Biennial Assessment of Ohio River Water Quality Conditions

for Water Years 2006 and 2007

September 2008

The Ohio River Valley Water Sanitation Commission
5735 Kellogg Avenue
Cincinnati, Ohio 45228-1112

EXECUTIVE SUMMARY

The Ohio River is one of the nation's great natural resources. It provides drinking water to nearly five million people; is a warm water habitat for aquatic life; provides numerous recreational opportunities; is used as a major transportation route; and is a source of water for manufacturing and power generation. The Ohio River forms in Pittsburgh, Pennsylvania at the confluence of the Allegheny and Monongahela rivers and flows in a southwesterly direction for 981 miles to join the Mississippi River near Cairo, Illinois. The first 40 miles of the Ohio River stay within the state of Pennsylvania. The remaining 941 miles form the state boundaries between Illinois, Indiana, and Ohio to the north, and Kentucky and West Virginia to the south.

The Ohio River Valley Water Sanitation Commission (ORSANCO; the Commission) is an interstate agency charged with abating existing pollution in the Ohio River Basin, and preventing future degradation of its waters. ORSANCO was created in 1948 with the signing of the Ohio River Valley Water Sanitation Compact. This report fulfills the following requirements of the Ohio River Valley Water Sanitation Compact:

1. To survey the district to determine water pollution problems.
2. To identify instances in which pollution from a state(s) injuriously affects waters of another state(s).

This report is a biennial assessment of Ohio River water quality conditions in terms of the degree to which the river supports each of its four designated uses: warm water aquatic life, public water supply, contact recreation, and fish consumption. The Ohio River Valley Water Sanitation Compact commits "...each state to place and maintain the waters of the basin in a satisfactory sanitary condition, available for safe and satisfactory use by public and industrial water supplies after reasonable treatment, suitable for recreation, capable of maintaining fish and other aquatic life...."

This assessment uses three classifications to describe the attainment of Ohio River designated uses: fully supporting (good water quality), partially supporting (fair water quality), and not supporting (poor water quality). ORSANCO conducts water quality monitoring and assessments on behalf of the Ohio River mainstem states (Illinois, Indiana, Kentucky, Ohio, Pennsylvania and West Virginia). This report provides a status of water quality from 2005-2007; however, in some cases data outside this range has been utilized in assessments. In addition, an Integrated List containing waters in need of Total Maximum Daily Loads (TMDLs) was completed (Table 10) in an effort to promote interstate consistency for Ohio River TMDLs.

Warm Water Aquatic Life Use Support

Ohio River warm water aquatic life use support was assessed based on chemical water quality data collected from ORSANCO's 17 clean metals and bimonthly sampling stations located on the mainstem, as well as direct measurements of fish communities from a large number of stream bank sites. Clean metals and bimonthly sampling, which occurred every other month at the 17 mainstem locations, detected no violations of ORSANCO's dissolved metals or bimonthly parameter criteria in relation to warm water aquatic life use support during this reporting period; therefore, no impairment designations resulted from this data.

Fish communities were assessed using ORSANCO's Ohio River Fish Index (ORFIn) for evaluating fish population data. Although numeric criteria have not yet been adopted into ORSANCO Pollution Control Standards, use of ORFIn allowed for the comprehensive assessment of Ohio River fish conditions. The Ohio River is divided into 20 assessment units based primarily on the locations of navigational dams. Using a random design, each assessment unit is assigned fifteen sampling locations to represent the fish community condition within a pool. This is being conducted on a rotating cycle with four pools sampled each year and the entire river sampled within five years. Sites are assessed as passing or failing when ORFIn scores are compared to expected values for a specific habitat type. Impairment is indicated when greater than 25 percent of sites within a pool have failing ORFIn scores. Sites sampled and data collected from July to October 2006 and 2007 were used for the 2008 report (Appendix K).

Sites are classified as fully supporting if fewer than 10 percent of water samples exceed the criteria for one or more pollutants and biological data do not indicate aquatic life impairment. Fair water quality is indicated by exceedances of criteria in 11-25 percent of the samples or biological data that suggested impairment. Sites are classified as not supporting if both water quality and biological data indicate impairment. No impairment was indicated from the biological data during the 2006-2007 sampling periods.

Dissolved oxygen and water temperature data were collected from thirteen stations (immediately upstream of 12 dams and at one power plant) on the Ohio River during months May through October 2006 and 2007 (Appendix E). *In situ* monitors are owned and operated by the US Army Corps of Engineers (seven locations), hydropower operators (five locations), and one coal-fired power plant operator. Hourly measurements are stored at each location, and ORSANCO electronically down-loads this data. For dissolved oxygen, stations with greater than 10% of days below 5 mg/L daily average have been identified as partially supporting the Aquatic Life Use. Two pools, J.T. Myers and Smithland (ORM 776.1 – 918.5), have been classified as partially supporting and requiring a TMDL. Partial Support is also indicated for stations having more than 10% of the periods exceed the period average in relation to water temperature. Stations with more than 10% of the periods exceeding the period average for temperature include Cannelton, Newburgh, and J.T. Myers. Available biological data indicates full support for the Cannelton and Newburgh pools. Only the J.T. Myers pool will be listed as partially supporting (ORM 776.1 – 848.0) and requiring a TMDL, based on unavailable biological data for the J.T. Myers pool for this assessment period. A weight-of-evidence approach is used here because biological data is a more direct indicator of aquatic life conditions.

Public Water Supply Use Support

Ohio River public water supply use support was assessed based on chemical water quality data collected from the Bimonthly Sampling Program (Appendix D), bacteria monitoring (Appendix F, G), and questionnaires sent to water utilities to assess impacts on Ohio River drinking water utilities caused by source water conditions (Figure 10). Data included in this report were collected from October 2005 to October 2007. The river was designated as fully supporting this use if pollutant criteria were exceeded in less than 10 percent of the samples collected. The river is considered in fair condition (impaired, but partially supporting) if one or more pollutants exceeded the criteria in 11-25 percent of the samples collected, if frequent intake closures due to elevated levels of pollutants were necessary to protect water supplies, or frequent "non-routine" additional treatment was necessary to protect water supplies. Poor river conditions were indicated by exceedances of criteria in greater than 25 percent of the samples collected, or if source water quality caused finished water Maximum Contaminant Levels (MCL) violations, which resulted in noncompliance with provisions of the Safe Drinking Water Act (SDWA).

Approximately one-tenth of the river is classified as partially supporting the public water supply use. Surveys were received from 22 out of 29 water utilities that use the Ohio River as a source for drinking water. No utility indicated violations of the Safe Drinking Water Act for MCLs in finished water that could be attributable to Ohio River source water quality. Spills were not considered in the assessment. The partially supporting impairment identifications were made from Bimonthly Sampling data and Bacteria Sampling data. The Bimonthly Sampling data contain Phenol criterion exceedances of >5 mg/L in greater than 10% of samples for Newburgh and L&D 52 stations. This caused the use designation of partially supporting for the L&D 52 and 53 Pools (ORM 918.5 – 962.6), and the Newburgh Pool beginning at the Cannelton L&D to the confluence of the Green River (ORM 720.7 – 784.2). The Fecal coliform monthly geometric mean criterion of 2000 CFU/100 mL for the protection of water supplies was exceeded in greater than 10% of months at the Pittsburgh station ORM 1.4, but not at station 4.3. Therefore, the river is designated as partially supporting from ORM 0.0 – 4.0.

Contact Recreation Use Support

Bacteria data from longitudinal surveys completed since 2003 (Appendix F), as well as recreation season monitoring bacteria data (Appendix G) from the six largest CSO urban areas for 2006-2007 were used to assess the contact recreational use (Appendix H). Because bacteria data are so variable and influenced by precipitation, it was decided to use all the available longitudinal data (back to 2003) instead of just the results from 2006-2007. The result is that more of the river is designated as impaired than if only the recent data were used, since 2006-2007 data were generally collected under dry conditions.

Impairments are based on exceedances of ORSANCO's stream criteria for bacteria. For the longitudinal surveys, sites are designated Partially Supporting if 11-25% of samples exceed the single sample maximum criterion, and Not Supporting if greater than 25% of samples exceed the single sample maximum, or the geometric mean criterion is exceeded. For the recreation season monitoring, a month is considered to exceed criteria if the single sample maximum is exceeded in more than 10% of samples, or the geometric mean criterion is exceeded. Then, if 11-25% of months exceed criteria, the site is designated Partially Supporting, and Not Supporting if greater than 25% of months exceed criteria. Approximately 484 miles of the Ohio River are classified as impaired (fair or poor water quality) for the contact recreation use. Fifty percent of the Ohio River is classified as fully supporting this use.

Fish Consumption Use Support

Fish consumption use support is assessed based primarily on the states' issuance of fish consumption advisories (Appendix M) and ORSANCO fish tissue contaminants data (Appendix I, J, L). Sites are classified as fully supporting if there are no fish consumption advisories and if PCBs, dioxins, and mercury did not exceed criteria. If contaminants exceeded criteria or fish consumption advisories are in effect, sites were considered impaired with fair water quality. Poor water quality is indicated by "no consumption" advisories. Under these advisories, it is recommended that no fish from the river be consumed by any individuals. None of these types of advisories were observed during the reporting period.

Through the Ohio River Watershed Pollutant Reduction Program, ORSANCO collected "high volume" Ohio River water samples that were analyzed for dioxin and polychlorinated biphenyls (PCBs). These data sets were compared to applicable ambient water quality criteria established for the protection of human health due to water and fish ingestion. Dioxin and PCB monitoring exceeded the applicable water quality criterion in every sample. Because of the widespread criteria violations for dioxin and PCBs, the entire river is assessed as impaired by these contaminants.

For mercury, a dual criterion, including water column and fish tissue data, is used in the assessment of fish consumption. The total mercury water column criterion was exceeded in greater than 10% of samples at five stations during the 2006 – 2007 sampling period; however there was only one fish tissue mercury criterion exceedance which occurred at Willow Island (ORM 161.7). Conclusions based on criteria violations conflict, and the fish tissue criterion is theoretically a more direct measure of impairment. So, a weight-of-evidence approach was employed and the river is not listed as impaired due to mercury. All 981 miles (100 percent) of the Ohio River are classified as partially supporting fish consumption use due to advisories for PCBs and widespread dioxin violations.

The following table is a state-by-state summary of impaired uses of the Ohio River.

State	River Miles	Aquatic Life Use Impairment	Contact Recreation Use Impairment	Public Water Supply Use Impairment	Fish Consumption Use Impairment
PA	0.0-40.2	0	40.2	4	40.2
OH-WV	40.2-317.1	0	176.0	0	276.9
OH-KY	317.1-491.1	0	18.7	0	174.2
IN-KY	491.1-848.0	71.9	243.5	63.5	356.7
IL-KY	848.0-981.0	70.5	5.2	44.1	133.0
TOTAL	981.0	142.4	483.6	111.6	981

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PART I: INTRODUCTION

The Ohio River Valley Water Sanitation Commission (ORSANCO; the Commission) is an interstate water pollution control agency for the Ohio River. ORSANCO was established in 1948 through the signing of the Ohio River Valley Water Sanitation Compact by representatives of the eight member states: Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia and West Virginia, and approved by Congress. Under the terms of the Compact, the states pledged to cooperate in the control of water pollution within the Ohio River Basin. Article VI of the Compact states that the guiding principal "shall be that pollution by sewage or industrial wastes originating in a signatory state shall not injuriously affect the various uses of the interstate waters." ORSANCO carries out a variety of programs, which primarily focus on the Ohio River mainstem, to address this principle. General program areas include water quality monitoring and assessment, emergency response, pollution control standards, and public information and education. The Commission also provides an excellent forum for information exchange and technology transfer among the states' water pollution control and natural resources agencies.

The Compact designates the Ohio River to be "available for safe and satisfactory use as public and industrial water supplies after reasonable treatment, suitable for recreational usage, capable of maintaining aquatic life…and adaptable to such other uses as may be legitimate." No degradation of Ohio River water quality, which would interfere with or become injurious to these uses, shall be permitted. ORSANCO monitors and assesses the Ohio River on behalf of the compact states. This report focuses on the water quality of the main stem of the Ohio River, though monitoring is conducted on tributaries as well. The Ohio River forms in Pittsburgh, Pennsylvania, at the confluence of the Allegheny and Monongahela Rivers. The river is 981 miles long and generally flows southwest to join the Mississippi River near Cairo, Illinois. The first 40 miles of the Ohio River are wholly within Pennsylvania. The remaining 941 miles form the state boundaries between Illinois, Indiana, and Ohio to the north, and Kentucky and West Virginia to the south.

This report generally covers the time between October, 2005 and October, 2007, although certain assessments use earlier data. The assessment methodologies and supporting data used to generate this assessment are contained within this report and its appendices. For this report, Ohio River water quality is determined by the degree of support for each of the following designated uses: warm water aquatic life habitat, public water supply, contact recreation, and fish consumption. Each designated use is evaluated using specific numeric water quality criteria, the existence of advisories against consuming fish, surveys and questionnaires, and a direct measure of biological communities within the Ohio River. Based on water quality conditions, the Ohio River is classified as fully, partially or not supporting each of the designated uses. Fully supporting indicates minor or no water quality problems. A designation of "partial support" indicates impairment, but data suggest fair water quality. A designation of "not supporting" also indicates impairment; however, in this case data indicate poor water quality.

Contained in this report are assessments of Ohio River designated use attainment, as well as an "Integrated List" of waters requiring Total Maximum Daily Loads (TMDLs). ORSANCO's role in completing Ohio River use attainment assessments and an Integrated List is to facilitate interstate consistency. However, the states' are not obligated to incorporate any or all of this assessment into their own reports. Specifically, the United States Environmental Protection Agency (USEPA) has prepared "Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(B) and 314 of the Clean Water Act." This guidance states that "data and information in an interstate commission 305(b) report should be considered by the states as one source of readily available data and information when they prepare their Integrated Report and make decisions on segments to be placed in Category 5; however, data in a 305(b) Interstate Commission Report should not be automatically entered in a state Integrated Report or 303(d) list without consideration by the state about whether such inclusion is appropriate."

PART II: BACKGROUND

Chapter 1: Ohio River Watershed

Basin Characteristics

The Ohio River drains 203,940 square miles, which is approximately five percent of the contiguous United States (Figure 1). Although the river is 981 miles in length and flows through or borders 6 states, only five percent of the basin actually drains directly into the Ohio River. Instead the river is fed by numerous tributaries, including the Allegheny, Monongahela, Kanawha, Wabash, Green, Cumberland, and Tennessee rivers. These are only a few of the watersheds that make up the Ohio River Basin, which covers portions of 15 states. Over 25 million people, approximately ten percent of the United States' population, reside in the Ohio River Basin. An estimated 3.6 million people live in cities and towns adjacent to the Ohio River.

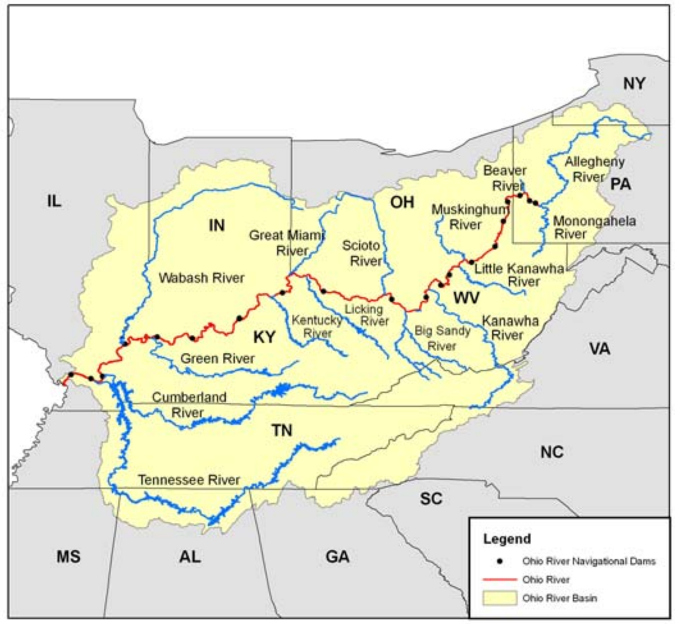


Figure 1. The Ohio River is fed by numerous tributaries. Twenty lock and dam systems regulate the water levels and allow navigation on the river.

The Ohio River watershed is comprised of a number of different land use types, including agricultural, industrial, urban, and forested areas (Figure 2). Land use is a significant factor in determining both the runoff characteristics of a drainage basin and the water quality of its streams. Land uses such as agriculture, industry, and mining can lead to impairments in water quality. Due to the high concentration of people in the watershed, urban runoff is a large contributor to degraded water quality as well. For example, in paved areas, water is conveyed to streams and rivers more quickly, transporting pollutants directly to the water bodies. In contrast, runoff is conveyed more slowly in forested areas where water can infiltrate the soil.

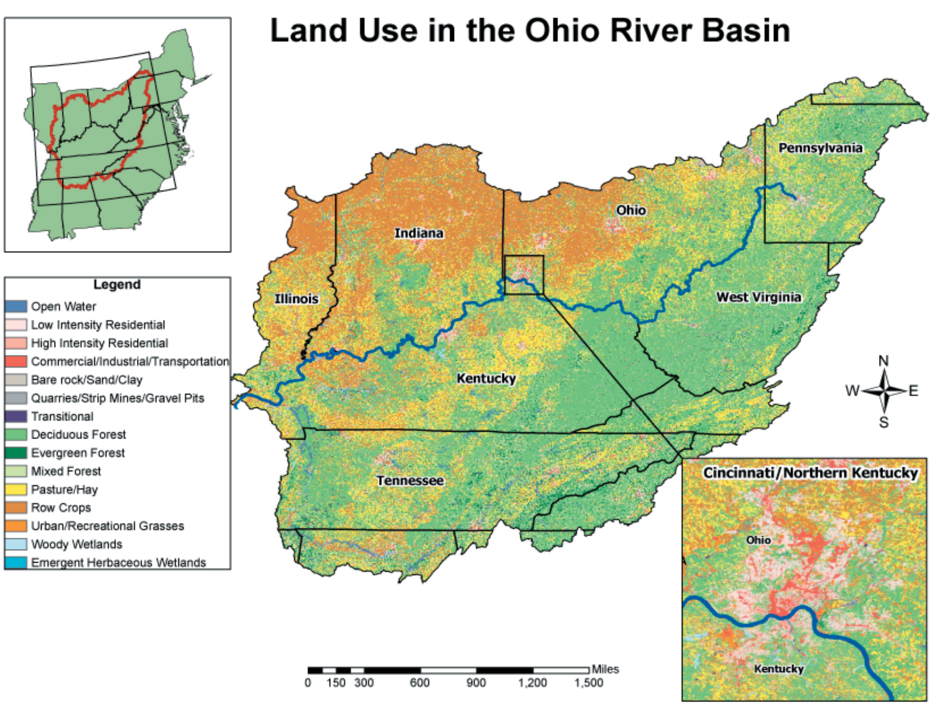


Figure 2 The Ohio River Valley supports a variety of land use types. Like most of the Midwest, states such as Ohio and Indiana are dominated by agriculture. As shown in the inset (Cincinnati/Northern Kentucky), highly populated regions of the river are characterized by residential, commercial, and industrial land use types.

Description of Ohio River Pools

The Ohio River is divided into 21 segments by 20 navigational dams (Figure 1). These dams have a significant impact on the flow, water quality and aquatic communities of the river. The modern high lift dams have resulted in a deeper, slower moving river than existed prior to their construction. Because each pool has its own unique characteristics, these water bodies often have been used for assessment and reporting purposes in the past. For this 2008 Biennial Assessment, aquatic life use attainment is determined using the navigational pools as separate assessment units; however, the degree of use support for the remaining uses is assessed for each river mile. It was determined that this method provided a more accurate description of the river. The following descriptions include the boundaries of each water body as well as other relative information.

- **Pittsburgh Point-Emsworth** (mile point 0-6.2) This water body is bounded by the confluence of the Allegheny and Monongahela rivers (the origin of the Ohio River) on the upstream end and by the Emsworth Locks & Dam on the downstream end. Chartiers Creek, with a drainage area of 277 square miles, intersects this water body at mile point 2.5.

- **Emsworth-Dashields** (mile point 6.2-13.3) This 7.1-mile-long water body encompasses the entire Dashields Pool and is bounded by the Emsworth Locks & Dam upstream and the Dashields Locks & Dam on the downstream end.

- **Dashields-Montgomery** (mile point 13.3-31.7) This 18.4-mile-long water body is bounded by the Dashields Locks & Dam upstream and the Montgomery Locks & Dam on the downstream end. Two tributaries that enter this navigational pool include the Beaver and Raccoon rivers at river miles 25.4 and 29.6 respectively.

- **Montgomery-New Cumberland** (mile point 31.7-54.4) This 22.7-mile-long water body is bounded by the Montgomery Locks & Dam upstream and New Cumberland Locks & Dam downstream. At mile point 40.2 the Ohio River leaves Pennsylvania to be bordered by Ohio to the north and West Virginia to the south. The Little Beaver River, with a drainage area of 510 square miles, intersects this water body at mile point 39.5. Yellow Creek, with a drainage area of 240 square miles, intersects this water body at mile point 50.4.

- **New Cumberland-Pike Island** (mile point 54.4-84.2) This 29.8-mile-long water body encompasses the entire Pike Island Pool and is bounded by the New Cumberland Locks & Dam upstream and the Pike Island Locks & Dam on the downstream end. The following tributaries intersect this water body: Buffalo Creek at mile point 74.7 with a drainage area of 160 square miles, and Short Creek at mile point 81.4 with a drainage area of 147 square miles.

- **Pike Island-Hannibal** (mile point 84.2-126.4) This 42.2-mile-long water body encompasses the entire Hannibal Pool and is bounded by the Pike Island Locks & Dam upstream and the Hannibal Locks & Dam on the downstream end. The following tributaries intersect this water body: Wheeling Creek in Ohio at mile point 91.0 with a drainage area of 108 square miles, Wheeling Creek in West Virginia at mile point 91.0 with a drainage area of 300 square miles, McMahon Creek at mile point 94.7 with a drainage area of 91 square miles, Grave Creek at mile point 102.5 with a drainage area of 75 square miles, Captina Creek at mile point 109.6 with a drainage area of 181 square miles, Fish Creek at mile point 113.8 with a drainage area of 250 square miles, and Sunfish Creek at mile point 118.0 with a drainage area of 114 square miles.

- **Hannibal-Willow Island** (mile point 126.4-161.7) This 35.3-mile-long water body encompasses the entire Willow Island Pool and is bounded by the Hannibal Locks & Dam upstream and the Willow Island Locks & Dam on the downstream end. The following tributaries intersect this water body: Fishing Creek at mile point 128.3 with a drainage area of 220 square miles, Middle Island Creek at mile point 154.0 with a drainage area of 560 square miles, and Little Muskingum River at mile point 168.3 with a drainage area of 315 square miles.

- **Willow Island-Belleville** (mile point 161.7-203.9) This 42.2-mile-long water body is bounded by Willow Island Locks & Dam on the upstream side and Belleville Locks & Dam on the downstream side. Duck Creek, with a drainage area of 228 square miles, intersects this water body at mile point 170.7. The Muskingum River has a drainage area of 8,040 square miles and enters the Ohio River at mile point 172.2. Other tributaries intersecting this water body include the Little Kanawha River at mile point 184.6 with a drainage area of 2,320 square miles, Little Hocking River at mile point 191.8 with a drainage area of 103 square miles, and Hocking River at mile point 199.3 with a drainage area of 1,190 square miles.

- **Belleville-Racine** (mile point 203.9-237.5) This 33.6-mile-long water body encompasses the entire Racine Pool and is bounded by the Belleville Locks & Dam upstream and the Racine Locks & Dam on the downstream end. The following tributaries intersect this water body: Shade River at mile point 210.6 with a drainage area of 221 square miles, Shady Creek at mile point 220.6 with a drainage area of 115 square miles, and Mill Creek at mile point 231.5 with a drainage area of 230 square miles.

- **Racine-Kanawha** (mile point 237.5-265.7) This 28.2-mile-long water body is bounded by the Racine Locks & Dam upstream and Kanawha River on the downstream end. Leading Creek, with a drainage area of 151 square miles, intersects this water body at mile point 254.2.

- **Kanawha-Robert C. Byrd** (mile point 265.7-279.2) This 13.5-mile-long water body is bounded by the Kanawha River upstream and the Robert C. Byrd (R.C. Byrd, formerly Gallipolis) Locks & Dam on the downstream end. The Kanawha River has a drainage area of 12,200 square miles. Raccoon Creek, with a drainage area of 684 square miles, intersects this water body at mile point 276.0.

- **Robert C. Byrd-Greenup** (mile point 279.2-341.0) This 61.8-mile-long water body is bounded by the RC Byrd Locks & Dam on the upstream and the Greenup Locks & Dam downstream. The following tributaries intersect this water body: Guyandotte River at mile point 305.2 with a drainage area of 1,670 square miles, Symmes Creek at mile point 308.7 with a drainage area of 356 square miles, and Twelvepole Creek at mile point 313.2 with a drainage area of 440 square miles. The Big Sandy River, forming the border between West Virginia and Kentucky, enters the Ohio River at mile point 317.1 with a drainage area of 4,280 square miles. The Little Sandy River, with a drainage area of 724 square miles, enters the Ohio River at mile point 336.4.

- **Greenup-Meldahl** (mile point 341.0-436.2) This 95.2-mile-long water body is bounded by the Greenup Locks & Dam upstream and Meldahl Lock & Dam on the downstream end. The following tributaries intersect this water body: Pine Creek at mile point 346.9 with a drainage area of 185 square miles, Little Scioto River at mile point 349.0 with a drainage area of 233 square miles, Tygarts Creek at mile point 353.3 with a drainage area of 336 square miles, the Scioto River at mile point 356.5 with a drainage area of 6,510 square miles, Kinniconnick Creek at mile point 368.1 with a drainage area of 253 square miles, Ohio Brush Creek at mile point 388.0 with a drainage area of 435 square miles, Eagle Creek at mile point 415.7 with a drainage area of 154 square miles, and White Oak Creek at mile point 423.9 with a drainage area of 234 square miles.

- **Meldahl-Markland** (mile point 436.2-531.5) This 95.3-mile-long water body is bounded by the Meldahl Lock & Dam upstream and the Markland Locks & Dam on the downstream end. Major tributaries intersecting this water body include the Little Miami River (river mile 464.1, drainage area 1,670 square miles), Licking River (river mile 470.2, drainage area 3,670 square miles), and Great Miami River (river mile 491.1, drainage area 5,400 square miles).

- **Markland-McAlpine** (mile point 531.5-604.4) This 72.9-mile-long water body is bounded by the Markland Locks & Dam upstream and the McAlpine Locks & Dam on the downstream end. The Kentucky River, which empties into this navigational pool, has a drainage area of 6,970 square miles. Other tributaries include the following: Little Kentucky River at mile point 546.5 with a drainage area of 147 square miles; Indian Kentucky River at mile point 550.5 with a drainage area of 150 square miles; and Silver Creek at mile point 606.5 with a drainage area of 225 square miles.

- **McAlpine-Cannelton** (mile point 604.4-720.7) This 113.9-mile-long water body is bounded by the McAlpine Locks & Dam upstream and the Cannelton Locks & Dam on the downstream end. Several tributaries intersect this portion of the Ohio River. The Salt River has a drainage area of 2,890 square miles. Other tributaries intersecting this water body include Big Indiana Creek at mile point 657 with a drainage area of 249 square miles, Blue River at mile point 663 with a drainage area of 466 square miles, and Sinking Creek at mile point 700.9 with a drainage area of 276 square miles.

- **Cannelton-Newburgh** (mile point 720.7-776.1) This 55.4-mile-long water body is bounded by the Cannelton Locks & Dam upstream and the Newburgh Locks & Dam on the downstream end. The following tributaries intersect this water body: Anderson River at mile point 731.5 with a drainage area of 276 square miles, Blackford Creek at mile point 742.2 with a drainage area of 124 square miles, and Little Pigeon Creek at mile point 773 with a drainage area of 415 square miles.

- **Newburgh-John T. Myers** (mile point 776.1-846.0) This 69.9-mile-long water body is bounded by the Newburgh Locks & Dam upstream and John T. Myers Locks & Dam (J.T. Myers, formerly Uniontown) on the downstream end. The Green River empties into this pool at river mile 784.2 and has a drainage area of 9,230 square miles. Pigeon Creek, with a drainage area of 375 square miles, intersects this water body at mile point 792.9.

- **John T. Myers-Smithland** (mile point 846.0-918.5) This 72.5-mile-long water body is bounded by the J.T. Myers Locks & Dam upstream and the Smithland Locks & Dam on the downstream end. The Wabash River has a drainage area of 33,100 square miles and enters the Ohio River at river mile 848. The Saline River, with a drainage area of 1,170 square miles, intersects this water body at mile point 867.3. The Tradewater River, with a drainage area of 1,000 square miles, intersects this water body at mile point 873.5.

- **Smithland-Lock & Dam 52** (mile point 918.5-938.9) This 20.4-mile-long water body is bounded by the Smithland Locks & Dam upstream and Lock & Dam 52 on the downstream end. The Cumberland River drains into the Ohio River at river mile 920.4 and has a drainage area of 17,920 square miles. The Tennessee River also empties into the Ohio River in this pool at river mile 932.5 with a drainage area of 40,910 square miles.

- **Lock & Dam 52-Cairo** (mile point 938.9-981) This 42.1-mile-long water body is bounded by Lock & Dam 52 upstream and the Mississippi River on the downstream end (the mouth of the Ohio River). Lock & Dam 52 as well as Lock & Dam 53 are currently being replaced by a single lock and dam facility called Olmsted Locks & Dam at river mile 964.4.

Appendix A contains additional data on basin characteristics including locations of locks and dams, locations of tributaries, and hydrologic data for water years 2005-2007.

Uses of the Ohio River

The Ohio River Basin encompasses 15 states. As such, the Ohio River is known for a variety of different uses. Specifically, through 29 public drinking water utilities and numerous industries, the river provides drinking water to approximately five million people. Forty-nine electric power-generating facilities located along the river provide greater than five percent of the United States' power generating capacity. In addition, the river serves as a transportation highway for commercial navigation. Each year, barges carry in excess of 150 million tons of cargo along the Ohio River. The majority of the commercial cargo consists of coal, oil and petroleum. Finally, the Ohio River serves as a source of recreation for many individuals throughout the basin. The river provides warm water habitat for over 129 species of fish, drawing fishermen and nature enthusiasts to the banks of the river. It also provides recreational opportunities for boaters and a natural setting for dining and festivals. According to the Clean Water Act, states must assess the degree to which state waters meet their designated uses. Designated uses for the Ohio River include contact recreation, aquatic life, public water supply, and fish consumption.

Flows

A series of locks and dams, operated and maintained by the United States Army Corps of Engineers, regulates pool elevation on the Ohio River. These dams create 20 pools with guaranteed, regulated minimum flows to assure commercial navigation at all times. Long-term average flows in the Ohio River, depending on location and time of year, range from 14,000 to 497,000 cubic feet per second (cfs). Hydrologic conditions varied considerably over the reporting period. Flow data, reported on a monthly basis by the National Weather Service, are contained in Appendix A. Figure 3 provides a comparison of flow over the reporting period compared to long-term average flows at three locations: Wheeling, WV; Markland, KY; and Smithland, KY. At all three locations the average monthly flows tended to be lower than the long-term average. Both high and low flow conditions can affect the various uses of the Ohio River adversely. Aquatic biota, for example, may experience lower dissolved oxygen levels during low flow periods. During high flow conditions, bacteria levels often increase due to combined sewer overflows (CSOs).

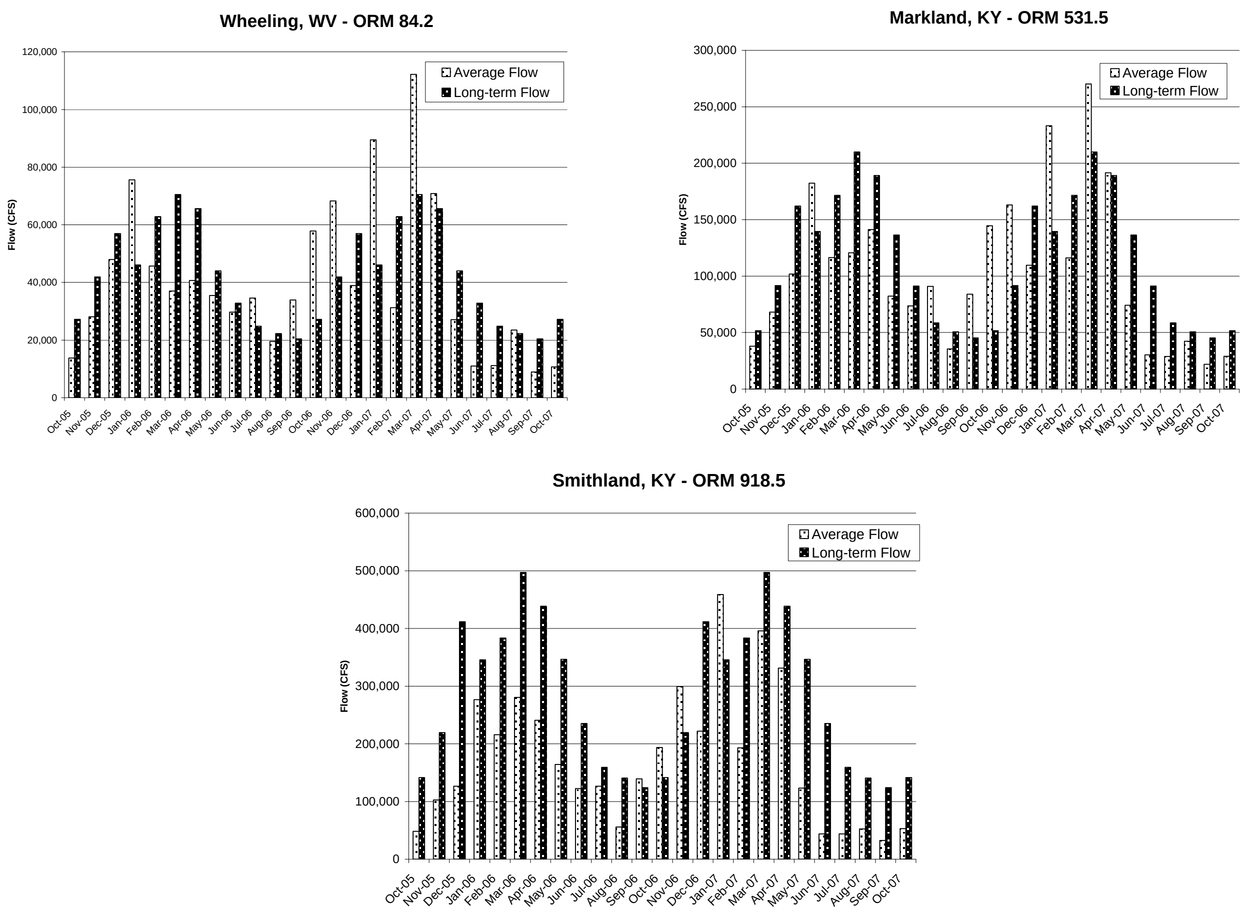


Figure 3 Flow data from the Ohio River at Wheeling, WV; Markland, KY; and Smithland, KY. Monthly average flows are compared to long-term flows. Flows in 2006-2007 tended to be lower than the long-term average. Wheeling, WV (the upper most site shown) had the highest percentage of flows greater than the long-term average**.**

Chapter 2: General Water Quality Conditions

Figure 4 presents box and whisker plots of all the Ohio River Bimonthly and Clean Metals monitoring data for the period July 2005 through July 2007. The data represents 13 sampling events conducted over the two year period, consisting of one round of sampling every other month beginning in January. Data are presented from upstream to downstream stations, which is left to right on the graphs. River mile points for each station can be found in the data tables in Appendix C and D.

Several general conclusions about the data are outlined in this chapter. A common occurrence in many of the data sets is a significant decrease in concentration between the Belleville and R.C. Byrd stations. This would be explained by the dilution caused by the Kanawha River whose flow is generally about 25 percent of the Ohio River flow. Many of the pollutant concentrations tend to increase in a downstream direction, while much fewer tend to decrease in a downstream direction which would be indicative of dilution of pollutants from upstream sources. Many of the total metals concentrations increase in a downstream direction because they are associated with (adsorbed to) suspended sediments which also increase in a downstream direction. As a general rule, West Point tends to have the highest concentrations for many of the parameters.

Ammonia concentrations are fairly consistent along the entire river, with the exception of spikes at Anderson Ferry, Louisville and West Point. West Point has the highest ammonia levels in the river with a maximum concentration of 0.5 mg/L, which is well below ORSANCO's criteria for the protection of aquatic life.

Median chloride concentrations tend to be fairly consistent along the length of the river, although slightly higher in the upper river. Median concentrations tend to be less than 40 mg/L and most of the data is below 60 mg/L, while all the data remains well below ORSANCO's water quality criterion of 250 mg/L.

Hardness increases steadily and consistently in a downstream direction. Median concentrations range from 100 mg/L in the upper river to 170 mg/L in the lower river, which would generally be considered moderately hard to hard. These concentrations would be considered "middle of the road" for river water quality.

Nitrate-Nitrite Nitrogen tends to increase consistently in a downstream direction beginning between the Greenup and Meldahl stations. Upstream of Greenup, concentrations remain consistently below 1 mg/L. All data is significantly below the stream criterion of 10 mg/L.

Very few detections of Phenolics occur, but were more prevalent at the Newburgh and L&D 52 stations, which resulted in impairments to the public water supply use. Any detection represents an exceedance of the water quality criterion of 5 ug/L.

Sulfate concentrations in the upper river increase steadily from New Cumberland to Belleville, decreases between Belleville and R.C. Byrd due to dilution from the Kanawha River, and then remains fairly consistent throughout the lower two-thirds of the river. All concentrations are well below the water quality criterion of 250 mg/L.
Total Kjeldahl Nitrogen (TKN) concentrations increase slightly in a downstream direction in the middle of the river, from the RC Byrd station to the West point station. West Point has the highest concentrations on the river with its median concentration around 0.8 mg/L. ORSANCO does not have a criterion for TKN.

Total Organic Carbon concentrations remain fairly consistent throughout the river with median concentrations in the 3 mg/L range and maximum concentrations only once exceeding 10 mg/L.

Median Total Phosphorus concentrations are consistently around 0.5 mg/L for the entire upper half of the river, then steadily increase from Meldahl to a high of 0.2 mg/L at West Point, then remain consistently at 0.1 mg/L from Cannelton and downstream (the lowest quarter of the river). Maximum concentrations reach 0.6 mg/L at Louisville and West Point. There currently is no stream criterion for Total Phosphorus.

Total Suspended Solids hold fairly constant in the upper Ohio River at a mean concentration of 12 mg/L, then gradually increase beginning with the R.C. Byrd station to a maximum mean concentration at West Point of over 100 mg/L. Mean concentrations then drop off from Cannelton and downstream.

Dissolved Aluminum is one of a few pollutants that consistently decrease in a downstream direction, with the highest median concentration of 15 ug/L occurring at Pike Island, and decreasing to 5 mg/L at L&D 52. In contrast, Total Aluminum generally increases in a downstream direction. The Commission does not have a criterion for Aluminum.

Arsenic concentrations, both dissolved and total, tend to increase in a downstream direction. The maximum median concentration occurs at the lowest station on the river at L&D 52, and is 1.4 ug/L for total Arsenic. Arsenic criteria are never exceeded, with a maximum concentration for Total Arsenic of 3 ug/L occurring at Anderson Ferry, which compares to the most stringent criterion for Total Arsenic of 10 ug/L.

Barium concentrations tend to be fairly consistent over the length of the river, with the highest median concentration occurring at West Point. No samples exceeded the water quality criterion of 1 mg/L; the maximum concentration of Total Barium being 115 ug/L occurred at Anderson Ferry.

Cadmium is detected more frequently in the lower third of the Ohio River, with the highest concentration of dissolved cadmium occurring at West Point and the highest concentration of Total Cadmium occurring at Anderson Ferry. The most stringent criterion for Dissolved Cadmium is 2.2 ug/L (at typical hardness) and this criterion is never exceeded.

Both total and dissolved Calcium concentrations tend to increase in a downstream direction, with a decrease at the R.C. Byrd station due to dilution from the Kanawha River. Maximum median concentrations for both total and dissolved Calcium occur at West Point. Almost all calcium found in the river is in the dissolved phase, as is noted by the total and dissolved concentrations being almost equal. There is no water quality criterion for Calcium.

Total and dissolved Chromium concentrations remain fairly consistent throughout the river, with the maximum dissolved concentration of 2.9 ug/L occurring at Louisville. The dissolved criterion of 74 ug/L is never exceeded.

Copper concentrations are highest in the upper river with maximum median concentrations occurring at the New Cumberland station. The maximum dissolved concentration of 6 ug/L also occurred at New Cumberland. The dissolved criterion of 9 ug/L was never exceeded.

Iron tends to be found predominantly in the solid phase as can be noted by the lack of detections of dissolved Iron. Total Iron concentrations are fairly consistent from New Cumberland to Belleville, then increase slightly downstream from the R.C. Byrd station. ORSANCO does not have an Iron criterion.

Lead is found predominantly in the particulate phase. Median concentrations of Total Lead remain relatively consistent throughout the river, while maximum concentrations tend to be higher in the lower half of the river. The maximum Total Lead concentration of 19 ug/L occurred at Anderson Ferry. The maximum dissolved Lead concentration of 0.16 ug/L occurred at the R.C. Byrd station. No dissolved concentrations exceeded the dissolved criterion of 2.5 ug/L (at typical hardness).

Both total and dissolved Magnesium concentrations significantly increase in a downstream direction. Magnesium, similar to Calcium, remains predominantly in the dissolved phase as is noted by nearly equal dissolved and total concentrations. Maximum median concentrations can be found at West Point, Smithland, and L&D 52 stations. There is no criterion for Magnesium.

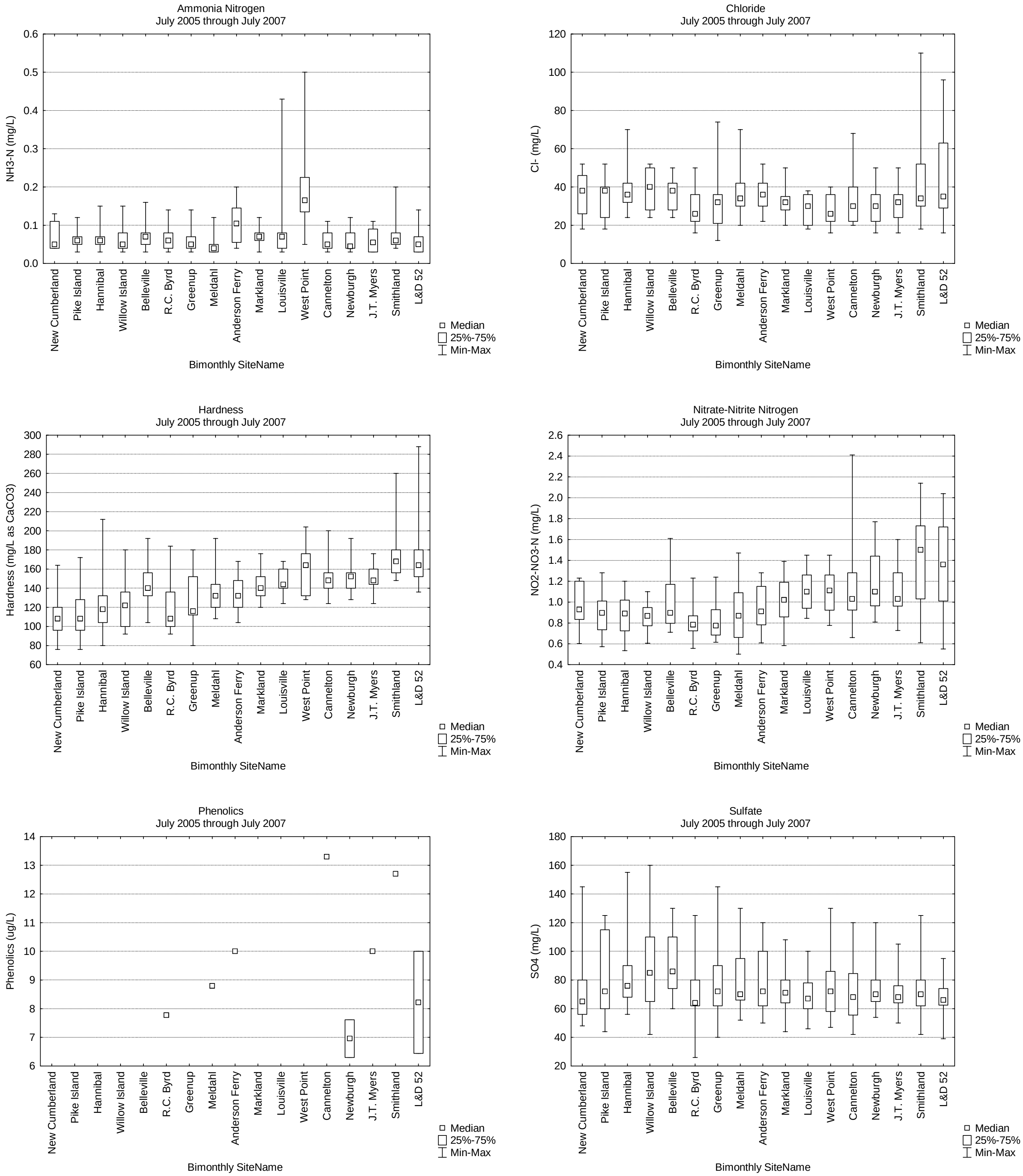
There are relatively few detections of Dissolved Mercury; however Total Mercury concentrations frequently exceed the water quality criterion of 0.012 ug/L. Total Mercury median concentrations tend to be relatively consistent in the upper half of the river, and are significantly higher in the lower river. The highest concentrations of Total Mercury occur at West Point. The median concentration of approximately 0.024 ug/L at West Point is almost twice the criterion value. Other stations with maximum concentrations exceeding the criterion include Anderson Ferry, Louisville, Cannelton, Newburgh, J.T. Myers, Smithland, and L&D 52.

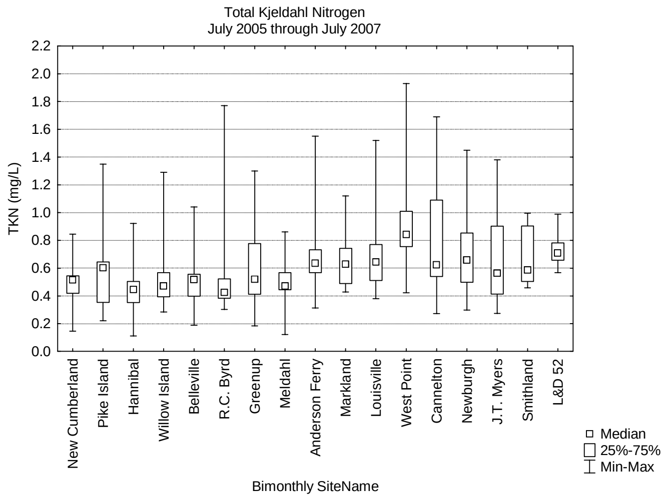
Dissolved Nickel is one of the few parameters which decrease in a downstream direction with the exception of a spike at West Point, while dissolved concentrations remain fairly consistent throughout the river. The maximum dissolved concentration of almost 8 ug/L occurred at the Greenup Station. The dissolved criterion of 52 ug/L (at typical hardness) was never exceeded.

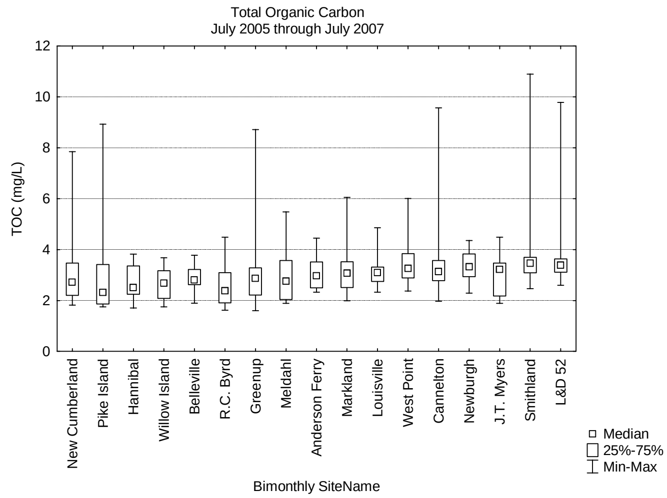
Dissolved and Total Selenium concentrations are fairly consistent and equal throughout the entire river with the exception of a spike at West Point. Total selenium concentrations never exceeded the criterion of 5 ug/L.

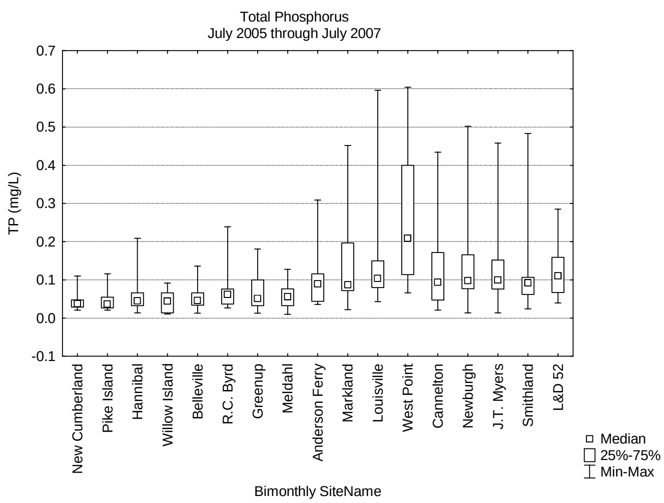
Dissolved and Total Zinc concentrations remain fairly consistent along the entire length of the Ohio River, with the maximum concentration of approximately 90 ug/L occurring at Anderson Ferry. The dissolved criterion of 117 ug/L (at typical hardness) is never exceeded throughout the entire river.

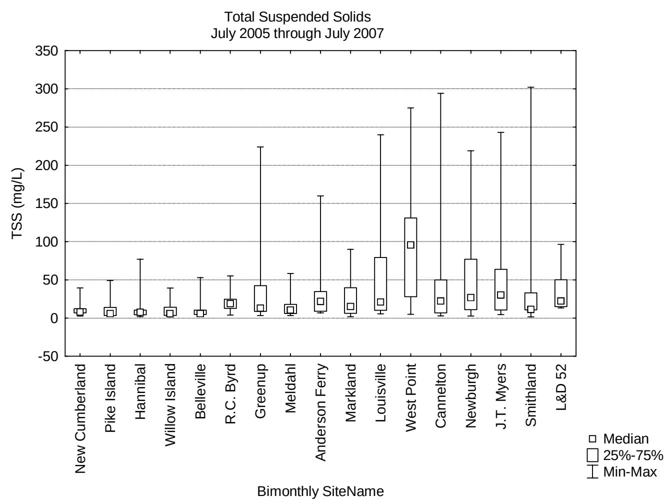
Figure 4 – Boxplots: Median 25th, 75th Maximum, Minimum All Bimonthly and Metals Data July 2005-July 2007

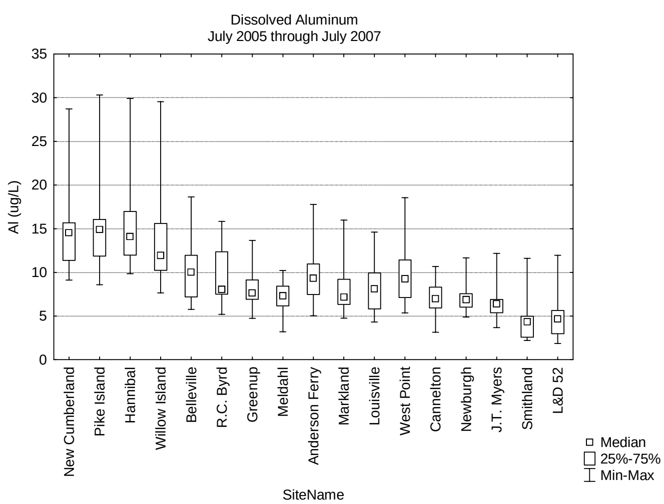


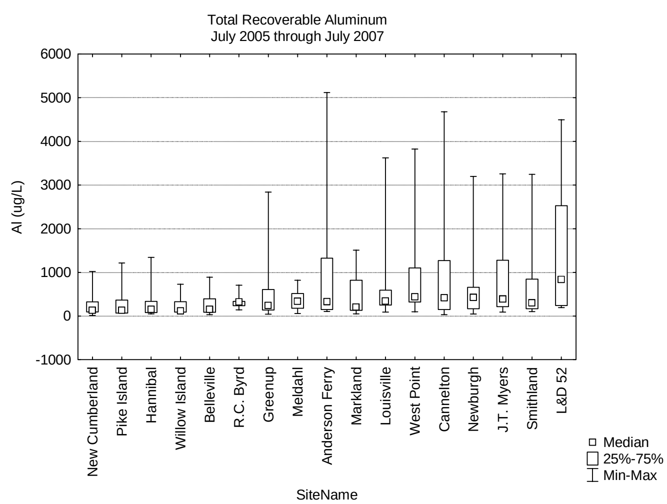

Total Kjeldahl Nitrogen
July 2005 through July 2007
TKN (mg/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max
Bimonthly SiteName

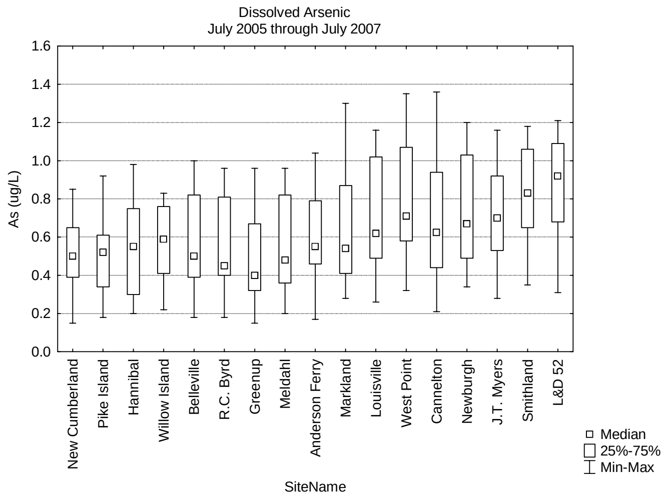

Total Organic Carbon
July 2005 through July 2007
TOC (mg/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max
Bimonthly SiteName

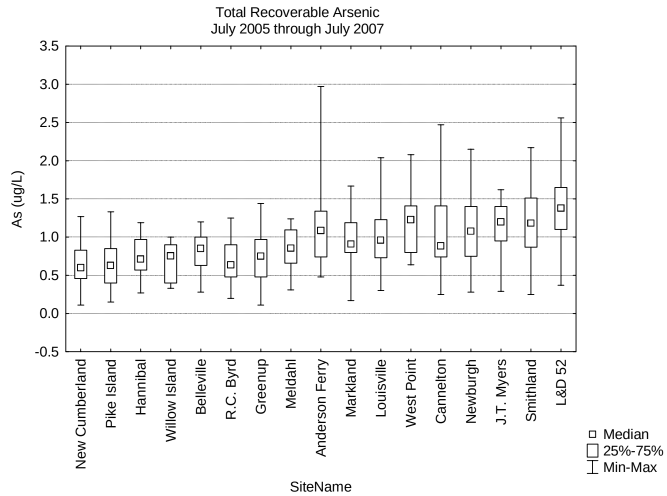

Total Phosphorus
July 2005 through July 2007
TP (mg/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max
Bimonthly SiteName

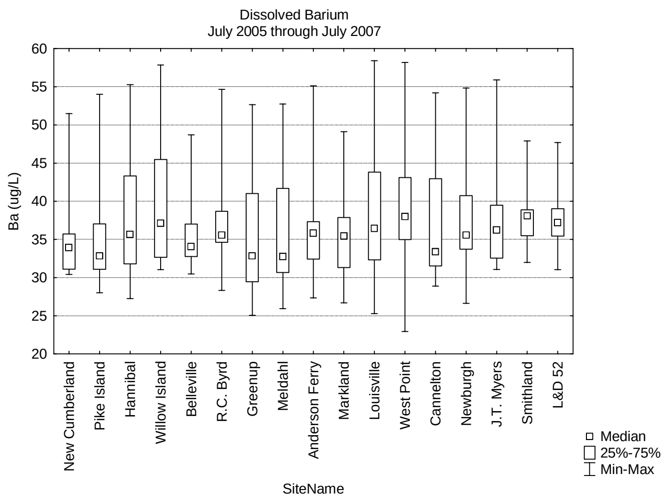

Total Suspended Solids
July 2005 through July 2007
TSS (mg/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max
Bimonthly SiteName

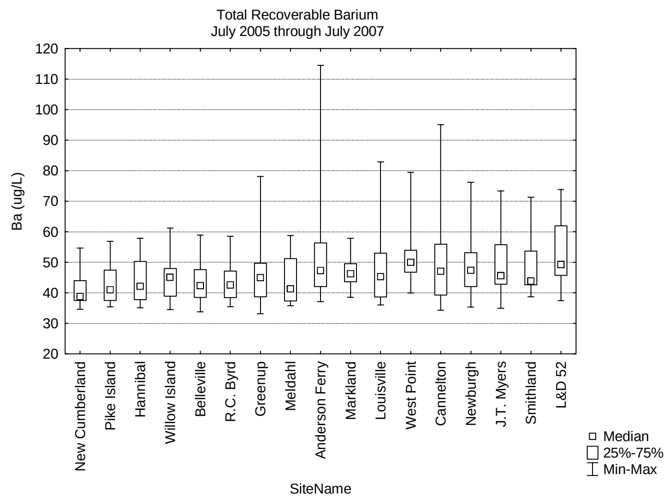

Dissolved Aluminum
July 2005 through July 2007
Al (ug/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max
SiteName

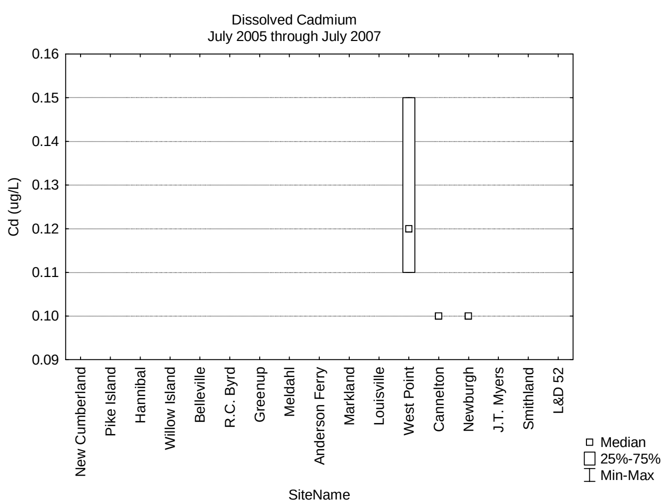

Total Recoverable Aluminum
July 2005 through July 2007
Al (ug/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max
SiteName

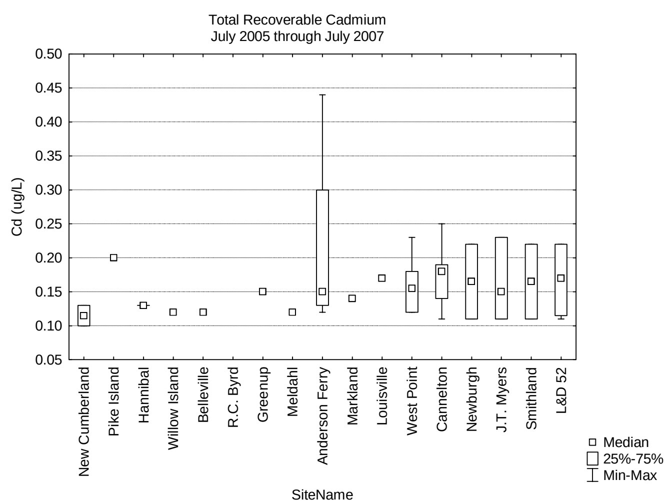

Dissolved Arsenic
July 2005 through July 2007
As (ug/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

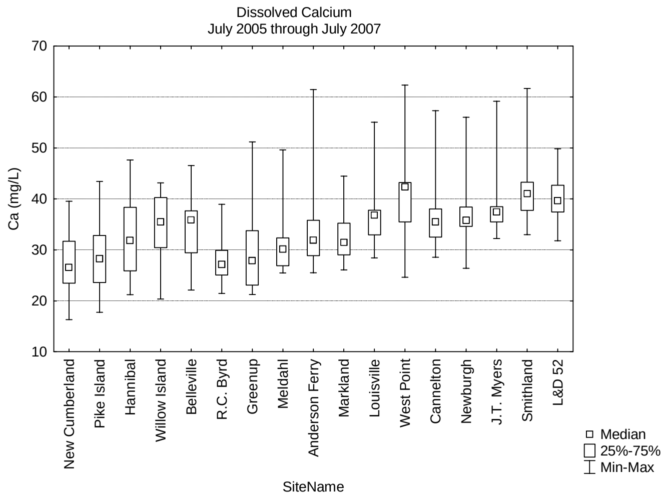

Total Recoverable Arsenic
July 2005 through July 2007
As (ug/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

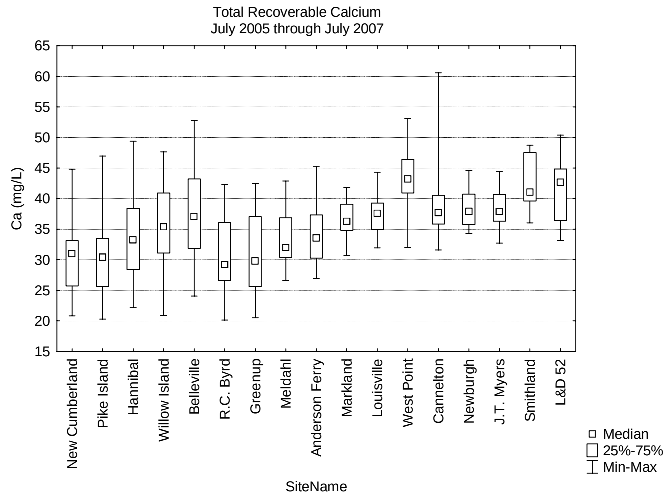

Dissolved Barium
July 2005 through July 2007
Ba (ug/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

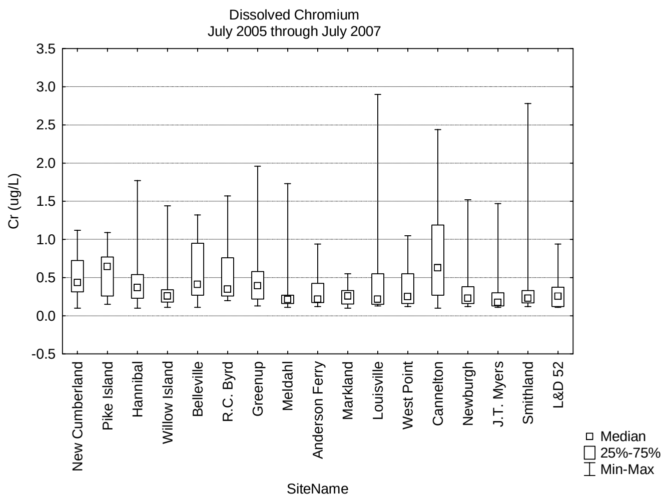

Total Recoverable Barium
July 2005 through July 2007
Ba (ug/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

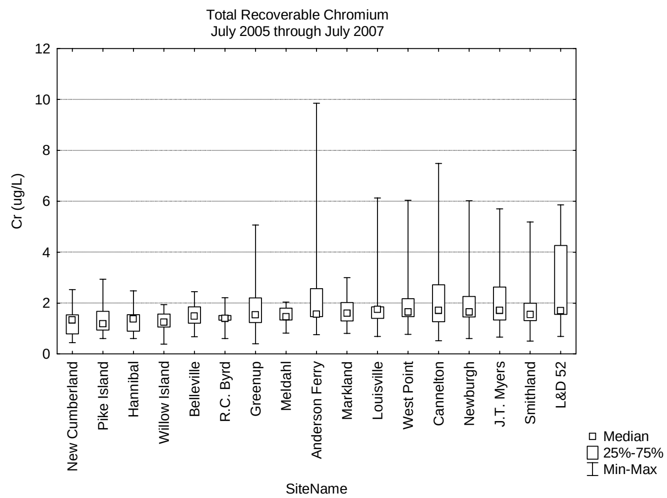

Dissolved Cadmium
July 2005 through July 2007
Cd (ug/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

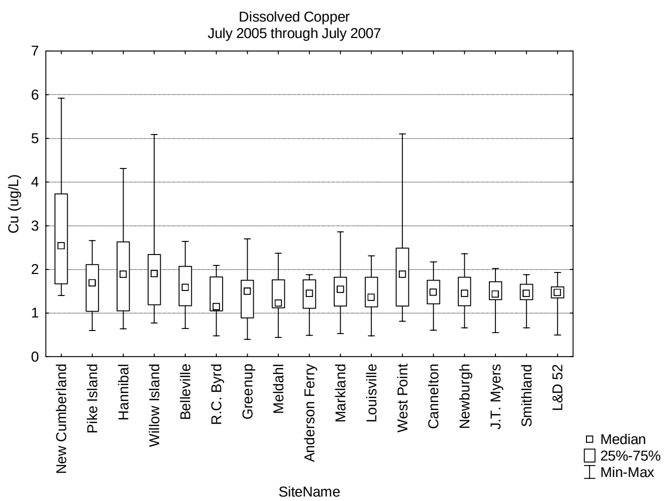

Total Recoverable Cadmium
July 2005 through July 2007
Cd (ug/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

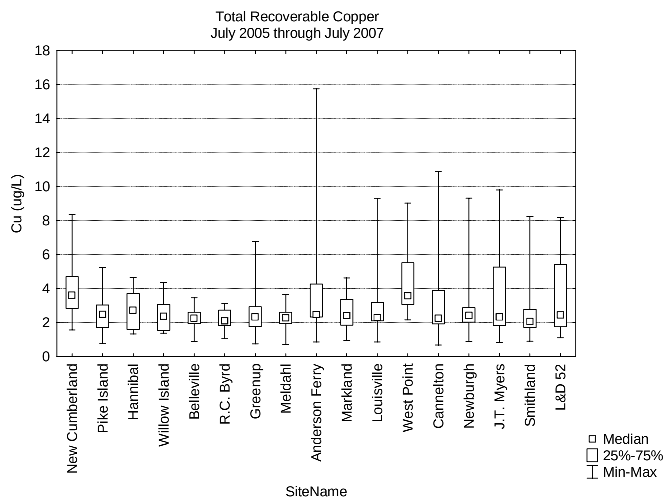

Dissolved Calcium
July 2005 through July 2007
Ca (mg/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

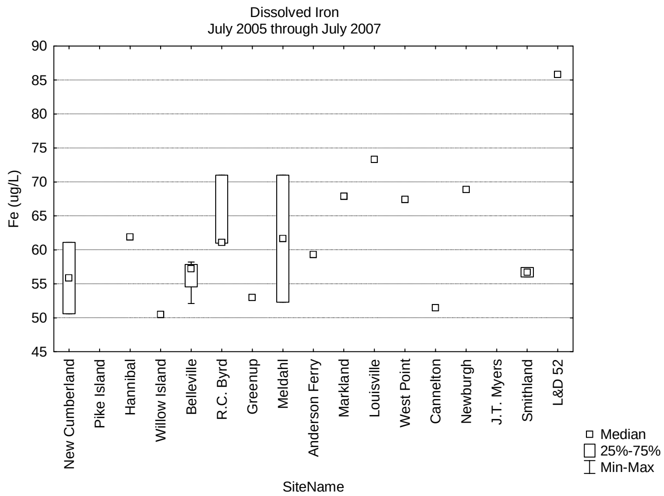

Total Recoverable Calcium
July 2005 through July 2007
Ca (mg/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

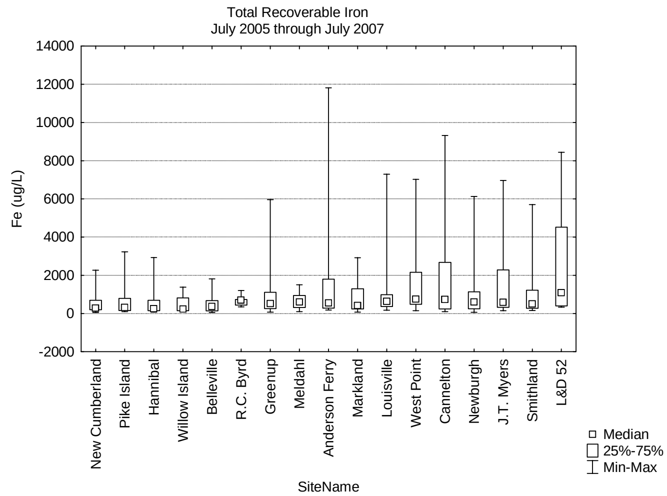

Dissolved Chromium
July 2005 through July 2007
Cr (ug/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

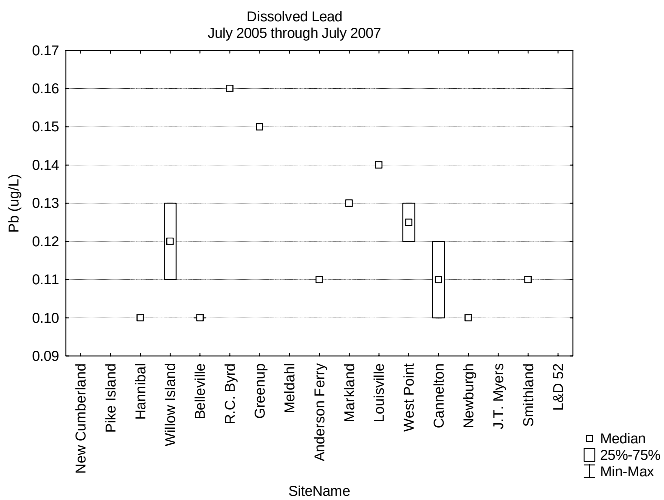

Total Recoverable Chromium
July 2005 through July 2007
Cr (ug/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

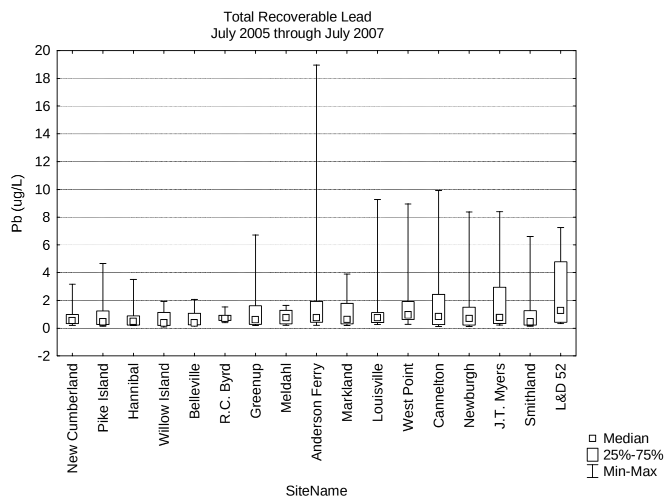

Dissolved Copper
July 2005 through July 2007
Cu (ug/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

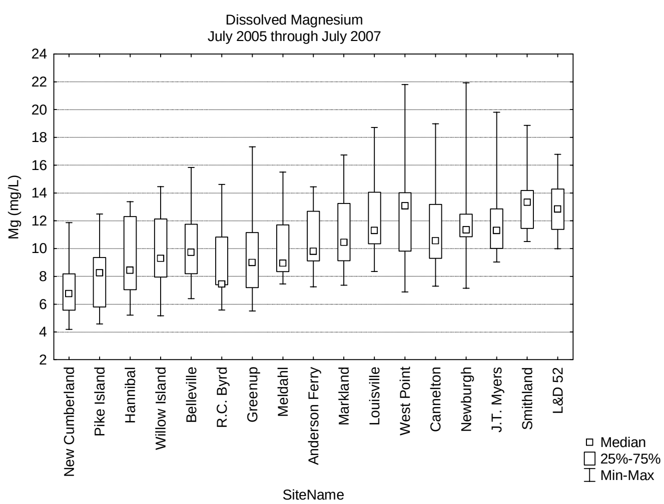

Total Recoverable Copper
July 2005 through July 2007
Cu (ug/L)
SiteName
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
Median
25%-75%
Min-Max

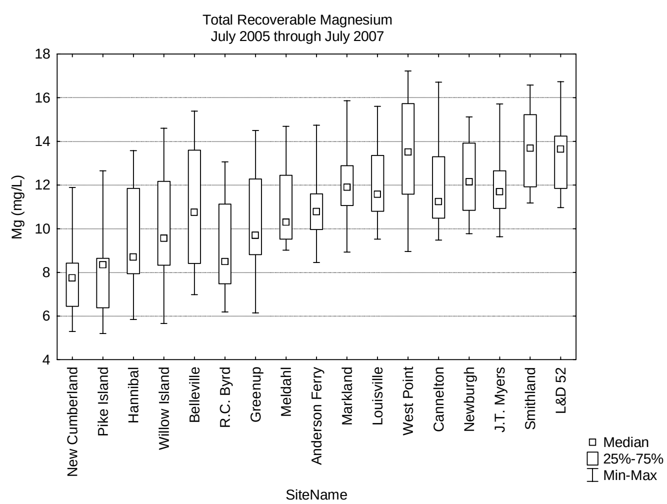

Dissolved Iron
July 2005 through July 2007
Fe (ug/L)
90
85
80
75
70
65
60
55
50
45
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

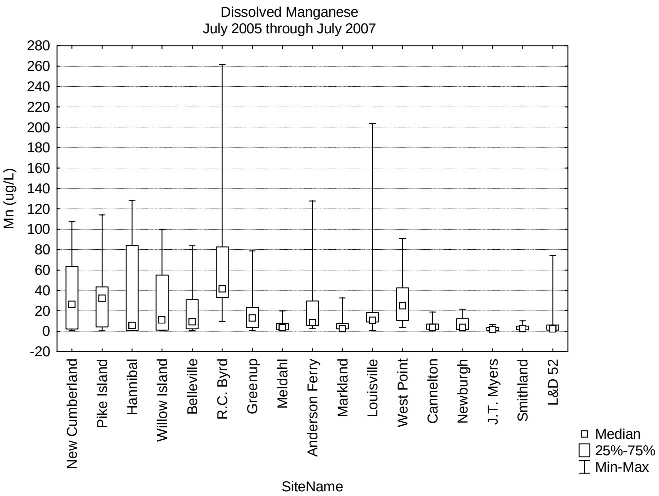

Total Recoverable Iron
July 2005 through July 2007
Fe (ug/L)
14000
12000
10000
8000
6000
4000
2000
0
-2000
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

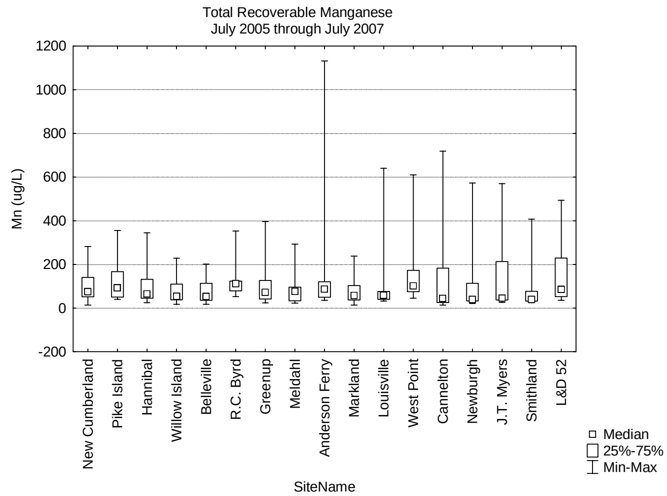

Dissolved Lead
July 2005 through July 2007
Pb (ug/L)
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.10
0.09
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

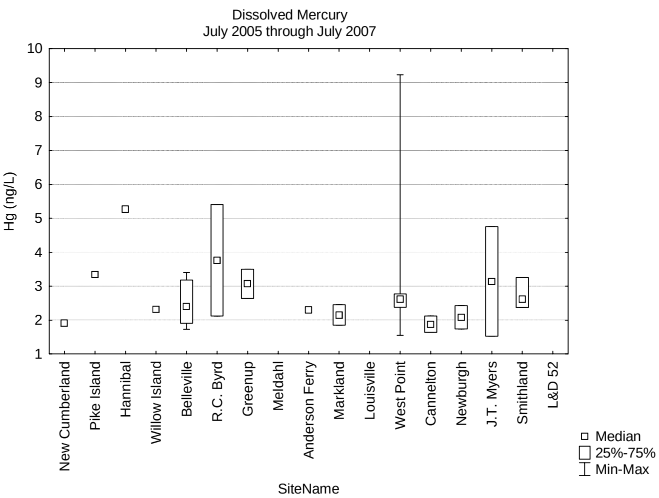

Total Recoverable Lead
July 2005 through July 2007
Pb (ug/L)
20
18
16
14
12
10
8
6
4
2
0
-2
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

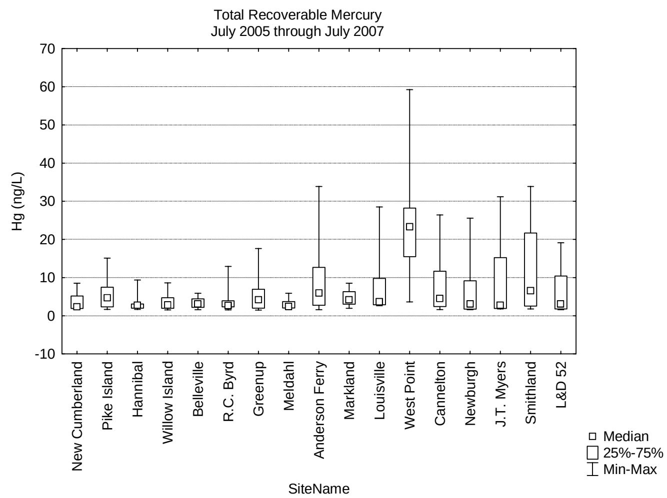

Dissolved Magnesium
July 2005 through July 2007
Mg (mg/L)
24
22
20
18
16
14
12
10
8
6
4
2
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

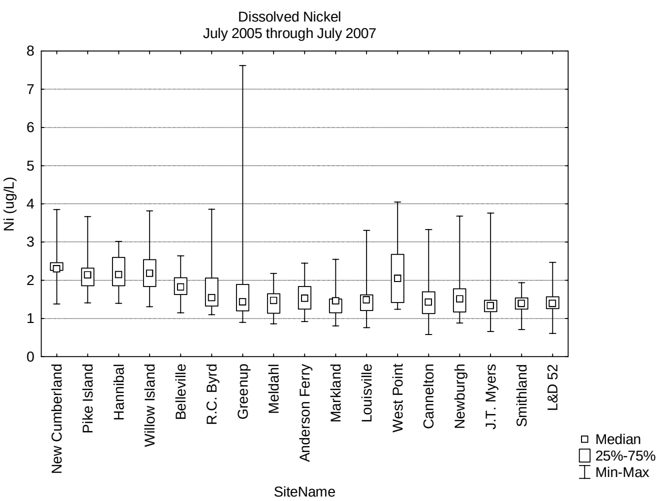

Total Recoverable Magnesium
July 2005 through July 2007
Mg (mg/L)
18
16
14
12
10
8
6
4
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

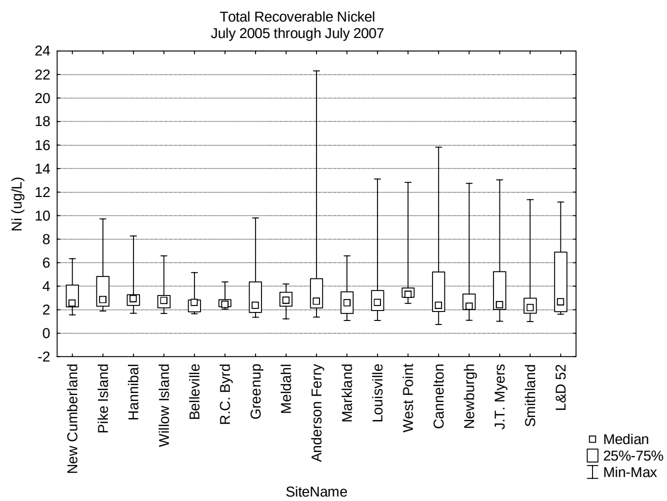

Dissolved Manganese
July 2005 through July 2007
Mn (ug/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

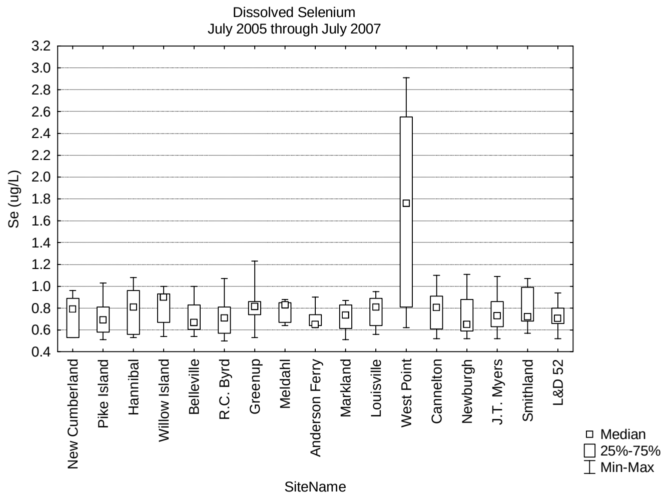

Total Recoverable Manganese
July 2005 through July 2007
Mn (ug/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

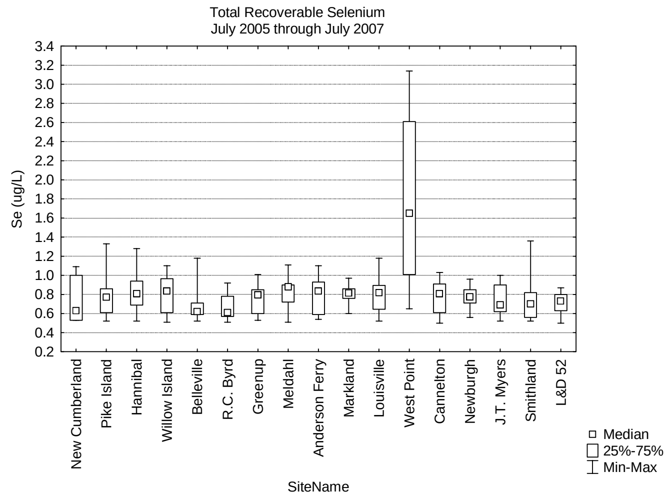

Dissolved Mercury
July 2005 through July 2007
Hg (ng/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

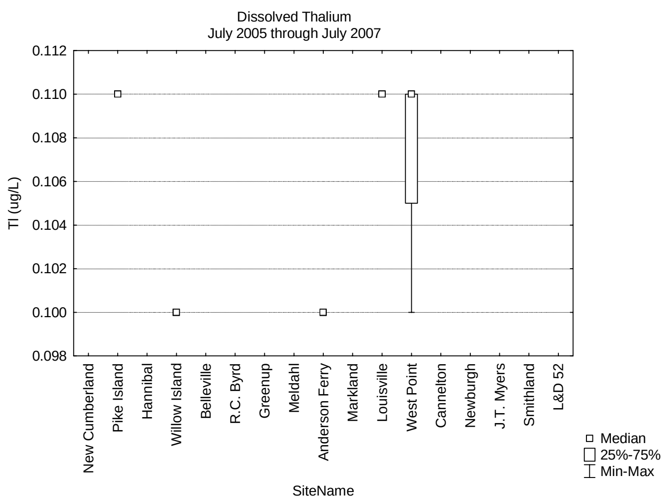

Total Recoverable Mercury
July 2005 through July 2007
Hg (ng/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

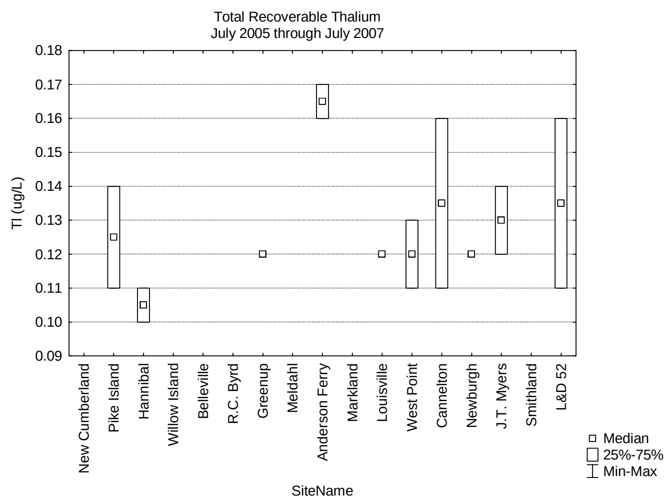

Dissolved Nickel
July 2005 through July 2007
Ni (ug/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

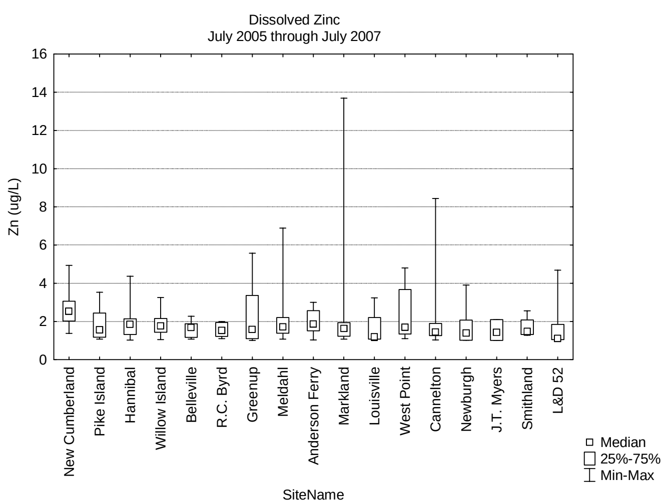

Total Recoverable Nickel
July 2005 through July 2007
Ni (ug/L)
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

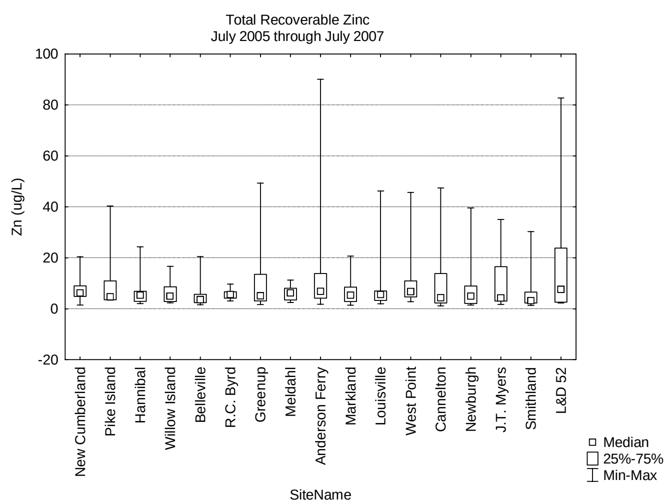

Dissolved Selenium
July 2005 through July 2007
Se (ug/L)
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max


Total Recoverable Selenium
July 2005 through July 2007
Se (ug/L)
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max


Dissolved Thalium
July 2005 through July 2007
Tl (ug/L)
0.112
0.110
0.108
0.106
0.104
0.102
0.100
0.098
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max


Total Recoverable Thalium
July 2005 through July 2007
Tl (ug/L)
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.10
0.09
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max


Dissolved Zinc
July 2005 through July 2007
Zn (ug/L)
16
14
12
10
8
6
4
2
0
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max


Total Recoverable Zinc
July 2005 through July 2007
Zn (ug/L)
100
80
60
40
20
0
-20
New Cumberland
Pike Island
Hannibal
Willow Island
Belleville
R.C. Byrd
Greenup
Meldahl
Anderson Ferry
Markland
Louisville
West Point
Cannelton
Newburgh
J.T. Myers
Smithland
L&D 52
SiteName
Median
25%-75%
Min-Max

PART III: SURFACE WATER MONITORING AND ASSESSMENT

Chapter 1: Monitoring Programs Designed To Assess Ohio River Designated Use Attainment

The Ohio River Valley Water Sanitation Compact requires that the Ohio River be capable of maintaining fish and other aquatic life, suitable for recreational usage, and in safe and satisfactory condition for public and industrial water supply. The Commission operates a number of monitoring programs to assess the degree of use support:

- Bimonthly Sampling
- Clean Metals Sampling
- Fish Population Monitoring
- Contact Recreation Bacteria Monitoring
- Longitudinal Bacteria Surveys
- Fish Tissue Sampling
- High Volume PCB and Dioxin Sampling

The first two are indirect chemical measures of biological health, while fish population surveys directly monitor biological integrity of one component (fish) of the aquatic community. Monitoring a large river system such as the Ohio River presents challenges related to spatial and temporal coverage. However, ORSANCO combines multiple monitoring programs to assess the attainment status of the Ohio River's designated uses (Figure 5). Water quality criteria used to assess use support are contained in the 2006 Revision of *Pollution Control Standards for Discharges to the Ohio River* (Appendix P).

Bimonthly & Clean Metals Sampling

Table 1 Table 1. Station Locations For Clean Metals And Bimonthly Sampling.

Station Name	River	Mile Point
New Cumberland	Ohio	54.4
Pike Island	Ohio	84.2
Hannibal	Ohio	126.4
Willow Island	Ohio	161.7
Belleville	Ohio	203.9
R.C. Byrd	Ohio	279.2
Greenup	Ohio	341.0
Meldahl	Ohio	436.2
Anderson Ferry	Ohio	477.5
Markland	Ohio	531.5
Louisville	Ohio	600.6
West Point	Ohio	625.9
Cannelton	Ohio	720.7
Newburgh	Ohio	776.1
J.T. Myers	Ohio	846.0
Smithland	Ohio	918.5
Lock & Dam 52	Ohio	938.9

The bimonthly and clean metals sampling programs are used to assess aquatic life and public water supply uses. These programs entail the collection of water column grab samples from 17 Ohio River stations once every other month (Appendix B, Table 1). The samples are collected by contract samplers and ORSANCO staff and analyzed for certain physical and chemical parameters by a contract laboratory. In October 2000, ORSANCO changed the aquatic life use criteria for metals from total recoverable metals to dissolved metals. This change was based on the conclusion that dissolved metals data were much more accurate and representative of metals dissolved in the water column, and therefore available to aquatic life. Dissolved metals criteria for the protection of aquatic life have very low concentrations, some in the single parts per billion range. Therefore, collection of uncontaminated samples and low-level analyses using clean techniques is essential. However, although dissolved criteria are used, every sample is analyzed for both total recoverable and dissolved metals. The Commonwealth of Virginia state laboratory provides the clean metals sampling equipment and analyses. Nonmetal parameters (Table 3) monitored in the Bimonthly Sampling Program as well as clean metals parameters (Table 2) are also used to determine the degree of support for aquatic life. Applicable results from mainstem stations are compared to established stream criteria. For this 2008 report, Bimonthly and Clean Metals data from July 2005 to July 2007 were used to make use assessments. Data from these programs also were used to assess the public water supply use.

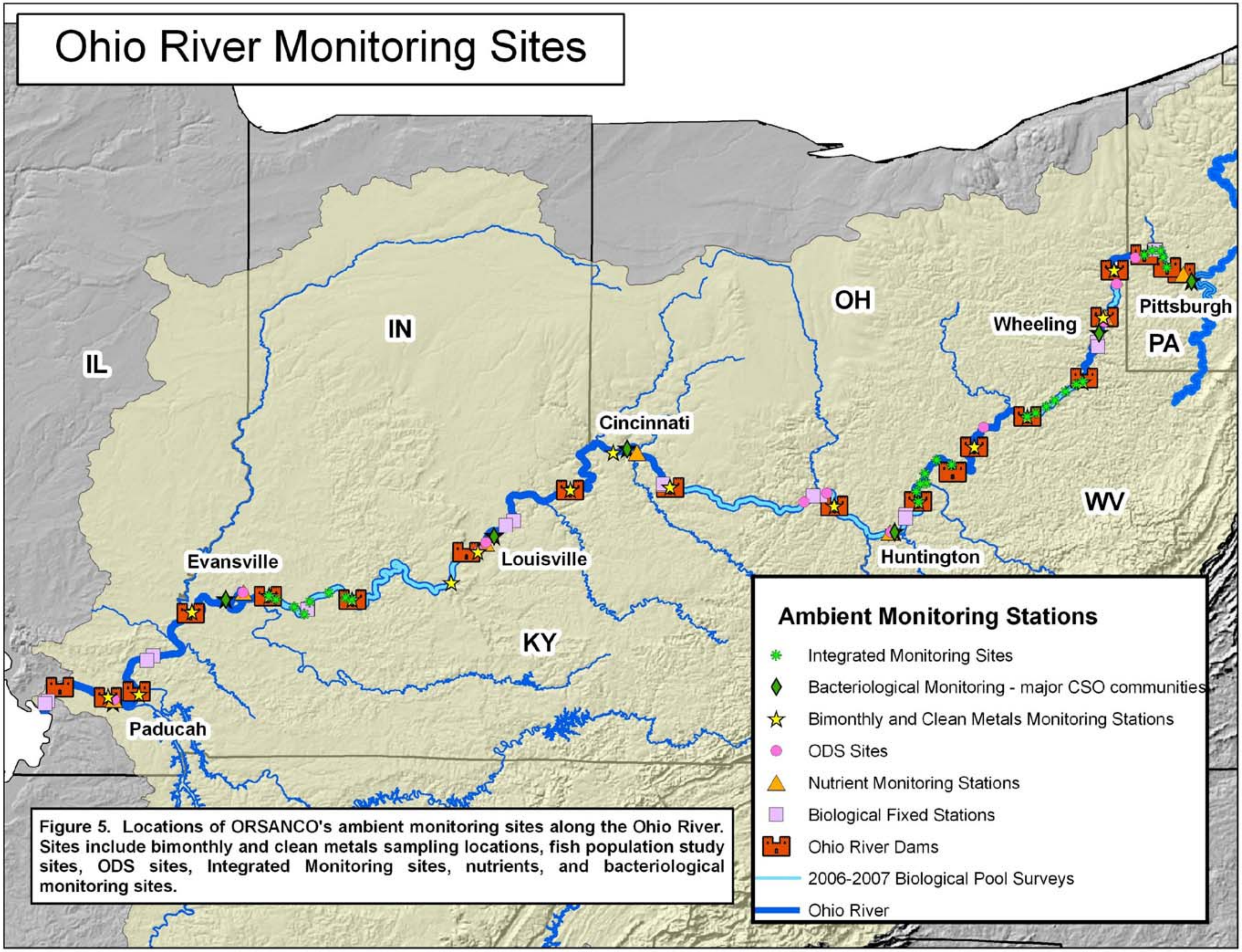


Figure 5. Locations of ORSANCO's ambient monitoring sites along the Ohio River. Sites include bimonthly and clean metals sampling locations, fish population study sites, ODS sites, Integrated Monitoring sites, nutrients, and bacteriological monitoring sites.

Table 2: Clean Metal Parameters.

Element	Analysis	Detection Limit (ug/L)
Aluminum	EPA 1638	1
Antimony	EPA 1638	0.1
Arsenic	EPA 1638	0.5
Barium	EPA 1638	10
Cadmium	EPA 1638	0.1
Calcium	EPA 1638	1,000
Copper	EPA 1638	0.1
Chromium	EPA 1638	0.1
Iron	EPA 1638	100
Lead	EPA 1638	0.1
Magnesium	EPA 1638	1,000
Manganese	EPA 1638	0.1
Mercury	EPA 1631	0.0002
Nickel	EPA 1638	0.1
Selenium	EPA 1638	0.5
Silver	EPA 1638	0.1
Thallium	EPA 1638	0.2
Zinc	EPA 1638	1

Table 3: Bimonthly Sampling Parameters.

Parameters	Analysis	Detection Limit
Ammonia Nitrogen	EPA 350.3	0.03 mg/L
Chloride	EPA 325.3	1.0 mg/L
Hardness	SM 2340C	1.0 mg/L
Nitrate + Nitrite	EPA 353.3	0.02 mg/L
Phenolics	EPA 420.1	0.005 mg/L
Total Kjeldahl Nitrogen	SM 4500	0.20 mg/L
Sulfate	HACH 8051	1.0 mg/L
Total Suspended Solids	EPA 160.2	1.0 mg/L
Total Phosphorus	EPA 365.3	0.01 mg/L
Total Organic Carbon	EPA 415.1	0.5 mg/L
Total Cyanide	EPA 335.2	5.0 ug/L

Table 2 and 3. Parameters, analytical methods and reporting levels for the Clean Metal Sampling Program and the Bimonthly Sampling Program (SM-Standard Methods).

Fish Population Monitoring

Fish population data from 2006 and 2007 were used to assess support of the aquatic life use. The Commission monitors the fish population annually from July through October, conducting between 100 and 200 surveys of the fish community. The monitoring strategy includes both fixed station and probability-based sampling. Samples consist of 500 meter shoreline zones that are electrofished by boat at night. The fish are netted, weighed, measured, species recorded, and any unusual abnormalities such as growths or lesions are noted. Habitat types within the zone also are recorded. Work usually is conducted in four pools throughout a field season, completing the entire length of the Ohio River (20 pools) in five years. Pools sampled in 2006 were Montgomery, Willow Island, Greenup, and Cannelton. In 2007, Emsworth, Pike Island, Meldahl, Cannelton, and Newburgh pools were sampled. Fifteen randomly selected zones are sampled in each pool to complete an assessment of the entire pool. If impairment is found, pools may be resampled the following year. Cannelton pool is listed in both 2006 and 2007 because fluctuating flows prohibited the sampling of all pool sites in 2006; sampling was completed in 2007. In past years, the sampling effort has focused on developing a numeric index to determine the integrity of fish communities. That index has been completed and includes a number of important factors such as number of fish, fish biomass, species diversity, and abundance of pollution tolerant and intolerant species. The Ohio River Fish Index (ORFIn) was based on the nationally used Index of Biotic Integrity (IBI), which was designed to assess smaller streams. The ORFIn, however, has been customized to assess the Ohio River, with expected values developed for the different habitats found in this large river system. Aquatic life use support is assessed by comparing measured, numeric index values to expected values. Pools with greater than 25 percent of sites scoring below the expected values for a specific habitat types were assessed as impaired.

Contact Recreation Bacteria Sampling

The Commission collects bacteria samples from May through October in six large urban communities with combined sewer systems to evaluate support of the contact recreation use. Locations include Pittsburgh, Wheeling, Huntington, Cincinnati, Louisville, and Evansville (Appendix B). Five rounds of sampling are completed monthly for each urban community sampling location and analyzed for fecal coliform and *E. coli*. There are at least three sites in each community sampled; one being upstream of the CSO community, one downtown, and one downstream. In addition to routine bacteria sampling, the Commission conducted longitudinal surveys for bacteria from May to

October in 2003-2007 under the Ohio River Watershed Pollutant Reduction Program (site list in Appendix B). For this work the Ohio was broken down into three segments: an upper, middle, and lower segment. For each segment five rounds of samples were collected, one round each week for five consecutive weeks. Sampling sites begin in Pittsburgh (Ohio River Mile 0) and end in Cairo (Ohio River Mile 981) with one river cross-section sample collected approximately every five miles. Each site was sampled fifteen times from 2003-2006, allowing for the calculation of three geometric means per site. In 2007 one round of sampling was completed for the entire river in a consecutive order beginning at mile 0 and ending at mile 981. Samples were analyzed for *E.coli* by the ORSANCO staff using Colilert, a Most Probable Number method. A minimum of ten percent duplicate samples were sent to a contract laboratory for analyses by the membrane filtration method for *E. coli* and fecal coliform. Through intensive longitudinal monitoring, the Commission has been able to monitor the entire river for bacteria and the contact recreation use.

Fish Tissue Sampling

The Commission collects fish tissue samples between July and October and analyzes them for certain contaminants to assess support of the fish consumption use (Appendix L). In 2005 and 2006, approximately 91 fish tissue samples are analyzed from various Ohio River locations depending on fish population monitoring efforts. Pollutant contamination in the tissue is based on a composite of up to five fillets from various species. Tissue contaminants analyzed include PCBs, chlordane, mercury, cadmium, lead and certain pesticides. The states use the data to develop and update public fish consumption advisories.

High Volume PCB and Dioxin Sampling

The Commission also conducted high volume sampling for dioxin (2,3,7,8-TCDD) and polychlorinated biphenyls (PCBs) to evaluate the fish consumption use (Appendix I, J). These chemicals have been known to bioaccumulate in fish tissue. High volume sampling is a method that concentrates 1,000 liters of water into a single sample, thereby lowering the detection level approximately 1,000 times. This achieves detection levels necessary to measure concentrations in the parts per quadrillion range. At least three rounds of sampling were completed at each of 35 Ohio River stations between 1997 and 2004. Filtered samples were analyzed by a contract laboratory, which generates results for dissolved and particulate fractions.

Other Sources of Data

Although many states rely on ORSANCO to monitor water quality in the Ohio River, most states collect some data on the Ohio River each year, though not as extensively as ORSANCO. To ensure the most comprehensive data set available to assess the quality of the Ohio River ORSANCO posted a public request for data on their website in addition to sending postcard requests to other government agencies, volunteer monitoring groups, and private industries.

Chapter 2: Aquatic Life Use Support Assessment

The Ohio River Valley Water Sanitation Compact calls for the Ohio River to be in a satisfactory sanitary condition capable of maintaining fish and other aquatic life. The Commission assesses the degree of use support every two years, as the states are required to do by section 305(b) of the federal Clean Water Act. Data from a number of monitoring programs are used in making use attainment assessments, including bimonthly and clean metals sampling, as well as biological data collected during electrofishing sampling events.

Aquatic Life Use Assessment Methodology

Bimonthly & Clean Metals Sampling
Both clean metals and nonmetal parameters are analyzed through ORSANCO's monitoring programs. Data are collected from 17 fixed stations along the river (Appendix B). Grab samples are collected from these stations once every other month, providing approximately 13 samples during the period between July 2005 and July 2007 at each station. Of the 20 lock and dam systems along the Ohio River, ORSANCO maintains monitoring locations in 15 of the pools, with two pools having two monitoring points. In the 2008 analysis, ORSANCO extrapolated data from these 17 sites to the entire river and considers all 981 miles assessed because no differences in impairment status were seen between monitoring locations.

Fish Population Monitoring
While monitoring chemical parameters is a common and valuable strategy used to determine impairment, it is also useful to expand the focus beyond water chemistry and directly examine the effects of pollution on aquatic life. To further understand the status of the river and the degree to which it is meeting its aquatic life use, ORSANCO also conducts biological assessments of the Ohio River using the Ohio River Fish Index (ORFIn) (Appendix K). The ORFIn combines various attributes of the fish community to give a score to the river based on its biology. The ORFIn is comprised of 13 metrics, which serve as surrogate measures of more complicated processes. Examples of metrics include the number of species, the number of pollution tolerant individuals, and the percent of top piscivores in the fish community. The values for each metric are compared to conditions found at the least disturbed locations in the Ohio River to derive a score. Metric scores are then combined to generate a single score for the site. A higher final score indicates a more desirable fish community, often having more species or fewer pollution-tolerant individuals in the fish community. The total score is compared to an expected score, which varies depending on the habitat type and location. Expected scores were developed using historical data collected from reference stations.

Since 2004, aquatic life has been assessed on a pool-by-pool basis. Four navigational pools are assessed each year, with the entire river (20 navigational pools) being fully assessed every five years. In 2006 and 2007, Emsworth, Montgomery, Pike Island, Willow Island, Greenup, Meldahl, Cannelton, and Newburgh pools were sampled (Appendix A), totaling 416.1 miles assessed. Fifteen sites were randomly selected to represent each pool as a whole. Sites were sampled using electrofishing between July and October. During each fish community assessment, biologists attempted to determine the fish community potential of that pool. A pool is designated as impaired when greater than 25 percent of those randomly selected sites have failing ORFIn scores.

Aquatic life use assessment was determined using the two types of monitoring programs described above. Attainment was assessed as either "fully supporting" indicating no impairment, "partially supporting" meaning the segment is impaired due to violations of chemical water quality criteria for the protection of aquatic life or biological data, or "not supporting" meaning biological and water quality data indicate impairment. A full description of each designation follows:

Assessment Methodology
Fully Supporting
- Fewer than ten percent of water samples exceed the criteria for one or more pollutants.
- Biological data does not indicate aquatic impairment (less than 25 percent of sites in a pool receive failing ORFIn scores).

Impaired-Partially Supporting
- One or more pollutants exceed the water quality criteria in 11-25 percent of the samples, **OR**
- Biological data indicates impairment (25 percent or more of sites in a pool receive failing ORFIn scores).

Impaired-Not Supporting
- One or more pollutants exceed the criteria in greater than 25 percent of the samples **AND**
- Biological data indicate impairment (25 percent or more of sites in a pool receive failing ORFIn scores).

Aquatic Life Use Assessment Summary

All sections of the river were designated as fully supporting the aquatic life use based on biological data (Table 4). This assessment was determined using biological data from eight navigational pools. Parameters such as dissolved oxygen, ammonia, and various dissolved metals have criteria that must be met to provide protection of warm water aquatic life. All of these parameters assessed through the bimonthly and clean metals programs were found to be fully supportive of aquatic life use. Dissolved oxygen and temperature parameters were measured from thirteen stations along the Ohio River (Appendix E). These stations are operated by the US Army Corps of Engineers at seven dams, hydropower operators at five locations, and one coal-fired power plant operator. ORSANCO acquires this data electronically as hourly measurements from each station, and then makes assessments from this information. Violations of dissolved oxygen were found within the J.T. Myers and Smithland pools (ORM 776.1 – 918.5); causing both pools to be classified as partially supporting and requiring a TMDL. Temperature data assessments found Cannelton, Newburgh, and J.T. Myers pools to have greater than ten percent of periods exceeding the period average. Biological data for this assessment period, indicating full support, was available for both Cannelton and Newburgh pools. Biological data is a direct measurement of aquatic life and carries greater weight when compared with water temperature and dissolved oxygen parameters. Because this additional biological information is available, and the weight-of evidence approach is being implemented, only J.T. Myers pool has been classified as partially supporting (ORM 776.1 – 848.0) and requiring a TMDL. No violations of the aquatic life criteria for clean metals or bimonthly parameters were observed (Appendix C, D).

Table 4. Summary of aquatic life use assessment for 2006-2007 based on 17 monitoring stations and fish population surveys. 838.6 miles of the Ohio River fully support warm-water aquatic life.

State	River Miles	Impaired Miles	Support Assessment	Causes of Impairment
PA	0-40.2	0.0	Full Support	None
OH-WV	40.2-317.1	0.0	Full Support	None
OH-KY	317.1-491.1	0.0	Full Support	None
IN-KY	491.1-848.0	776.1-848.0	Partial Support	Dissolved oxygen, Temperature
IN-IL	848.0-981.0	848.0-918.5	Partial Support	Dissolved oxygen
Total	981.0	142.4		

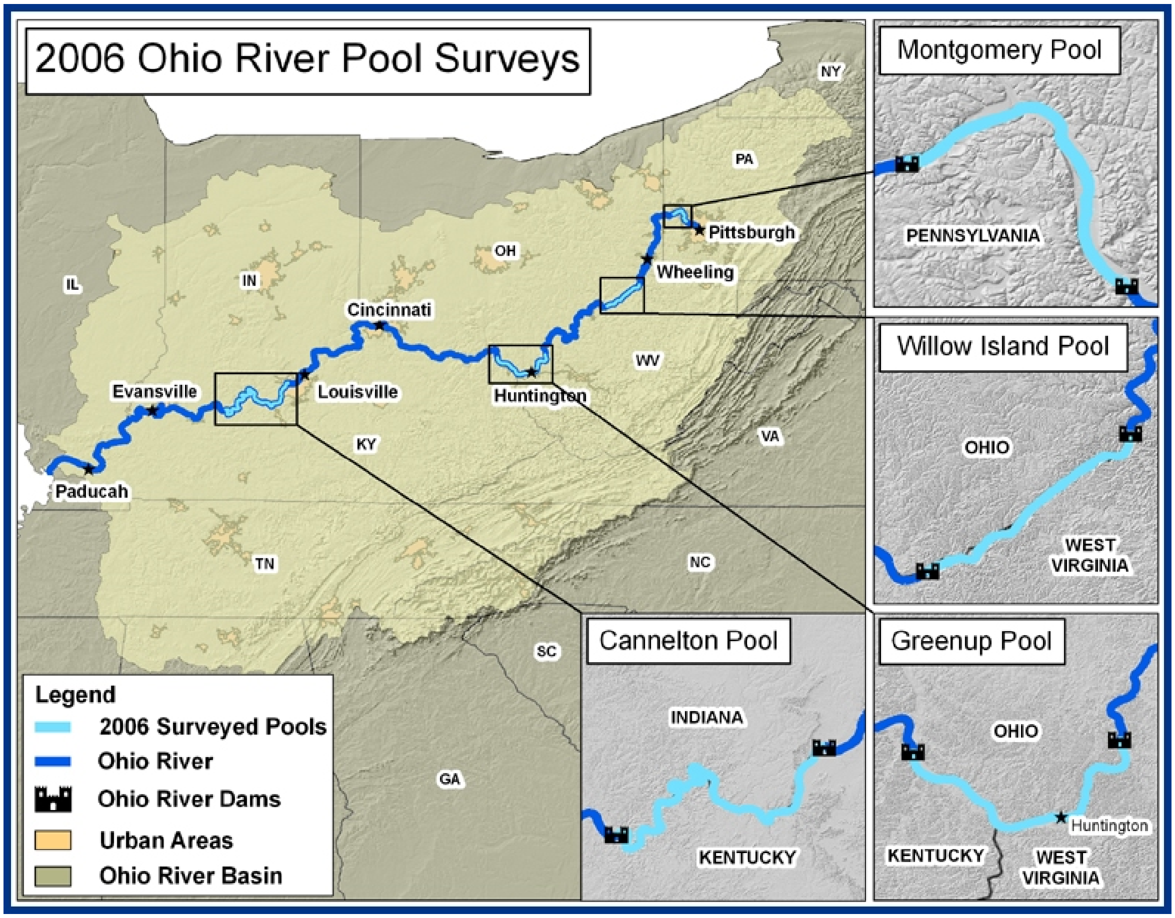


Figure 6. Location of Ohio River pools sampled during 2006 fish population surveys.

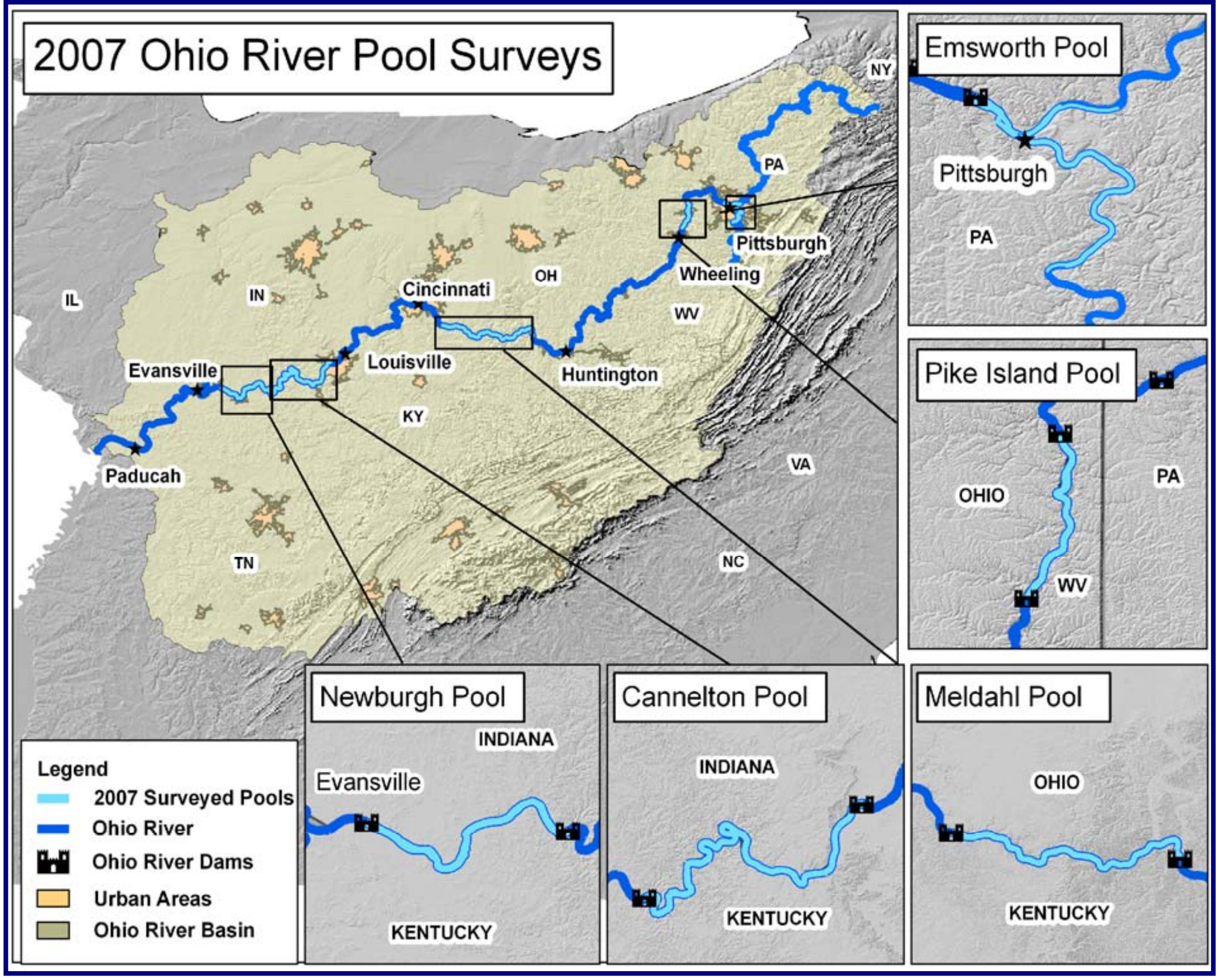


Figure 7. Location of Ohio River pools sampled during 2007 fish population surveys.

Figures 6 and 7 show the 2006 and 2007 pools surveyed for fish community assessment. In order to assess Ohio River fish communities ORSANCO has created a metrics system specialized for the Ohio River called the Ohio River Fish Index (ORFIn) for analysis; which is similar to the nationally used Index of Biotic Integrity (IBI) metrics system. ORFIn incorporates 13 attributes, or metrics, of the fish community that when compiled provide an accurate representation of the overall condition of the Ohio River fish community. Ohio River Pool Surveys are able to achieve a comprehensive analysis because each site is evaluated for habitat conditions, fish community, water quality, and substrate composition. Each site is assigned to one of three habitat classes; 'A', 'B', or 'C'. Habitat class 'A' sites are characterized by the presence of large substrates such as cobble and boulders. Sites that fall in habitat class 'C' are dominated by sand (small substrates), and habitat class 'B' describes sites that fall between 'A' and 'C' with a mix of large and small substrate materials. The three distinct habitat classes each exhibit different levels of ORFIn performance. Performance expectations for each habitat class were determined based on the statistical distribution of data (ORFIn scores) gathered from 'least impacted' (reference) sites within each habitat class. For a pool to be considered passing, 75 percent of the sites sampled within the pool must score above their criteria. Individual site scores were compared to expected values and the percentage of passing sites in the pool was then calculated (Table 5).

Table 5. Summary of 2006-2007 ORFIn score results.

Year	Mile Point	Pool	Result	% Passing
2006	13.7-30.4	MONTGOMERY	PASS	87%
2006	127.4-157.4	WILLOW ISLAND	PASS	100%
2006	281.6-338.9	GREENUP	PASS	80%
2007	0.0-5.1	EMSWORTH	PASS	100%
2007	55.5-79.8	PIKE ISLAND	PASS	100%
2007	356.2-431.2	MELDAHL	PASS	100%
2006&2007	612.1-720.3	CANNELTON	PASS	90%
2007	721.2-772.1	NEWBURGH	PASS	87%

Using several years of data, a possible relationship between ORFIn scores and Ohio River flow conditions was identified. Data from 1999 to 2007 indicated that as flow increases, the percentage of failing ORFIn scores increased. In both 2003 and 2004, two relatively wet years (Figure 8), less than 60 percent of the sites had passing ORFIn scores. Two dry years, 1999 and 2007 (Figure 8), resulted in passing ORFIn scores at over 90 percent of the sites.

Although 2007 could also be characterized as an "abnormal" flow year, it should be noted that fish are generally the most stressed when under low flow conditions, when dilution is reduced, thereby increasing instream concentrations of contaminants. Under these conditions, fish are additionally stressed by the higher temperatures and lower dissolved oxygen conditions naturally associated with low flows. In spite of these stressors, when only 2007 biological data are used, the pools sampled all fully support the aquatic life use.

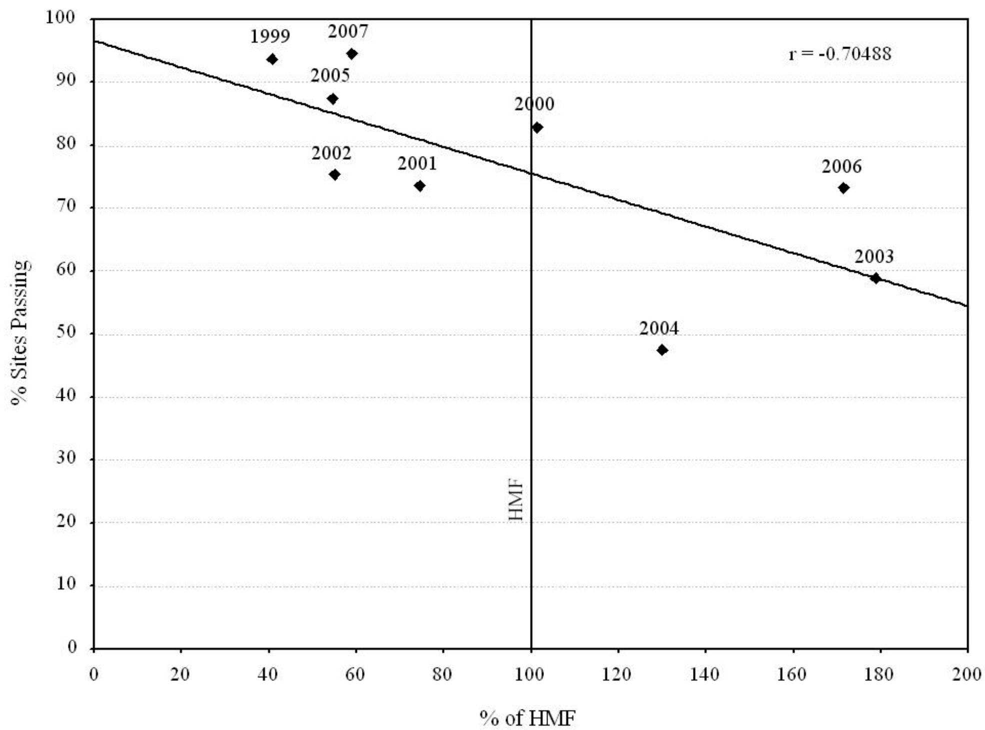


Figure 8. The percentage of sites passing in relation to harmonic mean flow (HMF) from 1999-2007. During wet years (higher % of HMF), a higher percentage of sites have failing ORFIn scores.

Chapter 3: Public Water Supply Use Support Assessment

The Ohio River Valley Water Sanitation Commission Compact requires that the Ohio River be available for safe and satisfactory use as public and industrial water supplies after reasonable treatment. The Ohio River serves as a drinking water source for over five million people within the Ohio River Basin. In order to ensure that this use is protected, the Commission operates a number of monitoring programs including bimonthly, clean metals, and bacteriological sampling.

Public Water Supply Use Assessment Methodology

The bimonthly and clean metals programs are comprised of 17 sampling stations along the Ohio River (Appendix B). Grab samples are collected from sites once every other month. Parameters monitored by ORSANCO for which there are human health criteria include arsenic, barium, silver, copper, nickel, selenium, thallium, total mercury, zinc, cyanide, chloride, fluoride, nitrates, nitrites, phenolics, dioxins, PCBs, and sulfates. Data included in this report were collected from July 2005 to July 2007. Bacteriological surveys are important to ensure that the fecal coliform criterion for drinking water—2,000 colonies/100 ml as a monthly geometric mean—is not exceeded. From 2005 through 2007, bacteria data were collected during the contact recreation season (May through October). In addition, the Commission mailed surveys to all Ohio River water utilities, requesting information about their source water quality. ORSANCO received responses from 22 utilities, approximately 75 percent of all utilities using the Ohio River as a drinking water source. Questionnaires asked utilities if there were frequent intake closures due to spills, whether violations of finished drinking water maximum contaminant levels (MCLs) occurred due to source water quality, or whether non-routine treatment due to source water quality was necessary to meet finished water MCLs (Figure 10). The designations are as follows:

Fully Supporting
- Pollutant criteria are exceeded in less than 10 percent of the samples collected.

Impaired-Partially Supporting
- One or more pollutants exceed the criteria in 11 to 25 percent of the samples collected.
- Frequent intake closures due to elevated levels of pollutants are necessary to protect water supplies.
- Frequent "non-routine" additional treatment is necessary to protect water supplies and comply with provisions of the Safe Drinking Water Act (SDWA).

Impaired-Not Supporting
- One or more pollutants exceed the criteria in greater than 25 percent of the samples collected.
- Source water quality causes finished water MCL violations which result in noncompliance with provisions of the SDWA.

Public Water Supply Use Assessment Summary

Twenty-eight public water utilities use the Ohio River as their drinking water source (Figure 9). Based on available data from various ORSANCO programs and outside data sources, 112 miles of the Ohio River partially support the public water supply use (Table 6). In the past, areas in West Virginia experienced recurring phenol violations; however between 2005 and 2007, phenol violations were found in Ohio, Kentucky, Indiana, and Illinois (Appendix D). One location in Pittsburgh has been designated as partially supporting the public water supply use due to multiple exceedances of the bacteria criterion. According to the Pollution Control Standards, the monthly geometric mean for fecal coliform should not exceed 2,000 colonies/ 100 ml. In June 2006 and August 2007, Pittsburgh reported geometric mean criterion exceedances at the ORM 1.4 fixed monitoring station (Appendix G). Wheeling and Louisville also reported monthly geometric mean exceedances for fecal coliform; however, this was less than 10 percent of the total number of monthly geometric means during the period between 2006 and 2007; therefore it earned a designation of fully supporting. Longitudinal bacteria survey data did not exceed the drinking water criterion at any point along the river (Appendix F), nor did metals levels threaten the public water supply (Appendix C).

Table 6. Summary of public water supply use assessment for 2005-2007 based on 17 monitoring stations, bacteriological sampling, and a survey of the public water utilities. All 112 miles of the Ohio River partially support the use of the Ohio River as a public water supply.

State	River Miles	Impaired Miles	Support Assessment	Causes of Impairment
PA	0-40.2	0.0-4.0	Partial Support	Fecal coliform
OH-WV	40.2-317.1	0	Full Support	None
OH-KY	317.1-491.1	0	Full Support	None
IN-KY	491.1-848.0	720.7-784.2	Partial Support	Phenol
IN-IL	848.0-981.0	918.5-962.6	Partial Support	Phenol
Total	981.0	111.6	Partial Support	

There was no indication of impairment based on the questionnaire surveys completed by water utilities (Table 7). However, although the river fully supports this use, surveys indicated that there are issues of concern. Three facilities reported intake closures due to chemical spills into the river. These closures did not result in an impairment designation because the conditions were temporary and related to single occurrences, but the occurrence of spills can temporarily suspend use of the Ohio River as a public water supply. Six respondents indicated that non-routine treatment was necessary. Much of the non-routine treatment conducted by utilities was related to preventing taste and odor problems caused by increases in algae. When algae are removed during the treatment process, some species leave behind metabolites that have an odor and can affect the taste of the water. Although taste and odor is considered a secondary standard, no MCL for taste and odor exists. Other instances of non-routine treatment were related to spills, non-point source pollution such as pesticides, or high levels of total organic carbon (TOC). TOC, a measure of organic matter, is removed during the treatment process, but interacts with the chlorine to produce disinfectant byproducts such as trihalomethanes (THMs) and haloacetic acids (HAA^5), which are regulated by the Safe Drinking Water Act. Therefore, even though TOC is not regulated, high levels can result in MCL violations in finished drinking water. Of the 22 returned surveys, five water utilities indicated they experienced MCL violations. Because THMs and HAA^5 were cited as the contaminants, rather than source water quality, these sites were not considered impaired because the contaminant was not directly caused by source water quality.

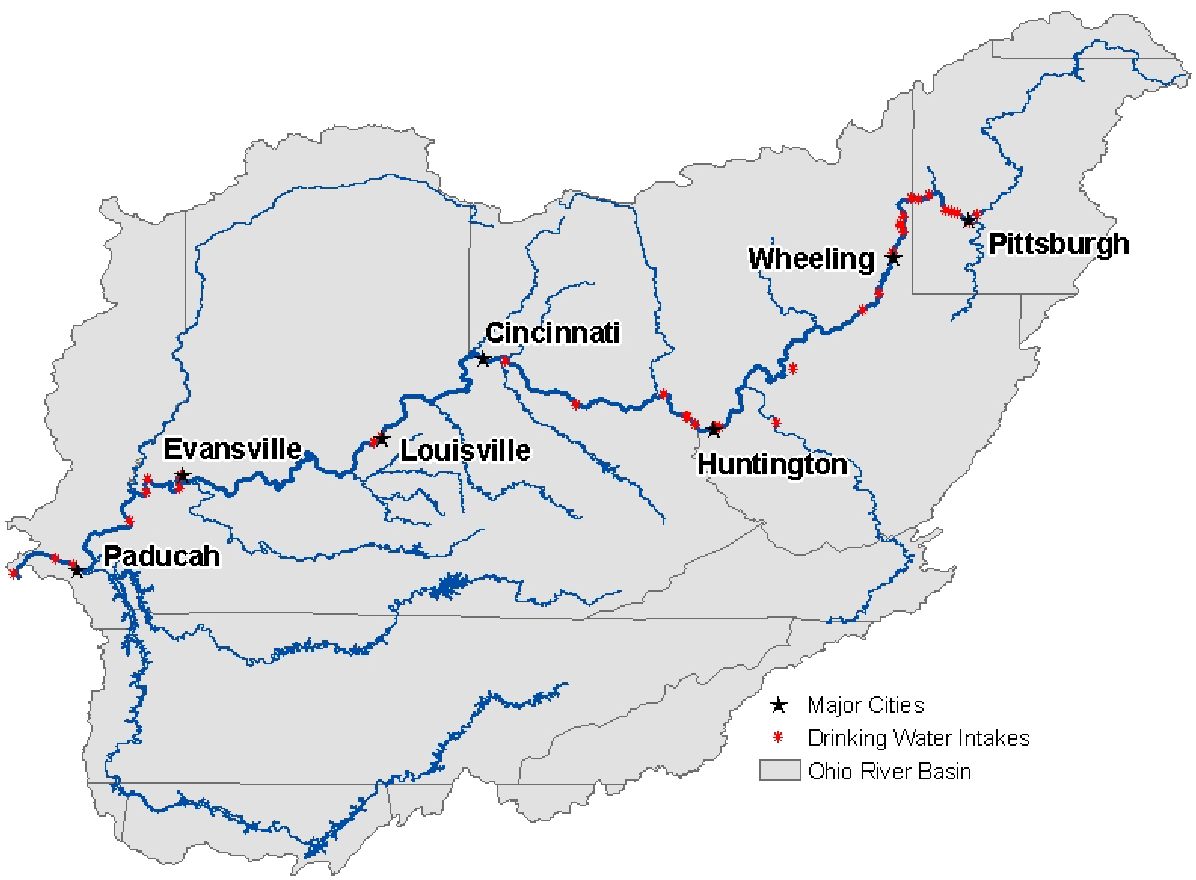


Figure 9. Map of Ohio River drinking water intakes. The 29 drinking water utilities provide drinking water to over three million people in the basin. The entire river fully supports use as a drinking water source.

Survey of the Ohio River Water Utilities for the 2008 Biennial Assessment of Ohio River Water Quality Conditions
(*For the period October 2005 – September 2007*)

Water Utility Name	Company/Facility		
1. Your Name:			
Title:			
Phone Number:			
2. Between October 2005 and September 2007, was your intake closed as a result of Ohio River water quality conditions?		☐ Yes	☐ No
If so, how many times over the period was your intake closed?	How many days total over the period was your intake closed?		
What pollutants were involved?			
What sources were involved?			
3. Between October 2005 and September 2007, did your plant have any MCL violations?		☐ Yes	☐ No
If so, for what contaminants?			
Was it, in whole or part, caused by Ohio River water quality conditions?		☐ Yes	☐ No
4. Was "nonroutine" or additional treatment necessary to comply with SDWA MCLs during the period?		☐ Yes	☐ No
If so, for what contaminants? What was the source of the contaminants?			
How frequently was nonroutine/ additional treatment required?	How many days total was "nonroutine"/ additional treatment required?		

Figure 10. Ohio River Water Utility Questionnaire.

Table 7. Results from a survey of water utilities utilizing the Ohio River as a drinking water source indicated that the entire river (981 miles) fully supports use as a public water supply. MCL violations due to disinfection byproducts did not constitute impairment.

Utility Location	Mile Point	State	No. of Intake Closures due to Ohio River Water Quality	Causes of Intake Closures	MCL Violations	Contaminants causing MCL Violations	Non-routine Treatment Required	Contaminants resulting in Non-routine Treatment	Source of Contaminants	No. of Days*
West View	5.0	PA	0	-	-	-	-	-	-	-
Beaver Valley	29.0	PA	0	-	-	-	-	-	-	-
Midland	36.0	PA	0	-	X	TOC	-	-	-	-
East Liverpool	40.2	OH	0	-	-	-	X	Algae (taste and odor)		120
Toronto	59.2	OH	1	Ethylene Glycol	-	-	-	-	-	-
Weirton	62.5	WV	1	Spill into river	X	TOC, TTHM	X	TOC, TTHM	Spills and Non-point Sources	0
Follansbee	70.8	WV	0	-	-	-	-	-	-	-
Wheeling	86.8	WV	0	-	-	-	X	Petroleum, Algae, and Hexavalent Chromium	Point and Non-point sources, algal blooms	65
New Martinsville	121.9	WV	0	-	-	-	-	-	-	-
Huntington	304.0	WV	0	-	-	-	-	-	-	-
Ashland	319.7	KY	0	-	-	-	-	-	-	-
Ironton	327.0	OH	0	-	-	-	-	-	-	-
Russell	327.6	KY	0	-	X	THM	-	-	-	-
Portsmouth	350.8	OH	0	-	-	-	-	-	-	-
Louisville	600.0	KY	0	-	-	-	X	Organics from spills		30
Evansville	791.5	IN	0	-	-	-	X	Petroleum, Asphalt, Atrazine	Spills and Non-point Sources	9
Mt Vernon	829.3	IN	1	Petroleum	X	TTHM, HAA^5	-	-	-	-
Morganfield	842.5	KY	0	-	-	-	-	-	-	-
Sturgis	871.4	KY	0	-	X	TTHM, HAA^5	-	-	-	-
Paducah (WTP)	935.5	KY	0	-	-	-	-	-	-	-
Paducah (USEC)	945.9	KY	0	-	-	-	X	Benzene, Ethyl Benzene		6
Cairo	978.0	IL	0	-	-	-	-	-	-	-

THM- Trihalomethane, TOC- Total Organic Carbon, HAA^5- Haloacetic acids

* Total number of days during reporting period that non-routine treatment was required for one or more of contaminants listed.

Chapter 4: Contact Recreation Use Support Assessment Results

The Compact requires that the Ohio River remain in a satisfactory sanitary condition suitable for recreational usage. The Commission operates two bacteria monitoring programs to assess the degree of contact recreational use support during the contact recreation season (May-October): routine contact recreation bacteria sampling and longitudinal bacteria surveys conducted through the Watershed Pollutant Reduction Program. Contact recreation season data from May to October 2006 and May to October 2007 were used in making assessments, as well as longitudinal bacteria surveys conducted during the contact recreation season in 2003 - 2007.

Contact Recreation Use Assessment Methodology

There are 49 communities with combined sewer systems located along the Ohio. Combined sewer overflows (CSOs) and other non-point sources have been identified as significant causes of bacteria problems in the Ohio River, particularly during heavy rain events. Data is collected from six urban communities along the Ohio River with combined sewer systems to assess the degree of contact recreation use support in these areas (Appendix B). Five samples were collected monthly from three locations in these communities: Evansville, IN, Huntington, WV, and Louisville, KY. Sample locations included a site upstream and downstream of the community as well as a site within the major metropolitan area where combined sewer overflow (CSO) events are likely to occur. Four locations were monitored in Pittsburgh, PA, three of which created a cross-section where the Allegheny and Monongahela rivers meet to form the Ohio River in downtown Pittsburgh (river mile 1.4L, M, R), and one site downstream of the city (river mile 4.3). There were also four locations sampled in Wheeling, WV and five locations in Cincinnati, OH. Samples were analyzed for fecal coliform and *E. coli*.

Impairments are based on exceedances of ORSANCO's stream criteria for bacteria. This criteria for bacteria states that fecal coliform should not exceed 400/100mL in more than 10 percent of samples taken during a month, and should not exceed 200/100mL as a monthly geometric mean (at least 5 samples required). The standards for *E. coli* state that no single sample should be greater than 240/100mL, and should not exceed 130/100mL as a monthly geometric mean (at least 5 samples required). Using the geometric mean and instantaneous maximum bacteria values, sites were classified as having good (less than 10 percent of sites exceeded criteria), fair (11-25 percent of sites exceeded criteria), or poor (greater than 25 percent of sites exceeded criteria) water quality.

In 2003, ORSANCO expanded its bacteria monitoring program to include areas outside of the CSO communities. During the contact recreation season in 2003 - 2007, the entire length of the Ohio River was sampled fifteen times at five-mile intervals (Appendix F). Every five miles, three-point cross-sectional samples were collected and analyzed for *E. coli*. The river was divided into three sections (upper, middle, and lower) and each section was sampled weekly during a five-week period, allowing for the calculation of a monthly geometric mean. This was repeated for each section in a subsequent year, allowing for the calculation of three geometric means for each section of the river. Using ambient monitoring data collected during the contact recreation season at the fixed stations and longitudinal bacteria surveys, assessment categories were assigned based on the following criteria:

Assessment Methodology

<u>Fully Supporting</u>

- Monthly geometric mean or instantaneous maximum bacteria criteria are exceeded in not more than 10 percent of the time.

<u>Impaired-Partially Supporting</u>

- Monthly geometric mean or instantaneous maximum bacteria criteria are exceeded 11-25 percent of the time.

<u>Impaired-Not Supporting</u>

- Monthly geometric mean exceeds or instantaneous maximum bacteria criteria are exceeded greater than 25 percent of the time.

Contact Recreation Use Assessment Summary

All 981 miles of the Ohio River were assessed through bacteriological surveys to determine the degree of support for contact recreational usage. Based on available data, 426 miles (43 percent) were classified as impaired and not supporting use for contact recreation, 60 miles (6 percent) were impaired, but partially supporting the use, and 495 miles (50 percent) were classified as fully supporting contact recreation (Appendix H, Table 8). Approximately sixty samples were collected annually at each fixed sampling station (Appendix G). In 2006, 13 out of 20 sites exceeded the criteria in more than 25 percent of the samples (Figure 11). In contrast, 2007 was a drier year and had only 10 out of 22 monitoring sites with greater than 25 percent of the samples exceeding the criteria. Pittsburgh exceeded the stream criterion for the protection of contact recreation most frequently during 2006 and 2007. Municipalities such as Cincinnati, Evansville, and Wheeling experienced fewer violations in 2007 compared to 2006, likely as a result of dry conditions and fewer CSO (combined sewer overflow) events. The upstream site in Cincinnati was the only fixed monitoring station at which the percentage of both the geometric mean and the individual sampling event exceedances were less than 25%, earning it a designation of “partial support.” Overall, 2006 tended to have more violations than 2007, presumably due to increased precipitation in that year. The risk to public health following increased precipitation often comes from wet weather sources such as combined sewer systems. Heavy rains can cause the flow of rainwater and sewage carried in the combined sewer pipes to exceed the capacity, resulting in overflows to the river.

Although the fixed monitoring locations are useful in determining impairment near major metropolitan areas, longitudinal bacteria survey data are needed to fully assess the entire length of the river. During 2003 - 2007, the entire length of the Ohio River was sampled fifteen times through longitudinal bacteria surveys (Appendix F). Higher levels of *E. coli* were measured in major metropolitan areas along the river (Figure 12). As discussed previously, many of these same cities, such as Pittsburgh and Louisville, experienced violations based on fecal coliform at their fixed monitoring stations. The upper and lower sections of river exceeded the geometric mean and individual sample criterion more frequently than the middle section of the river. Specifically, from Pittsburgh to Wheeling, 86 of 105 miles exceeded the criteria in over 25% of the samples and were classified as “not supporting.” In contrast, between Huntington and Cincinnati 105 of 177 miles were designated as “fully supporting” contact recreation.

The Ohio River is a large system that supports a variety of uses ranging from navigation to recreation. The basin also contains CSOs, which creates a risk associated with recreating in the river. Data described above show that the criterion for contact recreation use is often exceeded in the Ohio River, especially in major metropolitan areas. This risk of illness from bacteria increases after precipitation due to wet weather sources of pollution. Nonpoint sources of bacteria in the river include human waste from septic systems, urban stormwater runoff, and animal waste. In addition, point sources such as CSO events often lead to increased levels of human waste in the river. Currently, 15 percent of the CSO communities in the nation are found in the Ohio River Basin. Presently, criteria are in place to protect contact recreation. Through the development of Long Term Control Plans (LTCPs), facilities will begin to characterize, model, and monitor the combined sewer system, identify sensitive areas, and develop alternative plans to meet Clean Water Act requirements. Although facilities will continue to improve their practices of treating or storing wastewater, current evidence suggests that even after the requirements of the National CSO Control Policy are met by these treatment facilities, there may still be bacteria problems in the Ohio River with a corresponding health risk for swimming during wet weather.

Table 8. Summary of contact recreation use assessment for 2003-2007 based on fixed monitoring stations and longitudinal bacteria surveys. Of the 981 miles, 426 miles do not support contact recreation, 60 miles partially support contact recreation and 495 miles fully support contact recreation.

States	River Miles	Total Miles in Waterbody	Monitoring Station at River Mile Point (MP)	Support Assessment	Causes of Impairment
PA-OH-WV	0-68	68	*1.4L, 1.4M, 1.4R, 4.3, special survey*	Not supporting	bacteria
OH-WV	68-70	2	*special survey*	Partial support	bacteria
OH-WV	70-73	3	*special survey*	Not supporting	bacteria
OH-WV	73-82	9	*special survey*	Partial support	bacteria
OH-WV	82-85	3	*84.2, special survey*	Not supporting	bacteria
OH-WV	85-86	1	*special survey*	Full support	--
OH-WV	86-105	19	*86.8, 91.4, 92.8, special survey*	Not supporting	bacteria
OH-WV	105-177	72	*special survey*	Full support	--
OH-WV	177-182	5	*special survey*	Partial support	bacteria
OH-WV	182-203	21	*special survey*	Full support	--
OH-WV	203-228	25	*special survey*	Not supporting	bacteria
OH-WV	228-233	5	*special survey*	Partial support	bacteria
OH-WV	233-238	5	*special survey*	Not supporting	bacteria
OH-WV	238-243	5	*special survey*	Partial support	bacteria
OH-WV	243-299	56	*special survey*	Not supporting	bacteria
OH-WV	299-304	5	*special survey*	Full support	--
OH-WV	304-306	2	*305.1, special survey*	Not supporting	bacteria
OH-WV	306-308	2	*special survey*	Full support	--
OH-WV	308-311	3	*308.1, special survey*	Not supporting	bacteria
OH-WV	311-314	3	*special survey*	Partial support	bacteria
OH-WV	314-316	2	*314.8, special survey*	Not supporting	bacteria
OH-WV/KY	316-319	3	*special survey*	Partial support	bacteria
OH-KY	319-327	8	*special survey*	Full support	--
OH-KY	327-328	1	*special survey*	Partial support	bacteria
OH-KY	328-461	133	*special survey*	Full support	--
OH-KY	461-463	2	*462.6, special survey*	Not supporting	bacteria
OH-KY	463-465	2	*463.9, special survey*	Partial support	bacteria
OH-KY	465-469	4	*special survey*	Full support	--
OH-KY	469-471	2	*469.9, 470.0, special survey*	Not supporting	bacteria
OH-KY	471-475	4	*special survey*	Full support	--
OH-KY	475-478	3	*477.5, special survey*	Not supporting	bacteria
OH-KY	478-480	2	*special survey*	Full support	--
OH-KY	480-484	4	*special survey*	Partial support	bacteria
OH-KY	484-488	4	*special survey*	Not supporting	bacteria
OH/IN-KY	488-492	4	*special survey*	Full support	--
IN-KY	492-501	9	*special survey*	Not supporting	bacteria
IN-KY	501-593	92	*special survey*	Full support	--
IN-KY	593-596	3	*594.0, special survey*	Not supporting	bacteria
IN-KY	596-608	12	*special survey*	Full support	--
IN-KY	608-609	1	*608.7, special survey*	Not supporting	bacteria
IN-KY	609-611	2	*special survey*	Partial support	bacteria
IN-KY	611-709	98	*619.3, special survey*	Not supporting	bacteria
IN-KY	709-720	11	*special survey*	Partial support	bacteria
IN-KY	720-785	65	*special survey*	Not supporting	bacteria
IN-KY	785-789	4	*special survey*	Full support	--
IN-KY	789-798	9	*791.5, 793.7, 797.3, special survey*	Not supporting	bacteria
IN-KY	798-800	2	*special survey*	Partial support	bacteria
IN-KY	800-844	44	*special survey*	Not supporting	bacteria
IN/IL-KY	844-900	56	*special survey*	Full support	--
IL-KY	900-906	6	*special survey*	Partial support	bacteria
IL-KY	906-981	75	*special survey*	Full support	--
	Total Miles	**981**			

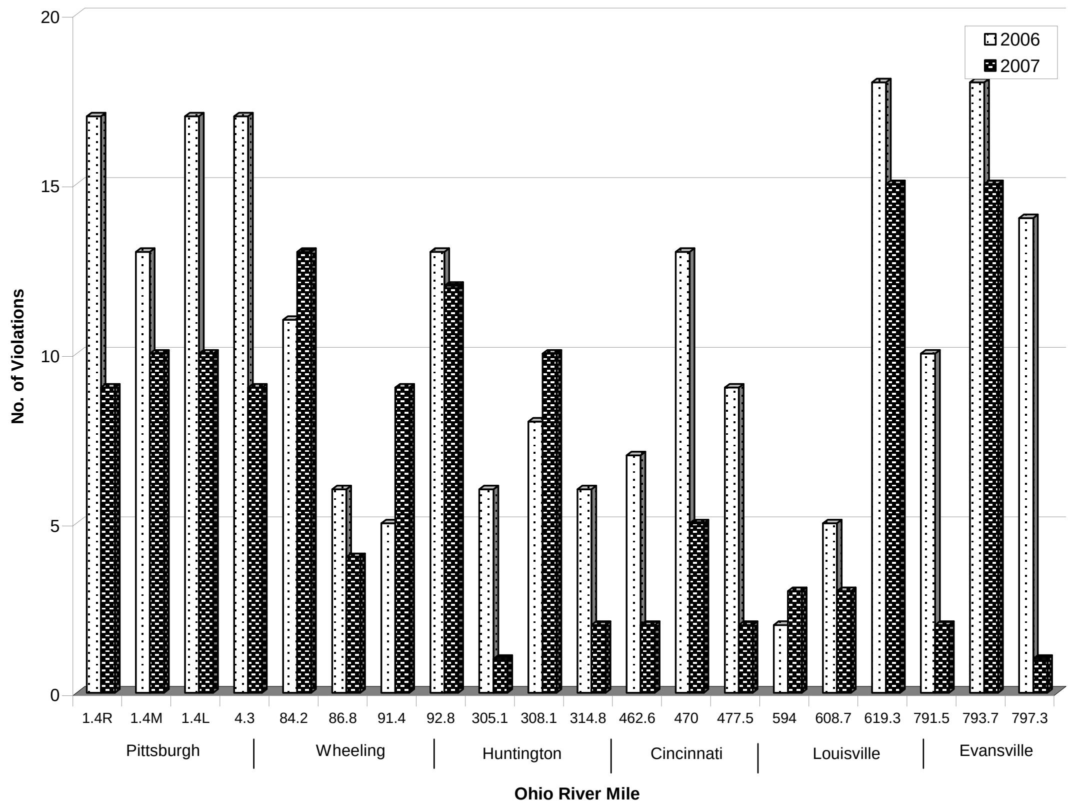


Figure 11. Number of samples, out of approximately 30 samples, exceeding the criteria at each contact recreation season monitoring location during 2006 and 2007. Sites with greater than 10 percent of the samples taken during the contact recreation season exceeding the 400 colonies/100 ml criterion are considered impaired.

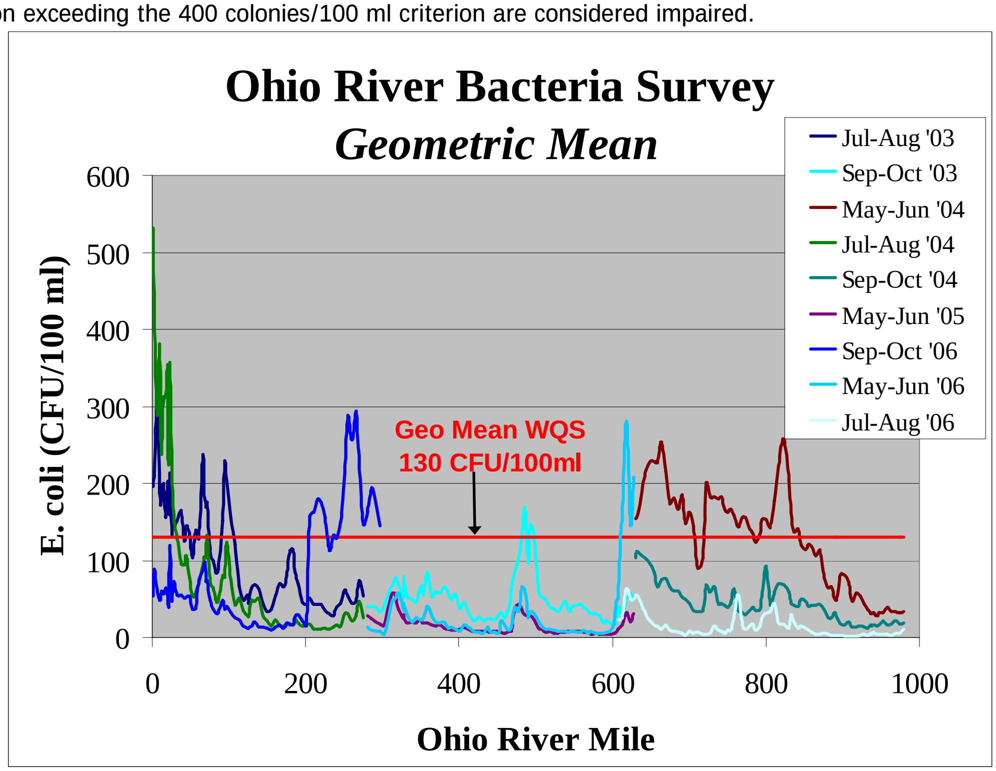


Figure 12. Between 2003 and 2006, the entire river was analyzed fifteen times through longitudinal bacteria surveys, allowing for the calculation of three monthly geometric means at each site. Peaks in *E. coli* levels often correspond with the location of major metropolitan areas such as Pittsburgh (river mile 1.4), Cincinnati (river mile 470), and Evansville (river mile 793.7).

Chapter 5: Fish Consumption Use Support Assessment

The Compact requires that the Ohio River be in a satisfactory sanitary condition and adaptable to such other uses as may be legitimate. The Commission maintains water quality criteria for the protection of human health from fish consumption and therefore evaluates this use in the Integrated Report.

Fish Consumption Use Assessment Methodology

The Commission generally collects and analyzes between 45 and 60 fish tissue samples annually. Samples, comprised of three- to five-fish composites, are analyzed for certain organics, pesticides, and metals. These data are then used by various agencies in each of the states bordering the river to issue fish consumption advisories to the public. Fish consumption advisories specific to the Ohio River are used in making impairment decisions. Statewide advisories not specific to the Ohio River are not used to classify the river as impaired. In addition to examining fish consumption advisories, levels of total mercury, PCBs, and dioxins (see note pg 41) in the water column, as well as methylmercury in fish tissue samples also were assessed against criteria for the protection of human health for fish consumption. Total mercury water column data were collected from 17 clean metals sites once every other month between July 2005 and July 2007. PCBs and dioxins were measured through high volume sampling. Collection of PCB and dioxin data was an ongoing process from 1997 through 2004; all data has been included in the assessment. Fish tissue samples were collected in 2005 and 2006 between July and October. These use designations are as follows:

Assessment Methodology

Fully Supporting

- No fish consumption advisories are in effect, **AND**
- PCB, dioxin, and mercury data do not exceed criteria

Impaired: Partially Supporting

- PCB, dioxin, or mercury criteria exceeded in greater than 10 percent of samples, **OR**
- Restricted fish consumption advisories are in effect

Impaired: Not Supporting

- "No Consumption" advisories are in effect for all commonly consumed species. Under these advisories, it is recommended that no fish from the river be consumed by any individuals.

Due to the prevalence of statewide consumption advisories for mercury and the differences in states' procedures for issuing these fish advisories, the Commission compared mercury fish tissue data against its criterion (0.3 mg/kg) in making impairment decisions.

Fish Consumption Use Assessment Summary

Fish consumption use was assessed based on the states' issuance of fish consumption advisories (Appendix M), mercury fish tissue data, PCB, dioxin, and mercury water column data. The entire Ohio River was assessed and classified as partially supporting based on fish consumption advisories as well as exceedances of the water quality criterion for PCBs and dioxin (Table 9). There was also a single occurrence of mercury fish tissue levels exceeding 0.3 mg/kg within the Willow Island pool (Appendix L). Dioxin water concentration data were compared against the Commission's water quality criterion of 0.000000005 µg/L (0.5 fg/L) (Appendix I). Every dioxin sample, riverwide, exceeded the water quality criterion (Figure 13). Similarly, PCB levels were compared against the 64 pg/L human health criteria set forth in the Pollution Control Standards (Appendix P). All samples were in violation of the PCB criterion as well (Appendix J, Figure 14). PCB and dioxin data were extrapolated to the entire river because data showed that all samples, at all locations along the river, exceeded the criteria for human health. Restricted fish consumption advisories are in effect in all states; however, no states had "no consumption" advisories in place in which no fish from a section of the river could be consumed by the general population, therefore the partial support classification.

Table 9. Summary of fish consumption use assessment for 2006-2007 based on 17 monitoring stations, high-volume sampling, and a fish tissue analyses. All 981 miles partially support the fish consumption use.

States	River Miles	Total Miles in Waterbody	Support Assessment	Causes of Impairment
PA-OH-WV-KY-IN-IL	0-981	981	Partial Support	PCBs, Dioxins

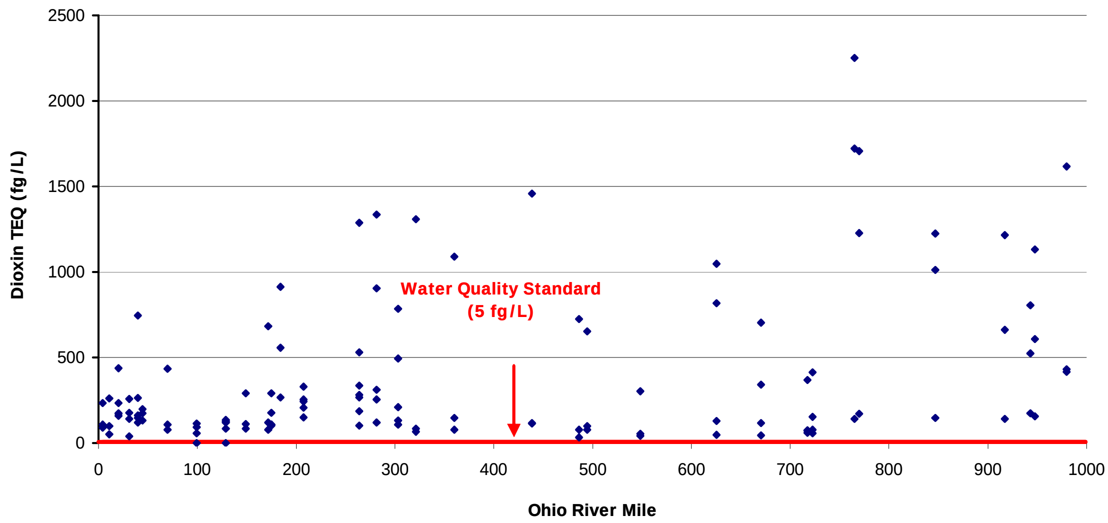


Figure 13. Dioxin TEQ concentrations in the Ohio River (1997-2004). All Ohio River samples analyzed for dioxins using high volume sampling techniques exceeded the water quality criteria for human health. As a result, the entire river was designated as impaired and “partially supporting” the fish consumption use.

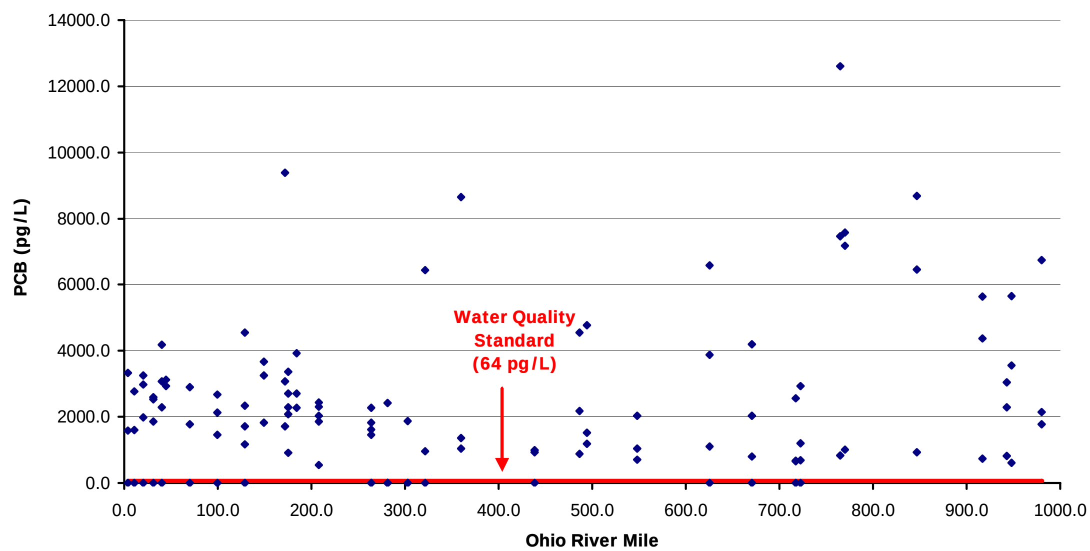


Figure 14. PCB data from the Ohio River collected from 1997-2004. All water samples analyzed for PCBs along the Ohio River exceeded ORSANCO’s human health criteria for PCBs.

Based on fish tissue data, no segments were impaired due to exceedances of the methlymercury criterion (Appendix L, Figure 15). There was one exceedance of the criteria in fish tissue samples. Although many states issue statewide consumption advisories for mercury, there are distinct differences in states' procedures for issuing these advisories. As a result, the Commission compared mercury fish tissue data against its criterion (0.3 mg/kg) to make impairment decisions. ORSANCO also has a criterion of 0.012 µg/L for mercury in the water column to prevent the bioaccumulation of mercury in fish tissue. Clean metals data from 2005 through 2007 indicate that 503.5 miles of the Ohio had multiple exceedances of the mercury criteria (Appendix C). These exceedances were found to be greater than 10 percent of the samples at 7 (Anderson Ferry, West Point, Cannelton, Newburgh, J.T. Myers, Smithland, and Lock and Dam 52) out of 17 sites. However, because levels of mercury in over 90 fish tissue samples for 2005-2006 did not indicate impairment, segments were not listed based on the in-stream water column mercury criteria. Through discussion of the conflicting results, it was determined that the fish tissue mercury levels were more applicable in this use assessment than the levels of total mercury found in the water column because fish tissue is a more direct measure than water quality. The weight-of-evidence approach allows for biological data to have a greater impact in the assessment than water quality data. Fish tissue data were used because the tissue levels would directly impact individuals consuming fish from the Ohio River, while total mercury water column data is used as an indicator of potential bioaccumulation.

* Note: The term dioxin refers to a complex array of 210 polychlorinated dibenzodioxins and dibenzofurans. Seventeen of these 210 compounds have dioxin-like toxicity, the most toxic of which is 2, 3, 7, 8-tetrachlordibenzodioxin (2, 3, 7, 8-TCDD). EPA developed a method to quantify the dioxin toxicity of these compounds, which is now reported as 2, 3, 7, 8-TCDD TEQ (toxicity equivalency), an estimated sum of the toxicity of the 17 dioxin compounds. According to ORSANCO's Pollution Control Standards, the human health criterion for 2, 3, 7, 8-TCDD (dioxin) TEQ is 5 fg/L. This standard is based on EPA's Human Health Criteria for priority pollutants; however, an explanation of the way in which this criteria was derived was not included in ORSANCO's standards.

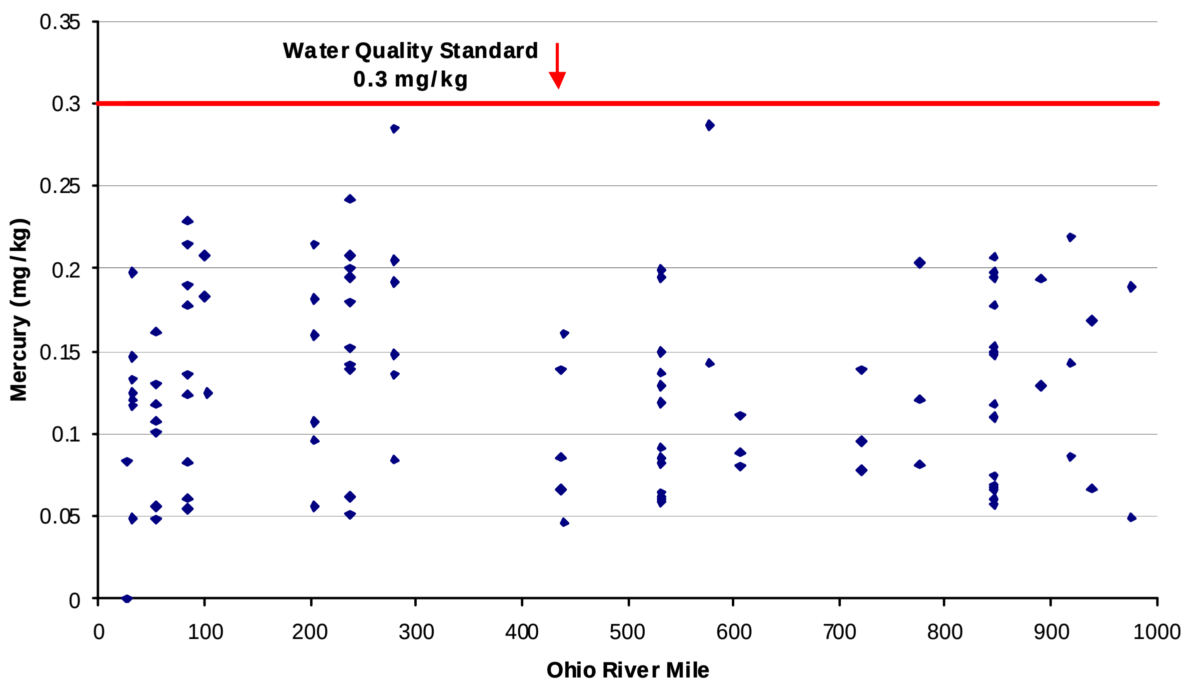


Figure 15. Mercury levels detected in Ohio River fish tissue (2003-2006). All fish tissue samples analyzed had mercury levels below the criteria for human health. No segments were assessed as impaired based on mercury levels in fish tissue.

Chapter 6: Ohio River Trends Analysis

ORSANCO first undertook a study of long-term temporal trends using the agency's own monitoring data in 1990, with 10-15 years of record at most monitoring stations. ORSANCO has since built another 18-year record to be tested for temporal trends. This study presents the results of that analysis and a comparison with the trends discovered in the earlier data set.

The Commission collects water quality samples at 17 locations on the Ohio River and near the mouth of 14 major Ohio River tributaries. Since 1990 the Commission has maintained a minimum of six sample events per year at each location. This study covers the 18-year period from January 1990 to December 2007, picking up where the previous ORSANCO trend analyses ended.

Sufficient data was available to test 18-year trends in seven non-metal water quality parameters: ammonia nitrogen, chloride, total hardness, nitrate-nitrite nitrogen, sulfate, total phosphorus, and total suspended solids. The introduction of a new sampling technique for metals in 2002 sufficiently changed the resulting data set such that this study examines only the 12-year record of total recoverable metals analysis through the end of 2002. The metals aluminum, magnesium, manganese, iron, and zinc have sufficient records for a 12-year trend test with a period ending in 2002.

A nonparametric test, the Seasonal Kendall, was performed both on direct concentrations and on a flow-adjusted basis to facilitate comparison with the Commission's earlier trend assessments. A nonparametric estimator of trend magnitude was calculated for all significant trends ($p < 0.10$).

Of 372 tests for trend (31 locations, 12 water quality parameters) 222 statistically significant ($p < 0.10$) trends were found. Analysis for the current period shows 54% increasing trends while the vast majority of trends (94%) discovered in the 1977 to 1990 studies were in the decreasing direction. One difference between the periods not indicated by that summary is that some parameters, for example copper and phenols, with decreases in the earlier period have apparently experienced declines such that infrequency of pollutant detections in the current period invalidates a test for continuing trends.

Important trends detected include increasing phosphorus concentrations at most Ohio River monitoring stations and increases in chloride concentrations at nearly all stations including tributaries. Sulfate concentrations in the Big Sandy River at the border of West Virginia and Kentucky have steadily increased and are reaching the level of the ORSANCO Water Quality Criterion of 250 milligrams per liter (mg/L).

Table 10 - Seasonal Kendall Test on Direct Concentrations

Bimonthly SiteName	River	Al	Cl-	Fe	Hardness	Mg	Mn	NH3-N	NO2-NO3-N	SO4	TP	TSS	Zn
Pittsburgh	Allegheny	O	INC	DEC	INC	INC	DEC	O	INC	O	O	O	dec
South Pittsburgh	Monongahela	O	INC	O	O	INC	DEC	O	inc	O	O	O	DEC
Beaver Falls	Beaver	O	INC	DEC	O	INC	DEC	O	dec	O	INC	O	O
New Cumberland	Ohio	DEC	INC	DEC	INC	INC	DEC	O	INC	O	DEC	DEC	DEC
Pike Island	Ohio	DEC	INC	DEC	O	inc	DEC	DEC	O	O	DEC	DEC	DEC
Hannibal	Ohio	O	INC	DEC	INC	INC	dec	O	O	O	O	O	DEC
Willow Island	Ohio	dec	INC	DEC	inc	INC	DEC	DEC	O	O	DEC	DEC	O
Marietta	Muskingum	DEC	O	DEC	O	INC	DEC	O	O	O	INC	DEC	DEC
Belleville	Ohio	DEC	INC	DEC	inc	INC	DEC	O	O	O	inc	DEC	DEC
Winfield	Kanawha	O	INC	O	INC	INC	inc	O	INC	INC	DEC	O	DEC
R.C. Byrd	Ohio	O	INC	O	O	INC	O	O	O	O	INC	inc	DEC
Louisa	Big Sandy	dec	O	dec	INC	INC	dec	INC	O	INC	O	DEC	DEC
Greenup	Ohio	DEC	INC	O	INC	INC	O	O	INC	O	INC	O	DEC
Lucasville	Scioto	O	inc	O	INC	INC	O	INC	DEC	O	INC	DEC	DEC
Meldahl	Ohio	O	INC	O	DEC	O	O	DEC	DEC	INC	O	O	DEC
Newtown	Little Miami	O	INC	O	inc	INC	O	inc	DEC	O	INC	DEC	dec
Covington	Licking	O	DEC	O	DEC	O	O	DEC	DEC	DEC	O	DEC	DEC
Anderson Ferry	Ohio	dec	INC	O	O	INC	O	INC	O	O	INC	O	O
Elizabethtown	Great Miami	O	O	O	O	inc	O	O	DEC	DEC	O	DEC	O
Markland	Ohio	O	INC	DEC	DEC	O	DEC	O	DEC	inc	INC	DEC	DEC
Louisville	Ohio	O	O	O	O	INC	O	dec	O	INC	INC	O	DEC
West Point	Ohio	DEC	INC	DEC	INC	INC	O	O	O	INC	INC	O	DEC
Cannelton	Ohio	O	INC	DEC	INC	INC	DEC	O	O	INC	INC	O	DEC
Newburgh	Ohio	O	INC	O	INC	INC	O	O	INC	INC	INC	O	DEC
Sebree	Green	dec	INC	O	INC	INC	O	O	INC	INC	INC	O	DEC
J.T. Myers	Ohio	O	INC	dec	INC	INC	DEC	O	O	INC	INC	O	DEC
Route 62 Bridge	Wabash		O	O	O	O	O	O	O	O	O	O	O
Smithland	Ohio	DEC	INC	DEC	INC	INC	dec	O	O	INC	INC	O	O
Pinkneyville	Cumberland	O	INC	inc	INC	INC	O	O	O	INC	INC	O	O
Paducah	Tennessee	DEC	INC	DEC	INC	INC	DEC	O	INC	INC	DEC	O	DEC
L&D 52	Ohio	DEC	INC	DEC	INC	INC	DEC	O	inc	INC	INC	O	DEC

INC - Strong significant increasing trend ($p < 0.05$, Z0.025 = 1.96)
inc - Significant increasing trend ($p < 0.10$, Z0.05 = 1.6449))
O - No significant trend found
dec - Significant decreasing trend ($p < 0.10$, Z0.05 = 1.6449)
DEC - Strong significant decreasing trend ($p < 0.05$, Z0.025 = 1.96)

Chapter 7: Integrated List

The Integrated Report combines requirements of both section 305(b) and 303(d) of the federal Clean Water Act. Each state completes an Integrated List, which then becomes available for public comment and is approved by the US EPA. While the Commission is not required to prepare a section 303(d) list, the preparation of a 305(b) report facilitates interstate consistency between states' Integrated Lists. The Integrated List contains a list of waters requiring Total Maximum Daily Loads (TMDLs). The Commission itself is not required to complete an Integrated List or TMDLs; therefore its Integrated List does not contain a schedule for establishment of TMDLs as is required of the states.

The Integrated List contains five assessment categories as follows:

Category 1 Data indicates that the designated use is met.

Category 2 Not Applicable ("available data and/or information indicated that some, but not all of the designated uses are supported").

Category 3 There is insufficient available data and/or information to make a use support determination.

Category 4 Water is impaired but a TMDL is not needed.

- **Category 4a** A TMDL is not needed because it has already been completed.
- **Category 4b** A TMDL is not needed because other required control measures are expected to result in the support of all designated uses in a reasonable period of time.
- **Category 4c** A TMDL is not needed because the impairment is not caused by a pollutant.

Category 5 The designated use is impaired and a TMDL is needed.

The entire length of the Ohio River was assessed for each use. Eight hundred and thirty-nine miles fully support the warm water aquatic life use. (Table 10). Bacteria TMDLs for the protection of the contact recreation use are required for 484 miles of the Ohio River. The remaining 497 miles fully support contact recreation. There were 112 miles impaired based on exceedances of the bacteria and phenol criterion for the public water supply use. The remaining 869 miles fully support the public water supply use. The full length of the river has been designated as impaired for the fish consumption use and requiring a TMDL for PCBs and dioxins. A TMDL for PCBs has been completed for river miles 0-238, the entire 40 miles of the Ohio River in Pennsylvania, and areas of the Ohio River bordering West Virginia and Ohio. TMDLs for both PCBs and dioxins have been completed for river miles 238-317.

Table 10. Ohio River integrated assessment summary for 2006-2007. Impaired uses include contact recreation and fish consumption. Category 5* Indicates that a PCB TMDL has been completed. A dioxin TMDL is still needed.

States	River Miles	Total Miles in Water Body	Warm Water Aquatic Life Use Support	Public Water Supply Use Support	Contact Recreation Use Support	Fish Consumption Use Support
PA	0-4	4	1	5	5	5*
PA-OH-WV	5-78	73	1	1	5	5*
OH-WV	78-83	5	1	1	5	5*
OH-WV	83-85	2	1	1	5	5*
OH-WV	85-86	1	1	1	1	5*
OH-WV	86-105	19	1	1	5	5*
OH-WV	105-131	26	1	1	1	5*
OH-WV	131-177	46	1	1	1	5*
OH-WV	177-182	5	1	1	5	5*
OH-WV	182-203	35	1	1	1	5*
OH-WV	203-238	35	1	1	5	5*
OH-WV	238-299	61	1	1	5	4a
OH-WV	299-304	5	1	1	1	4a
OH-WV	304-306	2	1	1	5	4a
OH-WV	306-308	2	1	1	1	4a
OH-WV	308-317	9	1	1	5	4a
OH-KY	317-319	2	1	1	5	5
OH-KY	319-327	8	1	1	1	5
OH-KY	327-328	1	1	1	5	5
OH-KY	328-397	96	1	1	1	5
OH-KY	397-461	64	1	1	1	5
OH-KY	461-465	4	1	1	5	5
OH-KY	465-469	4	1	1	1	5
OH-KY	469-471	2	1	1	5	5
OH-KY	471-475	4	1	1	1	5
OH-KY	475-478	3	1	1	5	5
OH-KY	478-480	2	1	1	1	5
OH-KY	480-488	8	1	1	5	5
OH/IN-KY	488-492	4	1	1	1	5
IN-KY	492-501	9	1	1	5	5
IN-KY	501-593	92	1	1	1	5
IN-KY	593-596	3	1	1	5	5
IN-KY	596-608	12	1	1	1	5
IN-KY	608-721	113	1	1	5	5
IN-KY	721-776	55	1	5	5	5
IN-KY	776-784	8	5	5	5	5
IN-KY	784-785	1	5	1	5	5
IN-KY	785-789	4	5	1	1	5
IN-KY	789-844	55	5	1	5	5
IN/IL-KY	844-900	56	5	1	1	5
IL-KY	900-906	6	5	1	5	5
IL-KY	906-919	13	5	1	1	5
IL-KY	919-981	62	1	1	1	5

Chapter 8: Summary Analysis for Surface Waters

ORSANCO's biennial assessment is generated through the coordination of the Commission's 305(b) Workgroup, which is composed of representatives from each of the mainstem states as well as US EPA Regions 3, 4, and 5. This workgroup communicates via meetings and teleconferences multiple times during the report preparation process. Through these conversations, the assessment parameters, methodology, and schedule are established. This group, along with ORSANCO staff, review Ohio River monitoring data and provide input into the generation of this report. Monitoring data from ORSANCO's bimonthly sampling, clean metals sampling, bacteria monitoring, watershed protection, fish population and fish contaminants programs, along with information from public drinking water facilities and outside data sources, provide the information needed to generate this assessment. The involvement of state personnel during the development of this report is essential to promote consistency among the states as they assess Ohio River water quality.

Most Ohio River states incorporate ORSANCO's biennial assessment into their own Integrated Report. This either occurs directly as an attachment to their reports or by reference within their reports. Most states do not conduct water quality monitoring on the Ohio River as extensively as ORSANCO, so this opportunity to share resources and promote consistency among the states that border the Ohio River is extremely valuable. ORSANCO also completes an Integrated List of waters requiring TMDLs. The purpose of developing this list is to promote consistency in Ohio River segments listed for TMDL development. The states submit their own Integrated Lists and otherwise have no requirement to complete TMDLs as contained in the Commission's report. However, the state listings in general are consistent with ORSANCO's 305(b) and Integrated List.

Aquatic Life

The aquatic life use assessment employed a new methodology for making assessments in the 2006 report. In 2004, ORSANCO began using a multimetric index to assess the fish community and aquatic life use. The Ohio River Fish Index (ORFIn) was compared against expected values from sites with good, representative fish communities. Locations with multiple ORFIn scores below the 25th percentile of expected scores were assessed as not supporting the aquatic life use. During the 2006 report cycle, biologists and members of the Biological Water Quality Subcommittee designed a monitoring schedule in which four navigational pools will be sampled each year, with the entire river (20 navigational pools) being sampled every five years. Fixed monitoring locations, which are visited yearly, enable biologists to track changes in the fish community over time. For the 2008 report, all Ohio River miles within eight separate segments were assessed as fully supporting aquatic life using biological data. Bimonthly and Clean metal data from 17 mainstem monitoring locations likewise indicated no impairment. One hundred and forty two miles of the Ohio River were found to be partially supporting due to violations of ORSANCO's dissolved oxygen and temperature criteria. Violations were found in the J.T. Myers pool (ORM 776.1 – 848.0) for both dissolved oxygen and temperature, while the Smithland pool (ORM 848.0 – 918.5) was found impaired due to low dissolved oxygen levels. The 142 miles with temperature and dissolved oxygen violations are listed under category 5.

Public Water Supply

Currently, there are 28 water utilities using the Ohio River as a source of drinking water. These water utilities provide drinking water to nearly 5 million people, and as such, it is important that the source water be evaluated for its suitability as drinking water after treatment. The public water supply use was assessed using Ohio River water quality data as well as results of a survey sent to each utility. Approximately three-fourths of the utilities responded to the survey, which asked whether finished drinking water standards (Maximum Contaminant Levels) were violated as a result of Ohio River water quality, whether non-routine treatment was necessary to meet finished water MCLs, or whether frequent intake closures were necessary as a result of poor source water conditions. No impairments to Ohio River water quality were designated based on responses to the water utility questionnaires. Several water utilities indicated on surveys that non-routine treatment was necessary due to contaminants such as toluene, oil, and pesticides such as atrazine. While the total number of non-routine treatment days and types of contamination may indicate some impairment of the public water supply use, this is not the case. Communication with water utilities confirmed that non-routine treatment was implemented to provide a better product to water utility customers and not to comply with the Safe Drinking Water Act's minimum requirements. Bimonthly sampling data did show impairment caused by phenol exceedances in greater than 10 percent of samples. As a result, the public water supply use has been designated as partially supporting for ORM 720.7-784.2 and ORM 918.5-962.6. There were also fecal coliform monthly geometric mean criterion exceedances found amongst contact recreation sampling data. At station ORM1.4, greater than ten percent of months exceeded 2000 CFU/100 mL of fecal coliform. Therefore, the Ohio River is designated as partially supporting at ORM 0.0-4.0. The length of the river not affected by violations was designated as Category 1, fully supporting public water use. The length of the river including miles 0.0-4.0, 720.7-784.2, and 918.5-962.6 are allocated as partially supporting, and so placed in category 5. In addition, it is important to recognize that spill events on the river can impact the use of the Ohio River as a public water supply but were not used in making use assessments.

Contact Recreation

The Ohio River is used extensively for contact recreation by boaters and swimmers alike. Bacteria data are used to determine the status of attainment of the contact recreational use. Contact recreation bacteriological monitoring is conducted in the six largest communities with combined sewer systems along the Ohio River: Cincinnati, Evansville, Huntington, Louisville, Pittsburgh and Wheeling. In 2003, the Commission initiated longitudinal bacteria surveys in an effort to characterize bacteria levels along the entire Ohio River, including sampling in remote locations. The 2006 report had been the first to report the extensive bacteria data collection for the entire length of the Ohio River. The length of the river has been sampled fifteen times at five-mile intervals, the most comprehensive of ORSANCO monitoring programs. Based on the six routine urban sites, all locations, with the exception of one upstream site in Cincinnati, are classified as not supporting the contact recreational use. These impairments have been documented since the initiation of the monitoring sites in the early 1990's. With the addition of the longitudinal surveys, ORSANCO can now provide a more comprehensive assessment of the river, locating those areas outside the influence of major metropolitan areas that fully support this use. Although over half of the Ohio River fully supports contact recreation usage, violations occurred along the entire length. The violations are being addressed within a bacteria TMDL which is currently under development for the entire river.

Fish Consumption

The entire Ohio River is designated as impaired and listed as requiring a TMDL (page 45) for the fish consumption use due to elevated levels of dioxin and PCBs. The states base their fish consumption advisories on the Commission's fish tissue contaminants program. All states have Ohio River fish consumption advisories for PCBs. In addition, the Commission has operated a dioxin sampling program since 1997 and has collected samples in many segments and all regions of the Ohio River. Every sample collected exceeds the Commission's water quality criterion for human health protection from consumption of fish. Therefore, the entire Ohio River is classified as impaired for both dioxin and PCBs. Many states have statewide fish consumption advisories for mercury. However, only one Ohio River fish tissue contaminant sample exceeded the Commission's criterion, despite total mercury exceedances of the water column criterion at five monitoring locations. This water column mercury criterion is designed to prevent the bioaccumulation of mercury in fish tissue, but since only one impairment was indicated for mercury in fish tissue, the use was not designated as impaired from mercury contamination as measured in the water column.

TMDL Development

The Commission completed an Integrated List containing waters requiring Total Maximum Daily Loads (TMDLs) for the purpose of promoting interstate consistency in TMDL-listed waters. States are not required to implement TMDLs based solely on ORSANCO's recommendations; however this list should be consistent with the states' lists. Riverwide TMDLs are indicated for PCBs and dioxin except for segments which already have a TMDL completed. A PCB TMDL has been completed for the upper 238 miles of the Ohio River. TMDLs for both dioxin and PCBs have been completed for the section of the river between river mile 238 and 317. Bacteria TMDLs are needed for 484 miles of the Ohio River, and the Commission is currently assisting US EPA Region 5 complete a bacteria TMDL for the entire river.

Chapter 9: Recommendations

From this 2008 edition of the Biennial Assessment of Ohio River Water Quality, recommendations can be suggested from detailed analysis of the data contained in this report. The first recommendation pertains to dissolved oxygen and temperature impairments. We would suggest follow-up monitoring to determine if aquatic life impairments and to better define dissolved oxygen levels within the Smithland and JT Myers pools, and determine causes and sources of criteria violations for these two parameters. The second recommendation is to update dioxin monitoring data. No new monitoring has been performed since 2003, therefore existing data is becoming outdated for use in future assessments.

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Appendix A: Tributaries, Flow, Lock and Dams, and Discharges to the Ohio

Appendix A: Ohio River Navigation Dams

Mile Point	Name	Normal Pool Elevation (ft.)*	Year Placed in Operation**
6.2	Emsworth	710.0	1921
13.2	Dashields	692.0	1929
31.7	Montgomery	682.0	1936
54.4	New Cumberland	664.5	1959
84.2	Pike Island	644.0	1963
126.4	Hannibal (h)	623.0	1972
161.7	Willow Island	602.0	1972
203.9	Bellville	582.0	1965
237.5	Racine (h)	560.0	1967
279.2	Robert C. Byrd	538.0	1937
341.0	Greenup (h)	515.0	1962
436.2	Captain Anthony Meldahl	485.0	1964
531.5	Markland (h)	455.0	1963
606.8	McAlpine (h)	420.0	1961
720.7	Cannelton	383.0	1972
776.1	Newburgh	358.0	1975
846.0	John T. Myers	342.0	1975
918.5	Smithland	324.0	1980
938.9	Lock & Dam 52	302.0	1928
962.6	Lock & Dam 53	290.0	1929

* Height of water surface above mean sea level (National Geodedic Vertical Data)
** Defined as when the pool was raised
(h) Hydropower facilities

Information provided by the U.S. Army Corps of Engineers

Appendix A: Selected Tributaries to the Ohio River

Enters Ohio River at Mile Point	Stream Name	State	Stream Length (Miles)	Drainage Area (Sq. Miles)	Enters Ohio River at Mile Point	Stream Mile	State	Stream Length (Miles)	Drainage Area (Sq. Miles)
0.1	ALLEGHENY RIVER	PA	325	11,700	150.0	LEITHS RUN	OH		
0.1	MONONGAHELA RIVER	PA	128	7,400	150.2	SPRING RUN	WV		
2.1	CHARTIERS CREEK	PA		277	151.0	REAS RUN	OH		
9.5	MONTOUR RUN	PA			154.0	MIDDLE ISLAND CREEK	WV	70	560
13.7	LITTLE SEWICKLEY CREEK	PA			156.9	DENAS RUN	OH		
15.5	BIG SEWICKLEY CREEK	PA			157.7	FRENCH RUN	WV		
25.4	BEAVER RIVER	PA	21	3,130	168.6	LITTLE MUSKINGUM RIVER	OH		315
29.6	RACCOON CREEK	PA		200	170.2	DUCK CREEK	OH	52	228
40.1	LITTLE BEAVER CREEK	PA	51	510	172.2	MUSKINGUM RIVER	OH	112	8,040
47.3	LITTLE YELLOW CREEK	OH			174.3	WILLIAMS CREEK	WV		
47.6	CONGO RUN	WV			184.8	LITTLE KANAWHA RIVER	WV	160	2,320
50.6	YELLOW CREEK	OH	34	240	188.7	DAVIS RUN	OH		
60.1	KINGS CREEK	WV			192.0	LITTLE HOCKING RIVER	OH	18	103
61.7	ISLAND RUN	OH			192.5	SAWER RUN	OH		
65.3	WILLS CREEK	OH			194.0	LITTLE SAND CREEK	WV		
66.5	HARMAN CREEK	WV			199.3	HOCKING RIVER	OH	100	1,190
71.6	CROSS CREEK	OH	27	128	200.4	INDIAN RUN	OH		
75.2	BUFFALO CREEK	WV		160	201.8	LEE CREEK	WV		
81.4	SHORT CREEK	OH	29	147	203.4	ROCK RUN	OH		
90.2	WHEELING CREEK	OH	30	108	210.2	SHADE RIVER	OH		221
90.2	WHEELING CREEK	WV		300	217.0	LITTLE SANDY CREEK	WV		
94.9	MCMAHON CREEK	OH	28	91	218.6	GROUNDHOG CREEK	OH		
101.6	LITTLE GRAVE CREEK	WV			220.9	SANDY CREEK	WV		115
102.4	BIG GRAVE CREEK	WV		75	223.4	CEDAR RUN	WV		
105.0	PIPE CREEK	OH			226.2	OLD TOWN CREEK	OH		
109.5	CAPTINA CREEK	OH	39	181	227.8	TANNERS RUN	OH		
113.7	FISH CREEK	WV		250	231.4	MILL CREEK	WV		230
117.5	SUNFISH CREEK	OH	31	114	231.5	LITTLE MILL CREEK	WV		
119.8	OPOSSUM CREEK	OH			232.3	JOHNS RUN	OH		
122.2	PROCTOR CREEK	WV			234.9	TOMBLESON RUN	WV		
128.6	FISHING CREEK	WV		220	235.8	SPRING RUN	WV		
137.7	MILLER RUN	OH			236.7	VIVIAN RUN	WV		
141.3	MILL CREEK	OH			240.6	WEST CREEK	WV		
148.8	BENS RUN	WV			241.0	DUNHAM RUN	OH		
149.0	SHEETS RUN	OH			245.0	BROAD CREEK	WV		

Appendix A: Selected Tributaries to the Ohio River

Enters Ohio River at Mile Point	Stream Name	State	Stream Length (Miles)	Drainage Area (Sq. Miles)	Enters Ohio River at Mile Point	Stream Mile	State	Stream Length (Miles)	Drainage Area (Sq. Miles)
253.7	LEADING CREEK	OH	30	151	336.2	LITTLE SANDY RIVER	KY		724
255.0	STORES RUN	OH			337.4	COAL BRANCH	KY		
255.9	TEN MILE CREEK	WV			338.6	SMITH BRANCH	KY		
258.7	MILL CREEK	WV			338.9	GINAT RUN	OH		
260.6	KYGER CREEK	OH			340.8	FRANKLIN RUN	OH		
262.5	CAMPAIGN CREEK	OH			345.6	PINE CREEK	OH	48	185
263.2	OLD TOWN CREEK	WV			349.2	LITTLE SCIOTO RIVER	OH	41	233
264.2	GEORGES CREEK	OH			353.2	TYGARTS CREEK	KY		336
265.5	KANAWHA RIVER	WV	97	12200	356.4	SCIOTO RIVER	OH	237	6,510
267.3	TWO MILE CREEK	WV			361.5	TURKEY CREEK	OH		
276.0	CRAB CREEK	WV			363.2	NACE RUN	OH		
276.1	RACCOON CREEK	OH	109	684	368.4	KINNICONICK CREEK	KY		253
277.4	BURRELS RUN	OH			373.4	UPPER TWIN CREEK	OH		
279.0	TEENS RUN	OH			373.6	LOWER TWIN CREEK	OH		
282.3	SIXTEENMILE CREEK	WV			378.4	SALT LICK CREEK	KY		
284.3	EIGHTEEN MILE CREEK	WV			388.0	OHIO BRUSH CREEK	OH	57	435
287.4	LITTLE GUYANDOT RIVER	WV			389.4	SPRING RUN	OH		
296.7	TWO MILE CREEK	OH			391.0	LOWER SISTER CREEK	OH		
299.0	NINE MILE CREEK	WV			392.3	DONALDSON CREEK	OH		
303.9	PADDYS CREEK	OH			395.3	ISLAND CREEK	OH		
305.2	GUYANDOTTE RIVER	WV	66	1670	398.4	ISAACS CREEK	OH		
306.9	INDIAN GUYAN CREEK	OH			401.6	CROOKED CREEK	KY		
309.7	SYMMES CREEK	OH	70	356	402.3	ELK RUN	OH		
310.7	BUFFALO CREEK	OH			403.0	CABIN CREEK	KY		
314.0	TWELVEPOLE CREEK	WV		440	405.6	LITTLE THREE MILE CREEK	OH		
317.1	BIG SANDY RIVER	WV	27	4280	406.9	SLEEPY HOLLOW CREEK	KY		
317.4	CATLETTS CREEK	KY			409.0	FISH GUT CREEK	OH		
319.4	KEYES CREEK	KY			412.1	THREE MILE CREEK	OH		
320.1	SALLIDAY CREEK	OH			414.8	LAWRENCE CREEK	KY		
324.0	HOOD CREEK	KY			415.2	EAGLE CREEK	OH	31	154
324.3	ICE CREEK	OH			417.1	RED OAK CREEK	OH		
328.1	STORMS CREEK	OH			419.1	LEES CREEK	KY		
331.1	POND RUN	KY			422.6	STRAIGHT CREEK	OH		
332.8	UHLANDS RUND	KY			423.6	WHITE OAK CREEK	OH	49	234

Appendix A: Selected Tributaries to the Ohio River

Enters Ohio River at Mile Point	Stream Name	State	Stream Length (Miles)	Drainage Area (Sq. Miles)	Enters Ohio River at Mile Point	Stream Mile	State	Stream Length (Miles)	Drainage Area (Sq. Miles)
425.1	HOG RUN	OH			521.4	PAINT LICK CREEK	KY		
426.4	BRACKEN CREEK	KY			522.7	LITTLE SUGAR CREEK	KY		
428.6	BIG TURTLE CREEK	KY			522.9	BIG SUGAR CREEK	KY		
430.5	WRANGLING RUN	KY			527.2	BRYANT CREEK	IN		
431.6	BULL SKIN CREEK	OH			529.1	TURTLE CREEK	IN		
431.7	BYERS RUN	KY			530.3	DAN CREEK	IN		
432.5	LITTLE LOCUST CREEK	KY			530.3	CRAIGS CREEK	KY		
432.8	BIG LOCUST CREEK	KY			532.0	STEPHENS CREEK	KY		
433.2	PATTERSONS RUN	OH			535.7	PLUM CREEK	IN		
433.6	CROOKED CREEK	OH			545.8	KENTUCKY RIVER	KY	255	6970
434.4	LITTLE SNAG CREEK	KY			546.4	GREEN VALLEY CREEK	IN		
435.7	BIG SNAG CREEK	KY			546.6	LITTLE KENTUCKY RIVER	KY	35	147
443.8	LITTLE INDIAN CREEK	OH			549.6	LOCUST CREEK	KY		
445.3	BIG INDIAN CREEK	OH			550.5	INDIAN KENTUCK CREEK	IN		150
451.5	TWELVEMILE CREEK	KY			553.2	BEE CAMP CREEK	IN		
455.1	TEN MILE CREEK	OH			555.5	EAGLE HALLOW	IN		
455.3	NINE MILE CREEK	OH			556.4	MARILYN CREEK	IN		
456.5	EIGHT MILE CREEK	OH			559.5	CROOKED CREEK	IN		
463.3	LITTLE MIAMI RIVER	OH	90	1670	560.3	BIG CLIFTY CREEK	IN		
470.1	LICKING RIVER	KY	320	3670	563.6	CHAIN MILL CREEK	IN		
472.5	MILL CREEK	OH	28	166	569.5	SALUDA CREEK	IN		
484.2	MUDDY CREEK	OH			570.6	CORN CREEK	KY		
491.1	GREAT MIAMI RIVER	OH	161	5400	573.2	BAREBONE CREEK	KY		
494.8	TANNERS CREEK	IN		136	574.4	MIDDLE CREEK	KY		
498.7	LAUGHERY CREEK	IN	39	350	574.4	KNOB CREEK	IN		
499.8	WOOLPER CREEK	KY			578.4	CAMP CREEK	IN		
501.5	ISLAND BRANCH	IN			580.7	EIGHTEEN MILE CREEK	KY		
504.6	MIDDLE CREEK	KY			584.4	BULL CREEK	IN		
508.7	ARNOLD CREEK	IN			585.6	OWEN CREEK	IN		
509.9	GRANT CREEK	IN			592.8	POND CREEK	KY		
512.2	LICK CREEK	KY			595.9	HARRODS CREEK	KY		
513.6	GUNPOWDER CREEK	KY			596.9	GOOSE CREEK	KY		
514.7	LANDING CREEK	KY			602.2	SOUTH FORK BEARGRASS CR	KY		
517.0	BIG BONE CREEK	KY			606.5	SILVER CREEK	IN		225

Appendix A: Selected Tributaries to the Ohio River

Enters Ohio River at Mile Point	Stream Name	State	Stream Length (Miles)	Drainage Area (Sq. Miles)	Enters Ohio River at Mile Point	Stream Mile	State	Stream Length (Miles)	Drainage Area (Sq. Miles)
616.3	MILL CREEK CUTOFF	KY			706.3	SAMPLE RUN	IN		
617.5	KNOB CREEK	IN			707.4	ADAMS RUN	IN		
623.5	BRINLEY CREEK	IN			707.5	TOWN CREEK	KY		
624.4	EVERSOLE CREEK	IN			707.7	BULL CREEK	KY		
625.0	MILLS CREEK	KY			709.0	GOEHAGAN CREEK	KY		
629.2	FOURMILE CREEK	IN			710.6	SLICK CREEK	KY		
629.7	SALT RIVER	KY	125	2,890	710.8	CLOVER CREEK	KY		
633.3	ABRAHAMS RUN	KY			712.4	FAUCETT CREEK	KY		
634.6	MOSQUITO CREEK	IN			714.6	POND RUN	IN		
636.3	OTTER CREEK	KY			716.3	SANDY BRANCH	IN		
641.2	BIG RUN	IN			717.4	MILLSTONE CREEK	IN		
642.2	DOE RUN	KY			718.9	DEER CREEK	IN		
645.9	FLIPPINS RUN	KY			720.2	BLUE WELLS HOLLOW	IN		
647.3	BUCK CREEK	IN			721.4	INDIAN CREEK	KY		
648.1	LICK RUN	IN			724.0	CASSELBURY CREEK	IN		
651.5	FRENCH CREEK	KY			724.1	LEAD CREEK	KY		
656.9	New Amsterdam City Trib	IN			729.8	WINDY CREEK	IN		
657.0	BIG INDIAN CREEK	IN		253	731.3	ANDERSON RIVER	IN		234
659.9	COLD FRIDAY HOLLOW	KY			731.7	MUDDY GUT CREEK	KY		
661.3	POTATO RUN	IN			733.1	CROOKED CREEK	IN		
662.8	BLUE RIVER	IN		435	736.6	YELLOW CREEK	KY		
672.3	CEDAR BRANCH	KY			740.8	BIG SLOUGH	KY		
678.6	LITTLE BLUE RIVER	IN			741.3	LITTLE SANDY CREEK	IN		
684.8	BOONE HALLOW	KY			742.0	BLACKFORD CREEK	KY		124
686.3	WATSON RUN	KY			742.0	SANDY CREEK	IN		
686.5	SPRING CREEK	KY			744.2	HONEY CREEK	IN		
688.3	MILL CREEK	IN			746.8	HUFFMAN DITCH	IN		
692.5	KNOB CREEK	IN			750.5	PUP CREEK	KY		
698.6	LICK RUN	KY			752.0	YELLOW CREEK	KY		
700.8	SINKING CREEK	KY		154	757.7	PERSIMMONS DITCH	KY		
703.1	BEAR CREEK	IN			763.6	COWHIDE SLOUGH TRIB	KY		
703.9	FANNY CREEK	IN			765.2	COWHIDE SLOUGH			
704.3	BUCK CREEK	IN			769.4	FULKERSON DITCH	KY		
705.3	KINGLEY CREEK	IN			772.8	LITTLE PIGEON CREEK	IN		415

Appendix A: Selected Tributaries to the Ohio River

Enters Ohio River at Mile Point	Stream Name	State	Stream Length (Miles)	Drainage Area (Sq. Miles)	Enters Ohio River at Mile Point	Stream Mile	State	Stream Length (Miles)	Drainage Area (Sq. Miles)
784.0	GREEN RIVER	KY	370	9,230	897.8	BIG GRAND PIERRE CREEK	IL		
787.2	WALKER SLOUGH				901.9	GIVENS CREEK	KY		
792.9	PIGEON CREEK			375	902.3	LUSK CREEK	IL		
796.8	BAYOU CREEK	IN			903.5	MC GILLIGAN CREEK	KY		
800.7	MOUND SLOUGH				910.1	BIG BAY CREEK	IL		
806.6	CANOE CREEK	KY			910.8	BARREN CREEK	IL		
813.2	LOGSDEN-STROOD BRANCH	IN			911.9	BAYOU CREEK	KY		
815.0	BAYOU CREEK	IN			913.7	PHELPS CREEK	KY		
827.7	CYPRESS SLOUGH				919.8	DYER HILL CREEK	KY		
827.8	MCFADDEN CREEK	IN			920.3	CUMBERLAND RIVER	KY	693	17920
832.4	SMITH CREEK	IN			923.2	DAVIS CREEK	KY		
833.6	BEAVERDAMN CREEK	IN			926.0	GOODLOW SLOUGH	KY		
840.7	BAYOU DRAIN	IN			927.6	DRAKE BRANCH			
841.9	HIGHLAND CREEK	KY			932.5	TENNESSEE RIVER	KY	652	40910
843.0	LOST CREEK	KY			933.3	ISLAND CREEK	KY		
846.9	SIBLEY CREEK	KY			935.8	BALLARD LAKE	IL		
847.8	WABASH RIVER	IL	474	33100	939.4	PERKINS CREEK	KY		
850.7	RUNNING SLOUGH	IL			940.4	SEVENMILE CREEK	IL		
867.2	SALINE RIVER	IL	27	1170	941.9	MASSAC CREEK	IL		
868.2	CANE CREEK	IL			942.7	MASSAC CREEK	KY		
868.7	DENNIS O'NAN DITCH	KY			947.5	BAYOU CREEK	KY		
873.4	TRADEWATER RIVER	KY	110	1000	947.5	ROCKY BRANCH	IL		
875.9	CAMP CREEK	KY			951.0	BAYOU CREEK			
877.0	CORNSTALK CREEK	KY			953.0	NEWTONS CREEK	IL		
877.6	HANEY CREEK	IL			953.3	BEAN BRANCH	KY		
877.7	ANTHONY CREEK	IL			956.2	REDSTONE CREEK	KY		
886.1	HURRICANE CREEK	KY			957.7	POST CREEK CUTOFF	IL		
886.4	PETERS CREEK	IL			962.9	GAR CREEK	KY		
887.3	FRANKLIN BRANCH				967.6	HUMPHREY'S CREEK	KY		
887.6	HOSICK CREEK	IL			968.9	HODGES BAYOU	IL		
889.5	BIG CREEK	IL			971.9	HESS BAYOU	IL		
892.9	DEER CREEK	KY			973.3	CACHE ISLAND	KY		
893.5	BUCK CREEK	KY			974.7	CACHE RIVER	IL		720
895.8	THREEMILE CREEK	IL			977.7	CROOKED CREEK			

Appendix A: Hydrologic Data for Water Years 2006 - 2007

Flows in Cubic Feet per Second (CFS)

	Dashields Dam - Mile Point 13.3				Wheeling, WV - Mile Point 84.2			
	Flow (CFS)			% Long-	Flow (CFS)			% Long-
Date	Maximum	Minimum	Average	Term Average	Maximum	Minimum	Average	Term Average
October-05	35,700	5,000	11,419	228%	39,500	5,700	13,774	230%
November-05	96,900	9,800	24,687	76%	89,000	12,800	28,090	85%
December-05	123,200	14,200	41,623	50%	138,200	17,800	47,965	52%
January-06	100,000	38,600	64,334	26%	112,600	47,000	75,606	27%
February-06	55,100	21,200	36,482	46%	71,600	25,400	45,675	50%
March-06	88,000	11,700	29,852	80%	107,800	16,600	37,032	86%
April-06	68,800	12,700	35,837	48%	81,800	15,700	40,680	50%
May-06	49,300	11,300	26,510	67%	69,200	13,400	35,455	67%
June-06	64,200	8,700	24,177	90%	73,300	11,000	29,693	80%
July-06	50,400	15,400	27,784	64%	59,300	19,100	34,552	64%
August-06	47,500	6,900	15,197	156%	58,800	8,900	19,532	151%
September-06	48,300	12,400	28,233	60%	58,300	18,000	33,933	64%
October-06	102,100	21,500	46,506	52%	121,800	25,900	57,822	55%
November-06	120,600	26,800	57,397	32%	143,500	32,700	68,283	35%
December-06	51,500	18,800	31,500	54%	63,400	23,700	38,942	53%
January-07	149,800	29,500	70,777	23%	199,600	38,600	89,474	23%
February-07	65,100	12,200	25,196	93%	80,000	16,000	31,275	94%
March-07	187,500	37,700	90,748	17%	206,000	52,300	112,219	17%
April-07	117,300	33,400	59,430	32%	132,600	40,200	70,813	32%
May-07	54,300	8,500	22,429	92%	60,900	11,100	27,084	97%
June-07	12,500	6,200	8,763	195%	15,100	8,200	10,983	188%
July-07	22,400	5,500	9,713	186%	24,100	6,700	11,129	207%
August-07	72,600	5,500	19,155	140%	97,300	6,200	23,519	123%
September-07	11,900	4,700	7,120	238%	13,800	6,300	8,947	248%
October-07	21,100	5,100	8,632	249%	25,100	6,200	10,684	247%

	Willow Island, WV - Mile Point 161.8				Parkersburg, WV - Mile Point 203.9			
	Flow (CFS)			% Long-	Flow (CFS)			% Long-
Date	Maximum	Minimum	Average	Term Average	Maximum	Minimum	Average	Term Average
October-05	52,500	5,900	15,990	207%	64,800	8,400	21,455	173%
November-05	91,100	13,500	30,820	76%	107,500	19,000	40,680	67%
December-05	134,300	20,900	51,432	50%	160,300	28,900	64,016	44%
January-06	124,000	50,300	80,031	26%	177,000	62,100	105,125	24%
February-06	74,500	26,300	47,650	46%	105,800	33,800	62,450	43%
March-06	112,400	17,600	40,203	75%	161,600	24,200	55,016	73%
April-06	82,700	16,600	44,837	46%	109,700	24,300	60,430	40%
May-06	73,800	12,200	37,055	65%	96,900	18,200	47,935	63%
June-06	64,800	9,400	30,750	70%	81,900	13,700	41,977	62%
July-06	63,600	20,600	36,194	60%	90,800	28,700	50,897	53%
August-06	59,000	9,000	19,887	149%	65,000	11,300	23,361	140%
September-06	59,300	18,300	35,240	63%	70,000	22,100	40,447	65%
October-06	123,600	26,700	60,184	50%	160,500	31,900	75,703	48%
November-06	141,600	33,500	70,433	34%	172,900	42,300	86,493	34%
December-06	66,500	25,500	41,306	52%	90,200	31,700	54,135	49%
January-07	208,400	40,600	94,216	22%	262,200	54,700	126,484	20%
February-07	89,400	17,000	35,121	89%	130,800	23,600	49,532	81%
March-07	212,100	54,200	117,461	16%	258,100	84,800	156,258	15%
April-07	138,700	43,600	73,400	31%	180,900	55,000	94,297	29%
May-07	61,700	11,400	28,558	93%	76,100	15,700	36,458	86%
June-07	18,700	6,000	12,467	169%	21,800	8,900	15,940	153%
July-07	32,100	7,000	12,539	193%	35,600	9,600	15,858	181%
August-07	98,600	6,400	24,868	116%	103,500	9,000	30,887	114%
September-07	14,000	6,400	9,647	224%	18,100	8,200	12,240	216%
October-07	36,700	6,400	11,703	244%	48,000	7,900	14,787	240%

* % Long-Term Average calculated by dividing the harmonic mean flow by the median flow for each location.

Appendix A: Hydrologic Data for Water Years 2006 - 2007

Flows in Cubic Feet per Second (CFS)

Date	R.C. Byrd Dam - Mile Point 279.2				Greenup Dam - Mile Point 341.0			
	Flow (CFS)			% Long-Term Average	Flow (CFS)			% Long-Term Average
	Maximum	Minimum	Average		Maximum	Minimum	Average	
October-05	74,700	12,000	28,142	133%	79,600	13,900	29,048	172%
November-05	109,500	26,700	52,123	55%	106,400	28,400	53,430	77%
December-05	197,500	31,500	83,748	36%	194,800	32,100	87,587	48%
January-06	228,400	75,200	135,278	21%	254,600	78,400	146,872	29%
February-06	138,900	45,300	83,604	34%	143,200	57,500	90,393	46%
March-06	194,400	34,000	72,310	51%	213,100	32,400	77,719	78%
April-06	146,300	39,800	91,200	28%	172,800	46,300	108,660	34%
May-06	105,800	30,400	59,655	49%	114,800	30,900	64,361	66%
June-06	157,400	19,400	55,717	55%	178,400	20,000	60,847	79%
July-06	139,900	38,100	70,297	45%	161,100	35,500	77,384	63%
August-06	73,100	11,900	28,674	115%	79,600	15,000	30,990	158%
September-06	117,300	34,200	55,407	52%	119,800	36,800	60,847	67%
October-06	199,100	47,300	98,084	35%	223,800	51,200	108,034	48%
November-06	241,000	56,000	115,057	26%	255,800	61,600	127,930	35%
December-06	119,800	38,100	69,471	42%	133,900	37,000	74,503	59%
January-07	293,100	76,200	159,697	17%	304,100	84,100	173,387	22%
February-07	185,800	26,500	73,889	53%	192,200	36,700	82,714	71%
March-07	350,500	101,800	197,687	13%	359,900	104,600	212,084	18%
April-07	297,800	67,100	131,777	23%	344,100	72,400	151,803	30%
May-07	99,800	21,700	50,381	63%	115,000	19,900	57,529	85%
June-07	44,000	13,900	24,000	121%	38,400	15,000	25,050	159%
July-07	44,000	11,900	21,445	135%	48,800	11,900	22,852	192%
August-07	98,800	12,900	35,132	96%	103,900	11,600	35,652	141%
September-07	32,700	12,400	18,123	158%	32,400	12,900	18,593	233%
October-07	57,200	10,500	21,929	179%	64,800	11,800	22,790	267%

Date	Meldahl Dam - Mile Point 436.2				Cincinnati, OH - Mile Point 477.5			
	Flow (CFS)			% Long-Term Average	Flow (CFS)			% Long-Term Average
	Maximum	Minimum	Average		Maximum	Minimum	Average	
October-05	89,100	15,200	33,661	179%	89,900	16,500	33,826	179%
November-05	121,700	30,000	59,970	78%	121,900	31,000	60,840	85%
December-05	202,900	39,100	93,506	52%	203,200	38,000	95,435	53%
January-06	279,800	88,000	163,059	27%	306,300	93,400	173,553	29%
February-06	159,300	62,300	98,579	47%	169,900	63,500	107,646	47%
March-06	252,000	41,900	95,245	67%	270,800	43,600	106,916	70%
April-06	178,200	64,800	121,987	33%	190,700	73,300	132,480	34%
May-06	123,700	35,900	69,219	65%	125,500	39,900	72,884	63%
June-06	173,500	22,700	68,267	71%	169,300	24,300	66,643	79%
July-06	152,100	40,100	80,310	61%	173,000	42,000	86,545	61%
August-06	77,600	15,300	33,352	165%	75,100	17,600	33,787	162%
September-06	131,100	40,200	69,297	68%	144,000	42,500	78,823	64%
October-06	251,500	58,000	131,175	36%	272,600	62,500	137,747	39%
November-06	255,900	68,200	138,153	36%	264,100	71,400	153,410	34%
December-06	154,300	49,100	88,394	55%	167,200	51,300	95,103	51%
January-07	345,300	91,300	198,329	21%	358,900	103,500	215,087	21%
February-07	229,900	40,700	100,300	69%	247,000	45,100	105,564	62%
March-07	372,300	119,700	240,126	18%	384,100	127,000	253,406	18%
April-07	351,800	84,000	167,490	31%	357,700	87,300	179,270	28%
May-07	119,100	12,000	60,897	79%	132,800	22,900	67,374	77%
June-07	37,700	14,700	26,830	159%	39,300	13,200	27,193	169%
July-07	44,600	12,900	25,097	190%	45,000	13,500	26,300	198%
August-07	105,100	16,500	39,465	133%	102,300	16,600	40,252	140%
September-07	33,000	12,800	19,403	241%	32,400	13,700	19,877	254%
October-07	64,500	13,000	24,794	242%	72,800	13,600	27,626	253%

* % Long-Term Average calculated by dividing the harmonic mean flow by the median flow for each location.

Appendix A: Hydrologic Data for Water Years 2006 - 2007

Flows in Cubic Feet per Second (CFS)

Date	Markland, KY - Mile Point 531.5 Flow (CFS) Maximum	Minimum	Average	% Long-Term Average	McAlpine Dam - Mile Point 606.8 Flow (CFS) Maximum	Minimum	Average	% Long-Term Average
October-05	90,400	18,700	37,797	153%	90,500	19,900	38,190	152%
November-05	133,500	34,200	68,103	77%	134,600	35,400	71,150	75%
December-05	200,600	34,000	101,865	50%	203,200	36,300	105,174	49%
January-06	308,600	101,700	182,219	27%	348,800	107,800	196,841	25%
February-06	180,300	65,600	116,361	43%	201,500	74,100	127,000	39%
March-06	291,600	46,100	120,710	59%	321,200	50,300	134,935	55%
April-06	204,400	76,600	141,290	30%	238,000	80,600	157,767	27%
May-06	128,400	43,000	82,258	59%	131,500	46,500	89,394	52%
June-06	164,100	27,800	73,673	67%	164,200	29,300	76,917	65%
July-06	173,500	49,300	90,958	59%	178,100	54,300	94,345	57%
August-06	82,500	15,700	35,487	150%	84,100	20,200	37,755	135%
September-06	163,600	43,800	83,980	62%	216,000	47,400	94,987	56%
October-06	288,700	67,900	144,591	38%	316,400	72,800	155,741	35%
November-06	271,900	76,800	163,083	32%	304,000	83,700	179,043	29%
December-06	180,200	55,900	109,677	44%	203,400	58,400	117,197	41%
January-07	374,700	112,100	233,126	20%	411,300	121,100	254,984	18%
February-07	265,200	51,200	116,164	55%	284,400	50,100	125,721	47%
March-07	400,600	136,100	270,165	16%	420,200	145,200	283,787	15%
April-07	364,600	94,100	191,480	26%	392,700	102,500	207,653	23%
May-07	143,300	24,400	74,226	72%	153,300	26,200	80,332	66%
June-07	44,400	16,700	30,277	150%	42,200	18,100	30,257	152%
July-07	63,300	15,500	28,900	180%	71,200	18,300	31,058	171%
August-07	107,200	16,300	42,335	137%	108,800	16,800	43,300	137%
September-07	34,700	15,300	21,877	227%	35,600	14,800	22,577	222%
October-07	76,400	12,600	28,984	237%	136,000	12,800	35,568	229%

Date	Cannelton, IN - Mile Point 720.7 Flow (CFS) Maximum	Minimum	Average	% Long-Term Average	Evansville, IN - Mile Point 776.1 Flow (CFS) Maximum	Minimum	Average	% Long-Term Average
October-05	91,600	17,000	36,394	179%	95,800	18,100	38,561	207%
November-05	165,400	35,200	74,150	78%	173,000	38,600	80,450	90%
December-05	203,900	35,800	105,313	52%	208,000	39,000	110,623	60%
January-06	340,900	118,000	204,947	26%	373,500	141,300	224,828	32%
February-06	203,600	82,400	133,986	40%	226,600	95,200	157,200	43%
March-06	345,500	52,000	144,187	55%	381,700	56,700	166,171	57%
April-06	240,000	80,200	165,587	28%	236,400	83,400	173,187	34%
May-06	139,500	48,200	97,771	50%	140,000	48,800	106,210	54%
June-06	147,100	26,200	78,950	67%	159,400	29,600	86,847	76%
July-06	173,100	44,100	98,448	60%	174,500	48,100	102,990	68%
August-06	79,000	17,300	37,868	160%	77,400	18,400	39,581	180%
September-06	250,200	41,400	101,417	63%	303,300	44,400	117,180	74%
October-06	308,600	69,100	156,481	40%	330,300	75,900	170,494	45%
November-06	311,700	90,400	192,130	27%	341,100	102,300	224,210	27%
December-06	220,100	60,800	123,055	44%	249,800	66,300	139,497	48%
January-07	415,000	134,100	268,123	18%	459,100	154,800	304,903	20%
February-07	289,800	45,100	129,314	47%	308,100	50,300	140,971	51%
March-07	400,200	153,300	290,535	16%	411,000	163,200	305,739	19%
April-07	371,900	112,800	221,660	22%	376,400	118,000	238,143	25%
May-07	159,900	30,400	84,226	73%	164,600	31,100	88,990	86%
June-07	43,000	11,000	30,283	164%	44,000	11,800	31,507	194%
July-07	58,600	15,100	32,184	178%	63,200	16,000	34,081	209%
August-07	104,000	13,700	44,068	136%	103,000	14,200	44,732	171%
September-07	42,000	16,600	23,203	227%	42,800	17,600	25,163	255%
October-07	151,800	14,700	38,261	246%	175,400	16,100	44,239	290%

* % Long-Term Average calculated by dividing the harmonic mean flow by the median flow for each location.

Appendix A: Hydrologic Data for Water Years 2006 - 2007

Flows in Cubic Feet per Second (CFS)

	J.T. Myers Dam - Mile Point 846.0				Smithland, KY - Mile Point 918.5			
	Flow (CFS)			% Long-	Flow (CFS)			% Long-
Date	Maximum	Minimum	Average	Term Average	Maximum	Minimum	Average	Term Average
October-05	101,400	26,600	48,352	151%	101,800	27,700	48,268	200%
November-05	189,800	48,600	100,390	71%	195,400	48,500	102,460	89%
December-05	227,500	42,500	126,539	52%	227,200	48,900	126,445	66%
January-06	426,200	176,000	273,241	25%	434,300	184,200	276,494	32%
February-06	291,500	128,200	202,382	34%	321,000	137,100	216,032	41%
March-06	531,100	74,500	265,110	28%	526,900	75,900	280,471	33%
April-06	306,400	123,800	236,777	24%	310,400	128,500	240,803	31%
May-06	214,900	88,300	159,165	37%	226,900	97,400	164,387	44%
June-06	203,200	56,800	120,903	54%	203,700	58,600	122,477	69%
July-06	206,800	61,100	123,568	59%	202,900	60,600	126,568	68%
August-06	89,300	25,400	54,300	123%	86,800	26,100	55,616	153%
September-06	326,200	58,900	135,963	61%	326,700	52,800	139,283	79%
October-06	364,200	83,300	192,841	38%	358,000	88,500	193,663	47%
November-06	422,500	151,100	285,783	21%	416,300	169,900	299,427	25%
December-06	349,300	130,300	216,858	31%	359,700	136,400	221,984	38%
January-07	624,100	283,000	440,919	14%	629,200	304,400	458,990	17%
February-07	373,000	90,600	188,425	34%	353,400	93,100	193,154	41%
March-07	507,100	236,000	390,435	15%	507,100	241,600	395,774	19%
April-07	448,400	191,700	316,253	18%	447,500	199,500	331,310	23%
May-07	211,700	44,500	120,403	66%	210,500	37,200	123,110	83%
June-07	56,000	24,500	42,860	140%	57,100	21,600	43,667	175%
July-07	67,000	25,400	44,026	141%	74,300	28,700	43,894	197%
August-07	106,800	25,200	51,665	141%	105,400	21,700	52,258	165%
September-07	52,600	22,100	32,333	195%	51,200	22,200	32,363	247%
October-07	190,700	20,600	52,194	211%	184,800	20,800	53,016	276%

* % Long-Term Average calculated by dividing the harmonic mean flow by the median flow for each location.

Appendix A: Ohio River Discharge Information

ORMP	Permit Number	Type	Corporation Name	Plant Name
0	PA0217611	M	CITY OF PITTSBURGH CSOS	CITY OF PITTSBURGH CSO OUTFALLS
1.9	PA0031933	I	ORION POWER MID WEST, L.P.	BRUNOT ISLAND POWER STATION
2.15	PA0031933	I	ORION POWER MID WEST, L.P.	BRUNOT ISLAND POWER STATION
2.4	PA0031933	I	ORION POWER MID WEST, L.P.	BRUNOT ISLAND POWER STATION
2.45	PA0031933	I	ORION POWER MID WEST, L.P.	BRUNOT ISLAND POWER STATION
2.9	PA0031933	I	ORION POWER MID WEST, L.P.	BRUNOT ISLAND POWER STATION
3.1	PA0025984	M	ALLEGHENY COUNTY SANITARY AUTHORITY	ALCOSAN WWTP
4.6	PA0217689	M	MUNICIPAL AUTHORITY OF THE BOROUGH OF WEST VIEW	JOSEPH A. BERKLEY WATER TREATMENT PLANT
5.1	PA0027928	I	GULF OIL LIMITED PARTNERSHIP	NEVILLE ISLAND PLANT
5.3	PA0091227	I	CALGON CARBON CORPORATION	NEVILLE ISLAND PLANT
6.4	PA0041602	I	EXXON COMPANY, U.S.A.	NEVILLE ISLAND TERMINAL
6.6	PA0004979	I	NEVILLE CHEMICAL COMPANY	
6.7	PA0204030	I	CALGON CARBON CORPORATION	NEVILLE ISLAND WEST PLANT
6.8	PA0003832	I	ARISTECH CHEMICAL CORPORATION	NEVILLE ISLAND PLANT
7	PA0094722	I	TAPCO, INC.	
8	PA0002437	I	SHENANGO, INC.	SHENANGO COKE DIVISION
8.1	PA0002445	I	SHENANGO, INC.	NEVILLE ISLAND FOUNDRY DIVISION
8.6	PA0097306	M	MUNICIPAL AUTHORITY OF THE TOWNSHIP OF ROBINSON	ROBINSON TOWNSHIP WTP
9.32	PA0028801	M	MOON TOWNSHIP MUNICIPAL AUTHORITY	MONTOUR RUN WWTP
10.9	PA0002984	I	STAR ENTERPRISE	PITTSBURGH SALES TERMINAL
11.2	PA0217751	M	BOROUGH OF OSBORNE AND SEWICKLEY	SEWICKLEY WATER AUTHORITY WTP
11.2	PA0003816	I	BP PRODUCTS NORTH AMERICA INC.	CORAOPOLIS TERMINAL
11.23	PA0026352	M	RIVERVIEW SANITARY AUTHORITY	RIVERVIEW SANITARY AUTHORITY WASTEWATER TREATMENT PLANT
11.6	PA0205991	M	MOON TOWNSHIP MUNICIPAL AUTHORITY	MOON TOWNSHIP MUNICIPAL AUTHORITY WTP
12.3	PA0020681	M	BOROUGH OF SEWICKLEY	SEWICKLEY WWTP
12.75	PA0203718	M	MUNICIPAL AUTHORITY OF THE BOROUGH OF EDGEWORTH	EDGEWORTH WTP
13.96	PA0023159	M	CRESCENT-SOUTH HEIGHTS MUNICIPAL AUTHORITY	CRESCENT-SOUTH HEIGHTS STP
14.15	PA0046906	M	MOON TOWNSHIP MUNICIPAL AUTHORITY	FLAUGHERTY RUN STP
14.2	PA0024589	M	MUNICIPAL AUTHORITY OF THE BOROUGH OF LEETSDALE	LEETSDALE STP
15	PA0001619	I	ORION POWER MIDWEST, L.P.	F.R. PHILIPS POWER STATION
15.1	PA0001619	I	ORION POWER MIDWEST, L.P.	F.R. PHILIPS POWER STATION
15.3	PA0001619	I	ORION POWER MIDWEST, L.P.	F.R. PHILIPS POWER STATION
15.5	PA0000566	I	HUSSEY COPPER LTD	
16	PA0006335	I	KOPPEL STEEL CORPORATION	AMBRIDGE PLANT
17.5	PA0003000	I	CENTRIA	AMBRIDGE PLANT
17.5	PA0006114	I	LTV STEEL COMPANY, INC.	ALIQUIPPA WORKS
17.51	PA0027146	M	BOROUGH OF AMBRIDGE MUNICIPAL AUTHORITY	AMBRIDGE BOROUGH STP
17.6	PA0090522	I	SACCO DISPOSAL SITE	AMBRIDGE LANDFILL
18.9	PA0204315	I	J & L STRUCTURAL, INC.	14" PRODUCTS MILL

Appendix A: Ohio River Discharge Information

ORMP	Permit Number	Type	Corporation Name	Plant Name
20.3	PA0028410	M	MUNICIPAL AUTHORITY OF THE BOROUGH OF BADEN	BADEN STP
20.6	PA0025968	M	MUNICIPAL WATER AUTHORITY OF ALIQUIPPA	ALIQUIPPA WWTP
22.04	PA0036609	M	CONWAY BOROUGH MUNICIPAL AUTHORITY	CONWAY BOROUGH WWTP
22.7	PA0037940	M	CENTER TOWNSHIP SEWER AUTHORITY	ELKHORN RUN WWTP
23.8	PA0095796	I	PITTSBURGH TUBE COMPANY	MONACA DIVISION
24	PA0001295	I	ASHLAND PETROLEUM COMPANY	FREEDOM REFINERY
24.2	PA0034665	I	BEAVER VALLEY HEATING, INC.	MONACA PLANT
25	PA0218553	I	BEAVER CONCRETE AND GRAVEL COMPANY	
25.3	PA0026140	M	ROCHESTER AREA JOINT SEWER AUTHORITY	ROCHESTER AREA JOINT SEWER AUTHORITY WWTP
25.56	PA0020125	M	BOROUGH OF MONACA	MONACA WWTP AND CSOS
25.6	PA0020125	M	MONACA BOROUGH MUNICIPAL AUTHORITY	MONACA WWTP
25.6	PA0002046	I	PITTSBURGH TOOL STEEL, INC.	
26.2	PA0024694	M	BEAVER BOROUGH MUNICIPAL AUTHORITY	BEAVER BOROUGH WWTP
27.5	PA0204528	M	VANPORT TOWNSHIP MUNICIPAL AUTHORITY	VANPORT WATER TREATMENT PLANT
28.1	PA0023698	M	VANPORT TOWNSHIP MUNICIPAL AUTHORITY	VANPORT WWTP
28.3	PA0036684	I	SUN REFINING AND MARKETING COMPANY	BEAVER MARKETING TERMINAL
28.5	PA0002208	I	ZINC CORPORATION OF AMERICA	MONACA SMELTING DIVISION
29.28	PA0218154	I	LOCK 6 LANDING RESTAURANT AND LOUNGE	LOCK 6 WWTP
29.4	PA0001236	I	WESTINGHOUSE ELECTRIC CORPORATION	BEAVER PLANT
29.6	PA0006254	I	NOVA CHEMICALS	BEAVER VALLEY PLANT
29.6	PA0006254	I	NOVA CHEMICALS	BEAVER VALLEY PLANT
30	PA0006254	I	NOVA CHEMICALS	BEAVER VALLEY PLANT
33.3	PA0027481	I	PENNSYLVANIA POWER COMPANY	BRUCE MANSFIELD PLANT
33.4	PA0027481	I	PENNSYLVANIA POWER COMPANY	BRUCE MANSFIELD PLANT
33.5	PA0027481	I	PENNSYLVANIA POWER COMPANY	BRUCE MANSFIELD PLANT
33.6	PA0027481	I	PENNSYLVANIA POWER COMPANY	BRUCE MANSFIELD PLANT
33.7	PA0027481	I	PENNSYLVANIA POWER COMPANY	BRUCE MANSFIELD PLANT
33.8	PA0027481	I	PENNSYLVANIA POWER COMPANY	BRUCE MANSFIELD PLANT
33.9	PA0027481	I	PENNSYLVANIA POWER COMPANY	BRUCE MANSFIELD PLANT
34	PA0027481	I	PENNSYLVANIA POWER COMPANY	BRUCE MANSFIELD PLANT
34.5	PA0252492	M	SHIPPINGPORT BOROUGH	SHIPPINGPORT STP
34.9	PA0025615	I	FIRST ENERGY NUCLEAR OPERATING COMPANY	BEAVER VALLEY POWER STATION
35	PA0027707	I	DUQUESNE LIGHT COMPANY	BEAVER VALLEY UNIT NO.2
35.7	PA0005754	I	J & L SPECIALTY STEEL, INC.	MIDLAND PLANT
36.4	PA0097870	I	LTV STEEL COMPANY	MIDLAND WORKS
37	PA0005754	I	J&L SPECIALTY STEEL, INC.	MIDLAND PLANT
37.4	PA0023701	M	MIDLAND BOROUGH MUNICIPAL AUTHORITY	MIDLAND BOROUGH MUNICIPAL AUTHORITY STP
38.7	PA0218219	I	C&C MARINE MAINTENANCE CO.	C&C MARINE MAINTENANCE CO.
40	PA0027481	I	PENNSYLVANIA POWER COMPANY	BRUCE MANSFIELD PLANT

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ORMP	Permit Number	Type	Corporation Name	Plant Name
40.1	OH0011410	I	THE HALL CHINA COMPANY	HALL CHINA COMPANY WWTP
40.3	OH0107298	I	VONROLL AMERICA	
42	WV0111759	I	GLOBE BUILDING MATERIALS, INC.	
42.4	WV0005223	I	THE CELOTEX CORPORATION	
43.3	WV0021768	M	CITY OF CHESTER	CHESTER WWTP
44.6	OH0024970	M	CITY OF EAST LIVERPOOL	EAST LIVERPOOL WWTP
44.8	OH0123617	I	BP OIL COMPANY	EAST LIVERPOOL BULK PLANT WWTP
45.3	OH0133447	I	DALE RUFENER	FARR HILL MOBILE HOME PARK
45.5	WV0004774	I	GLOBE REFRACTORIES, INC.	
45.67	WV0027502	I	THE NEWELL COMPANY	
46.2	OH0030341	M	CITY OF EAST LIVERPOOL	CITY OF EAST LIVERPOOL WTP
47.2	WV0005754	I	DIXON TICONDEROGA D.B.A. NEW CASTLE REFRACTORIES	
47.3	WV0112941	I	DTC ENVIRONMENTAL SERVICES, INC.	
47.4	WV0004626	I	QUAKER STATE OIL REFINING CORPORATION	CONGO PLANT
48	OH0012327	I	STERLING CHINA COMPANY	WWTP
48.5	OH0028045	M	VILLAGE OF WELLSVILLE	WELLSVILLE WWTP
49.15	OH0029068	I	MARATHON ASHLAND PETROLEUM LLC	WELLSVILLE TERMINAL
49.6	OH0064157	I	WELLSVILLE STORAGE & TRANSPORTATION TERMINAL	
51.6	WV0049361	I	BOC GASSES	NEWELL PLANT
53.9	OH0011525	I	OHIO EDISON COMPANY	W.H. SAMMIS PLANT
55.6	OH0050539	M	VILLAGE OF EMPIRE	EMPIRE WWTP
57.4	WV0079103	I	CM TECH, INC.	
57.5	OH0011568	I	OHIO EDISON COMPANY	TORONTO PLANT
57.6	WV0025119	M	CITY OF NEW CUMBERLAND	NEW CUMBERLAND WWTP
59.1	OH0059234	M	CITY OF TORONTO	TORONTO WTP
59.2	OH0011738	I	VALLEY CONVERTING COMPANTY, INC.	
60.2	OH0020214	M	CITY OF TORONTO	TORONTO WWTP
60.5	OH0010910	I	TITANIUM METALS CORPORATION	TIMET-TORONTO PLANT
61.8	WV0003336	I	WEIRTON STEEL CORPORATION	
61.9	WV0003336	I	WEIRTON STEEL CORPORATION	
62	WV0003336	I	WEIRTON STEEL CORPORATION	
62.4	WV0004391	I	AIR PRODUCTS AND CHEMICALS, INC.	
62.9	WV0003336	I	WEIRTON STEEL CORPORATION	
64.3	OH0108014	I	MARATHON ASHLAND PETROLEUM LLC	
64.9	WV0071129	I	APEX OIL COMPANY	
65.2	WV0070971	M	CITY OF WEIRTON	WEIRTON WTP
65.8	WV0003425	I	SIGNODE CONSUMABLE PRODUCTS OPERATION	
66	WV0091367	I	WEIRTON ICE AND COAL SUPPLY COMPANY	
66.2	WV0023108	M	CITY OF WEIRTON	WEIRTON WWTP

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ORMP	Permit Number	Type	Corporation Name	Plant Name
68.1	OH0027511	M	CITY OF STEUBENVILLE	STEUBENVILLE WWTP
68.7	OH0011347	I	WHEELING PITTSBURGH STEEL CORPORATION	STEUBENVILLE NORTH PLANT
68.85	WV0004499	I	WHEELING PITTSBURGH STEEL CORPORATION	STEUBENVILLE EAST COKE PLANT
68.9	WV0004499	I	WHEELING PITTSBURGH STEEL CORPORATION	STEUBENVILLE EAST COKE PLANT
69.4	WV0004588	I	KOPPERS INDUSTRIES, INC.	FOLLANSBEE PLANT
69.7	WV0023281	I	WHEELING PITTSBURGH STEEL CORPORATION	STUEBENVILLE EAST SINTER PLANT
70.35	WV0004502	I	WHEELING - NISSHIN INC.	
70.5	WV0020273	M	CITY OF FOLLANSBEE	FOLLANSBEE WWTP
70.7	OH0011355	I	WHEELING PITTSBURGH STEEL CORPORATION	MINGO JUNCTION SOUTH PLANT
71.6	OH0026565	M	VILLAGE OF MINGO JUNCTION	MINGO JUNCTION WWTP
72.5	WV1002554	I	STARVAGGI INDUSTRIES, INC.	WELLSBURG DOCK AND STOCKPILE FACILITY
73	WV0071196	I	EAGLE MANUFACTURING COMPANY	
73.6	WV0070289	I	GENPAK CORPORATION	
74.5	OH0099333	M	VILLAGE OF BRILLIANT WATER PLANT	BRILLIANT WTP
74.7	WV0026832	M	CITY OF WELLSBURG, WATER & SEWER BOARD	WELLSBURG WWTP
76.5	OH0012581	I	CARDINAL OPERATING COMPANY (AMERICAN ELECTRIC POWER)	CARDINAL POWER PLANT COMPLEX (BRILLIANT PLANT)
78.5	WV0084182	M	BROOKE COUNTY PUBLIC SERVICE DISTRICT	BEECH BOTTOM WWTP
79	WV0114375	I	ARROW CONCRETE COMPANY	
79.4	WV0004511	I	WHEELING PITTSBURGH STEEL CORPORATION	BEECH BOTTOM PLANT
80	WV0065790	I	WINDSOR POWER HOUSE COAL COMPANY	
80.7	OH0090891	M	VILLAGE OF TILTONSVILLE	TILTONSVILLE WWTP
83.7	OH0011371	I	WHEELING PITTSBURGH STEEL CORPORATION	YORKVILLE PLANT
84.5	OH0120588	I	OHIO COATINGS COMPANY	
86.4	WV0039764	I	WARWOOD TOOL COMPANY	
87.8	OH0011339	I	WHEELING - PITTSBURGH STEEL CORPORATION	MARTINS FERRY PLANT
88.3	WV0026387	I	UNO - VEN COMPANY	
90.2	OH0032433	M	CITY OF BRIDGEPORT	BRIDGEPORT WTP
90.6	WV0005282	I	L. NIEBERGALL ICE AND FREEZER STORAGE	
90.8	WV0023230	M	CITY OF WHEELING	WHEELING WWTP
92.7	OH0059889	I	OXFORD MINING COMPANY, INC.	BELLAIRE DOCK
93.1	OH0076864	I	MARIETTA COAL COMPANY	BELLAIRE REFUSE DISPOSAL SITE
93.2	WV0020648	M	CITY OF BENWOOD	BENWOOD WWTP
94	OH0049999	M	EASTERN OHIO REGIONAL WASTEWATER AUTHORITY	EASTERN OHIO REGIONAL WASTEWATER AUTHORITY WWTP
94.7	WV0116033	I	AUTOMATIC RECYCLING, INC.	
96.5	WV0020141	M	CITY OF MCMECHEN	McMECHEN WWTP
97	WV0103110	I	ARROW CONCRETE COMPANY	
97.6	OH0027383	M	VILLAGE OF SHADYSIDE	SHADYSIDE WWTP
99.3	WV0020036	M	CITY OF GLEN DALE	GLEN DALE WWTP

Appendix A: Ohio River Discharge Information

ORMP	Permit Number	Type	Corporation Name	Plant Name
100.5	WV0004693	I	TRIANGLE WIRE AND CABLE, INC.	GLEN DALE FACILITY
102.4	OH0011592	I	OHIO EDISON COMPANY	R.E. BURGER PLANT
102.5	WV0023264	M	CITY OF MOUNDSVILLE	MOUNDSVILLE WWTP
106.5	OH0076040	I	TONKOVICH TRUCKING COMPANY	FLYASH DISPOSAL FACILITY
107.6	WV0081612	M	MARSHALL COUNTY SEWER DISTRICT	MARSHALL COUNTY WWTP
109.5	OH0027219	M	VILLAGE OF POWHATAN POINT	POWHATAN POINT WWTP
110.9	WV0005291	I	OHIO POWER CO.	KRAMMER PLANT
110.9	WV0005291	I	OHIO POWER CO.	KRAMMER PLANT
110.9	WV0005291	I	OHIO POWER CO.	KRAMMER PLANT
110.9	WV0005291	I	OHIO POWER COMPANY	KAMMER PLANT
110.9	WV0005291	I	OHIO POWER CO.	KRAMMER PLANT
110.9	WV0005291	I	OHIO POWER CO.	KRAMMER PLANT
111.2	OH0011681	I	BELLAIRE CORPORATION	POWHATAN MINE NO. 1
111.8	WV0004642	I	VENCO L.L.C.	
112	WV0005304	I	AMERICAN ELECTRIC POWER	OHIO POWER COMPANY MITCHELL PLANT
112.1	WV0004642	I	VENCO L.L.C.	
112.3	WV0020818	I	CONSOLIDATION COAL COMPANY	McELROY MINE
112.4	WV0005304	I	AMERICAN ELECTRIC POWER	OHIO POWER COMPANY MITCHELL PLANT
112.6	WV0005304	I	AMERICAN ELECTRIC POWER	OHIO POWER COMPANY MITCHELL PLANT
112.8	WV0071897	I	HECKETT-MARSCO CORP.	REED MINERAL DIVISION
114.5	WV0076660	I	COLUMBIAN CHEMICALS COMPANY	
115.5	OH0012211	I	QUARTO MINING COMPANY	POWHATAN MINE NO. 4
119.7	WV0004359	I	PPG INDUSTRIES, INC.	NATRIUM PLANT
121	WV0004383	I	AIR PRODUCTS AND CHEMICALS, INC.	GEG EH & S FIELD SUPPORT
121.7	WV0005169	I	BAYER CORPORATION	
122.3	WV0077429	I	GRANDVIEW-DOOLIN PUBLIC SERVICE DISTRICT	
123.5	OH0011550	I	ORMET PRIMARY ALUMINUM CORPORATION	HANNIBAL REDUCTION DIVISION FACILITIES
123.7	OH0010855	I	ORMET ALUMINUM MILL PRODUCTS CORP.	HANNIBAL ROLLING MILL DIVISION
124.7	OH0124991	I	MARIETTA INDUSTRIAL ENTERPRISES, INC.	HANNIBAL DOCKSIDE WASTEWATER TREATMENT WORKS
126	WV0114367	I	ARROW CONCRETE COMPANY	
126.4	WV0114499	I	CITY OF NEW MARTINSVILLE	HYDROELECTRIC POWER PLANT
126.7	OH0125067	I	PAR MAR OIL COMPANY	STORE #13
127.8	OH0091103	M	OHIO DEPARTMENT OF TRANSPORTATION	DUFFEY OUTPOST BUILDING
129	WV0109185	I	WETZEL COUNTY LANDFILL	WETZEL COUNTY LANDFILL
133	WV0078352	I	PAUL WISSMACH GLASS COMPANY, INC	
133.2	WV0020613	M	CITY OF PADEN CITY	PADEN CITY WWTP
138.2	WV0021814	M	CITY OF SISTERSVILLE	SISTERSVILLE WWTP
142	WV0048861	M	FRIENDLY PUBLIC SERVICE DISTRICT	FRIENDLY PSD
142.8	OH0059323	M	FRONTIER BOARD OF EDUCATION	FRONTIER HIGH SCHOOL WWTP

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ORMP	Permit Number	Type	Corporation Name	Plant Name
144.7	WV0000094	I	GE SILICONES WV LLC	SISTERSVILLE PLANT
145	WV0000094	I	GE SILICONES WV LLC	SISTERSVILLE PLANT
145.3	WV0000094	I	GE SILICONES WV LLC	SISTERSVILLE PLANT
145.4	WV0000094	I	GE SILICONES WV LLC	SISTERSVILLE PLANT
145.6	WV0000094	I	GE SILICONES WV LLC	SISTERSVILLE PLANT\
145.7	WV0000094	I	GE SILICONES WV LLC	SISTERSVILLE PLANT
145.9	WV0000094	I	GE SILICONES WV LLC	SISTERSVILLE PLANT
147	WV0048861	M	FRIENDLY PUBLIC SERVICE DISTRICT	FRIENDLY WWTP
150.9	WV0051268	M	WEST VIRGINIA DIVISION OF CORRECTIONS	ST. MARYS CORRECTIONAL CENTER
155.1	WV0020168	M	CITY OF ST. MARYS	ST. MARYS WWTP
155.5	WV0111490	I	ST MARYS REFINING COMPANY	
155.6	WV0111635	I	WATSON-HAAS LUMBER CORPORATION	
157.8	WV0024490	M	CITY OF BELMONT	BELMONT WWTP
159.5	OH0099449	I	OHIO OIL GATHERING CORP	BELLS RUN TERMINAL WWT WORKS
160	WV0000787	I	CYTEC INDUSTRIES	WILLOW ISLAND FACILITY
160.1	WV0000787	I	CYTEC INDUSTRIES	WILLOW ISLAND FACILITY
160.4	WV0000787	I	CYTEC INDUSTRIES	WILLOW ISLAND FACILITY
160.6	WV0000787	I	CYTEC INDUSTRIES	WILLOW ISLAND FACILITY
160.9	WV0000761	I	MONONGAHELA POWER COMPANY, DBA ALLEGHENY POWER	WILLOW ISLAND POWER STATION
161	WV0000761	I	MONONGAHELA POWER COMPANY, DBA ALLEGHENY POWER	WILLOW ISLAND POWER STATION
162.9	WV0112640	I	LAMBERT ENTERPRISES, INC.	
164	WV0001210	I	CABOT CORPORATION	OHIO RIVER VALLEY PLANT
166	WV0112089	I	CARR CONCRETE CORPORATION	
166.2	WV0112089	I	CARR CONCRETE CORPORATION	
168.8	OH0127621	I	ERGON TRUCKING, INC.	MARIETTA TERMINAL
171	OH0026344	M	CITY OF MARIETTA	MARIETTA WWTP
172.1	WV0022071	M	CITY OF WILLIAMSTOWN	WILLIAMSTOWN WWTP
172.2	OH0104035	I	SUPER AMERICA, INC.	STATION NO. 5237
172.7	WV0054259	I	FENTON ART GLASS COMPANY	
174.9	OH0048747	I	MARATHON ASHLAND PETROLEUM LLC	MARIETTA TERMINALS NOS. 1 AND 2
175	OH0005070	I	ASPHALT MATERIALS, INC.	MARIETTA PLANT 2
175.7	OH0003905	I	SOLVAY ADVANCED POLYMERS, LLC	SOLVAY MARIETTA PLANT
176.2	OH0003905	I	SOLVAY ADVANCED POLYMERS, LLC	SOLVAY MARIETTA PLANT
176.7	OH0099252	I	PRAXAIR, INCORPORATED	MARIETTA PLANT
176.8	OH0099538	I	AMERICAN MUNICIPAL POWER-OHIO, INC.	RH GORSUSH STATION WWTP
176.9	OH0004006	I	ELKEM METALS COMPANY	MARIETTA PLANT
179.2	OH0006751	I	CHEVRON ASPHALT COMPANY	MARIETTA TERMINAL

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ORMP	Permit Number	Type	Corporation Name	Plant Name
180.3	WV0001422	I	MANVILLE BUILDING MATERIALS CORPORATION	
181.4	WV0023221	M	CITY OF VIENNA	VIENNA WWTP
182.1	OH0005665	I	DEGUSSA ENGINEERED CARBONS, LLC	BELPRE OHIO CARBON BLACK FACILITY
183.2	WV0025011	M	CITY OF PARKERSBURG	PARKERSBURG WTP
183.3	WV0023213	M	PARKERSBURG UTILITY BOARD	PARKERSBURG WWTP
185.7	OH0020621	M	CITY OF BELPRE	BELPRE WWTP
190.1	WV0001279	I	E.I. DU PONT DE NEMOURS AND COMPANY	WASHINGTON WORKS
190.4	WV0001279	I	E.I. DU PONT DE NEMOURS AND COMPANY	WASHINGTON WORKS
190.5	WV0001279	I	E.I. DU PONT DE NEMOURS AND COMPANY	WASHINGTON WORKS
190.6	WV0001279	I	E.I. DU PONT DE NEMOURS AND COMPANY	WASHINGTON WORKS
190.8	WV0001279	I	E.I. DU PONT DE NEMOURS AND COMPANY	WASHINGTON WORKS
191.5	WV0000841	I	GE PLASTICS	
191.6	WV0076538	I	E. I. DUPONT DE NEMOURS AND COMPANY	LOCAL LANDFILL
192.8	WV0076546	I	SENTINEL TRANSPORTATION CO.	PERMIT ISSUED TO CONOCO, INC. (NOW DUPONT COMPANY)
193	WV0001775	I	AGA GAS INC.	
195.5	WV0032590	M	LUBECK PSD	LUBECK PSD
210.8	OH0030643	I	TUPPERS PLAINS	CHESTER WATER PLANT
220.8	WV0021989	M	CITY OF RAVENSWOOD	RAVENSWOOD WWTP
222	WV0115932	I	PECHINEY ROLLED PRODUCTS, LLC	PECHINEY ROLLED PRODUCTS, LLC
226.9	WV0000779	I	CENTURY ALUMINUM OF WV, INC.	
229	WV0110175	I	PLASMA PROCESSING CORPORATION	
231.5	WV0046434	I	McCOY DEVELOPMENT CORP.	MILLWOOD SUBDIVISION WWTP
232	OH0005983	I	MARTIN MARIETTA AGGREGATES	APPLE GROVE PLANT
234.2	OH0004413	I	THE SHELLY COMPANY, RICHARDS AND SON, INC	
235.7	WV0092100	I	JESCO CORPORATION	SAND AND GRAVEL MINING
237.5	OH0059561	I	OHIO POWER COMPANY	RACINE HYDROELECTRIC PLANT
241.6	WV0000426	I	FOOTE MINERAL COMPANY	
241.9	WV0001058	I	APPALACHIAN POWER COMPANY	AEP - PHILLIP SPORN PLANT
242	WV0048500	I	APPALACHIAN POWER COMPANY	AEP - MOUNTAINEER PLANT
243	OH0050661	M	SYRACUSE - RACINE REGIONAL SEWER DISTRICT	SYRACUSE - RACINE WWTP
245	WV0032531	M	TOWN OF NEW HAVEN	NEW HAVEN WWTP
247.1	OH0114944	I	ASHLAND BRANDED MARKETING INC.	BULK PLANT #490
247.2	OH0127680	I	G & M FUEL COMPANY	BULK TERMINAL
250.2	OH0021725	M	VILLAGE OF POMEROY	POMEROY WWTP
250.7	WV0021849	M	TOWN OF MASON	MASON WWTP
255	OH0026514	M	VILLAGE OF MIDDLEPORT	MIDDLEPORT WWTP
256.4	WV0105619	M	MASON COUNTY PSD	
258.1	OH0023762	I	OHIO POWER COMPANY	GENERAL JAMES GAVIN PLANT
260	WV0075736	M	POINT PLEASANT WATER WORKS	POINT PLEASANT WTP

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ORMP	Permit Number	Type	Corporation Name	Plant Name
260.2	WV0086886	M	CAMP CONLEY PUBLIC SERVICE DISTRICT	CAMP CONLEY WWTP
262	OH0051063	I	GALLIPOLIS HOSPITALITY, INC.	HOLIDAY INN - GALLIPOLIS WWTP
263	OH0059692	I	MCCARTY CONSTRUCTION INC.	RIVER DOCK WASTEWATER TREATMENT WORKS
264.1	OH0060003	I	WATERLOO COAL COMPANY, INC	WATERLOO RIVER DOCK FACILITY #1
265	OH0060151	I	SANDS HILL COAL COMPANY, INC.	ZINN COAL DOCK WWTP
265.4	WV0112046	I	CUSTOM FUEL SERVICES	CUSTOM FUEL SERVICES
265.7	WV0022039	M	CITY OF POINT PLEASANT	POINT PLEASANT WWTP
266.2	OH0125016	I	O-KAN MARINE REPAIR INC.	
266.9	WV0114642	I	KANAWHA RIVER TOWING, INC.	
268.5	OH0006416	M	GALLIA COUNTY RURAL WATER ASSOCIATION	GALLIA COUNTY WTP
268.8	OH0120863	I	BP OIL COMPANY	GALLIPOLIS BULK PLANT
269.8	OH0020478	M	CITY OF GALLIPOLIS	GALLIPOLIS WWTP
273	WV0002496	I	RIPPLEWOOD PHOSPHORUS U.S. LLC	
274.5	WV0074799	M	MASON COUNTY PUBLIC SERVICE DISTRICT	MASON COUNTY WTP
280.2	WV0000132	I	M & G POLYMERS USA LLC	POINT PLEASANT POLYSTER PLANT-MASON COUNTY
282	WV0079120	I	APPLE GROVE PULP AND PAPER COMPANY, INC.	
282.1	WV0079138	I	APPLE GROVE LANDFILL	
300	WV0114383	I	ARROW CONCRETE COMPANY	
301	WV0104647	I	YMCA GLENBRIER	
303.5	WV0032484	I	CHEVRON HUNTINGTON LIGHT OIL	HUNTINGTON TERMINAL
304.6	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
305	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
306.1	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
306.6	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
306.9	WV0000159	I	WEST VIRGINIA-AMERICAN WATER COMPANY	HUNTINGTON WTP
307.2	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
307.8	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
308.2	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
308.4	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
308.9	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
309.6	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
310.2	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
310.9	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
311	WV0045241	I	DAWSON-THOMPSON OIL COMPANY	
311.2	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
312.5	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
313	WV0023159	M	CITY OF HUNTINGTON SANITARY BOARD	HUNTINGTON WWTP
313.1	OH0094684	M	LAWRENCE COUNTY, BOARD OF COMMISSIONERS	UNION-ROME TOWNSHIPS SUBSEWER DISTRICT WWTP
314.7	WV0064238	I	OGLEBAY NORTON COMPANY	

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ORMP	Permit Number	Type	Corporation Name	Plant Name
315	WV0115380	I	KOSMOS CEMENT CO	KOSMOS CEMENT CO
315.4	WV0035912	M	CITY OF KENOVA	KENOVA WWTP
315.4	WV0027090	I	SUN OIL COMPANY	
316.1	WV0035912	M	CITY OF KENOVA	KENOVA WWTP
316.8	WV0064360	I	AMERICAN COMMERCIAL TERMINALS	
317	OH0021814	M	VILLAGE OF SOUTH POINT	SOUTH POINT WWTP
317.1	KY0000388	I	ASHLAND PETROLEUM COMPANY	CATLETTSBURG REFINERY
317.1	KY0035467	M	CITY OF CATLETTSBURG	CATLETTSBURG WWTP
318.4	OH0076392	I	ASHLAND SERVICES COMPANY	FORMER SOUTH POINT ETHANOL SITE
320.3	KY0000558	I	AK STEEL CORPORATION	AK STEEL CORPORATION - COKE PLANT
321.1	KY0099651	I	PROGRESS METALS RECLAMATION CO.	
321.3	KY0022373	M	CITY OF ASHLAND	ASHLAND WWTP
321.5	KY0099651	I	PROGRESS METAL RECLAMATION COMPANY	
322	KY0060399	I	AK STEEL CORPORATION - WEST WORKS	NORTON LANDFILL
322.7	KY0094005	I	PACTIV CORPORATION	
323.5	KY0000485	I	AK STEEL CORPORATION	ASHLAND WORKS
323.8	OH0060097	I	OLIVER M. ELAM JR. COMPANY, INC.	
324	OH0029432	M	VILLAGE OF COAL GROVE	COAL GROVE WWTP
324.4	OH0076619	I	IRONTON COAL COMPANY, ADDINGTON INCORPORATED	IRONTON COAL LOADING FACILITY
324.9	OH0059897	I	RAIL RIVER TERMINAL	
325	OH0007544	I	HONEYWELL, INC.	IRONTON TAR PROCESSING PLANT
325.1	OH0099422	I	ADVANCED CAST PRODUCTS, INC. PEERLESS DIVISION	
326.4	KY0000124	I	CSX TRANSPORTATION	RUSSELL YARD
327.1	OH0008516	M	CITY OF IRONTON	IRONTON WTP
327.2	OH0025852	M	CITY OF IRONTON	IRONTON WWTP
327.5	KY0048348	M	GREENUP COUNTY ENVIRONMENTAL COMMISSION	GREENUP COUNTY WWTP
328.5	KY0022926	M	CITY OF WORTHINGTON	WORTHINGTON WWTP
330	OH0094358	I	COLLINS MINING COMPANY	
332.2	KY0094790	I	SUN CHEMICAL PCI, INCORPORATED	
332.3	KY0033553	M	CITY OF WURTLAND	WURTLAND WWTP
332.5	KY0000493	I	E.I. DU PONT DE NEMOURS AND COMPANY	WURTLAND PLANT
332.6	KY0000493	I	E.I. DU PONT DE NEMOURS AND COMPANY	WURTLAND PLANT
332.7	KY0000493	I	E.I. DU PONT DE NEMOURS AND COMPANY	WURTLAND PLANT
332.8	KY0000493	I	E.I. DU PONT DE NEMOURS AND COMPANY	WURTLAND PLANT
332.9	KY0000493	I	E.I. DU PONT DE NEMOURS AND COMPANY	WURTLAND PLANT
333.5	OH0099309	I	DOW CHEMICAL CO., USA	HANGING ROCK PLANT
336.1	OH0007391	I	SUNOCO CHEMICALS	HAVERHILL PLANT
336.4	KY0026450	M	CITY OF GREENUP	GREENUP WWTP
347.2	OH0060089	I	STANDARD LAFARGE COMPANY	WHEELERSBURG DOCK

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ORMP	Permit Number	Type	Corporation Name	Plant Name
349	OH0027201	M	CITY OF PORTSMOUTH	SCIOTOVILLE WWTP
349.2	OH0050962	I	BP AMOCO PLC	BP AMOCO SCIOTOVILLE TERMINAL
350.8	OH0008621	M	CITY OF PORTSMOUTH	PORTSMOUTH WTP
351.8	OH0020613	M	VILLAGE OF NEW BOSTON	NEW BOSTON WWTP
353.6	OH0027197	M	CITY OF PORTSMOUTH	PORTSMOUTH WWTP
353.8	KY0026131	M	CITY OF SOUTH SHORE	SOUTH SHORE WWTP
358	KY0075914	I	SAXONY VILLAGE APARTMENTS	
363.2	OH0048305	M	OHIO DEPARTMENT OF NATURAL RESOURCES	SHAWNEE STATE PARK MARINA WWTP
375	KY0100528	I	HOLLINEE LLC	HOLLINEE MANUFACTURING COMPANY
375.5	KY0092061	I	ELECTRIC PLANT BOARD	VANCEBURG LEWIS COUNTY INDUSTRIAL AUTHORITY
378.4	KY0021512	M	ELECTRIC PLANT BOARD	VANCEBURG WWTP
397.8	OH0020842	M	VILLAGE OF MANCHESTER	MANCHESTER WWTP
400	OH0023825	M	VILLAGE OF ABERDEEN	ABERDEEN WWTP
405.5	KY0105091	M	WESTERN LEWIS RECTORVILLE WATER COOPERATIVE	WESTERN LEWIS RECTORVILLE WATER COOP, MUN. WATER SUPPLY WELL
405.7	OH0004316	I	DAYTON POWER AND LIGHT COMPANY	J.M. STUART STATION
406.6	KY0100196	I	EPT, DRIVES AND COMPONENTS	COMPONENTS OPERATIONS
408.5	KY0000477	I	WALD MANUFACTURING COMPANY, INC.	
409.8	KY0091359	I	HARPER OIL PRODUCTS, INC.	HARPER OIL PRODUCTS, INCORPORATED
411.2	KY0020257	M	MAYSVILLE UTILITY COMMISSION	MAYSVILLE STP
413.2	KY0022250	I	EAST KENTUCKY POWER COOPERATIVE	HUGH L. SPURLOCK POWER STATION
413.4	KY0022250	I	EAST KENTUCKY POWER COOPERATIVE	HUGH L. SPURLOCK POWER STATION
413.5	KY0022250	I	EAST KENTUCKY POWER COOPERATIVE	HUGH L. SPURLOCK POWER STATION
413.7	KY0094463	I	INLAND CONTAINER CORP	MAYSVILLE MILL
417.1	OH0020966	M	VILLAGE OF RIPLEY	RIPLEY WWTP
417.2	OH0127175	M	BROWN COUNTY RURAL WATER ASSOCIATION, INC.	RURAL WATER WELLFIELD WTP
424.5	OH0134091	M	VILLAGE OF HIGGINSPORT	HIGGINSPORT WWTP
427.7	KY0021261	M	CITY OF AUGUSTA	AUGUSTA WWTP
441.5	KY0045284	I	DRAVO LIME COMPANY	BLACK RIVER DIVISION
442.7	OH0096571	M	VILLAGE OF MOSCOW	MOSCOW WWTP
443.2	OH0048836	I	CINCINNATI GAS AND ELECTRIC COMPANY	WILLIAM H. ZIMMER POWER STATION
445	KY0090603	I	SPANGLER APARTMENTS	
447.7	OH0010677	M	TATE MONROE WATER ASSOCIATION INC.	TATE MONROE WTP
449.9	OH0021156	M	VILLAGE OF NEW RICHMOND	NEW RICHMOND WWTP
453	OH0009865	I	CINCINNATI GAS AND ELECTRIC COMPANY	W.C. BECKJORD STATION
455.1	OH0049361	M	CLERMONT COUNTY BOARD OF COMMISSIONERS	NINE MILE CREEK WWTP
457.3	KY0088749	I	PRESTRESS SERVICES, INCORPORATED	
462.8	OH0009083	M	GREATER CINCINNATI WATERWORKS	RICHARD MILLER WTP

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ORMP	Permit Number	Type	Corporation Name	Plant Name
465.2	OH0025453	M	HAMILTON COUNTY BOARD OF COMMISSIONERS-METROPOLTIAN SEWER	LITTLE MIAMI WWTP - MSD OF GREATER CINCINNATI
465.7	OH0085936	I	QUEEN CITY TERMINALS, INC.	
470	0H0010031	I	HILLTOP BASIC RESOURCES, INC.	RIVER TERMINAL PLANT
472.5	OH0025461	M	HAMILTON COUNTY COMMISSIONERS	MILL CREEK WWTP
474.4	OH0010120	I	PETER CREMER NORTH AMERICA LP	
474.5	KY0001406	I	BP OIL PIPELINE CO., BROMLEY	BROMLEY TERMINAL
475.3	KY0063274	I	TRANSMONTAIGNE, INCORPORATED	TRANSMONTAIGNE PRODUCT SERVICE, INC.
475.8	OH0047457	I	THE VALVOLINE COMPANY	WWTP
477	OH0009598	I	MARATHON ASHLAND PETROLEUM LLC	CINCINNATI LIGHT OIL TERMINAL
477.4	KY0021466	M	SANITATION DISTRICT NO.1 OF CAMPBELL & KENTON COUNTIES	DRY CREEK WWTP
479.4	OH0105716	I	RIVER TRANSPORTATION COMPANY	
482	KY0099694	I	McGINNIS, INCORPORATED	HEBRON DIVISION
483.8	KY0094072	M	SANITATION DISTRICT NO. 1	RIVERSHORE FARMS SUBDIVISION WWTP
484.4	OH0009946	I	LANXESS CORPORATION	ADDYSTON FACILITY, PORT PLASTICS PLANT
486	OH0024678	M	BOARD OF COMMISSIONERS HAMILTON COUNTY	INDIAN CREEK WWTP
489.8	OH0009571	I	VIGORO INDUSTRIES, INC.	ROYSTER-CLARK NITROGEN WWTP
490	OH0009873	I	CINCINNATI GAS AND ELECTRIC COMPANY	MIAMI FORT STATION
493	IN0024538	M	SOUTH DEARBORN REGIONAL SEWER DISTRICT	SOUTH DEARBORN REGIONAL WWTP
495	IN0003131	I	JOSEPH E. SEAGRAM AND SONS, INC.	
495.5	IN0002160	I	AMERICAN ELECTRIC POWER	AMERICAN ELECTRIC POWER, TANNER'S CREEK PLANT
497	IN0050903	M	CITY OF AURORA	CSO OVERFLOW POINTS
502.4	KY0075639	I	RIVER RIDGE PARK, INCORPORATED	RIVER RIDGE PARK WWTP
502.6	KY0080691	M	BOONE COUNTY WATER AND SEWER DISTRICT, SANITATION DISTRICT 1	CHARLES H. KELLY ELEMENTARY SCHOOL
503	KY0077917	I	ARLINGHAUS PROPERTIES	ARLINGHAUS PROPERTIES, RIVERSIDE DRIVE
506	IN0024431	M	CITY OF RISING SUN	RISING SUN WWTP
510.4	KY0040444	I	CINCINNATI GAS & ELECTRIC COMPANY	CINCINNATI GAS & ELECTRIC COMPANY-EAST BEND STATION
510.5	KY0040444	I	CINCINNATI GAS & ELECTRIC COMPANY	CINCINNATI GAS & ELECTRIC COMPANY-EAST BEND STATION
511.1	KY0040444	I	CINCINNATI GAS & ELECTRIC COMPANY	CINCINNATI GAS & ELECTRIC COMPANY-EAST BEND STATION
516.6	KY0004243	M	KENTUCKY DEPARTMENT OF PARKS	BIG BONE LICK STATE PARK WTP
519.5	IN0056391	M	PATRIOT, TOWN OF	PATRIOT WWTP
529.9	KY0075825	I	CHARLOTTE LOWENDICK	RIVER'S EDGE CAMPGROUND
530	KY0028118	M	CITY OF WARSAW	WARSAW STP
533.1	KY0100153	I	STEEL TECHNOLOGIES, LP	GHENT FACILITY
534.8	KY0098221	I	GALLATIN STEEL COMPANY	GALLATIN COUNTY STEEL PLANT
535	KY0082686	I	GALLATIN TERMINAL COMPANY	
535.3	KY0002038	I	KENTUCKY UTILITIES COMPANY	GHENT GENERATING STATION

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ORMP	Permit Number	Type	Corporation Name	Plant Name
537.5	IN0020231	M	TOWN OF VEVAY	VEVAY WWTP
538.7	KY0095877	I	NORTH AMERICAN STAINLESS, LP	
540.5	KY0001279	I	DOW CORNING CORPORATION	CARROLLTON PLANT
543.6	KY0001431	I	ELF ATOCHEM NORTH AMERICA, INC.	
543.7	KY0071757	I	HARPER OIL PRODUCTS, INC.	
550.5	IN0060470	M	TOWN OF BROOKSBURG WASTEWATER TREATMENT PLANT	BROOKSBURG WWTP
552	KY0102920	I	NUGENT SAND COMPANY	MILTON PLANT
552.4	KY0001732	I	AMERIFORM MANUFACTURING, INCORPORATED	
556.6	KY0088625	M	CITY OF MILTON	MILTON WWTP
558.6	IN0025666	M	CITY OF MADISON	MADISON WWTP
560	IN0001759	I	INDIANA - KENTUCKY ELECTRIC CORPORATION	CLIFTY CREEK STATION
562.5	IN0020702	M	TOWN COUNCIL OF HANOVER	HANOVER WWTP
571.3	KY0041971	I	LOUISVILLE GAS AND ELECTRIC COMPANY	TRIMBLE COUNTY GENERATING STATION
586	IN0053571	I	MULZER CRUSHED STONE, INC.	CHARLESTOWN QUARRY
589.5	KY0038580	M	OLDHAM COUNTY SANITATION DISTRICT	CARDINAL HARBOUR WWTP
592	IN0020508	M	CITY OF CHARLESTOWN	CHARLESTOWN WWTP
593.5	IN0001163	I	U.S. DEPARTMENT OF THE ARMY	INDIANA ARMY AMMUNITION PLANT
596.9	KY0044261	M	LOUISVILLE & JEFFERSON COUNTY MSD	GLENVIEW BLUFF SUBDIVISION WWTP
600	IN0060224	M	INDIANA-AMERICAN WATER CO., INC./SIOTC	JEFFERSONVILLE SOUTHERN INDIANA OPERATIONS & TREATMENT CNTR
600.5	KY0097241	I	RIVER ROAD TERMINAL, INC.	
600.7	KY0003123	M	LOUISVILLE WATER COMPANY	B.E. PAYNE WTP
600.8	KY0001830	M	LOUISVILLE WATER COMPANY	ZORN AVENUE WTP
601.1	KY0095702	I	LOUISIANA DOCK COMPANY LLC	
601.2	KY0098710	I	NUGENT SAND COMPANY	NUGENT SAND COMPANY EXTRUSION MILL
602	IN0023965	M	OAK PARK CONSERVANCY DISTRICT	OAK PARK CONSERVANCY DISTRICT WWTP
603	KY0105236	I	MUHAMMAD ALI CENTER	MUHAMMAD ALI CENTER
603	KY0054771	I	MARATHON ASHLAND PETROLEUM LLC	LOUISVILLE RIVER ROAD ASPHALT TERMINAL
603	KY0053783	I	JEFFERSON COUNTY MEDICAL CENTER	MEDICAL CENTER STEAM AND CHILLED WATER PLANT
603	KY0046027	I	MISSOURI PORTLAND CEMENT COMPANY	LOUISVILLE PLANT
603.3	KY0002101	I	LOUISVILLE GAS AND ELECTRIC COMPANY	WATERSIDE STATION
603.5	KY0080675	I	HOME SUPPLY COMPANY	GALT HOUSE HOTEL
603.5	KY0069809	I	HUMANA, INC.	HUMANA BUILDING
604.1	IN0023302	M	CITY OF JEFFERSONVILLE & ENVIRONMENTAL MANAGEMENT CORP.	JEFFERSONVILLE WWTP
604.4	IN0060186	I	NATIONWIDE TRUCK SERVICE	
604.5	IN0025313	I	MARATHON ASHLAND PETROLEUM COMPANY	CLARKSVILLE TERMINAL
605	IN0003638	I	COLGATE - PALMOLIVE COMPANY	
606	IN0047058	M	TOWN OF CLARKSVILLE	CLARKSVILLE WWTP
606	KY0002089	I	LOUISVILLE GAS AND ELECTRIC COMPANY	OHIO FALLS GENERATING STATION

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ORMP	Permit Number	Type	Corporation Name	Plant Name
606.2	KY0020320	M	U.S. ARMY CORPS OF ENGINEERS-LOUISVILLE	LOUISVILLE REPAIR STATION
606.4	IN0002666	I	CALDWELL-MOSER LEATHER CO., INC.	
606.8	KY0105163	I	TGM CONSTRUCTORS, DBA	MCALPINE LOCK & DAM
609.5	IN0023884	M	CITY OF NEW ALBANY	NEW ALBANY WWTP
610	IN0002798	I	PUBLIC SERVICE COMPANY OF INDIANA	GALLAGHER GENERATING STATION
610.5	KY0070301	I	HEYBURN PARTNERSHIP	HEYBURN BUILDING
611.2	KY0002291	I	MARATHON ASHLAND PETROLEUM , LLC	LOUISVILLE-ALGONQUIN TERMINAL
611.6	KY0089711	I	BP PRODUCTS NORTH AMERICA, INCORPORATED	BP LOUISVILLE TERMINAL
612	KY0022411	M	LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT	MORRIS FORMAN WWTP
612	KY0021610	I	ASHLAND INCORPORATED	
612.3	KY0097179	I	CARBIDE/GRAPHITE GROUP, INC	LOUISVILLE PLANT
612.5	KY0101257	I	FIVE M TRANSPORTATION	
612.9	KY0002305	I	ROHM AND HAAS COMPANY	
613	KY0002305	I	ROHM AND HAAS COMPANY	
613	KY0002071	I	LOUISVILLE GAS AND ELECTRIC COMPANY	PADDY'S RUN STATION
613.1	KY0001457	I	OXY VINYLS, LP	BF GOODRICH COMPANY
613.1	KY0002305	I	ROHM AND HAAS COMPANY	
613.1	KY0001007	I	REYNOLDS METALS COMPANY	LOUISVILLE PLANT NO. 3
613.1	KY0001457	I	OXY VINYLS, LP	OXY VINYLS, LP
613.1	KY0002305	I	ROHM AND HAAS COMPANY	
613.1	KY0001457	I	OXY VINYLS, LP	POLY ONE
613.1	KY0001589	I	AMERICAN SYNTHETIC RUBBER COMPANY, LLC	
613.1	KY0001457	I	OXY VINYLS, LP	ZEON CHEMICALS
613.4	KY0001350	I	E.I. DU PONT DE NUMOURS AND COMPANY, INC.	
613.6	KY0002976	I	CITGO PETROLEUM CORPORATION	LOUISVILLE TERMINAL
614.1	KY0064629	I	MARATHON OIL COMPANY	
614.4	KY0002780	I	ASTRAZENECA	ATKEMIX TEN, INCORPORATED
614.8	KY0001112	I	BORDEN, INCORPORATED	
617.4	IN0059781	M	RDI / CAESARS RIVERBOAT CASINO, L.L.C.	CAESARS INDIANA GAMING FACILITY WWTP
617.4	KY0002062	I	LOUISVILLE GAS AND ELECTRIC COMPANY	CANE RUN GENERATING STATION
617.6	KY0097659	I	ELG METALS, INCORPORATED	
618.7	KY0096504	I	DJ/NYPRO	DJ/NYPRO LOUISVILLE
619.2	KY0090875	I	LOUISVILLE AND JEFFERSON COUNTY RIVERPORT AUTHORITY	
619.4	KY0103993	I	THORNTON TRANSPORTATION	THORNTON TRANSPORTATION TERMINAL
619.7	KY0086665	I	INTERPOLYMER CORPORATION	
620.1	KY0021881	I	MARATHON ASHLAND PETROLEUM, LLC	LOUISVILLE CANE RUN ROAD ASHALT TERMINAL
620.5	KY0021881	I	MARATHON ASHLAND PETROLEUM LLC	LOUISVILLE ASPHALT TERMINAL

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ORMP	Permit Number	Type	Corporation Name	Plant Name
621.3	KY0100803	I	JOHNSTOWN ROAD ELEMENTARY SCHOOL	JOHNSTOWN SCHOOL WWTP
621.5	IN0054852	I	US SILICA COMPANY	
622.9	KY0078956	M	LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT	WEST COUNTY WWTP
626	KY0003221	I	LOUISVILLE GAS AND ELECTRIC COMPANY	MILL CREEK STATION
626.9	KY0001210	I	KOSMOS CEMENT COMPANY	KOSMOS CEMENT COMPANY-LOUISVILLE PLANT
627.8	KY0087386	I	LOUISVILLE ENVIRONMENTAL SERVICES	WEST POINT FACILITY
631.4	KY0022152	M	CITY OF WEST POINT	WEST POINT WWTP
637.4	KY0074268	M	OTTER CREEK PARK LODGE	OTTER CREEK PARK WWTP
642	KY0002119	I	OLIN CORPORATION	DOE RUN, KENTUCKY PLANT
642.3	KY0043478	I	DOE VALLEY UTILITIES, INC.-	DOE VALLEY WWTP
642.9	KY0021474	M	CITY OF BRANDENBURG	BRANDENBURG WWTP
648	IN0060895	I	MULZER CRUSHED STONE, INC.	NEW AMSTERDAM QUARRY
664	IN0021121	M	TOWN OF LEAVENWORTH	LEAVENWORTH WWTP
674	IN0001139	I	MULZER CRUSHED STONE, INC.	CAPE SANDY QUARRY
710	KY0023272	I	CLOVER CREEK BRICK AND TILE	
711.3	KY0026701	M	CITY OF CLOVERPORT	CLOVERPORT WWTP
719.9	KY0001716	I	WEYERHAEUSER COMPANY	HAWESVILLE OPERATION-BLEACHED PULP MILL
720.5	KY0001716	I	WEYERHAEUSER COMPANY	HAWESVILLE OPERATIONS-BLEACHED PULP MILL
725.6	KY0092118	I	ARVIN ROLL COATER, INCORPORATED	
726.1	KY0065838	M	HANCOCK RIVERPORT PROPERTIES	
726.1	KY0101141	I	ALCOA AUTOMOTIVE CASTINGS	KENTUCKY CASTING CENTER
726.2	IN0001406	I	MAXON MARINE, INC.	
726.3	KY0101206	I	ALCOA	HAWESVILLE WORKS
726.5	IN0043460	M	TELL CITY WATER DEPARTMENT	TELL CITY WTP
726.6	IN0021016	M	CITY OF TELL CITY	TELL CITY WWTP
727.1	KY0002747	I	SOUTHWIRE COMPANY	
727.2	KY0001821	I	NATIONAL SOUTHWIRE ALUMINUM COMPANY	DIVISION OF SOUTHWIRE COMPANY
728	IN0059692	I	MULZER CRUSHED STONE, INC.	CAPE SANDY BARGE WATER DISCHARGE
728.1	KY0001937	I	WESTERN KENTUCKY ENERGY CORPORATION	KENNETH C. COLEMAN STATION
728.2	KY0001937	I	WESTERN KENTUCKY ENERGY CORPORATION	KENNETH C. COLEMAN STATION
728.3	KY0001937	I	WESTERN KENTUCKY ENERGY CORPORATION	KENNETH C. COLEMAN STATION
737.7	KY0052744	M	CITY OF LEWISPORT	LEWISPORT WTP
738.1	KY0023281	I	DAL-TILE INTERNATIONAL	
738.6	KY0025241	M	CITY OF LEWISPORT	LEWISPORT WWTP
743.5	IN0038300	M	TOWN OF GRANDVIEW	GRANDVIEW WWTP
744.7	IN0051845	I	AMERICAN ELECTRIC POWER POWER	ROCKPORT GENERATING FACILITY
745.5	IN0059650	I	AK STEEL CORPORATION	ROCKPORT WORKS
746.2	IN0021067	M	CITY OF ROCKPORT	ROCKPORT WWTP

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ORMP	Permit Number	Type	Corporation Name	Plant Name
749.7	KY0104566	I	KINDER MORGAN BULK TERMINALS, INC.	OWENSBORO GATEWAY TERMINAL
750.9	KY0100471	I	OWENSBORO HARBOR SERVICE	WRIGHTS LANDING
751.3	KY0001953	I	W.R. GRACE AND COMPANY	
751.9	KY0101109	I	DARAMIC, INCORPORATED	
752	KY0099911	I	SPECIALTY PAPERBOARD, INC.	ENDURA PRODUCTS DIVISION
752.8	KY0001295	M	OWENSBORO MUNICIPAL UTILITIES	ELMER SMITH ELECTRIC GENERATING STATION
753	KY0083771	I	KENTUCKY FRIED CHICKEN	KENTUCKY FRIED CHICKEN WWTP
753.2	KY0095711	I	SOUTHERN STATES COOPERATIVE, INCORPORATED	SOUTHERN STATES RIVER TERMINAL COMPANY
753.3	KY0095711	I	SOUTHERN STATES COOPERATIVE, INCORPORATED	SOUTHERN STATES RIVER TERMINAL COMPANY
753.5	KY0001571	I	GREEN RIVER STEEL CORPORATION	
753.9	KY0076147	I	BUEHLER-RUCKRIEGEL	LONG JOHN SILVER'S SEAFOOD RESTAURANT, NO.3 WWTP
754	KY0033421	I	BROOKHAVEN EAST 60 APARTMENTS	EAST 60 APARTMENTS WWTP
754.5	KY0023817	I	WYNDALL'S CENTER	WYNDALL'S CENTER WWTP
754.5	KY0071684	I	KROGER COMPANY	KROGER FOOD STORE L-336
754.6	KY0056103	I	OSCAR HORNSBY, INC.	SUPER TEST FOOD MART #22
754.6	KY0073377	M	CITY OF OWENSBORO	OWENSBORO WWTP EAST
754.9	KY0069752	I	MCDONALD'S CORPORATION	MCDONALD'S WWTP
755.3	KY0046019	I	LAFARGE CORPORATION	
755.5	KY0090280	I	OWENSBORO GRAIN COMPANY, INCORPORATED	
755.5	KY0001031	I	BARTON BRANDS, LTD.	
756	KY0095729	I	OWENSBORO GRAIN COMPANY - GROUNDWATER REMEDIATION	
757.5	KY0001520	I	FIELD PACKING COMPANY	
757.8	KY0020095	M	REGIONAL WATER RESOURCE AGENCY	OWENSBORO - WEST WWTP
757.9	KY0101184	I	DES-BROTHERS MOTEL ASSOCIATES	HOLIDAY INN - OWENSBORO
759	KY0093734	I	DART POLYMERS, INCORPORATED	
759.5	KY0099724	I	EAST/WEST MARINE TERMINALS	
768.7	KY0095192	I	KIMBERLY CLARK CORPORATION	OWENSBORO FACILITY
770	IN0055212	I	WARRICK MINERALS, INC.	
772.5	IN0048429	I	YANKEETOWN DOCK CORPORATION	
773	IN0002259	I	SOUTHERN INDIANA GAS AND ELECTRIC COMPANY	F.B. CULLEY STATION
773.1	IN0002259	I	SIGECO	F.B. CULLEY SATION
773.5	IN0001155	I	ALUMINUM COMPANY OF AMERICA (ALCOA)	WARRICK OPERATIONS
778	IN0023892	M	TOWN OF NEWBURGH	NEWBURGH WWTP
784.9	KY0099422	I	OHIO VALLEY MARINE SERVICES, INC.	
790	IN0025348	I	MARATHON ASHLAND PETROLEUM COMPANY	EVANSVILLE TERMINAL
791.5	IN0043117	M	CITY OF EVANSVILLE	EVANSVILLE WTP
792.5	IN0033073	M	CITY OF EVANSVILLE & ENVIRONMENTAL MANAGEMENT CORP.	EVANSVILLE EAST WWTP

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ORMP	Permit Number	Type	Corporation Name	Plant Name
793.5	IN0002241	I	SOUTHERN INDIANA GAS AND ELECTRIC COMPANY	OHIO RIVER GENERATING STATION
793.6	IN0047091	I	EVANSVILLE TERMINAL CORPORATION	BLACK BEAUTY COAL CO.
794	IN0032956	M	CITY OF EVANSVILLE & ENVIRONMENTAL MANAGEMENT CORP.	EVANSVILLE WEST WWTP
794.5	KY0099511	I	EVANSVILLE MARINE SERVICE, INCORPORATED	EVANSVILLE MARINE SERVICE
801	KY0095435	I	TRANSMONTAIGNE TERMINALING, INC.	
804	KY0002178	I	HENDERSON MUNICIPAL POWER AND LIGHT	
805.6	KY0020711	M	HENDERSON WATER UTILITY	HENDERSON WWTP #1
807.3	KY0002534	I	IMC-AGRICO CHEMICAL COMPANY	IMC-AGRICO CHEMICAL COMPANY
807.5	KY0024643	I	POLYMERIC RESOURCES CORPORATION	CUSTOM RESINS, INCORPORATED
807.5	KY0092126	I	HENDERSON COUNTY RIVERPORT AUTHORITY	
807.5	KY0100277	I	CONSOLIDATED GRAIN & BARGE MARINE SERVICES	CGB MARINE SERVICES
808	KY0026514	I	HENDERSON TEMINALING CO.	HENDERSON TERMINALING COMPANY
817	IN0052191	I	SOUTHERN INDIANA GAS AND ELECTRIC COMPANY	A.B. BROWN GENERATING STATION
828.2	KY0100773	I	MT. VERNON BARGE SERVICE, INC.	MT. VERNON BARGE SERVICE INC
829.3	IN0035696	M	CITY OF MOUNT VERNON	MT. VERNON WWTP
829.3	IN0003921	M	CITY OF MOUNT VERNON WATER WORKS	MOUNT VERNON WATER WORKS
829.3	IN0003921	M	CITY OF MT. VERNON	MT. VERNON WWTP
829.7	IN0002470	I	COUNTRYMARK CO-OP INC.	INDIANA FARM BUREAU REFINERY
830.1	IN0001970	I	MG INDUSTRIES	
830.4	IN0049948	I	MARATHON PETROLEUM COMPANY	MT VERNON TERMINAL
830.8	IN0002895	I	BABCOCK AND WILCOX COMPANY	
831.1	IN0059773	I	CF INDUSTRIES, INC.	MT VERNON TERMINAL
831.2	IN0002101	I	GENERAL ELECTRIC COMPANY	
842.1	KY0025844	M	CITY OF UNIONTOWN	UNIONTOWN WWTP
852.7	KY0001996	I	ISLAND CREEK COAL COMPANY	MORGANFIELD PLANT
859.5	IL0021776	M	CITY OF SHAWNEETOWN	CITY OF SHAWNEETOWN STP
880.5	IL0055581	M	VILLAGE OF CAVE IN ROCK	CAVE IN ROCK STP
889	IL0028690	M	VILLAGE OF ELIZABETHTOWN	ELIZABETHTOWN WWTP
891.5	IL0034207	M	CITY OF ROSICLARE	CITY OF ROSICLARE STP
891.7	IL0004251	I	OZARK - MAHONING COMPANY	JOHNSON WORKS, ROSICLARE TAILINGS PONDS
903	IL0028991	M	CITY OF GOLCONDA	GOLCONDA WWTP
929.1	KY0096776	I	MCGINNIS, INCORPORATED, DBA	NATIONAL MAINTENANCE & REPAIR OF KENTUCKY, INCORPORATED
929.5	KY0096776	I	MCGINNIS, INCORPORATED, DBA	NATIONAL MAINTENANCE & REPAIR OF KENTUCKY, INCORPORATED
934.3	KY0073113	M	PADUCAH WATER WORKS	PADUCAH WTP
934.6	KY0021695	I	MID WEST TERMINAL, INC.	
936	KY0022799	M	PADUCAH-McCRACKEN COUNTY JOINT SEWER AGENCY	PADUCAH WWTP
937.5	IL0027782	M	CITY OF BROOKPORT	BROOKPORT STP
942.9	IL0073717	I	MID-SOUTH TOWING COMPANY	METROPOLIS LOCATION

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ORMP	Permit Number	Type	Corporation Name	Plant Name
943.5	KY0099368	I	MID-SOUTH TOWING COMPANY	PADUCAH LOCATION
943.8	KY0042838	I	TYLER MOUNTAIN WATER COMPANY	RAINBOW DIVISION
944	IL0029874	M	CITY OF METROPOLIS	METROPOLIS WWTP
944.5	IL0076252	M	CITY OF METROPOLIS	METROPOLIS WATER TREATMENT PLANT
945	IL0004421	I	HONEYWELL INTERNATIONAL INCORPORATED	METROPOLIS WORKS
946	KY0004219	I	TENNESSEE VALLEY AUTHORITY	SHAWNEE FOSSIL PLANT
946	KY0004049	I	DEPARTMENT OF ENERGY	PADUCAH GASEOUS DIFFUSION PLANT
949.5	IL0004081	I	LAFARGE CORPORATION	CEMENT GROUP/ JOPPA PLANT
952	IL0004171	I	ELECTRIC ENERGY, INC.	JOPPA GENERATING STATION
952	ILG580156	M	JOPPA SANITARY DISTRICT	JOPPA STP
952.5	IL0042773	I	OHIO POWER COMPANY	COOK COAL TERMINAL
973	IL0071439	I	CGB WATERFRONT SERVICES	CONSOLIDATED GRAIN & BAGE WATERFRONT SERVICES
973.9	IL0041891	M	CITY OF MOUND CITY	MOUND CITY STP
974	IL0077674	I	MOUNDS PRODUCTION COMPANY, LLC	MOUNDS PRODUCTION COMPANY, LLC
974.5	KY0100269	I	CGB MARINE SERVICES	CONSOLIDATED GRAIN & BAGE WATERFRONT SERVICES
978	IL0046698	I	GARDEN INN MOTEL AND CAMPGROUND	GARDEN INN WWTP
979	IL0023825	M	CITY OF CAIRO	CAIRO STP
980	IL0071102	I	CGB MARINE SERVICES	CONSOLIDATED GRAIN & BARGE WATERFRONT SERVICES

Appendix B: Monitoring Locations

Appendix B: Sampling Sites and Monitoring Locations for ORSANCO Programs

BIMONTHLY AND CLEAN METALS SAMPLING LOCATIONS				
Station Name	River	River Mile Point	Bordering States	STORET Code
New Cumberland	Ohio	54.4	OH - WV	OR926.6M
Pike Island	Ohio	84.2	OH - WV	OR896.8M
Hannibal	Ohio	126.4	OH - WV	OR8546M
Willow Island	Ohio	161.7	OH - WV	OR8192M
Belleville	Ohio	203.9	OH - WV	OR7771M
R.C. Byrd	Ohio	279.2	OH - WV	OR7018M
Greenup	Ohio	341	OH - KY	OR640M
Meldahl	Ohio	436.2	OH - KY	OR5448M
Anderson Ferry	Ohio	477.5	OH - KY	OR502.2M
Markland	Ohio	531.5	IN - KY	OR4495M
Louisville	Ohio	600.6	IN - KY	OR374.2M
West Point	Ohio	625.9	IN - KY	OR3551M
Cannelton	Ohio	720.7	IN - KY	OR2603M
Newburgh	Ohio	776.1	IN - KY	OR204.9M
J.T. Myers	Ohio	846	IN - KY	OR1350M
Smithland	Ohio	918.5	IL - KY	OR62.5M
Lock & Dam 52	Ohio	938.9	IL - KY	OR42.1M

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CONTACT RECREATION BACTERIA SAMPLING LOCATIONS		
Metropolitan Area	**Site**	**Location Description**
Pittsburgh	Site 1	Mile point 1.4L, above Brunot Island A left descending bank sample is collected by boat at this location
	Site 2	Mile point 1.4M, above Brunot Island A midstream sample is collected by boat at this location
	Site 3	Mile point 1.4R, above Brunot Island A right descending bank sample is collected by boat at this location
	Site 4	Mile point 4.3, above Davis and Neville Islands A midstream surface grab is collected by boat at this location
Wheeling	Site 1	Mile point 84.2, Ohio Fishing Pier at Pike Island A grab sample is collected from the park downstream of Pike Island Dam on the right descending bank
	Site 2	Milepoint 86.8, at the Wheeling Water Department Intake A grab sample is collected from the raw water intake
	Site 3	Mile point 91.4, below Wheeling Island A surface grab sample is collected from the right descending bank
	Site 4	Mile point 92.8, at the 48th Street Boat Club A surface grab sample is collected from the dock on the left descending bank
Huntington	Site 1	Mile point 305.1, at the Guyan Marina A surface grab sample is collected from a dock on the left descending bank
	Site 2	Mile point 308.1, at the Riverfront Public Launching Ramp A surface grab sample is collected from a dock on the left descending bank
	Site 3	Mile point 314.8, at the Kosmos Cement Company A bailer is lowered from a barge morring on the left descending bank.
Cincinnati	Site 1	Mile point 462.6, at the California Yacht Club A surface grab sample is collected from a dock on the right descending bank
	Site 2	Mile point 463.9, at AquaRamp Harbor and Marina A surface grab sample is collected from a dock on the left descending bank
	Site 3	Mile point 469.9, at Who-Dey Shuttle Dock A surface grab sample is collected from a dock on the left descending bank
	Site 4	Mile point 470.0, at the Serpentine Wall A surface grab sample is collected on the right descending bank
	Site 5	Mile point 477.5, at the Anderson Ferry A midstream surface grab sample is collected by boat at this locations
Louisville	Site 1	Mile point 594.0, at the Upper Louisville Water Company intake A grab sample is collected from the raw water intake at the water company
	Site 2	Mile point 608.7, at Jaycee's Boat Ramp A surface grab sample is collected from a dock on the right descending bank
	Site 3	Mile point 619.3 at the Greenwood Road Public Access Site A surface grab sample is collected from a dock on the left descending bank
Evansville	Site 1	Mile point 791.5, at the Evansville Water Plant A grab sample is collected from the raw water intake at the water plant
	Site 2	Mile point 793.7, at the Bristol-Myers parking lot A surface grab sample is collected on the righ descending bank.
	Site 3	Mile point 797.3 at the US Army Corps of Engineers ramp A surface grab sample is collected from a dock on the right descending bank

LONGITUDINAL BACTERIA SURVEY SAMPLING LOCATIONS				
Mile Point	River	State	Sample Type	Ohio River Confluence Mile Point
1.0	Allegheny		Trib	
1.0	Monongahela		Trib	
1.5	Ohio	PA	POTW	1.29
3.3	Ohio	PA	POTW	3.1
6.2			Emsworth L&D	
6.4	Ohio		Standard	
9.5	Ohio	PA	POTW	9.32
11.4	Ohio	PA	POTW	11.23
12.5	Ohio	PA	POTW	12.3
13.2			Dashields L&D	
14.4	Ohio	PA	POTW	14.2
17.7	Ohio	PA	POTW	17.5
20.5	Ohio	PA	POTW	20.3
20.8	Ohio	PA	POTW	20.6
21.8	Ohio	PA	POTW	21.6
22.9	Ohio	PA	POTW	22.7
25.5	Ohio	PA	POTW	25.3
1.0	Beaver		Trib	
25.8	Ohio	PA	POTW	25.6
26.4	Ohio	PA	POTW	26.2
28.3	Ohio	PA	POTW	28.1
31.7			Montgomery L&D	
32.9	Ohio		Standard	
37.6	Ohio	PA	POTW	37.4
41.2	Ohio		Standard	
44.8	Ohio	OH	POTW	44.6
48.7	Ohio	OH	POTW	47.6
52.5	Ohio		Standard	
54.4			New Cumberland L&D	
56.4	Ohio		Standard	
60.3	Ohio	OH	POTW	60.1
66.4	Ohio	WV	POTW	66.2
66.9	Ohio	OH	POTW	66.7
70.7	Ohio	WV	POTW	70.5
71.8	Ohio	OH	POTW	71.6
74.9	Ohio	WV	POTW	74.7
80.2	Ohio		Standard	
84.2			Pike Island L&D	
85.6	Ohio		Standard	
91.2	Ohio	WV	POTW	90.8
94.2	Ohio	OH	POTW	94
97.8	Ohio		POTW	97.6
102.6	Ohio	WV	POTW	102.4
107.7	Ohio		Standard	
113.0	Ohio		Standard	
118.3	Ohio		Standard	
123.7	Ohio	OH	WWTP	123.5
124.9	Ohio	WV	POTW	124.7
126.4			Hannibal L&D	

Appendix B: Sampling Sites and Monitoring Locations for ORSANCO Programs

LONGITUDINAL BACTERIA SURVEY SAMPLING LOCATIONS				
Mile Point	River	State	Sample Type	Outfall/ Confluence Mile Point
129.1	Ohio		Standard	
133.4	Ohio	WV	POTW	133.2
138.7	Ohio		Standard	
144.2	Ohio		Standard	
149.6	Ohio		Standard	
155.0	Ohio		Standard	
160.4	Ohio		Standard	
161.7			Willow Island L&D	
165.8	Ohio		Standard	
171.2	Ohio	OH	POTW	171
1.0	Muskingum		Trib	172.1
175.1	Ohio		Standard	
179.4	Ohio		Standard	
183.5	Ohio	WV	POTW	183.3
1.0	L. Kanawha		Trib	184.6
185.9	Ohio	OH	POTW	185.7
190.8	Ohio		Standard	
195.7	Ohio	WV	POTW	195.5
1.0	Hocking		Trib	199.3
200.7	Ohio		Standard	
203.9			Belleville L&D	
205.7	Ohio		Standard	
210.7	Ohio		Standard	
215.7	Ohio		Standard	
220.4	Ohio	WV	POTW	220.2
225.4	Ohio		Standard	
230.4	Ohio		Standard	
235.6	Ohio		Standard	
237.5			Racine L&D	
240.4	Ohio		Standard	
245.4	Ohio		Standard	
250.4	Ohio		Standard	
255.5	Ohio		Standard	
260.6	Ohio		Standard	
265.7	0.7	WV	POTW	265.7
1.3	Kanawha		Trib	265.7
269.8	Ohio	OH	POTW	269.8
275.2	Ohio		Standard	
279.2			R.C. Byrd L&D	
279.2			R.C. Byrd L&D	
280.8	Ohio		Standard	
285.9	Ohio		Standard	
291.4	Ohio		Standard	
296.6	Ohio		Standard	
302.0	Ohio		Standard	
1.0	Guyandotte		Trib	305.2
307.7	Ohio		Standard	
313.3	Ohio	OH/WV	POTW	313.1
0.5	Big Sandy	KY	POTW	317.1
1.0	Big Sandy		Trib	317.1

Appendix B: Sampling Sites and Monitoring Locations for ORSANCO Programs

LONGITUDINAL BACTERIA SURVEY SAMPLING LOCATIONS				
Mile Point	River	State	Sample Type	Outfall/ Confluence Mile Point
317.2	Ohio	OH	POTW	317
321.5	Ohio	KY	POTW	321.3
327.4	Ohio	OH	POTW	327.2
327.7	Ohio	KY	POTW	327.5
328.0	Ohio	KY	POTW	327.8
332.5	Ohio	KY	POTW	332.3
1.0	Little Sandy		Trib	336.3
338.1	Ohio		Standard	
341.0			Greenup L&D	
343.5	Ohio		Standard	
349.2	Ohio	OH	POTW	349
352.0	Ohio	OH	POTW	351.8
353.8	Ohio	OH	POTW	353.6
0.5	Scioto		Trib	356.5
359.3	Ohio		Standard	
364.6	Ohio		Standard	
369.8	Ohio		Standard	
375.0	Ohio		Standard	
380.4	Ohio		Standard	
385.4	Ohio		Standard	
390.6	Ohio		Standard	
395.0	Ohio		Standard	
400.4	Ohio		Standard	
405.8	Ohio		Standard	
411.4	Ohio	KY	POTW	411.18
416.4	Ohio		Standard	
421.6	Ohio		Standard	
426.4	Ohio		Standard	
431.4	Ohio		Standard	
436.2			Meldahl L&D	
436.8	Ohio		Standard	
441.5	Ohio		Standard	
446.5	Ohio		Standard	
451.6	Ohio	KY	POTW	451.4
455.3	Ohio	OH	POTW	455.1
460.0	Ohio		Standard	
1.0	Little Miami		Trib	464.1
465.0	Ohio	OH	POTW	464.5
468.7	Ohio		Standard	
1.0	Licking		Trib	470.2
0.4	Mill Creek		Trib	472.5
472.7	Ohio	OH	POTW	472.5
477.6	Ohio	KY	POTW	477.4
482.2	Ohio	OH	POTW	482
486.2	Ohio	OH	POTW	486
489.7	Ohio		Standard	
1.0	Great Miami		Trib	491.1
493.2	Ohio	IN	POTW	493
498.0	Ohio		Standard	
503.1	Ohio		Standard	

LONGITUDINAL BACTERIA SURVEY SAMPLING LOCATIONS				
Mile Point	River	State	Sample Type	Outfall/ Confluence Mile Point
508.3	Ohio		Standard	
513.4	Ohio		Standard	
518.5	Ohio		Standard	
523.4	Ohio		Standard	
528.4	Ohio		Standard	
531.7			Markland L&D	
533.2	Ohio		Standard	
538.5	Ohio		Standard	
543.5	Ohio		Standard	
1.5	Kentucky		Trib	545.8
548.3	Ohio		Standard	
553.6	Ohio		Standard	
558.8	Ohio	IN	POTW	558.6
562.7	Ohio	IN	POTW	562.5
567.6	Ohio		Standard	
572.5	Ohio		Standard	
577.4	Ohio		Standard	
582.9	Ohio		Standard	
587.8	Ohio		Standard	
592.2	Ohio	IN	POTW	592
597.1	Ohio		Standard	
602.2	Ohio	IN	POTW	602
604.3	Ohio	IN	POTW	604.1
607.5	Ohio	IN	POTW	606
606.8			McAlpine L&D	
609.7	Ohio	IN	POTW	609.5
612.2	Ohio	KY	POTW	612
617.6	Ohio		Standard	
623.1	Ohio	KY	POTW	622.9
628.1	Ohio		Standard	
1.5	Salt		Trib	
630.0	Ohio		Standard	
631.6	Ohio	KY	POTW	631.4
637.6	Ohio	KY	POTW	637.4
643.1	Ohio	KY	POTW	642.9
648.9	Ohio		Standard	
654.0	Ohio		Standard	
659.0	Ohio		Standard	
664.2	Ohio	IN	POTW	664
669.1	Ohio		Standard	
674.5	Ohio		Standard	
680.4	Ohio		Standard	
685.6	Ohio		Standard	
690.7	Ohio		Standard	
695.6	Ohio		Standard	
700.9	Ohio		Standard	
706.2	Ohio		Standard	
711.5	Ohio	KY	Standard	711.3
717.4	Ohio		Standard	
720.7			Cannelton L&D	

LONGITUDINAL BACTERIA SURVEY SAMPLING LOCATIONS				
Mile Point	River	State	Sample Type	Outfall/ Confluence Mile Point
721.5	Ohio		Standard	
726.8	Ohio	IN	POTW	726.6
732.5	Ohio		Standard	
738.8	Ohio	KY	POTW	738.6
742.4	Ohio	IN	POTW	742.2
746.4	Ohio	IN	POTW	746.2
750.6	Ohio		Standard	
754.8	Ohio	KY	POTW	754.6
758.0	Ohio	KY	POTW	757.8
763.2	Ohio		Standard	
769.1	Ohio		Standard	
773.6	Ohio		Standard	
776.1			Newburgh L&D	
778.2	Ohio	IN	POTW	778
782.8	Ohio		Standard	
2.0	Green		Maj Trib	784.2
787.0	Ohio		Standard	
792.7	Ohio	IN	POTW	792.5
794.2	Ohio	IN	POTW	794
800.0	Ohio		Standard	
805.8	Ohio	KY	POTW	805.6
811.3	Ohio		Standard	
817.0	Ohio		Standard	
823.2	Ohio		Standard	
829.5	Ohio	IN	POTW	829.3
832.2	Ohio		Standard	
837.2	Ohio		Standard	
842.3	Ohio	KY	POTW	842.1
846.0			J.T. Meyers	
846.5	Ohio		Standard	
2.0	Wabash		Maj Trib	848
851.3	Ohio		Standard	
855.5	Ohio		Standard	
859.7	Ohio	IL	POTW	859.5
864.4	Ohio		Standard	
1.4	Saline		Maj Trib	867.3
869.8	Ohio		Standard	
1.2	Tradewater		Maj Trib	873.5
875.7	Ohio		Standard	
880.7	Ohio	IL	POTW	880.5
885.0	Ohio		Standard	
889.2	Ohio	IL	POTW	889
891.7	Ohio	IL	POTW	891.5
897.5	Ohio		Standard	
903.2	Ohio	IL	POTW	903
908.0	Ohio		Standard	
912.6	Ohio		Standard	
917.6	Ohio		Standard	
918.5			Smithland L&D	
3.3	Cumberland		Maj Trib	920.4

Appendix B: Sampling Sites and Monitoring Locations for ORSANCO Programs

LONGITUDINAL BACTERIA SURVEY SAMPLING LOCATIONS				
Mile Point	River	State	Sample Type	Outfall/ Confluence Mile Point
923.4	Ohio		Standard	
927.9	Ohio		Standard	
932.2	Ohio		Standard	
4.3	Tennessee		Maj Trib	934.5
936.2	Ohio	KY	POTW	936
937.7	Ohio	IL	POTW	937.5
938.9			L&D 52	
940.9	Ohio		Standard	
944.2	Ohio	IL	POTW	944
947.5	Ohio		Standard	
952.2	Ohio	IL	POTW	952
957.7	Ohio		Standard	
962.6			L&D 53	
963.0	Ohio		Standard	
969.2	Ohio		Standard	
974.1	Ohio	IL	POTW	973.9
979.2	Ohio	IL	POTW	979

Appendix B: Longitudional Sampling Locations

Mile Point	River
1.0	Monongahela
1.0	Allegheny
1.5	Ohio
3.3	Ohio
6.2	Emsworth L&D
6.4	Ohio
9.5	Ohio
11.4	Ohio
12.5	Ohio
13.2	Dashields L&D
14.4	Ohio
17.7	Ohio
20.5	Ohio
20.8	Ohio
21.8	Ohio
22.9	Ohio
25.5	Ohio
1.0	Beaver
25.8	Ohio
26.4	Ohio
28.3	Ohio
31.7	Montgomery L&D
32.9	Ohio
37.6	Ohio
41.2	Ohio
44.8	Ohio
48.7	Ohio
52.5	Ohio
54.4	New Cumberland L&D
56.4	Ohio
60.3	Ohio
66.4	Ohio
68.2	Ohio
70.7	Ohio
71.8	Ohio
74.9	Ohio
80.2	Ohio
84.2	Pike Island L&D
85.6	Ohio
91.2	Ohio
94.2	Ohio
97.8	Ohio
102.6	Ohio
107.7	Ohio
113	Ohio
118.3	Ohio
123.7	Ohio
124.9	Ohio
126.4	Hannibal L&D
129.1	Ohio
133.4	Ohio
138.7	Ohio
144.2	Ohio
149.6	Ohio
155	Ohio
160.4	Ohio
161.7	Willow Island L&D
165.8	Ohio
171.2	Ohio
1	Muskingum
175.1	Ohio
179.4	Ohio
183.5	Ohio
1	L. Kanawha
185.9	Ohio
190.8	Ohio
195.7	Ohio
1	Hocking
200.7	Ohio
203.9	Belleville L&D

Mile Point	River
205.7	Ohio
210.7	Ohio
215.7	Ohio
220.4	Ohio
225.4	Ohio
230.4	Ohio
235.6	Ohio
237.5	Racine L&D
240.4	Ohio
245.4	Ohio
250.4	Ohio
255.5	Ohio
260.6	Ohio
265.7	0.7
1.3	Kanawha
269.8	Ohio
275.2	Ohio
279.2	R.C. Byrd L&D
280.8	Ohio
285.9	Ohio
291.4	Ohio
296.6	Ohio
279.2	R.C. Byrd L&D
280.8	Ohio
285.9	Ohio
291.4	Ohio
296.6	Ohio
302.0	Ohio
1.0	Guyandotte
307.7	Ohio
313.3	Ohio
0.5	Big Sandy
1.0	Big Sandy
317.2	Ohio
321.5	Ohio
327.4	Ohio
327.7	Ohio
328.0	Ohio
332.5	Ohio
1.0	Little Sandy
338.1	Ohio
341.0	Greenup L&D
343.5	Ohio
349.2	Ohio
352.0	Ohio
353.8	Ohio
0.5	Scioto
359.3	Ohio
364.6	Ohio
369.8	Ohio
375.0	Ohio
380.4	Ohio
385.4	Ohio
390.6	Ohio
395.0	Ohio
400.4	Ohio
405.8	Ohio
411.4	Ohio
416.4	Ohio
421.6	Ohio
426.4	Ohio
431.4	Ohio
436.2	Meldahl L&D
436.8	Ohio
441.5	Ohio
446.5	Ohio
451.6	Ohio
455.3	Ohio
460.0	Ohio
1.0	Little Miami

Mile Point	River
465.4	Ohio
468.7	Ohio
1.0	Licking
0.3	Mill Creek
472.7	Ohio
477.6	Ohio
482.2	Ohio
486.2	Ohio
489.7	Ohio
1.0	Great Miami
493.2	Ohio
498.0	Ohio
503.1	Ohio
508.3	Ohio
513.4	Ohio
518.5	Ohio
523.4	Ohio
528.4	Ohio
531.7	Markland L&D
533.2	Ohio
538.5	Ohio
543.5	Ohio
1.5	Kentucky
548.3	Ohio
553.6	Ohio
558.8	Ohio
562.7	Ohio
567.6	Ohio
572.5	Ohio
577.4	Ohio
582.9	Ohio
587.8	Ohio
592.2	Ohio
597.1	Ohio
602.2	Ohio
604.3	Ohio
606.8	McAlpine L&D
607.5	Ohio
609.7	Ohio
612.2	Ohio
617.6	Ohio
623.1	Ohio
628.1	Ohio
1.5	Salt
631.6	Ohio
637.6	Ohio
643.1	Ohio
648.9	Ohio
607.5	Ohio
609.7	Ohio
612.2	Ohio
617.6	Ohio
623.1	Ohio
628.1	Ohio
1.5	Salt
631.6	Ohio
637.6	Ohio
643.1	Ohio
648.9	Ohio
654.0	Ohio
659.2	Ohio
664.2	Ohio
669.1	Ohio
674.5	Ohio
680.4	Ohio
684.9	Ohio
690.7	Ohio
695.6	Ohio
700.9	Ohio
706.2	Ohio

Mile Point	River
711.5	Ohio
717.2	Ohio
720.7	Cannelton L&D
721.5	Ohio
727.0	Ohio
732.5	Ohio
739.2	Ohio
742.4	Ohio
746.4	Ohio
750.6	Ohio
754.8	Ohio
758.0	Ohio
763.2	Ohio
769.1	Ohio
773.6	Ohio
776.1	Newburgh L&D
778.2	Ohio
782.8	Ohio
2.3	Green
787.0	Ohio
792.7	Ohio
794.2	Ohio
799.5	Ohio
805.8	Ohio
811.3	Ohio
817.0	Ohio
823.2	Ohio
829.5	Ohio
832.2	Ohio
837.2	Ohio
842.3	Ohio
846.0	J.T. Meyers
846.5	Ohio
2.0	Wabash
851.3	Ohio
855.5	Ohio
859.7	Ohio
864.4	Ohio
1.4	Saline
869.8	Ohio
1.2	Tradewater
875.7	Ohio
880.7	Ohio
885.0	Ohio
889.2	Ohio
891.7	Ohio
897.5	Ohio
903.2	Ohio
908.0	Ohio
912.6	Ohio
917.6	Ohio
918.5	Smithland L&D
3.3	Cumberland
923.4	Ohio
927.9	Ohio
932.2	Ohio
4.3	Tennessee
936.2	Ohio
937.7	Ohio
938.9	L&D 52
940.9	Ohio
944.2	Ohio
947.5	Ohio
952.2	Ohio
957.7	Ohio
962.6	L&D 53
963.0	Ohio
969.2	Ohio
974.1	Ohio
979.2	Ohio

Appendix C:
Clean Metals Sampling Results

Appendix C: Total Recoverable Metals and Dissolved Metals Criteria

Total Metals			
	Human Health Protection	Aquatic Life Protection	
Constituent	Criteria (ug/L)	Acute (ug/L)	Chronic (ug/L)
Arsenic	10		
Antimony	5.6		
Barium	1000		
Mercury	0.012		
Selenium	170	20	5
Thallium	1.7		
Copper	1300		
Nickel	610		
Silver	50		
Zinc	7400		

Appendix C: Total Recoverable Metals and Dissolved Metals Criteria

Dissolved Metals				
	Aquatic Life Protection			
Constituent	Acute (ug/L)	Acute Dissolved Criterion Conversion Factor	Chronic (ug/L)	Chronic Dissolved Criterion Conversion factor
Arsenic	340		150	
Mercury	1.4		0.77	
Cadmium	$e^{(1.28(\ln Hard)-3.6867)}$	1.136672-[ln(Hard)*0.041838]	$e^{(0.7852(\ln Hard)-2.715)}$	1.101672-[ln(Hard)*0.041838]
Chromium	16		11	
Copper	$e^{(0.9422(\ln Hard)-1.7)}$	0.96	$e^{(0.8545(\ln Hard)-1.702)}$	0.96
Lead	$e^{(1.273(\ln Hard)-1.460)}$	1.46203-[ln(Hard)*0.145712]	$e^{(1.273(\ln Hard)-4.705)}$	1.46203-[ln(Hard)*0.145712]
Nickel	$e^{(0.846(\ln Hard)+2.255)}$	0.998	$e^{(0.846(\ln Hard)+0.0584)}$	0.997
Silver	$e^{(1.72(\ln Hard)-6.52)}$	0.85		
Zinc	$e^{(0.8473(\ln Hard)+0.884)}$	0.978	$e^{(0.8473(\ln Hard)+0.884)}$	0.986

Appendix C: Summary of Total Recoverable Metals Results July 2005 - July 2007

Total Recoverable Metals Station Name		Data	Ag (ug/L)	Al (ug/L)	As (ug/L)	Ba (ug/L)	Ca (mg/L)	Cd (ug/L)	Cr (ug/L)	Cu (ug/L)	Fe (ug/L)	Hg (ng/L)	Mg (mg/L)	Mn (ug/L)	Ni (ug/L)	Pb (ug/L)	Sb (ug/L)	Se (ug/L)	Tl (ug/L)	Zn (ug/L)
New Cumberland	54.4	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	2	12	13	13	8	13	13	13	12	0	7	0	13
		Maximum		1022	1.27	54.7	44.8	0.13	2.53	8.37	2271	8.5	11.9	282.1	6.3	3.18		1.09		20.4
		Minimum		15	0.11	34.7	20.8	0.1	0.45	1.56	60	1.7	5.3	14.5	1.6	0.21		0.53		1.5
		Mean		272	0.66	41.4	30.2	0.12	1.28	4.18	607	3.7	8.1	107.1	3.2	0.91		0.73		8.2
		Std. Dev.		301	0.30	5.6	7.2	0.02	0.61	1.89	680	2.8	2.2	76.4	1.6	0.95		0.23		5.6
Pike Island	84.2	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	1	13	13	13	8	13	13	13	13	0	6	2	13
		Maximum		1217	1.33	56.9	47.0	0.2	2.94	5.24	3232	15.1	12.7	355.4	9.7	4.65		1.33	0.14	40.4
		Minimum		67	0.15	35.4	20.3	0.2	0.61	0.78	97	1.7	5.2	40.3	1.9	0.15		0.52	0.11	3.4
		Mean		332	0.66	43.0	31.3	0.20	1.47	2.60	796	5.7	8.3	128.8	3.8	1.13		0.81	0.13	10.0
		Std. Dev.		394	0.35	6.8	8.6	0.00	0.72	1.16	1009	4.6	2.4	111.0	2.4	1.41		0.29	0.02	10.9
Hannibal	126.4	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	12	13	13	1	13	13	13	11	13	13	13	13	0	10	1	13
		Maximum		1346	1.19	57.9	49.4	0.13	2.48	4.66	2925	9.4	13.6	345.5	8.3	3.53		1.08	0.1	24.3
		Minimum		52	0.27	35.1	22.2	0.13	0.61	1.33	81	1.5	5.9	24.8	1.7	0.18		0.51	0.1	2.0
		Mean		272	0.66	43.3	33.5	0.13	1.33	2.57	588	3.6	9.0	99.5	3.2	0.76		0.75	0.10	6.2
		Std. Dev.		352	0.29	7.0	7.2	0.00	0.54	1.05	763	2.6	2.3	87.9	1.7	0.91		0.20	0.00	5.9
Willow Island	161.7	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	12	13	13	1	13	13	13	8	13	13	13	13	0	10	0	13
		Maximum		729	0.99	61.2	47.7	0.12	2.41	3.34	1382	8.6	14.6	228.7	6.6	1.94		1.1		16.7
		Minimum		46	0.33	34.6	20.9	0.12	0.39	1.38	86	1.7	5.7	17.7	1.7	0.1		0.51		2.3
		Mean		249	0.65	43.6	33.8	0.12	1.28	2.26	509	4.0	9.4	86.6	3.0	0.61		0.78		6.1
		Std. Dev.		231	0.25	7.2	7.9	0.00	0.49	0.68	464	2.4	2.8	65.3	1.4	0.54		0.20		3.9
Belleville	203.9	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	1	13	13	13	9	13	13	13	12	0	11	0	13
		Maximum		888	1.2	58.9	52.8	0.12	2.45	3.45	1819	5.9	15.4	202.0	5.2	2.08		1.18		20.5
		Minimum		34	0.28	35.1	25.8	0.12	0.68	0.89	55	2.0	7.1	17.3	1.8	0.17		0.52		1.6
		Mean		273	0.83	43.3	38.6	0.12	1.50	2.19	534	3.4	11.3	78.9	2.8	0.68		0.72		5.6
		Std. Dev.		258	0.29	6.3	7.0	0.00	0.56	0.66	514	1.5	2.6	56.2	1.0	0.58		0.23		5.1
R.C. Byrd	279.2	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	13	13	13	11	13	13	13	13	0	8	0	13
		Maximum		855	1.25	58.6	42.3		2.21	3.11	1408	13.0	13.1	352.9	3.8	1.57		0.92		10.6
		Minimum		146	0.2	33.8	20.1		0.61	1.04	350	1.6	6.2	52.7	1.7	0.4		0.51		3.1
		Mean		404	0.72	43.9	30.0		1.45	2.20	724	3.9	9.1	118.1	2.5	0.84		0.70		5.8
		Std. Dev.		232	0.32	7.7	6.9		0.42	0.64	355	3.1	2.5	80.3	0.6	0.39		0.15		2.3
Greenup	341.0	# Samples	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		# Detects	0	12	12	12	12	0	12	12	12	8	12	12	12	11	0	9	0	12
		Maximum		1078	1.16	58.2	40.9		2.86	3.66	2103	7.0	13.6	217.0	9.5	2.6		1.01		49.3
		Minimum		59	0.11	35.7	22.4		0.4	0.74	111	1.5	7.3	27.5	1.4	0.2		0.53		1.7
		Mean		291	0.63	43.4	31.6		1.46	2.12	559	3.5	10.4	72.0	3.0	0.70		0.80		8.9
		Std. Dev.		292	0.31	7.9	6.1		0.67	0.80	565	2.2	2.0	54.3	2.3	0.73		0.18		13.5
Meldahl	436.2	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	12	13	13	1	13	13	13	10	13	13	13	13	0	9	0	13
		Maximum		818	1.24	58.8	42.9	0.12	2.04	3.64	1507	5.9	14.7	293.1	4.2	1.65		1.11		11.3
		Minimum		59	0.31	35.8	26.6	0.12	0.82	0.72	99	1.6	9.0	23.0	1.2	0.22		0.51		2.5
		Mean		372	0.86	44.6	33.3	0.12	1.48	2.29	663	2.9	11.0	83.3	2.7	0.88		0.82		6.3
		Std. Dev.		248	0.28	8.5	5.3	0.00	0.37	0.85	435	1.3	2.0	72.7	1.0	0.53		0.19		3.1
Anderson Ferry	477.5	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	1	13	12	13	13	4	13	13	13	9	13	13	13	13	0	10	2	13
		Maximum	0.11	5117	2.97	114.5	45.2	0.44	9.85	15.76	11817	33.9	14.7	1132.1	22.3	18.96		1.1	0.17	90.1
		Minimum	0.11	104	0.48	37.2	27.0	0.12	0.76	0.85	181	1.6	8.5	35.3	1.4	0.22		0.54	0.16	1.8
		Mean	0.11	908	1.18	52.6	34.2	0.22	2.40	3.89	1839	9.5	11.2	177.4	4.8	2.90		0.80	0.17	15.0
		Std. Dev.	0	1363	0.67	19.7	4.9	0.15	2.37	3.80	3149	10.2	2.0	295.0	5.6	5.17		0.19	0.01	23.6

Appendix C: Summary of Total Recoverable Metals Results July 2005 - July 2007

Total Recoverable Metals Station Name		Data	Ag (ug/L)	Al (ug/L)	As (ug/L)	Ba (ug/L)	Ca (mg/L)	Cd (ug/L)	Cr (ug/L)	Cu (ug/L)	Fe (ug/L)	Hg (ng/L)	Mg (mg/L)	Mn (ug/L)	Ni (ug/L)	Pb (ug/L)	Sb (ug/L)	Se (ug/L)	Tl (ug/L)	Zn (ug/L)
Markland	531.5	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	1	13	13	13	8	13	13	13	12	0	10	0	13
		Maximum		1512	1.67	57.9	41.8	0.14	3	4.62	2917	8.6	15.9	238.0	6.6	3.9		0.97		20.7
		Minimum		54	0.17	38.6	30.7	0.14	0.81	0.94	78	2.0	8.9	13.4	1.1	0.18		0.6		1.4
		Mean		501	0.93	46.8	36.3	0.14	1.66	2.58	900	4.7	12.1	83.5	2.9	1.19		0.79		7.3
		Std. Dev.		494	0.36	6.2	3.8	0.00	0.58	1.03	932	2.3	2.0	71.6	1.6	1.26		0.11		6.1
Louisville	600.6	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	1	13	13	13	7	13	13	13	13	0	8	1	13
		Maximum		3623	2.04	82.9	44.4	0.17	6.13	9.28	7294	28.5	15.6	639.7	13.1	9.28		1.18	0.12	46.2
		Minimum		93	0.3	36.1	31.9	0.17	0.69	0.85	176	2.6	9.5	32.6	1.1	0.25		0.52	0.12	2.0
		Mean		765	1.05	49.2	37.5	0.17	1.91	2.98	1404	8.2	12.2	131.8	3.6	1.62		0.80	0.12	9.0
		Std. Dev.		987	0.44	13.8	3.5	0.00	1.40	2.07	1972	9.3	1.9	186.2	3.1	2.47		0.21	0.00	11.8
West Point	625.9	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	6	13	13	13	13	13	13	13	13	0	11	2	13
		Maximum		3827	2.08	79.5	53.1	0.23	6.04	9.03	7028	59.2	17.2	610.5	12.8	8.94		3.14	0.13	45.7
		Minimum		98	0.64	40.0	32.0	0.12	0.77	2.16	147	3.7	9.0	45.1	2.6	0.29		0.65	0.11	2.8
		Mean		924	1.20	51.7	42.8	0.16	2.16	4.22	1728	23.4	13.4	164.4	4.6	2.06		1.85	0.12	11.4
		Std. Dev.		1104	0.43	10.5	6.3	0.04	1.47	2.04	2139	13.7	2.7	162.8	3.2	2.65		0.88	0.01	12.2
Cannelton	720.7	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	3	13	13	13	8	13	13	13	13	0	10	2	13
		Maximum		4678	2.47	95.1	60.6	0.25	7.49	10.88	9319	26.4	16.0	718.8	15.8	9.93		1.03	0.16	47.5
		Minimum		62	0.25	34.3	31.6	0.17	0.52	0.68	96	1.7	9.6	18.5	0.7	0.12		0.5	0.11	1.3
		Mean		1023	1.13	52.6	39.0	0.20	2.49	3.67	1951	11.3	11.7	180.2	4.5	2.39		0.76	0.14	12.1
		Std. Dev.		1522	0.65	18.3	7.5	0.04	2.21	3.46	3123	10.5	2.1	269.9	5.2	3.72		0.17	0.04	17.1
Newburgh	776.1	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	2	13	13	13	11	13	13	13	13	0	10	1	13
		Maximum		3198	2.15	76.2	44.6	0.22	6.02	9.32	6125	25.6	15.1	572.6	12.8	8.38		0.96	0.12	39.6
		Minimum		46	0.28	35.4	34.3	0.11	0.61	0.89	67	1.6	9.8	20.8	1.1	0.12		0.56	0.12	1.5
		Mean		827	1.11	49.9	38.4	0.17	2.21	3.22	1539	6.5	12.3	128.1	3.9	1.77		0.76	0.12	10.0
		Std. Dev.		1075	0.53	12.3	3.4	0.08	1.55	2.36	2153	7.7	1.7	170.5	3.5	2.59		0.12	0.00	12.6
J.T. Myers	846.0	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	3	13	13	13	11	13	13	13	13	0	11	2	13
		Maximum		3255	1.62	73.4	44.4	0.23	5.7	9.81	6966	31.2	15.7	570.0	13.1	8.39		1	0.14	35.1
		Minimum		93	0.29	34.9	32.7	0.11	0.67	0.84	153	1.8	9.6	26.6	1.0	0.23		0.52	0.12	1.7
		Mean		898	1.10	49.8	38.4	0.16	2.20	3.43	1695	8.0	12.0	142.2	4.1	2.05		0.76	0.13	10.4
		Std. Dev.		1031	0.45	11.4	3.4	0.06	1.49	2.55	2189	9.4	1.8	172.7	3.6	2.71		0.16	0.01	11.7
Smithland	918.5	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	2	13	13	13	8	13	13	13	13	0	10	0	13
		Maximum		3245	2.17	71.3	48.8	0.22	5.19	8.24	5701	33.9	16.6	406.9	11.4	6.62		1.36		30.3
		Minimum		101	0.25	38.7	36.0	0.11	0.51	0.9	160	1.8	11.2	25.3	1.0	0.16		0.52		1.4
		Mean		861	1.15	48.7	42.8	0.17	1.98	2.81	1405	12.2	13.7	95.7	3.3	1.44		0.76		7.9
		Std. Dev.		1074	0.51	9.9	4.4	0.08	1.40	2.02	1874	12.2	1.9	115.4	3.0	2.04		0.25		9.4
L&D 52	938.9	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	4	13	13	13	12	13	13	13	13	0	10	2	13
		Maximum		4496	2.56	73.9	50.4	0.22	5.86	8.19	8445	19.1	16.7	493.7	11.2	7.24		0.87	0.16	82.8
		Minimum		193	0.37	37.5	33.2	0.11	0.69	1.1	336	1.6	11.0	35.6	1.6	0.33		0.5	0.11	2.3
		Mean		1338	1.34	52.2	41.6	0.17	2.53	3.52	2342	6.6	13.3	157.0	4.3	2.60		0.71	0.14	18.2
		Std. Dev.		1363	0.56	11.6	5.4	0.06	1.68	2.31	2562	6.6	1.9	144.3	3.3	2.51		0.11	0.04	22.9

Dissolved Metals Station Name	River Mile	Data	Ag (ug/L)	Al (ug/L)	As (ug/L)	Ba (ug/L)	Ca (mg/L)	Cd (ug/L)	Cr (ug/L)	Cu (ug/L)	Fe (ug/L)	Hg (ng/L)	Mg (mg/L)	Mn (ug/L)	Ni (ug/L)	Pb (ug/L)	Sb (ug/L)	Se (ug/L)	Tl (ug/L)	Zn (ug/L)
New Cumberland	54.4	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	12	13	2	1	13	13	13	0	0	5	0	13
		Maximum		28.71	0.85	51.5	39.5		1.12	5.92	61.1	1.91	11.9	107.7	3.85			0.96		4.94
		Minimum		9.12	0.15	30.4	16.3		0.1	1.4	50.6	1.91	4.2	0.3	1.38			0.53		1.38
		Mean		14.66	0.51	35.6	27.3		0.51	2.83	55.9	1.91	7.4	41.6	2.31			0.74		2.57
		Std. Dev.		4.85	0.20	6.3	7.1		0.29	1.38	7.4	0.00	2.4	40.7	0.60			0.20		0.96
Pike Island	84.2	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	10	13	0	1	13	13	13	0	0	9	1	11
		Maximum		30.32	0.92	54.0	43.4		1.09	2.66		3.34	12.5	114.0	3.67			1.03	0.11	3.53
		Minimum		8.6	0.18	28.0	17.8		0.15	0.6		3.34	4.6	0.3	1.41			0.51	0.11	1.08
		Mean		14.78	0.50	35.9	29.4		0.56	1.56		3.34	7.8	41.0	2.24			0.72	0.11	1.85
		Std. Dev.		5.28	0.22	7.8	8.3		0.33	0.65		0.00	2.6	40.6	0.66			0.20	0.00	0.76
Hannibal	126.4	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	11	13	1	1	13	13	13	0	0	9	0	10
		Maximum		29.91	0.78	55.3	42.9		1.57	4.31	61.9	5.27	13.4	128.5	3.86			1.08		2.6
		Minimum		9.85	0.2	27.3	21.2		0.1	0.64	61.9	5.27	5.2	0.5	1.4			0.53		1.03
		Mean		15.23	0.52	37.1	31.4		0.56	1.82	61.9	5.27	8.6	39.1	2.28			0.79		1.62
		Std. Dev.		5.30	0.20	8.1	7.1		0.41	1.03	0.0	0.00	2.6	47.7	0.72			0.19		0.50
Willow Island	161.7	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	11	13	1	1	13	13	13	1	0	9	1	10
		Maximum		29.54	0.81	57.9	42.8		1.77	5.09	50.5	2.31	14.5	109.1	3.82	0.11		1.00	0.10	3.26
		Minimum		9.79	0.22	31.1	20.4		0.11	0.77	50.5	2.31	5.2	0.5	1.31	0.11		0.53	0.10	1.06
		Mean		14.06	0.53	39.1	32.6		0.39	1.81	50.5	2.31	9.3	36.6	2.30	0.11		0.74	0.10	1.82
		Std. Dev.		5.31	0.20	7.8	7.2		0.49	1.11	0.0	0.00	3.0	42.3	0.72	0.00		0.19	0.00	0.63
Belleville	203.9	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	11	13	3	4	13	13	13	3	0	7	0	9
		Maximum		18.64	1	48.7	46.5		1.44	2.64	58.2	3.40	15.8	72.9	2.92	0.13		1.00		2.67
		Minimum		5.77	0.25	30.8	25.1		0.11	0.65	57.0	1.73	6.6	0.7	1.36	0.1		0.60		1.14
		Mean		10.54	0.62	37.0	35.4		0.62	1.60	57.6	2.42	10.5	22.0	2.04	0.11		0.74		1.79
		Std. Dev.		3.85	0.25	5.1	5.4		0.42	0.54	0.6	0.76	2.6	26.2	0.46	0.02		0.15		0.54
R.C. Byrd	279.2	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	10	13	4	4	13	13	13	1	0	6	0	7
		Maximum		12.69	0.96	54.7	38.9		1.32	2.09	71.0	5.40	14.6	261.8	2.19	0.16		1.07		1.95
		Minimum		5.2	0.18	28.3	21.5		0.2	0.48	52.1	2.12	5.6	9.7	1.1	0.16		0.50		1.08
		Mean		8.83	0.53	37.0	28.3		0.53	1.31	61.3	3.22	8.8	60.5	1.56	0.16		0.71		1.46
		Std. Dev.		2.22	0.27	7.6	5.6		0.37	0.50	7.7	1.53	3.0	65.4	0.36	0.00		0.21		0.33
Greenup	341.0	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	6	13	1	2	13	13	13	0	0	6	0	8
		Maximum		13.67	0.78	52.7	51.2		1.96	2.7	53.0	3.50	14.2	42.2	7.62			0.95		4.21
		Minimum		4.74	0.15	27.9	21.9		0.17	0.4	53.0	2.64	6.7	2.6	0.97			0.55		1.03
		Mean		8.61	0.47	35.6	29.8		0.60	1.48	53.0	3.07	9.7	16.4	1.99			0.79		1.96
		Std. Dev.		2.53	0.23	8.2	8.0		0.68	0.68	0.0	0.61	2.5	14.0	1.74			0.14		1.10
Meldahl	436.2	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	10	13	2	0	13	13	13	0	0	7	0	6
		Maximum		10.21	0.96	52.7	49.6		1.73	2.37	71.0		15.5	19.9	2.18			0.88		6.89
		Minimum		3.2	0.2	26.0	25.5		0.11	0.44	52.3		7.5	0.4	0.86			0.64		1.08
		Mean		7.26	0.57	36.4	31.0		0.40	1.42	61.7		10.1	5.2	1.49			0.77		2.50
		Std. Dev.		1.83	0.26	8.0	6.3		0.50	0.58	13.2		2.6	5.3	0.43			0.10		2.18
Anderson Ferry	477.5	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	12	13	1	1	13	13	13	1	0	7	1	8
		Maximum		17.77	1.04	55.1	61.5		0.94	1.88	59.3	2.30	14.5	127.7	2.45	0.11		0.90	0.10	3.01
		Minimum		5.03	0.17	27.4	25.5		0.12	0.49	59.3	2.30	7.3	2.9	0.92	0.11		0.62	0.10	1.04
		Mean		9.85	0.64	37.7	34.6		0.34	1.39	59.3	2.30	10.6	24.0	1.58	0.11		0.70	0.10	1.99
		Std. Dev.		3.64	0.27	8.7	9.6		0.27	0.43	0.0	0.00	2.5	35.2	0.45	0.00		0.10	0.00	0.69

Dissolved Metals Station Name	River Mile	Data	Ag (ug/L)	Al (ug/L)	As (ug/L)	Ba (ug/L)	Ca (mg/L)	Cd (ug/L)	Cr (ug/L)	Cu (ug/L)	Fe (ug/L)	Hg (ng/L)	Mg (mg/L)	Mn (ug/L)	Ni (ug/L)	Pb (ug/L)	Sb (ug/L)	Se (ug/L)	Tl (ug/L)	Zn (ug/L)
Markland	531.5	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	12	13	1	2	13	13	13	1	0	8	0	10
		Maximum		15.99	1.3	49.1	44.5		0.55	2.86	67.9	2.45	16.7	32.6	2.55	0.13		0.87		13.69
		Minimum		4.76	0.28	26.7	26.1		0.1	0.53	67.9	1.85	7.4	0.4	0.81	0.13		0.51		1.08
		Mean		8.48	0.65	36.2	32.2		0.26	1.53	67.9	2.15	11.3	7.5	1.46	0.13		0.72		2.79
		Std. Dev.		3.47	0.31	6.8	5.2		0.13	0.57	0.0	0.42	2.8	9.4	0.49	0.00		0.13		3.85
Louisville	600.6	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	9	13	1	0	13	13	13	1	0	7	1	8
		Maximum		14.62	1.16	58.4	55.1		2.9	2.31	73.3		18.7	203.6	3.31	0.14		0.95	0.11	3.24
		Minimum		4.32	0.26	25.3	28.4		0.13	0.48	73.3		8.4	0.7	0.76	0.14		0.56	0.11	1
		Mean		8.19	0.72	38.6	36.9		0.65	1.48	73.3		12.2	27.0	1.51	0.14		0.77	0.11	1.65
		Std. Dev.		3.11	0.29	9.2	6.6		0.93	0.56	0.0		3.0	53.6	0.61	0.00		0.15	0.00	0.82
West Point	625.9	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	3	11	13	1	9	13	13	13	2	0	11	4	11
		Maximum		18.55	1.35	58.2	62.3	0.15	1.05	5.1	67.4	9.23	21.8	91.0	4.05	0.13		2.91	0.11	4.8
		Minimum		5.37	0.32	23.0	24.6	0.11	0.12	0.81	67.4	1.55	6.9	3.7	1.24	0.12		0.62	0.10	1.11
		Mean		9.71	0.82	39.1	41.0	0.13	0.36	2.16	67.4	3.40	12.9	30.4	2.14	0.13		1.76	0.11	2.34
		Std. Dev.		3.77	0.34	9.6	8.8	0.02	0.28	1.37	0.0	2.34	4.0	25.0	0.82	0.01		0.82	0.01	1.23
Cannelton	720.7	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	8	13	1	0	13	13	13	0	0	8	0	5
		Maximum		10.67	1.13	54.2	57.3		1.32	2.09	51.5		19.0	18.9	3.33			1.10		8.44
		Minimum		4.33	0.28	31.4	29.9		0.1	0.69	51.5		7.3	0.3	0.8			0.52		1.18
		Mean		7.36	0.69	38.0	36.0		0.56	1.39	51.5		11.4	5.5	1.50			0.78		2.94
		Std. Dev.		1.81	0.29	8.3	6.8		0.50	0.38	0.0		3.1	5.3	0.63			0.21		3.11
Newburgh	776.1	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	1	10	13	1	2	13	13	13	1	0	10	0	7
		Maximum		11.67	1.2	54.8	56.0	0.1	1.52	2.36	68.9	2.42	21.9	21.6	3.68	0.1		1.11		3.91
		Minimum		4.9	0.34	26.6	26.4	0.1	0.12	0.66	68.9	1.74	7.1	0.3	0.88	0.1		0.52		1.02
		Mean		7.12	0.75	38.9	37.4	0.10	0.37	1.53	68.9	2.08	12.3	6.5	1.64	0.10		0.73		1.74
		Std. Dev.		1.97	0.29	8.9	6.7	0.00	0.42	0.50	0.0	0.48	3.5	6.9	0.72	0.00		0.20		1.04
J.T. Myers	846.0	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	10	13	0	2	13	13	13	0	0	9	0	3
		Maximum		12.19	1.16	55.9	59.2		1.47	2.02		4.75	19.8	6.5	3.76			1.09		2.1
		Minimum		3.68	0.28	31.1	32.2		0.11	0.55		1.53	9.0	0.4	0.66			0.52		1.01
		Mean		6.39	0.72	38.2	38.7		0.35	1.49		3.14	12.1	2.5	1.48			0.75		1.51
		Std. Dev.		2.09	0.25	7.7	6.5		0.42	0.41		2.28	2.9	2.2	0.73			0.18		0.55
Smithland	918.5	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	10	13	2	3	13	13	13	1	0	7	0	4
		Maximum		11.62	1.18	47.9	61.7		2.78	1.88	57.4	3.25	18.9	10.1	1.94	0.11		1.07		2.56
		Minimum		2.2	0.35	32.0	33.0		0.12	0.66	56.0	2.37	10.5	0.3	0.71	0.11		0.57		1.28
		Mean		4.54	0.84	38.3	41.8		0.51	1.43	56.7	2.75	13.5	3.3	1.37	0.11		0.80		1.70
		Std. Dev.		2.55	0.26	5.0	7.0		0.81	0.32	1.0	0.45	2.5	3.0	0.30	0.00		0.18		0.59
L&D 52	938.9	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	0	13	13	13	13	0	8	13	1	0	13	13	13	0	0	10	0	6
		Maximum		11.95	1.21	47.7	49.9		0.94	1.93	85.8		16.8	73.9	2.47			0.94		4.69
		Minimum		1.87	0.31	31.0	31.8		0.11	0.5	85.8		10.0	0.5	0.61			0.52		1.02
		Mean		5.00	0.86	37.3	40.3		0.32	1.45	85.8		12.9	9.0	1.44			0.72		1.81
		Std. Dev.		2.62	0.28	4.1	5.4		0.28	0.36	0.0		2.1	19.8	0.43			0.13		1.45

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
New Cumberland	54.4	Ag (ug/L)	07/14/05	<0.1	<0.1
			09/07/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/04/06	<0.1	<0.1
			03/07/06	<0.1	<0.1
			05/04/06	<0.1	<0.1
			07/13/06	<0.1	<0.1
			09/14/06	<0.1	<0.1
			11/01/06	<0.1	<0.1
			01/12/07	<0.1	<0.1
			03/12/07	<0.1	<0.1
			05/07/07	<0.1	<0.1
			07/10/07	<0.1	<0.1
Pike Island	84.2	Ag (ug/L)	07/14/05	<0.1	<0.1
			09/07/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/04/06	<0.1	<0.1
			03/07/06	<0.1	<0.1
			05/04/06	<0.1	<0.1
			07/13/06	<0.1	<0.1
			09/14/06	<0.1	<0.1
			11/01/06	<0.1	<0.1
			01/12/07	<0.1	<0.1
			03/12/07	<0.1	<0.1
			05/07/07	<0.1	<0.1
			07/10/07	<0.1	<0.1
Hannibal	126.4	Ag (ug/L)	07/14/05	<0.1	<0.1
			09/15/05	<0.1	<0.1
			11/15/05	<0.1	<0.1
			01/04/06	<0.1	<0.1
			03/13/06	<0.1	<0.1
			05/03/06	<0.1	<0.1
			07/18/06	<0.1	<0.1
			09/06/06	<0.1	<0.1
			11/07/06	<0.1	<0.1
			01/02/07	<0.1	<0.1
			03/13/07	<0.1	<0.1
			05/10/07	<0.1	<0.1
			07/12/07	<0.1	<0.1
Willow Island	161.7	Ag (ug/L)	07/12/05	<0.1	<0.1
			09/15/05	<0.1	<0.1
			11/15/05	<0.1	<0.1
			01/03/06	<0.1	<0.1
			03/13/06	<0.1	<0.1
			05/03/06	<0.1	<0.1
			07/18/06	<0.1	<0.1
			09/06/06	<0.1	<0.1
			11/07/06	<0.1	<0.1
			01/02/07	<0.1	<0.1
			03/13/07	<0.1	<0.1
			05/10/07	<0.1	<0.1
			07/12/07	<0.1	<0.1
Belleville	203.9	Ag (ug/L)	07/12/05	<0.1	<0.1
			09/13/05	<0.1	<0.1
			11/03/05	<0.1	<0.1
			01/03/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/11/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/24/06	<0.1	<0.1
			01/04/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	<0.1	<0.1
			07/17/07	<0.1	<0.1
R. C. Byrd	279.2	Ag (ug/L)	07/12/05	<0.1	<0.1
			09/13/05	<0.1	<0.1
			11/03/05	<0.1	<0.1
			01/03/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/11/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/24/06	<0.1	<0.1
			01/04/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	<0.1	<0.1
			07/17/07	<0.1	<0.1
Greenup	341.0	Ag (ug/L)	07/14/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/19/06	<0.1	<0.1
			03/07/06	<0.1	<0.1
			05/10/06	<0.1	<0.1
			07/25/06	<0.1	<0.1
			09/12/06	<0.1	<0.1
			11/28/06	<0.1	<0.1
			01/17/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	no data	<0.1
			07/26/07	<0.1	<0.1

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Meldahl	436.2	Ag (ug/L)	07/14/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/19/06	<0.1	<0.1
			03/07/06	<0.1	<0.1
			05/10/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/12/06	<0.1	<0.1
			11/28/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
Anderson Ferry	477.5	Ag (ug/L)	07/13/05	<0.1	<0.1
			09/27/05	<0.1	<0.1
			11/16/05	<0.1	<0.1
			01/20/06	<0.1	<0.1
			03/06/06	<0.1	<0.1
			05/09/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/11/06	<0.1	<0.1
			11/09/06	<0.1	<0.1
			01/24/07	0.11	<0.1
			03/27/07	0.12	<0.1
			05/08/07	0.13	<0.1
			07/24/07	0.14	<0.1
Markland	531.5	Ag (ug/L)	07/13/05	<0.1	<0.1
			09/27/05	<0.1	<0.1
			11/16/05	<0.1	<0.1
			01/20/06	<0.1	<0.1
			03/06/06	<0.1	<0.1
			05/09/06	<0.1	<0.1
			07/13/06	<0.1	<0.1
			09/13/06	<0.1	<0.1
			11/09/06	<0.1	<0.1
			01/24/07	<0.1	<0.1
			03/27/07	<0.1	<0.1
			05/22/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
Louisville	600.6	Ag (ug/L)	07/13/05	<0.1	<0.1
			09/21/05	<0.1	<0.1
			11/10/05	<0.1	<0.1
			01/25/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/17/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/20/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/31/07	<0.1	<0.1
			03/22/07	<0.1	<0.1
			05/22/07	<0.1	<0.1
			07/24/07	<0.1	<0.1
West Point	625.9	Ag (ug/L)	07/13/05	<0.1	<0.1
			09/21/05	<0.1	<0.1
			11/10/05	<0.1	<0.1
			01/25/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/17/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/20/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/19/07	<0.1	<0.1
			03/22/07	<0.1	<0.1
			05/22/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
Cannelton	720.7	Ag (ug/L)	07/13/05	<0.1	<0.1
			09/21/05	<0.1	<0.1
			11/10/05	<0.1	<0.1
			01/25/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/09/06	<0.1	<0.1
			07/27/06	<0.1	<0.1
			09/14/06	<0.1	<0.1
			11/01/06	<0.1	<0.1
			01/19/07	<0.1	<0.1
			03/22/07	<0.1	<0.1
			05/08/07	<0.1	<0.1
			07/24/07	<0.1	<0.1
Newburgh	776.1	Ag (ug/L)	07/13/05	<0.1	<0.1
			09/21/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/25/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/10/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/20/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/31/07	<0.1	<0.1
			03/22/07	<0.1	<0.1
			05/22/07	<0.1	<0.1
			07/24/07	<0.1	<0.1

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
J.T. Myers	846.0	Ag (ug/L)	07/12/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/24/06	<0.1	<0.1
			03/08/06	<0.1	<0.1
			05/16/06	<0.1	<0.1
			07/11/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/22/07	<0.1	<0.1
			05/21/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
Smithland	918.5	Ag (ug/L)	07/12/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/24/06	<0.1	<0.1
			03/08/06	<0.1	<0.1
			05/16/06	<0.1	<0.1
			07/11/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/14/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/21/07	<0.1	<0.1
			05/21/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
L&D 52	938.9	Ag (ug/L)	07/12/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/24/06	<0.1	<0.1
			03/08/06	<0.1	<0.1
			05/16/06	<0.1	<0.1
			07/11/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/14/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/21/07	<0.1	<0.1
			05/21/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
New Cumberland	54.4	Al (ug/L)	07/14/05	127.58	14.48
			09/07/05	68.06	10.73
			11/08/05	83.98	9.12
			01/04/06	1021.67	10.57
			03/07/06	94.01	11.37
			05/04/06	97.85	16.22
			07/13/06	14.92	14.54
			09/14/06	226.11	12.78
			11/01/06	757.08	14.79
			01/12/07	433.38	16.7
			03/12/07	325.67	14.86
			05/07/07	156.73	28.71
			07/10/07	125.98	15.68
Pike Island	84.2	Al (ug/L)	07/14/05	71.88	16.07
			09/07/05	82.39	12.92
			11/08/05	68.37	11.86
			01/04/06	1216.9	11.06
			03/07/06	92.26	10.02
			05/04/06	70.17	15.05
			07/13/06	144.62	16.14
			09/14/06	253.36	8.6
			11/01/06	976.64	13.9
			01/12/07	766.09	14.91
			03/12/07	364.78	15.04
			05/07/07	135.22	30.32
			07/10/07	67.04	16.2
Hannibal	126.4	Al (ug/L)	07/14/05	79.71	18.58
			09/15/05	74.62	15.12
			11/15/05	104.93	9.85
			01/04/06	1346.11	10.84
			03/13/06	520	9.98
			05/03/06	66.66	19.24
			07/18/06	91.88	13.26
			09/06/06	336.54	11.98
			11/07/06	250.74	15.57
			01/02/07	139.87	13.59
			03/13/07	338.25	15.85
			05/10/07	133.5	29.91
			07/12/07	51.95	14.26
Willow Island	161.7	Al (ug/L)	07/12/05	72.73	16.43
			09/15/05	46.02	11.39
			11/15/05	92.18	10.89
			01/03/06	622.43	14.8
			03/13/06	729	10.23
			05/03/06	104.44	16.3
			07/18/06	101.03	11.92
			09/06/06	329.79	9.79
			11/07/06	299.09	12.08
			01/02/07	154.47	12.61
			03/13/07	496.95	16.98
			05/10/07	105.73	29.54
			07/12/07	81.28	9.8

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Belleville	203.9	Al (ug/L)	07/12/05	85.48	11.95
			09/13/05	43.4	5.85
			11/03/05	157.58	6.36
			01/03/06	888.48	10.01
			03/09/06	177.89	10.11
			05/11/06	71.14	12.83
			07/12/06	150.79	9.28
			09/19/06	396.21	7.2
			11/24/06	535.61	12.48
			01/04/07	151.26	10.96
			03/15/07	589.61	15.61
			05/09/07	270.61	18.64
			07/17/07	34.12	5.77
R. C. Byrd	279.2	Al (ug/L)	07/12/05	318.82	12.69
			09/13/05	179.24	8.05
			11/03/05	239.05	6.66
			01/03/06	317.1	7.85
			03/09/06	332.89	10.71
			05/11/06	323.58	7.58
			07/12/06	647.33	7.51
			09/19/06	706.24	5.2
			11/24/06	338.26	7.45
			01/04/07	145.51	8.56
			03/15/07	855.32	10.4
			05/09/07	661.81	12.36
			07/17/07	182.56	9.83
Greenup	341.0	Al (ug/L)	07/14/05	59.18	12.22
			09/20/05	136.96	5.77
			11/08/05	138.12	4.74
			01/19/06	1078.46	8.48
			03/07/06	137	7.38
			05/10/06	88.57	7.22
			07/25/06	261.76	9.08
			09/12/06	332.72	6.99
			11/28/06	223.2	8.66
			01/17/07	1535.8	10.99
			03/15/07	609.45	13.67
			05/09/07	no data	11.21
			07/26/07	89.06	7.33
Meldahl	436.2	Al (ug/L)	07/14/05	652.8	8.21
			09/20/05	92.56	8.84
			11/08/05	518.37	3.2
			01/19/06	818.11	7.3
			03/07/06	183.94	6.45
			05/10/06	132.79	5.84
			07/12/06	180.8	6.66
			09/12/06	450.63	6.18
			11/28/06	264.45	8.43
			01/30/07	337.8	8.19
			03/15/07	702.33	9.01
			05/09/07	440.69	10.21
			07/25/07	58.86	5.85
Anderson Ferry	477.5	Al (ug/L)	07/13/05	0.15	10.58
			09/27/05	0.16	17.77
			11/16/05	0.17	5.06
			01/20/06	0.18	7.87
			03/06/06	0.19	7.48
			05/09/06	0.2	9.33
			07/12/06	0.21	10.06
			09/11/06	0.22	5.03
			11/09/06	0.23	9.2
			01/24/07	0.24	7.21
			03/27/07	1426.05	13.18
			05/08/07	541.14	14.34
			07/24/07	107.2	10.97
Markland	531.5	Al (ug/L)	07/13/05	95.63	15.99
			09/27/05	132.04	7.58
			11/16/05	820.47	4.76
			01/20/06	1168.96	7.08
			03/06/06	201.51	5.94
			05/09/06	85.46	7.17
			07/13/06	169.85	6.33
			09/13/06	599.97	5.52
			11/09/06	394.68	7.96
			01/24/07	1104.74	9.22
			03/27/07	1511.53	14.82
			05/22/07	176.47	10.98
			07/25/07	53.62	6.84
Louisville	600.6	Al (ug/L)	07/13/05	146.97	8.44
			09/21/05	307.61	12.63
			11/10/05	305.79	4.32
			01/25/06	1167.4	5.39
			03/09/06	179.57	5.08
			05/17/06	342.26	6.32
			07/12/06	254.96	6.59
			09/20/06	593.72	5.83
			11/15/06	524.81	8.14
			01/31/07	542.98	9.95
			03/22/07	3623.05	10.96
			05/22/07	1858.89	14.62
			07/24/07	93.33	8.24

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
West Point	625.9	Al (ug/L)	07/13/05	166.41	11.43
			09/21/05	130.95	18.55
			11/10/05	353.76	7.12
			01/25/06	2623.98	5.37
			03/09/06	1100	5.56
			05/17/06	358.07	7.96
			07/12/06	322.97	11.35
			09/20/06	586.11	6.4
			11/15/06	895.32	9.74
			01/19/07	1116.32	9.25
			03/22/07	3826.81	7.55
			05/22/07	436.08	14.25
			07/25/07	97.88	11.76
Cannelton	720.7	Al (ug/L)	07/13/05	155.61	6.03
			09/21/05	110.52	8.8
			11/10/05	150.58	5.27
			01/25/06	3191.65	8.07
			03/09/06	114.43	4.33
			05/09/06	152.92	6.91
			07/27/06	264.45	7.05
			09/14/06	488.6	7.49
			11/01/06	2880.02	5.95
			01/19/07	2745.07	7.75
			03/22/07	4677.99	10.67
			05/08/07	343.57	8.56
			07/24/07	62.26	6.64
Newburgh	776.1	Al (ug/L)	07/13/05	94.47	6.17
			09/21/05	83.95	6.91
			11/09/05	169.43	5.13
			01/25/06	2979.51	6.89
			03/09/06	182.64	4.9
			05/10/06	347.65	11.67
			07/12/06	658.61	6.49
			09/20/06	430.54	6.02
			11/15/06	640.79	9.97
			01/31/07	1495.39	8.56
			03/22/07	3197.74	7.22
			05/22/07	425.25	5.11
			07/24/07	45.59	7.57
J.T. Myers	846.0	Al (ug/L)	07/12/05	129.05	12.19
			09/20/05	216.24	5.59
			11/09/05	228.09	5.38
			01/24/06	3254.5	5.49
			03/08/06	191.58	3.68
			05/16/06	391.15	7.33
			07/11/06	571.6	6.44
			09/19/06	518.59	4.99
			11/15/06	1279.07	6.4
			01/30/07	2039.18	7.82
			03/22/07	2416.66	6.9
			05/21/07	350.41	4.42
			07/25/07	93.15	6.43
Smithland	918.5	Al (ug/L)	07/12/05	105.62	11.62
			09/20/05	154.35	2.54
			11/09/05	167.44	2.2
			01/24/06	3244.87	4.35
			03/08/06	205.17	2.57
			05/16/06	739.63	4.35
			07/11/06	302.18	4.97
			09/19/06	431.15	3.27
			11/14/06	847.4	5.21
			01/30/07	1963.53	4.65
			03/21/07	2718.38	7.04
			05/21/07	100.89	2.23
			07/25/07	206.46	3.96
L&D 52	938.9	Al (ug/L)	07/12/05	241.9	11.95
			09/20/05	192.99	2.86
			11/09/05	577.01	1.87
			01/24/06	2527.12	4.8
			03/08/06	467	2.53
			05/16/06	835.76	5.16
			07/11/06	937.72	5.65
			09/19/06	4495.52	2.99
			11/14/06	1178.01	6.98
			01/30/07	2537.9	4.69
			03/21/07	2968.71	6.97
			05/21/07	227.65	4.52
			07/25/07	208.15	4.09
New Cumberland	54.4	As (ug/L)	07/14/05	0.57	0.73
			09/07/05	0.83	0.73
			11/08/05	0.61	0.54
			01/04/06	0.9	0.37
			03/07/06	0.11	0.15
			05/04/06	0.44	0.39
			07/13/06	0.56	0.63
			09/14/06	0.83	0.65
			11/01/06	1.27	0.5
			01/12/07	0.99	0.42
			03/12/07	0.6	0.41
			05/07/07	0.46	0.32
			07/10/07	0.43	0.85

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Pike Island	84.2	As (ug/L)	07/14/05	0.66	0.8
			09/07/05	0.63	0.92
			11/08/05	0.33	0.61
			01/04/06	1.2	0.34
			03/07/06	0.15	0.18
			05/04/06	0.36	0.3
			07/13/06	0.68	0.53
			09/14/06	0.85	0.56
			11/01/06	1.33	0.52
			01/12/07	0.99	0.31
			03/12/07	0.49	0.35
			05/07/07	0.54	0.34
			07/10/07	0.4	0.74
Hannibal	126.4	As (ug/L)	07/14/05	0.6	0.75
			09/15/05	1.02	0.78
			11/15/05	<0.1	0.69
			01/04/06	1.19	0.38
			03/13/06	0.27	0.2
			05/03/06	0.28	0.5
			07/18/06	0.57	0.55
			09/06/06	1	0.73
			11/07/06	0.73	0.3
			01/02/07	0.64	0.4
			03/13/07	0.48	0.4
			05/10/07	0.7	0.3
			07/12/07	0.45	0.76
Willow Island	161.7	As (ug/L)	07/12/05	0.53	0.73
			09/15/05	0.97	0.81
			11/15/05	<0.1	0.76
			01/03/06	0.71	0.48
			03/13/06	0.4	0.22
			05/03/06	0.33	0.41
			07/18/06	0.8	0.7
			09/06/06	0.99	0.76
			11/07/06	0.86	0.43
			01/02/07	0.81	0.37
			03/13/07	0.65	0.28
			05/10/07	0.35	0.36
			07/12/07	0.35	0.59
Belleville	203.9	As (ug/L)	07/12/05	0.68	0.82
			09/13/05	1.15	1
			11/03/05	0.63	0.9
			01/03/06	1	0.43
			03/09/06	0.28	0.25
			05/11/06	0.65	0.5
			07/12/06	1.2	0.86
			09/19/06	1.13	0.82
			11/24/06	0.92	0.39
			01/04/07	1	0.54
			03/15/07	0.9	0.3
			05/09/07	0.85	0.49
			07/17/07	0.37	0.76
R. C. Byrd	279.2	As (ug/L)	07/12/05	0.73	0.84
			09/13/05	0.99	0.81
			11/03/05	0.63	0.96
			01/03/06	0.4	0.34
			03/09/06	0.2	0.18
			05/11/06	0.58	0.42
			07/12/06	1.25	0.59
			09/19/06	1.18	0.71
			11/24/06	0.72	0.31
			01/04/07	0.46	0.32
			03/15/07	0.89	0.18
			05/09/07	0.9	0.45
			07/17/07	0.4	0.82
Greenup	341.0	As (ug/L)	07/14/05	0.48	0.67
			09/20/05	1.16	0.77
			11/08/05	0.56	0.78
			01/19/06	1.01	0.3
			03/07/06	0.11	0.15
			05/10/06	0.42	0.32
			07/25/06	0.77	0.68
			09/12/06	0.95	0.55
			11/28/06	0.46	0.33
			01/17/07	1.23	0.37
			03/15/07	0.78	0.19
			05/09/07	no data	0.36
			07/26/07	0.3	0.68
Meldahl	436.2	As (ug/L)	07/14/05	1.14	0.86
			09/20/05	1.24	0.96
			11/08/05	1.05	0.91
			01/19/06	1	0.48
			03/07/06	<0.1	0.2
			05/10/06	0.65	0.42
			07/12/06	0.75	0.61
			09/12/06	1.2	0.77
			11/28/06	0.65	0.36
			01/30/07	0.8	0.35
			03/15/07	0.91	0.36
			05/09/07	0.67	0.37
			07/25/07	0.31	0.82

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Anderson Ferry	477.5	As (ug/L)	07/13/05	0.78	0.97
			09/27/05	1.42	1.04
			11/16/05	1.76	0.99
			01/20/06	1.26	0.46
			03/06/06	<0.1	0.17
			05/09/06	0.64	0.46
			07/12/06	0.73	0.78
			09/11/06	1.21	0.78
			11/09/06	0.96	0.55
			01/24/07	2.97	0.47
			03/27/07	1.25	0.39
			05/08/07	0.75	0.42
			07/24/07	0.48	0.79
Markland	531.5	As (ug/L)	07/13/05	0.83	1.03
			09/27/05	1.67	1.3
			11/16/05	0.93	0.98
			01/20/06	0.95	0.49
			03/06/06	0.17	0.28
			05/09/06	0.71	0.54
			07/13/06	0.9	0.71
			09/13/06	1.2	0.64
			11/09/06	0.91	0.49
			01/24/07	1.19	0.41
			03/27/07	1.27	0.34
			05/22/07	0.8	0.37
			07/25/07	0.61	0.87
Louisville	600.6	As (ug/L)	07/13/05	0.99	1.14
			09/21/05	1.49	1.02
			11/10/05	0.71	1.03
			01/25/06	0.92	0.48
			03/09/06	0.3	0.26
			05/17/06	0.73	0.61
			07/12/06	1.13	0.67
			09/20/06	1.23	0.8
			11/15/06	0.96	0.62
			01/31/07	0.86	0.49
			03/22/07	2.04	0.48
			05/22/07	1.5	0.6
			07/24/07	0.73	1.16
West Point	625.9	As (ug/L)	07/13/05	1.09	1.35
			09/21/05	1.62	1.32
			11/10/05	0.74	1.04
			01/25/06	1.41	0.51
			03/09/06	0.64	0.43
			05/17/06	0.8	0.71
			07/12/06	1.28	0.91
			09/20/06	1.64	1.07
			11/15/06	1.3	0.69
			01/19/07	1.23	0.58
			03/22/07	2.08	0.32
			05/22/07	1.08	0.63
			07/25/07	0.64	1.11
Cannelton	720.7	As (ug/L)	07/13/05	0.73	0.94
			09/21/05	1.41	1.05
			11/10/05	0.86	1.13
			01/25/06	2.04	0.51
			03/09/06	0.25	0.28
			05/09/06	0.75	0.54
			07/27/06	0.79	0.77
			09/14/06	1.3	0.92
			11/01/06	1.91	0.79
			01/19/07	1.9	0.53
			03/22/07	2.47	0.35
			05/08/07	0.74	0.44
			07/24/07	0.57	0.9
Newburgh	776.1	As (ug/L)	07/13/05	0.81	1.03
			09/21/05	1.27	1.1
			11/09/05	0.73	1.2
			01/25/06	1.89	0.59
			03/09/06	0.28	0.34
			05/10/06	0.75	0.67
			07/12/06	1.24	0.77
			09/20/06	1.4	0.96
			11/15/06	1.08	0.66
			01/31/07	1.45	0.48
			03/22/07	2.15	0.37
			05/22/07	0.94	0.49
			07/24/07	0.47	1.07
J.T. Myers	846.0	As (ug/L)	07/12/05	0.95	0.99
			09/20/05	1.27	0.96
			11/09/05	1.2	1.16
			01/24/06	1.62	0.53
			03/08/06	0.29	0.28
			05/16/06	0.61	0.66
			07/11/06	1.07	0.73
			09/19/06	1.35	0.81
			11/15/06	1.4	0.7
			01/30/07	1.62	0.44
			03/22/07	1.6	0.69
			05/21/07	0.97	0.52
			07/25/07	0.39	0.92

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Smithland	918.5	As (ug/L)	07/12/05	0.87	1.06
Smithland	918.5	As (ug/L)	09/20/05	1.53	1.16
Smithland	918.5	As (ug/L)	11/09/05	0.91	1.18
Smithland	918.5	As (ug/L)	01/24/06	2.17	0.59
Smithland	918.5	As (ug/L)	03/08/06	0.25	0.35
Smithland	918.5	As (ug/L)	05/16/06	1.01	0.69
Smithland	918.5	As (ug/L)	07/11/06	1.18	0.88
Smithland	918.5	As (ug/L)	09/19/06	1.19	1.01
Smithland	918.5	As (ug/L)	11/14/06	1.22	0.83
Smithland	918.5	As (ug/L)	01/30/07	1.51	0.65
Smithland	918.5	As (ug/L)	03/21/07	1.76	0.73
Smithland	918.5	As (ug/L)	05/21/07	0.69	0.64
Smithland	918.5	As (ug/L)	07/25/07	0.62	1.11
L&D 52	938.9	As (ug/L)	07/12/05	1.1	1.15
L&D 52	938.9	As (ug/L)	09/20/05	1.65	1.14
L&D 52	938.9	As (ug/L)	11/09/05	1.23	1.21
L&D 52	938.9	As (ug/L)	01/24/06	1.51	0.68
L&D 52	938.9	As (ug/L)	03/08/06	0.37	0.31
L&D 52	938.9	As (ug/L)	05/16/06	1.16	0.92
L&D 52	938.9	As (ug/L)	07/11/06	1.38	1
L&D 52	938.9	As (ug/L)	09/19/06	2.56	1.02
L&D 52	938.9	As (ug/L)	11/14/06	1.4	0.77
L&D 52	938.9	As (ug/L)	01/30/07	1.66	0.62
L&D 52	938.9	As (ug/L)	03/21/07	1.87	0.55
L&D 52	938.9	As (ug/L)	05/21/07	0.94	0.69
L&D 52	938.9	As (ug/L)	07/25/07	0.63	1.09
New Cumberland	54.4	Ba (ug/L)	07/14/05	48.19	37.82
New Cumberland	54.4	Ba (ug/L)	09/07/05	45.49	46
New Cumberland	54.4	Ba (ug/L)	11/08/05	41.5	35.73
New Cumberland	54.4	Ba (ug/L)	01/04/06	42.53	30.42
New Cumberland	54.4	Ba (ug/L)	03/07/06	36.79	31.94
New Cumberland	54.4	Ba (ug/L)	05/04/06	37.54	33.95
New Cumberland	54.4	Ba (ug/L)	07/13/06	34.65	31.01
New Cumberland	54.4	Ba (ug/L)	09/14/06	38.06	34.46
New Cumberland	54.4	Ba (ug/L)	11/01/06	44.05	31.11
New Cumberland	54.4	Ba (ug/L)	01/12/07	38.79	33.54
New Cumberland	54.4	Ba (ug/L)	03/12/07	37.23	31.09
New Cumberland	54.4	Ba (ug/L)	05/07/07	38.75	34.07
New Cumberland	54.4	Ba (ug/L)	07/10/07	54.69	51.48
Pike Island	84.2	Ba (ug/L)	07/14/05	49.88	45.15
Pike Island	84.2	Ba (ug/L)	09/07/05	46.09	46.34
Pike Island	84.2	Ba (ug/L)	11/08/05	42.45	37.03
Pike Island	84.2	Ba (ug/L)	01/04/06	52.03	32.17
Pike Island	84.2	Ba (ug/L)	03/07/06	36.19	31.66
Pike Island	84.2	Ba (ug/L)	05/04/06	37.51	28.03
Pike Island	84.2	Ba (ug/L)	07/13/06	35.42	31.09
Pike Island	84.2	Ba (ug/L)	09/14/06	37.8	32.82
Pike Island	84.2	Ba (ug/L)	11/01/06	47.49	30.41
Pike Island	84.2	Ba (ug/L)	01/12/07	40.98	34.81
Pike Island	84.2	Ba (ug/L)	03/12/07	39.35	33.56
Pike Island	84.2	Ba (ug/L)	05/07/07	37.33	29.73
Pike Island	84.2	Ba (ug/L)	07/10/07	56.89	54.02
Hannibal	126.4	Ba (ug/L)	07/14/05	48.43	43.32
Hannibal	126.4	Ba (ug/L)	09/15/05	50.29	49.18
Hannibal	126.4	Ba (ug/L)	11/15/05	40.95	35.63
Hannibal	126.4	Ba (ug/L)	01/04/06	51	32.68
Hannibal	126.4	Ba (ug/L)	03/13/06	44.61	30.08
Hannibal	126.4	Ba (ug/L)	05/03/06	35.91	31.81
Hannibal	126.4	Ba (ug/L)	07/18/06	37.09	33.34
Hannibal	126.4	Ba (ug/L)	09/06/06	46.33	41.83
Hannibal	126.4	Ba (ug/L)	11/07/06	35.11	30.9
Hannibal	126.4	Ba (ug/L)	01/02/07	38.48	35.55
Hannibal	126.4	Ba (ug/L)	03/13/07	39.28	34.93
Hannibal	126.4	Ba (ug/L)	05/10/07	37.77	27.25
Hannibal	126.4	Ba (ug/L)	07/12/07	57.9	55.28
Willow Island	161.7	Ba (ug/L)	07/12/05	46.77	42.94
Willow Island	161.7	Ba (ug/L)	09/15/05	47.99	48.47
Willow Island	161.7	Ba (ug/L)	11/15/05	42.91	37.34
Willow Island	161.7	Ba (ug/L)	01/03/06	45.1	35.96
Willow Island	161.7	Ba (ug/L)	03/13/06	45.83	37.11
Willow Island	161.7	Ba (ug/L)	05/03/06	34.55	32.66
Willow Island	161.7	Ba (ug/L)	07/18/06	35.54	32.1
Willow Island	161.7	Ba (ug/L)	09/06/06	49.2	45.46
Willow Island	161.7	Ba (ug/L)	11/07/06	35.99	31.06
Willow Island	161.7	Ba (ug/L)	01/02/07	41.34	40.67
Willow Island	161.7	Ba (ug/L)	03/13/07	41.43	35.63
Willow Island	161.7	Ba (ug/L)	05/10/07	38.95	31.5
Willow Island	161.7	Ba (ug/L)	07/12/07	61.24	57.85
Belleville	203.9	Ba (ug/L)	07/12/05	47.68	44
Belleville	203.9	Ba (ug/L)	09/13/05	47.61	42.59
Belleville	203.9	Ba (ug/L)	11/03/05	43.72	36.75
Belleville	203.9	Ba (ug/L)	01/03/06	49.54	37.01
Belleville	203.9	Ba (ug/L)	03/09/06	38.5	33
Belleville	203.9	Ba (ug/L)	05/11/06	40.32	36.86
Belleville	203.9	Ba (ug/L)	07/12/06	38.55	33.94
Belleville	203.9	Ba (ug/L)	09/19/06	35.14	32.77
Belleville	203.9	Ba (ug/L)	11/24/06	38.53	30.76
Belleville	203.9	Ba (ug/L)	01/04/07	39.83	36.85
Belleville	203.9	Ba (ug/L)	03/15/07	42.2	33.94
Belleville	203.9	Ba (ug/L)	05/09/07	42.55	34.07
Belleville	203.9	Ba (ug/L)	07/17/07	58.91	48.69

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
R. C. Byrd	279.2	Ba (ug/L)	07/12/05	47.15	43.5
			09/13/05	54.77	47.59
			11/03/05	46.62	38.69
			01/03/06	35.52	30.15
			03/09/06	40.59	32.23
			05/11/06	37.75	34.64
			07/12/06	43.43	35.03
			09/19/06	42.57	36.98
			11/24/06	35.47	28.33
			01/04/07	33.82	31.49
			03/15/07	42.38	30.48
			05/09/07	52.15	37.87
			07/17/07	58.57	54.66
Greenup	341.0	Ba (ug/L)	07/14/05	44.97	38.04
			09/20/05	58.13	50.31
			11/08/05	43.15	37.85
			01/19/06	44.87	27.88
			03/07/06	35.74	29.46
			05/10/06	36.9	29.28
			07/25/06	39.12	34.43
			09/12/06	46.25	41.02
			11/28/06	35.96	29.27
			01/17/07	54.73	31.48
			03/15/07	41.28	32.51
			05/09/07	no data	28.09
			07/26/07	58.15	52.65
Meldahl	436.2	Ba (ug/L)	07/14/05	58.79	46.05
			09/20/05	54.42	45.76
			11/08/05	51.23	41.69
			01/19/06	38.46	25.95
			03/07/06	36.49	32.76
			05/10/06	36.51	32.46
			07/12/06	40.63	35.72
			09/12/06	44.62	39.05
			11/28/06	37.34	31.35
			01/30/07	35.76	30.68
			03/15/07	41.26	29.53
			05/09/07	45.4	29.75
			07/25/07	58.74	52.73
Anderson Ferry	477.5	Ba (ug/L)	07/13/05	52.13	47.99
			09/27/05	57.31	55.12
			11/16/05	47.24	32.44
			01/20/06	48.73	27.35
			03/06/06	37.18	32.53
			05/09/06	40.85	36.54
			07/12/06	41.13	35.81
			09/11/06	44.7	37.33
			11/09/06	42.06	31.16
			01/24/07	114.53	30.32
			03/27/07	56.36	33.62
			05/08/07	44.79	37.23
			07/24/07	57.21	52.71
Markland	531.5	Ba (ug/L)	07/13/05	49.59	45.88
			09/27/05	51.36	49.11
			11/16/05	48.55	35.5
			01/20/06	44.29	26.7
			03/06/06	39.1	34.6
			05/09/06	38.57	35.88
			07/13/06	43.63	37.87
			09/13/06	47.56	35.43
			11/09/06	39.59	31.04
			01/24/07	46.21	29.14
			03/27/07	57.02	32.62
			05/22/07	44.8	31.32
			07/25/07	57.92	45.76
Louisville	600.6	Ba (ug/L)	07/13/05	45.33	40.72
			09/21/05	53.04	44.35
			11/10/05	52.41	50.19
			01/25/06	42.66	25.3
			03/09/06	36.58	34.13
			05/17/06	38.66	33.87
			07/12/06	40.43	36.44
			09/20/06	46.78	42.24
			11/15/06	38.51	32.31
			01/31/07	36.05	30.42
			03/22/07	82.9	29.29
			05/22/07	67.19	43.82
			07/24/07	59.37	58.41
West Point	625.9	Ba (ug/L)	07/13/05	47.61	43.1
			09/21/05	50.52	47.3
			11/10/05	54	50.79
			01/25/06	62.11	22.96
			03/09/06	50.02	35.63
			05/17/06	39.95	37.62
			07/12/06	41.75	38.62
			09/20/06	46.78	42.14
			11/15/06	42.64	33.09
			01/19/07	48.04	34.99
			03/22/07	79.48	25.39
			05/22/07	50.54	38
			07/25/07	58.92	58.18

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Cannelton	720.7	Ba (ug/L)	07/13/05	45.54	41.92
			09/21/05	47.84	46.62
			11/10/05	54.39	52.18
			01/25/06	77.56	31.44
			03/09/06	34.46	33.43
			05/09/06	34.32	31.51
			07/27/06	41.1	37.03
			09/14/06	46.23	38.98
			11/01/06	71.86	31.82
			01/19/07	67.6	32.41
			03/22/07	95.11	31.44
			05/08/07	41.49	31.79
			07/24/07	54.91	54.22
Newburgh	776.1	Ba (ug/L)	07/13/05	43.85	40.74
			09/21/05	53.03	54.83
			11/09/05	55.76	51.73
			01/25/06	76.2	31.46
			03/09/06	35.38	33.99
			05/10/06	37.23	35.59
			07/12/06	42.06	34.76
			09/20/06	42.49	39.5
			11/15/06	41.37	33.74
			01/31/07	49.22	33.1
			03/22/07	71.2	26.64
			05/22/07	47.34	36.82
			07/24/07	53.15	53.07
J.T. Myers	846.0	Ba (ug/L)	07/12/05	42.85	37.42
			09/20/05	45.65	42.33
			11/09/05	59.81	55.88
			01/24/06	73.36	31.42
			03/08/06	34.94	32.56
			05/16/06	37.62	35.14
			07/11/06	42.58	37.51
			09/19/06	43.26	39.5
			11/15/06	46.89	32.49
			01/30/07	55.83	33.19
			03/22/07	67.45	31.08
			05/21/07	44.82	36.24
			07/25/07	52.28	51.48
Smithland	918.5	Ba (ug/L)	07/12/05	38.74	38.07
			09/20/05	43.08	38.04
			11/09/05	53.71	47.89
			01/24/06	71.34	31.98
			03/08/06	39.57	32.94
			05/16/06	44.25	39.74
			07/11/06	42.62	38.71
			09/19/06	42.64	38.88
			11/14/06	43.79	35.49
			01/30/07	54.58	37.7
			03/21/07	64.14	32.44
			05/21/07	43.84	38.74
			07/25/07	50.48	47.84
L&D 52	938.9	Ba (ug/L)	07/12/05	41.49	39.5
			09/20/05	37.48	32.84
			11/09/05	45.75	37.83
			01/24/06	67.99	31.04
			03/08/06	40.21	36.14
			05/16/06	45.99	39.02
			07/11/06	49.23	38.75
			09/19/06	73.86	37.19
			11/14/06	50.31	36.21
			01/30/07	61.95	35.44
			03/21/07	66.71	33.88
			05/21/07	47.38	39.02
			07/25/07	49.81	47.7
New Cumberland	54.4	Ca (mg/L)	07/14/05	36.63	16.29
			09/07/05	44.83	39.53
			11/08/05	31.01	33.29
			01/04/06	31.79	31.71
			03/07/06	31.3	28.21
			05/04/06	24.62	26.55
			07/13/06	33.13	28.24
			09/14/06	25.88	23.67
			11/01/06	20.83	18.87
			01/12/07	21.05	21.01
			03/12/07	26.42	23.48
			05/07/07	25.72	25.27
			07/10/07	39.9	38.61
Pike Island	84.2	Ca (mg/L)	07/14/05	46.96	32.83
			09/07/05	44.76	43.44
			11/08/05	33.5	41.24
			01/04/06	31.08	32.01
			03/07/06	30.39	28.28
			05/04/06	25.54	23.61
			07/13/06	31.9	29.71
			09/14/06	25.68	23.12
			11/01/06	20.31	17.77
			01/12/07	21.34	20.89
			03/12/07	26.39	24.94
			05/07/07	26.5	23.84
			07/10/07	42.37	40.84

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Hannibal	126.4	Ca (mg/L)	07/14/05	37.42	38.03
			09/15/05	49.4	42.83
			11/15/05	31.95	36.79
			01/04/06	35.26	32.75
			03/13/06	34.44	30.88
			05/03/06	27.58	23.51
			07/18/06	33.23	29.3
			09/06/06	32.81	31.85
			11/07/06	22.24	21.23
			01/02/07	29.75	27.08
			03/13/07	28.23	27.14
			05/10/07	28.41	23.73
			07/12/07	44.61	42.87
Willow Island	161.7	Ca (mg/L)	07/12/05	43.04	39.15
			09/15/05	47.67	42.06
			11/15/05	34.9	40.27
			01/03/06	35.42	35.49
			03/13/06	31.12	31.53
			05/03/06	24.13	24.89
			07/18/06	32.27	30.43
			09/06/06	37.5	35.48
			11/07/06	20.9	20.37
			01/02/07	30.46	28.45
			03/13/07	28.12	25.88
			05/10/07	28.64	26.98
			07/12/07	44.64	42.77
Belleville	203.9	Ca (mg/L)	07/12/05	52.78	37.53
			09/13/05	43.23	39.68
			11/03/05	45.26	46.54
			01/03/06	37.7	39.7
			03/09/06	37.1	35.87
			05/11/06	35.88	37.68
			07/12/06	42.51	34.51
			09/19/06	31.89	29.43
			11/24/06	25.83	25.11
			01/04/07	37.57	31.93
			03/15/07	33.91	32.12
			05/09/07	33.46	33.25
			07/17/07	44.86	37.23
R. C. Byrd	279.2	Ca (mg/L)	07/12/05	36.57	29.91
			09/13/05	41.06	37
			11/03/05	42.3	38.94
			01/03/06	26.03	24.71
			03/09/06	30.24	29.27
			05/11/06	23.24	25.06
			07/12/06	26.59	23.91
			09/19/06	27.98	27.11
			11/24/06	20.13	21.47
			01/04/07	24.08	22.1
			03/15/07	26.54	24.66
			05/09/07	29.24	29.03
			07/17/07	36.09	34.94
Greenup	341.0	Ca (mg/L)	07/14/05	35.82	28.18
			09/20/05	37.52	38.15
			11/08/05	40.88	51.17
			01/19/06	27.46	25.88
			03/07/06	28.26	26.45
			05/10/06	26.3	23.48
			07/25/06	32.89	29.49
			09/12/06	37.78	33.76
			11/28/06	22.39	21.92
			01/17/07	23.87	22.36
			03/15/07	28.79	27.7
			05/09/07	no data	23.84
			07/26/07	37.06	33.88
Meldahl	436.2	Ca (mg/L)	07/14/05	33.92	32.34
			09/20/05	42.9	32.57
			11/08/05	41.98	49.61
			01/19/06	32.03	28.74
			03/07/06	30.46	30.12
			05/10/06	26.61	26.89
			07/12/06	36.88	30.28
			09/12/06	31.93	30.96
			11/28/06	28.82	26.44
			01/30/07	26.63	25.5
			03/15/07	30.41	27.34
			05/09/07	32.02	26.81
			07/25/07	37.98	34.8
Anderson Ferry	477.5	Ca (mg/L)	07/13/05	38.43	35.81
			09/27/05	45.22	39.77
			11/16/05	37.33	43.88
			01/20/06	33.58	61.45
			03/06/06	33.36	31.76
			05/09/06	26.96	28.86
			07/12/06	37.62	31.93
			09/11/06	35.32	30.79
			11/09/06	28.62	26.26
			01/24/07	30.11	25.53
			03/27/07	30.28	27.77
			05/08/07	31.43	32.21
			07/24/07	36.76	34.11

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Markland	531.5	Ca (mg/L)	07/13/05	37.6	36.5
			09/27/05	39.34	36.68
			11/16/05	41.81	44.49
			01/20/06	35.31	31.45
			03/06/06	35.91	35.23
			05/09/06	39.1	33.84
			07/13/06	41.43	33.14
			09/13/06	34.83	29.03
			11/09/06	31.11	26.75
			01/24/07	30.68	26.06
			03/27/07	30.83	26.28
			05/22/07	36.31	29.06
			07/25/07	37.81	29.86
Louisville	600.6	Ca (mg/L)	07/13/05	40.75	36.67
			09/21/05	41.42	32.95
			11/10/05	44.35	55.07
			01/25/06	36.29	36.77
			03/09/06	38.37	41.28
			05/17/06	36.8	37.07
			07/12/06	37.62	32.73
			09/20/06	38.46	37.67
			11/15/06	33.37	34.98
			01/31/07	33.65	29.67
			03/22/07	31.94	28.42
			05/22/07	34.95	37.77
			07/24/07	39.27	39.16
West Point	625.9	Ca (mg/L)	07/13/05	44.42	42.39
			09/21/05	50.02	45.41
			11/10/05	49.07	62.34
			01/25/06	40.91	32.88
			03/09/06	43.47	43.21
			05/17/06	41.58	39.49
			07/12/06	53.11	42.93
			09/20/06	43.21	42.36
			11/15/06	38.02	35.5
			01/19/07	32.17	33.92
			03/22/07	32.02	24.62
			05/22/07	46.41	45.36
			07/25/07	42.06	42.23
Cannelton	720.7	Ca (mg/L)	07/13/05	60.57	34.16
			09/21/05	38.45	35.11
			11/10/05	46.84	57.3
			01/25/06	36.45	35.9
			03/09/06	37.1	39.16
			05/09/06	35.85	32
			07/27/06	40.54	35.99
			09/14/06	38.42	34.75
			11/01/06	36.07	32.36
			01/19/07	36.84	34.01
			03/22/07	32.77	29.92
			05/08/07	34.23	32.35
			07/24/07	37.47	37.11
Newburgh	776.1	Ca (mg/L)	07/13/05	36.39	33.19
			09/21/05	42.24	38.42
			11/09/05	44.62	56.02
			01/25/06	38.6	37.69
			03/09/06	39.04	40.67
			05/10/06	34.76	35.47
			07/12/06	43.01	34.43
			09/20/06	37.91	37.45
			11/15/06	40.75	34.61
			01/31/07	35.82	35.81
			03/22/07	34.31	26.39
			05/22/07	36.8	40.69
			07/24/07	34.64	35
J.T. Myers	846.0	Ca (mg/L)	07/12/05	38.47	32.21
			09/20/05	41.17	36.52
			11/09/05	44.4	59.18
			01/24/06	40.71	39.84
			03/08/06	37.8	38.47
			05/16/06	35.89	37.44
			07/11/06	43.62	37.81
			09/19/06	38.71	38.48
			11/15/06	32.73	35.49
			01/30/07	33.99	35.27
			03/22/07	37.31	35.42
			05/21/07	37.85	40.87
			07/25/07	36.32	36.55
Smithland	918.5	Ca (mg/L)	07/12/05	38.01	32.97
			09/20/05	39.75	37.69
			11/09/05	48.75	61.68
			01/24/06	44.03	41.75
			03/08/06	47.52	43.41
			05/16/06	41.04	43.28
			07/11/06	48.7	41.05
			09/19/06	39.63	38.8
			11/14/06	44.58	39.55
			01/30/07	40.78	41.38
			03/21/07	39.14	37.74
			05/21/07	48.4	47.57
			07/25/07	36.02	36.11

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
L&D 52	938.9	Ca (mg/L)	07/12/05	42.71	34.45
			09/20/05	33.17	31.8
			11/09/05	35.78	47.71
			01/24/06	44.91	40.21
			03/08/06	44.84	47.75
			05/16/06	43.35	42.71
			07/11/06	49.94	40.53
			09/19/06	40.84	38
			11/14/06	43.37	37.93
			01/30/07	36.39	37.44
			03/21/07	40.16	39.65
			05/21/07	50.41	49.85
			07/25/07	35.49	35.54
New Cumberland	54.4	Cd (ug/L)	07/14/05	<0.1	<0.1
			09/07/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/04/06	0.1	<0.1
			03/07/06	<0.1	<0.1
			05/04/06	<0.1	<0.1
			07/13/06	<0.1	<0.1
			09/14/06	<0.1	<0.1
			11/01/06	0.13	<0.1
			01/12/07	<0.1	<0.1
			03/12/07	<0.1	<0.1
			05/07/07	<0.1	<0.1
			07/10/07	<0.1	<0.1
Pike Island	84.2	Cd (ug/L)	07/14/05	<0.1	<0.1
			09/07/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/04/06	0.2	<0.1
			03/07/06	<0.1	<0.1
			05/04/06	<0.1	<0.1
			07/13/06	<0.1	<0.1
			09/14/06	<0.1	<0.1
			11/01/06	<0.1	<0.1
			01/12/07	<0.1	<0.1
			03/12/07	<0.1	<0.1
			05/07/07	<0.1	<0.1
			07/10/07	<0.1	<0.1
Hannibal	126.4	Cd (ug/L)	07/14/05	<0.1	<0.1
			09/15/05	<0.1	<0.1
			11/15/05	<0.1	<0.1
			01/04/06	0.13	<0.1
			03/13/06	<0.1	<0.1
			05/03/06	<0.1	<0.1
			07/18/06	<0.1	<0.1
			09/06/06	<0.1	<0.1
			11/07/06	<0.1	<0.1
			01/02/07	<0.1	<0.1
			03/13/07	<0.1	<0.1
			05/10/07	<0.1	<0.1
			07/12/07	<0.1	<0.1
Willow Island	161.7	Cd (ug/L)	07/12/05	<0.1	<0.1
			09/15/05	<0.1	<0.1
			11/15/05	<0.1	<0.1
			01/03/06	0.12	<0.1
			03/13/06	<0.1	<0.1
			05/03/06	<0.1	<0.1
			07/18/06	<0.1	<0.1
			09/06/06	<0.1	<0.1
			11/07/06	<0.1	<0.1
			01/02/07	<0.1	<0.1
			03/13/07	<0.1	<0.1
			05/10/07	<0.1	<0.1
			07/12/07	<0.1	<0.1
Belleville	203.9	Cd (ug/L)	07/12/05	<0.1	<0.1
			09/13/05	<0.1	<0.1
			11/03/05	<0.1	<0.1
			01/03/06	0.12	<0.1
			03/09/06	<0.1	<0.1
			05/11/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/24/06	<0.1	<0.1
			01/04/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	<0.1	<0.1
			07/17/07	<0.1	<0.1
R. C. Byrd	279.2	Cd (ug/L)	07/12/05	<0.1	<0.1
			09/13/05	<0.1	<0.1
			11/03/05	<0.1	<0.1
			01/03/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/11/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/24/06	<0.1	<0.1
			01/04/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	<0.1	<0.1
			07/17/07	<0.1	<0.1

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
			07/14/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/19/06	<0.1	<0.1
			03/07/06	<0.1	<0.1
			05/10/06	<0.1	<0.1
Greenup	341.0	Cd (ug/L)	07/25/06	<0.1	<0.1
			09/12/06	<0.1	<0.1
			11/28/06	<0.1	<0.1
			01/17/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	no data	<0.1
			07/26/07	<0.1	<0.1
			07/14/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/19/06	<0.1	<0.1
			03/07/06	<0.1	<0.1
			05/10/06	<0.1	<0.1
Meldahl	436.2	Cd (ug/L)	07/12/06	<0.1	<0.1
			09/12/06	<0.1	<0.1
			11/28/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/15/07	0.12	<0.1
			05/09/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
			07/13/05	<0.1	<0.1
			09/27/05	<0.1	<0.1
			11/16/05	0.16	<0.1
			01/20/06	0.14	<0.1
			03/06/06	<0.1	<0.1
			05/09/06	<0.1	<0.1
Anderson Ferry	477.5	Cd (ug/L)	07/12/06	<0.1	<0.1
			09/11/06	<0.1	<0.1
			11/09/06	<0.1	<0.1
			01/24/07	0.44	<0.1
			03/27/07	0.12	<0.1
			05/08/07	<0.1	<0.1
			07/24/07	<0.1	<0.1
			07/13/05	<0.1	<0.1
			09/27/05	<0.1	<0.1
			11/16/05	<0.1	<0.1
			01/20/06	<0.1	<0.1
			03/06/06	<0.1	<0.1
			05/09/06	<0.1	<0.1
Markland	531.5	Cd (ug/L)	07/13/06	<0.1	<0.1
			09/13/06	<0.1	<0.1
			11/09/06	<0.1	<0.1
			01/24/07	<0.1	<0.1
			03/27/07	0.14	<0.1
			05/22/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
			07/13/05	<0.1	<0.1
			09/21/05	<0.1	<0.1
			11/10/05	<0.1	<0.1
			01/25/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/17/06	<0.1	<0.1
Louisville	600.6	Cd (ug/L)	07/12/06	<0.1	<0.1
			09/20/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/31/07	<0.1	<0.1
			03/22/07	0.17	<0.1
			05/22/07	<0.1	<0.1
			07/24/07	<0.1	<0.1
			07/13/05	0.14	0.15
			09/21/05	<0.1	<0.1
			11/10/05	<0.1	<0.1
			01/25/06	0.18	<0.1
			03/09/06	<0.1	<0.1
			05/17/06	<0.1	<0.1
West Point	625.9	Cd (ug/L)	07/12/06	0.12	0.11
			09/20/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/19/07	<0.1	<0.1
			03/22/07	0.23	<0.1
			05/22/07	0.17	0.12
			07/25/07	0.12	<0.1
			07/13/05	<0.1	<0.1
			09/21/05	<0.1	<0.1
			11/10/05	<0.1	<0.1
			01/25/06	0.25	<0.1
			03/09/06	<0.1	<0.1
			05/09/06	<0.1	<0.1
Cannelton	720.7	Cd (ug/L)	07/27/06	<0.1	<0.1
			09/14/06	<0.1	<0.1
			11/01/06	0.17	<0.1
			01/19/07	0.18	<0.1
			03/22/07	0.19	<0.1
			05/08/07	<0.1	<0.1
			07/24/07	<0.1	<0.1

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Newburgh	776.1	Cd (ug/L)	07/13/05	<0.1	<0.1
			09/21/05	<0.1	<0.1
			11/09/05	<0.1	0.1
			01/25/06	0.22	<0.1
			03/09/06	<0.1	<0.1
			05/10/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/20/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/31/07	<0.1	<0.1
			03/22/07	0.11	<0.1
			05/22/07	<0.1	<0.1
			07/24/07	<0.1	<0.1
J.T. Myers	846.0	Cd (ug/L)	07/12/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/24/06	0.23	<0.1
			03/08/06	<0.1	<0.1
			05/16/06	<0.1	<0.1
			07/11/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/30/07	0.11	<0.1
			03/22/07	0.15	<0.1
			05/21/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
Smithland	918.5	Cd (ug/L)	07/12/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/24/06	0.22	<0.1
			03/08/06	<0.1	<0.1
			05/16/06	<0.1	<0.1
			07/11/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/14/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/21/07	0.11	<0.1
			05/21/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
L&D 52	938.9	Cd (ug/L)	07/12/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/24/06	0.22	<0.1
			03/08/06	<0.1	<0.1
			05/16/06	0.12	<0.1
			07/11/06	<0.1	<0.1
			09/19/06	0.22	<0.1
			11/14/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/21/07	0.11	<0.1
			05/21/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
New Cumberland	54.4	Cr (ug/L)	07/14/05	0.56	0.47
			09/07/05	1.24	0.35
			11/08/05	1.01	0.1
			01/04/06	2	0.4
			03/07/06	0.58	0.34
			05/04/06	1	0.23
			07/13/06	<0.1	<0.1
			09/14/06	0.45	0.29
			11/01/06	2.53	0.62
			01/12/07	1.53	0.67
			03/12/07	1.47	0.78
			05/07/07	1.43	0.8
			07/10/07	1.54	1.12
Pike Island	84.2	Cr (ug/L)	07/14/05	0.61	0.26
			09/07/05	1.58	0.61
			11/08/05	1.09	<0.1
			01/04/06	2.61	0.28
			03/07/06	0.64	0.15
			05/04/06	1.18	<0.1
			07/13/06	0.87	<0.1
			09/14/06	0.94	0.15
			11/01/06	2.94	0.68
			01/12/07	2.06	0.72
			03/12/07	1.68	0.89
			05/07/07	1.19	0.77
			07/10/07	1.67	1.09
Hannibal	126.4	Cr (ug/L)	07/14/05	0.61	0.54
			09/15/05	1.37	0.22
			11/15/05	1.5	<0.1
			01/04/06	2.48	0.3
			03/13/06	0.79	0.1
			05/03/06	1.23	0.5
			07/18/06	0.76	<0.1
			09/06/06	0.9	0.78
			11/07/06	1.47	0.23
			01/02/07	2.19	1.57
			03/13/07	1.49	0.74
			05/10/07	1.42	0.41
			07/12/07	1.14	0.76

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Willow Island	161.7	Cr (ug/L)	07/12/05	0.39	<0.1
			09/15/05	1.18	0.11
			11/15/05	1.17	<0.1
			01/03/06	1.62	0.76
			03/13/06	0.85	0.11
			05/03/06	1.06	0.27
			07/18/06	1.25	0.27
			09/06/06	0.75	0.23
			11/07/06	1.49	0.2
			01/02/07	2.41	1.77
			03/13/07	1.54	0.16
			05/10/07	1.3	0.26
			07/12/07	1.57	0.18
Belleville	203.9	Cr (ug/L)	07/12/05	0.68	<0.1
			09/13/05	1.29	0.11
			11/03/05	1.38	0.27
			01/03/06	2.45	0.63
			03/09/06	0.82	0.34
			05/11/06	1.21	0.41
			07/12/06	0.88	0.26
			09/19/06	1.51	0.41
			11/24/06	1.62	<0.1
			01/04/07	1.94	1.44
			03/15/07	1.87	0.85
			05/09/07	2.39	1.1
			07/17/07	1.49	0.95
R. C. Byrd	279.2	Cr (ug/L)	07/12/05	0.61	<0.1
			09/13/05	1.48	0.26
			11/03/05	1.28	0.31
			01/03/06	1.37	0.35
			03/09/06	0.88	0.35
			05/11/06	1.36	0.23
			07/12/06	1.4	0.2
			09/19/06	1.71	<0.1
			11/24/06	1.33	<0.1
			01/04/07	1.85	1.32
			03/15/07	1.9	0.61
			05/09/07	2.21	0.94
			07/17/07	1.51	0.76
Greenup	341.0	Cr (ug/L)	07/14/05	0.4	<0.1
			09/20/05	1.51	0.19
			11/08/05	1.23	<0.1
			01/19/06	2.2	<0.1
			03/07/06	0.75	<0.1
			05/10/06	1.24	0.17
			07/25/06	0.9	0.35
			09/12/06	1.63	<0.1
			11/28/06	1.38	<0.1
			01/17/07	2.96	0.53
			03/15/07	2.01	0.32
			05/09/07	no data	0.59
			07/26/07	1.37	<0.1
Meldahl	436.2	Cr (ug/L)	07/14/05	1.21	0.24
			09/20/05	1.46	0.11
			11/08/05	1.68	0.17
			01/19/06	1.8	0.24
			03/07/06	0.82	0.16
			05/10/06	1.34	<0.1
			07/12/06	0.83	0.16
			09/12/06	1.5	<0.1
			11/28/06	1.47	<0.1
			01/30/07	1.82	1.73
			03/15/07	1.85	0.27
			05/09/07	2.04	0.71
			07/25/07	1.42	0.19
Anderson Ferry	477.5	Cr (ug/L)	07/13/05	0.76	0.56
			09/27/05	1.56	0.13
			11/16/05	2.92	0.12
			01/20/06	3.28	0.19
			03/06/06	0.86	0.22
			05/09/06	1.48	0.22
			07/12/06	0.97	0.2
			09/11/06	1.53	<0.1
			11/09/06	1.96	0.16
			01/24/07	9.85	0.29
			03/27/07	2.57	0.23
			05/08/07	1.95	0.94
			07/24/07	1.47	0.78
Markland	531.5	Cr (ug/L)	07/13/05	1.05	0.55
			09/27/05	1.64	0.27
			11/16/05	2.02	0.13
			01/20/06	2.07	0.26
			03/06/06	0.81	0.1
			05/09/06	1.3	0.26
			07/13/06	1.18	0.14
			09/13/06	1.6	<0.1
			11/09/06	1.62	0.21
			01/24/07	2.33	0.42
			03/27/07	3	0.26
			05/22/07	1.48	0.39
			07/25/07	1.42	0.17

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Louisville	600.6	Cr (ug/L)	07/13/05	0.72	0.55
			09/21/05	1.76	<0.1
			11/10/05	1.48	<0.1
			01/25/06	1.98	<0.1
			03/09/06	0.69	<0.1
			05/17/06	1.46	0.15
			07/12/06	0.94	0.22
			09/20/06	1.75	0.25
			11/15/06	1.76	0.15
			01/31/07	1.85	2.9
			03/22/07	6.13	0.19
			05/22/07	2.9	0.13
			07/24/07	1.4	1.34
West Point	625.9	Cr (ug/L)	07/13/05	0.77	0.63
			09/21/05	1.65	0.17
			11/10/05	1.61	<0.1
			01/25/06	4.42	<0.1
			03/09/06	1.26	0.18
			05/17/06	1.47	0.12
			07/12/06	1.03	0.16
			09/20/06	1.94	0.55
			11/15/06	2.17	0.25
			01/19/07	2.43	0.39
			03/22/07	6.04	0.16
			05/22/07	1.66	0.31
			07/25/07	1.65	1.05
Cannelton	720.7	Cr (ug/L)	07/13/05	0.84	0.47
			09/21/05	1.55	<0.1
			11/10/05	1.21	<0.1
			01/25/06	5.69	<0.1
			03/09/06	0.52	0.1
			05/09/06	1.27	0.12
			07/27/06	1.03	<0.1
			09/14/06	1.71	<0.1
			11/01/06	5.41	0.83
			01/19/07	5.08	0.27
			03/22/07	7.49	0.12
			05/08/07	2.42	1.19
			07/24/07	1.47	0.29
Newburgh	776.1	Cr (ug/L)	07/13/05	0.61	0.41
			09/21/05	1.45	<0.1
			11/09/05	2.26	0.24
			01/25/06	6.02	<0.1
			03/09/06	0.74	<0.1
			05/10/06	1.46	0.12
			07/12/06	1.48	0.14
			09/20/06	1.81	0.16
			11/15/06	1.95	0.17
			01/31/07	2.86	1.52
			03/22/07	4.81	0.22
			05/22/07	1.65	0.38
			07/24/07	1.62	0.29
J.T. Myers	846.0	Cr (ug/L)	07/12/05	0.71	<0.1
			09/20/05	1.57	<0.1
			11/09/05	1.71	0.11
			01/24/06	5.7	0.13
			03/08/06	0.67	<0.1
			05/16/06	1.34	0.17
			07/11/06	1.12	0.3
			09/19/06	1.9	0.15
			11/15/06	2.63	0.22
			01/30/07	3.55	1.47
			03/22/07	4.32	0.18
			05/21/07	1.74	0.64
			07/25/07	1.58	0.13
Smithland	918.5	Cr (ug/L)	07/12/05	0.51	<0.1
			09/20/05	1.31	<0.1
			11/09/05	1.41	0.12
			01/24/06	5.19	0.19
			03/08/06	0.65	0.14
			05/16/06	1.55	0.23
			07/11/06	0.92	0.28
			09/19/06	1.63	<0.1
			11/14/06	2	0.17
			01/30/07	3.32	2.78
			03/21/07	4.16	0.33
			05/21/07	1.47	0.61
			07/25/07	1.59	0.23
L&D 52	938.9	Cr (ug/L)	07/12/05	0.69	<0.1
			09/20/05	1.56	<0.1
			11/09/05	1.72	<0.1
			01/24/06	4.66	0.22
			03/08/06	0.78	0.11
			05/16/06	1.7	<0.1
			07/11/06	1.59	0.32
			09/19/06	5.86	<0.1
			11/14/06	2.43	0.13
			01/30/07	4.26	0.94
			03/21/07	4.44	0.29
			05/21/07	1.49	0.43
			07/25/07	1.67	0.11

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
New Cumberland	54.4	Cu (ug/L)	07/14/05	6.37	4.11
New Cumberland	54.4	Cu (ug/L)	09/07/05	6.17	4.56
New Cumberland	54.4	Cu (ug/L)	11/08/05	4.4	3.73
New Cumberland	54.4	Cu (ug/L)	01/04/06	4.64	1.4
New Cumberland	54.4	Cu (ug/L)	03/07/06	1.56	1.45
New Cumberland	54.4	Cu (ug/L)	05/04/06	2.97	2.27
New Cumberland	54.4	Cu (ug/L)	07/13/06	2.83	2.65
New Cumberland	54.4	Cu (ug/L)	09/14/06	3.47	2.44
New Cumberland	54.4	Cu (ug/L)	11/01/06	4.7	1.67
New Cumberland	54.4	Cu (ug/L)	01/12/07	2.79	1.46
New Cumberland	54.4	Cu (ug/L)	03/12/07	2.4	2.54
New Cumberland	54.4	Cu (ug/L)	05/07/07	3.62	2.65
New Cumberland	54.4	Cu (ug/L)	07/10/07	8.37	5.92
Pike Island	84.2	Cu (ug/L)	07/14/05	2.97	2.29
Pike Island	84.2	Cu (ug/L)	09/07/05	3.18	2.21
Pike Island	84.2	Cu (ug/L)	11/08/05	2.21	1.91
Pike Island	84.2	Cu (ug/L)	01/04/06	5.24	1.12
Pike Island	84.2	Cu (ug/L)	03/07/06	0.78	0.6
Pike Island	84.2	Cu (ug/L)	05/04/06	1.61	1.15
Pike Island	84.2	Cu (ug/L)	07/13/06	2.25	1.7
Pike Island	84.2	Cu (ug/L)	09/14/06	2.93	1.69
Pike Island	84.2	Cu (ug/L)	11/01/06	3.9	2.11
Pike Island	84.2	Cu (ug/L)	01/12/07	2.47	0.82
Pike Island	84.2	Cu (ug/L)	03/12/07	1.72	1.04
Pike Island	84.2	Cu (ug/L)	05/07/07	1.45	0.96
Pike Island	84.2	Cu (ug/L)	07/10/07	3.03	2.66
Hannibal	126.4	Cu (ug/L)	07/14/05	2.72	2.23
Hannibal	126.4	Cu (ug/L)	09/15/05	3.26	2.47
Hannibal	126.4	Cu (ug/L)	11/15/05	3.7	2.94
Hannibal	126.4	Cu (ug/L)	01/04/06	4.66	0.92
Hannibal	126.4	Cu (ug/L)	03/13/06	1.33	0.64
Hannibal	126.4	Cu (ug/L)	05/03/06	1.58	1.21
Hannibal	126.4	Cu (ug/L)	07/18/06	2.54	2.39
Hannibal	126.4	Cu (ug/L)	09/06/06	3.29	1.89
Hannibal	126.4	Cu (ug/L)	11/07/06	2.14	1.24
Hannibal	126.4	Cu (ug/L)	01/02/07	1.4	1.05
Hannibal	126.4	Cu (ug/L)	03/13/07	1.73	1.15
Hannibal	126.4	Cu (ug/L)	05/10/07	1.6	1.26
Hannibal	126.4	Cu (ug/L)	07/12/07	3.52	4.31
Willow Island	161.7	Cu (ug/L)	07/12/05	2.24	1.9
Willow Island	161.7	Cu (ug/L)	09/15/05	2.56	2.34
Willow Island	161.7	Cu (ug/L)	11/15/05	2.36	2.03
Willow Island	161.7	Cu (ug/L)	01/03/06	3.34	1.31
Willow Island	161.7	Cu (ug/L)	03/13/06	1.46	0.77
Willow Island	161.7	Cu (ug/L)	05/03/06	1.54	1.19
Willow Island	161.7	Cu (ug/L)	07/18/06	2.66	2.19
Willow Island	161.7	Cu (ug/L)	09/06/06	3.2	2.05
Willow Island	161.7	Cu (ug/L)	11/07/06	2.1	1.47
Willow Island	161.7	Cu (ug/L)	01/02/07	1.54	1.05
Willow Island	161.7	Cu (ug/L)	03/13/07	1.91	1.03
Willow Island	161.7	Cu (ug/L)	05/10/07	1.38	1.1
Willow Island	161.7	Cu (ug/L)	07/12/07	3.06	5.09
Belleville	203.9	Cu (ug/L)	07/12/05	1.93	1.59
Belleville	203.9	Cu (ug/L)	09/13/05	2.44	2.07
Belleville	203.9	Cu (ug/L)	11/03/05	2.85	2.21
Belleville	203.9	Cu (ug/L)	01/03/06	3.45	1.22
Belleville	203.9	Cu (ug/L)	03/09/06	0.89	0.65
Belleville	203.9	Cu (ug/L)	05/11/06	1.54	1.17
Belleville	203.9	Cu (ug/L)	07/12/06	2.19	2.07
Belleville	203.9	Cu (ug/L)	09/19/06	2.74	1.75
Belleville	203.9	Cu (ug/L)	11/24/06	2.33	1.45
Belleville	203.9	Cu (ug/L)	01/04/07	1.54	1.23
Belleville	203.9	Cu (ug/L)	03/15/07	2	1.1
Belleville	203.9	Cu (ug/L)	05/09/07	1.94	1.6
Belleville	203.9	Cu (ug/L)	07/17/07	2.61	2.64
R. C. Byrd	279.2	Cu (ug/L)	07/12/05	2.11	1.38
R. C. Byrd	279.2	Cu (ug/L)	09/13/05	2.77	1.95
R. C. Byrd	279.2	Cu (ug/L)	11/03/05	2.79	2.09
R. C. Byrd	279.2	Cu (ug/L)	01/03/06	2	1.1
R. C. Byrd	279.2	Cu (ug/L)	03/09/06	1.04	0.48
R. C. Byrd	279.2	Cu (ug/L)	05/11/06	1.83	1
R. C. Byrd	279.2	Cu (ug/L)	07/12/06	2.73	1.5
R. C. Byrd	279.2	Cu (ug/L)	09/19/06	3.11	1.83
R. C. Byrd	279.2	Cu (ug/L)	11/24/06	1.83	1.12
R. C. Byrd	279.2	Cu (ug/L)	01/04/07	1.14	0.94
R. C. Byrd	279.2	Cu (ug/L)	03/15/07	2.26	0.96
R. C. Byrd	279.2	Cu (ug/L)	05/09/07	2.32	0.88
R. C. Byrd	279.2	Cu (ug/L)	07/17/07	2.7	1.86
Greenup	341.0	Cu (ug/L)	07/14/05	1.76	1.7
Greenup	341.0	Cu (ug/L)	09/20/05	2.33	1.8
Greenup	341.0	Cu (ug/L)	11/08/05	2.38	1.96
Greenup	341.0	Cu (ug/L)	01/19/06	3.66	0.81
Greenup	341.0	Cu (ug/L)	03/07/06	0.74	0.4
Greenup	341.0	Cu (ug/L)	05/10/06	1.25	0.81
Greenup	341.0	Cu (ug/L)	07/25/06	2.31	1.73
Greenup	341.0	Cu (ug/L)	09/12/06	2.83	1.91
Greenup	341.0	Cu (ug/L)	11/28/06	1.55	1.14
Greenup	341.0	Cu (ug/L)	01/17/07	4.64	0.99
Greenup	341.0	Cu (ug/L)	03/15/07	2.07	1.05
Greenup	341.0	Cu (ug/L)	05/09/07	no data	2.7
Greenup	341.0	Cu (ug/L)	07/26/07	2.93	2.36

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Meldahl	436.2	Cu (ug/L)	07/14/05	3.31	1.6
			09/20/05	2.15	1.76
			11/08/05	3.64	2.37
			01/19/06	2.61	0.82
			03/07/06	0.72	0.44
			05/10/06	1.29	0.97
			07/12/06	2.03	1.58
			09/12/06	3.53	2.3
			11/28/06	1.93	1.23
			01/30/07	1.6	1.15
			03/15/07	2.38	1.12
			05/09/07	2.31	1.13
			07/25/07	2.27	2.01
Anderson Ferry	477.5	Cu (ug/L)	07/13/05	1.99	1.47
			09/27/05	2.46	1.87
			11/16/05	4.49	1.69
			01/20/06	5.84	1.11
			03/06/06	0.85	0.49
			05/09/06	1.9	0.86
			07/12/06	2.41	1.88
			09/11/06	2.88	1.81
			11/09/06	2.98	1.36
			01/24/07	15.76	0.97
			03/27/07	4.26	1.45
			05/08/07	2.32	1.36
			07/24/07	2.38	1.76
Markland	531.5	Cu (ug/L)	07/13/05	1.84	1.54
			09/27/05	2.41	1.93
			11/16/05	3.06	1.63
			01/20/06	3.37	1.16
			03/06/06	0.94	0.53
			05/09/06	1.31	1.06
			07/13/06	2.35	1.98
			09/13/06	3.6	1.82
			11/09/06	2.52	1.36
			01/24/07	3.53	1.01
			03/27/07	4.62	1.33
			05/22/07	1.68	2.86
			07/25/07	2.26	1.67
Louisville	600.6	Cu (ug/L)	07/13/05	2.21	1.81
			09/21/05	2.65	1.68
			11/10/05	2.72	2.31
			01/25/06	3.27	0.83
			03/09/06	0.85	0.48
			05/17/06	1.74	1.14
			07/12/06	2.1	1.82
			09/20/06	3.19	2.08
			11/15/06	2.21	1.36
			01/31/07	1.92	1.06
			03/22/07	9.28	1.26
			05/22/07	4.34	1.16
			07/24/07	2.3	2.23
West Point	625.9	Cu (ug/L)	07/13/05	5.52	4.6
			09/21/05	3.84	3.1
			11/10/05	3.07	2.2
			01/25/06	7.11	0.89
			03/09/06	2.16	0.81
			05/17/06	2.21	1.34
			07/12/06	2.62	1.89
			09/20/06	3.68	2.49
			11/15/06	3.23	1.55
			01/19/07	3.57	1.16
			03/22/07	9.03	1.06
			05/22/07	3.19	1.91
			07/25/07	5.58	5.1
Cannelton	720.7	Cu (ug/L)	07/13/05	1.97	1.43
			09/21/05	1.66	1.41
			11/10/05	2.31	2.09
			01/25/06	9.25	0.92
			03/09/06	0.68	0.69
			05/09/06	1.48	1.22
			07/27/06	2.18	1.75
			09/14/06	2.51	1.5
			11/01/06	8.76	1.87
			01/19/07	7.29	1.13
			03/22/07	10.88	1.21
			05/08/07	1.77	1.08
			07/24/07	1.93	1.59
Newburgh	776.1	Cu (ug/L)	07/13/05	1.71	1.4
			09/21/05	2.15	1.82
			11/09/05	2.81	2.22
			01/25/06	9.32	1.14
			03/09/06	0.89	0.66
			05/10/06	1.77	1.45
			07/12/06	2.42	1.52
			09/20/06	2.83	2.36
			11/15/06	2.87	2.11
			01/31/07	4.09	1.17
			03/22/07	6.96	0.99
			05/22/07	2.07	1.31
			07/24/07	2.02	1.79

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
J.T. Myers	846.0	Cu (ug/L)	07/12/05	1.77	1.43
			09/20/05	1.82	1.4
			11/09/05	2.43	1.96
			01/24/06	9.81	1.14
			03/08/06	0.84	0.55
			05/16/06	1.75	1.33
			07/11/06	2.32	1.72
			09/19/06	2.79	2.02
			11/15/06	5.26	1.56
			01/30/07	5.4	1.63
			03/22/07	6.31	1.31
			05/21/07	1.91	1.28
			07/25/07	2.13	2.02
Smithland	918.5	Cu (ug/L)	07/12/05	1.54	1.33
			09/20/05	1.71	1.44
			11/09/05	2.02	1.55
			01/24/06	8.24	1.1
			03/08/06	0.9	0.66
			05/16/06	2.06	1.45
			07/11/06	2.11	1.88
			09/19/06	2.45	1.81
			11/14/06	2.78	1.66
			01/30/07	4.05	1.31
			03/21/07	5.43	1.48
			05/21/07	1.47	1.25
			07/25/07	1.82	1.71
L&D 52	938.9	Cu (ug/L)	07/12/05	1.85	1.45
			09/20/05	1.67	1.35
			11/09/05	2.19	1.47
			01/24/06	6.97	1.1
			03/08/06	1.1	0.5
			05/16/06	2.45	1.6
			07/11/06	2.93	1.87
			09/19/06	8.19	1.93
			11/14/06	3.83	1.64
			01/30/07	5.4	1.35
			03/21/07	5.72	1.56
			05/21/07	1.68	1.45
			07/25/07	1.75	1.6
New Cumberland	54.4	Fe (ug/L)	07/14/05	244	<50
			09/07/05	152	<50
			11/08/05	140	<50
			01/04/06	2271	<50
			03/07/06	280	<50
			05/04/06	232.4	<50
			07/13/06	60.2	61.1
			09/14/06	451.5	<50
			11/01/06	1716.4	50.6
			01/12/07	1059.3	<50
			03/12/07	691.8	<50
			05/07/07	394	<50
			07/10/07	200.42	<50
Pike Island	84.2	Fe (ug/L)	07/14/05	102	<50
			09/07/05	183	<50
			11/08/05	160	<50
			01/04/06	3232	<50
			03/07/06	300	<50
			05/04/06	152.9	<50
			07/13/06	316.5	<50
			09/14/06	535.5	<50
			11/01/06	2338.6	<50
			01/12/07	1792.5	<50
			03/12/07	797	<50
			05/07/07	336	<50
			07/10/07	96.67	<50
Hannibal	126.4	Fe (ug/L)	07/14/05	123	<50
			09/15/05	152	<50
			11/15/05	210	<50
			01/04/06	2925	<50
			03/13/06	1020	<50
			05/03/06	143.2	<50
			07/18/06	183.4	<50
			09/06/06	702.2	<50
			11/07/06	679.8	61.9
			01/02/07	442.9	<50
			03/13/07	721.1	<50
			05/10/07	261	<50
			07/12/07	80.53	<50
Willow Island	161.7	Fe (ug/L)	07/12/05	128	<50
			09/15/05	86	<50
			11/15/05	150	<50
			01/03/06	1382	<50
			03/13/06	1290	<50
			05/03/06	216	<50
			07/18/06	157.7	<50
			09/06/06	631.3	<50
			11/07/06	823.6	50.5
			01/02/07	445.3	<50
			03/13/07	954.9	<50
			05/10/07	200	<50
			07/12/07	146.54	<50

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Belleville	203.9	Fe (ug/L)	07/12/05	140	<50
			09/13/05	83	57
			11/03/05	160	<50
			01/03/06	1819	<50
			03/09/06	500	<50
			05/11/06	134.8	<50
			07/12/06	308.1	<50
			09/19/06	679	58.2
			11/24/06	1057.3	57.5
			01/04/07	437.9	<50
			03/15/07	1063.6	<50
			05/09/07	499	<50
			07/17/07	55.41	<50
R. C. Byrd	279.2	Fe (ug/L)	07/12/05	584	<50
			09/13/05	363	71
			11/03/05	350	<50
			01/03/06	714	<50
			03/09/06	740	61
			05/11/06	507.2	<50
			07/12/06	1042	<50
			09/19/06	1064.4	61.1
			11/24/06	702.5	<50
			01/04/07	368.3	52.1
			03/15/07	1408.4	<50
			05/09/07	1206	<50
			07/17/07	358.25	<50
Greenup	341.0	Fe (ug/L)	07/14/05	111	<50
			09/20/05	265	53
			11/08/05	180	<50
			01/19/06	2103	<50
			03/07/06	360	<50
			05/10/06	190.1	<50
			07/25/06	424.9	<50
			09/12/06	523.6	<50
			11/28/06	542.4	<50
			01/17/07	3305.5	<50
			03/15/07	1111.9	<50
			05/09/07	no data	<50
			07/26/07	156.69	<50
Meldahl	436.2	Fe (ug/L)	07/14/05	1145	<50
			09/20/05	169	71
			11/08/05	710	<50
			01/19/06	1507	<50
			03/07/06	390	<50
			05/10/06	206.4	<50
			07/12/06	320.9	<50
			09/12/06	724.4	52.3
			11/28/06	609	<50
			01/30/07	611.2	<50
			03/15/07	1182	<50
			05/09/07	952	<50
			07/25/07	98.55	<50
Anderson Ferry	477.5	Fe (ug/L)	07/13/05	182	<50
			09/27/05	289	<50
			11/16/05	1800	<50
			01/20/06	3165	<50
			03/06/06	250	<50
			05/09/06	554	<50
			07/12/06	385.4	<50
			09/11/06	493.1	<50
			11/09/06	1217	59.3
			01/24/07	11816.6	<50
			03/27/07	2588.2	<50
			05/08/07	984	<50
			07/24/07	181.25	<50
Markland	531.5	Fe (ug/L)	07/13/05	143	<50
			09/27/05	242	<50
			11/16/05	1300	<50
			01/20/06	1927	<50
			03/06/06	410	<50
			05/09/06	135.3	<50
			07/13/06	311.4	<50
			09/13/06	932.3	<50
			11/09/06	782.4	67.9
			01/24/07	2264.8	<50
			03/27/07	2917.2	<50
			05/22/07	255	<50
			07/25/07	77.7	<50
Louisville	600.6	Fe (ug/L)	07/13/05	249	<50
			09/21/05	637	<50
			11/10/05	370	<50
			01/25/06	2050	<50
			03/09/06	370	<50
			05/17/06	528.4	<50
			07/12/06	415.1	<50
			09/20/06	900.6	<50
			11/15/06	982.8	73.3
			01/31/07	974.6	<50
			03/22/07	7294.1	<50
			05/22/07	3309	<50
			07/24/07	176.47	<50

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
West Point	625.9	Fe (ug/L)	07/13/05	288	<50
			09/21/05	229	<50
			11/10/05	480	<50
			01/25/06	5357	<50
			03/09/06	2470	<50
			05/17/06	564.7	<50
			07/12/06	544	<50
			09/20/06	844.1	<50
			11/15/06	1599.9	67.4
			01/19/07	2155.4	<50
			03/22/07	7028.4	<50
			05/22/07	750	<50
			07/25/07	147.3	<50
Cannelton	720.7	Fe (ug/L)	07/13/05	224	<50
			09/21/05	191	<50
			11/10/05	150	<50
			01/25/06	6600	<50
			03/09/06	200	<50
			05/09/06	262.9	<50
			07/27/06	390.4	<50
			09/14/06	719.6	<50
			11/01/06	5854.5	51.5
			01/19/07	5543.7	<50
			03/22/07	9318.9	<50
			05/08/07	602	<50
			07/24/07	96.12	<50
Newburgh	776.1	Fe (ug/L)	07/13/05	159	<50
			09/21/05	150	<50
			11/09/05	250	<50
			01/25/06	6125	<50
			03/09/06	310	<50
			05/10/06	548.2	<50
			07/12/06	914.6	<50
			09/20/06	606.4	<50
			11/15/06	1136.9	68.9
			01/31/07	2886.6	<50
			03/22/07	6082.1	<50
			05/22/07	775	<50
			07/24/07	67.06	<50
J.T. Myers	846.0	Fe (ug/L)	07/12/05	224	<50
			09/20/05	382	<50
			11/09/05	320	<50
			01/24/06	6966	<50
			03/08/06	330	<50
			05/16/06	541.7	<50
			07/11/06	723.6	<50
			09/19/06	727.8	<50
			11/15/06	2287.9	<50
			01/30/07	3988.4	<50
			03/22/07	4803.4	<50
			05/21/07	591	<50
			07/25/07	153.29	<50
Smithland	918.5	Fe (ug/L)	07/12/05	164	<50
			09/20/05	272	56
			11/09/05	160	<50
			01/24/06	5701	<50
			03/08/06	340	<50
			05/16/06	848.1	<50
			07/11/06	497.3	<50
			09/19/06	796	<50
			11/14/06	1222.3	57.4
			01/30/07	2974.5	<50
			03/21/07	4791.8	<50
			05/21/07	175	<50
			07/25/07	321	<50
L&D 52	938.9	Fe (ug/L)	07/12/05	402	<50
			09/20/05	336	<50
			11/09/05	810	<50
			01/24/06	5011	<50
			03/08/06	710	<50
			05/16/06	1093.3	<50
			07/11/06	1385.3	<50
			09/19/06	8445	<50
			11/14/06	2121.6	85.8
			01/30/07	4521.8	<50
			03/21/07	4886.2	<50
			05/21/07	362	<50
			07/25/07	360	<50
New Cumberland	54.4	Hg (ug/L)	07/14/05	<1.5E-3	<1.5E-3
			09/07/05	2.08E-03	<1.5E-3
			11/08/05	<1.5E-3	<1.5E-3
			01/04/06	8.52E-03	<1.5E-3
			03/07/06	1.78E-03	<1.5E-3
			05/04/06	<1.5E-3	<1.5E-3
			07/13/06	<1.5E-3	<1.5E-3
			09/14/06	2.28E-03	<1.5E-3
			11/01/06	7.65E-03	<1.5E-3
			01/12/07	2.74E-03	<1.5E-3
			03/12/07	1.70E-03	<1.5E-3
			05/07/07	<1.5E-3	<1.5E-3
			07/10/07	2.45E-03	0.00191

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Pike Island	84.2	Hg (ug/L)	07/14/05	<1.5E-3	<1.5E-3
			09/07/05	<1.5E-3	<1.5E-3
			11/08/05	<1.5E-3	<1.5E-3
			01/04/06	**1.51E-02**	<1.5E-3
			03/07/06	<1.5E-3	<1.5E-3
			05/04/06	<1.5E-3	<1.5E-3
			07/13/06	2.26E-03	<1.5E-3
			09/14/06	4.12E-03	<1.5E-3
			11/01/06	9.78E-03	<1.5E-3
			01/12/07	5.23E-03	<1.5E-3
			03/12/07	2.41E-03	<1.5E-3
			05/07/07	1.67E-03	<1.5E-3
			07/10/07	5.26E-03	0.00334
Hannibal	126.4	Hg (ug/L)	07/14/05	3.10E-03	<1.5E-3
			09/15/05	2.02E-03	<1.5E-3
			11/15/05	2.18E-03	<1.5E-3
			01/04/06	9.36E-03	<1.5E-3
			03/13/06	3.82E-03	<1.5E-3
			05/03/06	<1.5E-3	<1.5E-3
			07/18/06	1.97E-03	<1.5E-3
			09/06/06	7.68E-03	0.00527
			11/07/06	2.80E-03	<1.5E-3
			01/02/07	1.53E-03	<1.5E-3
			03/13/07	2.35E-03	<1.5E-3
			05/10/07	<1.5E-3	<1.5E-3
			07/12/07	2.25E-03	<1.5E-3
Willow Island	161.7	Hg (ug/L)	07/12/05	<1.5E-3	<1.5E-3
			09/15/05	<1.5E-3	<1.5E-3
			11/15/05	1.66E-03	<1.5E-3
			01/03/06	5.80E-03	<1.5E-3
			03/13/06	4.26E-03	<1.5E-3
			05/03/06	<1.5E-3	<1.5E-3
			07/18/06	<1.5E-3	<1.5E-3
			09/06/06	4.73E-03	<1.5E-3
			11/07/06	2.03E-03	<1.5E-3
			01/02/07	2.00E-03	<1.5E-3
			03/13/07	2.95E-03	<1.5E-3
			05/10/07	<1.5E-3	<1.5E-3
			07/12/07	8.62E-03	0.00231
Belleville	203.9	Hg (ug/L)	07/12/05	<1.5E-3	<1.5E-3
			09/13/05	<1.5E-3	<1.5E-3
			11/03/05	<1.5E-3	<1.5E-3
			01/03/06	5.91E-03	<1.5E-3
			03/09/06	2.41E-03	<1.5E-3
			05/11/06	<1.5E-3	0.00173
			07/12/06	2.19E-03	0.00263
			09/19/06	3.14E-03	<1.5E-3
			11/24/06	3.70E-03	0.00191
			01/04/07	1.97E-03	<1.5E-3
			03/15/07	3.29E-03	<1.5E-3
			05/09/07	2.09E-03	<1.5E-3
			07/17/07	5.62E-03	0.0034
R. C. Byrd	279.2	Hg (ug/L)	07/12/05	1.85E-03	<1.5E-3
			09/13/05	<1.5E-3	<1.5E-3
			11/03/05	<1.5E-3	<1.5E-3
			01/03/06	2.55E-03	<1.5E-3
			03/09/06	3.24E-03	<1.5E-3
			05/11/06	2.49E-03	<1.5E-3
			07/12/06	3.17E-03	<1.5E-3
			09/19/06	4.07E-03	<1.5E-3
			11/24/06	2.72E-03	0.00212
			01/04/07	1.57E-03	0.00217
			03/15/07	4.45E-03	0.00318
			05/09/07	3.94E-03	<1.5E-3
			07/17/07	**1.30E-02**	0.0054
Greenup	341.0	Hg (ug/L)	07/14/05	<1.5E-3	<1.5E-3
			09/20/05	<1.5E-3	<1.5E-3
			11/08/05	<1.5E-3	<1.5E-3
			01/19/06	5.72E-03	<1.5E-3
			03/07/06	1.68E-03	<1.5E-3
			05/10/06	<1.5E-3	<1.5E-3
			07/25/06	4.18E-03	0.00264
			09/12/06	1.51E-03	<1.5E-3
			11/28/06	1.86E-03	<1.5E-3
			01/17/07	7.25E-03	<1.5E-3
			03/15/07	4.85E-03	<1.5E-3
			05/09/07	no data	<1.5E-3
			07/26/07	6.96E-03	0.0035
Meldahl	436.2	Hg (ug/L)	07/14/05	2.52E-03	<1.5E-3
			09/20/05	<1.5E-3	<1.5E-3
			11/08/05	<1.5E-3	<1.5E-3
			01/19/06	3.92E-03	<1.5E-3
			03/07/06	2.08E-03	<1.5E-3
			05/10/06	<1.5E-3	<1.5E-3
			07/12/06	1.59E-03	<1.5E-3
			09/12/06	2.28E-03	<1.5E-3
			11/28/06	2.24E-03	<1.5E-3
			01/30/07	3.75E-03	<1.5E-3
			03/15/07	5.92E-03	<1.5E-3
			05/09/07	3.46E-03	<1.5E-3
			07/25/07	1.60E-03	<1.5E-3

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Anderson Ferry	477.5	Hg (ug/L)	07/13/05	<1.5E-3	<1.5E-3
			09/27/05	<1.5E-3	<1.5E-3
			11/16/05	5.99E-03	<1.5E-3
			01/20/06	**1.27E-02**	<1.5E-3
			03/06/06	<1.5E-3	<1.5E-3
			05/09/06	2.45E-03	<1.5E-3
			07/12/06	1.60E-03	<1.5E-3
			09/11/06	<1.5E-3	<1.5E-3
			11/09/06	**1.30E-02**	<1.5E-3
			01/24/07	**3.39E-02**	<1.5E-3
			03/27/07	1.01E-02	<1.5E-3
			05/08/07	3.07E-03	<1.5E-3
			07/24/07	2.78E-03	0.0023
Markland	531.5	Hg (ug/L)	07/13/05	<1.5E-3	<1.5E-3
			09/27/05	<1.5E-3	<1.5E-3
			11/16/05	3.29E-03	<1.5E-3
			01/20/06	5.77E-03	<1.5E-3
			03/06/06	1.96E-03	<1.5E-3
			05/09/06	<1.5E-3	<1.5E-3
			07/13/06	<1.5E-3	<1.5E-3
			09/13/06	2.96E-03	<1.5E-3
			11/09/06	3.21E-03	0.00245
			01/24/07	6.89E-03	<1.5E-3
			03/27/07	8.55E-03	0.00185
			05/22/07	5.11E-03	<1.5E-3
			07/25/07	<1.5E-3	<1.5E-3
Louisville	600.6	Hg (ug/L)	07/13/05	<1.5E-3	<1.5E-3
			09/21/05	2.92E-03	<1.5E-3
			11/10/05	<1.5E-3	<1.5E-3
			01/25/06	6.27E-03	<1.5E-3
			03/09/06	<1.5E-3	<1.5E-3
			05/17/06	<1.5E-3	<1.5E-3
			07/12/06	<1.5E-3	<1.5E-3
			09/20/06	2.61E-03	<1.5E-3
			11/15/06	3.70E-03	<1.5E-3
			01/31/07	3.48E-03	<1.5E-3
			03/22/07	**2.85E-02**	<1.5E-3
			05/22/07	9.83E-03	<1.5E-3
			07/24/07	<1.5E-3	<1.5E-3
West Point	625.9	Hg (ug/L)	07/13/05	**1.79E-02**	0.00262
			09/21/05	**1.24E-02**	0.00255
			11/10/05	**1.55E-02**	0.00221
			01/25/06	**3.11E-02**	<1.5E-3
			03/09/06	**3.02E-02**	0.00277
			05/17/06	**2.33E-02**	<1.5E-3
			07/12/06	**2.82E-02**	0.00263
			09/20/06	**2.21E-02**	0.00238
			11/15/06	3.65E-03	0.00155
			01/19/07	8.19E-03	<1.5E-3
			03/22/07	**2.56E-02**	<1.5E-3
			05/22/07	**5.92E-02**	0.00467
			07/25/07	**2.69E-02**	0.00923
Cannelton	720.7	Hg (ug/L)	07/13/05	<1.5E-3	<1.5E-3
			09/21/05	1.66E-03	<1.5E-3
			11/10/05	<1.5E-3	<1.5E-3
			01/25/06	**2.64E-02**	<1.5E-3
			03/09/06	<1.5E-3	<1.5E-3
			05/09/06	<1.5E-3	<1.5E-3
			07/27/06	1.00E-02	<1.5E-3
			09/14/06	2.33E-03	<1.5E-3
			11/01/06	**1.59E-02**	<1.5E-3
			01/19/07	**1.65E-02**	<1.5E-3
			03/22/07	**2.64E-02**	<1.5E-3
			05/08/07	2.21E-03	<1.5E-3
			07/24/07	<1.5E-3	<1.5E-3
Newburgh	776.1	Hg (ug/L)	07/13/05	<1.5E-3	<1.5E-3
			09/21/05	1.82E-03	<1.5E-3
			11/09/05	1.74E-03	<1.5E-3
			01/25/06	**2.56E-02**	<1.5E-3
			03/09/06	<1.5E-3	<1.5E-3
			05/10/06	1.67E-03	<1.5E-3
			07/12/06	3.15E-03	<1.5E-3
			09/20/06	2.18E-03	<1.5E-3
			11/15/06	5.76E-03	<1.5E-3
			01/31/07	9.18E-03	0.00174
			03/22/07	**1.57E-02**	0.00242
			05/22/07	3.28E-03	<1.5E-3
			07/24/07	1.58E-03	<1.5E-3
J.T. Myers	846.0	Hg (ug/L)	07/12/05	<1.5E-3	<1.5E-3
			09/20/05	1.94E-03	<1.5E-3
			11/09/05	<1.5E-3	<1.5E-3
			01/24/06	**3.12E-02**	<1.5E-3
			03/08/06	1.84E-03	<1.5E-3
			05/16/06	1.80E-03	<1.5E-3
			07/11/06	3.56E-03	<1.5E-3
			09/19/06	2.80E-03	<1.5E-3
			11/15/06	9.50E-03	0.00475
			01/30/07	**1.58E-02**	<1.5E-3
			03/22/07	**1.52E-02**	<1.5E-3
			05/21/07	2.40E-03	<1.5E-3
			07/25/07	1.98E-03	0.00153

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Smithland	918.5	Hg (ug/L)	07/12/05	<1.5E-3	<1.5E-3
			09/20/05	<1.5E-3	<1.5E-3
			11/09/05	<1.5E-3	<1.5E-3
			01/24/06	**1.90E-02**	<1.5E-3
			03/08/06	1.77E-03	<1.5E-3
			05/16/06	2.91E-03	<1.5E-3
			07/11/06	<1.5E-3	<1.5E-3
			09/19/06	2.21E-03	<1.5E-3
			11/14/06	4.07E-03	<1.5E-3
			01/30/07	9.07E-03	0.00262
			03/21/07	**2.44E-02**	0.00237
			05/21/07	<1.5E-3	<1.5E-3
			07/25/07	**3.39E-02**	0.00325
L&D 52	938.9	Hg (ug/L)	07/12/05	<1.5E-3	<1.5E-3
			09/20/05	1.62E-03	<1.5E-3
			11/09/05	2.65E-03	<1.5E-3
			01/24/06	**1.91E-02**	<1.5E-3
			03/08/06	1.99E-03	<1.5E-3
			05/16/06	3.08E-03	<1.5E-3
			07/11/06	4.48E-03	<1.5E-3
			09/19/06	**1.84E-02**	<1.5E-3
			11/14/06	7.96E-03	<1.5E-3
			01/30/07	**1.30E-02**	<1.5E-3
			03/21/07	3.13E-03	<1.5E-3
			05/21/07	1.66E-03	<1.5E-3
			07/25/07	1.59E-03	<1.5E-3
New Cumberland	54.4	Mg (mg/L)	07/14/05	11.65	4.18
			09/07/05	11.89	11.87
			11/08/05	7.75	9.91
			01/04/06	8.07	7.6
			03/07/06	8.42	7.79
			05/04/06	7.72	5.57
			07/13/06	8.29	8.18
			09/14/06	6.45	6.77
			11/01/06	5.39	4.87
			01/12/07	5.29	5.18
			03/12/07	6.69	6.39
			05/07/07	6.31	6.19
			07/10/07	11.27	11.07
Pike Island	84.2	Mg (mg/L)	07/14/05	10.97	9.36
			09/07/05	12.65	12.49
			11/08/05	8.62	10.46
			01/04/06	8.4	8.25
			03/07/06	8.64	8.26
			05/04/06	7.95	5.03
			07/13/06	8.34	8.45
			09/14/06	6.33	6.1
			11/01/06	5.22	4.58
			01/12/07	5.2	5.16
			03/12/07	6.66	6.38
			05/07/07	6.38	5.8
			07/10/07	11.99	11.5
Hannibal	126.4	Mg (mg/L)	07/14/05	11.85	11.38
			09/15/05	13.57	13.37
			11/15/05	7.94	10.47
			01/04/06	9.06	8.44
			03/13/06	9.2	8.28
			05/03/06	8.14	5.55
			07/18/06	8.42	7.43
			09/06/06	8.66	8.79
			11/07/06	5.85	5.21
			01/02/07	7.48	7.42
			03/13/07	7.19	7.18
			05/10/07	7.09	6.05
			07/12/07	12.92	12.36
Willow Island	161.7	Mg (mg/L)	07/12/05	12.48	11.86
			09/15/05	14.6	14.46
			11/15/05	9.14	11.78
			01/03/06	9.19	9.1
			03/13/06	8.66	9.15
			05/03/06	6.76	5.3
			07/18/06	8.33	7.95
			09/06/06	9.57	9.61
			11/07/06	5.66	5.16
			01/02/07	8.7	8.1
			03/13/07	7.19	7.04
			05/10/07	7.22	6.88
			07/12/07	14.29	14.17
Belleville	203.9	Mg (mg/L)	07/12/05	14.61	11.75
			09/13/05	13.6	13.65
			11/03/05	14.76	15.83
			01/03/06	10.75	10.76
			03/09/06	11.08	10.72
			05/11/06	12.46	8.69
			07/12/06	9.95	9.73
			09/19/06	8.41	8.19
			11/24/06	7.12	6.55
			01/04/07	9.88	8.76
			03/15/07	9.62	9.28
			05/09/07	9.28	9.3
			07/17/07	15.39	13.22

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
R. C. Byrd	279.2	Mg (mg/L)	07/12/05	11.13	10.83
R. C. Byrd	279.2	Mg (mg/L)	09/13/05	13.06	12.8
R. C. Byrd	279.2	Mg (mg/L)	11/03/05	12.46	14.62
R. C. Byrd	279.2	Mg (mg/L)	01/03/06	7.76	7.43
R. C. Byrd	279.2	Mg (mg/L)	03/09/06	9.48	8.77
R. C. Byrd	279.2	Mg (mg/L)	05/11/06	8.49	6.18
R. C. Byrd	279.2	Mg (mg/L)	07/12/06	6.42	7.4
R. C. Byrd	279.2	Mg (mg/L)	09/19/06	7.57	7.45
R. C. Byrd	279.2	Mg (mg/L)	11/24/06	6.19	5.58
R. C. Byrd	279.2	Mg (mg/L)	01/04/07	6.98	6.39
R. C. Byrd	279.2	Mg (mg/L)	03/15/07	7.22	6.95
R. C. Byrd	279.2	Mg (mg/L)	05/09/07	8.7	7.67
R. C. Byrd	279.2	Mg (mg/L)	07/17/07	12.99	12.94
Greenup	341.0	Mg (mg/L)	07/14/05	11.3	10.93
Greenup	341.0	Mg (mg/L)	09/20/05	13.57	14.15
Greenup	341.0	Mg (mg/L)	11/08/05	12.75	14.14
Greenup	341.0	Mg (mg/L)	01/19/06	9.4	8.41
Greenup	341.0	Mg (mg/L)	03/07/06	9.34	8.7
Greenup	341.0	Mg (mg/L)	05/10/06	9.69	7.39
Greenup	341.0	Mg (mg/L)	07/25/06	9.44	9.12
Greenup	341.0	Mg (mg/L)	09/12/06	10.25	9.86
Greenup	341.0	Mg (mg/L)	11/28/06	7.28	6.73
Greenup	341.0	Mg (mg/L)	01/17/07	6.33	6.03
Greenup	341.0	Mg (mg/L)	03/15/07	8.99	8.88
Greenup	341.0	Mg (mg/L)	05/09/07	no data	7.19
Greenup	341.0	Mg (mg/L)	07/26/07	13.52	12.72
Meldahl	436.2	Mg (mg/L)	07/14/05	13.12	11.7
Meldahl	436.2	Mg (mg/L)	09/20/05	14.28	13.41
Meldahl	436.2	Mg (mg/L)	11/08/05	12.45	15.51
Meldahl	436.2	Mg (mg/L)	01/19/06	10.1	8.87
Meldahl	436.2	Mg (mg/L)	03/07/06	10.47	10.39
Meldahl	436.2	Mg (mg/L)	05/10/06	10.3	8.62
Meldahl	436.2	Mg (mg/L)	07/12/06	10.73	8.94
Meldahl	436.2	Mg (mg/L)	09/12/06	9.52	9.3
Meldahl	436.2	Mg (mg/L)	11/28/06	9.02	7.46
Meldahl	436.2	Mg (mg/L)	01/30/07	9.5	7.81
Meldahl	436.2	Mg (mg/L)	03/15/07	9.02	8.34
Meldahl	436.2	Mg (mg/L)	05/09/07	9.77	7.5
Meldahl	436.2	Mg (mg/L)	07/25/07	14.69	13.42
Anderson Ferry	477.5	Mg (mg/L)	07/13/05	14.2	12.68
Anderson Ferry	477.5	Mg (mg/L)	09/27/05	14.52	14.45
Anderson Ferry	477.5	Mg (mg/L)	11/16/05	11.36	14.2
Anderson Ferry	477.5	Mg (mg/L)	01/20/06	10.88	11.1
Anderson Ferry	477.5	Mg (mg/L)	03/06/06	11.6	10.78
Anderson Ferry	477.5	Mg (mg/L)	05/09/06	10.42	9.11
Anderson Ferry	477.5	Mg (mg/L)	07/12/06	10.78	9.65
Anderson Ferry	477.5	Mg (mg/L)	09/11/06	10.52	9.42
Anderson Ferry	477.5	Mg (mg/L)	11/09/06	9.21	7.25
Anderson Ferry	477.5	Mg (mg/L)	01/24/07	9.39	7.3
Anderson Ferry	477.5	Mg (mg/L)	03/27/07	8.45	8.29
Anderson Ferry	477.5	Mg (mg/L)	05/08/07	9.96	9.79
Anderson Ferry	477.5	Mg (mg/L)	07/24/07	14.74	13.91
Markland	531.5	Mg (mg/L)	07/13/05	11.89	13.25
Markland	531.5	Mg (mg/L)	09/27/05	13.49	14.02
Markland	531.5	Mg (mg/L)	11/16/05	12.89	16.74
Markland	531.5	Mg (mg/L)	01/20/06	11.06	8.95
Markland	531.5	Mg (mg/L)	03/06/06	11.99	12.2
Markland	531.5	Mg (mg/L)	05/09/06	12.03	10.45
Markland	531.5	Mg (mg/L)	07/13/06	11.46	10.27
Markland	531.5	Mg (mg/L)	09/13/06	10.52	9.13
Markland	531.5	Mg (mg/L)	11/09/06	9.52	14.8
Markland	531.5	Mg (mg/L)	01/24/07	15.86	7.36
Markland	531.5	Mg (mg/L)	03/27/07	8.93	8.28
Markland	531.5	Mg (mg/L)	05/22/07	11.88	9.53
Markland	531.5	Mg (mg/L)	07/25/07	15.2	12.09
Louisville	600.6	Mg (mg/L)	07/13/05	13.35	13.1
Louisville	600.6	Mg (mg/L)	09/21/05	14.24	14.06
Louisville	600.6	Mg (mg/L)	11/10/05	15.39	18.71
Louisville	600.6	Mg (mg/L)	01/25/06	11.38	10.35
Louisville	600.6	Mg (mg/L)	03/09/06	12.24	15.31
Louisville	600.6	Mg (mg/L)	05/17/06	12.28	11.31
Louisville	600.6	Mg (mg/L)	07/12/06	11.12	10.48
Louisville	600.6	Mg (mg/L)	09/20/06	10.76	10.93
Louisville	600.6	Mg (mg/L)	11/15/06	10.8	9.56
Louisville	600.6	Mg (mg/L)	01/31/07	10.74	9.25
Louisville	600.6	Mg (mg/L)	03/22/07	9.52	8.35
Louisville	600.6	Mg (mg/L)	05/22/07	11.57	11.9
Louisville	600.6	Mg (mg/L)	07/24/07	15.61	15.65
West Point	625.9	Mg (mg/L)	07/13/05	15.73	13.4
West Point	625.9	Mg (mg/L)	09/21/05	16.14	16.92
West Point	625.9	Mg (mg/L)	11/10/05	17.23	21.8
West Point	625.9	Mg (mg/L)	01/25/06	12.64	9.48
West Point	625.9	Mg (mg/L)	03/09/06	13.51	13.07
West Point	625.9	Mg (mg/L)	05/17/06	13.52	12.38
West Point	625.9	Mg (mg/L)	07/12/06	15.62	14.02
West Point	625.9	Mg (mg/L)	09/20/06	11.58	11.68
West Point	625.9	Mg (mg/L)	11/15/06	11.07	9.81
West Point	625.9	Mg (mg/L)	01/19/07	8.96	8.64
West Point	625.9	Mg (mg/L)	03/22/07	9.26	6.88
West Point	625.9	Mg (mg/L)	05/22/07	13.32	13.2
West Point	625.9	Mg (mg/L)	07/25/07	16.03	16.94

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Cannelton	720.7	Mg (mg/L)	07/13/05	13.76	12.65
			09/21/05	12.24	13.64
			11/10/05	15.98	18.98
			01/25/06	12.1	10.68
			03/09/06	11.07	11.45
			05/09/06	10.48	10.56
			07/27/06	10.74	10.33
			09/14/06	11.13	10.59
			11/01/06	10.12	7.3
			01/19/07	9.58	8.18
			03/22/07	9.61	8.61
			05/08/07	10	9.37
			07/24/07	15.22	15.33
Newburgh	776.1	Mg (mg/L)	07/13/05	12.59	11.34
			09/21/05	13.92	15.25
			11/09/05	15.12	21.93
			01/25/06	12.36	10.96
			03/09/06	12.15	12.48
			05/10/06	11.87	11.85
			07/12/06	14.61	12.34
			09/20/06	10.69	10.85
			11/15/06	10.84	10.45
			01/31/07	10.7	9.95
			03/22/07	9.77	7.14
			05/22/07	11.33	11.2
			07/24/07	14.5	14.69
J.T. Myers	846.0	Mg (mg/L)	07/12/05	12.42	12.19
			09/20/05	12.2	12.86
			11/09/05	15.71	19.81
			01/24/06	12.65	10.9
			03/08/06	10.93	11.41
			05/16/06	11.69	10.01
			07/11/06	13.5	13.02
			09/19/06	11.11	11.31
			11/15/06	9.99	9.59
			01/30/07	9.63	9.03
			03/22/07	10.81	9.76
			05/21/07	11.09	11.13
			07/25/07	14.71	15.69
Smithland	918.5	Mg (mg/L)	07/12/05	12.85	13.25
			09/20/05	13.98	14.06
			11/09/05	16.43	18.87
			01/24/06	13.68	12.07
			03/08/06	14.5	13.32
			05/16/06	15.22	13.4
			07/11/06	15.6	15.79
			09/19/06	11.18	11.45
			11/14/06	11.63	10.51
			01/30/07	11.92	11.18
			03/21/07	11.45	10.88
			05/21/07	13.6	14.18
			07/25/07	16.58	16.85
L&D 52	938.9	Mg (mg/L)	07/12/05	14.76	13.98
			09/20/05	10.97	11.85
			11/09/05	11.85	14.95
			01/24/06	13.93	11.94
			03/08/06	13.64	14.29
			05/16/06	14.24	12.84
			07/11/06	16.73	14.64
			09/19/06	12.45	11.39
			11/14/06	11.88	9.98
			01/30/07	11	10.09
			03/21/07	11.4	10.82
			05/21/07	13.74	14.23
			07/25/07	16.23	16.78
New Cumberland	54.4	Mn (ug/L)	07/14/05	71.46	0.4
			09/07/05	38.97	0.34
			11/08/05	40.74	19.16
			01/04/06	213.29	89.26
			03/07/06	134	107.3
			05/04/06	74.77	26.29
			07/13/06	14.47	13.98
			09/14/06	66.82	2.11
			11/01/06	282.07	52.42
			01/12/07	140.86	56.87
			03/12/07	147.68	107.72
			05/07/07	114.43	63.58
			07/10/07	52.28	0.78
Pike Island	84.2	Mn (ug/L)	07/14/05	60.07	0.62
			09/07/05	46.47	0.34
			11/08/05	40.34	32.4
			01/04/06	355.35	102.86
			03/07/06	126	103.17
			05/04/06	51.38	24.84
			07/13/06	50.53	30.91
			09/14/06	94.46	4.16
			11/01/06	347.18	43.41
			01/12/07	203.09	40.96
			03/12/07	166.72	113.96
			05/07/07	92.16	35.21
			07/10/07	40.38	0.45

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Hannibal	126.4	Mn (ug/L)	07/14/05	50.8	0.56
			09/15/05	33.13	0.59
			11/15/05	45.47	12.05
			01/04/06	345.46	128.49
			03/13/06	157.26	84.33
			05/03/06	49.35	39.45
			07/18/06	24.76	0.61
			09/06/06	131.34	2.69
			11/07/06	100.37	37.99
			01/02/07	106.58	82.58
			03/13/07	158.08	116.78
			05/10/07	64.28	2.2
			07/12/07	26.75	0.51
Willow Island	161.7	Mn (ug/L)	07/12/05	35.78	0.5
			09/15/05	25.36	0.65
			11/15/05	38.05	10.95
			01/03/06	228.67	99.8
			03/13/06	157.07	85.12
			05/03/06	44.88	31.22
			07/18/06	17.65	0.66
			09/06/06	99.95	15.96
			11/07/06	109.84	30.39
			01/02/07	110.09	86.24
			03/13/07	166.09	109.09
			05/10/07	53.52	3.96
			07/12/07	39.45	0.98
Belleville	203.9	Mn (ug/L)	07/12/05	41.38	0.65
			09/13/05	17.34	1.19
			11/03/05	36.39	2.27
			01/03/06	202.04	53.82
			03/09/06	137.13	53.68
			05/11/06	40.78	6.7
			07/12/06	32.9	11.34
			09/19/06	86.11	10.66
			11/24/06	113.34	9.16
			01/04/07	81.8	54.94
			03/15/07	146.49	72.89
			05/09/07	63.88	6.99
			07/17/07	26.58	1.77
R. C. Byrd	279.2	Mn (ug/L)	07/12/05	123.46	41.35
			09/13/05	63.79	9.68
			11/03/05	52.82	19.83
			01/03/06	78.77	33.74
			03/09/06	158.9	55.77
			05/11/06	111.08	88.49
			07/12/06	118.19	73.49
			09/19/06	111.39	33.06
			11/24/06	60.75	20.59
			01/04/07	52.67	30.93
			03/15/07	169.53	83.79
			05/09/07	352.88	261.77
			07/17/07	80.56	33.74
Greenup	341.0	Mn (ug/L)	07/14/05	27.49	3.57
			09/20/05	41.1	2.83
			11/08/05	29.36	2.64
			01/19/06	217.01	33.17
			03/07/06	94.58	12.79
			05/10/06	48.67	29.55
			07/25/06	34.83	5.59
			09/12/06	72.35	4.14
			11/28/06	47.94	14.4
			01/17/07	334.37	13.27
			03/15/07	126.92	34.55
			05/09/07	no data	8.33
			07/26/07	47.38	19.1
Meldahl	436.2	Mn (ug/L)	07/14/05	293.06	0.95
			09/20/05	34.03	1.81
			11/08/05	135.02	0.97
			01/19/06	88.2	4.72
			03/07/06	76.24	0.42
			05/10/06	24.58	7.12
			07/12/06	29.89	8.92
			09/12/06	104.63	19.85
			11/28/06	40.03	3.42
			01/30/07	42.51	7.71
			03/15/07	95.35	7.38
			05/09/07	96.17	2.39
			07/25/07	22.96	1.37
Anderson Ferry	477.5	Mn (ug/L)	07/13/05	49.42	4.56
			09/27/05	51.44	8.98
			11/16/05	119.14	8.36
			01/20/06	239.96	6.74
			03/06/06	54.16	5.62
			05/09/06	87.07	60.86
			07/12/06	44.37	29.55
			09/11/06	45.86	2.89
			11/09/06	120.69	30.34
			01/24/07	1132.09	127.72
			03/27/07	238.19	6.95
			05/08/07	88.7	5.77
			07/24/07	35.32	13.42

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Markland	531.5	Mn (ug/L)	07/13/05	39.3	0.39
			09/27/05	37.58	2.52
			11/16/05	69.4	2.28
			01/20/06	166.37	32.62
			03/06/06	69.68	2.55
			05/09/06	13.39	4.99
			07/13/06	37.75	20.55
			09/13/06	103.38	12.83
			11/09/06	57.86	5.7
			01/24/07	194.22	1.66
			03/27/07	238.03	7.27
			05/22/07	35.81	1.31
			07/25/07	22.42	2.51
Louisville	600.6	Mn (ug/L)	07/13/05	36.11	9.05
			09/21/05	57.94	11.04
			11/10/05	32.6	6.12
			01/25/06	125.04	10.56
			03/09/06	45.21	0.68
			05/17/06	40.97	26.82
			07/12/06	40.64	18.28
			09/20/06	74.47	17.75
			11/15/06	75.98	9.38
			01/31/07	70.22	10.24
			03/22/07	639.68	4.54
			05/22/07	433.51	203.61
			07/24/07	40.72	23.12
West Point	625.9	Mn (ug/L)	07/13/05	85.7	43.21
			09/21/05	45.1	14.62
			11/10/05	75.55	42.41
			01/25/06	392.28	4.59
			03/09/06	204.23	59.32
			05/17/06	56.56	37.37
			07/12/06	100.72	91.04
			09/20/06	86.22	24.78
			11/15/06	138.64	22.35
			01/19/07	172.79	7.5
			03/22/07	610.51	3.66
			05/22/07	114.45	10.64
			07/25/07	54.56	33.87
Cannelton	720.7	Mn (ug/L)	07/13/05	41.5	2.75
			09/21/05	25.75	6.52
			11/10/05	20.57	4.44
			01/25/06	646.59	18.87
			03/09/06	24.75	0.29
			05/09/06	24.21	13.66
			07/27/06	28.81	3.06
			09/14/06	66.16	7.03
			11/01/06	582	3.81
			01/19/07	440.95	7.33
			03/22/07	718.76	2.01
			05/08/07	35.08	1.53
			07/24/07	18.52	5.71
Newburgh	776.1	Mn (ug/L)	07/13/05	29.45	0.57
			09/21/05	22.59	0.34
			11/09/05	32.98	3.75
			01/25/06	572.61	1.95
			03/09/06	34.04	1.72
			05/10/06	35.04	21.55
			07/12/06	57.84	12.12
			09/20/06	39.26	4.36
			11/15/06	113.7	13.61
			01/31/07	234.72	14.56
			03/22/07	385.18	1.54
			05/22/07	87.11	0.28
			07/24/07	20.76	8.4
J.T. Myers	846.0	Mn (ug/L)	07/12/05	43.1	0.85
			09/20/05	39.7	2.07
			11/09/05	37.64	3.51
			01/24/06	569.96	5.55
			03/08/06	33.33	1.06
			05/16/06	36.19	6.44
			07/11/06	50.13	0.88
			09/19/06	45.78	1.44
			11/15/06	213.12	1.6
			01/30/07	325.45	6.45
			03/22/07	356.29	0.9
			05/21/07	71.62	0.44
			07/25/07	26.57	1.03
Smithland	918.5	Mn (ug/L)	07/12/05	35.12	0.87
			09/20/05	38.37	2.3
			11/09/05	27.32	0.26
			01/24/06	406.88	10.05
			03/08/06	27.09	1.41
			05/16/06	42.09	6.85
			07/11/06	32.1	2.5
			09/19/06	39.88	2.09
			11/14/06	76.94	2.77
			01/30/07	165.9	4.88
			03/21/07	256.38	1.72
			05/21/07	25.31	0.33
			07/25/07	70.55	7.27

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
L&D 52	938.9	Mn (ug/L)	07/12/05	55.34	4.18
			09/20/05	35.64	1.57
			11/09/05	102.14	0.47
			01/24/06	357.94	5.98
			03/08/06	48.26	2.15
			05/16/06	52.75	8.78
			07/11/06	85.73	1.35
			09/19/06	493.7	1.08
			11/14/06	218.79	73.94
			01/30/07	229.14	11.58
			03/21/07	254.6	4.13
			05/21/07	57.51	0.49
			07/25/07	48.99	0.74
New Cumberland	54.4	Ni (ug/L)	07/14/05	1.97	1.69
			09/07/05	2.52	2.38
			11/08/05	2.56	2.45
			01/04/06	6.33	2.64
			03/07/06	2.22	2.26
			05/04/06	2.57	2.28
			07/13/06	1.57	1.59
			09/14/06	2.25	1.38
			11/01/06	6.15	2.46
			01/12/07	4.1	2.3
			03/12/07	4.41	3.85
			05/07/07	3.23	2.49
			07/10/07	2.3	2.27
Pike Island	84.2	Ni (ug/L)	07/14/05	1.99	1.83
			09/07/05	2.85	2.32
			11/08/05	2.9	3.15
			01/04/06	9.73	2.99
			03/07/06	2.29	2.18
			05/04/06	2.58	1.87
			07/13/06	1.89	1.41
			09/14/06	2.86	1.44
			11/01/06	7.21	2.18
			01/12/07	5.16	2.14
			03/12/07	4.83	3.67
			05/07/07	2.93	2.06
			07/10/07	2.02	1.86
Hannibal	126.4	Ni (ug/L)	07/14/05	1.95	1.89
			09/15/05	3.16	2.6
			11/15/05	2.75	3.02
			01/04/06	8.28	2.45
			03/13/06	2.78	1.97
			05/03/06	2.06	1.86
			07/18/06	1.69	1.45
			09/06/06	2.94	1.4
			11/07/06	3.27	2.15
			01/02/07	3.8	3.13
			03/13/07	4.37	3.86
			05/10/07	2.6	1.58
			07/12/07	2.36	2.22
Willow Island	161.7	Ni (ug/L)	07/12/05	1.68	2.13
			09/15/05	2.16	2.18
			11/15/05	2.78	3.24
			01/03/06	6.59	3.82
			03/13/06	2.62	1.84
			05/03/06	1.76	1.6
			07/18/06	1.68	1.31
			09/06/06	2.93	1.67
			11/07/06	3.47	2.12
			01/02/07	3.73	2.97
			03/13/07	4.6	2.83
			05/10/07	2.27	1.96
			07/12/07	2.54	2.27
Belleville	203.9	Ni (ug/L)	07/12/05	1.81	1.71
			09/13/05	2.62	2.64
			11/03/05	2.71	2.43
			01/03/06	5.15	2.2
			03/09/06	1.96	1.63
			05/11/06	1.76	1.58
			07/12/06	1.82	1.73
			09/19/06	2.6	1.36
			11/24/06	3.97	1.99
			01/04/07	3.19	2.46
			03/15/07	4.21	2.92
			05/09/07	2.83	1.82
			07/17/07	2.32	2.07
R. C. Byrd	279.2	Ni (ug/L)	07/12/05	2.17	1.31
			09/13/05	2.44	2.06
			11/03/05	2.45	2.19
			01/03/06	2.85	1.55
			03/09/06	2.07	1.1
			05/11/06	2.06	1.33
			07/12/06	2.55	1.71
			09/19/06	2.7	1.41
			11/24/06	2.26	1.37
			01/04/07	1.66	1.15
			03/15/07	3.79	1.85
			05/09/07	3.49	1.3
			07/17/07	2.32	2

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Greenup	341.0	Ni (ug/L)	07/14/05	1.42	1.48
			09/20/05	2.83	2.37
			11/08/05	2.29	1.91
			01/19/06	5.08	1.43
			03/07/06	1.56	0.97
			05/10/06	1.37	1.11
			07/25/06	1.76	1.18
			09/12/06	2.32	1.53
			11/28/06	2.23	1.45
			01/17/07	6.89	1.25
			03/15/07	3.62	1.89
			05/09/07	no data	1.05
			07/26/07	2.33	1.89
Meldahl	436.2	Ni (ug/L)	07/14/05	4.19	1.59
			09/20/05	3.16	2.05
			11/08/05	3.42	2.15
			01/19/06	3.77	1.32
			03/07/06	1.29	0.86
			05/10/06	1.22	1.11
			07/12/06	1.55	1.14
			09/12/06	3.48	1.65
			11/28/06	2.34	1.47
			01/30/07	2.46	1.31
			03/15/07	3.53	1.58
			05/09/07	2.82	1.01
			07/25/07	2.3	2.18
Anderson Ferry	477.5	Ni (ug/L)	07/13/05	2.15	1.84
			09/27/05	3.59	2.3
			11/16/05	4.65	2.45
			01/20/06	7.64	1.6
			03/06/06	1.38	0.92
			05/09/06	1.98	1.05
			07/12/06	1.87	1.49
			09/11/06	2.37	1.53
			11/09/06	3.41	1.39
			01/24/07	22.31	1.25
			03/27/07	6.01	1.69
			05/08/07	2.73	1.19
			07/24/07	2.38	1.87
Markland	531.5	Ni (ug/L)	07/13/05	1.68	1.51
			09/27/05	3.44	2.02
			11/16/05	3.52	2.55
			01/20/06	4.42	1.47
			03/06/06	1.32	0.81
			05/09/06	1.09	1.08
			07/13/06	1.8	1.46
			09/13/06	3.14	1.43
			11/09/06	2.59	1.3
			01/24/07	5.02	1.15
			03/27/07	6.59	1.47
			05/22/07	1.5	0.83
			07/25/07	2.15	1.96
Louisville	600.6	Ni (ug/L)	07/13/05	1.93	1.53
			09/21/05	3.63	1.69
			11/10/05	2.6	3.31
			01/25/06	4.39	1.49
			03/09/06	1.09	0.76
			05/17/06	1.69	1.14
			07/12/06	1.84	1.23
			09/20/06	2.94	1.62
			11/15/06	2.66	1.28
			01/31/07	2.58	1.21
			03/22/07	13.12	1.51
			05/22/07	5.79	1.05
			07/24/07	2.34	1.83
West Point	625.9	Ni (ug/L)	07/13/05	2.89	2.52
			09/21/05	3.06	2.8
			11/10/05	3.79	4.05
			01/25/06	10.24	1.25
			03/09/06	3.06	1.24
			05/17/06	2.55	1.71
			07/12/06	3.04	2.68
			09/20/06	3.32	2.05
			11/15/06	3.85	1.68
			01/19/07	5.21	1.42
			03/22/07	12.83	1.38
			05/22/07	3.29	2.24
			07/25/07	3.23	2.8
Cannelton	720.7	Ni (ug/L)	07/13/05	1.74	1.58
			09/21/05	0.74	1.75
			11/10/05	2.58	3.33
			01/25/06	13.65	1.44
			03/09/06	0.82	0.8
			05/09/06	1.47	1.09
			07/27/06	1.69	1.13
			09/14/06	2.5	1.35
			11/01/06	10.68	1.54
			01/19/07	10.35	1.36
			03/22/07	15.82	1.42
			05/08/07	2.04	0.98
			07/24/07	2.08	1.83

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Newburgh	776.1	Ni (ug/L)	07/13/05	1.58	1.51
			09/21/05	2.13	1.94
			11/09/05	3.19	3.68
			01/25/06	12.75	1.61
			03/09/06	1.1	0.88
			05/10/06	1.83	1.27
			07/12/06	2.28	1.17
			09/20/06	2.47	1.71
			11/15/06	3.33	1.78
			01/31/07	5.88	1.34
			03/22/07	9.87	1.16
			05/22/07	2.22	1.06
			07/24/07	2.01	2.22
J.T. Myers	846.0	Ni (ug/L)	07/12/05	1.57	1.24
			09/20/05	2.43	1.7
			11/09/05	2.88	3.76
			01/24/06	13.05	1.48
			03/08/06	1.03	0.66
			05/16/06	1.77	1.18
			07/11/06	2.25	1.18
			09/19/06	2.7	1.42
			11/15/06	5.24	1.34
			01/30/07	7.56	1.24
			03/22/07	9.04	1.34
			05/21/07	2.02	1.06
			07/25/07	2.09	1.69
Smithland	918.5	Ni (ug/L)	07/12/05	1.37	1.27
			09/20/05	1.85	1.55
			11/09/05	2.26	1.94
			01/24/06	11.36	1.54
			03/08/06	0.99	0.71
			05/16/06	2.15	1.34
			07/11/06	1.69	1.25
			09/19/06	2.43	1.54
			11/14/06	2.98	1.43
			01/30/07	5.15	1.23
			03/21/07	7.1	1.39
			05/21/07	1.24	1.05
			07/25/07	2.17	1.63
L&D 52	938.9	Ni (ug/L)	07/12/05	1.84	1.28
			09/20/05	1.64	1.26
			11/09/05	2.66	2.47
			01/24/06	9.29	1.4
			03/08/06	1.65	0.61
			05/16/06	2.57	1.42
			07/11/06	2.85	1.9
			09/19/06	11.16	1.57
			11/14/06	4.56	1.48
			01/30/07	7.31	1.24
			03/21/07	6.89	1.32
			05/21/07	1.61	1.1
			07/25/07	2.09	1.65
New Cumberland	54.4	Pb (ug/L)	07/14/05	0.41	<0.1
			09/07/05	0.29	<0.1
			11/08/05	0.34	<0.1
			01/04/06	3.18	<0.1
			03/07/06	0.21	<0.1
			05/04/06	0.28	<0.1
			07/13/06	<0.1	<0.1
			09/14/06	0.85	<0.1
			11/01/06	2.53	<0.1
			01/12/07	1.11	<0.1
			03/12/07	0.62	<0.1
			05/07/07	0.55	<0.1
			07/10/07	0.53	<0.1
Pike Island	84.2	Pb (ug/L)	07/14/05	0.15	<0.1
			09/07/05	0.42	<0.1
			11/08/05	0.4	<0.1
			01/04/06	4.65	<0.1
			03/07/06	0.17	<0.1
			05/04/06	0.22	<0.1
			07/13/06	0.44	<0.1
			09/14/06	1.25	<0.1
			11/01/06	3.51	<0.1
			01/12/07	1.82	<0.1
			03/12/07	0.85	<0.1
			05/07/07	0.49	<0.1
			07/10/07	0.26	<0.1
Hannibal	126.4	Pb (ug/L)	07/14/05	0.18	<0.1
			09/15/05	0.23	<0.1
			11/15/05	0.42	<0.1
			01/04/06	3.53	<0.1
			03/13/06	0.59	<0.1
			05/03/06	0.2	<0.1
			07/18/06	0.27	<0.1
			09/06/06	1.41	<0.1
			11/07/06	0.94	<0.1
			01/02/07	0.47	<0.1
			03/13/07	0.93	<0.1
			05/10/07	0.46	<0.1
			07/12/07	0.21	<0.1

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Willow Island	161.7	Pb (ug/L)	07/12/05	0.18	<0.1
			09/15/05	0.1	<0.1
			11/15/05	0.17	<0.1
			01/03/06	1.94	0.11
			03/13/06	0.66	<0.1
			05/03/06	0.3	<0.1
			07/18/06	0.2	<0.1
			09/06/06	1.15	<0.1
			11/07/06	1.13	<0.1
			01/02/07	0.5	<0.1
			03/13/07	0.89	<0.1
			05/10/07	0.38	<0.1
			07/12/07	0.32	<0.1
Belleville	203.9	Pb (ug/L)	07/12/05	0.17	<0.1
			09/13/05	<0.1	<0.1
			11/03/05	0.35	0.1
			01/03/06	2.08	<0.1
			03/09/06	0.29	<0.1
			05/11/06	0.2	<0.1
			07/12/06	0.34	<0.1
			09/19/06	0.89	<0.1
			11/24/06	1.28	<0.1
			01/04/07	0.52	0.13
			03/15/07	1.13	<0.1
			05/09/07	0.67	0.1
			07/17/07	0.18	<0.1
R. C. Byrd	279.2	Pb (ug/L)	07/12/05	0.7	<0.1
			09/13/05	0.4	0.16
			11/03/05	0.63	<0.1
			01/03/06	0.91	<0.1
			03/09/06	0.54	<0.1
			05/11/06	0.57	<0.1
			07/12/06	1.08	<0.1
			09/19/06	1.09	<0.1
			11/24/06	0.87	<0.1
			01/04/07	0.4	<0.1
			03/15/07	1.57	<0.1
			05/09/07	1.54	<0.1
			07/17/07	0.58	<0.1
Greenup	341.0	Pb (ug/L)	07/14/05	<0.1	<0.1
			09/20/05	0.31	<0.1
			11/08/05	0.2	<0.1
			01/19/06	2.6	<0.1
			03/07/06	0.25	<0.1
			05/10/06	0.21	<0.1
			07/25/06	0.37	<0.1
			09/12/06	0.6	<0.1
			11/28/06	0.61	<0.1
			01/17/07	4.42	<0.1
			03/15/07	1.43	<0.1
			05/09/07	no data	<0.1
			07/26/07	0.28	<0.1
Meldahl	436.2	Pb (ug/L)	07/14/05	1.65	<0.1
			09/20/05	0.22	<0.1
			11/08/05	1.16	<0.1
			01/19/06	1.64	<0.1
			03/07/06	0.3	<0.1
			05/10/06	0.22	<0.1
			07/12/06	0.31	<0.1
			09/12/06	0.95	<0.1
			11/28/06	0.72	<0.1
			01/30/07	0.73	<0.1
			03/15/07	1.51	<0.1
			05/09/07	1.29	<0.1
			07/25/07	0.75	<0.1
Anderson Ferry	477.5	Pb (ug/L)	07/13/05	0.3	<0.1
			09/27/05	0.43	0.11
			11/16/05	1.93	<0.1
			01/20/06	6.61	<0.1
			03/06/06	0.22	<0.1
			05/09/06	0.74	<0.1
			07/12/06	0.49	<0.1
			09/11/06	0.69	<0.1
			11/09/06	1.7	<0.1
			01/24/07	18.96	<0.1
			03/27/07	4.04	<0.1
			05/08/07	1.21	<0.1
			07/24/07	0.33	<0.1
Markland	531.5	Pb (ug/L)	07/13/05	0.18	<0.1
			09/27/05	0.31	<0.1
			11/16/05	0.89	<0.1
			01/20/06	2.36	<0.1
			03/06/06	0.3	<0.1
			05/09/06	<0.1	<0.1
			07/13/06	0.34	<0.1
			09/13/06	1.23	<0.1
			11/09/06	1.07	<0.1
			01/24/07	3.1	<0.1
			03/27/07	3.9	0.13
			05/22/07	0.38	<0.1
			07/25/07	0.2	<0.1

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Louisville	600.6	Pb (ug/L)	07/13/05	0.3	<0.1
			09/21/05	0.76	<0.1
			11/10/05	0.42	<0.1
			01/25/06	2.45	<0.1
			03/09/06	0.25	<0.1
			05/17/06	0.43	<0.1
			07/12/06	0.41	<0.1
			09/20/06	0.99	<0.1
			11/15/06	1.12	<0.1
			01/31/07	1.04	<0.1
			03/22/07	9.28	0.14
			05/22/07	3.22	<0.1
			07/24/07	0.33	<0.1
West Point	625.9	Pb (ug/L)	07/13/05	0.36	<0.1
			09/21/05	0.35	<0.1
			11/10/05	0.69	<0.1
			01/25/06	6.47	<0.1
			03/09/06	1.61	0.13
			05/17/06	0.68	<0.1
			07/12/06	0.64	<0.1
			09/20/06	1.08	<0.1
			11/15/06	1.91	<0.1
			01/19/07	2.82	<0.1
			03/22/07	8.94	<0.1
			05/22/07	0.96	0.12
			07/25/07	0.29	<0.1
Cannelton	720.7	Pb (ug/L)	07/13/05	0.25	<0.1
			09/21/05	0.22	<0.1
			11/10/05	0.12	<0.1
			01/25/06	8.96	<0.1
			03/09/06	0.19	<0.1
			05/09/06	0.25	<0.1
			07/27/06	0.36	<0.1
			09/14/06	0.85	<0.1
			11/01/06	7.62	<0.1
			01/19/07	6.93	0.1
			03/22/07	9.93	<0.1
			05/08/07	0.69	<0.1
			07/24/07	0.18	<0.1
Newburgh	776.1	Pb (ug/L)	07/13/05	0.16	<0.1
			09/21/05	0.14	<0.1
			11/09/05	0.3	0.1
			01/25/06	8.38	<0.1
			03/09/06	0.23	<0.1
			05/10/06	0.51	<0.1
			07/12/06	0.85	<0.1
			09/20/06	0.7	<0.1
			11/15/06	1.52	<0.1
			01/31/07	3.17	<0.1
			03/22/07	5.98	<0.1
			05/22/07	0.93	<0.1
			07/24/07	0.12	<0.1
J.T. Myers	846.0	Pb (ug/L)	07/12/05	0.25	<0.1
			09/20/05	0.34	<0.1
			11/09/05	0.43	<0.1
			01/24/06	8.39	<0.1
			03/08/06	0.23	<0.1
			05/16/06	0.34	<0.1
			07/11/06	0.84	<0.1
			09/19/06	0.85	<0.1
			11/15/06	2.96	<0.1
			01/30/07	4.81	<0.1
			03/22/07	6.15	<0.1
			05/21/07	0.78	<0.1
			07/25/07	0.24	<0.1
Smithland	918.5	Pb (ug/L)	07/12/05	0.16	<0.1
			09/20/05	0.23	<0.1
			11/09/05	0.24	<0.1
			01/24/06	6.62	<0.1
			03/08/06	0.21	<0.1
			05/16/06	0.65	<0.1
			07/11/06	0.42	<0.1
			09/19/06	0.69	<0.1
			11/14/06	1.26	<0.1
			01/30/07	3.05	<0.1
			03/21/07	4.56	<0.1
			05/21/07	0.23	0.11
			07/25/07	0.45	<0.1
L&D 52	938.9	Pb (ug/L)	07/12/05	0.44	<0.1
			09/20/05	0.33	<0.1
			11/09/05	3.33	<0.1
			01/24/06	6.32	<0.1
			03/08/06	0.41	<0.1
			05/16/06	1.04	<0.1
			07/11/06	1.29	<0.1
			09/19/06	7.24	<0.1
			11/14/06	2.5	<0.1
			01/30/07	4.77	<0.1
			03/21/07	5.22	<0.1
			05/21/07	0.42	<0.1
			07/25/07	0.46	<0.1

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
			07/14/05	<0.5	<0.5
			09/07/05	<0.5	<0.5
			11/08/05	<0.5	<0.5
			01/04/06	<0.5	<0.5
			03/07/06	<0.5	<0.5
			05/04/06	<0.5	<0.5
New Cumberland	54.4	Sb (ug/L)	07/13/06	<0.5	<0.5
			09/14/06	<0.5	<0.5
			11/01/06	<0.5	<0.5
			01/12/07	<0.5	<0.5
			03/12/07	<0.5	<0.5
			05/07/07	<0.5	<0.5
			07/10/07	<0.5	<0.5
			07/14/05	<0.5	<0.5
			09/07/05	<0.5	<0.5
			11/08/05	<0.5	<0.5
			01/04/06	<0.5	<0.5
			03/07/06	<0.5	<0.5
			05/04/06	<0.5	<0.5
Pike Island	84.2	Sb (ug/L)	07/13/06	<0.5	<0.5
			09/14/06	<0.5	<0.5
			11/01/06	<0.5	<0.5
			01/12/07	<0.5	<0.5
			03/12/07	<0.5	<0.5
			05/07/07	<0.5	<0.5
			07/10/07	<0.5	<0.5
			07/14/05	<0.5	<0.5
			09/15/05	<0.5	<0.5
			11/15/05	<0.5	<0.5
			01/04/06	<0.5	<0.5
			03/13/06	<0.5	<0.5
			05/03/06	<0.5	<0.5
Hannibal	126.4	Sb (ug/L)	07/18/06	<0.5	<0.5
			09/06/06	<0.5	<0.5
			11/07/06	<0.5	<0.5
			01/02/07	<0.5	<0.5
			03/13/07	<0.5	<0.5
			05/10/07	<0.5	<0.5
			07/12/07	<0.5	<0.5
			07/12/05	<0.5	<0.5
			09/15/05	<0.5	<0.5
			11/15/05	<0.5	<0.5
			01/03/06	<0.5	<0.5
			03/13/06	<0.5	<0.5
			05/03/06	<0.5	<0.5
Willow Island	161.7	Sb (ug/L)	07/18/06	<0.5	<0.5
			09/06/06	<0.5	<0.5
			11/07/06	<0.5	<0.5
			01/02/07	<0.5	<0.5
			03/13/07	<0.5	<0.5
			05/10/07	<0.5	<0.5
			07/12/07	<0.5	<0.5
			07/12/05	<0.5	<0.5
			09/13/05	<0.5	<0.5
			11/03/05	<0.5	<0.5
			01/03/06	<0.5	<0.5
			03/09/06	<0.5	<0.5
			05/11/06	<0.5	<0.5
Belleville	203.9	Sb (ug/L)	07/12/06	<0.5	<0.5
			09/19/06	<0.5	<0.5
			11/24/06	<0.5	<0.5
			01/04/07	<0.5	<0.5
			03/15/07	<0.5	<0.5
			05/09/07	<0.5	<0.5
			07/17/07	<0.5	<0.5
			07/12/05	<0.5	<0.5
			09/13/05	<0.5	<0.5
			11/03/05	<0.5	<0.5
			01/03/06	<0.5	<0.5
			03/09/06	<0.5	<0.5
			05/11/06	<0.5	<0.5
R. C. Byrd	279.2	Sb (ug/L)	07/12/06	<0.5	<0.5
			09/19/06	<0.5	<0.5
			11/24/06	<0.5	<0.5
			01/04/07	<0.5	<0.5
			03/15/07	<0.5	<0.5
			05/09/07	<0.5	<0.5
			07/17/07	<0.5	<0.5
			07/14/05	<0.5	<0.5
			09/20/05	<0.5	<0.5
			11/08/05	<0.5	<0.5
			01/19/06	<0.5	<0.5
			03/07/06	<0.5	<0.5
			05/10/06	<0.5	<0.5
Greenup	341.0	Sb (ug/L)	07/25/06	<0.5	<0.5
			09/12/06	<0.5	<0.5
			11/28/06	<0.5	<0.5
			01/17/07	<0.5	<0.5
			03/15/07	<0.5	<0.5
			05/09/07	no data	<0.5
			07/26/07	<0.5	<0.5

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Meldahl	436.2	Sb (ug/L)	07/14/05	<0.5	<0.5
			09/20/05	<0.5	<0.5
			11/08/05	<0.5	<0.5
			01/19/06	<0.5	<0.5
			03/07/06	<0.5	<0.5
			05/10/06	<0.5	<0.5
			07/12/06	<0.5	<0.5
			09/12/06	<0.5	<0.5
			11/28/06	<0.5	<0.5
			01/30/07	<0.5	<0.5
			03/15/07	<0.5	<0.5
			05/09/07	<0.5	<0.5
			07/25/07	<0.5	<0.5
Anderson Ferry	477.5	Sb (ug/L)	07/13/05	<0.5	<0.5
			09/27/05	<0.5	<0.5
			11/16/05	<0.5	<0.5
			01/20/06	<0.5	<0.5
			03/06/06	<0.5	<0.5
			05/09/06	<0.5	<0.5
			07/12/06	<0.5	<0.5
			09/11/06	<0.5	<0.5
			11/09/06	<0.5	<0.5
			01/24/07	<0.5	<0.5
			03/27/07	<0.5	<0.5
			05/08/07	<0.5	<0.5
			07/24/07	<0.5	<0.5
Markland	531.5	Sb (ug/L)	07/13/05	<0.5	<0.5
			09/27/05	<0.5	<0.5
			11/16/05	<0.5	<0.5
			01/20/06	<0.5	<0.5
			03/06/06	<0.5	<0.5
			05/09/06	<0.5	<0.5
			07/13/06	<0.5	<0.5
			09/13/06	<0.5	<0.5
			11/09/06	<0.5	<0.5
			01/24/07	<0.5	<0.5
			03/27/07	<0.5	<0.5
			05/22/07	<0.5	<0.5
			07/25/07	<0.5	<0.5
Louisville	600.6	Sb (ug/L)	07/13/05	<0.5	<0.5
			09/21/05	<0.5	<0.5
			11/10/05	<0.5	<0.5
			01/25/06	<0.5	<0.5
			03/09/06	<0.5	<0.5
			05/17/06	<0.5	<0.5
			07/12/06	<0.5	<0.5
			09/20/06	<0.5	<0.5
			11/15/06	<0.5	<0.5
			01/31/07	<0.5	<0.5
			03/22/07	<0.5	<0.5
			05/22/07	<0.5	<0.5
			07/24/07	<0.5	<0.5
West Point	625.9	Sb (ug/L)	07/13/05	<0.5	<0.5
			09/21/05	<0.5	<0.5
			11/10/05	<0.5	<0.5
			01/25/06	<0.5	<0.5
			03/09/06	<0.5	<0.5
			05/17/06	<0.5	<0.5
			07/12/06	<0.5	<0.5
			09/20/06	<0.5	<0.5
			11/15/06	<0.5	<0.5
			01/19/07	<0.5	<0.5
			03/22/07	<0.5	<0.5
			05/22/07	<0.5	<0.5
			07/25/07	<0.5	<0.5
Cannelton	720.7	Sb (ug/L)	07/13/05	<0.5	<0.5
			09/21/05	<0.5	<0.5
			11/10/05	<0.5	<0.5
			01/25/06	<0.5	<0.5
			03/09/06	<0.5	<0.5
			05/09/06	<0.5	<0.5
			07/27/06	<0.5	<0.5
			09/14/06	<0.5	<0.5
			11/01/06	<0.5	<0.5
			01/19/07	<0.5	<0.5
			03/22/07	<0.5	<0.5
			05/08/07	<0.5	<0.5
			07/24/07	<0.5	<0.5
Newburgh	776.1	Sb (ug/L)	07/13/05	<0.5	<0.5
			09/21/05	<0.5	<0.5
			11/09/05	<0.5	<0.5
			01/25/06	<0.5	<0.5
			03/09/06	<0.5	<0.5
			05/10/06	<0.5	<0.5
			07/12/06	<0.5	<0.5
			09/20/06	<0.5	<0.5
			11/15/06	<0.5	<0.5
			01/31/07	<0.5	<0.5
			03/22/07	<0.5	<0.5
			05/22/07	<0.5	<0.5
			07/24/07	<0.5	<0.5

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
J.T. Myers	846.0	Sb (ug/L)	07/12/05	<0.5	<0.5
			09/20/05	<0.5	<0.5
			11/09/05	<0.5	<0.5
			01/24/06	<0.5	<0.5
			03/08/06	<0.5	<0.5
			05/16/06	<0.5	<0.5
			07/11/06	<0.5	<0.5
			09/19/06	<0.5	<0.5
			11/15/06	<0.5	<0.5
			01/30/07	<0.5	<0.5
			03/22/07	<0.5	<0.5
			05/21/07	<0.5	<0.5
			07/25/07	<0.5	<0.5
Smithland	918.5	Sb (ug/L)	07/12/05	<0.5	<0.5
			09/20/05	<0.5	<0.5
			11/09/05	<0.5	<0.5
			01/24/06	<0.5	<0.5
			03/08/06	<0.5	<0.5
			05/16/06	<0.5	<0.5
			07/11/06	<0.5	<0.5
			09/19/06	<0.5	<0.5
			11/14/06	<0.5	<0.5
			01/30/07	<0.5	<0.5
			03/21/07	<0.5	<0.5
			05/21/07	<0.5	<0.5
			07/25/07	<0.5	<0.5
L&D 52	938.9	Sb (ug/L)	07/12/05	<0.5	<0.5
			09/20/05	<0.5	<0.5
			11/09/05	<0.5	<0.5
			01/24/06	<0.5	<0.5
			03/08/06	<0.5	<0.5
			05/16/06	<0.5	<0.5
			07/11/06	<0.5	<0.5
			09/19/06	<0.5	<0.5
			11/14/06	<0.5	<0.5
			01/30/07	<0.5	<0.5
			03/21/07	<0.5	<0.5
			05/21/07	<0.5	<0.5
			07/25/07	<0.5	<0.5
New Cumberland	54.4	Se (ug/L)	07/14/05	1.09	0.96
			09/07/05	1	0.79
			11/08/05	<0.5	<0.5
			01/04/06	<0.5	<0.5
			03/07/06	<0.5	<0.5
			05/04/06	<0.5	<0.5
			07/13/06	0.63	0.53
			09/14/06	0.53	0.53
			11/01/06	0.53	<0.5
			01/12/07	<0.5	<0.5
			03/12/07	0.59	<0.5
			05/07/07	<0.5	<0.5
			07/10/07	0.77	0.89
Pike Island	84.2	Se (ug/L)	07/14/05	1.33	1.01
			09/07/05	0.86	1.03
			11/08/05	0.52	0.69
			01/04/06	<0.5	0.51
			03/07/06	<0.5	<0.5
			05/04/06	0.69	0.53
			07/13/06	<0.5	<0.5
			09/14/06	0.61	0.59
			11/01/06	<0.5	0.58
			01/12/07	<0.5	<0.5
			03/12/07	<0.5	0.69
			05/07/07	<0.5	<0.5
			07/10/07	0.85	0.81
Hannibal	126.4	Se (ug/L)	07/14/05	0.95	0.98
			09/15/05	0.94	0.96
			11/15/05	<0.5	0.83
			01/04/06	0.76	<0.5
			03/13/06	<0.5	<0.5
			05/03/06	0.61	0.65
			07/18/06	0.72	0.53
			09/06/06	0.84	0.75
			11/07/06	0.52	<0.5
			01/02/07	0.51	0.57
			03/13/07	<0.5	0.75
			05/10/07	0.6	<0.5
			07/12/07	1.08	1.08
Willow Island	161.7	Se (ug/L)	07/12/05	1.1	1
			09/15/05	1	0.88
			11/15/05	<0.5	0.67
			01/03/06	0.64	0.54
			03/13/06	<0.5	<0.5
			05/03/06	0.53	<0.5
			07/18/06	0.69	0.64
			09/06/06	0.9	0.96
			11/07/06	0.51	<0.5
			01/02/07	0.81	0.53
			03/13/07	0.69	0.56
			05/10/07	<0.5	<0.5
			07/12/07	0.96	0.91

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Belleville	203.9	Se (ug/L)	07/12/05	1.13	0.87
			09/13/05	0.71	0.69
			11/03/05	0.59	0.79
			01/03/06	0.62	<0.5
			03/09/06	<0.5	<0.5
			05/11/06	0.57	0.65
			07/12/06	0.52	0.61
			09/19/06	0.62	0.6
			11/24/06	<0.5	<0.5
			01/04/07	0.58	<0.5
			03/15/07	0.77	<0.5
			05/09/07	0.59	<0.5
			07/17/07	1.18	1
R. C. Byrd	279.2	Se (ug/L)	07/12/05	0.76	0.64
			09/13/05	0.92	0.71
			11/03/05	0.84	1.07
			01/03/06	<0.5	<0.5
			03/09/06	<0.5	<0.5
			05/11/06	0.58	<0.5
			07/12/06	0.61	<0.5
			09/19/06	0.51	0.5
			11/24/06	<0.5	<0.5
			01/04/07	<0.5	<0.5
			03/15/07	<0.5	0.54
			05/09/07	0.57	<0.5
			07/17/07	0.78	0.81
Greenup	341.0	Se (ug/L)	07/14/05	0.84	0.74
			09/20/05	1.01	0.95
			11/08/05	0.84	0.81
			01/19/06	<0.5	<0.5
			03/07/06	<0.5	<0.5
			05/10/06	0.62	<0.5
			07/25/06	0.86	0.55
			09/12/06	0.95	0.86
			11/28/06	<0.5	<0.5
			01/17/07	<0.5	<0.5
			03/15/07	0.53	<0.5
			05/09/07	no data	<0.5
			07/26/07	0.96	0.82
Meldahl	436.2	Se (ug/L)	07/14/05	0.85	0.71
			09/20/05	0.9	0.83
			11/08/05	1.11	0.84
			01/19/06	<0.5	<0.5
			03/07/06	<0.5	<0.5
			05/10/06	0.88	0.67
			07/12/06	0.72	0.64
			09/12/06	0.93	0.88
			11/28/06	0.51	<0.5
			01/30/07	0.56	<0.5
			03/15/07	<0.5	<0.5
			05/09/07	<0.5	<0.5
			07/25/07	0.9	0.85
Anderson Ferry	477.5	Se (ug/L)	07/13/05	0.87	0.74
			09/27/05	0.93	0.9
			11/16/05	1.1	0.64
			01/20/06	<0.5	<0.5
			03/06/06	<0.5	<0.5
			05/09/06	0.54	<0.5
			07/12/06	0.82	0.62
			09/11/06	0.97	0.65
			11/09/06	<0.5	<0.5
			01/24/07	0.58	<0.5
			03/27/07	0.59	<0.5
			05/08/07	0.7	0.71
			07/24/07	0.85	0.65
Markland	531.5	Se (ug/L)	07/13/05	0.86	0.67
			09/27/05	0.81	0.87
			11/16/05	0.82	0.86
			01/20/06	0.6	<0.5
			03/06/06	<0.5	<0.5
			05/09/06	0.76	0.73
			07/13/06	0.86	0.56
			09/13/06	0.8	0.74
			11/09/06	0.62	0.51
			01/24/07	<0.5	<0.5
			03/27/07	<0.5	<0.5
			05/22/07	0.97	<0.5
			07/25/07	0.83	0.8
Louisville	600.6	Se (ug/L)	07/13/05	0.75	0.66
			09/21/05	0.87	0.81
			11/10/05	1.18	0.95
			01/25/06	<0.5	<0.5
			03/09/06	<0.5	<0.5
			05/17/06	<0.5	0.88
			07/12/06	0.52	0.56
			09/20/06	0.78	0.64
			11/15/06	<0.5	<0.5
			01/31/07	0.54	<0.5
			03/22/07	<0.5	<0.5
			05/22/07	0.86	<0.5
			07/24/07	0.92	0.89

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
West Point	625.9	Se (ug/L)	07/13/05	2.58	2.54
			09/21/05	2.61	2.56
			11/10/05	1.7	1.83
			01/25/06	<0.5	0.62
			03/09/06	0.65	0.7
			05/17/06	1.59	1.76
			07/12/06	3.14	2.91
			09/20/06	1.65	1.55
			11/15/06	1.01	0.81
			01/19/07	<0.5	<0.5
			03/22/07	0.83	<0.5
			05/22/07	3.08	2.55
			07/25/07	1.52	1.49
Cannelton	720.7	Se (ug/L)	07/13/05	0.81	0.8
			09/21/05	0.92	0.9
			11/10/05	1.03	1.1
			01/25/06	0.61	<0.5
			03/09/06	<0.5	<0.5
			05/09/06	0.64	0.61
			07/27/06	0.69	0.56
			09/14/06	0.89	0.81
			11/01/06	0.5	<0.5
			01/19/07	<0.5	<0.5
			03/22/07	<0.5	<0.5
			05/08/07	0.62	<0.5
			07/24/07	0.91	0.96
Newburgh	776.1	Se (ug/L)	07/13/05	0.85	0.72
			09/21/05	0.71	0.88
			11/09/05	0.85	1.11
			01/25/06	<0.5	0.52
			03/09/06	<0.5	<0.5
			05/10/06	<0.5	0.54
			07/12/06	0.71	0.59
			09/20/06	0.96	0.67
			11/15/06	0.56	0.63
			01/31/07	0.61	<0.5
			03/22/07	0.83	<0.5
			05/22/07	0.72	0.6
			07/24/07	0.84	1
J.T. Myers	846.0	Se (ug/L)	07/12/05	0.69	0.86
			09/20/05	0.62	0.73
			11/09/05	0.88	1.09
			01/24/06	0.69	<0.5
			03/08/06	<0.5	<0.5
			05/16/06	<0.5	0.52
			07/11/06	1	0.66
			09/19/06	0.92	0.81
			11/15/06	0.59	0.63
			01/30/07	0.52	<0.5
			03/22/07	0.63	<0.5
			05/21/07	0.87	0.56
			07/25/07	0.9	0.87
Smithland	918.5	Se (ug/L)	07/12/05	0.82	0.72
			09/20/05	0.69	0.68
			11/09/05	1.36	0.99
			01/24/06	0.71	<0.5
			03/08/06	<0.5	<0.5
			05/16/06	0.55	<0.5
			07/11/06	0.81	0.71
			09/19/06	0.69	0.83
			11/14/06	0.52	<0.5
			01/30/07	<0.5	<0.5
			03/21/07	<0.5	<0.5
			05/21/07	0.56	0.57
			07/25/07	0.93	1.07
L&D 52	938.9	Se (ug/L)	07/12/05	0.73	0.66
			09/20/05	0.6	0.66
			11/09/05	0.64	0.87
			01/24/06	0.77	0.52
			03/08/06	<0.5	<0.5
			05/16/06	0.81	0.76
			07/11/06	0.63	0.7
			09/19/06	0.87	0.8
			11/14/06	<0.5	<0.5
			01/30/07	<0.5	<0.5
			03/21/07	0.5	0.54
			05/21/07	0.73	0.71
			07/25/07	0.8	0.94
New Cumberland	54.4	Tl (ug/L)	07/14/05	<0.1	<0.1
			09/07/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/04/06	<0.1	<0.1
			03/07/06	<0.1	<0.1
			05/04/06	<0.1	<0.1
			07/13/06	<0.1	<0.1
			09/14/06	<0.1	<0.1
			11/01/06	<0.1	<0.1
			01/12/07	<0.1	<0.1
			03/12/07	<0.1	<0.1
			05/07/07	<0.1	<0.1
			07/10/07	<0.1	<0.1

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Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Pike Island	84.2	Tl (ug/L)	07/14/05	<0.1	<0.1
			09/07/05	<0.1	<0.1
			11/08/05	0.11	<0.1
			01/04/06	<0.1	<0.1
			03/07/06	<0.1	<0.1
			05/04/06	<0.1	<0.1
			07/13/06	<0.1	<0.1
			09/14/06	<0.1	<0.1
			11/01/06	<0.1	<0.1
			01/12/07	<0.1	<0.1
			03/12/07	<0.1	<0.1
			05/07/07	<0.1	<0.1
			07/10/07	0.14	0.11
Hannibal	126.4	Tl (ug/L)	07/14/05	<0.1	<0.1
			09/15/05	<0.1	<0.1
			11/15/05	<0.1	<0.1
			01/04/06	<0.1	<0.1
			03/13/06	<0.1	<0.1
			05/03/06	<0.1	<0.1
			07/18/06	<0.1	<0.1
			09/06/06	<0.1	<0.1
			11/07/06	<0.1	<0.1
			01/02/07	<0.1	<0.1
			03/13/07	<0.1	<0.1
			05/10/07	<0.1	<0.1
			07/12/07	0.1	<0.1
Willow Island	161.7	Tl (ug/L)	07/12/05	<0.1	<0.1
			09/15/05	<0.1	<0.1
			11/15/05	<0.1	<0.1
			01/03/06	<0.1	0.1
			03/13/06	<0.1	<0.1
			05/03/06	<0.1	<0.1
			07/18/06	<0.1	<0.1
			09/06/06	<0.1	<0.1
			11/07/06	<0.1	<0.1
			01/02/07	<0.1	<0.1
			03/13/07	<0.1	<0.1
			05/10/07	<0.1	<0.1
			07/12/07	<0.1	<0.1
Belleville	203.9	Tl (ug/L)	07/12/05	<0.1	<0.1
			09/13/05	<0.1	<0.1
			11/03/05	<0.1	<0.1
			01/03/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/11/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/24/06	<0.1	<0.1
			01/04/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	<0.1	<0.1
			07/17/07	<0.1	<0.1
R. C. Byrd	279.2	Tl (ug/L)	07/12/05	<0.1	<0.1
			09/13/05	<0.1	<0.1
			11/03/05	<0.1	<0.1
			01/03/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/11/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/24/06	<0.1	<0.1
			01/04/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	<0.1	<0.1
			07/17/07	<0.1	<0.1
Greenup	341.0	Tl (ug/L)	07/14/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/19/06	<0.1	<0.1
			03/07/06	<0.1	<0.1
			05/10/06	<0.1	<0.1
			07/25/06	<0.1	<0.1
			09/12/06	<0.1	<0.1
			11/28/06	<0.1	<0.1
			01/17/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	no data	<0.1
			07/26/07	<0.1	<0.1
Meldahl	436.2	Tl (ug/L)	07/14/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/08/05	<0.1	<0.1
			01/19/06	<0.1	<0.1
			03/07/06	<0.1	<0.1
			05/10/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/12/06	<0.1	<0.1
			11/28/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/15/07	<0.1	<0.1
			05/09/07	<0.1	<0.1
			07/25/07	<0.1	<0.1

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Anderson Ferry	477.5	Tl (ug/L)	07/13/05	<0.1	<0.1
			09/27/05	<0.1	0.1
			11/16/05	0.17	<0.1
			01/20/06	<0.1	<0.1
			03/06/06	<0.1	<0.1
			05/09/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/11/06	<0.1	<0.1
			11/09/06	<0.1	<0.1
			01/24/07	0.16	<0.1
			03/27/07	<0.1	<0.1
			05/08/07	<0.1	<0.1
			07/24/07	<0.1	<0.1
Markland	531.5	Tl (ug/L)	07/13/05	<0.1	<0.1
			09/27/05	<0.1	<0.1
			11/16/05	<0.1	<0.1
			01/20/06	<0.1	<0.1
			03/06/06	<0.1	<0.1
			05/09/06	<0.1	<0.1
			07/13/06	<0.1	<0.1
			09/13/06	<0.1	<0.1
			11/09/06	<0.1	<0.1
			01/24/07	<0.1	<0.1
			03/27/07	<0.1	<0.1
			05/22/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
Louisville	600.6	Tl (ug/L)	07/13/05	<0.1	<0.1
			09/21/05	<0.1	<0.1
			11/10/05	<0.1	<0.1
			01/25/06	<0.1	<0.1
			03/09/06	<0.1	<0.1
			05/17/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/20/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/31/07	<0.1	<0.1
			03/22/07	0.12	0.11
			05/22/07	<0.1	<0.1
			07/24/07	<0.1	<0.1
West Point	625.9	Tl (ug/L)	07/13/05	<0.1	<0.1
			09/21/05	<0.1	0.11
			11/10/05	<0.1	<0.1
			01/25/06	<0.1	<0.1
			03/09/06	<0.1	0.1
			05/17/06	<0.1	<0.1
			07/12/06	<0.1	0.11
			09/20/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/19/07	<0.1	<0.1
			03/22/07	0.13	<0.1
			05/22/07	<0.1	0.11
			07/25/07	0.11	<0.1
Cannelton	720.7	Tl (ug/L)	07/13/05	<0.1	<0.1
			09/21/05	<0.1	<0.1
			11/10/05	<0.1	<0.1
			01/25/06	0.11	<0.1
			03/09/06	<0.1	<0.1
			05/09/06	<0.1	<0.1
			07/27/06	<0.1	<0.1
			09/14/06	<0.1	<0.1
			11/01/06	<0.1	<0.1
			01/19/07	<0.1	<0.1
			03/22/07	0.16	<0.1
			05/08/07	<0.1	<0.1
			07/24/07	<0.1	<0.1
Newburgh	776.1	Tl (ug/L)	07/13/05	<0.1	<0.1
			09/21/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/25/06	0.12	<0.1
			03/09/06	<0.1	<0.1
			05/10/06	<0.1	<0.1
			07/12/06	<0.1	<0.1
			09/20/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/31/07	<0.1	<0.1
			03/22/07	<0.1	<0.1
			05/22/07	<0.1	<0.1
			07/24/07	<0.1	<0.1
J.T. Myers	846.0	Tl (ug/L)	07/12/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/24/06	0.12	<0.1
			03/08/06	<0.1	<0.1
			05/16/06	<0.1	<0.1
			07/11/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/15/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/22/07	0.14	<0.1
			05/21/07	<0.1	<0.1
			07/25/07	<0.1	<0.1

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Smithland	918.5	Tl (ug/L)	07/12/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/24/06	<0.1	<0.1
			03/08/06	<0.1	<0.1
			05/16/06	<0.1	<0.1
			07/11/06	<0.1	<0.1
			09/19/06	<0.1	<0.1
			11/14/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/21/07	<0.1	<0.1
			05/21/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
L&D 52	938.9	Tl (ug/L)	07/12/05	<0.1	<0.1
			09/20/05	<0.1	<0.1
			11/09/05	<0.1	<0.1
			01/24/06	<0.1	<0.1
			03/08/06	<0.1	<0.1
			05/16/06	0.11	<0.1
			07/11/06	<0.1	<0.1
			09/19/06	0.16	<0.1
			11/14/06	<0.1	<0.1
			01/30/07	<0.1	<0.1
			03/21/07	<0.1	<0.1
			05/21/07	<0.1	<0.1
			07/25/07	<0.1	<0.1
New Cumberland	54.4	Zn (ug/L)	07/14/05	6.19	1.38
			09/07/05	6.08	2.35
			11/08/05	4.08	3.06
			01/04/06	20.42	3.25
			03/07/06	4.83	3.13
			05/04/06	4.41	2.54
			07/13/06	1.51	2.03
			09/14/06	7.67	2.63
			11/01/06	18.69	1.5
			01/12/07	11.23	2.03
			03/12/07	9.01	4.94
			05/07/07	4.86	1.53
			07/10/07	6.99	3.02
Pike Island	84.2	Zn (ug/L)	07/14/05	3.38	1.08
			09/07/05	4.76	<1
			11/08/05	4.77	2.14
			01/04/06	40.37	2.45
			03/07/06	3.88	2.58
			05/04/06	3.4	1.18
			07/13/06	3.54	1.4
			09/14/06	8.39	1.16
			11/01/06	23.83	1.83
			01/12/07	15.06	1.57
			03/12/07	10.93	3.53
			05/07/07	4.72	<1
			07/10/07	3.38	1.38
Hannibal	126.4	Zn (ug/L)	07/14/05	2.01	<1
			09/15/05	2.89	1.16
			11/15/05	4.25	1.85
			01/04/06	24.33	1.35
			03/13/06	6.24	1.37
			05/03/06	2.36	<1
			07/18/06	2.89	1.32
			09/06/06	7.39	<1
			11/07/06	6.44	1.03
			01/02/07	5.81	2
			03/13/07	8.81	1.37
			05/10/07	3.49	2.11
			07/12/07	3.1	2.6
Willow Island	161.7	Zn (ug/L)	07/12/05	5.94	1.38
			09/15/05	2.41	<1
			11/15/05	4.96	1.82
			01/03/06	16.71	3.26
			03/13/06	6.07	1.5
			05/03/06	2.58	<1
			07/18/06	2.34	1.06
			09/06/06	7.35	1.16
			11/07/06	8.61	1.92
			01/02/07	6.86	1.95
			03/13/07	8.9	2.14
			05/10/07	2.85	<1
			07/12/07	3.6	2
Belleville	203.9	Zn (ug/L)	07/12/05	2.47	<1
			09/13/05	1.6	<1
			11/03/05	3.6	2.21
			01/03/06	20.54	2.28
			03/09/06	3.6	1.79
			05/11/06	2.93	<1
			07/12/06	2.33	1.17
			09/19/06	5.7	1.23
			11/24/06	8.94	<1
			01/04/07	4.71	1.7
			03/15/07	9.38	2.67
			05/09/07	4.61	1.14
			07/17/07	2.15	1.88

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
R. C. Byrd	279.2	Zn (ug/L)	07/12/05	6.7	<1
			09/13/05	3.1	<1
			11/03/05	5.57	1.54
			01/03/06	7.35	1.95
			03/09/06	3.52	<1
			05/11/06	4.17	<1
			07/12/06	6.28	1.64
			09/19/06	5.32	<1
			11/24/06	5.34	1.11
			01/04/07	3.84	1.69
			03/15/07	10.63	1.08
			05/09/07	9.75	<1
			07/17/07	4.07	1.22
Greenup	341.0	Zn (ug/L)	07/14/05	1.65	1.09
			09/20/05	3.06	1.03
			11/08/05	3.18	1.5
			01/19/06	18.4	2.75
			03/07/06	5.01	<1
			05/10/06	2.58	<1
			07/25/06	2.78	1.12
			09/12/06	4.41	<1
			11/28/06	4.59	<1
			01/17/07	33.64	<1
			03/15/07	8.84	1.59
			05/09/07	no data	4.21
			07/26/07	2.37	<1
Meldahl	436.2	Zn (ug/L)	07/14/05	11.31	<1
			09/20/05	6.21	<1
			11/08/05	7.49	1.9
			01/19/06	9.19	2.21
			03/07/06	2.63	1.39
			05/10/06	2.94	<1
			07/12/06	2.48	<1
			09/12/06	5.19	<1
			11/28/06	4.31	1.08
			01/30/07	3.47	<1
			03/15/07	7.47	<1
			05/09/07	8.03	1.55
			07/25/07	10.98	6.89
Anderson Ferry	477.5	Zn (ug/L)	07/13/05	3.47	2.31
			09/27/05	6.84	1.79
			11/16/05	13.87	1.63
			01/20/06	25.03	2.84
			03/06/06	1.83	<1
			05/09/06	4.58	<1
			07/12/06	3.88	3.01
			09/11/06	4.39	<1
			11/09/06	9.93	1.04
			01/24/07	90.06	<1
			03/27/07	20.43	<1
			05/08/07	7.12	1.39
			07/24/07	4.15	1.93
Markland	531.5	Zn (ug/L)	07/13/05	3.62	<1
			09/27/05	5.37	1.87
			11/16/05	8.05	1.94
			01/20/06	13.5	2.16
			03/06/06	2.97	1.23
			05/09/06	1.41	<1
			07/13/06	2.84	1.08
			09/13/06	8.54	1.53
			11/09/06	6.54	13.69
			01/24/07	16.9	1.1
			03/27/07	20.68	<1
			05/22/07	2.88	1.69
			07/25/07	2.08	1.57
Louisville	600.6	Zn (ug/L)	07/13/05	3.92	2.31
			09/21/05	5.53	<1
			11/10/05	5.11	2.11
			01/25/06	10.18	1.12
			03/09/06	1.96	1.11
			05/17/06	3.29	<1
			07/12/06	2.73	3.24
			09/20/06	5.98	<1
			11/15/06	5.99	<1
			01/31/07	7.01	1.05
			03/22/07	46.23	1
			05/22/07	16.83	<1
			07/24/07	2.76	1.29
West Point	625.9	Zn (ug/L)	07/13/05	3.51	2.02
			09/21/05	4.64	4.8
			11/10/05	6.67	2.77
			01/25/06	28.06	1.7
			03/09/06	8.53	1.25
			05/17/06	4.4	1.11
			07/12/06	5.67	3.68
			09/20/06	6.69	1.35
			11/15/06	10.96	1.61
			01/19/07	13.98	<1
			03/22/07	45.65	<1
			05/22/07	7.25	3.72
			07/25/07	2.79	1.71

Appendix C: Clean Metals Results Compaired to Criteria

Sample Site	Mile Point	Parameter	Date	Total Metals	Dissolved Metals
Cannelton	720.7	Zn (ug/L)	07/13/05	2.31	1.18
Cannelton	720.7	Zn (ug/L)	09/21/05	1.85	<1
Cannelton	720.7	Zn (ug/L)	11/10/05	2.35	1.55
Cannelton	720.7	Zn (ug/L)	01/25/06	41.77	8.44
Cannelton	720.7	Zn (ug/L)	03/09/06	1.27	<1
Cannelton	720.7	Zn (ug/L)	05/09/06	2.25	2.26
Cannelton	720.7	Zn (ug/L)	07/27/06	2.78	<1
Cannelton	720.7	Zn (ug/L)	09/14/06	4.71	<1
Cannelton	720.7	Zn (ug/L)	11/01/06	35.34	<1
Cannelton	720.7	Zn (ug/L)	01/19/07	32.16	<1
Cannelton	720.7	Zn (ug/L)	03/22/07	47.46	<1
Cannelton	720.7	Zn (ug/L)	05/08/07	3.95	<1
Cannelton	720.7	Zn (ug/L)	07/24/07	1.74	1.26
Newburgh	776.1	Zn (ug/L)	07/13/05	1.93	<1
Newburgh	776.1	Zn (ug/L)	09/21/05	2.08	1.02
Newburgh	776.1	Zn (ug/L)	11/09/05	3.6	2.08
Newburgh	776.1	Zn (ug/L)	01/25/06	39.6	3.91
Newburgh	776.1	Zn (ug/L)	03/09/06	1.75	<1
Newburgh	776.1	Zn (ug/L)	05/10/06	3.97	1.68
Newburgh	776.1	Zn (ug/L)	07/12/06	5.19	1.02
Newburgh	776.1	Zn (ug/L)	09/20/06	5.16	1.39
Newburgh	776.1	Zn (ug/L)	11/15/06	8.96	1.07
Newburgh	776.1	Zn (ug/L)	01/31/07	18.22	<1
Newburgh	776.1	Zn (ug/L)	03/22/07	33.6	<1
Newburgh	776.1	Zn (ug/L)	05/22/07	4.89	<1
Newburgh	776.1	Zn (ug/L)	07/24/07	1.5	<1
J.T. Myers	846.0	Zn (ug/L)	07/12/05	3.04	<1
J.T. Myers	846.0	Zn (ug/L)	09/20/05	2.89	<1
J.T. Myers	846.0	Zn (ug/L)	11/09/05	4.15	2.1
J.T. Myers	846.0	Zn (ug/L)	01/24/06	35.09	<1
J.T. Myers	846.0	Zn (ug/L)	03/08/06	1.71	<1
J.T. Myers	846.0	Zn (ug/L)	05/16/06	4.08	<1
J.T. Myers	846.0	Zn (ug/L)	07/11/06	4.29	1.43
J.T. Myers	846.0	Zn (ug/L)	09/19/06	4.38	<1
J.T. Myers	846.0	Zn (ug/L)	11/15/06	16.54	1.01
J.T. Myers	846.0	Zn (ug/L)	01/30/07	24.83	<1
J.T. Myers	846.0	Zn (ug/L)	03/22/07	28.69	<1
J.T. Myers	846.0	Zn (ug/L)	05/21/07	4.06	<1
J.T. Myers	846.0	Zn (ug/L)	07/25/07	2.05	<1
Smithland	918.5	Zn (ug/L)	07/12/05	1.76	<1
Smithland	918.5	Zn (ug/L)	09/20/05	2.68	<1
Smithland	918.5	Zn (ug/L)	11/09/05	2.27	1.28
Smithland	918.5	Zn (ug/L)	01/24/06	30.33	1.36
Smithland	918.5	Zn (ug/L)	03/08/06	2.25	<1
Smithland	918.5	Zn (ug/L)	05/16/06	5.23	<1
Smithland	918.5	Zn (ug/L)	07/11/06	2.87	1.61
Smithland	918.5	Zn (ug/L)	09/19/06	4.66	<1
Smithland	918.5	Zn (ug/L)	11/14/06	6.59	<1
Smithland	918.5	Zn (ug/L)	01/30/07	16.9	2.56
Smithland	918.5	Zn (ug/L)	03/21/07	23.2	<1
Smithland	918.5	Zn (ug/L)	05/21/07	1.36	<1
Smithland	918.5	Zn (ug/L)	07/25/07	3.14	<1
L&D 52	938.9	Zn (ug/L)	07/12/05	5.62	4.69
L&D 52	938.9	Zn (ug/L)	09/20/05	2.42	<1
L&D 52	938.9	Zn (ug/L)	11/09/05	82.76	1.85
L&D 52	938.9	Zn (ug/L)	01/24/06	27.5	1.02
L&D 52	938.9	Zn (ug/L)	03/08/06	2.61	<1
L&D 52	938.9	Zn (ug/L)	05/16/06	5.19	1.05
L&D 52	938.9	Zn (ug/L)	07/11/06	7.58	1.15
L&D 52	938.9	Zn (ug/L)	09/19/06	40.43	1.08
L&D 52	938.9	Zn (ug/L)	11/14/06	12.24	<1
L&D 52	938.9	Zn (ug/L)	01/30/07	22.15	<1
L&D 52	938.9	Zn (ug/L)	03/21/07	23.81	<1
L&D 52	938.9	Zn (ug/L)	05/21/07	2.28	<1
L&D 52	938.9	Zn (ug/L)	07/25/07	2.38	<1

Appendix D: Bimonthly Sampling Results

Appendix D: Summary of Bimonthly Mainstem Stations July 2005 - July 2007

Station Name	River Mile		TSS (mg/L)	SO_4 (mg/L)	THARD (mg/L)	TPHOS (mg/L)	TKN (mg/L)	NH_3-N (mg/L)	NO_3/NO_2 (mg/L)	Phenol (ug/L)	Total CN (mg/L)	Chloride (mg/L)	TOC (mg/L)	pH (su)	Temp (°C)	Cond (umhos/cm)
Criteria				250 mg/L (HH)					10 mg/L (HH)	5 ug/L (HH)	700 ug/L (HH)	250 mg/L (HH)				
New Cumberland	54.4	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	13	13	13	13	13	11	13	0	0	13	12	13	13	10
		Maximum	39.70	145.00	164.00	0.11	0.85	0.13	1.23			52.00	7.85	7.77	31.00	520.00
		Minimum	2.80	48.00	76.00	0.02	0.15	0.04	0.60			18.00	1.82	7.56	5.00	210.00
		Mean	12.42	75.31	112.31	0.04	0.50	0.07	0.96			35.23	3.16	7.65	17.35	355.00
		Std. Dev.	12.21	30.09	25.58	0.02	0.18	0.04	0.22			11.82	1.62	0.08	9.56	119.84
Pike Island	84.2	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	13	13	13	13	13	10	13	0	0	13	13	13	13	10
		Maximum	49.30	125.00	172.00	0.12	1.35	0.12	1.28			52.00	8.93	7.50	29.00	540.00
		Minimum	2.80	44.00	76.00	0.02	0.22	0.03	0.57			18.00	1.75	7.38	5.00	200.00
		Mean	13.93	80.69	116.92	0.05	0.57	0.06	0.90			33.54	3.04	7.48	16.01	359.00
		Std. Dev.	16.19	29.99	31.20	0.03	0.29	0.03	0.23			11.35	1.90	0.04	9.20	126.35
Hannibal	126.4	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	12	12	13	12	13	12	13	0	0	12	13	13	13	10
		Maximum	77.00	155.00	212.00	0.21	0.92	0.15	1.20			70.00	3.82	7.36	29.00	650.00
		Minimum	2.00	56.00	80.00	0.01	0.11	0.03	0.58			24.00	1.71	7.18	5.96	230.00
		Mean	13.60	88.50	126.77	0.06	0.44	0.07	0.89			40.50	2.67	7.29	16.45	396.00
		Std. Dev.	20.82	31.03	37.14	0.06	0.20	0.03	0.18			14.50	0.66	0.06	8.65	140.17
Willow Island	161.7	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	12	13	13	13	13	10	13	0	0	13	13	13	13	10
		Maximum	39.30	160.00	180.00	0.09	1.29	0.15	1.10			52.00	3.68	7.34	28.00	570.00
		Minimum	1.75	42.00	92.00	0.01	0.28	0.03	0.61			24.00	1.75	7.25	5.50	230.00
		Mean	11.11	87.62	126.77	0.04	0.54	0.07	0.87			38.15	2.61	7.28	16.68	405.00
		Std. Dev.	12.24	33.34	30.61	0.03	0.27	0.04	0.15			10.85	0.66	0.03	8.86	122.04
Belleville	203.9	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	13	13	13	11	13	11	13	0	0	13	13	13	13	10
		Maximum	53.00	130.00	192.00	0.14	1.04	0.16	1.61			50.00	3.78	7.56	28.00	580.00
		Minimum	2.40	60.00	104.00	0.01	0.19	0.03	0.71			24.00	1.90	7.38	6.00	280.00
		Mean	11.13	89.00	143.38	0.06	0.53	0.07	0.99			36.31	2.84	7.45	16.51	424.00
		Std. Dev.	13.57	22.76	25.03	0.03	0.22	0.04	0.26			9.62	0.59	0.08	8.66	104.05
R.C. Byrd	279.2	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	13	13	13	13	13	11	13	1	0	13	13	13	13	10
		Maximum	55.30	125.00	184.00	0.24	1.77	0.14	1.23	**7.77**		50.00	4.49	7.27	27.00	510.00
		Minimum	4.00	26.00	92.00	0.03	0.30	0.03	0.56			16.00	1.62	7.16	6.00	230.00
		Mean	21.36	71.92	121.23	0.07	0.55	0.07	0.81			30.15	2.59	7.22	16.05	360.00
		Std. Dev.	12.95	26.44	29.46	0.06	0.39	0.03	0.19			10.15	0.80	0.04	8.42	103.92
Greenup	341.0	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	1	13
		# Detects	13	13	13	12	13	7	13	0	0	13	13	13	0	0
		Maximum	118.00	120.00	180.00	0.18	1.30	0.14	1.24			48.00	3.66	7.31	27.36	
		Minimum	3.33	49.00	96.00	0.01	0.26	0.03	0.65			18.00	1.78	7.17	5.34	
		Mean	24.62	78.00	130.46	0.06	0.60	0.07	0.81			31.69	2.66	7.27	16.73	
		Std. Dev.	33.10	22.89	25.69	0.06	0.33	0.04	0.18			10.48	0.64	0.05	8.64	
Meldahl	436.2	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	1	13
		# Detects	13	13	13	12	13	9	13	1	0	13	12	13	0	0
		Maximum	58.50	130.00	192.00	0.13	0.86	0.12	1.47	**8.80**		70.00	5.48	7.88	27.00	
		Minimum	3.40	52.00	108.00	0.01	0.12	0.03	0.50			20.00	1.89	7.49	4.84	
		Mean	14.98	81.77	136.31	0.06	0.49	0.05	0.90			37.46	2.96	7.66	16.37	
		Std. Dev.	15.14	25.97	24.14	0.03	0.18	0.03	0.30			13.82	1.13	0.12	8.43	
Anderson Ferry	477.5	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	1	13
		# Detects	13	13	13	13	13	12	13	1	0	13	12	13	0	0
		Maximum	160.00	120.00	168.00	0.31	1.55	0.20	1.28	**10.00**		52.00	4.45	7.77	27.09	
		Minimum	7.00	50.00	104.00	0.04	0.31	0.04	0.61			22.00	2.33	7.56	4.20	
		Mean	34.92	77.92	134.15	0.11	0.69	0.11	0.95			35.31	3.14	7.65	16.40	
		Std. Dev.	42.05	21.60	18.52	0.08	0.30	0.06	0.24			8.79	0.73	0.08	8.58	

HH: Human Health Criteria, AL: Aquatic Life Criteria
Estimated values
Violations

Appendix D: Summary of Bimonthly Mainstem Stations July 2005 - July 2007

Station Name	River Mile		TSS (mg/L)	SO_4 (mg/L)	THARD (mg/L)	TPHOS (mg/L)	TKN (mg/L)	NH_3-N (mg/L)	NO_3/NO_2 (mg/L)	Phenol (ug/L)	Total CN (mg/L)	Chloride (mg/L)	TOC (mg/L)	pH (su)	Temp (°C)	Cond (umhos/cm)
Criteria				250 mg/L (HH)					10 mg/L (HH)	5 ug/L (HH)	700 ug/L (HH)	250 mg/L (HH)				
Markland	531.5	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	1	13
		# Detects	13	13	13	13	12	9	13	0	0	13	12	13	0	0
		Maximum	90.10	108.00	176.00	0.45	1.12	0.12	1.39			50.00	6.05	7.58	26.82	
		Minimum	2.00	44.00	120.00	0.02	0.43	0.03	0.58			20.00	1.99	7.36	3.52	
		Mean	28.32	72.69	142.77	0.14	0.66	0.07	1.01			32.85	3.22	7.47	16.13	
		Std. Dev.	30.39	20.67	18.07	0.13	0.22	0.03	0.26			7.96	1.08	0.08	9.00	
Louisville	600.6	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	1	13
		# Detects	13	13	13	13	13	9	13	0	0	13	12	13	0	0
		Maximum	240.00	100.00	168.00	0.60	1.52	0.43	1.45			38.00	4.86	7.46	27.12	
		Minimum	5.60	46.00	124.00	0.04	0.38	0.03	0.84			18.00	2.33	7.28	4.11	
		Mean	53.08	69.31	146.15	0.16	0.70	0.11	1.11			27.92	3.22	7.38	16.62	
		Std. Dev.	69.22	16.47	13.92	0.15	0.29	0.13	0.21			7.55	0.75	0.07	8.94	
West Point	625.9	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	1	13
		# Detects	13	13	13	13	13	12	13	0	0	13	12	13	0	0
		Maximum	275.00	130.00	204.00	0.60	1.93	0.50	1.45			40.00	6.01	7.42	29.29	
		Minimum	5.00	47.00	128.00	0.07	0.42	0.05	0.78			16.00	2.37	7.27	4.53	
		Mean	102.49	74.54	158.15	0.27	0.94	0.21	1.10			28.85	3.51	7.34	17.40	
		Std. Dev.	89.78	23.49	25.44	0.18	0.42	0.14	0.23			8.16	1.04	0.05	9.46	
Cannelton	720.7	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	1	13
		# Detects	13	13	13	13	13	11	13	0	0	13	13	13	0	0
		Maximum	270.00	120.00	200.00	0.43	1.69	0.10	1.65			54.00	4.30	7.70	27.89	
		Minimum	3.00	42.00	132.00	0.02	0.27	0.03	0.81			20.00	2.00	7.45	3.96	
		Mean	64.10	71.46	150.77	0.15	0.81	0.05	1.06			31.08	3.17	7.57	17.11	
		Std. Dev.	94.86	21.52	17.62	0.14	0.47	0.02	0.24			11.18	0.63	0.08	9.43	
Newburgh	776.1	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	13	13	13	13	13	10	13	2	0	13	13	13	13	10
		Maximum	219.00	120.00	192.00	0.50	1.45	0.12	1.77	**7.61**		50.00	4.36	8.10	29.00	590.00
		Minimum	2.80	54.00	128.00	0.01	0.30	0.03	0.81	**6.30**		16.00	2.29	7.60	5.00	300.00
		Mean	51.77	75.08	151.69	0.14	0.73	0.06	1.20	**6.96**		30.31	3.35	7.87	17.35	409.00
		Std. Dev.	61.89	18.00	17.92	0.13	0.32	0.03	0.32	0.93		10.45	0.65	0.14	9.21	84.52
J.T. Myers	846.0	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	13	13	13	13	13	8	13	1	0	13	13	13	13	10
		Maximum	243.00	105.00	176.00	0.46	1.38	0.11	1.60	**10.00**		50.00	4.49	7.80	29.00	570.00
		Minimum	4.60	50.00	124.00	0.01	0.27	0.03	0.73			16.00	1.89	0.80	4.00	10.00
		Mean	50.02	70.92	151.38	0.13	0.68	0.06	1.13			30.92	3.01	7.13	16.61	378.00
		Std. Dev.	64.87	13.43	15.39	0.11	0.36	0.03	0.26			10.05	0.79	1.91	9.32	144.59
Smithland	918.5	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	13	13	13	13	13	9	13	1	0	13	12	13	13	4
		Maximum	302.00	125.00	260.00	0.48	1.00	0.20	2.14	**12.70**		110.00	10.90	7.80	28.00	656.00
		Minimum	1.80	42.00	148.00	0.02	0.46	0.04	0.61			18.00	2.47	5.50	5.53	400.00
		Mean	43.04	71.62	176.92	0.12	0.69	0.08	1.40			47.38	3.93	6.93	17.75	517.50
		Std. Dev.	80.48	20.97	29.98	0.12	0.22	0.05	0.49			28.76	2.24	0.67	8.45	106.23
L&D 52	938.9	# Samples	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		# Detects	12	12	13	13	13	9	13	2	0	12	12	13	13	4
		Maximum	96.50	95.00	288.00	0.29	0.99	0.14	2.04	**10.00**		96.00	9.78	6.87	28.00	507.00
		Minimum	13.40	39.00	136.00	0.04	0.57	0.03	0.55	**6.44**		16.00	2.60	5.60	5.96	256.00
		Mean	35.07	67.67	172.00	0.13	0.72	0.06	1.37	**8.22**		46.67	3.90	6.53	17.91	418.75
		Std. Dev.	27.92	15.28	38.19	0.08	0.11	0.04	0.44	2.52		26.96	1.92	0.46	8.65	111.16

HH: Human Health Criteria, AL: Aquatic Life Criteria
Estimated values
Violations

Appendix D: Bimonthly Mainstem Stations July 2005 - July 2007

Station Name	Mile Point	Date	TSS (mg/L)	SO_4 (mg/L)	THARD (mg/L)	TPHOS (mg/L)	TKN (mg/L)	NH_3-N (mg/L)		NO_3/NO_2 (mg/L)	Phenol (ug/L)	Total CN (mg/L)	Chloride (mg/L)	TOC (mg/L)	pH (su)	Temp (°C)	Cond (umhos/cm)
Criteria				250 mg/L (HH)					Ammonia Criterion (AL)	10 mg/L (HH)	5 ug/L (HH)	700 ug/L (HH)	250 mg/L (HH)				
		07/14/05	8.00	80.00	136.00	0.03	0.66	0.04	1.74	0.93	<5		46.00	3.92	*7.65*	29.00	490.00
		09/07/05	6.75	145.00	152.00	0.03	0.73	0.04	2.42	1.20	<5		42.00	7.85	*7.57*	26.00	520.00
		11/08/05	2.80	95.00	120.00	0.05	0.44	0.06	4.89	0.85	<5	<0.005	38.00	3.01	*7.63*	14.00	400.00
		01/04/06	39.70	65.00	108.00	0.11	0.85	0.13	7.69	1.14	<5	<0.005	46.00	2.64	*7.72*	6.00	350.00
		03/07/06	2.86	76.00	120.00	0.02	0.45	0.10	4.73	0.93	<5	<0.005	50.00	1.82	*7.56*	*6.60*	
		05/04/06	4.20	64.00	100.00	0.03	0.15	<0.03	3.32	1.23	<5		30.00	1.95	*7.77*	*19.75*	
New Cumberland	54.4	07/13/06	8.00	66.00	108.00	0.05	0.52	0.05	1.98	0.84	<5		26.00	2.53	*7.65*	*28.24*	
		09/14/06	12.40	52.00	88.00	0.05	0.34	0.05	3.13	0.81	<5		28.00	3.48	*7.57*	21.00	270.00
		11/01/06	38.30	48.00	76.00	0.06	0.51	0.05	5.22	0.60	<5	<0.005	20.00	3.46	*7.63*	13.00	210.00
		01/12/07	13.60	48.00	92.00	0.04	0.54	<0.03	7.69	0.83	<5	<5	18.00	<0.5	*7.72*	6.00	210.00
		03/12/07	7.67	56.00	100.00	0.02	0.31	0.13	4.73	1.22	<5	<0.005	40.00	2.30	*7.56*	5.00	320.00
		05/07/07	8.96	58.00	96.00	0.03	0.42	0.04	3.32	0.68	<5		22.00	2.10	*7.77*	20.00	270.00
		07/10/07	8.25	126.00	164.00	0.04	0.53	0.11	1.74	1.20	<5		52.00	2.80	*7.65*	31.00	510.00
		07/14/05	3.33	120.00	152.00	0.03	0.60	0.06	1.83	0.96	<5		46.00	3.48	*7.50*	28.00	520.00
		09/07/05	5.20	125.00	168.00	0.04	0.76	0.03	2.76	1.28	<5		46.00	8.93	*7.38*	24.00	540.00
		11/08/05	3.00	115.00	124.00	0.03	0.50	0.07	5.13	0.92	<5	<0.005	38.00	2.91	*7.50*	12.00	410.00
		01/04/06	45.50	75.00	116.00	0.11	0.72	0.12	7.69	1.01	<5	<0.005	40.00	2.31	*7.46*	5.50	340.00
		03/07/06	2.86	82.00	128.00	0.03	0.43	0.09	4.73	0.90	<5	<0.005	40.00	1.75	*7.49*	*6.02*	
		05/04/06	2.80	70.00	108.00	0.02	0.22	<0.03	4.30	0.74	<5		28.00	1.85	*7.50*	*16.85*	
Pike Island	84.2	07/13/06	4.80	72.00	108.00	0.12	1.35	0.07	2.08	0.81	<5		24.00	2.26	*7.50*	*26.79*	
		09/14/06	14.00	50.00	80.00	0.06	0.29	0.06	3.13	0.71	<5		24.00	3.42	*7.38*	21.00	260.00
		11/01/06	49.30	50.00	76.00	0.09	0.65	0.05	5.48	0.57	<5	<0.005	18.00	3.47	*7.50*	11.00	200.00
		01/12/07	25.60	44.00	88.00	0.05	0.61	<0.03	7.69	0.74	<5	<5	20.00	1.80	*7.46*	5.00	220.00
		03/12/07	12.50	62.00	104.00	0.02	0.35	<0.03	4.73	1.19	<5	<0.005	38.00	2.20	*7.49*	5.00	320.00
		05/07/07	6.51	60.00	96.00	0.04	0.34	0.03	3.78	0.63	<5		22.00	1.86	*7.50*	18.00	280.00
		07/10/07	5.75	124.00	172.00	0.03	0.61	0.05	1.61	1.25	<5		52.00	3.25	*7.5*	29.00	500.00
		07/14/05	6.33	120.00	152.00	0.01	0.24	0.06	1.87	0.92	<5		52.00	3.45	*7.36*	29.00	530.00
		09/15/05	4.33	155.00	212.00	0.03	0.66	0.04	2.42	1.11	<5		70.00	2.60	*7.31*	25.00	650.00
		11/15/05	8.75	90.00	132.00	0.05	0.51	0.05	5.22	0.85	<5	<0.005	40.00	2.72	*7.24*	15.00	400.00
		01/04/06	77.00	75.00	120.00	0.14	0.92	0.11	9.20	1.02	<5	<0.005	36.00	2.28	*7.18*	6.00	340.00
		03/13/06	24.30	88.00	128.00	0.07	0.46	0.05	5.08	0.91	<5	<0.005	38.00	1.97	*7.31*	*5.96*	
		05/03/06	2.00	70.00	104.00	<0.01	0.11	0.03	4.06	0.90	<5		32.00	2.05	*7.33*	*17.05*	
Hannibal	126.4	07/18/06	4.00	66.00	112.00	0.21	0.44	0.07	2.42	0.88	<5		28.00	3.39	*7.36*	*25.89*	
		09/14/06	10.80	56.00	80.00	0.04	0.37	0.05	3.13	0.73	<5		28.00	3.82	*7.31*	21.00	260.00
		11/07/06			92.00	0.07	0.43	0.04	7.21	0.64	<5	<0.005		2.82	*7.24*	10.00	230.00
		01/02/07	4.60	80.00	124.00	0.06	0.50	0.07	8.63	0.78	<5	<5	32.00	2.25	*7.18*	8.00	330.00
		03/13/07	10.50	68.00	112.00	0.02	0.35	0.15	5.08	1.20	<5	<0.005	42.00	2.30	*7.31*	6.00	340.00
		05/10/07	7.61	62.00	96.00	0.03	0.31	<0.03	4.06	0.58	<5		24.00	1.71	*7.33*	18.00	310.00
		07/12/07	3.00	132.00	184.00	0.05	0.46	0.08	2.13	1.04	<5		64.00	3.36	*7.36*	27.00	570.00
		07/12/05	<1	130.00	168.00	0.01	1.29	<0.03	2.26	0.83	<5		50.00	3.53	*7.26*	28.00	550.00
		09/15/05	4.00	160.00	176.00	0.06	0.75	0.03	2.13	1.10	<5		52.00	2.65	*7.34*	27.00	570.00
		11/15/05	5.50	110.00	136.00	0.06	0.57	0.05	4.92	0.89	<5	<0.005	44.00	2.80	*7.32*	15.00	440.00
		01/03/06	39.30	90.00	120.00	0.09	0.77	0.13	8.75	0.95	<5	<0.005	40.00	1.90	*7.25*	5.50	380.00
		03/13/06	32.00	82.00	120.00	0.07	0.45	0.03	5.39	0.86	<5	<0.005	52.00	2.14	*7.28*	*6.47*	
		05/03/06	3.60	62.00	100.00	0.01	0.28	<0.03	4.90	0.97	<5		28.00	1.95	*7.27*	*16.94*	
Willow Island	161.7	07/18/06	3.20	66.00	128.00	0.07	0.41	0.04	2.57	0.90	<5		24.00	3.68	*7.26*	*26.91*	
		09/19/06	7.00	56.00	96.00	0.01	0.37	0.05	3.13	0.87	<5		34.00	3.02	*7.34*	22.00	300.00
		11/07/06	14.20	42.00	92.00	0.04	0.39	0.06	6.79	0.63	<5	<0.005	26.00	3.18	*7.32*	10.00	230.00
		01/02/07	3.00	88.00	128.00	0.02	0.46	0.07	8.20	0.77	<5	<5	32.00	2.08	*7.25*	8.00	350.00
		03/13/07	14.00	72.00	104.00	0.05	0.48	0.15	5.39	1.10	<5	<0.005	40.00	2.10	*7.28*	6.00	350.00
		05/10/07	5.80	65.00	100.00	0.01	0.31	<0.03	4.31	0.61	<5		24.00	1.75	*7.27*	18.00	310.00
		07/12/07	1.75	116.00	180.00	0.03	0.48	0.05	2.26	0.84	<5		50.00	3.17	*7.26*	27.00	570.00

HH: Human Health Criteria, AL: Aquatic Life Criteria

Estimated values

Violations

Appendix D: Bimonthly Mainstem Stations July 2005 - July 2007

Station Name	Mile Point	Date	TSS (mg/L)	SO_4 (mg/L)	THARD (mg/L)	TPHOS (mg/L)	TKN (mg/L)	NH_3-N (mg/L)		NO_3/NO_2 (mg/L)	Phenol (ug/L)	Total CN (mg/L)	Chloride (mg/L)	TOC (mg/L)	pH (su)	Temp (°C)	Cond (umhos/cm)
Criteria				250 mg/L (HH)					Ammonia Criterion (AL)	10 mg/L (HH)	5 ug/L (HH)	700 ug/L (HH)	250 mg/L (HH)				
Belleville	203.9	07/12/05	4.86	110.00	172.00	<0.01	1.04	0.05	2.13	0.76	<5		48.00	3.78	*7.38*	28.00	540.00
		09/13/05	2.40	115.00	156.00	0.02	0.19	0.06	2.26	0.99	<5		40.00	2.98	*7.48*	25.00	530.00
		11/03/05	7.20	130.00	172.00	0.09	0.56	0.07	4.92	1.61	<5	<0.005	50.00	2.81	*7.38*	15.00	490.00
		01/03/06	53.00	90.00	140.00	0.14	0.91	0.12	7.09	1.18	<5	<0.005	40.00	2.68	*7.56*	6.00	420.00
		03/09/06	5.71	90.00	144.00	0.05	0.53	<0.03	5.08	0.92	<5	<0.005	30.00	1.95	*7.38*	*6.57*	
		05/11/06	4.40	86.00	140.00	<0.01	0.43	<0.03	3.49	0.74	<5		38.00	2.23	*7.54*	*17.28*	
		07/12/06	6.00	78.00	140.00	0.07	0.52	0.07	2.13	1.27	<5		24.00	3.22	*7.38*	*27.23*	
		09/19/06	13.50	60.00	104.00	0.04	0.39	0.06	2.92	0.88	<5		32.00	3.72	*7.48*	21.00	320.00
		11/09/06	9.00	60.00	108.00	0.04	0.40	0.07	6.79	0.80	<5	<0.005	24.00	3.00	*7.38*	10.50	280.00
		01/04/07	4.67	84.00	140.00	0.05	0.53	0.04	7.09	0.89	<5	<5	28.00	2.70	*7.56*	7.00	360.00
		03/15/07	21.00	64.00	124.00	0.03	0.40	0.16	5.08	1.17	<5	<0.005	42.00	1.90	*7.38*	6.00	370.00
		05/09/07	10.50	74.00	132.00	0.06	0.43	0.03	3.49	0.90	<5		26.00	2.62	*7.54*	18.00	350.00
		07/17/07	2.50	116.00	192.00	0.01	0.63	0.08	2.13	0.71	<5		50.00	3.33	*7.38*	27.00	580.00
R.C. Byrd	279.2	07/12/05	16.80	80.00	136.00	0.24	1.77	0.08	2.38	0.56	<5		32.00	3.17	*7.20*	27.00	420.00
		09/13/05	12.80	125.00	184.00	0.03	0.35	<0.03	3.08	0.68	<5		40.00	2.88	*7.16*	23.50	510.00
		11/03/05	14.50	115.00	164.00	0.06	0.40	0.05	6.25	1.13	<5	<0.005	50.00	2.27	*7.18*	13.00	490.00
		01/03/06	18.70	65.00	100.00	0.12	0.79	0.09	8.75	0.79	<5	<0.005	26.00	1.90	*7.26*	6.00	280.00
		03/09/06	22.50	72.00	116.00	0.08	0.39	<0.03	5.39	0.80	<5	<0.005	36.00	1.62	*7.24*	*7.24*	
		05/11/06	12.20	62.00	100.00	0.03	0.30	0.03	4.90	0.88	<5		26.00	1.91	*7.27*	*16.99*	
		07/12/06	22.50	62.00	104.00	0.05	0.50	0.04	2.70	0.87	<5		16.00	2.74	*7.20*	*26.98*	
		09/19/06	26.00	52.00	96.00	0.06	0.51	0.08	3.98	0.78	**7.77**		26.00	4.49	*7.16*	20.00	290.00
		11/09/06	55.30	56.00	92.00	0.11	0.52	0.06	7.11	0.74	<5	<0.005	18.00	3.29	*7.18*	11.00	230.00
		01/04/07	4.00	64.00	108.00	0.04	0.30	0.03	8.75	0.79	<5	<5	22.00	2.38	*7.26*	6.00	300.00
		03/15/07	24.70	26.00	104.00	0.03	0.42	0.14	5.39	1.23	<5	<0.005	36.00	1.80	*7.24*	6.00	280.00
		05/09/07	35.70	62.00	116.00	0.06	0.38	0.05	4.31	0.73	<5		22.00	2.13	*7.27*	18.00	320.00
		07/17/07	12.00	94.00	156.00	0.06	0.57	0.07	2.26	0.56	<5		42.00	3.10	*7.2*	27.00	480.00
Greenup	341	07/14/05	3.33	90.00	140.00	0.01	1.10	0.07	2.26	0.69	<5		38.00	3.17	*7.28*	*27.36*	
		09/20/05	12.80	120.00	180.00	0.03	1.30	<0.03	2.92	0.79	<5		36.00	3.33	*7.29*	*24.11*	
		11/08/05	5.40	95.00	160.00	0.07	0.53	0.05	6.67	1.04	<5		46.00	2.32	*7.17*	*12.49*	
		01/19/06	70.00	80.00	112.00	0.18	0.88	0.05	8.75	0.72	<5		26.00	3.00	*7.29*	*5.34*	
		03/07/06	16.50	76.00	136.00	0.04	0.52	<0.03	5.08	0.82	<5		40.00	1.78	*7.31*	*8.03*	
		05/10/06	7.40	72.00	108.00	0.02	0.30	<0.03	4.31	0.66	<5		30.00	2.12	*7.24*	*17.72*	
		07/25/06	13.20	56.00	116.00	0.06	0.26	0.04	2.26	0.89	<5		18.00	3.09	*7.28*	*27.36*	
		09/12/06	12.50	80.00	148.00	0.05	0.52	<0.03	2.92	0.93	<5		36.00	3.66	*7.29*	*24.11*	
		11/28/06	10.00	54.00	100.00	<0.01	0.30	0.10	6.67	0.65	<5		20.00	2.57	*7.17*	*12.49*	
		01/17/07	118.00	49.00	96.00	0.18	0.86	<0.03	8.75	0.77	<5		20.00	2.75	*7.29*	*5.34*	
		03/15/07	31.30	58.00	132.00	0.04	0.43	0.14	5.08	1.24	<5		36.00	1.80	*7.31*	*8.03*	
		05/09/07	15.60	66.00	112.00	0.03	0.35	<0.03	4.31	0.65	<5		18.00	1.82	*7.24*	*17.72*	
		07/26/07	4.00	118.00	156.00	0.02	0.41	0.03	2.26	0.69	<5		48.00	3.14	*7.28*	*27.36*	
Meldahl	436.2	07/24/05	6.67	130.00	144.00	0.02	0.47	<0.03	1.90	0.54	<5		35.00	4.30	*7.66*	*27.00*	
		09/24/05	5.50	125.00	168.00	0.05	0.12	0.04	2.45	0.66	<5		48.00	2.99	*7.70*	*22.36*	
		11/08/05	5.60	95.00	160.00	0.10	0.75	0.04	3.99	1.47	<5		70.00	2.60	*7.88*	*11.78*	
		01/19/06	58.50	80.00	128.00	0.13	0.86	0.05	7.09	1.09	<5		56.00	5.48	*7.57*	*4.84*	
		03/07/06	11.00	76.00	132.00	0.07	0.47	0.03	4.73	0.89	<5		38.00	1.89	*7.49*	*8.44*	
		05/10/06	6.20	68.00	108.00	<0.01	0.32	0.04	3.18	0.59	<5		30.00	1.98	*7.67*	*18.48*	
		07/12/06	8.00	70.00	132.00	0.05	0.54	<0.03	1.90	1.11	<5		30.00	2.18	*7.66*	*27.00*	
		09/12/06	18.30	66.00	128.00	0.08	0.58	<0.03	2.45	0.87	<5		34.00	4.07	*7.70*	*22.36*	
		11/28/06	10.70	60.00	112.00	0.02	0.44	0.10	3.99	0.80	**8.80**		26.00	2.92	*7.88*	*11.78*	
		01/31/07	18.00	59.00	120.00	0.06	0.47	0.03	7.09	1.09	<5		20.00		*7.57*	*4.84*	
		03/15/07	31.70	52.00	132.00	0.07	0.47	0.12	4.73	1.27	<5		34.00	2.10	*7.49*	*8.44*	
		05/09/07	11.20	68.00	116.00	0.04	0.36	<0.03	3.18	0.77	<5		24.00	1.96	*7.67*	*18.48*	
		07/25/07	3.40	114.00	192.00	0.01	0.57	0.03	1.67	0.50	<5		42.00	3.07	*7.66*	*27*	

HH: Human Health Criteria, AL: Aquatic Life Criteria

Estimated values

Violations

Appendix D: Bimonthly Mainstem Stations July 2005 - July 2007

Station Name	Mile Point	Date	TSS (mg/L)	SO_4 (mg/L)	THARD (mg/L)	TPHOS (mg/L)	TKN (mg/L)	NH_3-N (mg/L)		NO_3/NO_2 (mg/L)	Phenol (ug/L)	Total CN (mg/L)	Chloride (mg/L)	TOC (mg/L)	pH (su)	Temp (°C)	Cond (umhos/cm)
Criteria				250 mg/L (HH)					Ammonia Criterion (AL)	10 mg/L (HH)	5 ug/L (HH)	700 ug/L (HH)	250 mg/L (HH)				
		07/22/05	7.00	100.00	152.00	0.04	0.44	0.06	1.67	0.66	<5		37.00	4.45	*7.65*	27.09	
		09/27/05	8.14	120.00	168.00	0.25	0.68	0.11	2.69	0.78	<5		52.00	3.05	*7.57*	22.43	
		11/21/05	21.80	100.00	148.00	0.09	0.71	0.19	4.99	1.15	<5		36.00	3.56	*7.63*	11.60	
		01/12/06	34.70	60.00	136.00	0.12	0.81	0.12	5.81	1.24	<5		38.00	2.77	*7.72*	4.20	
		03/27/06	44.80	80.00	144.00	0.10	0.82	0.17	4.36	1.28	<5		42.00	2.91	*7.56*	8.92	
		05/08/06	12.40	70.00	120.00	0.04	0.31	0.11	2.86	0.61	<5		22.00	2.34	*7.77*	18.80	
Anderson Ferry	477.5	07/12/06	9.00	72.00	132.00	0.04	0.57	0.04	1.67	1.15	<5		34.00	2.50	*7.65*	27.09	
		09/11/06	19.80	72.00	128.00	0.08	0.64	0.05	2.69	0.91	<5		34.00	4.39	*7.57*	22.43	
		11/09/06	30.30	50.00	116.00	0.09	0.52	0.10	4.99	0.81	**10.00**		26.00	3.47	*7.63*	11.60	
		01/24/07	160.00	53.00	120.00	0.31	1.55	<0.03	5.81	0.93	<5		30.00		*7.72*	4.20	
		03/27/07	74.00	62.00	104.00	0.12	0.57	0.05	4.36	1.25	<5		42.00	2.50	*7.56*	8.92	
		05/08/07	24.30	70.00	120.00	0.05	0.73	0.08	2.86	0.89	<5		22.00	2.33	*7.77*	18.80	
		07/17/07	7.75	104.00	156.00	0.04	0.59	0.20	1.67	0.66	<5		44.00	3.39	*7.65*	27.09	
		07/24/05	3.78	100.00	148.00	0.04	0.46	<0.03	2.26	0.58	<5		35.00	6.05	*7.43*	26.82	
		09/24/05	6.29	80.00	152.00	0.09	<0.1	<0.03	2.57	1.16	<5		40.00	3.28	*7.45*	23.81	
		11/21/05	39.80	100.00	176.00	0.25	1.01	0.11	5.97	1.11	<5		50.00	3.08	*7.36*	12.04	
		01/20/06	72.00	75.00	140.00	0.20	1.12	0.06	7.09	1.24	<5		34.00	3.07	*7.58*	3.52	
		03/06/06	12.00	74.00	140.00	0.09	0.47	0.06	4.36	1.19	<5		26.00	1.99	*7.56*	7.38	
		05/10/06	2.00	66.00	152.00	0.02	0.43	0.08	3.78	0.86	<5		28.00	2.20	*7.47*	17.89	
Markland	531.5	07/13/06	7.80	70.00	132.00	0.07	0.50	0.07	2.26	1.32	<5		34.00	2.52	*7.43*	26.82	
		09/13/06	24.00	64.00	132.00	0.08	0.67	0.03	2.57	0.88	<5		32.00	4.06	*7.45*	23.81	
		11/09/06	18.80	44.00	120.00	0.07	0.51	0.08	5.97	0.95	<5		20.00	3.77	*7.36*	12.04	
		01/24/07	72.00	47.00	128.00	0.16	0.78	<0.03	7.09	1.02	<5		30.00		*7.58*	3.52	
		03/27/07	90.10	46.00	120.00	0.29	0.58	0.03	4.36	1.39	<5		32.00	2.50	*7.56*	7.38	
		05/22/07	15.00	71.00	140.00	0.04	0.69	<0.03	3.78	0.72	<5		24.00	2.83	*7.47*	17.89	
		07/25/07	4.60	108.00	176.00	0.45	0.71	0.12	2.26	0.66	<5		42.00	3.28	*7.43*	26.82	
		07/18/05	8.00	100.00	168.00	0.04	0.77	<0.03	2.26	0.84	<5		33.00	4.49	*7.28*	27.12	
		09/27/05	7.40	85.00	148.00	0.08	0.64	0.04	2.76	0.96	<5		36.00	3.03	*7.32*	24.45	
		11/28/05	10.40	90.00	160.00	0.10	0.51	0.15	5.57	1.25	<5		38.00	2.88	*7.40*	12.54	
		01/26/06	240.00	75.00	160.00	0.60	1.52	0.04	7.69	1.30	<5		26.00	3.21	*7.43*	4.11	
		03/27/06	19.50	74.00	164.00	0.15	0.76	0.07	4.73	1.42	<5		30.00	3.22	*7.42*	7.87	
		05/22/06	24.00	66.00	148.00	0.12	0.64	0.08	3.78	1.45	<5		36.00	2.81	*7.46*	18.38	
Louisville	600.6	07/26/06	10.60	60.00	140.00	0.09	0.47	<0.03	2.26	1.15	<5		18.00	3.42	*7.28*	27.12	
		09/25/06	79.30	54.00	140.00	0.31	0.83	0.03	2.76	0.94	<5		20.00	4.86	*7.32*	24.45	
		11/27/06	40.80	60.00	140.00	0.10	0.38	0.43	5.57	1.10	<5		20.00	2.69	*7.40*	12.54	
		01/22/07	142.00	46.00	124.00	0.25	0.91	<0.03	7.69	1.02	<5		20.00		*7.43*	4.11	
		03/22/07	81.50	46.00	124.00	0.12	0.67	0.08	4.73	1.26	<5		30.00	2.50	*7.42*	7.87	
		05/08/07	21.00	67.00	144.00	0.06	0.46	0.06	3.78	0.91	<5		20.00	2.33	*7.46*	18.38	
		07/18/07	5.60	78.00	140.00	0.05	0.59	<0.03	2.26	0.88	<5		36.00	3.16	*7.28*	27.12	
		07/18/05	275.00	100.00	172.00	0.40	1.93	0.47	1.87	1.14	<5		35.00	6.01	*7.30*	29.29	
		09/27/05	10.40	130.00	176.00	0.07	0.88	0.13	2.76	1.02	<5		38.00	3.29	*7.36*	24.43	
		11/28/05	195.00	95.00	188.00	0.60	1.63	0.50	5.97	1.33	<5		40.00	3.72	*7.40*	12.55	
		01/26/06	125.00	75.00	128.00	0.34	1.01	0.07	8.75	1.21	<5		24.00	3.52	*7.27*	4.53	
		03/27/06	47.00	74.00	176.00	0.19	0.81	0.23	5.08	1.45	<5		36.00	3.03	*7.32*	8.30	
		05/22/06	27.30	64.00	144.00	0.21	0.64	0.16	3.32	1.44	<5		30.00	2.92	*7.42*	19.38	
West Point	625.9	07/26/06	117.00	72.00	172.00	0.25	0.76	0.16	1.87	1.11	<5		22.00	3.22	*7.30*	29.29	
		09/25/06	131.00	54.00	140.00	0.44	1.06	0.05	2.76	0.83	<5		26.00	4.87	*7.36*	24.43	
		11/27/06	33.10	58.00	132.00	0.11	0.54	0.17	5.97	0.86	<5		22.00	2.86	*7.40*	12.55	
		01/22/07	95.60	47.00	128.00	0.19	0.81	<0.03	8.75	0.96	<5		16.00		*7.27*	4.53	
		03/22/07	243.00	48.00	204.00	0.58	0.91	0.17	5.08	1.26	<5		26.00	2.40	*7.32*	8.30	
		05/08/07	28.00	66.00	132.00	0.09	0.42	0.14	3.32	0.92	<5		20.00	2.37	*7.42*	19.38	
		07/18/07	5.00	86.00	164.00	0.09	0.84	0.22	1.87	0.78	<5		40.00	3.96	*7.3*	29.29	

HH: Human Health Criteria, AL: Aquatic Life Criteria
Estimated values
Violations

Appendix D: Bimonthly Mainstem Stations July 2005 - July 2007

Station Name	Mile Point	Date	TSS (mg/L)	SO_4 (mg/L)	THARD (mg/L)	TPHOS (mg/L)	TKN (mg/L)	NH_3-N (mg/L)		NO_3/NO_2 (mg/L)	Phenol (ug/L)	Total CN (mg/L)	Chloride (mg/L)	TOC (mg/L)	pH (su)	Temp (°C)	Cond (umhos/cm)
Criteria				250 mg/L (HH)					Ammonia Criterion (AL)	10 mg/L (HH)	5 ug/L (HH)	700 ug/L (HH)	250 mg/L (HH)				
		07/13/05	5.75	95.00	148.00	0.02	1.69	0.09	1.83	0.92	<5		34.00	4.15	*7.54*	27.89	
		09/21/05	6.83	80.00	148.00	0.04	1.12	<0.03	2.26	0.84	<5		36.00	3.66	*7.45*	25.81	
		11/10/05	5.20	120.00	200.00	0.21	0.67	0.06	4.81	1.65	<5		54.00	3.30	*7.59*	13.29	
		01/25/06	270.00	85.00	148.00	0.43	1.43	0.06	5.81	1.29	<5		22.00	3.08	*7.70*	3.96	
		03/09/06	9.71	70.00	148.00	0.07	0.32	0.04	4.36	1.24	<5		40.00	2.00	*7.60*	7.49	
		05/09/06	5.25	64.00	132.00	0.04	0.27	0.04	3.49	0.81	<5		22.00	2.86	*7.56*	18.85	
Cannelton	720.7	07/27/06	7.20	66.00	140.00	0.13	0.52	0.03	1.83	1.10	<5		20.00	3.15	*7.54*	27.89	
		09/14/06	22.20	68.00	140.00	0.09	0.43	0.04	2.26	0.86	<5		34.00	2.96	*7.45*	25.81	
		11/01/06	212.00	56.00	152.00	0.38	1.20	0.03	4.81	0.89	<5		20.00	4.30	*7.59*	13.29	
		01/19/07	194.00	42.00	148.00	0.34	1.25	<0.03	5.81	0.97	<5		20.00	3.48	*7.70*	3.96	
		03/13/07	67.00	44.00	168.00	0.10	0.57	0.10	4.36	1.26	<5		40.00	2.70	*7.60*	7.49	
		05/08/07	25.10	55.00	132.00	0.07	0.48	0.05	3.49	1.03	<5		20.00	2.50	*7.56*	18.85	
		07/24/07	3.00	84.00	156.00	0.03	0.57	0.06	1.83	0.92	<5		42.00	3.12	*7.54*	27.89	
		07/14/05	7.25	90.00	160.00	0.02	0.75	0.08	1.33	1.05	<5		30.00	3.83	7.9	26.00	450.00
		09/15/05	7.60	95.00	152.00	0.04	0.85	0.04	0.88	0.99	**<u>7.61</u>**		38.00	3.36	8.1	28.00	470.00
		11/10/05	11.00	120.00	192.00	0.10	0.71	0.06	2.36	1.65	<5		50.00	3.14	8	15.00	590.00
		01/05/06	86.50	65.00	152.00	0.22	1.13	0.08	3.95	1.77	<5		34.00	3.31	8	5.00	370.00
		03/02/06	15.20	66.00	156.00	0.09	0.50	0.05	2.80	1.62	<5		44.00	2.42	*7.9*	*8.05*	
		05/04/06	24.00	70.00	140.00	0.08	0.30	0.04	1.96	0.81	<5		18.00	2.72	*7.91*	*19.45*	
Newburgh	776.1	07/13/06	26.80	72.00	136.00	0.10	0.66	0.04	1.17	1.44	<5		22.00	2.29	*7.99*	*28.01*	
		09/14/06	31.30	76.00	148.00	0.12	0.65	<0.03	1.33	0.96	<5		34.00	4.26	7.9	25.00	410.00
		11/09/06	77.00	62.00	128.00	0.17	0.63	0.03	4.11	0.95	**<u>6.30</u>**		16.00	4.36	7.6	14.00	300.00
		01/11/07	122.00	56.00	180.00	0.26	1.04	<0.03	5.81	1.25	<5		24.00	3.91	7.7	7.00	370.00
		03/08/07	219.00	54.00	140.00	0.50	1.45	0.12	3.18	1.10	<5		36.00	3.70	7.8	5.00	340.00
		05/03/07	42.50	70.00	136.00	0.08	0.37	<0.03	2.89	1.10	<5		18.00	2.94	7.8	16.00	340.00
		07/19/07	2.80	80.00	152.00	0.01	0.46	0.04	1.32	0.93	<5		30.00	3.32	7.7	29.00	450.00
		07/14/05	6.40	70.00	164.00	0.03	0.41	0.11	1.71	0.73	<5		36.00	4.49	7.7	26.00	460.00
		09/15/05	9.50	80.00	144.00	0.06	1.37	0.07	2.08	0.91	<5		28.00	3.59	7.5	26.00	390.00
		11/10/05	10.60	105.00	176.00	0.08	0.56	<0.03	3.29	1.48	<5		50.00	2.44	7.8	14.00	570.00
		01/05/06	78.50	65.00	160.00	0.20	0.93	0.09	5.81	1.60	<5		36.00	3.23	7.7	5.00	390.00
		03/02/06	11.80	66.00	160.00	0.10	0.41	0.09	4.73	1.48	<5		36.00	2.18	*7.4*	*7.46*	
		05/04/06	36.30	68.00	132.00	0.09	0.48	<0.03	3.18	1.00	<5		20.00	2.13	*7.66*	*18.92*	
J.T. Myers	846	07/13/06	14.40	76.00	144.00	0.11	0.65	0.03	1.50	1.21	<5		30.00	1.89	*7.73*	*27.59*	
		09/14/06	30.00	70.00	148.00	0.12	0.27	<0.03	1.94	1.03	<5		42.00	3.36	7.7	24.00	440.00
		11/09/06	92.00	64.00	124.00	0.19	0.90	<0.03	4.38	0.96	**<u>10.00</u>**		16.00	3.47	7.6	13.00	10.00
		01/11/07	64.00	60.00	172.00	0.15	0.58	0.03	5.81	1.28	<5		24.00	3.33	7.7	5.00	370.00
		03/08/07	243.00	50.00	140.00	0.46	1.38	<0.03	4.73	1.06	<5		36.00	3.80	0.8	4.00	350.00
		05/03/07	49.10	64.00	160.00	0.09	0.39	0.04	3.61	1.00	<5		16.00	2.15	7.6	16.00	360.00
		07/19/07	4.60	84.00	144.00	0.01	0.47	0.03	1.17	0.92	<5		32.00	3.13	7.8	29.00	440.00
		07/05/05	11.50	75.00	180.00	0.05	0.72	0.08	2.88	0.82	<5		52.00	3.02	6.2	28.00	489.00
		09/06/05	11.00	90.00	156.00	0.06	0.90	0.06	3.31	0.88	<5		86.00	10.90	5.5	25.00	525.00
		11/07/05	10.80	125.00	212.00	0.09	1.00	<0.03	6.70	1.52	<5		110.00	3.91	5.8	15.00	656.00
		01/03/06	37.30	65.00	156.00	0.15	0.86	0.14	5.17	1.54	<5		42.00	3.51	7.8	7.00	400.00
		03/08/06	11.00	70.00	188.00	0.08	0.49	<0.03	5.08	1.90	<5		34.00	2.47	*7.31*	*8.92*	
		05/16/06	21.80	62.00	172.00	0.11	0.51	0.07	4.15	2.14	<5		26.00	3.55	*7.09*	*19.00*	
Smithland	918.5	07/10/06	9.20	80.00	168.00	0.09	0.53	0.05	2.26	1.50	<5		86.00	2.52	*7.25*	*27.38*	
		09/19/06	21.40	66.00	148.00	0.08	0.46	0.04	2.92	1.03	<5		34.00	3.62	*6.95*	*25.87*	
		11/14/06	33.00	56.00	156.00	0.11	0.51	<0.03	5.94	1.27	**<u>12.70</u>**		18.00	3.77	*7.22*	*13.71*	
		01/30/07	81.00	47.00	172.00	0.22	0.98	<0.03	8.75	2.07	<5		20.00		*7.27*	*5.53*	
		03/21/07	302.00	42.00	260.00	0.48	0.98	0.06	5.08	1.73	<5		30.00	3.30	*7.31*	*8.92*	
		05/21/07	7.75	71.00	164.00	0.04	0.47	0.05	4.15	1.12	<5		46.00	3.16	*7.09*	*19.00*	
		07/25/07	1.80	82.00	168.00	0.02	0.59	0.20	2.26	0.61	<5		32.00	3.41	*7.25*	*27.38*	

HH: Human Health Criteria, AL: Aquatic Life Criteria

Estimated values

<u>Violations</u>

Appendix D: Bimonthly Mainstem Stations July 2005 - July 2007

Station Name	Mile Point	Date	TSS (mg/L)	SO_4 (mg/L)	THARD (mg/L)	TPHOS (mg/L)	TKN (mg/L)	NH_3-N (mg/L)		NO_3/NO_2 (mg/L)	Phenol (ug/L)	Total CN (mg/L)	Chloride (mg/L)	TOC (mg/L)	pH (su)	Temp (°C)	Cond (umhos/cm)
Criteria				250 mg/L (HH)					Ammonia Criterion (AL)	10 mg/L (HH)	5 ug/L (HH)	700 ug/L (HH)	250 mg/L (HH)				
L&D 52	938.9	07/05/05	14.80	67.00	152.00	0.06	0.79	<0.03	2.91	0.85	<5		68.00	2.99	5.6	28.00	459.00
		09/06/05	16.00	90.00	160.00	0.07	0.74	0.03	3.22	0.97	<5		58.00	9.78	6.4	26.00	507.00
		11/07/05	13.40	95.00	180.00	0.11	0.72	<0.03	6.30	1.36	<5		96.00	3.46	5.7	17.00	256.00
		01/03/06	58.00	70.00	156.00	0.16	0.70	0.14	11.30	1.56	<5		92.00	3.28	6	6.00	453.00
		03/08/06	28.50	66.00	188.00	0.11	0.71	0.09	6.57	1.80	<5		32.00	2.60	*6.68*	*8.65*	
		05/16/06	30.50	60.00	164.00	0.12	0.66	0.07	5.03	2.04	<5		26.00	3.70	*6.85*	*18.38*	
		07/10/06	13.40	78.00	184.00	0.13	0.67	<0.03	2.64	1.59	<5		52.00	2.76	*6.87*	*27.69*	
		09/19/06	42.70	66.00	136.00	0.09	0.78	0.03	3.07	1.01	**<u>6.44</u>**		32.00	3.56	*6.79*	*26.15*	
		11/14/06	76.00	50.00	144.00	0.18	0.63	<0.03	6.66	1.17	**<u>10.00</u>**		18.00	4.65	*6.74*	*14.23*	
		01/30/07	96.50	39.00	148.00	0.26	0.99	0.03	10.20	1.84	<5		16.00		*6.82*	*5.96*	
		03/21/07			288.00	0.29	0.86	0.04	6.57	1.72	<5			3.30	*6.68*	*8.65*	
		05/21/07	15.20	65.00	172.00	0.06	0.57	0.05	5.03	1.32	<5		36.00	3.24	*6.85*	*18.38*	
		07/25/07	15.80	66.00	164.00	0.04	0.61	0.06	2.64	0.55	<5		34.00	3.49	*6.87*	*27.69*	

HH: Human Health Criteria, AL: Aquatic Life Criteria

Estimated values

<u>Violations</u>

Appendix E: Dissolved Oxygen and Temperature Sampling Results 2006-2007

Appendix E: Summary of Dissolved Oxygen and Temperature Data Exceedances

	Months w/exceedances 2006	2007	Number of exceedances	Number total Samples	Percent exceedances May 06 - Oct 06 May 07 - Oct 07
Montgomery			0		
Hannibal			0		
Belleville			0		
Racine			0		
Kyger		August	5	228	2%
Greenup (upstream)		August, Sept, Oct	15	235	6%
Greenup (downstream)			0		
Meldahl			0		
Markland 1			0		
Markland 2			0		
McAlpine			0		
Cannelton	Sept, Oct	July, Aug, Sept	48	163	29%
Newburgh		Sept	8	110	7%
JT Myers	Sept	Sept, Oct	24	175	14%
Smithland	Sept	June, July, Aug, Sept	58	160	36%

Appendix E:
Daily Dissolved Oxygen Readings May 2006

CALENDAR DAY JULIAN DAY		2-May 122	3-May 123	4-May 124	5-May 125	8-May 128	9-May 129	10-May 130	11-May 131	12-May 132	15-May 135	16-May 136	17-May 137	18-May 138	19-May 139	22-May 142	23-May 143	24-May 144	25-May 145	26-May 146	30-May 150	31-May 151	Monthly % Exceedance
MONTGOMERY	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 31.7	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
HANNIBAL***	MAX	8.96	9.65	9.53	9.24	9.14	9.05	9.18	9.21	9.12	7.85	9.53	8.97	9.23	9.12	12.45	9.27	9.35	9.35	9.44	8.94	8.94	
MP 126.4	MIN	8.51	8.60	8.57	8.57	8.79	8.55	8.52	9.03	8.97	7.70	9.08	7.61	8.58	8.81	9.08	8.88	8.81	8.78	8.93	6.80	8.58	
UPSTREAM	AVG	8.79	8.81	8.95	9.09	8.98	8.77	8.79	9.09	9.04	7.79	9.31	8.42	8.73	8.98	9.32	9.00	8.93	8.95	9.21	8.40	8.74	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	No	No	11.88	13.27	No	No	11.28	12.31	No	12.74	11.95	No	9.94	8.90	9.86	9.58	9.36	8.69	8.76	7.73	7.66	
MP 237.5	MIN	Data	Data	10.56	11.90	Data	Data	9.98	11.16	Data	11.16	10.82	Data	7.56	8.40	8.45	8.28	8.26	8.21	8.06	7.51	7.51	
	AVG	Available	Available	11.21	12.83	Available	Available	10.66	11.67	Available	11.91	11.26	Available	9.06	8.72	8.89	8.71	8.57	8.44	8.36	7.65	7.58	0.00%
KYGER	MAX	8.81	8.81	8.95	8.93	9.07	8.88	9.02	9.05	9.12	8.64	8.57	No	9.84	9.41	9.19	9.19	10.49	9.05	8.95	8.78	8.42	
MP 260.0	MIN	8.64	8.69	8.59	8.64	8.78	8.57	8.57	8.54	8.42	8.30	8.35	Data	8.95	8.81	8.98	8.83	8.76	8.81	8.78	8.33	7.94	
	AVG	8.70	8.76	8.84	8.85	8.93	8.76	8.88	8.85	8.74	8.52	8.48	Available	9.36	9.09	9.10	8.96	9.04	8.94	8.87	8.54	8.14	0.00%
GREENUP***	MAX	7.73	8.21	8.11	8.11	9.17	9.72	9.19	8.06	7.68	7.44	8.16	8.26	8.18	8.21	7.94	7.68	7.51	7.78	7.97	8.16	7.78	
MP 341.0	MIN	6.98	6.98	7.87	7.58	8.38	8.38	8.06	7.56	7.13	6.72	6.82	7.30	7.85	7.54	7.68	7.37	6.98	7.10	7.25	7.15	7.18	
UPSTREAM	AVG	7.24	7.69	8.00	7.86	8.82	9.06	8.67	7.77	7.50	6.95	7.94	8.18	8.09	7.96	7.83	7.55	7.15	7.49	7.74	7.62	7.53	0.00%
DOWNSTREAM	MAX	6.82	7.49	7.34	7.42	9.84	10.22	9.91	9.31	9.24	8.52	10.39	8.40	8.35	No	No	7.56	6.58	7.90	7.94	8.18	8.09	
	MIN	6.41	6.55	6.65	6.86	9.36	9.41	9.31	9.05	8.81	8.33	7.80	5.52	7.92	Data	Data	6.43	6.07	6.02	7.75	7.66	7.56	
	AVG	6.62	7.14	7.09	7.17	9.60	9.73	9.61	9.19	9.00	8.45	8.39	8.19	8.19	Available	Available	6.76	6.31	7.73	7.86	8.04	7.81	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	8.47	8.52	8.78	9.07	9.48	9.84	9.65	9.14	8.69	8.02	8.11	8.38	8.54	8.50	8.04	7.87	7.22	No	8.04	No	No	
MP 531.5	MIN	5.52	8.33	8.50	8.62	8.81	8.83	8.74	8.69	8.06	7.73	7.82	8.09	8.30	8.21	7.73	7.37	5.14	Data	7.32	Data	Data	
D.O. #1	AVG	7.05	8.47	8.65	8.84	9.14	9.26	9.30	8.90	8.37	7.84	7.97	8.28	8.44	8.36	7.91	7.63	5.92	Available	7.53	Available	Available	0.00%
D.O. #2	MAX	8.47	No	8.95	9.24	9.86	10.13	9.94	9.46	8.95	7.99	7.92	8.18	8.35	8.30	7.82	7.70	7.85	8.11	7.87	No	No	
	MIN	5.81	Data	8.57	8.81	9.14	9.17	9.14	8.90	8.42	7.63	7.66	7.90	8.16	8.02	7.61	7.22	4.87	5.86	7.44	Data	Data	
	AVG	7.25	Available	8.81	9.00	9.48	9.57	9.65	9.21	8.70	7.76	7.80	8.08	8.27	8.17	7.73	7.51	6.23	7.44	7.65	Available	Available	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 720.7	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
NEWBURGH	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 776.1	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
JOHN T. MYERS	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 846.0	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
SMITHLAND	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 919.0	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E:
Daily Dissolved Oxygen Readings June 2006

CALENDAR DAY JULIAN DAY		1-Jun 152	2-Jun 153	5-Jun 156	12-Jun 163	13-Jun 164	14-Jun 165	15-Jun 166	16-Jun 167	19-Jun 170	20-Jun 171	21-Jun 172	22-Jun 173	23-Jun 174	26-Jun 177	27-Jun 178	28-Jun 179	29-Jun 180	30-Jun 181	Monthly % Exceedance
MONTGOMERY	MAX	10.27	10.38	9.14	10.65	11.71	11.46	12.79	12.43	11.81	11.33	14.93	13.23	11.43	10.99	11.49	10.82	10.25	10.42	
MP 31.7	MIN	10.00	10.00	8.89	9.72	10.35	9.65	10.32	10.43	10.02	10.02	9.30	11.37	10.61	9.90	11.10	10.38	9.95	10.05	
	AVG	10.15	10.16	8.98	10.21	10.81	10.67	11.16	11.00	11.00	10.41	12.21	12.31	11.01	10.53	11.30	10.63	10.12	10.15	0.00%
HANNIBAL***	MAX	8.96	8.79	9.66	8.25	8.55	9.05	8.97	8.82	9.48	8.58	8.25	8.28	8.13	7.76	8.22	8.37	8.94	8.84	
MP 126.4	MIN	8.46	8.37	7.88	8.01	8.03	8.37	8.54	8.37	8.19	8.13	7.79	7.53	7.34	6.95	6.98	8.18	8.21	7.40	
UPSTREAM	AVG	8.66	8.55	8.44	8.14	8.28	8.63	8.77	8.58	8.74	8.37	8.06	7.96	7.85	7.37	7.39	8.28	8.48	8.27	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	7.75	10.27	7.34	6.74	7.08	7.03	6.86	6.86	7.42	No	No	7.40	7.24	6.04	6.04	5.87	5.99	5.85	
MP 237.5	MIN	7.54	7.51	6.77	6.58	6.62	6.74	6.58	6.48	7.13	Data	Data	7.23	6.99	5.54	5.54	5.35	5.70	5.72	
	AVG	7.66	8.17	7.06	6.65	6.85	6.88	6.74	6.68	7.26	Available	Available	7.30	7.11	5.72	5.72	5.54	5.81	5.79	0.00%
KYGER	MAX	8.11	7.90	7.61	6.98	6.94	7.15	7.13	7.20	7.32	8.21	8.26	7.39	7.56	6.46	5.40	5.86	5.90	5.81	
MP 260.0	MIN	7.78	7.70	7.25	6.84	6.84	6.86	6.86	6.86	6.72	7.15	7.34	7.03	6.98	4.97	5.02	4.78	5.30	5.64	
	AVG	7.93	7.81	7.46	6.91	6.88	7.03	6.99	7.02	7.08	7.68	7.76	7.23	7.20	5.59	5.22	5.14	5.64	5.74	0.00%
GREENUP***	MAX	7.34	7.08	6.34	6.02	6.48	6.60	8.18	7.94	8.23	7.68	7.94	7.56	7.08	5.98	6.12	5.69	*	*	
MP 341.0	MIN	6.98	6.79	5.95	5.69	5.66	5.88	6.43	7.06	7.58	7.42	7.06	6.19	5.90	5.26	5.14	5.06	*	*	
UPSTREAM	AVG	7.15	6.96	6.19	5.82	6.18	6.29	7.23	7.48	7.88	7.53	7.55	6.82	6.35	5.50	5.53	5.34	*	*	0.00%
DOWNSTREAM	MAX	7.63	7.37	6.26	5.47	*	7.30	8.98	9.34	8.66	8.18	8.42	7.94	8.33	6.50	*	6.19	*	5.62	
	MIN	7.39	6.96	5.47	5.02	*	6.86	7.15	8.09	7.99	7.94	7.75	6.91	6.46	6.22	*	5.88	*	4.39	
	AVG	7.49	7.17	5.75	5.21	*	7.02	8.15	8.63	8.34	8.04	8.09	7.37	7.08	6.41	*	6.06	*	5.17	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	9.29	6.50	*	7.94	7.75	7.08	7.27	7.22	6.96	7.87	7.75	6.46	7.01	*	*	6.43	6.31	5.88	
MP 531.5	MIN	7.97	5.33	*	6.94	6.94	6.72	6.60	5.76	5.86	6.74	5.88	5.74	5.86	*	*	5.95	5.83	4.90	
D.O. #1	AVG	8.46	5.86	*	7.57	7.31	6.90	6.84	6.72	6.23	7.49	6.83	6.04	6.20	*	*	6.27	6.10	5.54	0.00%
D.O. #2	MAX	9.22	7.80	5.90	7.08	6.41	6.05	5.74	5.38	*	6.74	6.65	5.81	6.07	*	6.02	6.43	6.31	6.05	
	MIN	8.02	6.89	5.47	5.86	5.88	5.62	5.30	5.11	*	4.39	5.30	5.18	5.33	*	4.18	5.98	6.10	5.14	
	AVG	8.45	7.30	5.73	6.58	6.06	5.81	5.48	5.28	*	6.15	5.94	5.41	5.63	*	5.70	6.24	6.22	5.74	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 720.7	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
NEWBURGH	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 776.1	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
JOHN T. MYERS	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 846.0	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
SMITHLAND	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 919.0	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E:
Daily Dissolved Oxygen Readings July 2006

CALENDAR DAY		2-Jul	5-Jul	6-Jul	7-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	24-Jul	25-Jul	26-Jul	27-Jul	31-Jul	Monthly
JULIAN DAY		184	186	187	188	191	192	193	194	195	198	199	200	201	202	205	206	207	208	212	% Exceedance
MONTGOMERY	MAX	9.84	8.80	9.37	8.61	8.38	8.37	8.65	8.67	8.53	8.72	8.76	8.98	9.74	9.67	8.29	8.12	8.54	9.15	8.58	
MP 31.7	MIN	9.44	8.53	8.28	8.12	8.14	8.18	8.31	8.00	8.07	8.50	8.47	8.44	9.35	9.16	7.99	7.48	7.85	8.12	8.32	
	AVG	9.71	8.69	8.52	8.37	8.23	8.24	8.55	8.36	8.29	8.61	8.64	8.59	9.57	9.37	8.10	7.94	8.04	8.75	8.46	0.00%
HANNIBAL***	MAX	9.23	8.46	8.45	8.09	9.14	8.66	8.96	8.07	8.04	8.64	8.21	8.15	8.37	8.10	7.82	7.85	7.74	8.39	7.70	
MP 126.4	MIN	8.70	8.10	7.89	7.64	8.60	8.18	8.00	7.97	7.80	8.30	7.88	7.77	7.92	7.70	7.17	7.19	7.37	7.26	7.13	
UPSTREAM	AVG	8.88	8.35	8.15	7.80	8.79	8.44	8.13	8.01	7.98	8.49	8.07	7.96	8.11	7.95	7.55	7.55	7.56	7.89	7.55	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	6.19	6.78	6.95	7.04	7.16	7.02	6.78	6.88	6.94	No	6.81	6.65	6.61	6.73	6.55	6.95	7.10	6.99	7.53	
MP 237.5	MIN	6.07	6.51	6.78	6.85	6.89	6.79	6.69	6.72	6.83	Data	6.42	6.45	6.47	6.56	6.42	6.51	6.74	6.89	6.65	
	AVG	6.12	6.62	6.87	6.94	6.96	6.93	6.74	6.80	6.88	Available	6.60	6.55	6.53	6.63	6.49	6.77	6.94	6.94	7.01	0.00%
KYGER	MAX	5.81	6.70	6.70	6.14	6.24	6.07	5.95	5.81	5.88	5.42	+	+	5.71	5.40	+	10.61	8.35	8.54	8.40	
MP 260.0	MIN	5.62	5.52	5.69	5.93	5.86	5.66	5.57	5.45	5.45	4.82	+	+	5.18	5.16	+	5.02	7.30	8.06	7.92	
	AVG	5.76	5.76	5.91	6.03	6.03	5.86	5.72	5.60	5.63	5.03	+	+	5.34	5.26	+	7.95	7.68	8.27	8.18	0.00%
GREENUP***	MAX	7.78	5.88	5.93	5.54	6.00	6.29	6.19	5.95	6.26	5.59	5.54	5.57	5.54	5.88	5.54	5.76	5.86	6.02	6.82	
MP 341.0	MIN	5.42	5.50	5.42	4.94	5.59	5.59	5.74	5.40	5.40	5.30	5.30	5.26	5.16	5.66	5.28	5.35	5.50	5.38	5.59	
UPSTREAM	AVG	6.03	5.66	5.64	5.29	5.82	5.76	5.96	5.69	5.87	5.47	5.43	5.40	5.34	5.76	5.37	5.52	5.68	5.64	6.30	0.00%
DOWNSTREAM	MAX	+	6.29	6.41	6.29	6.50	6.43	6.41	6.43	6.77	6.26	6.29	6.38	6.46	9.07	6.46	6.60	6.86	6.96	9.46	
	MIN	+	5.95	5.98	5.40	6.05	6.05	6.26	6.22	6.19	4.27	4.20	5.88	6.34	8.66	6.07	6.38	6.43	6.46	6.62	
	AVG	+	6.10	6.21	6.01	6.29	6.32	6.34	6.31	6.54	5.11	5.52	6.16	6.39	8.96	6.30	6.48	6.66	6.70	7.12	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	5.30	5.66	5.45	5.64	8.28	8.28	6.17	6.02	5.88	5.86	No	No	No	No	6.98	5.86	5.90	6.07	5.57	
MP 531.5	MIN	4.94	5.26	5.21	5.35	4.99	6.02	5.83	5.66	5.62	5.59	Data	Data	Data	Data	5.33	5.28	5.18	5.59	4.82	
D.O. #1	AVG	5.17	5.41	5.31	5.51	5.36	6.41	5.98	5.85	5.74	5.73	Available	Available	Available	Available	5.56	5.54	5.58	5.74	5.18	0.00%
D.O. #2	MAX	5.64	5.86	5.62	5.86	8.30	8.30	6.22	6.10	6.02	6.12	No	No	No	No	5.90	5.95	5.90	6.07	5.62	
	MIN	5.42	5.47	5.50	5.71	5.45	6.05	5.95	5.78	5.78	5.88	Data	Data	Data	Data	5.45	5.42	5.45	5.66	4.78	
	AVG	5.57	5.64	5.56	5.80	5.82	6.41	6.03	5.94	5.91	6.05	Available	Available	Available	Available	5.63	5.66	5.69	5.84	5.21	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	No	No	No	No	No	No	6.23	6.28	6.27	6.25	5.53	5.93	5.99	5.96	6.05	6.12	6.33	7.09	7.28	
MP 720.7	MIN	Data	Data	Data	Data	Data	Data	5.90	6.00	6.01	5.78	4.94	5.58	5.77	5.69	5.71	5.77	6.10	6.77	6.73	
	AVG	Available	Available	Available	Available	Available	Available	6.11	6.13	6.15	6.09	5.18	5.78	5.91	5.81	5.89	5.98	6.23	6.93	6.96	0.00%
NEWBURGH	MAX	No	No	No	No	No	6.91	6.57	6.63	6.27	6.24	6.21	5.53	5.85	6.21	5.79	6.43	6.90	+	8.09	
MP 776.1	MIN	Data	Data	Data	Data	Data	6.61	6.45	6.26	5.92	6.00	6.00	5.00	5.65	5.79	5.42	5.65	6.63	+	6.99	
	AVG	Available	Available	Available	Available	Available	6.76	6.51	6.43	6.11	6.13	6.12	5.34	5.75	5.91	5.65	5.97	6.75	+	7.43	0.00%
JOHN T. MYERS	MAX	No	No	No	No	No	No	7.20	7.21	6.99	No	No	6.47	6.41	5.73	5.81	6.38	6.03	6.81	8.89	
MP 846.0	MIN	Data	Data	Data	Data	Data	Data	6.83	6.42	5.91	Data	Data	5.93	5.40	5.13	4.67	6.05	5.64	+	8.18	
	AVG	Available	Available	Available	Available	Available	Available	6.91	6.92	6.50	Available	Available	6.17	5.85	5.42	5.23	6.23	5.79	5.76	8.62	0.00%
SMITHLAND	MAX	No	No	No	No	No	No	No	6.60	6.01	+	6.05	6.46	+	+	+	+	+	+	+	
MP 919.0	MIN	Data	Data	Data	Data	Data	Data	Data	4.97	4.82	+	4.90	4.54	+	+	+	+	+	+	+	
	AVG	Available	Available	Available	Available	Available	Available	Available	5.91	5.32	+	5.27	5.29	+	+	+	+	+	+	+	0.00%

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E:
Daily Dissolved Oxygen Readings August 2006

CALENDAR DAY JULIAN DAY		1-Aug 213	2-Aug 214	3-Aug 215	4-Aug 216	7-Aug 219	8-Aug 220	9-Aug 221	10-Aug 222	14-Aug 226	15-Aug 227	16-Aug 228	17-Aug 229	21-Aug 233	22-Aug 234	23-Aug 235	24-Aug 236	25-Aug 237	28-Aug 240	29-Aug 241	31-Aug 242	31-Aug 243	Monthly % Exceedance
MONTGOMERY	MAX	8.79	9.04	8.75	8.18	9.16	9.35	8.43	8.23	8.35	8.39	8.43	8.18	9.08	8.73	6.99	4.76	9.30	8.06	7.80	7.70	8.07	
MP 31.7	MIN	8.53	8.52	8.37	7.88	8.72	8.55	7.67	7.61	7.76	7.72	7.33	7.53	7.84	6.86	4.97**	4.22	7.34	7.37	7.26	7.44	7.65	
	AVG	8.65	8.87	8.65	8.04	8.89	8.79	7.98	7.95	8.10	8.01	8.00	7.90	8.53	7.33	5.65	4.42*	8.37	7.64	7.46	7.54	7.77	0.00%
HANNIBAL***	MAX	7.80	8.61	8.34	7.95	9.33	8.01	7.65	7.77	8.97	7.71	8.06	7.37	7.10	7.10	8.03	7.61	7.80	7.55	7.44	7.53	7.95	
MP 126.4	MIN	7.29	7.35	7.43	7.31	7.04	6.99	6.95	7.16	7.55	7.49	7.32	6.95	6.75	6.53	7.02	7.08	7.29	7.11	6.62	7.02	7.37	
UPSTREAM	AVG	7.54	8.03	7.98	7.66	8.13	7.47	7.25	7.42	8.19	7.60	7.64	7.16	6.95	6.73	7.41	7.32	7.49	7.35	7.07	7.32	7.72	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	7.18	6.81	6.76	6.76	No	No	8.07	7.50	6.62	7.21	6.14	6.80	No	No	5.67	5.67	5.88	5.74	*	*	5.75	
MP 237.5	MIN	6.77	6.42	6.38	6.38	Data	Data	7.18	6.79	6.27	6.06	5.88	5.90	Data	Data	5.03	5.03	5.19	5.01	*	*	5.38	
	AVG	6.97	6.57	6.55	6.55	Available	Available	7.47	7.11	6.45	6.52	5.99	6.16	Available	Available	5.19	5.32	5.47	5.36	*	*	5.51	0.00%
KYGER	MAX	8.93	8.64	8.14	8.18	9.24	8.88	8.59	9.00	8.38	8.21	7.99	7.66	7.66	7.13	6.96	7.61	7.75	7.20	7.06	6.31	6.72	
MP 260.0	MIN	8.18	8.09	7.61	7.63	8.09	7.78	8.02	6.36	7.66	7.66	7.42	7.34	7.03	6.82	6.62	6.58	6.84	6.94	6.26	6.02	5.81	
	AVG	8.52	8.41	7.90	7.82	8.85	8.21	8.26	8.26	7.90	7.88	7.74	7.49	7.33	6.97	6.78	6.90	7.24	7.07	6.73	6.13	6.05	0.00%
GREENUP***	MAX	7.42	7.32	7.01	7.06	7.22	6.58	6.53	6.53	5.93	6.79	6.94	6.14	5.88	6.17	6.10	6.41	6.46	6.58	5.52	*	*	
MP 341.0	MIN	6.07	6.50	6.29	6.22	5.86	5.95	5.88	5.90	5.23	5.40	6.02	5.04	4.73	5.57	5.50	5.45	5.47	5.06	4.66	*	*	
UPSTREAM	AVG	6.92	6.85	6.60	6.53	6.48	6.19	6.16	6.10	5.50	6.12	6.23	5.57	5.62	5.79	5.70	5.83	5.76	5.71	5.06	*	*	0.00%
DOWNSTREAM	MAX	7.08	6.77	6.22	5.74	7.18	6.77	6.38	6.12	6.48	6.86	7.97	7.34	6.72	6.65	6.50	6.26	6.19	*	6.70	6.43	*	
	MIN	6.41	6.02	5.64	5.21	5.54	5.98	5.71	5.71	5.83	5.90	6.60	5.59	4.92	6.31	6.00	5.66	5.86	*	5.76	5.62	*	
	AVG	6.72	6.51	5.91	5.50	6.47	6.31	6.03	5.91	6.02	6.45	7.10	6.29	6.12	6.46	6.17	6.06	6.02	*	6.25	6.13	*	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	*	*	*	*	6.77	6.77	5.42	5.28	*	*	*	*	5.23	5.54	5.86	6.05	6.98	*	*	5.42	5.16	
MP 531.5	MIN	*	*	*	*	4.37	5.38	5.21	4.90	*	*	*	*	4.56	4.68	4.82	4.73	5.33	*	*	5.18	4.92	
D.O. #1	AVG	*	*	*	*	5.26	5.59	5.31	5.11	*	*	*	*	4.80**	5.12	5.14	5.22	6.03	*	*	5.28	5.03	0.00%
D.O. #2	MAX	*	*	*	*	8.78	8.78	5.62	5.42	*	*	5.78	5.81	5.42	5.81	6.22	6.31	7.27	*	5.76	5.57	5.28	
	MIN	*	*	*	*	4.70	5.50	5.28	4.97	*	*	4.80	4.82	4.80	4.90	5.06	4.94	5.59	*	4.06	5.30	5.06	
	AVG	*	*	*	*	5.39	5.81	5.47	5.21	*	*	5.24	5.27	5.00	5.34	5.41	5.46	6.29	*	5.29	5.42	5.16	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	6.45	6.38	6.48	6.53	8.54	7.66	7.47	6.50	6.32	5.37	5.35	6.01	Data	Data	Data	Data	Data	*	*	*	*	
MP 720.7	MIN	6.18	6.09	5.92	6.43	6.39	6.27	6.80	6.29	5.36	5.04	4.99	4.76	Quality	Quality	Quality	Quality	Quality	*	*	*	*	
	AVG	6.30	6.23	6.22	6.49	7.64	7.09	7.10	6.43	5.64	5.15	5.12	5.22	Uncertain	Uncertain	Uncertain	Uncertain	Uncertain	*	*	*	*	0.00%
NEWBURGH	MAX	8.38	8.41	7.66	8.25	7.79	10.17	8.49	7.36	7.23	7.03	6.98	7.39	7.15	8.13	10.82	11.70	11.74	8.25	9.44	7.74	7.16	
MP 776.1	MIN	7.42	6.78	6.00	7.24	6.92	8.14	7.00	6.47	5.82	5.48	5.56	6.39	5.79	7.06	10.07	8.44	8.97	6.98	7.58	7.32	6.53	
	AVG	7.80	7.40	7.06	7.49	7.36	9.24	7.91	6.86	6.30	6.14	6.42	6.95	6.40	7.59	10.55	10.03	10.02	7.66	8.39	7.55	6.89	0.00%
JOHN T. MYERS	MAX	8.77	7.54	7.36	No	8.63	8.31	6.54	6.35	6.42	5.82	6.65	7.86	6.45	8.73	9.74	12.67	11.99	11.39	11.02	10.53	7.76	
MP 846.0	MIN	7.76	6.53	6.81	Data	7.50	6.46	5.91	5.73	5.58	5.43	5.72	6.02	6.25	8.20	8.66	9.91	9.93	9.39	9.96	9.43	6.99	
	AVG	8.32	7.17	7.06	Available	7.96	7.17	6.30	5.96	5.91	5.66	6.20	6.58	6.35	8.35	9.11	10.66	10.64	9.98	10.31	10.07	7.31	0.00%
SMITHLAND	MAX	*	5.99	5.38	5.67	*	9.30	No	7.28	*	*	5.89	6.48	Data	Data	5.98	6.57	5.93	*	*	*	*	
MP 919.0	MIN	*	4.14	4.92	4.99	*	6.40	Data	4.72	*	*	4.50	5.24	Quality	Quality	4.75	4.82	4.39	*	*	*	*	
	AVG	*	5.11	5.15	5.42	*	7.62	Available	5.85	*	*	5.18	5.73	Uncertain	Uncertain	5.30	5.50	5.09	*	*	*	*	0.00%

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E:
Daily Dissolved Oxygen Readings September 2006

CALENDAR DAY		1-Sep	5-Sep	6-Sep	7-Sep	8-Sep	11-Sep	12-Sep	13-Sep	14-Sep	15-Sep	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	25-Sep	26-Sep	27-Sep	28-Sep	29-Sep	Monthly
JULIAN DAY		244	248	249	250	251	254	255	256	257	258	261	262	263	264	265	268	269	270	271	272	% Exceedance
MONTGOMERY	MAX	7.83	8.75	8.75	8.82	8.70	7.89	7.67	7.21	6.89	6.36	5.32	4.91	4.54	9.33	9.40	9.44	9.47	9.77	9.61	9.42	
MP 31.7	MIN	7.67	8.55	8.56	8.73	8.52	7.70	7.36	6.93	6.56	6.13	5.03	4.63	4.27	9.06	9.17	9.26	9.19	9.46	9.30	9.22	
	AVG	7.76	8.68	8.67	8.76	8.62	7.82	7.50	7.06	6.70	6.24	5.19	4.79**	4.41**	9.17	9.31	9.37	9.34	9.58	9.45	9.35	0.00%
HANNIBAL***	MAX	8.84	8.94	9.14	10.95	8.48	8.61	8.43	8.12	8.46	8.16	8.81	8.64	8.63	8.43	8.19	8.46	8.48	8.36	8.43	8.30	
MP 126.4	MIN	8.01	8.42	6.92	6.63	8.01	8.13	8.15	7.83	8.12	7.50	8.51	8.36	8.40	8.04	7.94	7.47	7.79	7.68	8.00	7.98	
UPSTREAM	AVG	8.40	8.78	8.25	8.21	8.17	8.40	8.30	7.97	8.24	7.89	8.70	8.49	8.50	8.28	8.09	7.78	8.18	8.00	8.30	8.11	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	5.65	5.49	5.70	5.70	6.38	No	6.80	6.93	7.12	6.46	7.03	7.15	6.92	7.55	7.19	7.26	7.52	7.38	7.18	7.00	
MP 237.5	MIN	5.16	4.83	5.41	5.41	6.08	Data	6.57	6.64	6.30	6.10	6.71	6.61	6.69	6.76	6.98	7.10	7.08	7.00	6.94	6.80	
	AVG	5.33	5.12	5.59	5.59	6.20	Available	6.66	6.79	6.60	6.29	6.89	6.82	6.81	6.99	7.08	7.17	7.17	7.12	7.04	6.91	0.00%
KYGER	MAX	7.01	6.53	6.53	6.89	7.22	7.90	8.28	8.26	8.21	8.04	6.77	6.89	6.86	6.82	6.91	6.98	6.86	6.67	6.67	6.36	
MP 260.0	MIN	6.46	6.10	6.05	6.55	6.86	7.63	7.92	7.87	7.97	6.34	6.50	6.31	6.70	6.72	6.79	6.84	6.65	6.53	6.41	5.14	
	AVG	6.64	6.33	6.33	6.75	7.09	7.80	8.09	8.10	8.08	6.58	6.68	6.69	6.80	6.76	6.84	6.88	6.78	6.60	6.56	5.80	0.00%
GREENUP***	MAX	*	5.78	5.52	5.52	5.88	6.82	6.53	6.41	6.65	6.12	5.42	5.52	5.74	5.57	5.88	6.79	6.22	6.10	6.05	6.19	
MP 341.0	MIN	*	5.52	5.38	5.11	5.40	5.83	6.02	6.14	6.10	5.66	5.23	5.38	5.33	5.35	5.59	6.02	5.59	5.57	5.98	6.05	
UPSTREAM	AVG	*	5.67	5.44	5.36	5.67	6.09	6.27	6.29	6.42	5.81	5.34	5.42	5.42	5.46	5.80	6.35	5.92	5.89	6.02	6.12	0.00%
DOWNSTREAM	MAX	5.71	8.57	8.18	6.29	8.50	9.05	9.53	9.70	10.37	9.67	6.12	6.26	6.31	6.46	6.82	6.82	6.84	6.96	7.01	7.13	
	MIN	3.89	8.18	5.95	5.06	5.04	8.64	8.86	9.24	9.67	9.10	5.98	6.10	6.17	6.31	6.48	*	4.78**	4.73**	6.26	6.24	
	AVG	5.20	8.44	7.40	5.77	6.73	8.86	9.22	9.55	10.05	9.29	6.06	6.18	6.24	6.39	6.68	5.19	6.13	5.53	6.76	6.62	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	5.04	5.40	5.38	5.78	6.58	6.67	6.19	6.02	6.41	6.31	5.45	5.54	5.64	5.57	5.47	6.07	5.69	5.18	5.23	4.97	
MP 531.5	MIN	4.39	5.26	4.97	5.04	5.16	6.07	5.93	5.81	6.14	5.54	5.26	5.40	5.45	5.38	5.30	5.81	5.23	4.99	5.02	4.78	
D.O. #1	AVG	4.81**	5.32	5.21	5.55	5.97	6.34	6.05	5.90	6.31	5.86	5.36	5.48	5.55	5.47	5.39	5.94	5.44	5.08	5.10	4.87**	0.00%
D.O. #2	MAX	11.66	*	*	*	*	*	*	*	*	*	5.93	5.76	5.40	5.26	5.14	5.78	5.30	4.97	5.18	5.23	
	MIN	4.49	*	*	*	*	*	*	*	*	*	5.66	5.33	5.26	4.99	4.90	5.30	4.82	4.49	4.68	4.82	
	AVG	5.18	*	*	*	*	*	*	*	*	*	5.80	5.48	5.32	5.14	5.03	5.55	4.99**	4.72**	4.92**	5.02	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	4.69	3.38	4.72	4.93	5.17	5.51	5.52	5.71	5.76	5.78	5.78	5.78	4.25	4.14	4.21	4.12	4.15	4.13	4.38	4.51	
MP 720.7	MIN	4.52	3.13	4.54	4.86	4.98	5.34	5.39	5.47	5.57	5.55	5.56	5.63	4.16	4.02	4.09	4.02	4.01	4.01	4.18	4.41	
	AVG	4.63**	3.25**	4.64**	4.89**	5.08	5.42	5.45	5.58	5.67	5.66	5.70	5.70	**4.19**	**4.08**	**4.15**	**4.06**	**4.06**	**4.05**	**4.26**	**4.47**	40.00%
NEWBURGH	MAX	6.13	5.65	4.71	4.69	5.26	6.08	5.78	5.71	5.74	5.79	6.22	6.04	7.02	7.46	No	6.64	6.64	No	No	No	
MP 776.1	MIN	5.57	5.35	4.61	4.54	5.20	5.84	5.47	5.51	5.37	5.67	5.93	5.74	6.83	6.93	Data	6.59	5.98	Data	Data	Data	
	AVG	5.84	5.56	4.65**	4.59**	5.23	5.97	5.61	5.60	5.57	5.73	6.10	5.94	6.95	7.17	Available	6.62	6.34	Available	Available	Available	0.00%
JOHN T. MYERS	MAX	7.96	6.04	5.81	5.83	5.59	5.94	6.27	6.28	6.37	5.96	6.75	6.39	5.63	5.77	5.99	5.26	4.91	4.44	4.53	4.61	
MP 846.0	MIN	7.12	5.75	5.74	5.51	5.46	5.86	6.15	6.21	6.17	5.54	6.60	6.25	5.42	5.56	5.79	4.87	4.71	4.32	4.39	4.49	
	AVG	7.58	5.88	5.76	5.68	5.53	5.91	6.22	6.24	6.31	5.79	6.67	6.31	5.51	5.64	5.88	5.05	**4.79**	**4.38**	**4.44**	**4.53**	20.00%
SMITHLAND	MAX	3.80	4.77	5.14	5.67	5.34	5.03	5.07	5.09	5.04	5.21	5.18	5.54	5.27	5.00	5.07	5.06	4.42	4.37	4.37	4.35	
MP 919.0	MIN	3.28	4.58	4.78	4.90	4.87	4.74	4.81	4.65	4.53	4.92	4.73	4.93	4.95	4.92	4.99	4.48	4.21	4.27	4.14	4.19	
	AVG	**3.46**	**4.68**	**4.92**	5.12	5.00	**4.85**	**4.90**	**4.81**	**4.68**	5.04	**4.99**	5.09	5.14	**4.96**	5.02	**4.82**	**4.30**	**4.33**	**4.24**	**4.26**	70.00%

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E:
Daily Dissolved Oxygen Readings October 2006

CALENDAR DAY JULIAN DAY		2-Oct 275	3-Oct 276	4-Oct 277	5-Oct 278	6-Oct 279	9-Oct 282	10-Oct 283	11-Oct 284	12-Oct 285	13-Oct 286	16-Oct 289	17-Oct 290	18-Oct 291	19-Oct 292	20-Oct 293	23-Oct 296	24-Oct 297	25-Oct 298	26-Oct 299	27-Oct 300	30-Oct 303	31-Oct 304	Monthly % Exceedance
MONTGOMERY	MAX	9.85	9.99	9.99	10.08	10.27	10.00	9.93	9.95	10.00	No	No	No	No	No	No	No	No	No	No	No	No	No	
MP 31.7	MIN	9.53	9.66	9.79	9.84	9.86	9.78	9.67	9.77	9.62	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	
	AVG	9.67	9.81	9.90	9.97	10.08	9.89	9.83	9.85	9.84	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	0.00%
HANNIBAL***	MAX	8.67	9.20	9.09	8.66	8.54	8.73	9.32	9.41	8.57	8.39	8.45	9.18	9.20	9.26	10.65	8.97	9.41	9.35	9.42	9.18	9.66	9.32	
MP 126.4	MIN	8.34	8.55	8.36	8.34	8.15	8.21	8.63	8.43	8.36	8.16	7.34	8.28	8.90	8.85	8.31	7.05	8.97	8.82	8.60	8.57	8.34	7.73	
UPSTREAM	AVG	8.50	8.83	8.69	8.50	8.34	8.51	9.03	8.81	8.46	8.30	7.86	8.67	9.04	9.04	9.44	7.90	9.21	9.11	9.11	8.81	9.16	8.51	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	No	No	No	No	No	No	No	No	No	No	7.88	8.10	No	7.70	7.00	8.29	No	8.49	8.53	8.87	No	9.07	
MP 237.5	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	7.62	7.85	Data	6.85	6.98	7.48	Data	5.24	5.32	8.25	Data	8.58	
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	7.79	7.97	Available	7.21	6.94	7.86	Available	7.33	7.45	8.60	Available	8.87	0.00%
KYGER	MAX	4.87	4.82	4.66	4.49	4.37	2.26	2.42	2.52	2.50	2.45	*	*	*	No	No	10.58	10.18	8.11	7.54	7.85	7.73	8.74	
MP 260.0	MIN	4.73	4.63	4.46	4.25	3.72	2.11	2.21	2.33	2.35	2.30	*	*	*	Data	Data	10.22	8.06	7.70	6.36	7.32	7.58	7.73	
	AVG	4.77**	4.74**	4.58**	4.39**	4.09**	2.19**	2.34**	2.44**	2.44**	2.37**	*	*	*	Available	Available	10.42	8.28	7.97	6.87	7.75	7.67	7.83	0.00%
GREENUP***	MAX	8.33	7.15	7.08	7.06	7.06	6.82	6.89	6.60	8.16	7.03	7.58	7.66	7.92	7.54	7.54	7.75	8.35	8.86	9.26	9.24	9.67	9.79	
MP 341.0	MIN	6.31	7.03	6.86	6.86	6.74	6.65	6.34	6.26	6.26	6.74	7.30	7.46	7.37	7.37	7.20	6.60	7.75	8.38	8.83	8.64	8.78	9.67	
UPSTREAM	AVG	6.99	7.09	6.97	6.98	6.92	6.76	6.63	6.44	6.75	6.94	7.44	7.59	7.53	7.47	7.42	7.39	8.05	8.77	9.10	9.11	9.49	9.71	0.00%
DOWNSTREAM	MAX	8.14	7.37	7.34	7.39	7.44	7.25	7.15	7.08	7.20	7.51	8.04	8.11	8.18	7.85	7.85	8.35	8.64	9.24	9.38	9.41	9.89	9.89	
	MIN	7.10	7.27	7.25	7.30	7.34	6.74	6.67	6.96	0.70	7.18	7.87	7.99	7.42	7.37	7.06	6.58	6.65	7.87	9.19	8.88	7.90	7.97	
	AVG	7.26	7.34	7.31	7.36	7.41	6.95	6.94	7.03	5.99	7.38	7.96	8.04	7.90	7.64	7.57	7.88	8.07	8.99	9.29	9.32	8.86	9.19	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	5.33	7.08	7.27	7.25	7.37	7.08	6.72	6.74	6.86	6.89	7.44	7.49	7.42	7.20	6.74	5.69	9.58	7.75	8.09	8.35	8.78	8.57	
MP 531.5	MIN	4.75	6.77	7.08	7.03	7.20	6.82	6.41	6.46	6.72	6.65	7.18	7.30	7.20	6.72	6.36	4.56	7.03	7.39	7.80	8.09	8.54	7.90	
D.O. #1	AVG	4.85**	6.97	7.15	7.17	7.27	6.95	6.51	6.55	6.78	6.75	7.32	7.37	7.30	6.86	6.62	5.09	7.31	7.59	7.94	8.24	8.65	8.14	0.00%
D.O. #2	MAX	5.40	7.37	7.39	7.39	7.49	7.18	6.82	6.77	6.84	6.79	7.39	7.42	7.32	7.03	6.58	5.66	8.83	7.61	7.94	8.09	8.52	8.28	
	MIN	5.04	6.79	7.18	7.22	7.32	6.84	6.53	6.62	6.74	6.70	7.13	7.18	7.03	6.41	6.05	4.80	6.86	7.30	7.63	7.94	8.26	7.68	
	AVG	5.17	7.08	7.31	7.31	7.39	7.04	6.62	6.68	6.79	6.75	7.24	7.25	7.16	6.67	6.41	5.23	7.13	7.46	7.79	8.03	8.37	7.88	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	4.32	4.35	4.42	4.48	4.62	4.95	5.03	4.88	4.77	4.79	4.92	5.19	5.41	5.48	5.53	5.47	5.53	5.56	5.60	5.81	6.33	No	
MP 720.7	MIN	4.15	4.22	4.33	4.41	4.52	4.81	4.89	4.81	4.68	4.67	4.84	4.97	5.25	5.36	5.16	5.36	5.38	5.43	5.45	5.57	6.12	Data	
	AVG	**4.24**	**4.28**	**4.39**	**4.45**	**4.57**	**4.87**	**4.95**	**4.85**	**4.72**	**4.73**	**4.87**	5.09	5.33	5.40	5.44	5.41	5.46	5.50	5.49	5.69	6.24	Available	52.38%
NEWBURGH	MAX	7.71	7.87	7.47	7.71	7.77	7.81	7.91	8.02	7.97	8.24	8.46	8.64	8.56	8.70	8.93	8.01	8.23	No	No	No	No	No	
MP 776.1	MIN	7.37	7.56	7.23	7.51	7.66	7.66	7.68	7.70	7.77	8.01	8.16	8.50	8.27	8.40	8.66	7.86	8.08	Data	Data	Data	Data	Data	
	AVG	7.55	7.68	7.34	7.62	7.73	7.74	7.77	7.80	7.87	8.12	8.33	8.57	8.43	8.57	8.83	7.94	8.15	Available	Available	Available	Available	Available	0.00%
JOHN T. MYERS	MAX	5.21	5.44	5.48	5.60	5.66	6.14	5.88	5.86	5.86	6.14	6.71	7.04	6.82	6.61	6.59	6.61	6.17	No	No	No	No	No	
MP 846.0	MIN	4.94	5.25	5.34	5.41	5.44	6.03	5.72	5.62	5.74	6.06	6.60	6.82	6.61	6.43	6.43	6.47	5.99	Data	Data	Data	Data	Data	
	AVG	5.05	5.34	5.42	5.48	5.52	6.08	5.80	5.71	5.82	6.10	6.65	6.92	6.69	6.52	6.49	6.56	6.09	Available	Available	Available	Available	Available	0.00%
SMITHLAND	MAX	5.09	5.42	5.62	5.76	6.09	6.54	6.54	6.67	6.71	6.81	7.61	7.52	7.50	7.40	6.62	6.76	7.04	6.72	6.91	7.17	7.43	7.64	
MP 919.0	MIN	5.01	5.23	5.48	5.30	5.67	6.23	6.27	6.37	6.54	6.64	7.27	7.17	7.15	6.77	6.32	6.37	6.75	6.48	6.68	6.90	7.09	7.41	
	AVG	5.05	5.36	5.57	5.66	5.94	6.41	6.48	6.57	6.64	6.71	7.48	7.38	7.31	7.13	6.48	6.60	6.95	6.61	6.79	7.02	7.24	7.55	0.00%

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E:
Daily Dissolved Oxygen Readings May 2007

CALENDAR DAY		1-May	2-May	3-May	7-May	8-May	9-May	10-May	11-May	14-May	15-May	16-May	17-May	18-May	21-May	22-May	23-May	24-May	25-May	29-May	30-May	31-May	Monthly
JULIAN DAY		121	122	123	127	128	129	130	131	134	135	136	137	138	141	142	143	144	145	149	150	151	% Exceedance
MONTGOMERY	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 31.7	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
HANNIBAL***	MAX	8.31	8.34	8.28	7.88	7.82	7.85	8.70	13.88	7.67	7.55	7.38	7.73	7.70	7.70	7.71	7.71	8.43	8.21	8.43	8.61	8.61	
MP 126.4	MIN	7.71	7.82	8.04	7.61	7.62	7.62	6.92	2.42	6.68	7.28	7.11	7.16	7.44	7.56	7.56	7.55	7.61	8.04	8.30	8.45	8.51	
UPSTREAM	AVG	8.17	8.13	8.17	7.71	7.70	7.70	7.79	7.61	7.48	7.44	7.24	7.44	7.58	7.62	7.64	7.63	8.13	8.11	8.35	8.54	8.56	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	10.71	10.61	10.58	No	10.35	10.24	10.20	10.14	11.15	11.54	11.18	10.56	10.31	69.42	10.51	10.68	11.07	11.21	10.40	10.12	9.74	
MP 237.5	MIN	10.57	10.47	10.38	Data	10.11	9.90	9.90	9.95	10.58	10.57	10.54	10.12	9.75	68.79	9.92	9.90	10.45	10.72	10.05	9.74	9.07	
	AVG	10.66	10.55	10.50	Available	10.20	10.08	10.03	10.05	10.86	10.91	10.91	10.40	10.10	69.15	10.18	10.15	10.73	10.95	10.19	9.95	9.43	0.00%
KYGER	MAX	10.30	10.25	10.15	No	9.74	9.94	10.03	9.96	10.58	10.99	11.04	10.51	10.13	10.44	10.08	10.32	10.97	9.72	9.84	9.46	9.29	
MP 260.0	MIN	9.96	9.72	9.74	Data	9.50	5.86	9.70	9.65	9.82	10.03	10.15	9.89	9.53	9.79	9.53	9.65	9.41	9.38	9.38	9.00	8.88	
	AVG	10.23	9.92	9.93	Available	9.65	7.38	9.85	9.80	10.28	10.65	10.67	10.22	9.85	10.15	9.82	9.96	9.85	9.58	9.62	9.17	9.05	0.00%
GREENUP***	MAX	9.12	9.79	8.78	9.07	8.81	8.93	9.19	9.50	9.60	9.74	9.65	9.41	9.48	10.68	10.97	11.18	11.54	11.52	9.79	9.72	9.14	
MP 341.0	MIN	8.76	8.59	8.59	8.38	8.64	8.71	8.88	9.07	9.00	8.90	8.64	8.59	8.98	9.41	9.67	9.72	10.10	10.25	9.00	8.83	8.18	
UPSTREAM	AVG	8.95	8.77	8.68	8.65	8.73	8.84	9.05	9.26	9.28	9.28	9.12	9.07	9.23	10.04	10.35	10.37	10.87	10.81	9.39	9.21	8.71	0.00%
DOWNSTREAM	MAX	10.10	9.74	9.65	9.50	9.34	9.00	8.78	9.82	10.37	10.63	10.34	10.15	10.56	11.93	12.48	10.46	12.41	11.35	9.02	9.14	8.23	
	MIN	9.70	9.36	8.62	9.17	8.98	8.71	8.38	8.16	7.97	9.86	8.88	8.81	10.03	10.44	10.15	9.29	9.58	10.44	8.50	7.97	7.25	
	AVG	9.88	9.64	9.15	9.38	9.22	8.87	8.57	8.89	9.68	10.17	10.01	9.57	10.28	11.21	11.22	9.82	11.49	10.87	8.72	8.47	7.82	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	7.37	7.97	5.74	8.81	8.86	8.93	9.05	9.31	9.60	10.97	9.89	9.26	8.74	10.63	10.87	10.49	10.22	9.89	9.26	9.02	9.67	
MP 531.5	MIN	3.19	5.11	4.80	8.64	8.62	8.86	8.88	8.86	9.07	8.98	9.05	8.74	8.40	8.74	9.10	9.22	9.31	8.71	8.50	8.09	8.14	
D.O. #1	AVG	4.84**	6.52	5.35	8.74	8.74	8.89	8.99	9.06	9.27	9.66	9.48	9.01	8.59	9.58	9.81	9.75	9.79	9.38	8.96	8.57	9.03	0.00%
D.O. #2	MAX	8.57	8.42	6.50	9.00	9.10	9.14	9.36	9.60	9.82	11.16	10.25	9.53	8.78	10.44	10.97	10.68	10.37	9.82	9.12	8.88	9.62	
	MIN	5.74	5.76	4.94	8.83	8.86	9.05	9.12	9.12	9.22	9.17	9.24	8.86	8.54	8.66	9.22	9.34	9.41	8.90	8.42	8.09	8.11	
	AVG	7.16	7.74	5.99	8.92	8.98	9.10	9.27	9.33	9.45	9.84	9.79	9.31	8.66	9.53	9.87	9.83	9.94	9.51	8.85	8.48	9.02	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	9.89	11.21	10.07	9.31	9.58	
MP 720.7	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	9.47	9.36	9.40	8.81	8.25	
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	9.69	9.99	9.75	9.14	8.93	0.00%
NEWBURGH	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	9.57	10.25	No	No	No	
MP 776.1	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	8.86	9.18	Data	Data	Data	
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	9.24	9.55	Available	Available	Available	0.00%
JOHN T. MYERS	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	10.76	9.73	9.33	9.46	8.88	
MP 846.0	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	8.00	8.39	8.35	8.32	7.22	
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	9.66	9.00	8.70	8.87	8.01	0.00%
SMITHLAND	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	7.77	9.09	8.31	7.17	
MP 919.0	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	6.20	7.27	6.70	6.17	
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	7.35	8.08	7.41	6.55	0.00%

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E:
Daily Dissolved Oxygen Readings June 2007

CALENDAR DAY JULIAN DAY		1-Jun 152	4-Jun 155	5-Jun 156	6-Jun 157	7-Jun 158	8-Jun 159	11-Jun 162	12-Jun 163	13-Jun 164	14-Jun 165	15-Jun 166	18-Jun 169	19-Jun 170	20-Jun 171	21-Jun 172	22-Jun 173	25-Jun 176	26-Jun 177	27-Jun 178	28-Jun 179	29-Jun 180	Monthly % Exceedance
MONTGOMERY	MAX	No	No	No	No	No	9.32	9.05	8.76	9.85	10.74	8.95	8.62	9.39	7.99	7.92	7.82	8.13	10.14	10.94	10.97	9.73	
MP 31.7	MIN	Data	Data	Data	Data	Data	7.39	7.81	7.69	7.26	7.97	7.60	7.07	6.70	7.12	6.54	6.21	7.16	7.10	9.41	7.99	7.98	
	AVG	Available	Available	Available	Available	Available	8.28	8.42	8.33	8.49	9.15	8.20	7.72	8.23	7.48	7.34	7.22	7.77	8.86	9.97	9.36	8.82	0.00%
HANNIBAL***	MAX	8.69	8.85	8.93	9.03	9.12	9.08	8.90	9.12	9.08	9.18	9.38	7.26	8.60	8.09	6.72	8.01	7.44	8.43	8.73	9.05	7.68	
MP 126.4	MIN	8.57	8.75	8.79	8.82	8.85	8.78	8.75	8.75	8.96	9.00	9.11	7.02	6.96	6.71	5.94	5.55	5.60	6.65	8.09	7.20	6.99	
UPSTREAM	AVG	8.64	8.79	8.86	8.95	8.94	8.88	8.82	8.93	9.04	9.10	9.28	7.13	7.55	7.12	6.29	6.57	6.36	7.36	8.45	7.98	7.36	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	8.94	7.79	7.28	6.51	5.99	6.69	6.57	6.71	No	7.35	7.50	8.68	8.58	8.10	8.19	8.06	7.19	7.58	7.24	7.88	7.61	
MP 237.5	MIN	8.34	7.27	6.43	5.86	5.55	5.52	6.30	6.37	Data	6.51	6.89	7.63	7.82	7.64	7.63	6.90	6.17	6.90	6.90	7.09	7.18	
	AVG	8.65	7.62	6.80	6.21	5.72	6.28	6.43	6.52	Available	6.88	7.15	8.02	8.05	7.86	7.94	7.36	6.62	7.28	7.03	7.51	7.39	0.00%
KYGER	MAX	10.27	7.39	10.56	7.34	7.03	6.72	7.78	6.29	6.41	6.34	7.20	6.86	7.99	7.58	7.25	6.94	*	*	*	*	7.99	
MP 260.0	MIN	8.40	6.79	6.96	6.98	6.53	6.38	5.98	5.93	5.88	5.98	6.19	6.43	7.20	6.72	6.31	5.11	*	*	*	*	7.06	
	AVG	8.97	7.10	7.33	7.12	6.72	6.55	6.49	6.08	6.15	6.14	6.42	6.61	7.61	7.25	6.72	5.69	*	*	*	*	7.50	0.00%
GREENUP***	MAX	8.26	10.73	10.06	6.77	6.86	6.84	8.35	6.62	6.65	No	No	No	8.81	6.38	6.50	6.98	No	6.05	6.19	9.10	5.59	
MP 341.0	MIN	7.78	9.24	6.36	6.07	6.05	6.19	6.53	6.36	6.24	Data	Data	Data	6.07	5.26	5.59	6.17	Data	4.61	4.54	4.70	4.42	
UPSTREAM	AVG	8.06	9.86	7.82	6.39	6.42	6.44	7.08	6.51	6.41	Available	Available	Available	6.65	5.74	6.20	6.49	Available	5.29	5.58	5.98	5.14	0.00%
DOWNSTREAM	MAX	7.61	8.52	8.33	7.94	8.30	7.75	11.98	6.74	6.60	No	No	No	8.45	6.43	6.67	6.96	No	8.86	10.34	16.54	11.16	
	MIN	7.13	5.81	7.85	7.32	7.44	5.28	6.60	6.41	6.22	Data	Data	Data	4.61	5.64	5.71	6.31	Data	7.01	7.15	9.89	10.44	
	AVG	7.33	7.74	8.09	7.61	7.81	6.52	7.10	6.59	6.40	Available	Available	Available	6.56	6.09	6.31	6.59	Available	7.86	8.77	10.52	10.89	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	9.24	7.03	6.82	6.70	6.38	6.10	6.02	7.90	7.30	8.02	7.70	5.38	5.76	5.98	5.54	4.94	5.90	5.98	6.19	No	6.60	
MP 531.5	MIN	7.54	6.24	4.94	5.57	5.33	5.33	4.68	5.26	5.71	6.02	5.23	4.22	4.87	4.99	4.42	4.25	4.80	4.70	4.61	Data	5.18	
D.O. #1	AVG	8.62	6.67	5.70	6.02	5.89	5.73	5.38	6.60	6.61	6.74	6.45	4.86**	5.29	5.59	4.97**	4.52**	5.23	5.32	5.32	Available	5.87	0.00%
D.O. #2	MAX	9.10	7.13	6.22	7.10	6.17	5.71	5.50	8.11	7.56	8.11	7.80	4.61	4.87	4.92	4.51	3.46	5.81	5.98	6.29	No	7.22	
	MIN	7.49	6.26	5.23	5.57	5.11	5.06	4.27	4.30	5.98	5.98	5.14	3.72	3.91	4.49	3.31	3.02	4.75**	4.75**	4.66**	Data	5.74	
	AVG	8.52	6.73	5.54	6.09	5.72	5.39	4.84**	6.57	6.82	6.77	6.41	4.24**	4.49**	4.69**	4.04**	3.22**	5.18	5.40	5.38	Available	6.36	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	8.78	7.43	6.84	6.92	6.41	6.51	6.22	6.13	6.43	6.21	7.42	9.15	6.20	5.90	6.65	8.57	6.34	6.62	6.77	6.28	7.42	
MP 720.7	MIN	8.14	6.55	6.14	6.15	5.59	5.97	5.37	5.42	5.49	5.65	5.21	5.31	5.15	5.07	5.63	5.76	5.75	5.66	5.33	5.31	4.88	
	AVG	8.44	6.95	6.46	6.54	5.99	6.19	5.72	5.69	5.85	6.02	6.13	7.23	5.62	5.38	5.98	7.08	6.01	6.00	5.91	5.65	6.08	0.00%
NEWBURGH	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 776.1	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
JOHN T. MYERS	MAX	7.90	7.01	6.58	6.86	6.77	6.77	6.46	6.57	7.23	8.04	9.88	8.83	7.43	7.00	7.41	7.77	6.87	6.62	6.08	5.81	5.38	
MP 846.0	MIN	7.27	6.26	5.88	6.31	5.92	5.68	5.28	5.69	5.46	6.50	7.43	6.43	5.99	6.35	6.71	6.37	5.95	5.14	5.03	5.17	4.17	
	AVG	7.67	6.58	6.21	6.55	6.25	6.40	5.96	6.09	6.23	7.08	8.24	7.41	6.62	6.62	6.97	7.04	6.46	5.79	5.56	5.46	4.98**	0.00%
SMITHLAND	MAX	7.19	6.21	No	6.37	6.77	6.04	6.32	5.50	5.63	5.46	5.65	5.57	4.10	5.02	5.52	5.54	4.08	5.05	5.22	4.33	No	
MP 919.0	MIN	5.82	5.34	Data	5.39	4.84	4.92	4.37	4.89	4.09	4.21	4.25	3.87	3.40	2.98	3.87	3.36	3.10	3.04	3.70	4.16	Data	
	AVG	6.74	5.71	Available	5.85	5.79	5.47	5.34	5.17	**4.75**	**4.79**	5.03	**4.67**	**3.88**	**3.88**	**4.78**	**4.48**	**3.69**	**3.60**	**4.19**	**4.27**	Available	57.89%

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E:
Daily Dissolved Oxygen Readings July 2007

CALENDAR DAY		2-Jul	3-Jul	5-Jul	6-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	23-Jul	24-Jul	25-Jul	26-Jul	31-Jul	Monthly
JULIAN DAY		183	184	186	187	190	191	192	193	194	197	198	199	200	201	204	205	206	207	212	% Exceedance
MONTGOMERY	MAX	10.77	9.96	8.97	7.63	8.61	No	9.52	9.72	7.86	10.67	10.15	9.54	9.22	8.16	8.46	8.82	8.75	8.42	8.34	
MP 31.7	MIN	9.55	7.55	5.28	6.67	7.35	Data	6.64	7.09	6.36	8.63	6.69	5.25	6.31	5.51	6.19	8.20	7.89	7.14	5.55	
	AVG	10.08	8.61	6.89	7.21	8.14	Available	8.36	8.22	7.30	9.50	8.76	8.00	7.98	6.90	7.34	8.56	8.39	7.96	7.59	0.00%
HANNIBAL***	MAX	8.06	8.43	8.33	8.19	8.36	9.14	8.45	8.03	8.87	8.34	8.42	7.14	7.89	8.10	9.74	9.42	8.24	8.99	8.24	
MP 126.4	MIN	7.02	7.25	7.86	7.14	7.68	7.89	7.28	7.04	7.50	7.73	6.89	6.65	6.44	6.75	9.05	7.94	7.91	8.39	7.35	
UPSTREAM	AVG	7.44	7.93	8.15	7.68	8.05	8.65	7.93	7.55	8.16	7.94	7.65	6.95	6.84	7.70	9.28	8.96	8.05	8.68	7.78	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	7.34	8.63	8.80	8.20	7.23	No	No	No	No	No	No	No	No	7.20	7.22	7.13	7.14	7.04	7.05	
MP 237.5	MIN	6.25	6.58	7.81	7.68	6.61	Data	Data	Data	Data	Data	Data	Data	Data	6.46	6.79	6.76	6.75	6.62	6.37	
	AVG	7.04	7.74	8.28	7.92	6.93	Available	Available	Available	Available	Available	Available	Available	Available	6.90	6.98	6.94	6.89	6.82	6.81	0.00%
KYGER	MAX	7.85	8.06	7.20	7.25	6.55	6.48	6.60	6.72	7.51	7.37	7.37	6.89	6.98	6.72	5.86	6.19	6.17	5.64	6.84	
MP 260.0	MIN	6.77	7.13	6.89	6.53	6.02	5.90	5.86	6.22	6.55	6.29	6.14	5.40	2.50	5.98	5.23	4.82	5.59	4.15	4.39	
	AVG	7.14	7.60	7.03	6.94	6.27	6.09	6.14	6.51	6.95	6.71	6.84	6.49	5.94	6.41	5.54	5.52	5.85	4.75**	5.57	0.00%
GREENUP***	MAX	9.72	7.51	9.58	7.58	No	8.42	6.86	5.16	6.82	6.91	6.58	6.65	6.26	6.05	5.83	5.42	6.41	6.31	6.24	
MP 341.0	MIN	4.22	4.75	6.79	6.72	Data	6.29	5.26	4.66	6.02	6.10	5.45	5.64	4.49	4.42	5.09	4.94	5.06	5.26	4.73	
UPSTREAM	AVG	5.30	6.37	7.22	7.06	Available	7.19	6.36	4.87**	6.28	6.42	5.99	6.08	5.24	5.39	5.38	5.15	5.60	5.77	5.42	0.00%
DOWNSTREAM	MAX	8.09	7.32	13.03	7.27	No	8.83	6.86	6.58	6.65	6.43	6.38	6.65	7.99	7.25	6.72	7.22	7.06	7.08	9.07	
	MIN	4.94	4.70	6.84	6.38	Data	6.50	6.14	6.12	5.57	5.45	5.59	5.54	6.74	6.60	5.54	5.52	6.17	6.19	6.70	
	AVG	6.27	6.08	7.52	6.87	Available	7.32	6.51	6.34	6.05	5.83	5.96	5.91	7.30	6.91	5.99	6.00	6.48	6.62	7.78	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	5.59	5.83	5.88	5.93	7.68	6.02	5.95	5.28	6.02	5.28	6.70	6.17	4.44	No	6.07	5.66	7.20	6.05	7.68	
MP 531.5	MIN	5.16	5.23	3.55	4.13	5.18	5.09	4.87	4.54	4.44	4.87	4.97	4.51	3.58	Data	5.21	4.85	4.94	4.54	6.07	
D.O. #1	AVG	5.40	5.53	4.40**	5.49	6.25	5.39	5.35	4.83**	5.55	5.08	5.87	5.25	4.04**	Available	5.56	5.23	6.04	5.26	6.77	0.00%
D.O. #2	MAX	5.64	5.83	6.05	5.74	7.34	5.86	5.38	5.06	5.71	5.45	6.89	6.22	5.54	No	6.62	6.65	7.85	6.72	7.27	
	MIN	5.21	5.26	3.53	4.15	4.92	4.70	4.63	4.20	**4.25**	5.11	5.30	5.09	4.94	Data	5.83	5.71	5.69	3.17	4.49	
	AVG	5.46	5.53	4.40**	5.32	6.02	5.11	5.00	4.54**	5.20	5.25	6.10	5.61	5.18	Available	6.14	6.02	6.66	5.53	6.23	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	5.81	6.28	6.13	No	No	No	No	6.23	7.37	7.20	7.60	8.46	7.49	6.87	7.42	7.73	8.10	7.14	5.34	
MP 720.7	MIN	5.13	5.42	5.66	Data	Data	Data	Data	5.89	6.13	5.93	5.78	5.94	6.03	5.66	5.73	5.58	5.92	5.70	4.56	
	AVG	5.44	5.85	5.85	Available	Available	Available	Available	6.05	6.91	6.35	6.65	7.34	6.79	6.17	6.21	6.18	6.37	6.43	**4.94**	6.67%
NEWBURGH	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 776.1	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
JOHN T. MYERS	MAX	5.93	6.87	7.30	6.77	5.71	6.53	6.19	6.97	7.41	6.56	7.24	6.92	6.49	6.71	7.17	6.32	5.95	6.53	6.81	
MP 846.0	MIN	5.15	5.91	6.45	5.52	4.78	5.15	5.36	6.19	5.63	5.58	5.42	5.07	5.42	5.07	5.75	5.05	4.89	5.04	5.37	
	AVG	5.54	6.25	6.89	6.10	5.27	5.58	5.77	6.60	6.52	5.86	6.23	5.90	5.78	5.54	6.42	5.67	5.54	5.83	6.06	0.00%
SMITHLAND	MAX	4.30	4.67	3.80	3.53	3.51	3.63	4.75	4.31	4.48	4.58	4.01	5.67	5.31	6.15	4.55	4.94	4.29	6.27	6.78	
MP 919.0	MIN	4.07	4.42	2.62	3.02	2.58	2.74	3.81	3.69	3.78	2.97	2.98	2.59	3.73	3.43	3.77	3.42	3.86	4.50	5.21	
	AVG	**4.15**	**4.55**	**3.32**	**3.35**	**3.04**	**3.11**	**4.18**	**3.95**	**4.07**	**3.77**	**3.28**	**4.67**	**4.41**	**4.18**	**4.06**	**4.02**	**4.05**	5.25	5.91	89.47%

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E:
Daily Dissolved Oxygen Readings August 2007

CALENDAR DAY JULIAN DAY		1-Aug 213	2-Aug 214	3-Aug 215	6-Aug 218	7-Aug 219	8-Aug 220	9-Aug 221	10-Aug 222	13-Aug 225	14-Aug 226	15-Aug 227	16-Aug 228	21-Aug 229	20-Aug 232	21-Aug 233	22-Aug 234	23-Aug 235	24-Aug 236	27-Aug 239	28-Aug 240	29-Aug 241	30-Aug 242	31-Aug 243	Monthly % Exceedance
MONTGOMERY	MAX	8.34	9.57	No	9.83	8.05	6.85	7.19	7.74	7.48	7.47	7.91	8.33	No	No	7.96	7.98	7.90	8.28	8.54	8.62	8.76	8.80	8.99	
MP 31.7	MIN	5.55	6.58	Data	7.66	6.95	6.22	6.60	7.16	7.35	7.29	7.43	7.87	Data	Data	7.53	7.23	7.42	8.19	8.43	8.35	8.53	8.38	8.30	
	AVG	7.10	8.17	Available	8.98	7.44	6.58	7.05	7.46	7.40	7.39	7.74	8.07	Available	Available	7.73	7.61	7.66	8.23	8.49	8.43	8.62	8.54	8.51	0.00%
HANNIBAL***	MAX	8.79	9.47	8.99	7.52	7.65	8.19	8.31	8.79	7.64	8.13	8.39	9.35	8.93	7.92	8.55	9.59	8.85	8.67	8.69	9.45	9.06	9.38	9.21	
MP 126.4	MIN	7.14	7.17	7.59	7.32	6.99	7.29	6.54	7.22	6.99	7.32	7.52	8.13	8.36	6.20	5.96	7.02	8.28	7.88	7.10	1.34	8.22	8.91	8.49	
UPSTREAM	AVG	7.79	8.02	8.24	7.43	7.23	7.79	7.60	8.11	7.39	7.84	8.05	8.67	8.67	7.15	7.52	7.71	8.58	8.33	8.09	6.35	8.75	9.16	8.89	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	7.78	9.95	10.27	10.18	9.65	6.65	6.47	6.96	6.11	6.15	6.12	6.25	7.08	7.32	8.58	6.97	6.00	5.65	6.74	6.50	6.42	6.41	6.47	
MP 237.5	MIN	6.67	7.33	9.51	9.44	6.70	5.72	5.54	6.38	5.75	5.81	5.53	5.76	6.02	6.68	6.79	5.80	5.48	5.15	6.42	6.35	5.64	6.08	6.22	
	AVG	7.16	8.53	9.84	9.77	8.66	6.14	6.00	6.62	5.96	5.94	5.81	5.92	6.35	6.94	7.34	6.18	5.71	5.47	6.56	6.44	6.10	6.30	6.35	0.00%
KYGER	MAX	6.62	8.64	7.68	8.42	7.18	7.10	6.41	5.18	5.16	5.23	9.55	5.81	6.17	6.86	7.03	6.48	6.67	5.64	5.40	5.64	6.89	5.78	5.69	
MP 260.0	MIN	5.14	5.95	6.38	7.27	5.86	6.05	5.02	4.39	4.73	4.87	4.87	4.58	5.35	5.54	5.81	4.10	3.70	4.37	4.80	5.40	5.28	5.35	5.28	
	AVG	5.64	7.47	7.44	7.72	6.18	6.35	5.55	**4.66**	**4.90**	**4.97**	5.28	5.29	5.84	6.11	6.52	5.56	**4.94**	**4.84**	5.22	5.54	5.50	5.51	5.49	21.74%
GREENUP***	MAX	6.38	7.61	8.45	6.07	6.43	6.58	6.48	5.69	5.71	5.81	7.20	6.07	6.07	5.88	5.93	6.24	4.63	5.18	7.56	4.58	6.72	4.87	*	
MP 341.0	MIN	5.09	5.06	6.60	4.13	3.62	5.30	5.23	4.92	4.10	5.09	5.40	5.02	5.23	4.92	4.85	4.44	3.79	3.89	4.08	4.01	4.03	4.08	*	
UPSTREAM	AVG	5.87	6.66	7.59	5.26	5.03	5.77	5.74	5.28	**4.90**	5.41	5.99	5.54	5.66	5.31	5.56	5.29	**4.15**	**4.50**	**4.51**	**4.25**	**4.64**	**4.42**	*	31.82%
DOWNSTREAM	MAX	8.21	8.54	10.32	7.34	7.13	7.58	7.46	6.38	6.24	6.43	7.08	7.15	6.05	7.54	13.46	7.80	6.31	5.88	5.90	6.22	6.19	6.41	6.58	
	MIN	6.77	6.79	7.63	6.00	6.29	6.29	5.78	4.92	5.50	5.50	5.54	5.23	4.51	5.81	6.48	6.17	5.57	4.70	4.92	4.13	5.54	5.64	5.64	
	AVG	7.46	7.72	8.78	6.96	6.66	6.69	6.45	5.67	5.80	5.85	6.01	5.81	5.23	6.39	7.45	6.85	5.91	5.32	5.51	5.69	5.83	5.97	5.90	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	7.85	8.88	8.45	6.77	7.10	6.17	5.04	6.98	6.02	6.62	6.29	6.19	6.17	5.64	5.18	5.09	5.04	5.14	4.61	5.62	6.24	6.19	6.50	
MP 531.5	MIN	6.00	6.02	6.14	6.34	6.19	4.70	3.74	5.26	4.73	4.63	4.70	4.87	5.09	4.08	3.94	4.80	4.42	4.51	4.34	4.39	4.85	4.90	5.30	
D.O. #1	AVG	6.76	6.90	6.99	6.53	6.59	5.74	4.53*	6.45	5.39	5.31	5.34	5.67	5.45	4.89**	4.63**	4.97**	4.67**	4.75**	4.46**	5.02	5.33	5.69	5.80	0.00%
D.O. #2	MAX	7.78	8.38	8.45	6.94	7.94	7.13	5.83	7.75	6.53	7.03	6.65	6.70	6.36	4.61	4.90	4.63	4.06	4.15	4.56	6.41	6.72	6.74	6.79	
	MIN	5.95	6.10	6.19	6.46	6.53	5.50	4.42	6.02	5.14	5.02	4.97	5.23	5.02	3.96	4.01	3.91	3.72	3.84	3.62	3.72	4.80	4.94	5.74	
	AVG	6.69	6.78	7.08	6.70	7.25	6.55	5.27	6.95	5.83	5.67	5.66	6.05	5.54	4.33**	4.45**	4.01**	3.87**	3.98**	3.79**	4.93**	5.22	5.70	6.23	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	5.34	4.93	No	7.04	7.25	7.49	8.15	6.74	5.27	5.61	7.22	6.86	No	No	5.03	5.06	5.31	4.82	4.78	5.00	4.30	4.07	4.20	
MP 720.7	MIN	4.56	4.05	Data	4.16	5.02	4.43	4.61	4.49	4.28	4.12	3.97	4.54	Data	Data	4.30	4.11	4.67	4.25	4.49	4.58	3.86	4.01	3.91	
	AVG	**4.94**	**4.46**	Available	5.45	6.28	5.41	5.70	5.34	**4.79**	**4.64**	5.27	5.60	Available	Available	**4.67**	**4.63**	**4.96**	**4.53**	**4.64**	**4.73**	**4.05**	**4.04**	**3.97**	65.00%
NEWBURGH	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	6.06	
MP 776.1	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	5.20	
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	5.64	0.00%
JOHN T. MYERS	MAX	6.81	7.75	No	6.38	6.89	6.68	6.72	6.35	7.48	7.30	8.29	11.65	No	No	5.73	5.24	6.13	5.82	4.80	5.41	6.46	6.26	6.04	
MP 846.0	MIN	5.25	5.57	Data	4.54	5.42	5.73	5.74	4.72**	5.76	6.24	6.26	6.16	Data	Data	4.89	4.77	5.46	4.79	4.59	5.02	5.75	5.80	5.43	
	AVG	5.96	6.48	Available	5.49	6.22	6.24	6.14	5.75	6.40	6.67	6.88	7.30	Available	Available	5.27	4.97**	5.93	5.22	4.73**	5.18	6.11	5.93	5.75	0.00%
SMITHLAND	MAX	6.78	6.38	No	7.99	8.49	7.31	6.77	6.63	5.72	5.92	5.66	6.31	No	No	4.33	5.25	4.65	4.27	4.57	5.02	4.80	4.76	5.27	
MP 919.0	MIN	5.21	4.55	Data	5.54	4.94	4.76	4.88	4.69	3.45	3.94	3.99	4.53	Data	Data	3.66	3.65	4.26	3.88	4.11	4.37	4.38	4.29	4.67	
	AVG	5.91	5.11	Available	6.70	7.15	6.04	5.87	5.42	**4.31**	**4.69**	**4.71**	5.36	Available	Available	**4.06**	**4.28**	**4.45**	**4.05**	**4.31**	**4.57**	**4.56**	**4.60**	**4.88**	60.00%

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E:
Daily Dissolved Oxygen Readings September 2007

CALENDAR DAY JULIAN DAY		4-Sep 247	5-Sep 248	6-Sep 249	7-Sep 250	10-Sep 253	11-Sep 254	12-Sep 255	13-Sep 256	14-Sep 257	17-Sep 260	18-Sep 261	19-Sep 262	20-Sep 263	21-Sep 264	24-Sep 267	25-Sep 268	26-Sep 269	27-Sep 270	28-Sep 271	Monthly % Exceedance
MONTGOMERY	MAX	9.86	9.40	9.72	8.94	6.98	6.95	7.01	7.33	7.90	8.80	9.25	9.05	9.41	10.22	9.23	9.08	8.43	No	No	
MP 31.7	MIN	8.90	8.82	8.86	8.35	6.48	6.23	6.38	6.86	7.41	8.20	8.47	8.56	8.91	9.11	8.30	7.73	8.10	Data	Data	
	AVG	9.26	9.12	9.30	8.71	6.68	6.79	6.74	7.15	7.65	8.54	8.82	8.79	9.11	9.57	8.72	8.17	8.27	Available	Available	0.00%
HANNIBAL***	MAX	9.27	8.54	8.69	9.08	8.78	8.90	8.60	8.09	8.22	8.75	9.24	8.69	8.85	9.12	9.00	8.57	8.18	7.89	7.52	
MP 126.4	MIN	7.92	7.10	7.47	7.82	6.48	5.19	4.82	6.12	7.55	8.33	8.45	8.39	8.51	8.42	8.22	8.12	7.88	7.47	7.28	
UPSTREAM	AVG	8.88	7.87	8.00	8.61	7.79	7.59	6.83	7.67	7.80	8.45	8.95	8.51	8.69	8.75	8.63	8.30	8.06	7.69	7.39	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	6.86	7.24	7.23	7.12	7.18	6.99	6.76	6.96	6.70	6.58	7.87	6.98	7.18	7.56	6.47	6.55	6.44	6.54	6.46	
MP 237.5	MIN	6.33	6.58	6.69	6.78	6.78	6.64	6.55	6.56	6.28	6.33	6.37	6.42	6.65	6.51	6.16	6.11	6.13	5.70	6.22	
	AVG	6.50	6.79	6.92	6.94	6.94	6.79	6.67	6.71	6.47	6.44	6.60	6.70	6.90	6.82	6.32	6.24	6.28	6.33	6.31	0.00%
KYGER	MAX	5.33	*	*	*	8.21	7.68	7.20	6.82	7.06	7.22	7.49	7.78	7.92	9.02	8.59	7.63	7.75	7.01	7.75	
MP 260.0	MIN	4.73	*	*	*	7.54	7.25	6.70	6.60	6.60	6.96	6.94	7.13	7.39	7.51	7.56	7.27	6.98	6.74	6.65	
	AVG	5.03	*	*	*	7.96	7.42	6.94	6.70	6.84	7.10	7.18	7.38	7.59	8.07	8.01	7.46	7.36	6.89	6.85	0.00%
GREENUP***	MAX	5.90	5.09	5.47	5.62	5.90	5.40	No	5.23	5.14	5.76	6.53	6.53	5.52	6.02	5.90	6.86	7.63	6.86	5.71	
MP 341.0	MIN	3.19	4.20	4.18	4.54	4.75	4.90	Data	4.82	4.30	4.39	5.09	5.11	4.70	4.63	2.26	5.42	5.38	5.38	5.30	
UPSTREAM	AVG	5.23	**4.70**	**4.76**	**4.91**	5.29	5.18	Available	**4.97**	**4.76**	**4.99**	5.64	5.59	5.09	5.23	**4.98**	5.95	6.16	6.02	5.52	38.89%
DOWNSTREAM	MAX	8.18	7.25	7.46	7.99	6.53	6.22	6.24	6.53	6.05	6.22	5.78	6.29	5.86	6.72	7.58	7.39	7.66	7.20	6.82	
	MIN	6.34	6.10	5.90	6.91	6.19	5.98	5.69	5.81	4.42	4.51	4.97	5.35	5.59	4.78	6.74	6.91	6.91	6.74	6.46	
	AVG	7.16	6.64	6.78	7.33	6.30	6.11	6.09	6.06	5.42	5.42	5.42	5.79	5.68	6.13	7.04	7.11	7.19	6.96	6.71	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	6.50	6.31	6.77	6.41	5.28	6.00	5.95	6.10	5.83	5.59	6.07	6.00	5.83	6.07	6.07	5.93	5.90	5.86	5.50	
MP 531.5	MIN	5.16	3.72	5.16	5.69	3.84	5.21	5.40	4.87	3.58	4.94	5.71	5.81	5.57	5.57	5.57	5.54	5.59	5.42	5.18	
D.O. #1	AVG	5.92	5.23	5.87	6.10	4.69**	5.72	5.71	5.60	4.90**	5.23	5.89	5.90	5.68	5.77	5.79	5.70	5.74	5.59	5.35	0.00%
D.O. #2	MAX	6.62	6.72	7.08	6.48	6.50	6.00	5.98	6.00	5.66	5.26	5.83	5.64	5.50	5.54	5.54	5.57	5.64	5.57	5.26	
	MIN	5.42	**4.87**	5.66	6.00	4.61	5.40	5.54	5.28	4.25	4.70	5.54	5.52	5.16	5.14	5.14	5.23	5.38	5.23	5.02	
	AVG	6.17	5.84	6.30	6.24	5.24	5.76	5.77	5.66	5.15	4.87**	5.66	5.56	5.30	5.31	5.33	5.38	5.53	5.42	5.16	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	5.03	5.61	5.52	4.15	4.07	3.95	3.47	3.54	3.73	4.23	3.77	4.20	3.96	4.69	3.77	6.20	5.63	5.49	5.78	
MP 720.7	MIN	4.13	4.17	4.43	3.97	3.86	3.52	3.35	3.26	3.52	3.58	3.35	3.37	3.43	3.27	3.05	5.52	5.31	5.30	5.60	
	AVG	**4.55**	**4.77**	**4.72**	**4.04**	**3.99**	**3.72**	**3.42**	**3.44**	**3.61**	**3.75**	**3.55**	**3.67**	**3.68**	**3.82**	**3.28**	5.77	5.45	5.38	5.68	78.95%
NEWBURGH	MAX	8.46	8.15	8.58	6.32	5.63	5.86	4.58	4.58	4.61	4.97	4.70	5.34	5.23	5.70	4.31	8.48	7.18	7.06	6.51	
MP 776.1	MIN	6.17	6.23	6.00	5.08	4.50	4.90	4.09	3.84	4.01	4.14	3.92	4.24	4.22	4.46	3.74	6.73	6.56	6.30	5.97	
	AVG	7.00	6.90	7.12	5.74	5.17	5.28	**4.26**	**4.13**	**4.23**	**4.34**	**4.28**	**4.54**	**4.54**	5.22	**3.96**	7.36	6.89	6.55	6.26	42.11%
JOHN T. MYERS	MAX	6.23	7.21	5.95	5.77	5.04	6.51	4.49	5.00	4.60	4.24	4.38	4.32	4.29	4.35	4.95	6.66	5.77	5.53	5.32	
MP 846.0	MIN	5.37	5.54	5.38	5.23	4.85	4.32	4.28	4.39	4.15	3.79	3.68	3.73	3.93	4.02	4.39	5.74	5.43	5.21	5.07	
	AVG	5.82	6.01	5.63	5.40	**4.97**	5.38	**4.38**	**4.52**	**4.32**	**3.97**	**3.94**	**3.88**	**4.08**	**4.17**	**4.65**	6.05	5.59	5.34	5.21	52.63%
SMITHLAND	MAX	5.58	5.58	4.35	4.52	4.53	5.87	6.03	6.39	6.10	6.09	6.18	6.00	6.61	7.00	6.93	6.60	8.38	6.10	5.84	
MP 919.0	MIN	4.51	4.30	3.95	4.34	4.26	5.13	5.57	5.46	5.18	5.39	5.64	5.53	5.77	5.94	6.06	5.74	6.06	5.48	5.36	
	AVG	5.00	**4.81**	**4.11**	**4.43**	**4.37**	5.56	5.79	5.87	5.43	5.61	5.86	5.78	6.18	6.51	6.47	6.26	6.93	5.68	5.58	21.05%

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectri dam**

Appendix E:
Daily Dissolved Oxygen Readings October 2007

CALENDAR DAY JULIAN DAY		1-Oct 274	2-Oct 275	3-Oct 276	4-Oct 277	5-Oct 278	8-Oct 281	9-Oct 282	10-Oct 283	11-Oct 284	12-Oct 285	15-Oct 288	16-Oct 289	17-Oct 290	18-Oct 291	19-Oct 292	22-Oct 295	23-Oct 296	24-Oct 297	25-Oct 298	26-Oct 299	29-Oct 302	30-Oct 303	31-Oct 304	Monthly % Exceedance
MONTGOMERY	MAX	7.53	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	
MP 31.7	MIN	7.31	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	
	AVG	7.43	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	0.00%
HANNIBAL***	MAX	7.55	8.51	8.57	12.48	8.72	8.79	8.58	8.69	8.51	8.37	8.39	8.73	9.08	9.29	9.15	8.96	8.94	9.29	8.99	9.39	9.68	10.01	10.14	
MP 126.4	MIN	7.11	7.40	8.21	8.27	8.24	7.97	8.07	8.12	7.94	7.91	7.98	8.00	8.70	8.73	8.78	8.70	8.82	8.88	8.70	8.94	9.51	9.56	9.53	
UPSTREAM	AVG	7.45	8.36	8.37	8.58	8.42	8.50	8.27	8.49	8.23	8.11	8.25	8.24	8.92	9.04	8.97	8.84	8.88	9.06	8.86	9.12	9.59	9.81	9.83	0.00%
BELLEVILLE	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 203.9	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
RACINE***	MAX	6.60	6.80	6.47	6.67	7.24	7.23	7.09	6.93	*	*	*	10.51	7.49	7.44	7.48	7.67	7.52	7.47	7.25	7.19	7.69	7.87	8.27	
MP 237.5	MIN	6.21	6.34	6.27	6.22	6.37	6.30	6.57	6.57	*	*	*	7.03	7.35	7.31	7.32	7.23	7.23	7.12	6.99	6.84	7.40	7.65	7.77	
	AVG	6.37	6.53	6.37	6.41	6.78	6.74	6.79	6.72	*	*	*	8.02	7.43	7.37	7.39	7.36	7.34	7.29	7.16	7.01	7.52	7.75	8.09	0.00%
KYGER	MAX	7.10	No	7.80	7.80	8.04	9.82	9.79	10.51	11.04	10.99	7.34	7.46	7.63	7.73	7.63	7.70	7.78	7.73	7.66	8.38	7.78	8.54	*	
MP 260.0	MIN	6.79	Data	6.91	7.25	7.58	9.02	9.24	9.48	8.76	9.53	7.15	7.15	7.25	7.25	7.27	7.44	7.56	7.51	7.51	7.15	7.61	7.06	*	
	AVG	6.97	Available	7.41	7.64	7.78	9.38	9.44	9.64	9.63	10.15	7.27	7.33	7.46	7.59	7.50	7.60	7.66	7.63	7.58	7.77	7.70	7.93	*	0.00%
GREENUP***	MAX	5.62	5.57	6.14	5.81	6.07	6.24	5.50	5.45	5.42	5.57	5.64	5.95	5.86	6.36	6.02	6.65	6.55	6.07	6.31	5.83	8.45	6.70	7.15	
MP 341.0	MIN	5.18	5.16	5.26	4.87	5.28	3.36	4.92	4.94	5.26	5.18	4.94	4.94	5.47	5.78	5.78	5.83	6.07	5.78	4.87	4.13**	6.43	6.55	6.60	
UPSTREAM	AVG	5.32	5.35	5.54	5.47	5.77	5.03	5.17	5.19	5.37	5.36	5.30	5.61	5.70	5.99	5.88	6.14	6.23	5.92	5.68	**4.77**	6.83	6.62	6.90	4.35%
DOWNSTREAM	MAX	6.60	6.77	7.30	6.65	7.34	7.01	6.53	6.98	6.98	6.86	7.08	7.10	7.03	7.22	7.18	7.54	7.51	7.03	7.08	6.96	7.63	7.51	7.61	
	MIN	6.29	6.41	6.53	6.38	6.43	6.46	6.31	6.46	6.72	6.72	6.77	6.77	6.84	6.86	6.91	7.25	6.98	4.22	3.34	6.00	5.93	7.49	7.49	
	AVG	6.42	6.57	6.73	6.52	6.80	6.72	6.41	6.65	6.82	6.79	6.90	6.87	6.92	7.01	7.07	7.43	7.17	6.26	5.99	6.86	7.31	7.50	7.55	0.00%
MELDAHL	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 436.2	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
MARKLAND***	MAX	5.86	5.38	5.40	5.18	5.57	5.33	5.30	4.34	4.68	4.94	5.06	7.20	7.58	5.62	5.47	5.76	No	6.29	6.48	6.70	7.06	No	8.06	
MP 531.5	MIN	5.40	5.11	5.02	4.97	4.78	4.39	4.34	3.94	3.91	4.61	4.66	4.63	4.94	5.30	5.06	5.30	Data	6.12	6.24	6.29	6.53	Data	7.73	
D.O. #1	AVG	5.58	5.25	5.15	5.10	4.94**	4.95**	4.86**	4.13**	4.31**	4.84**	4.83**	4.89**	5.71	5.42	5.26	5.53	Available	6.20	6.39	6.55	6.84	Available	7.96	0.00%
D.O. #2	MAX	5.83	5.40	5.45	5.18	5.62	5.76	5.64	4.56	4.51	4.87	4.99	5.04	7.32	5.52	5.23	5.57	No	6.38	6.36	6.60	6.96	No	7.63	
	MIN	5.42	5.11	5.06	4.99	4.87	4.87	4.56	3.94	3.96	4.44	4.61	4.61	5.21	5.06	4.85	5.33	Data	6.12	6.17	6.22	6.46	Data	7.27	
	AVG	5.61	5.26	5.19	5.11	5.01	5.39	5.16	4.22**	4.25**	4.72**	4.78**	4.77**	5.83	5.28	5.04	5.46	Available	6.23	6.28	6.45	6.73	Available	7.49	0.00%
McALPINE***	MAX	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
MP 606.8	MIN	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
	AVG	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
CANNELTON	MAX	5.97	6.00	6.54	6.02	6.35	6.45	5.95	5.56	No	No	No	6.70	6.73	No	6.53	6.70	6.69	7.06	7.37	No	7.29	7.41	No	
MP 720.7	MIN	5.79	5.79	5.92	5.80	5.88	5.43	5.28	5.31	Data	Data	Data	6.33	6.14	Data	5.65	6.37	6.40	6.61	6.93	Data	7.11	7.17	Data	
	AVG	5.87	5.89	6.17	5.91	6.10	5.92	5.53	5.45	Available	Available	Available	6.50	6.33	Available	6.02	6.60	6.52	6.78	7.15	Available	7.20	7.28	Available	0.00%
NEWBURGH	MAX	7.02	6.95	7.33	7.21	7.18	10.71	11.13	9.26	8.34	7.78	8.06	7.90	8.39	8.23	8.00	8.10	7.39	8.06	No	8.47	No	8.05	7.97	
MP 776.1	MIN	6.45	6.34	6.60	6.37	6.12	7.97	7.85	7.12	7.27	7.05	7.16	6.98	7.37	7.64	7.09	7.07	6.86	7.81	Data	7.73	Data	7.53	7.25	
	AVG	6.61	6.73	6.86	6.73	6.60	8.99	9.54	8.07	7.82	7.48	7.64	7.45	7.82	7.95	7.55	7.48	7.00	7.94	Available	8.22	Available	7.90	7.58	0.00%
JOHN T. MYERS	MAX	5.29	5.35	5.46	6.08	5.29	5.93	7.26	6.52	6.90	6.72	5.74	5.00	4.48	4.22	4.51	4.63	4.10	4.10	4.43	4.41	5.12	5.24	5.30	
MP 846.0	MIN	4.95	5.07	5.03	4.79	4.81	4.94	5.47	6.07	6.10	5.92	4.67	4.51	3.85	3.83	4.41	4.18	3.72	3.95	4.13	4.27	4.87	5.02	5.19	
	AVG	5.09	5.20	5.26	5.19	5.01	5.41	6.11	6.33	6.43	6.39	5.17	**4.76**	**4.23**	**4.07**	**4.46**	**4.45**	**3.91**	**4.02**	**4.29**	**4.34**	**4.94**	5.12	5.25	43.48%
SMITHLAND	MAX	5.22	5.50	5.67	5.80	5.67	7.05	9.86	6.64	6.44	6.31	6.14	6.16	6.40	6.03	6.27	6.61	7.06	7.02	7.12	7.68	7.83	7.88	8.01	
MP 919.0	MIN	4.91	5.20	5.30	5.31	5.12	5.24	5.50	5.64	6.03	5.90	5.77	5.90	5.71	5.89	5.83	6.27	6.40	6.71	6.43	7.31	7.50	7.63	7.55	
	AVG	5.07	5.34	5.45	5.53	5.36	5.96	6.62	6.01	6.21	6.08	5.95	5.99	5.91	5.94	5.97	6.44	6.74	6.89	6.74	7.52	7.71	7.77	7.74	0.00%

***Indicates problem with instrument**
****Indicates data quality uncertain**
*****Indicates hydroelectric dam**

Appendix E: Temperature Period Average Exceedences for 2007

Temperature Period Average Exceedences - 2007

Site	Aug		July		June (1-15)		June (16-30)		May (1-15)		May (16-31)		Oct (1-15)		Oct (16-31)		Sept (1-15)		Sept (16-30)	
	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences
Cannelton	218	90.83%	53	30.81%	6	4.55%	2	1.85%			17	47.22%	79	73.15%	41	38.32%	31	28.70%		
Greenup	305	55.35%	2	0.48%			1	0.52%	34	14.17%	45	17.05%	127	48.11%	89	31.12%				
Hannibal	189	34.24%			6	2.30%	10	4.17%					95	35.98%	84	29.17%				
J. T. Myers	232	96.67%	137	60.09%	15	11.36%	3	2.68%			36	100.00%	82	62.60%	48	33.33%	30	27.78%		
Kyger									15	6.25%										
Montgomery					1	0.94%														
Newburgh	12	100.00%											105	79.55%	63	52.50%	52	55.91%	26	24.07%
Racine	225	40.61%							43	19.91%	8	3.03%	2	0.75%	26	9.00%				
Smithland	228	95.00%	74	33.04%	2	1.67%	10	8.93%			35	97.22%	26	19.70%	48	33.33%	4	3.70%		

Appendix E: Maximum Criteria Temperature Exceedences for 2007

Number of Temperature Excedences (max criteria) by Period - 2007

Site	Aug		Oct (1-15)		Oct (16-31)		Sept (1-15)	
	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences
Greenup					1	0.35%		
J. T. Myers	10	4.17%						
Newburgh			2	1.52%			2	2.15%

Appendix E: Temperature Period Average Exceedences for 2006

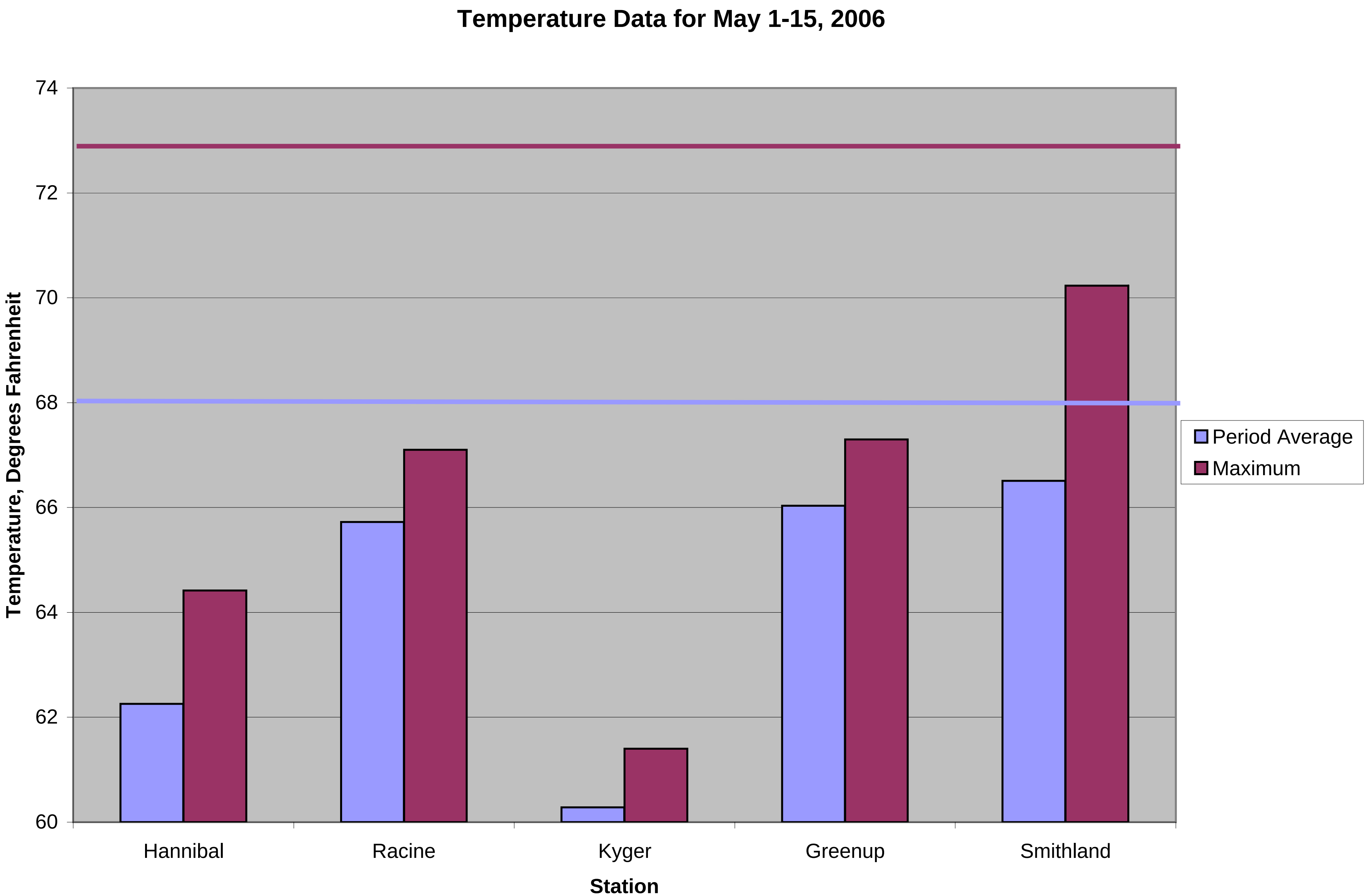
Temperature Period Average Excedences 2006

Site	May (1-15)		June (16-30)		July		August		Sept (1-15)	
	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences	# of exceedences	% of exceedences
CANNELTON							183	75.00%		
GREENUP							264	52.59%		
HANNIBAL			3	1.14%	29	6.37%	263	52.18%		
J. T. MYERS					22	16.18%	232	95.08%		
KYGER							4	0.79%		
MONTGOMERY										
NEWBURGH					17	9.94%	187	100.00%	1	1.67%
RACINE							51	12.50%		
SMITHLAND	39	33.00%			29	20.14%	184	76.99%	4	3.33%

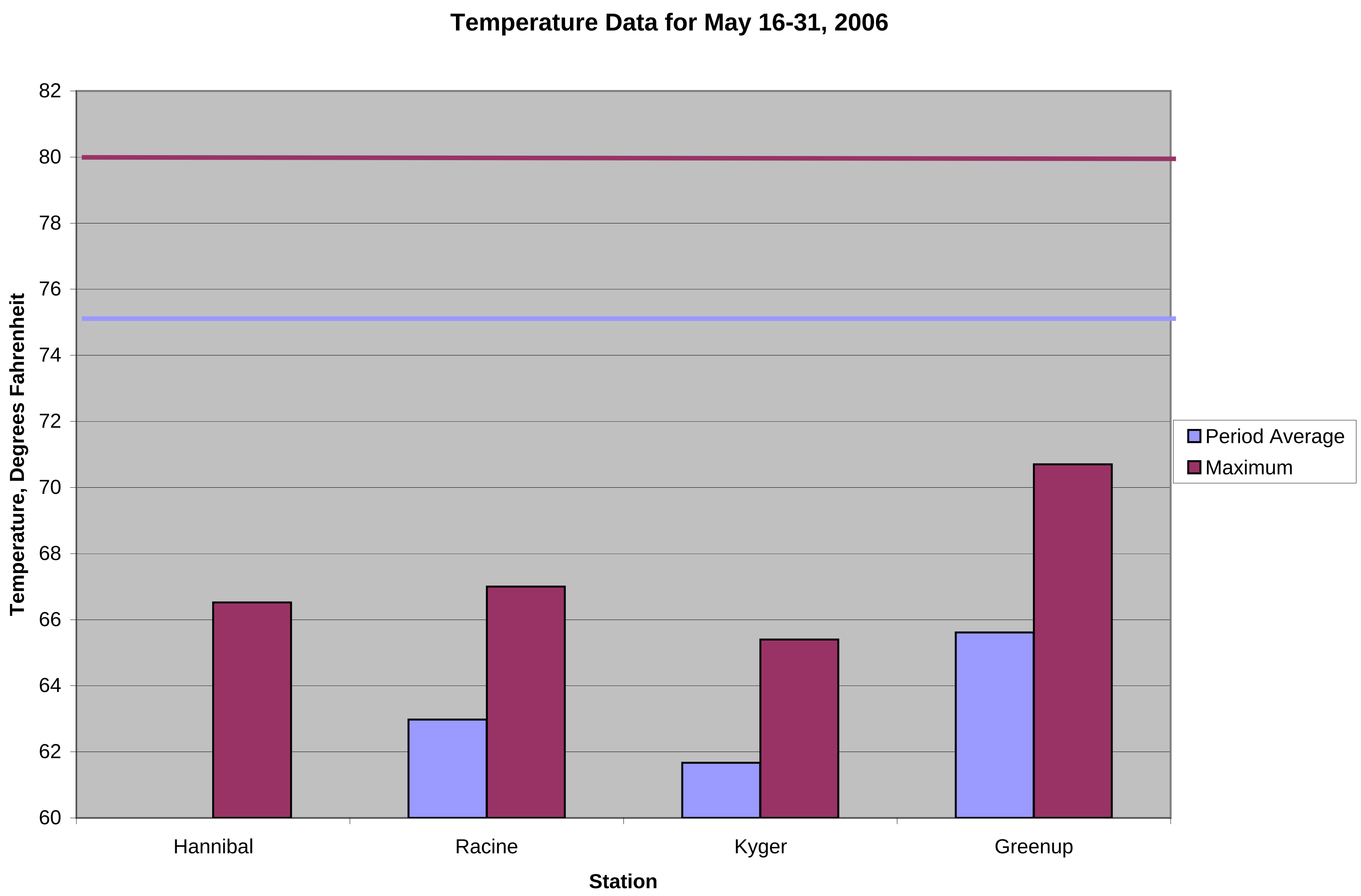
Appendix E: Maximum Criteria Temperature Exceedences for 2006

Maximum Temperature Excedences 2006			
Location	**Period**	**# of Exceedences**	**% of Excedences**
Greenup	Aug (1-31)	1	0.20%
Newburgh	Aug (1-31)	3	1.60%

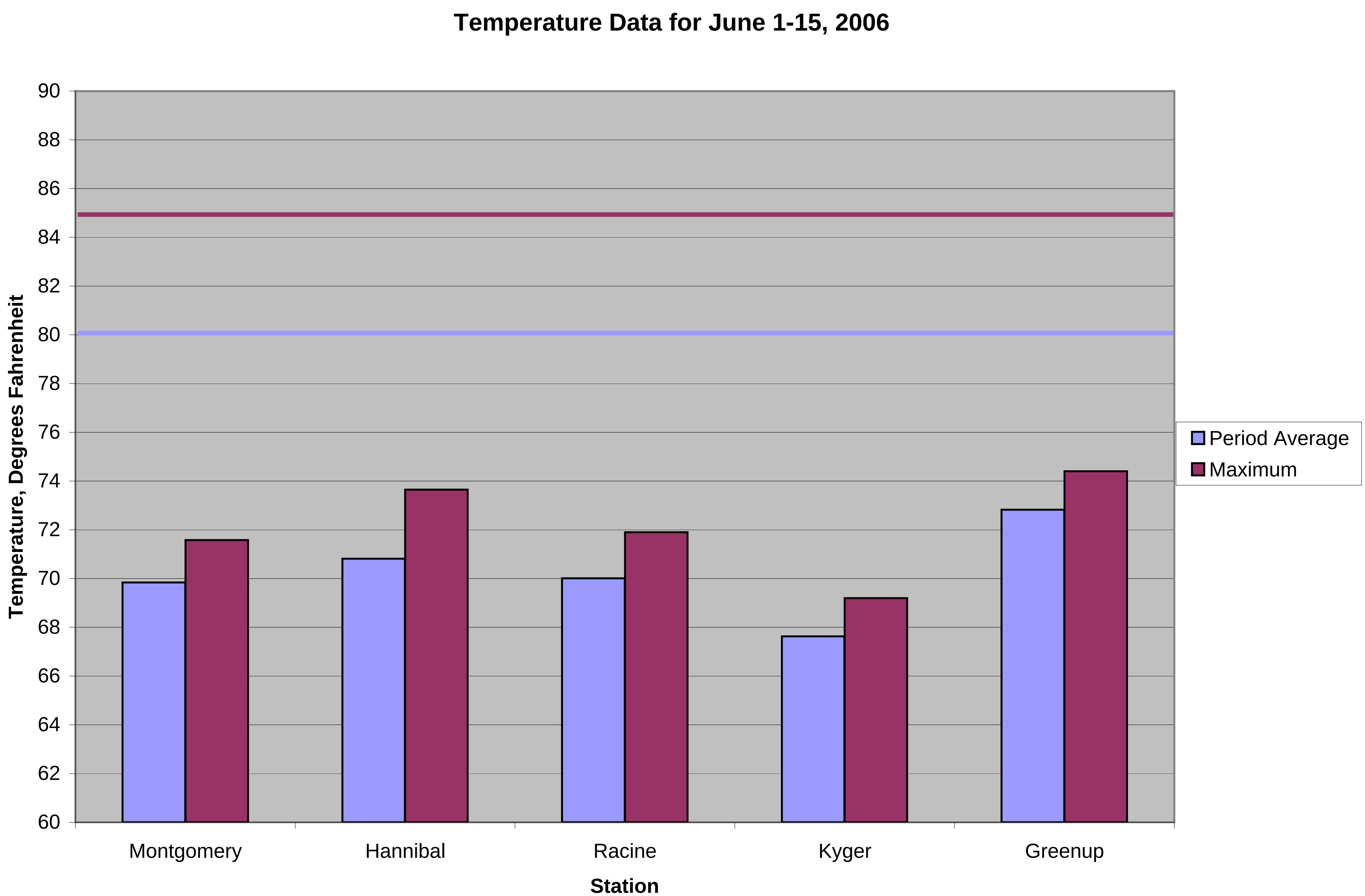
Appendix E: Temperature Data 2006 - 2007

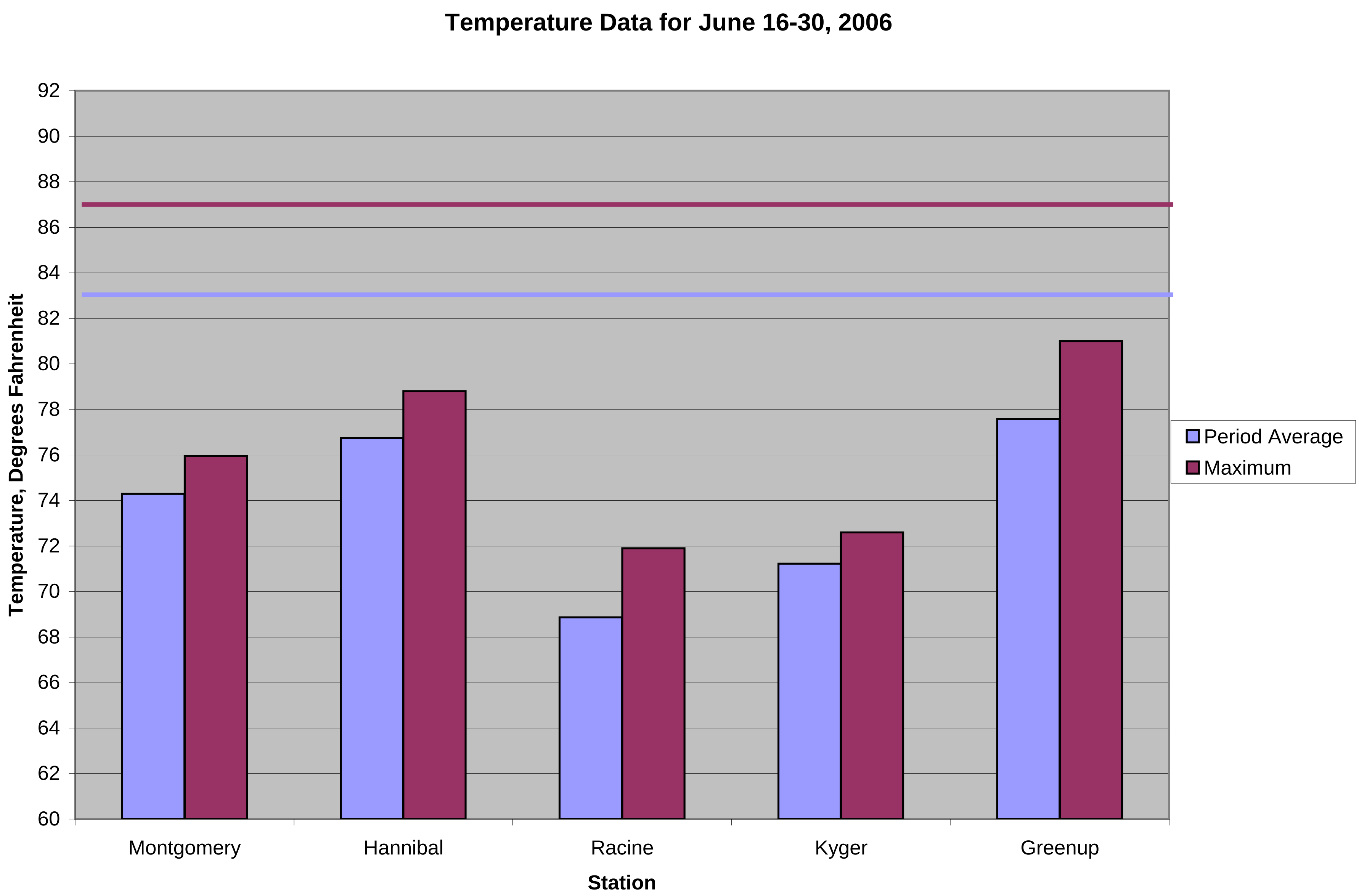


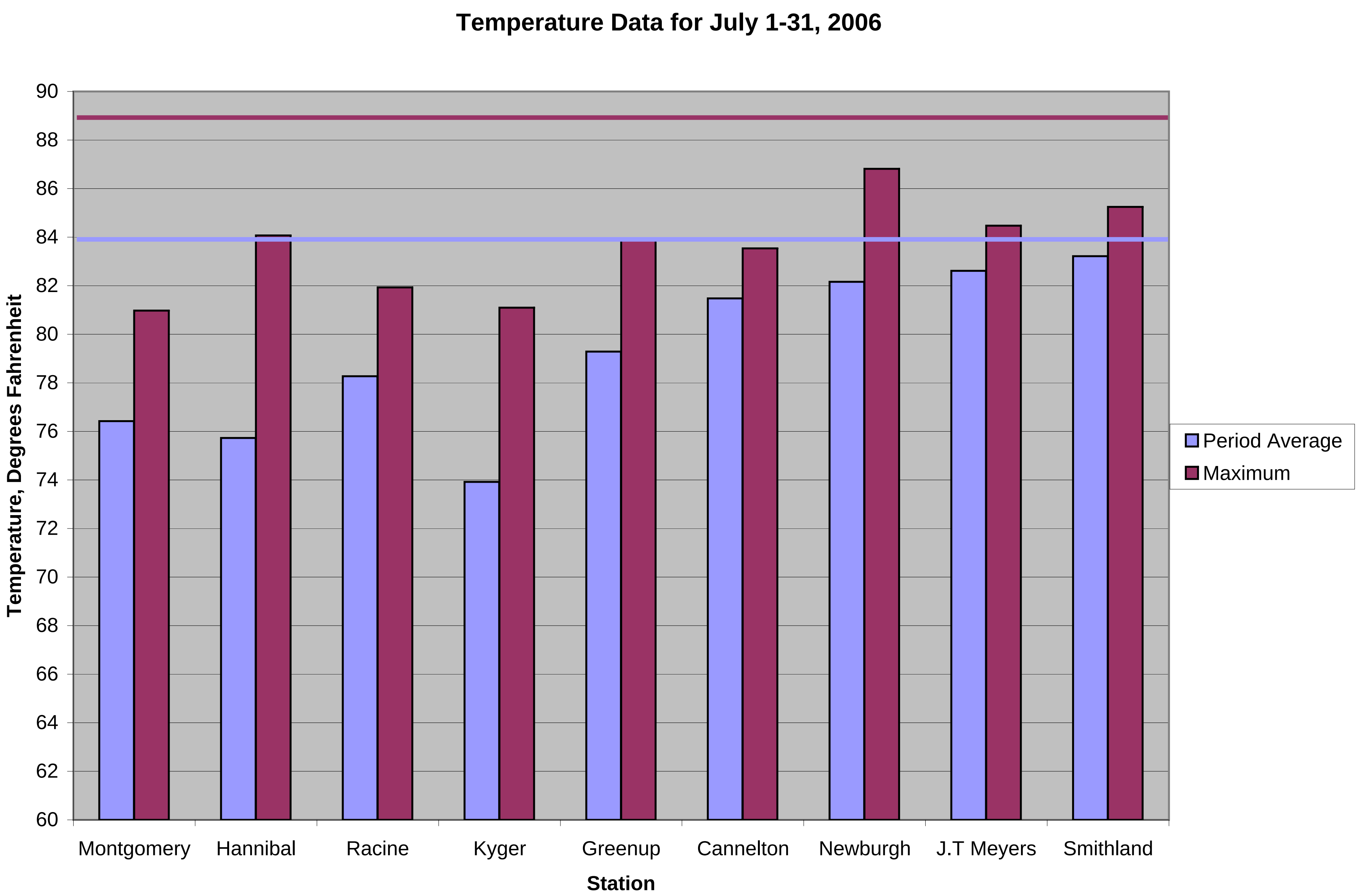
Appendix E: Temperature Data 2006 - 2007



Appendix E: Temperature Data 2006 - 2007




Temperature Data for June 16-30, 2006
Temperature, Degrees Fahrenheit
92
90
88
86
84
82
80
78
76
74
72
70
68
66
64
62
60
Montgomery
Hannibal
Racine
Kyger
Greenup
Station
Period Average
Maximum


Temperature Data for July 1-31, 2006
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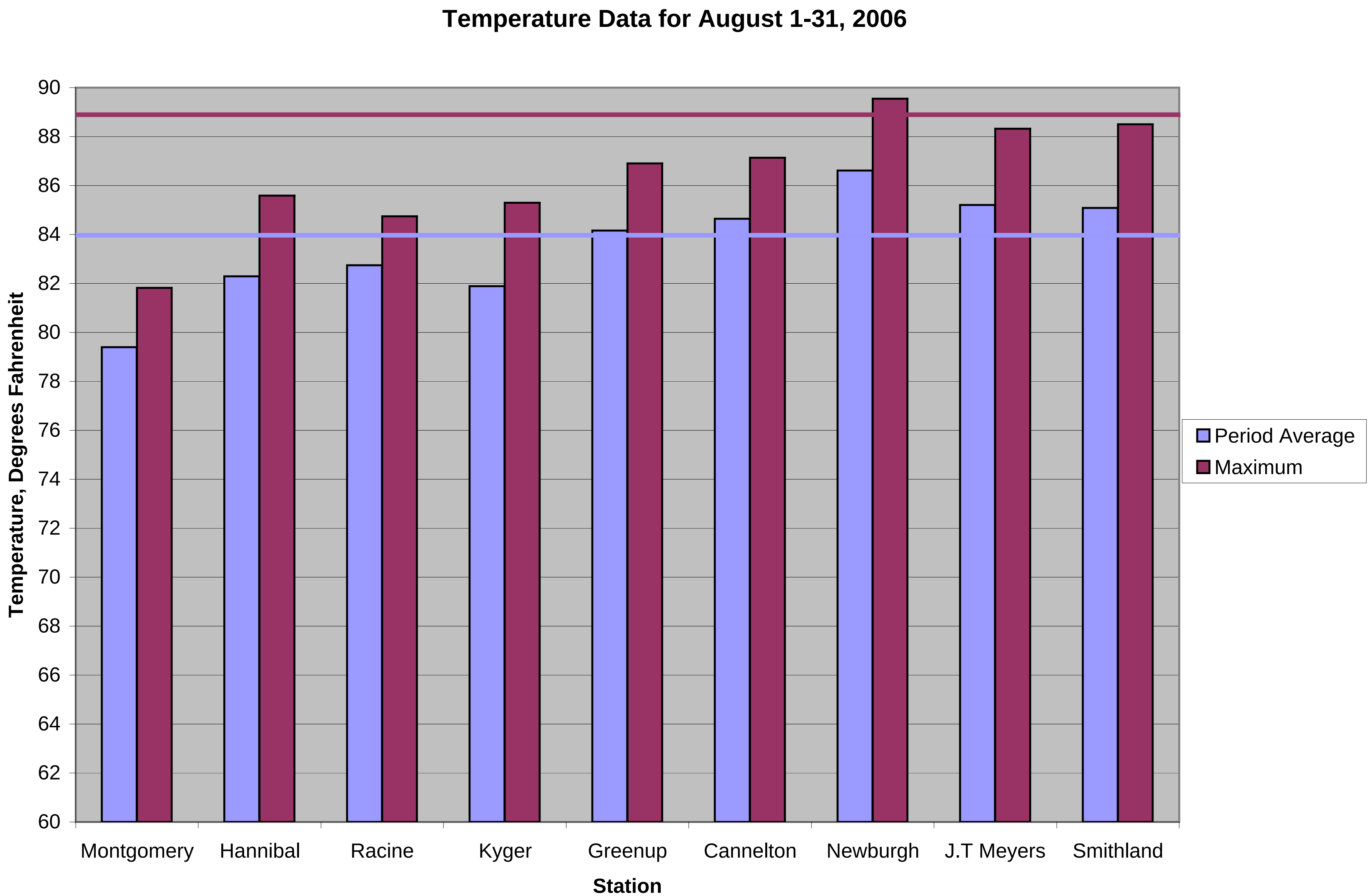
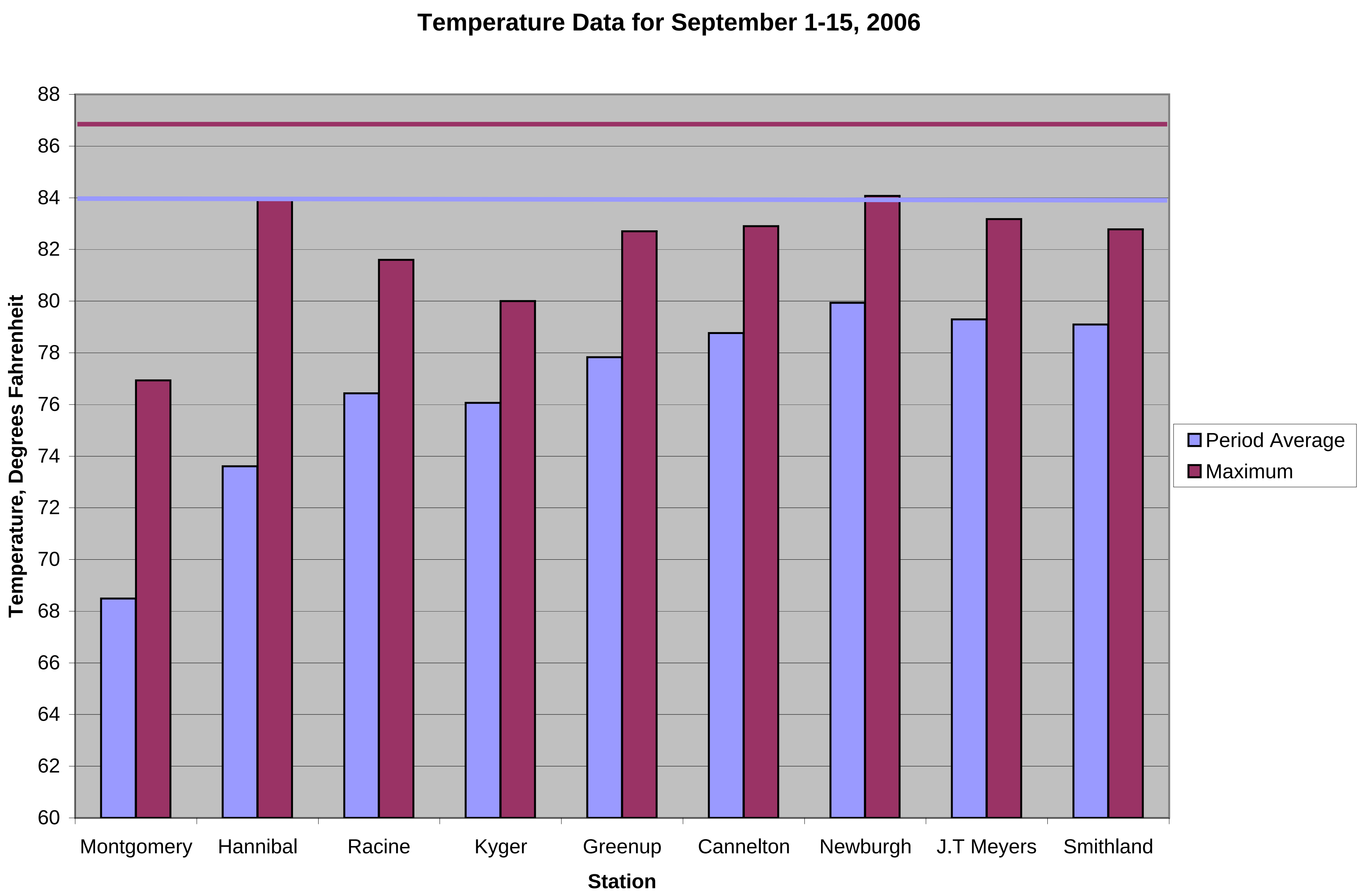
62
60
Temperature, Degrees Fahrenheit
Montgomery
Hannibal
Racine
Kyger
Greenup
Cannelton
Newburgh
J.T Meyers
Smithland
Station
Period Average
Maximum

Appendix E: Temperature Data 2006 - 2007




Temperature Data for September 1-15, 2006
Temperature, Degrees Fahrenheit
88
86
84
82
80
78
76
74
72
70
68
66
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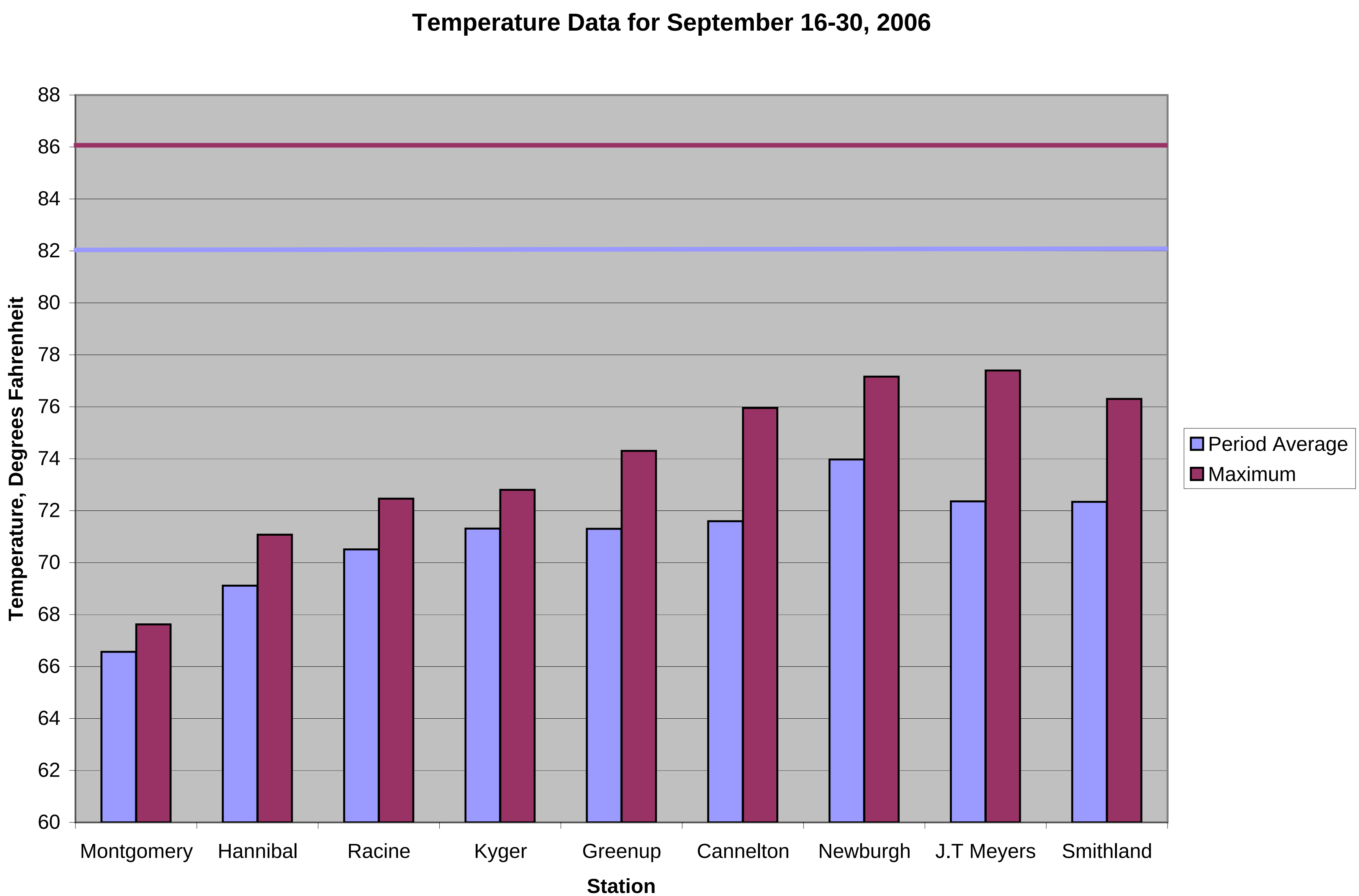
62
60
Montgomery
Hannibal
Racine
Kyger
Greenup
Cannelton
Newburgh
J.T Meyers
Smithland
Station
Period Average
Maximum


Temperature Data for September 16-30, 2006
Temperature, Degrees Fahrenheit
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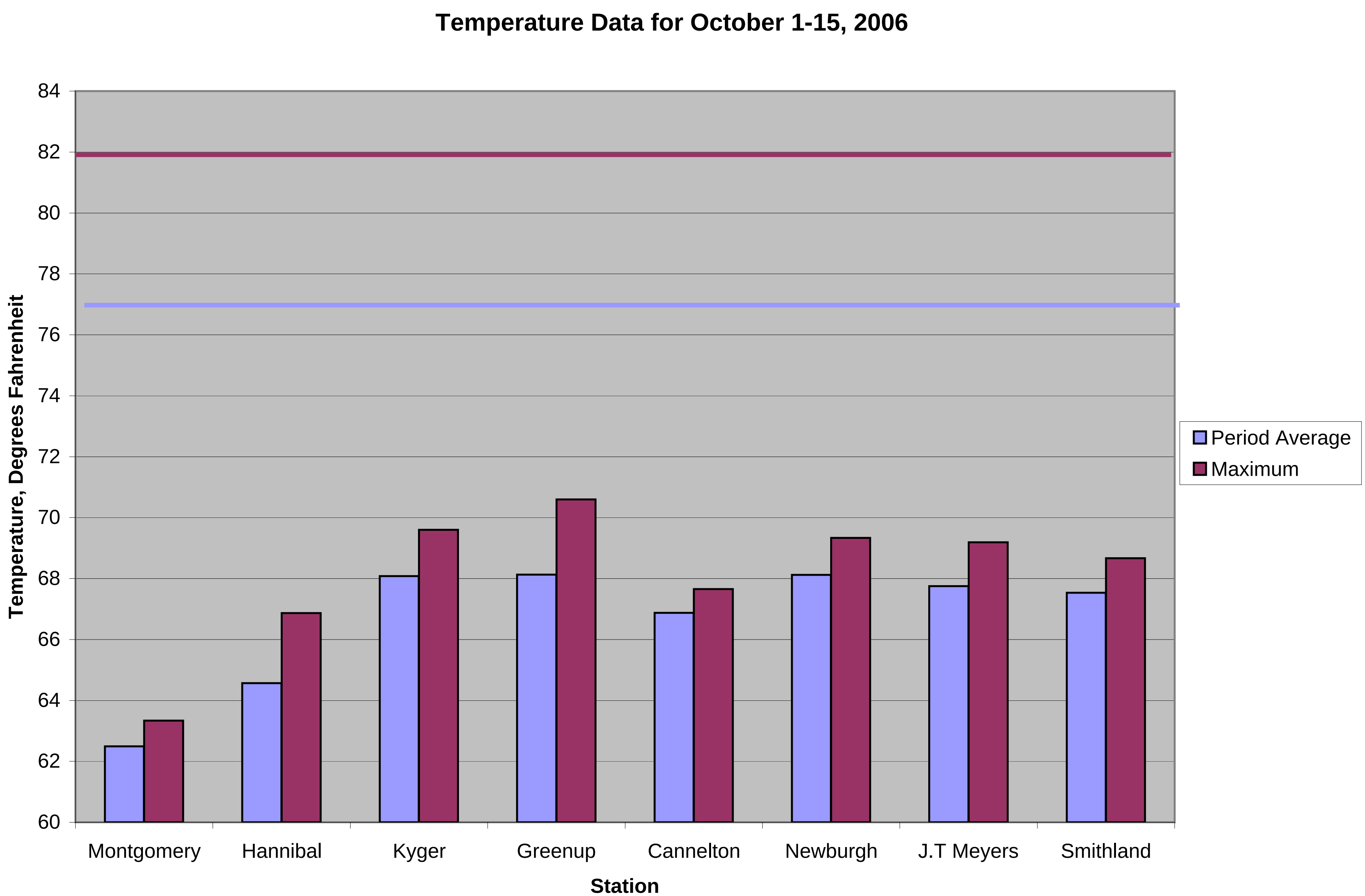
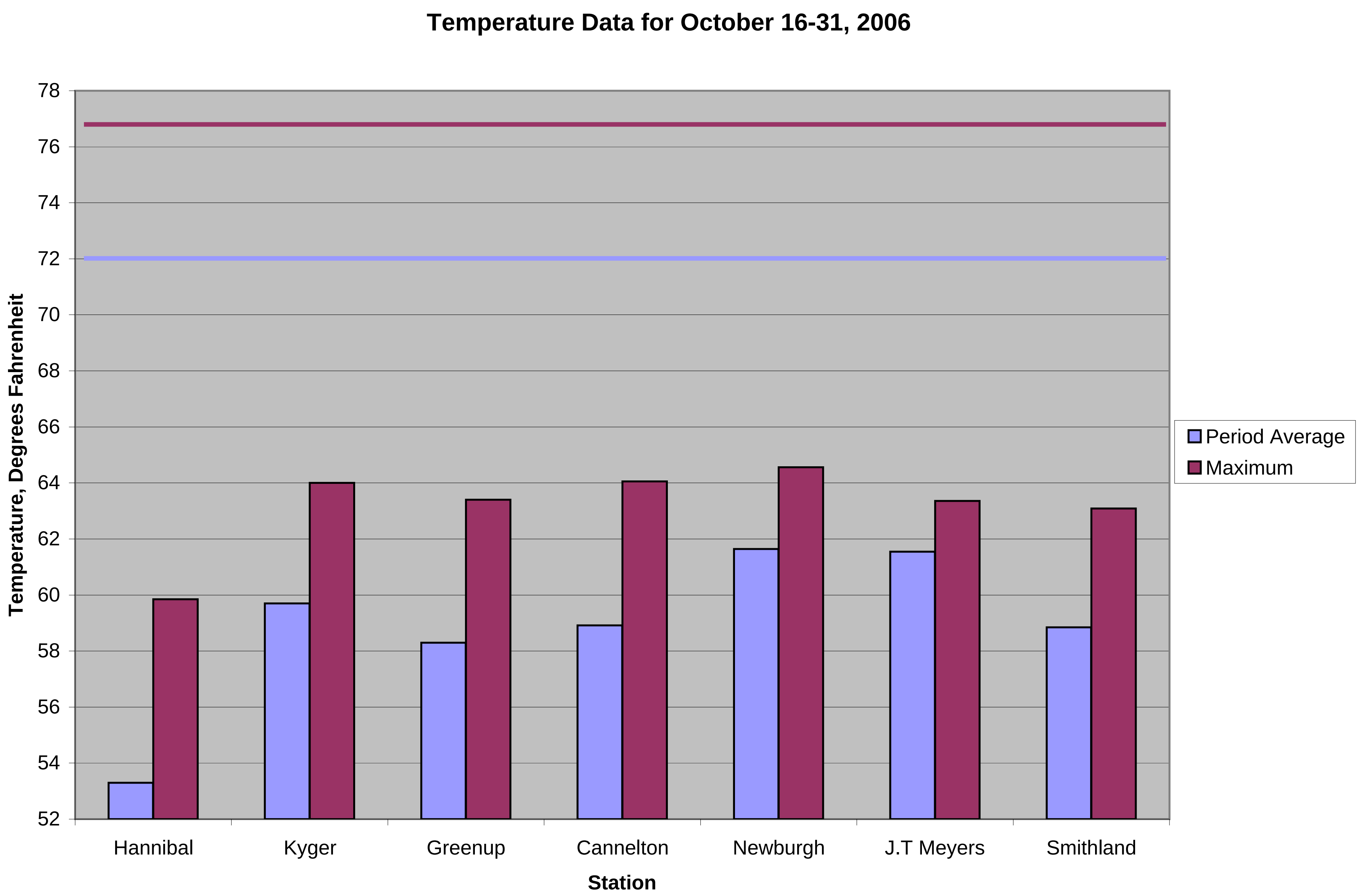
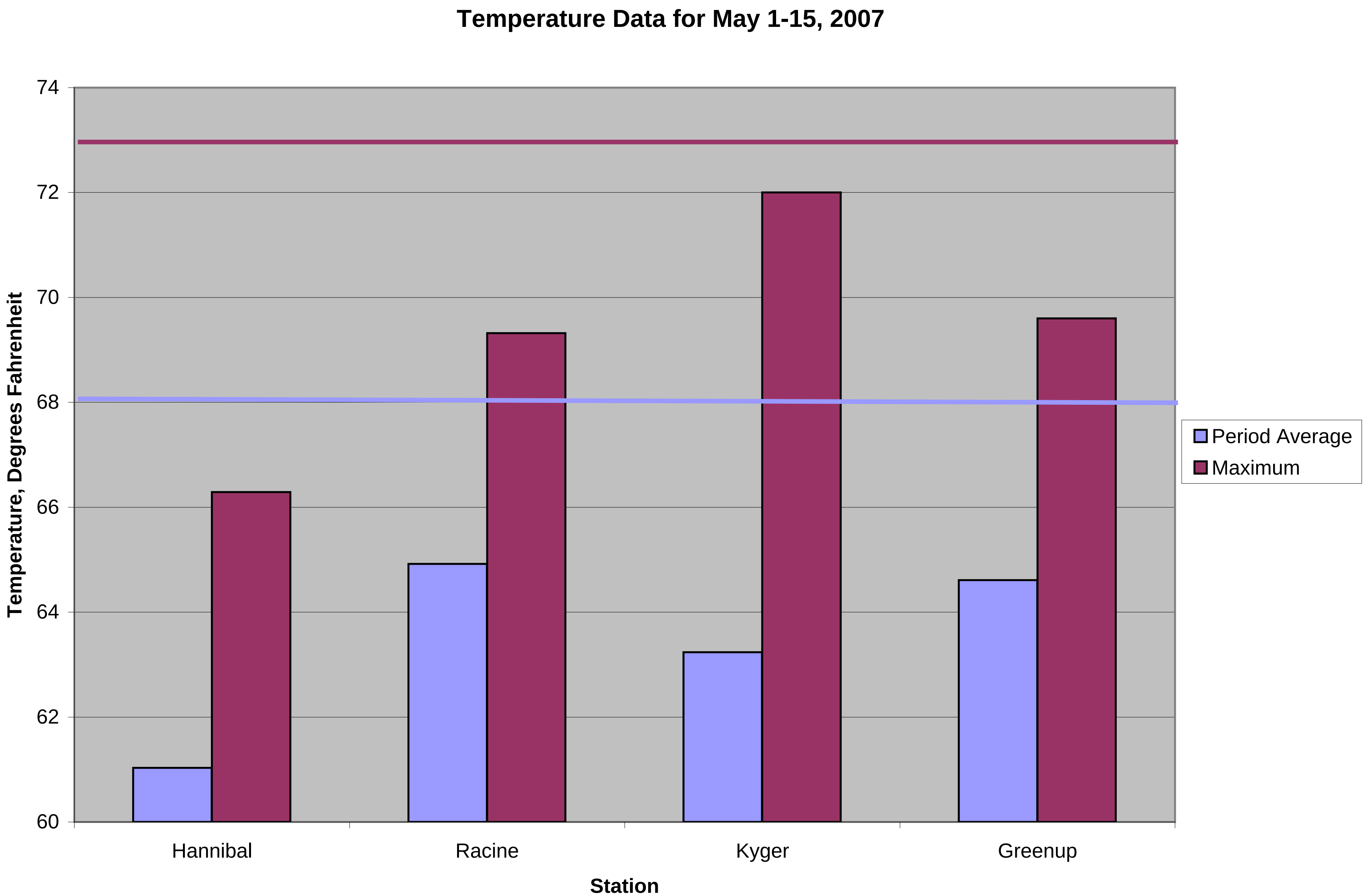
Montgomery
Hannibal
Racine
Kyger
Greenup
Cannelton
Newburgh
J.T Meyers
Smithland
Station
Period Average
Maximum

Appendix E: Temperature Data 2006 - 2007




Temperature Data for October 16-31, 2006
Temperature, Degrees Fahrenheit
78
76
74
72
70
68
66
64
62
60
58
56
54
52
Hannibal
Kyger
Greenup
Cannelton
Newburgh
J.T Meyers
Smithland
Station
Period Average
Maximum


Temperature Data for May 1-15, 2007
Temperature, Degrees Fahrenheit
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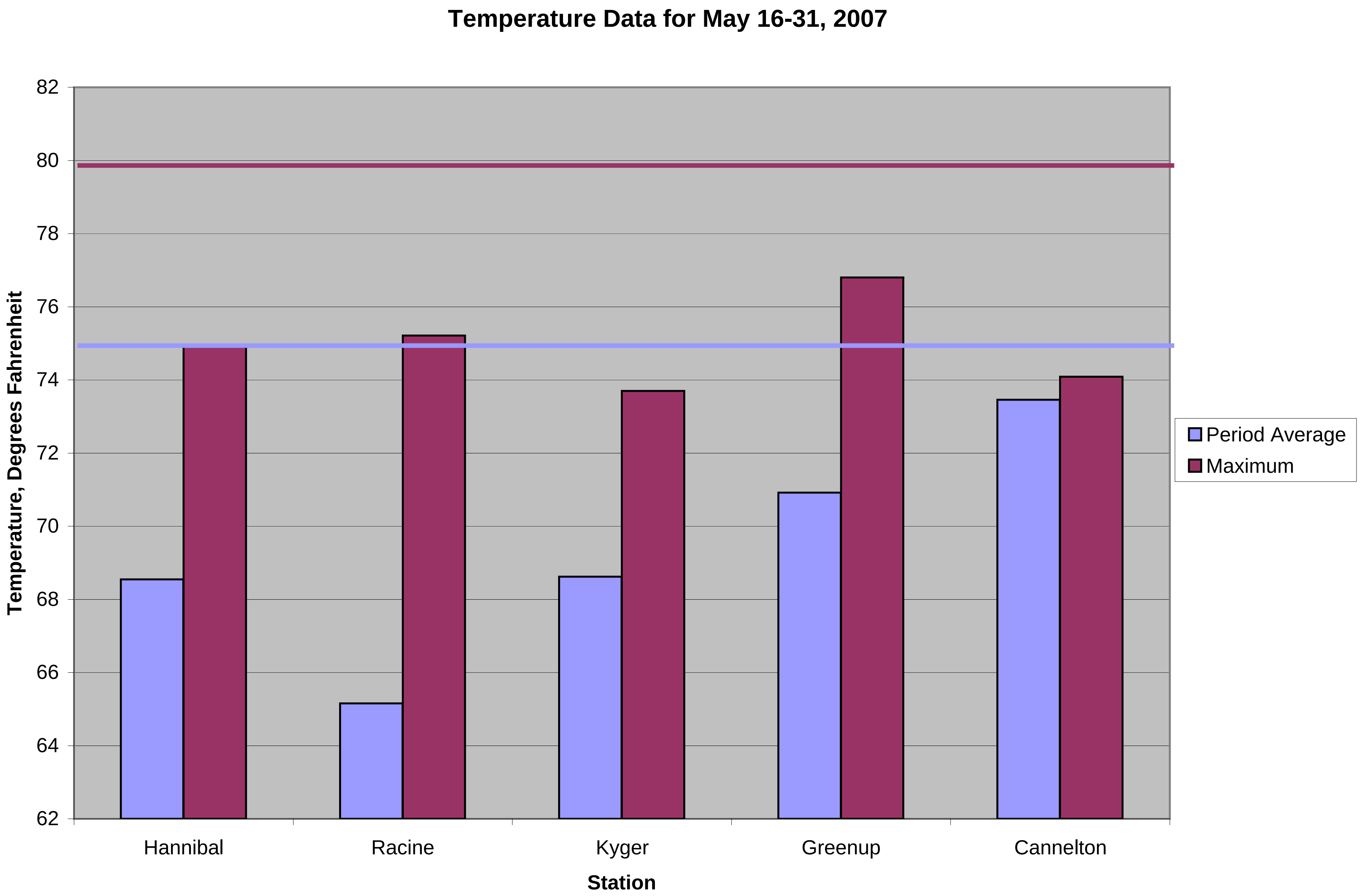
72
70
68
66
64
62
60
Hannibal
Racine
Kyger
Greenup
Station
Period Average
Maximum


Temperature Data for May 16-31, 2007
82
80
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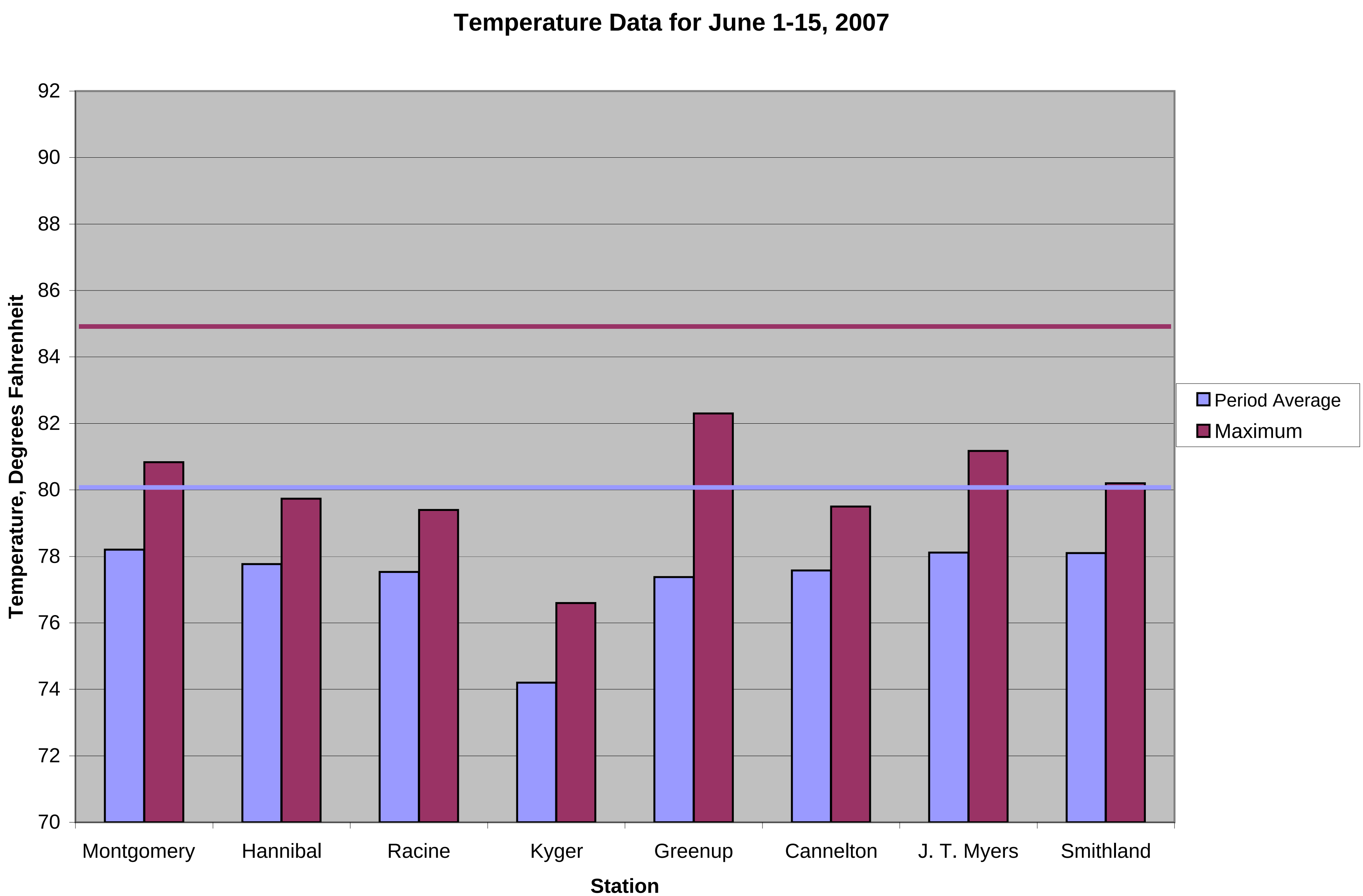
74
72
70
68
66
64
62
Temperature, Degrees Fahrenheit
Hannibal
Racine
Kyger
Greenup
Cannelton
Station
Period Average
Maximum


Temperature Data for June 1-15, 2007
92
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82
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76
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72
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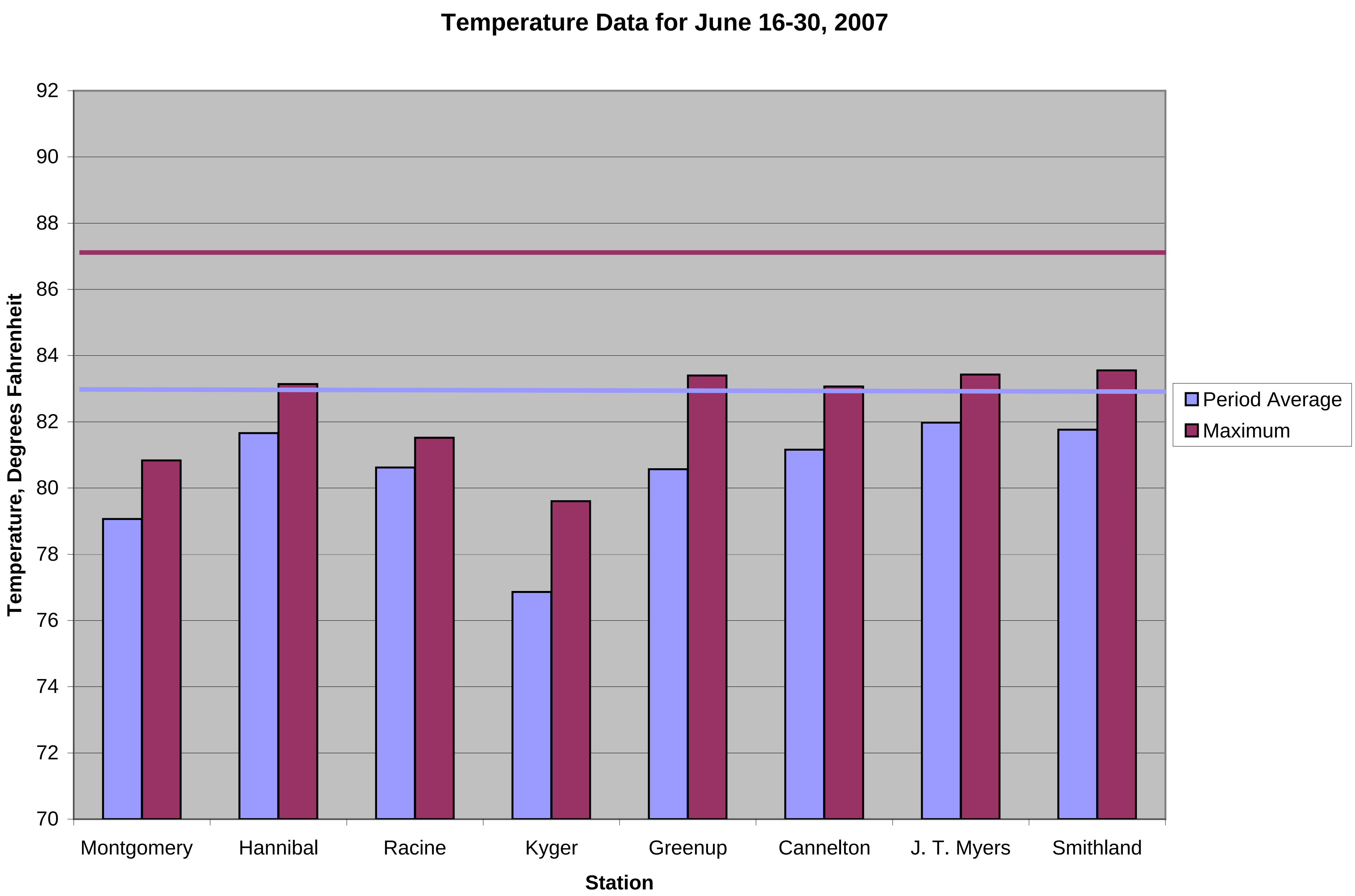
Temperature, Degrees Fahrenheit
Period Average
Maximum
Montgomery
Hannibal
Racine
Kyger
Greenup
Cannelton
J. T. Myers
Smithland
Station


Temperature Data for June 16-30, 2007
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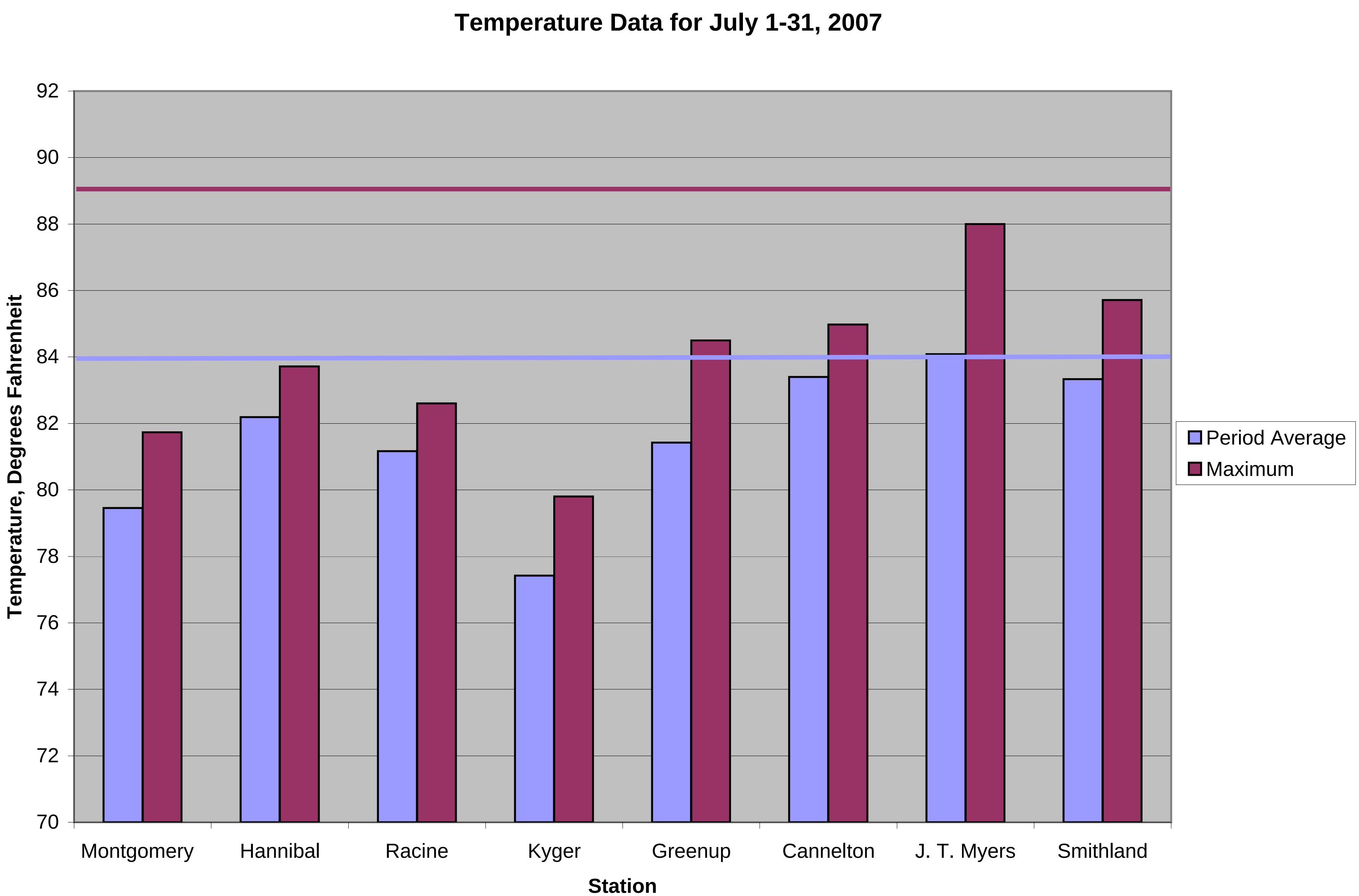
Temperature, Degrees Fahrenheit
Period Average
Maximum
Montgomery
Hannibal
Racine
Kyger
Greenup
Cannelton
J. T. Myers
Smithland
Station


Temperature Data for July 1-31, 2007
92
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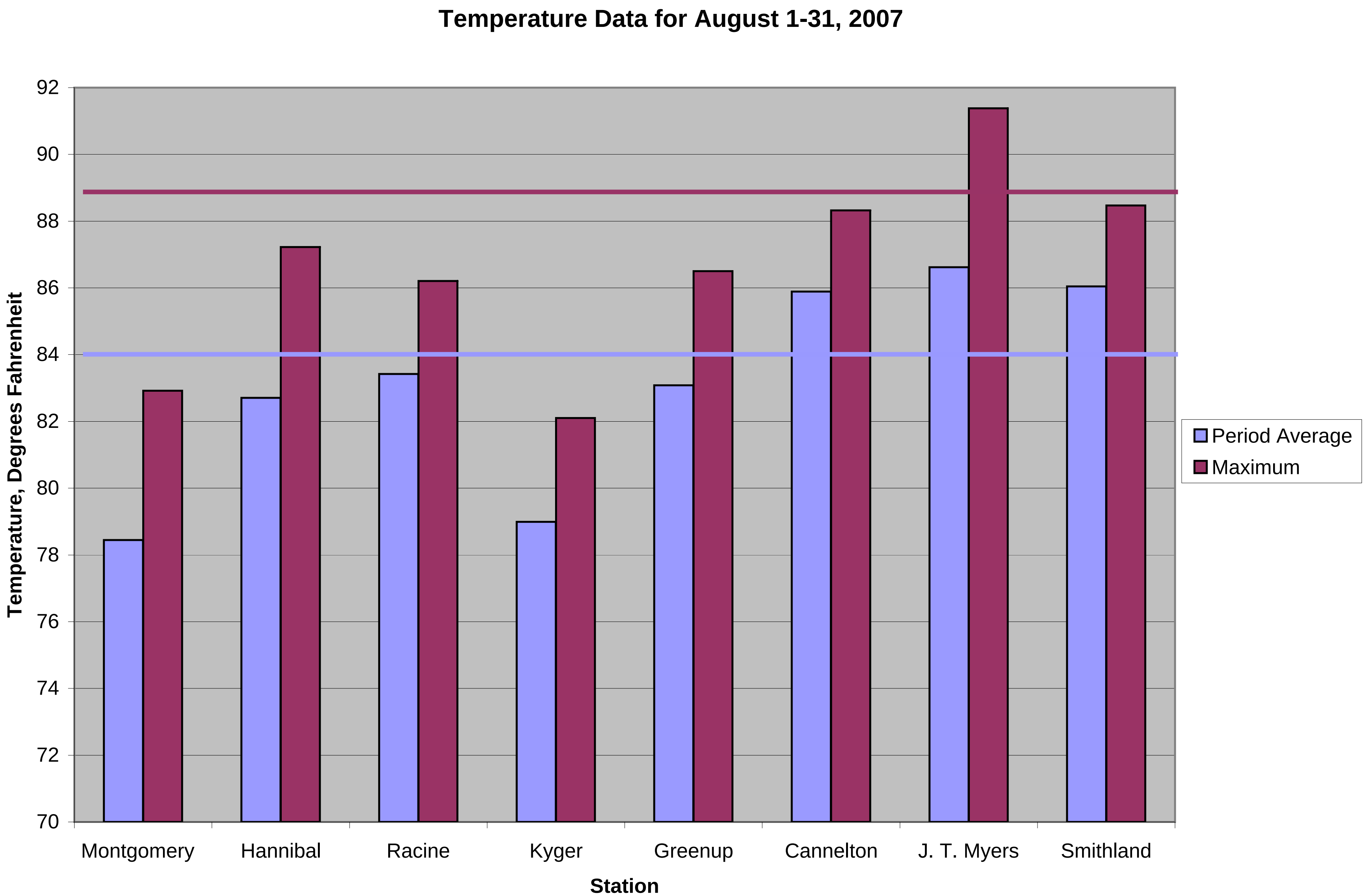
72
70
Temperature, Degrees Fahrenheit
Montgomery
Hannibal
Racine
Kyger
Greenup
Cannelton
J. T. Myers
Smithland
Station
Period Average
Maximum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92
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88
86
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80
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72
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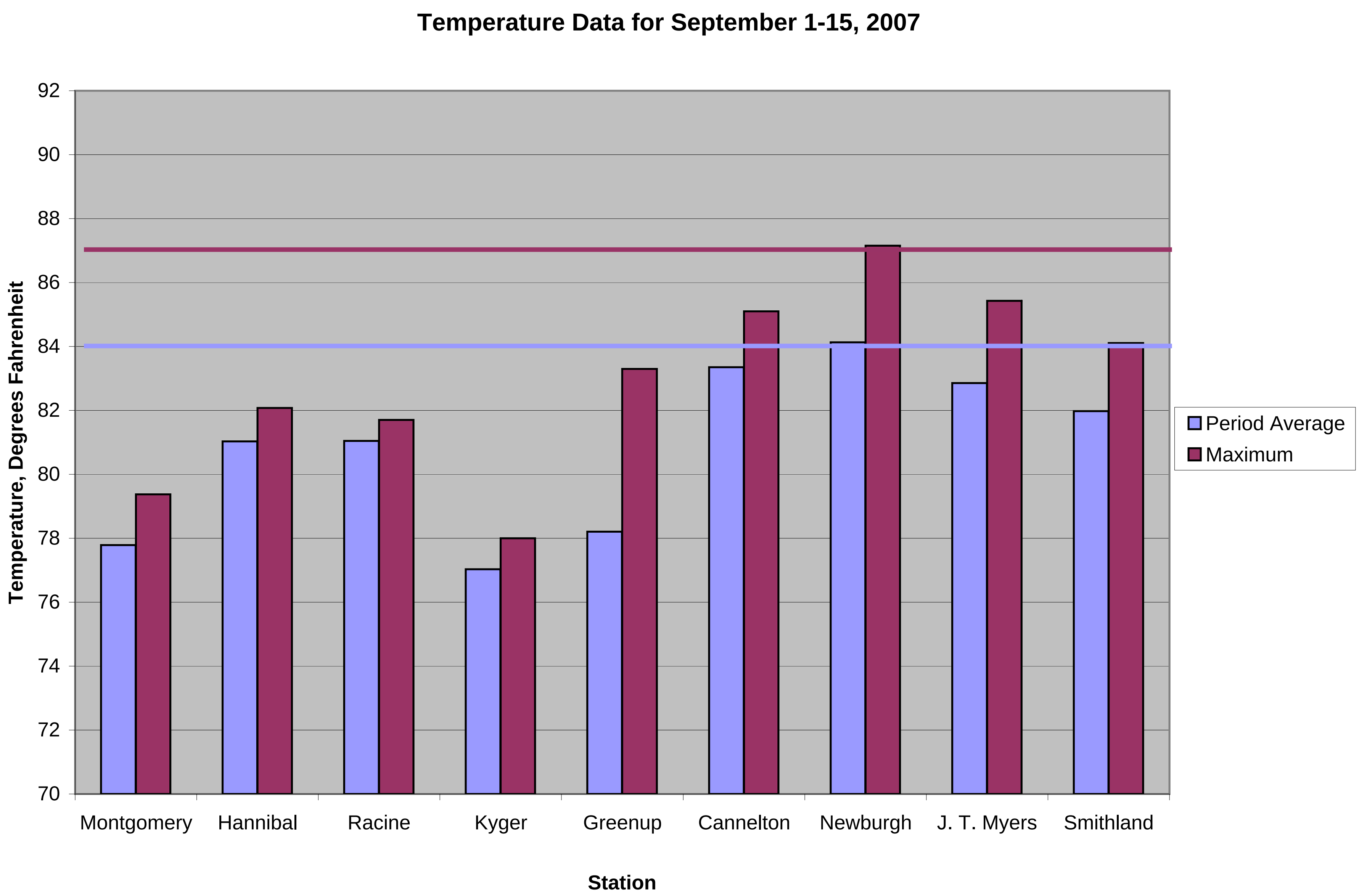
Temperature, Degrees Fahrenheit
Montgomery
Hannibal
Racine
Kyger
Greenup
Cannelton
J. T. Myers
Smithland
Station
Period Average
Maximum


Temperature Data for September 1-15, 2007
92
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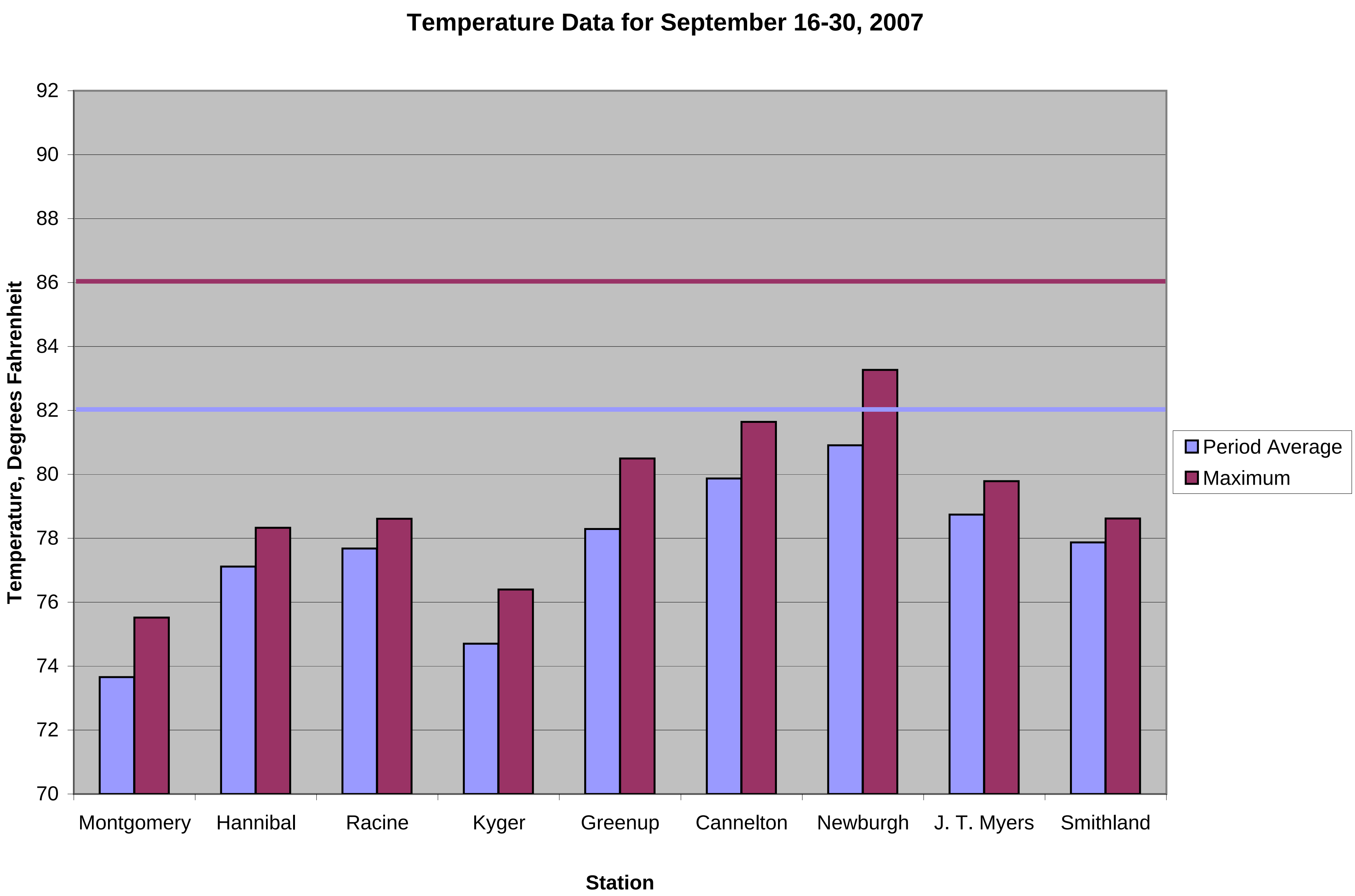
Temperature, Degrees Fahrenheit
Montgomery
Hannibal
Racine
Kyger
Greenup
Cannelton
Newburgh
J. T. Myers
Smithland
Station
Period Average
Maximum


Temperature Data for September 16-30, 2007
Temperature, Degrees Fahrenheit
92
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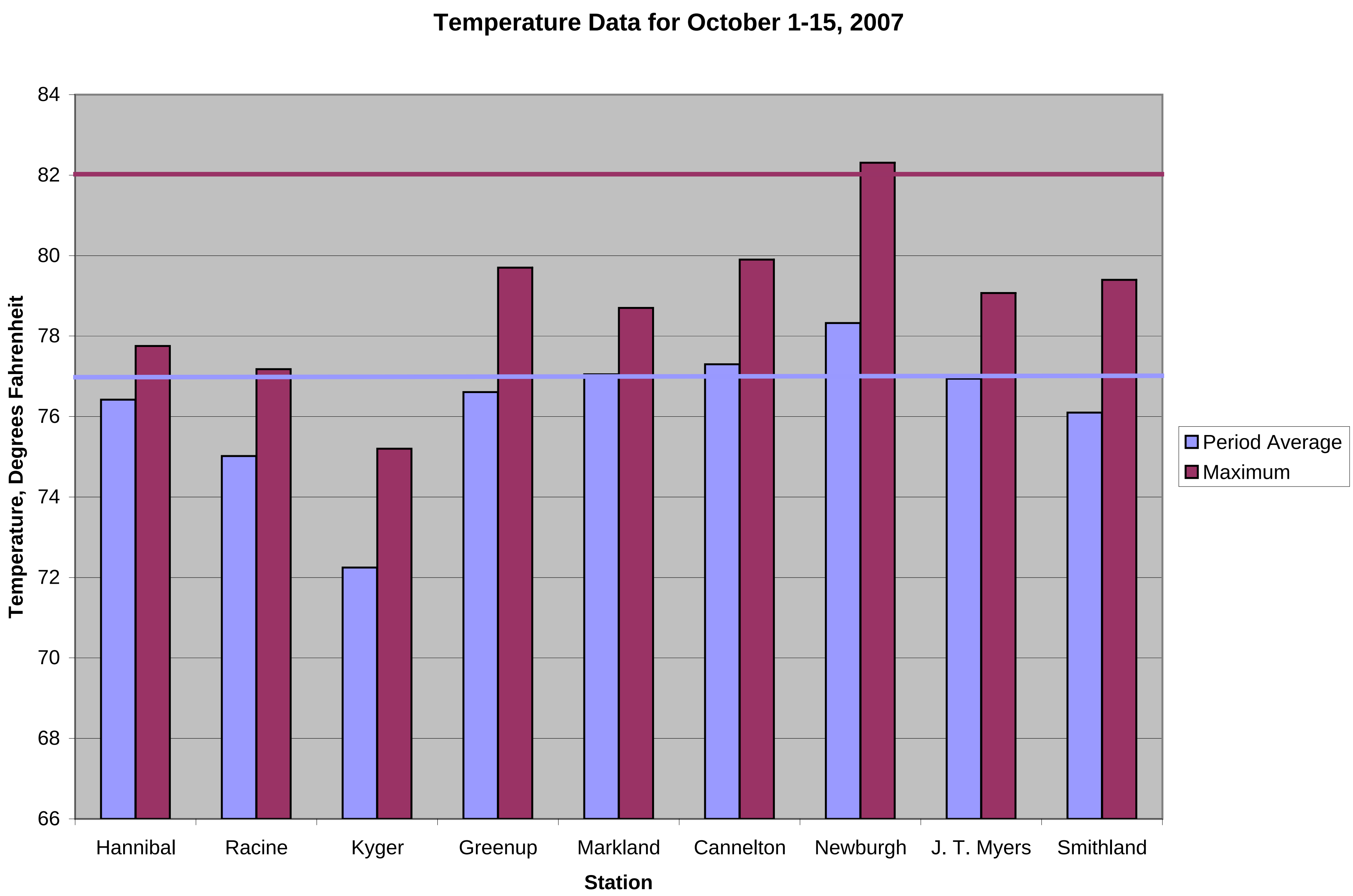
Montgomery
Hannibal
Racine
Kyger
Greenup
Cannelton
Newburgh
J. T. Myers
Smithland
Station
Period Average
Maximum


Temperature Data for October 1-15, 2007
Temperature, Degrees Fahrenheit
84
82
80
78
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72
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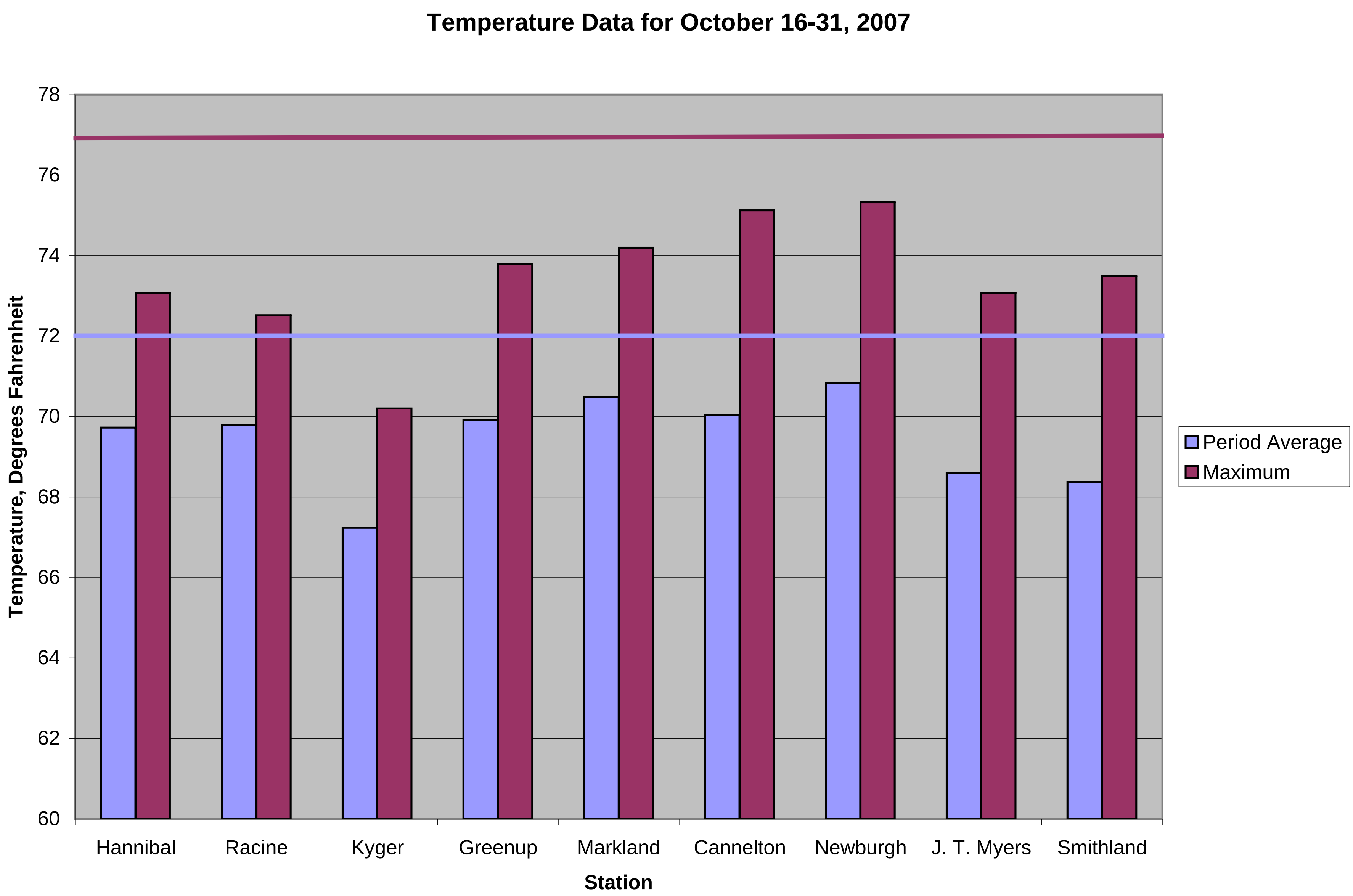
Hannibal
Racine
Kyger
Greenup
Markland
Cannelton
Newburgh
J. T. Myers
Smithland
Station
Period Average
Maximum


Temperature Data for October 16-31, 2007
Temperature, Degrees Fahrenheit
78
76
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Hannibal
Racine
Kyger
Greenup
Markland
Cannelton
Newburgh
J. T. Myers
Smithland
Station
Period Average
Maximum

Appendix F: Longitudinal Bacteria Sampling Results

Survey F: Longitudional Bacteria Survey 2003 - 2006

Longitudinal Bacteria Survey Logistics and Details								
Round	**Survey**	**Reach**	**Year**	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**
1	**A**	Upper	2003	Jul 28-31	Aug 4-7	Aug 11-14	Aug 18-21	Aug 25-28
1	**B**	Mid	2003	Sept 29 - Oct 2	Oct 6-9	Oct 13-16	Oct 20-23	Oct 27-30
1	**C**	Lower	2004	May 3-6	May 10-13	May 17-20	May 24-27	June 7-10
2	**D**	Upper	2004	July 26-29	Aug 2-5	Aug 9-12	Aug 16-19	Aug 23-26
2	**F**	Mid	2005	May 9-12	May 16-19	May 23-26	May 30 - Jun 2	Jun 6-9
2	**E**	Lower	2004	Sept 13-16	Sept 20-23	Sept 27-30	Oct 4-7	Oct 11-14
3	**I**	Upper	2006	Sep 11-14	Sep 18-21	Sep 25-28	Oct 2-5	Oct 9-12
3	**G**	Mid	2006	May 22-25	May 30 - Jun 2	Jun 5-8	Jun 12-15	Jun 19-22
3	**H**	Lower	2006	Jul 24-27	Jul 31 - Aug 3	Aug 7-10	Aug 14-17	Aug 21-24
4	**L**	Upper	2007	Sep 24-27				
4	**L**	Mid	2007		Oct 1-4			
4	**L**	Lower	2007			Oct 8-11		

Appendix F: E. coli Concentration Data in colonies per 100 mL

		Round 1			Round 2			Round 3		
Mile Point		Monthly Geometric Mean	Percent Individual Exceedences		Monthly Geometric Mean	Percent Individual Exceedences		Monthly Geometric Mean	Percent Individual Exceedences	Geometric Mean Exceedences
1.5	A	**196**	**46.7**	D	**532**	**53.3**	I	54	0	**exceeds**
3.3	A	**213**	**53.3**	D	**418**	**46.7**	I	88	**20.0**	**exceeds**
6.4	A	**308**	**53.3**	D	**289**	**40.0**	I	59	0	**exceeds**
9.5	A	**198**	**60.0**	D	**381**	**60.0**	I	48	0	**exceeds**
11.4	A	**172**	**53.3**	D	**297**	**53.3**	I	50	6.7	**exceeds**
12.5	A	**180**	**60.0**	D	**238**	**53.3**	I	60	6.7	**exceeds**
14.4	A	**200**	**53.3**	D	**313**	**46.7**	I	56	6.7	**exceeds**
17.7	A	**155**	**60.0**	D	**312**	**46.7**	I	64	**13.3**	**exceeds**
20.5	A	**203**	**60.0**	D	**353**	**66.7**	I	51	0	**exceeds**
20.8	A	**181**	**53.3**	D	**261**	**46.7**	I	50	0	**exceeds**
21.8	A	**161**	**60.0**	D	**226**	**46.7**	I	40	0	**exceeds**
22.9	A	**214**	**60.0**	D	**357**	**66.7**	I	120	**33.3**	**exceeds**
25.5	A	**131**	**40.0**	D	**208**	**46.7**	I	48	0	**exceeds**
25.8	A	**177**	**46.7**	D	**203**	**46.7**	I	55	**13.3**	**exceeds**
26.4	A	**160**	**46.7**	D	**191**	**46.7**	I	59	6.7	**exceeds**
28.3	A	**144**	**46.7**	D	**150**	**46.7**	I	73	**20.0**	**exceeds**
32.9	A	**151**	**60.0**	D	**132**	**40.0**	I	55	**20.0**	**exceeds**
37.6	A	**164**	**64.3**	D	95	**40.0**	I	55	**20.0**	**exceeds**
41.2	A	125	**60.0**	D	94	**40.0**	I	51	**20.0**	
44.8	A	**145**	**60.0**	D	106	**40.0**	I	52	**20.0**	**exceeds**
48.7	A	**135**	**46.7**	D	78	**40.0**	I	54	**20.0**	**exceeds**
52.5	A	103	**53.3**	D	54	7.7	I	36	**20.0**	
56.4	A	**139**	**60.0**	D	58	7.1	I	37	**20.0**	**exceeds**
60.3	A	128	**60.0**	D	69	**13.3**	I	74	**40.0**	
66.4	A	**237**	**66.7**	D	94	**13.3**	I	88	**20.0**	**exceeds**
66.9	A	**194**	**60.0**	D	104	**14.3**	-	-	-	**exceeds**
68.2	-	-	-	-	-	-	I	99	**20.0**	**exceeds**
70.7	A	**170**	**53.3**	D	104	**13.3**	I	73	**20.0**	**exceeds**
71.8	A	**176**	**60.0**	D	**132**	**26.7**	I	74	**20.0**	**exceeds**
74.9	A	110	**40.0**	D	71	6.7	I	48	6.7	
80.2	A	99	**46.7**	D	65	**13.3**	I	36	0	
85.6	A	84	**33.3**	D	46	0	I	31	0	
91.2	A	**151**	**40.0**	D	81	**26.7**	I	48	0	**exceeds**
94.2	A	**228**	**53.3**	D	78	**13.3**	I	36	0	**exceeds**
97.8	A	**202**	**33.3**	D	124	**20.0**	I	40	0	**exceeds**
102.6	A	**154**	**33.3**	D	76	6.7	I	32	0	**exceeds**
107.7	A	121	**20.0**	D	43	0	I	26	0	
113.0	A	67	**20.0**	D	50	0	I	22	0	
118.3	A	49	**20.0**	D	35	0	I	15	0	
123.7	A	55	**20.0**	D	28	0	I	13	0	
124.9	A	44	**20.0**	D	27	0	I	12	0	
129.1	A	65	**20.0**	D	48	6.7	I	15	0	
133.4	A	68	**20.0**	D	47	0	I	21	0	
138.7	A	63	**13.3**	D	51	6.7	I	13	0	
144.2	A	44	**20.0**	D	29	0	I	14	0	
149.6	A	34	**13.3**	D	21	0	I	12	0	
155.0	A	36	**13.3**	D	15	0	I	9	0	
160.4	A	53	0	D	23	0	I	14	0	
165.8	A	70	**13.3**	D	16	0	I	16	6.7	
171.2	A	66	**13.3**	D	15	0	I	12	0	
175.1	A	80	**13.3**	D	18	0	I	19	0	
179.4	A	113	**33.3**	D	16	0	I	17	0	
183.5	A	114	**20.0**	D	18	0	I	16	0	
185.9	A	85	0	D	22	0	I	27	0	
190.8	A	70	0	D	18	0	I	30	6.7	

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in colonies per 100 mL

		Round 1			Round 2			Round 3		
Mile Point		Monthly Geometric Mean	Percent Individual Exceedences		Monthly Geometric Mean	Percent Individual Exceedences		Monthly Geometric Mean	Percent Individual Exceedences	Geometric Mean Exceedences
195.7	A	46	0	D	15	0	I	22	0	
200.7	A	43	0	D	16	0	I	17	0	
205.7	A	50	0	D	17	0	I	**157**	**53.3**	**exceeds**
210.7	A	43	0	D	11	0	I	**162**	**53.3**	**exceeds**
215.7	A	42	0	D	10	0	I	**179**	**46.7**	**exceeds**
220.4	A	42	0	D	11	0	I	**176**	**53.3**	**exceeds**
225.4	A	35	0	D	12	0	I	**156**	**40.0**	**exceeds**
230.4	A	30	0	D	11	0	I	113	**40.0**	
235.6	A	28	0	D	14	0	I	**132**	**40.0**	**exceeds**
240.4	A	39	0	D	16	0	I	129	**40.0**	
245.4	A	45	0	D	14	0	I	**150**	**46.7**	**exceeds**
250.4	A	62	6.7	D	30	6.7	I	**213**	**60.0**	**exceeds**
255.5	A	54	0	D	31	6.7	I	**288**	**60.0**	**exceeds**
260.6	A	44	0	D	22	0	I	**256**	**60.0**	**exceeds**
265.7	A	47	0	D	28	0	I	**294**	**60.0**	**exceeds**
269.8	A	74	6.7	D	47	**13.3**	I	**227**	**46.7**	**exceeds**
275.2	A	53	0	D	26	0	I	**148**	**20.0**	**exceeds**
280.8	B	40	0	F	28	0	G	14	0	**exceeds**
280.8	-	-	-	-	-	-	I	**164**	**33.3**	**exceeds**
285.9	B	40	0	F	24	0	G	9	0	**exceeds**
285.9	-	-	-	-	-	-	I	**195**	**46.7**	**exceeds**
291.4	B	38	0	F	20	0	G	8	0	**exceeds**
291.4	-	-	-	-	-	-	I	**175**	**46.7**	**exceeds**
296.6	B	34	0	F	18	0	G	8	0	**exceeds**
296.6	-	-	-	-	-	-	I	**145**	**40.0**	**exceeds**
302.0	B	40	6.7	F	16	0	G	5	0	
307.7	B	57	**20.0**	F	39	6.7	G	24	0	
313.3	B	68	**20.0**	F	58	6.7	G	48	**20.0**	
317.2	B	77	**13.3**	F	53	6.7	G	51	**20.0**	
321.5	B	68	**13.3**	F	36	0	G	58	6.7	
327.4	B	51	**13.3**	F	24	0	G	35	7.1	
327.7	B	67	**20.0**	F	30	0	G	37	**20.0**	
328.0	B	79	**13.3**	F	28	0	G	44	**13.3**	
332.5	B	55	6.7	F	19	0	G	31	0	
338.1	B	49	**13.3**	F	21	0	G	20	0	
343.5	B	45	6.7	F	19	0	G	25	0	
349.2	B	65	**13.3**	F	22	0	G	23	0	
352.0	B	67	**20.0**	F	18	0	G	23	0	
353.8	B	55	6.7	F	18	0	G	26	0	
359.3	B	84	**26.7**	F	19	0	G	41	6.7	
364.6	B	54	**13.3**	F	17	0	G	29	0	
369.8	B	60	**20.0**	F	14	0	G	19	0	
375.0	B	58	**13.3**	F	16	0	G	18	0	
380.4	B	66	**13.3**	F	12	0	G	20	0	
385.4	B	58	**26.7**	F	11	0	G	12	0	
390.6	B	50	**13.3**	F	9	0	G	14	0	
395.0	B	57	**20.0**	F	9	0	G	11	0	
400.4	B	37	6.7	F	11	0	G	8	0	
405.8	B	46	**13.3**	F	13	0	G	16	0	
411.4	B	34	0	F	11	0	G	13	0	
416.4	B	24	0	F	9	0	G	9	0	
421.6	B	21	0	F	8	0	G	7	0	
426.4	B	27	0	F	8	0	G	7	0	
431.4	B	21	0	F	7	0	G	6	0	
436.8	B	24	0	F	7	0	G	13	0	

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in colonies per 100 mL

		Round 1			Round 2			Round 3		
Mile Point		Monthly Geometric Mean	Percent Individual Exceedences		Monthly Geometric Mean	Percent Individual Exceedences		Monthly Geometric Mean	Percent Individual Exceedences	Geometric Mean Exceedences
441.5	B	24	0	F	7	0	G	6	0	
446.5	B	23	0	F	8	0	G	7	0	
451.6	B	29	0	F	6	0	G	6	0	
455.3	B	32	0	F	6	0	G	22	**13.3**	
460.0	B	25	0	F	5	0	G	14	**13.3**	
465.0	B	42	**13.3**	F	8	0	G	10	0	
468.7	B	65	**20.0**	F	8	0	G	13	0	
472.7	B	84	**26.7**	F	36	6.7	G	40	0	
477.6	B	103	**20.0**	F	42	6.7	G	34	0	
482.2	B	130	**26.7**	F	36	6.7	G	66	**20.0**	
486.2	B	**169**	**20.0**	F	30	0	G	61	**20.0**	**exceeds**
489.7	B	96	**20.0**	F	27	0	G	27	0	
493.2	B	**147**	25	F	28	0	G	34	0	**exceeds**
498.0	B	**134**	**20.0**	F	23	0	G	30	0	**exceeds**
503.1	B	59	0	F	12	0	G	21	0	
508.3	B	52	0	F	10	0	G	13	0	
513.4	B	50	0	F	7	0	G	11	0	
518.5	B	39	6.7	F	8	0	G	10	0	
523.4	B	37	**20.0**	F	5	0	G	9	0	
528.4	B	34	**20.0**	F	5	0	G	8	0	
533.2	B	39	**20.0**	F	6	0	G	8	0	
538.5	B	47	**20.0**	F	7	0	G	8	0	
543.5	B	34	0	F	8	0	G	7	0	
548.3	B	41	0	F	8	0	G	8	0	
553.6	B	41	0	F	7	0	G	6	0	
558.8	B	42	**13.3**	F	8	0	G	6	0	
562.7	B	39	**13.3**	F	6	0	G	10	0	
567.6	B	35	0	F	7	0	G	6	0	
572.5	B	31	0	F	4	0	G	7	0	
577.4	B	31	0	F	5	0	G	5	0	
582.9	B	28	0	F	5	0	G	5	0	
587.8	B	19	0	F	4	0	G	5	0	
592.2	B	21	0	F	5	0	G	7	0	
597.1	B	19	0	F	4	0	G	8	0	
602.2	B	17	0	F	5	0	G	18	6.7	
604.3	B	17	0	F	6	0	G	47	**20.0**	
607.5	B	40	6.7	F	11	0	G	51	**20.0**	**exceeds**
607.5	-	-	-	-	-	-	H	23	0	**exceeds**
609.7	B	39	6.7	F	13	0	G	123	**40.0**	**exceeds**
609.7	-	-	-	-	-	-	H	23	0	**exceeds**
612.2	B	26	0	F	16	0	G	**157**	**20.0**	**exceeds**
612.2	-	-	-	-	-	-	H	26	6.7	**exceeds**
617.6	B	51	**13.3**	F	32	6.7	G	**280**	**60.0**	**exceeds**
617.6	-	-	-	-	-	-	H	63	**20.0**	**exceeds**
623.1	B	57	**13.3**	F	20	6.7	G	**146**	**40.0**	**exceeds**
623.1	-	-	-	-	-	-	H	49	**20.0**	**exceeds**
628.1	B	49	**13.3**	F	30	6.7	G	**209**	**46.7**	**exceeds**
628.1	-	-	-	-	-	-	H	49	**13.3**	**exceeds**
630.0	C	**155**	**40.0**	E	104	**40.0**	-	-	-	**exceeds**
631.6	C	**156**	**40.0**	E	111	**40.0**	G	**819**	66.7	**exceeds**
631.6	-	-	-	-	-	-	H	54	**20.0**	**exceeds**
637.6	C	**180**	**46.7**	E	107	**46.7**	G	**2301**	91.7	**exceeds**
637.6	-	-	-	-	-	-	H	45	**20.0**	**exceeds**
643.1	C	**218**	**60.0**	E	101	**40.0**	G	**472**	58.3	**exceeds**
643.1	-	-	-	-	-	-	H	30	0	**exceeds**

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in colonies per 100 mL

Mile Point		Round 1 Monthly Geometric Mean	Round 1 Percent Individual Exceedences		Round 2 Monthly Geometric Mean	Round 2 Percent Individual Exceedences		Round 3 Monthly Geometric Mean	Round 3 Percent Individual Exceedences	Geometric Mean Exceedences
648.9	C	**228**	**60.0**	E	95	**33.3**	G	91	11.1	**exceeds**
648.9	-	-	-	-	-	-	H	21	0	**exceeds**
654.0	C	**229**	**53.3**	E	85	**26.7**	H	15	0	**exceeds**
659.2	C	**227**	**53.3**	E	65	**13.3**	H	15	0	**exceeds**
664.2	C	**254**	**60.0**	E	75	**20.0**	H	10	0	**exceeds**
669.1	C	**216**	**60.0**	E	77	**26.7**	H	16	6.7	**exceeds**
674.5	C	**174**	**46.7**	E	66	**26.7**	H	9	**13.3**	**exceeds**
680.4	C	**181**	**53.3**	E	61	**13.3**	H	9	0	**exceeds**
685.6	C	**166**	**46.7**	E	60	0	H	7	0	**exceeds**
690.7	C	**185**	**60.0**	E	52	0	H	6	0	**exceeds**
695.6	C	**148**	**40.0**	E	49	0	H	3	0	**exceeds**
700.9	C	**162**	**46.7**	E	44	0	H	8	0	**exceeds**
706.2	C	**143**	**46.7**	E	35	0	H	5	0	**exceeds**
711.5	C	90	**40.0**	E	33	0	H	6	0	
717.4	C	104	**40.0**	E	34	0	H	4	0	
721.5	C	**200**	**46.7**	E	66	**13.3**	H	3	0	**exceeds**
727.0	C	**182**	**60.0**	E	59	**13.3**	H	5	0	**exceeds**
732.5	C	**182**	**60.0**	E	66	**13.3**	H	14	6.7	**exceeds**
738.8	C	**180**	**40.0**	E	43	0	H	10	0	**exceeds**
742.4	C	**182**	**53.3**	E	44	0	H	8	0	**exceeds**
746.4	C	**167**	**46.7**	E	42	0	H	5	0	**exceeds**
750.6	C	**162**	**46.7**	E	39	0	H	9	0	**exceeds**
754.8	C	**166**	**40.0**	E	44	0	H	9	0	**exceeds**
758.0	C	**158**	**40.0**	E	64	6.7	H	26	**20.0**	**exceeds**
763.2	C	**144**	**40.0**	E	35	0	H	56	**20.0**	**exceeds**
769.1	C	**156**	**40.0**	E	33	0	H	16	0	**exceeds**
773.6	C	**156**	**40.0**	E	30	6.7	H	11	0	**exceeds**
778.2	C	**141**	**33.3**	E	35	0	H	15	0	**exceeds**
782.8	C	**136**	**40.0**	E	39	0	H	18	0	**exceeds**
787.0	C	124	**33.3**	E	35	0	H	10	0	
792.7	C	**135**	**26.7**	E	36	0	H	14	6.7	**exceeds**
794.2	C	**153**	**33.3**	E	53	6.7	H	25	6.7	**exceeds**
799.5	-	-	-	-	-	-	H	31	**20.0**	**exceeds**
800.0	C	**152**	**40.0**	E	92	**20.0**	-	-	-	**exceeds**
805.8	C	**144**	**33.3**	E	43	0	H	34	**20.0**	**exceeds**
811.3	C	**177**	**40.0**	E	59	0	H	45	6.7	**exceeds**
817.0	C	**222**	**53.3**	E	70	6.7	H	19	0	**exceeds**
823.2	C	**257**	**73.3**	E	69	0	H	17	0	**exceeds**
829.5	C	**204**	**53.3**	E	60	0	H	12	0	**exceeds**
832.2	C	**162**	**26.7**	E	45	0	H	29	0	**exceeds**
837.2	C	**137**	**40.0**	E	41	0	H	20	0	**exceeds**
842.3	C	**140**	**26.7**	E	40	0	H	12	0	**exceeds**
846.5	C	120	**26.7**	E	49	6.7	H	14	0	
851.3	C	115	**13.3**	E	46	0	H	13	0	
855.5	C	120	**20.0**	E	40	0	H	10	0	
859.7	C	118	**20.0**	E	42	0	H	7	0	
864.4	C	106	**26.7**	E	42	0	H	5	0	
869.8	C	113	**26.7**	E	43	0	H	4	0	
875.7	C	78	**20.0**	E	36	0	H	5	0	
880.7	C	65	**20.0**	E	25	0	H	4	0	
885.0	C	66	6.7	E	26	0	H	3	0	
889.2	C	51	6.7	E	32	0	H	3	0	
891.7	C	48	6.7	E	27	0	H	2	0	
897.5	C	82	**33.3**	E	17	0	H	3	0	
903.2	C	80	**40.0**	E	16	0	H	2	0	

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in colonies per 100 mL

		Round 1			**Round 2**			**Round 3**		
Mile Point		Monthly Geometric Mean	Percent Individual Exceedences		Monthly Geometric Mean	Percent Individual Exceedences		Monthly Geometric Mean	Percent Individual Exceedences	Geometric Mean Exceedences
908.0	C	72	**26.7**	E	19	0	H	2	0	
912.6	C	46	6.7	E	14	0	H	2	0	
917.6	C	58	**20.0**	E	14	0	H	2	0	
923.4	C	53	**20.0**	E	15	0	H	2	0	
928.2	C	43	6.7	E	13	0	H	4	0	
932.2	C	36	0	E	12	0	H	2	0	
936.2	C	31	0	E	16	0	H	5	0	
937.7	C	31	0	E	15	0	H	4	0	
940.9	C	32	0	E	16	0	H	6	0	
944.2	C	28	0	E	15	0	H	4	0	
947.5	C	32	6.7	E	17	0	H	4	0	
952.2	C	33	6.7	E	21	0	H	4	0	
957.7	C	39	6.7	E	16	0	H	4	0	
963.0	C	33	6.7	E	18	0	H	3	0	
969.2	C	34	7.1	E	21	0	H	5	0	
974.1	C	32	6.7	E	18	0	H	6	0	
979.2	C	34	6.7	E	19	0	H	11	0	

Exceeds Criteria
E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL
E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey A																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
1.5	400	320	710	178	238	267	750	820	790	191	119	152	24	25	24	196	7
3.3	430	370	400	285	235	445	960	750	1330	185	144	162	22	19	26	213	8
6.4	270	340	370	222	432	421	1110	960	1040	108	185	139	172	148	194	308	8
9.5	690	173	720	335	450	490	800	960	1010	242	172	146	3	21	16	198	9
11.4	370	218	670	386	345	380	540	820	880	228	125	99	12	10	9	172	8
12.5	490	264	810	378	309	386	620	930	990	194	173	147	5	12	8	180	9
14.4	890	200	440	435	357	740	645	720	500	192	143	238	14	15	11	200	8
17.7	610	410	630	502	450	930	459	760	480	99	93	89	3	5	12	155	9
20.5	990	680	660	770	700	1040	535	635	770	98	111	114	3	6	26	203	9
20.8	1220	1300	109	1110	750	750	465	504	580	93	98	199	6	7	6	181	8
21.8	1190	640	1190	1260	960	990	380	496	500	46	105	115	2	5	2	161	9
22.9	1220	1210	880	1350	1080	606	1350	565	469	108	80	228	6	5	4	214	9
25.5	240	200	173	1150	770	647	599	410	479	50	73	82	14	7	4	131	6
25.8	170	1190	1660	193	379	1300	561	385	520	67	78	87	10	14	24	177	7
26.4	200	200	1470	365	276	521	526	518	540	96	93	131	11	14	14	160	7
28.3	264	350	1560	223	324	600	214	383	504	70	89	86	14	11	12	144	7
32.9	255	560	1920	450	512	395	419	580	511	74	80	75	5	8	8	151	9
37.6	420	700	1300	486	547	620	455	299	328	51	53	47	6	5	-	164	9
41.2	440	580	910	518	500	526	260	337	288	64	50	47	10	5	5	125	9
44.8	1020	1050	1470	529	540	580	248	253	244	28	73	68	7	11	6	145	9
48.7	1790	1080	680	448	605	562	214	325	192	33	34	53	5	9	13	135	7
52.5	530	720	650	534	493	368	285	248	240	34	28	22	9	7	3	103	8
56.4	930	1330	1020	630	640	572	533	253	294	33	29	38	9	6	6	139	9
60.3	1240	810	880	660	534	399	341	408	386	28	29	19	7	8	7	128	9
66.4	1173	860	1970	660	505	534	385	296	247	70	34	32	50	34	320	237	10
66.9	1370	1350	1550	670	430	559	566	278	295	74	25	26	33	28	21	194	9
70.7	1350	1682	1670	437	495	445	260	422	234	42	35	29	24	23	13	170	8
71.8	1660	1500	1700	417	328	381	425	406	405	46	26	45	8	24	30	176	9
74.9	1150	3080	2280	326	266	264	201	158	238	41	17	12	6	5	12	110	6
80.2	1110	2190	1790	192	492	345	276	210	243	21	15	24	4	5	3	99	7
85.6	630	340	560	167	249	262	152	167	126	24	28	26	12	10	9	84	5
91.2	575	480	655	274	236	150	118	330	162	21	27	52	221	6	1080	151	6
94.2	630	558	750	249	208	291	162	153	166	21	30	70	498	402	1609	228	8
97.8	585	385	583	166	178	155	139	128	147	29	34	118	910	148	1550	202	5
102.6	466	461	580	172	147	276	135	132	172	21	38	35	515	173	102	154	5
107.7	1020	655	641	147	112	150	114	162	115	34	32	22	155	55	40	121	3
113.0	545	910	648	126	114	152	91	140	67	20	13	34	12	5	7	67	3
118.3	327	519	568	93	68	114	142	93	104	20	10	16	6	3	4	49	3

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey A																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
123.7	**408**	**590**	**830**	68	99	112	73	93	86	20	19	26	8	9	2	55	3
124.9	**295**	**367**	**582**	84	91	102	86	99	93	28	13	5	5	5	2	44	3
129.1	**555**	**610**	**447**	105	90	89	99	131	102	17	19	21	15	8	10	65	3
133.4	**365**	**487**	**435**	26	69	131	127	96	86	51	26	24	42	7	18	68	3
138.7	**326**	235	**285**	111	77	47	91	58	36	147	25	22	25	17	17	63	2
144.2	**447**	**345**	**309**	86	82	56	93	63	43	19	10	8	12	8	6	44	3
149.6	**344**	**244**	218	73	108	120	46	51	88	10	7	8	1	3	13	34	2
155.0	**342**	233	**269**	93	105	86	53	52	50	16	19	12	7	2	2	36	2
160.4	205	169	238	91	114	102	66	135	58	25	31	17	7	15	13	53	0
165.8	**337**	**365**	205	179	119	115	108	101	79	25	26	24	95	5	13	70	2
171.2	**291**	178	**308**	148	148	144	111	96	127	17	14	31	20	20	**<10**	76	2
175.1	144	**250**	194	167	178	**306**	122	105	172	17	16	58	**<10**	30	55	93	2
179.4	179	140	**249**	113	**261**	**522**	75	98	**281**	18	18	42	36	**300**	200	113	5
183.5	167	172	170	**260**	172	**619**	210	69	79	13	21	34	**500**	100	**<100**	115	3
185.9	236	178	127	142	125	135	40	96	96	45	34	52	68	38	93	85	0
190.8	184	156	156	105	142	127	99	84	89	38	29	26	44	30	21	70	0
195.7	-	60	179	113	102	184	80	69	33	33	28	13	18	18	12	46	0
200.7	69	88	91	115	107	122	70	114	79	23	23	19	8	12	7	43	0
205.7	231	140	121	117	163	147	118	91	138	19	25	16	7	6	6	50	0
210.7	121	144	104	148	140	153	76	166	56	17	12	16	5	8	6	43	0
215.7	115	135	98	141	128	167	75	117	99	6	20	15	10	6	6	42	0
220.4	138	108	96	161	161	127	108	99	86	23	21	9	3	7	6	42	0
225.4	114	86	84	124	126	116	101	70	86	14	14	8	7	4	4	35	0
230.4	90	53	59	126	114	114	73	58	47	11	8	8	6	5	7	30	0
235.6	82	62	56	75	71	166	47	58	38	13	13	8	6	3	6	28	0
240.4	118	105	156	225	172	185	53	33	70	13	16	**<10**	6	3	11	43	0
245.4	72	114	105	138	220	128	79	108	93	12	17	15	7	10	10	45	0
250.4	93	102	**1420**	150	199	140	86	91	146	11	22	16	12	19	13	62	1
255.5	78	107	154	132	173	238	79	102	116	10	22	23	14	8	26	54	0
260.6	15	88	109	133	138	179	73	93	127	24	15	21	8	13	15	44	0
265.7	140	91	68	155	238	172	56	39	39	17	19	9	46	12	15	47	0
269.8	**249**	79	231	115	118	124	46	78	111	15	50	73	93	15	46	74	1
275.2	77	83	178	155	206	135	42	78	50	16	21	17	49	16	21	53	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey B

Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
280.8	101	89	70	25	18	17	6	14	14	60	79	61	74	83	115	40	0
285.9	93	99	64	28	18	25	11	14	14	66	66	56	61	34	156	40	0
291.4	162	111	98	15	16	19	8	19	7	68	68	44	114	24	118	38	0
296.6	153	118	120	26	24	32	6	5	10	75	50	70	24	12	91	34	0
302.0	162	153	91	19	26	31	4	6	6	35	79	65	**1020**	15	83	40	1
307.7	**336**	162	96	**244**	23	24	24	7	5	118	82	78	**560**	11	84	57	3
313.3	**452**	85	111	52	30	21	27	5	30	84	93	82	**1310**	29	**256**	68	3
317.2	**503**	105	114	57	30	37	20	11	24	137	122	75	**1470**	79	72	77	2
321.5	**378**	184	108	33	27	51	8	17	19	47	83	69	**1250**	196	56	68	2
327.4	168	96	105	41	25	17	7	5	13	49	105	51	**375**	**285**	99	51	2
327.7	**305**	120	80	67	32	17	7	12	10	70	64	58	**2220**	**397**	109	67	3
328.0	**304**	132	74	69	35	54	9	8	68	73	53	56	**1470**	227	214	79	2
332.5	196	210	88	24	35	23	16	13	5	42	59	43	**547**	126	220	55	1
338.1	**276**	135	89	39	18	19	14	15	5	36	51	44	**446**	108	119	49	2
343.5	102	111	126	24	22	29	8	15	1	81	67	41	**424**	213	128	45	1
349.2	131	125	138	30	28	45	12	11	29	52	55	35	**325**	210	**642**	65	2
352.0	186	102	152	28	32	52	55	6	10	54	75	62	**252**	**264**	**315**	67	3
353.8	118	91	96	36	29	38	12	6	12	60	68	66	236	163	**402**	55	1
359.3	130	**242**	**530**	26	55	57	9	29	32	47	56	77	190	**469**	**358**	84	4
364.6	84	98	**429**	32	40	53	1	17	24	43	60	76	131	140	**294**	54	2
369.8	179	**337**	**473**	24	37	37	4	12	21	37	50	57	130	130	**265**	60	3
375.0	133	**363**	**640**	26	40	43	5	10	11	50	74	39	101	129	201	58	2
380.4	205	**406**	**575**	34	27	21	15	17	11	60	73	58	64	201	236	66	2
385.4	**345**	**638**	**420**	20	35	19	7	7	4	36	53	60	111	223	**356**	58	4
390.6	172	**429**	**485**	47	29	26	8	6	12	27	25	40	89	112	156	50	2
395.0	**449**	**387**	**269**	30	28	28	8	5	10	47	34	51	196	132	201	57	3
400.4	131	199	**249**	28	15	26	1	9	8	23	49	36	112	139	112	37	1
405.8	190	**244**	**365**	24	26	23	7	10	16	25	31	26	135	114	96	46	2
411.4	75	133	186	29	27	33	23	7	8	36	20	16	50	69	38	34	0
416.4	166	96	93	27	28	20	6	12	5	19	17	26	13	30	15	24	0
421.6	145	115	91	17	12	11	10	5	4	34	25	23	19	23	15	21	0
426.4	125	126	192	11	7	93	11	8	5	30	25	15	33	23	30	27	0
431.4	140	102	105	11	24	12	5	5	5	31	16	28	43	14	17	21	0
436.8	127	141	49	15	15	13	9	13	18	24	32	17	35	12	21	24	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey B																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
441.5	105	138	72	18	15	15	7	7	8	34	25	25	26	26	22	24	0
446.5	147	96	89	26	15	19	7	3	7	22	25	17	37	25	18	23	0
451.6	156	135	102	14	14	20	30	26	13	22	16	15	34	29	23	29	0
455.3	105	54	84	15	26	10	78	17	46	27	28	22	28	35	25	32	0
460.0	102	88	79	16	23	14	24	5	24	32	19	26	16	36	14	25	0
465.0	105	93	101	17	16	15	60	**245**	**277**	28	13	26	28	14	39	42	2
468.7	73	91	147	9	19	30	**830**	**800**	**910**	24	24	29	29	16	58	65	3
472.7	61	73	81	24	26	12	**1150**	**577**	**620**	21	20	25	118	**630**	82	84	4
477.6	96	76	80	20	16	17	**2910**	**2490**	**1660**	19	30	59	200	40	145	103	3
482.2	75	60	101	22	15	33	**8660**	**2490**	**7700**	20	38	38	127	64	**260**	130	4
486.2	68	89	132	11	20	51	**4880**	**15530**	**15530**	20	29	76	209	120	227	169	3
489.7	105	99	190	16	36	58	**475**	**760**	**810**	24	45	84	36	127	70	96	3
493.2	108	144	199	21	30	76	**880**	**780**	**1040**	-	-	-	50	86	225	147	3
498.0	125	232	226	14	25	93	**1080**	**960**	**610**	42	40	93	105	179	214	134	3
503.1	93	91	132	12	37	37	34	68	26	59	26	41	162	214	169	59	0
508.3	79	119	96	11	10	33	40	47	69	23	28	50	181	190	112	52	0
513.4	79	50	59	28	26	40	41	26	29	32	36	35	156	199	126	50	0
518.5	50	75	68	17	25	17	9	22	12	28	30	32	148	150	**260**	39	1
523.4	57	46	68	11	13	26	5	7	15	26	28	29	**356**	**318**	**435**	37	3
528.4	53	44	116	12	7	8	8	13	13	16	15	26	**451**	**354**	**334**	34	3
533.2	55	101	90	14	20	24	10	4	8	13	28	19	**561**	**418**	**436**	39	3
538.5	88	96	93	20	27	22	10	11	12	24	24	19	**510**	**333**	**477**	47	3
543.5	84	99	74	15	17	15	13	9	20	12	24	11	214	142	166	34	0
548.3	96	66	101	41	20	33	68	6	24	15	15	8	194	110	213	41	0
553.6	101	84	122	14	18	21	42	8	46	15	6	24	197	210	228	41	0
558.8	99	72	64	14	17	15	19	7	194	14	10	36	**276**	**261**	171	42	2
562.7	80	84	88	16	23	20	19	7	63	10	8	15	**249**	220	**265**	39	2
567.6	108	86	60	17	17	12	12	26	40	10	8	15	150	222	166	35	0
572.5	86	81	64	9	23	12	16	23	33	11	12	5	105	201	167	31	0
577.4	102	91	71	11	11	12	12	23	37	11	12	10	86	148	155	31	0
582.9	75	88	91	11	18	13	24	12	22	8	17	14	31	140	66	28	0
587.8	68	79	48	3	8	6	26	15	29	12	11	7	18	58	46	19	0
592.2	81	86	63	5	11	6	14	19	40	13	13	14	23	55	20	21	0
597.1	79	86	62	11	8	13	68	61	15	11	9	5	8	17	6	19	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey B																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
602.2	75	70	54	12	50	9	12	11	12	9	7	11	7	16	20	17	0
604.3	86	72	108	58	5	12	11	7	14	9	5	13	14	12	15	17	0
607.5	165	138	125	203	14	24	**422**	39	14	18	14	15	25	19	17	40	1
609.7	119	133	98	119	31	15	**250**	162	15	26	12	14	20	12	15	39	1
612.2	140	100	60	101	19	15	76	11	15	11	8	17	12	18	16	26	0
617.6	136	136	110	161	31	24	**1420**	20	24	20	14	15	**350**	12	16	51	2
623.1	200	100	110	185	33	11	**1860**	35	30	19	17	12	**624**	15	20	57	2
628.1	192	93	108	**447**	43	7	**1010**	22	34	24	15	7	89	28	15	49	2

Exceeds Criteria
E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL
E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey C																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
630.0	**1110**	**790**	**561**	63	22	36	**2280**	24	15	138	105	111	**516**	**272**	162	155	6
631.6	**3650**	**630**	**628**	54	27	31	**1920**	22	10	68	104	184	**511**	167	**260**	156	6
637.6	**1440**	**1140**	**525**	40	58	20	75	57	**570**	79	178	86	**423**	**425**	**317**	180	7
643.1	**1020**	**1010**	**780**	38	42	24	**412**	**406**	**640**	73	108	74	**345**	**450**	**387**	218	9
648.9	**1200**	**1140**	**780**	47	22	28	**539**	**690**	**603**	91	104	125	**282**	**355**	**291**	228	9
654.0	**1220**	**930**	**790**	39	35	33	**790**	**510**	**900**	127	96	81	161	**317**	**329**	229	8
659.2	**1190**	**990**	**990**	22	34	26	**720**	**921**	**1310**	114	73	93	**323**	**322**	142	227	8
664.2	**1120**	**820**	**2010**	60	27	37	**459**	**601**	**530**	228	84	78	**548**	**332**	**273**	254	9
669.1	**1090**	**780**	**1370**	38	25	26	**346**	**495**	**428**	100	75	70	**392**	**442**	**533**	216	9
674.5	**1120**	**960**	**930**	23	21	25	**247**	**341**	198	86	133	91	**285**	**304**	231	174	7
680.4	**1220**	**1440**	**790**	36	22	16	**305**	216	**276**	114	82	72	**252**	**375**	**365**	181	8
685.6	**866**	**1120**	**910**	23	19	15	**252**	233	194	98	82	101	**341**	**388**	**288**	166	7
690.7	**990**	**1130**	**990**	26	26	19	**248**	**337**	**261**	74	133	117	**311**	**325**	**291**	185	9
695.6	**720**	**580**	**561**	18	20	13	185	166	238	80	117	64	**472**	**384**	**424**	148	6
700.9	**780**	**780**	**652**	23	28	16	**260**	127	179	100	88	58	**505**	**414**	**554**	162	7
706.2	**690**	**630**	**652**	20	10	25	192	**248**	93	70	50	48	**413**	**700**	**727**	143	7
711.5	**537**	**548**	**490**	27	15	11	61	60	41	24	40	25	**440**	**575**	**370**	90	6
717.4	**500**	**620**	**577**	20	22	16	42	59	38	34	58	43	**410**	**710**	**572**	104	6
721.5	**682**	**840**	**910**	19	18	18	120	108	84	**1020**	**1170**	**710**	**274**	201	199	200	7
727.0	**760**	**622**	**830**	20	17	15	71	91	86	**524**	**730**	**590**	**420**	**268**	**275**	182	9
732.5	**800**	**580**	**658**	18	12	113	48	50	166	**303**	**481**	**249**	**396**	**328**	**590**	182	9
738.8	**780**	**615**	**710**	27	28	117	105	50	95	205	196	236	**346**	**306**	**440**	180	6
742.4	**680**	**750**	**480**	18	24	91	70	38	**313**	**337**	152	202	**573**	**341**	**498**	182	8
746.4	**670**	**573**	**614**	16	14	46	81	72	144	**445**	185	144	**525**	**506**	**336**	167	7
750.6	**680**	**690**	**730**	11	22	50	101	45	147	**314**	125	131	**353**	**605**	**485**	162	7
754.8	**560**	**730**	**710**	22	27	49	116	91	99	104	162	204	**370**	**514**	**361**	166	6
758.0	**860**	**480**	**910**	17	23	22	104	70	167	108	119	233	**630**	**370**	**349**	158	6
763.2	**770**	**840**	**677**	10	15	19	81	67	172	170	93	185	**433**	**434**	**365**	144	6
769.1	**661**	**1070**	**680**	15	19	38	117	101	93	115	91	101	**620**	**414**	**507**	156	6
773.6	**820**	**830**	**1140**	20	20	12	104	96	201	151	77	135	**482**	**388**	**372**	156	6
778.2	**600**	**840**	**1080**	16	19	33	120	105	93	130	77	98	**327**	**353**	225	141	5
782.8	**700**	**545**	**650**	19	17	28	108	105	91	144	111	83	**283**	**331**	**326**	136	6
787.0	**780**	**680**	**612**	30	15	27	48	76	96	132	91	99	185	**305**	**260**	124	5
792.7	**590**	**437**	**700**	36	20	32	156	192	123	118	64	52	214	**391**	172	135	4

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey C																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
794.2	**605**	**539**	**540**	52	16	116	147	201	141	158	82	42	198	**245**	**328**	153	5
800.0	**580**	**580**	**660**	22	22	46	192	140	155	71	133	82	**310**	**460**	**250**	152	6
805.8	**501**	**491**	**475**	24	30	49	102	162	126	79	70	86	234	**481**	**528**	144	5
811.3	**431**	**547**	**575**	99	35	41	**375**	228	135	199	65	88	**275**	**327**	225	177	6
817.0	**461**	**623**	**352**	133	41	28	220	101	61	**299**	**597**	**1350**	231	**269**	**517**	222	8
823.2	**385**	**529**	**553**	**378**	102	24	**295**	240	31	**427**	**441**	**980**	**318**	**398**	**272**	257	11
829.5	**340**	**330**	**365**	127	120	35	228	214	58	**585**	**308**	**294**	**295**	**299**	154	204	8
832.2	**346**	**399**	**494**	56	41	28	185	162	76	**575**	206	132	201	228	201	162	4
837.2	**372**	**540**	**287**	39	31	18	79	98	52	**383**	**248**	228	**339**	222	133	137	6
842.3	**580**	**503**	**423**	61	15	21	43	66	67	**2360**	240	150	88	217	229	140	4
846.5	**600**	**567**	**321**	30	17	36	82	82	53	91	172	228	196	**265**	113	120	4
851.3	**585**	**423**	225	52	34	49	60	56	32	132	172	186	120	219	135	115	2
855.5	**476**	**350**	219	42	37	30	68	79	52	**345**	126	178	173	167	152	120	3
859.7	**495**	**540**	**345**	51	40	19	55	96	42	229	108	172	179	161	121	118	3
864.4	**352**	**383**	200	36	29	38	46	57	36	**285**	131	**244**	170	91	161	106	4
869.8	**530**	**358**	**283**	28	26	20	73	49	24	**1940**	152	119	133	185	102	113	4
875.7	**360**	**295**	**275**	28	16	15	47	47	28	147	101	127	135	101	82	78	3
880.7	**263**	**359**	201	20	10	10	52	28	13	**533**	39	111	124	98	72	65	3
885.0	220	**308**	172	10	17	22	38	38	25	122	57	145	131	124	80	66	1
889.2	**357**	238	233	11	12	15	35	29	17	20	53	60	120	86	91	51	1
891.7	**255**	144	190	7	12	20	26	25	16	57	34	52	140	121	74	48	1
897.5	172	**249**	166	17	6	9	26	43	10	**596**	**572**	**281**	**270**	170	140	82	5
903.2	172	**241**	126	13	9	10	17	17	13	**670**	**631**	**441**	**303**	**249**	114	80	6
908.0	222	196	**387**	12	6	9	17	13	12	**600**	**401**	**249**	185	210	93	72	4
912.6	131	158	116	13	5	6	5	18	8	203	**274**	228	98	114	91	46	1
917.6	238	214	167	12	8	7	14	16	5	**256**	**381**	**333**	133	122	75	58	3
923.4	137	167	**291**	11	12	10	5	10	17	129	**403**	**261**	135	75	91	53	3
928.2	70	**261**	111	6	10	9	7	15	15	107	238	86	102	113	74	43	1
932.2	102	160	96	9	12	7	10	10	9	93	75	99	74	79	52	36	0
936.2	47	150	88	20	3	11	-	5	23	64	73	48	104	15	53	31	0
937.7	96	130	142	10	4	12	7	4	14	118	74	38	41	65	70	31	0
940.9	68	108	84	12	6	6	11	11	28	93	54	75	33	53	55	32	0
944.2	45	91	111	20	5	11	7	6	13	96	34	121	26	53	36	28	0
947.5	83	118	99	8	5	16	13	9	6	**328**	59	53	33	70	43	32	1

Exceeds Criteria
E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL
E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey C																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
952.2	66	58	82	25	10	6	3	9	15	**377**	70	44	96	44	57	33	1
957.7	41	77	81	38	9	19	8	9	19	**524**	40	132	56	48	35	39	1
963.0	68	77	75	8	13	12	7	6	32	60	44	**305**	40	50	56	33	1
969.2	30	55	74	5	8	25	3	7	**-**	**273**	112	191	47	71	41	34	1
974.1	39	64	62	6	4	20	14	6	24	166	64	**299**	40	40	50	32	1
979.2	66	65	72	17	4	**309**	8	12	11	47	31	112	51	36	44	34	1

Exceeds Criteria
E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL
E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

	Survey D															Geometric	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
1.5	**8160**	**12030**	**4880**	**387**	188	**326**	206	145	158	137	147	158	**1190**	**539**	**698**	532	8
3.3	**6490**	**7700**	**2380**	186	138	**242**	140	172	158	172	180	59	**720**	**580**	**960**	418	7
6.4	**470**	**680**	**1140**	214	197	156	78	178	114	89	190	110	**1090**	**710**	**1480**	289	6
9.5	**6300**	**2360**	**3450**	**247**	148	**425**	132	72	35	**281**	60	60	**1080**	**1080**	**1660**	381	9
11.4	**2600**	**273**	**497**	197	186	215	**421**	135	66	**365**	161	53	**640**	**880**	**670**	297	8
12.5	**1280**	**534**	**2060**	**344**	119	**294**	96	93	87	69	69	20	**820**	**780**	**560**	238	8
14.4	**2760**	**1310**	**1720**	230	**250**	233	152	124	77	141	65	39	**600**	**1020**	**1010**	313	7
17.7	**2250**	**2600**	**2720**	221	201	**493**	114	96	93	55	82	36	**750**	**670**	**880**	312	7
20.5	**1370**	**608**	**2380**	**325**	**259**	**572**	89	98	180	34	64	**500**	**830**	**1310**	**930**	353	10
20.8	**1560**	**523**	**1780**	238	172	**339**	30	78	198	46	46	93	**810**	**910**	**1330**	261	7
21.8	**1973**	**477**	**2720**	195	214	**410**	50	75	84	27	38	34	**690**	**540**	**1180**	226	7
22.9	**1850**	**960**	**1780**	**520**	**346**	**561**	48	118	169	**269**	46	18	**1290**	**1660**	**1350**	357	10
25.5	**1010**	**1530**	**1530**	178	173	**455**	101	82	99	26	23	13	**466**	**602**	**1040**	208	7
25.8	**1120**	**1290**	**1410**	122	201	**332**	115	67	122	28	17	20	**539**	**640**	**800**	203	7
26.4	**930**	**1370**	**3040**	132	204	**261**	88	88	99	15	19	20	**425**	**480**	**700**	191	7
28.3	**470**	**930**	**1790**	130	**248**	227	73	82	56	17	15	12	**450**	**445**	**388**	150	7
32.9	**620**	**770**	**930**	143	167	210	62	50	49	13	12	11	**485**	**458**	**505**	132	6
37.6	**444**	**614**	**930**	107	219	107	15	32	35	8	8	8	**422**	**423**	**465**	95	6
41.2	**481**	**515**	**630**	118	119	107	33	26	28	10	8	10	**502**	**386**	**425**	94	6
44.8	**480**	**639**	**514**	150	147	201	41	31	38	6	11	30	**400**	**295**	**313**	106	6
48.7	**260**	**345**	**255**	186	156	127	37	48	20	5	13	3	**290**	**320**	**450**	78	6
52.5	150	167	**320**	108	-	-	32	38	19	4	10	6	179	173	222	54	1
56.4	133	144	137	-	201	105	31	24	24	23	5	5	225	**275**	152	58	1
60.3	**357**	161	**279**	99	162	192	28	22	49	5	10	7	205	190	190	69	2
66.4	**318**	228	166	205	125	143	38	35	48	34	20	21	**298**	209	150	94	2
66.9	**437**	167	130	228	135	117	63	-	70	26	17	25	237	**304**	145	104	2
70.7	**246**	173	231	**730**	124	179	142	51	53	14	20	26	150	115	238	104	2
71.8	**429**	158	192	**305**	206	198	**552**	**422**	47	18	28	26	147	172	113	132	4
74.9	222	144	**608**	153	93	175	120	25	25	13	8	12	80	120	153	71	1
80.2	**432**	**247**	178	185	219	162	32	55	24	6	5	7	98	86	133	65	2
85.6	178	219	166	140	153	147	19	25	12	7	7	4	108	54	64	46	0
91.2	**256**	206	153	86	84	96	**254**	11	**860**	10	10	24	68	78	**260**	81	4
94.2	184	180	**304**	99	101	67	82	210	**272**	5	7	20	101	61	143	78	2
97.8	222	125	138	121	105	127	**590**	**331**	**602**	93	21	19	127	83	84	124	3

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

	Survey D																
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
102.6	**354**	96	152	96	119	118	150	75	96	16	9	21	98	84	78	76	1
107.7	129	202	219	137	116	82	10	12	19	7	6	10	72	96	64	43	0
113.0	236	236	236	144	108	116	47	13	13	8	10	5	122	63	57	50	0
118.3	137	236	225	72	121	99	12	9	4	5	7	6	47	93	56	35	0
123.7	133	137	166	75	111	96	12	9	4	2	4	3	46	64	74	28	0
124.9	128	135	121	80	105	80	10	7	4	5	3	3	65	62	55	27	0
129.1	123	112	117	99	104	88	**277**	26	41	8	5	6	64	48	52	48	1
133.4	119	74	117	65	65	72	147	75	101	6	6	6	131	51	24	47	0
138.7	123	91	80	84	75	86	124	11	8	**614**	3	14	231	50	30	51	1
144.2	96	101	114	73	50	54	22	20	3	12	7	6	58	26	32	29	0
149.6	91	88	62	38	52	57	6	4	7	14	6	2	28	23	79	21	0
155.0	47	89	51	40	48	46	3	3	1	3	3	5	120	21	29	15	0
160.4	25	35	23	41	72	53	26	20	19	5	3	11	35	32	63	23	0
165.8	29	17	15	44	63	49	25	7	6	2	3	2	56	59	31	16	0
171.2	10	15	15	21	50	30	14	17	9	**<1**	3	3	53	71	60	18	0
175.1	17	20	21	24	60	65	11	6	12	4	5	1	93	119	59	18	0
179.4	15	18	26	16	34	56	8	5	15	1	6	5	62	64	93	16	0
183.5	26	36	11	24	26	44	11	5	16	3	5	5	77	69	91	18	0
185.9	32	30	14	21	27	37	38	21	19	7	6	5	40	61	60	22	0
190.8	18	15	17	20	40	26	20	19	19	5	5	3	61	50	56	18	0
195.7	17	11	7	14	22	28	30	20	15	1	10	2	70	74	55	15	0
200.7	17	16	10	20	27	31	35	38	34	**<1**	2	4	48	50	34	20	0
205.7	24	24	11	20	21	21	17	23	17	10	2	4	56	42	38	17	0
210.7	15	10	14	17	19	20	8	15	13	**<1**	1	4	45	35	40	13	0
215.7	12	15	38	26	11	29	5	6	5	**<1**	1	2	44	49	38	12	0
220.4	18	12	24	29	20	16	6	2	13	**<1**	**<1**	4	48	52	39	15	0
225.4	19	20	14	20	13	13	11	4	5	10	**<1**	2	51	44	47	14	0
230.4	16	11	15	36	26	13	5	5	5	2	2	1	56	54	45	11	0
235.6	34	11	33	31	24	20	3	2	5	10	4	5	57	52	62	14	0
240.4	24	24	32	37	60	54	4	5	2	5	2	5	64	63	99	16	0
245.4	31	26	26	31	33	23	6	1	2	3	2	7	84	74	160	14	0
250.4	26	25	99	36	30	23	5	5	36	8	3	**2360**	51	54	80	30	1
255.5	22	31	56	32	35	60	5	2	56	15	28	21	40	96	**543**	31	1
260.6	24	22	26	21	23	36	11	13	8	3	9	8	64	219	158	22	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey D																Geometric	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
265.7	34	28	36	46	23	38	13	6	23	17	14	31	89	53	52	28	0
269.8	133	25	28	**308**	39	30	26	23	56	4	6	50	**360**	101	202	47	2
275.2	60	38	28	79	91	60	18	22	34	1	**<1**	9	71	96	68	33	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey E																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
630.0	194	**242**	108	**324**	**249**	234	**261**	**329**	**276**	38	44	26	76	22	11	104	6
631.6	**284**	219	91	**302**	**595**	**272**	**342**	221	**248**	44	44	31	58	23	12	111	6
637.6	198	228	**264**	**337**	**387**	**409**	**248**	**266**	**401**	62	30	28	18	11	16	107	7
643.1	**377**	**340**	221	**365**	**335**	**378**	214	180	**272**	59	36	35	15	7	11	101	6
648.9	**261**	141	**250**	**335**	196	**260**	206	185	**263**	39	53	54	15	13	14	95	5
654.0	200	228	**461**	**282**	**505**	192	192	178	**260**	25	38	33	7	13	5	85	4
659.2	148	162	126	**302**	**254**	180	194	141	204	21	32	17	11	12	5	65	2
664.2	125	**242**	141	**305**	**302**	238	236	219	196	14	32	31	9	12	9	75	3
669.1	238	**249**	185	**245**	**337**	227	237	153	**276**	31	24	24	9	11	5	77	4
674.5	152	**248**	84	**319**	**363**	152	170	**354**	143	18	26	18	7	7	9	66	4
680.4	124	120	84	**354**	238	101	185	**313**	135	15	18	35	10	6	13	61	2
685.6	88	108	77	185	194	199	199	215	148	20	19	24	13	7	18	60	0
690.7	88	105	82	135	133	105	154	117	228	26	17	29	7	14	7	52	0
695.6	43	91	61	122	142	107	179	221	142	13	17	15	15	16	13	49	0
700.9	53	47	33	62	112	93	190	156	204	19	19	12	16	15	14	44	0
706.2	32	44	30	82	86	58	126	147	172	24	16	19	7	6	7	35	0
711.5	21	31	34	79	131	84	153	115	114	15	17	12	9	6	9	33	0
717.4	36	28	24	96	77	79	142	127	194	12	23	15	7	8	9	34	0
721.5	147	102	162	**293**	234	**330**	119	123	114	31	25	20	14	8	14	66	2
727.0	119	96	178	214	**308**	**249**	130	79	161	25	19	15	10	13	8	59	2
732.5	166	178	118	**291**	**313**	162	145	110	108	22	27	27	11	7	16	66	2
738.8	71	50	63	162	236	192	82	131	93	20	23	16	5	11	5	43	0
742.4	93	111	68	130	152	162	149	137	86	26	12	12	4	6	11	44	0
746.4	76	82	44	84	135	162	111	105	147	25	20	24	5	6	6	42	0
750.6	67	65	50	93	140	156	101	114	143	28	15	15	6	4	7	39	0
754.8	29	53	68	49	113	133	184	238	196	22	23	24	7	8	11	44	0
758.0	55	70	43	120	99	110	128	120	166	24	28	15	**2480**	10	8	64	1
763.2	39	29	40	84	54	109	214	83	179	23	23	18	15	3	5	35	0
769.1	34	34	33	121	73	84	228	112	153	21	23	18	2	4	7	33	0
773.6	15	27	22	82	78	82	148	148	**259**	11	15	15	10	3	6	30	1
778.2	31	26	29	93	127	93	89	117	123	26	33	23	7	6	5	35	0
782.8	22	20	31	63	107	105	178	133	197	25	22	25	7	7	25	39	0
787.0	22	22	34	38	64	122	140	153	172	23	12	20	16	9	9	35	0
792.7	17	17	11	89	84	60	161	225	140	25	39	25	10	6	24	36	0

Exceeds Criteria
E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL
E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey E																Geometric	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
794.2	43	23	20	137	86	114	33	206	120	20	19	50	12	14	**1120**	53	1
800.0	110	30	22	99	99	91	236	186	**331**	14	25	19	62	**560**	**1350**	92	3
805.8	24	27	31	76	115	76	148	192	185	24	18	24	15	12	26	43	0
811.3	81	34	24	82	120	45	185	124	96	140	34	23	229	19	11	59	0
817.0	82	41	32	84	114	118	84	77	81	**260**	108	10	74	48	68	70	1
823.2	79	59	49	133	122	96	86	78	55	130	117	15	86	54	24	69	0
829.5	81	55	25	76	133	74	133	129	72	43	44	24	60	39	41	60	0
832.2	62	37	28	102	109	69	71	105	75	19	17	18	46	34	21	45	0
837.2	46	41	25	109	101	78	140	108	69	20	12	4	31	41	31	41	0
842.3	45	37	37	62	99	61	47	67	64	19	25	14	43	32	28	40	0
846.5	28	36	28	91	121	32	201	**261**	128	19	25	25	36	23	35	49	1
851.3	46	38	22	118	147	118	131	124	84	41	19	15	17	26	17	46	0
855.5	44	26	29	96	49	88	118	70	96	34	25	13	30	19	17	40	0
859.7	54	34	15	120	96	47	186	126	86	17	26	13	25	25	18	42	0
864.4	24	42	31	111	118	64	86	178	84	26	26	16	22	15	19	42	0
869.8	40	36	31	104	82	118	124	101	91	17	25	15	38	15	16	43	0
875.7	24	49	24	52	59	86	120	119	60	17	17	12	18	36	16	36	0
880.7	32	30	19	99	33	66	46	50	50	28	14	8	10	7	12	25	0
885.0	37	26	19	47	64	57	82	155	45	13	8	9	8	11	11	26	0
889.2	34	24	24	126	55	68	96	99	57	26	17	15	13	8	10	32	0
891.7	26	20	23	54	39	105	60	39	86	17	13	14	11	12	12	27	0
897.5	34	28	17	51	45	96	17	13	24	15	8	11	5	3	7	17	0
903.2	23	30	16	53	82	59	12	16	12	14	10	5	3	7	7	16	0
908.0	34	15	21	53	52	36	27	15	24	16	10	15	5	5	30	19	0
912.6	23	25	19	50	55	43	9	9	10	11	10	8	5	2	11	14	0
917.6	15	25	11	61	44	38	13	12	7	8	11	11	14	4	5	14	0
923.4	8	28	18	58	99	82	11	23	28	2	15	20	1	6	6	15	0
928.2	22	13	26	32	69	145	9	14	36	2	3	12	2	5	8	13	0
932.2	15	18	20	28	35	19	13	22	26	5	7	7	5	5	4	12	0
936.2	52	17	25	42	36	46	24	5	67	2	4	9	48	5	5	16	0
937.7	9	23	22	30	57	46	15	12	23	2	5	14	21	19	8	15	0
940.9	21	11	21	21	33	35	20	18	50	4	5	13	15	15	6	16	0
944.2	21	25	14	31	33	34	13	8	19	4	5	13	29	21	6	15	0
947.5	29	12	13	67	33	29	18	15	31	6	3	7	32	15	15	17	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey E																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
952.2	24	12	25	39	26	70	26	34	31	6	10	46	26	13	7	21	0
957.7	13	8	27	31	33	40	37	20	36	5	4	12	14	10	14	16	0
963.0	29	9	32	24	29	48	54	36	45	2	3	9	26	15	14	18	0
969.2	5	16	30	29	39	46	58	60	34	10	6	15	22	13	18	21	0
974.1	12	10	33	57	62	37	11	44	37	5	20	7	10	7	11	18	0
979.2	8	8	17	30	21	33	27	21	34	4	2	13	114	26	93	19	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
Survey F	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
280.8	11	12	20	210	102	101	206	166	141	12	12	5	7	7	5	28	0
285.9	17	10	14	79	91	53	185	132	90	17	16	9	4	4	7	24	0
291.4	11	22	15	93	88	77	156	131	85	6	5	11	3	3	3	20	0
296.6	19	14	9	82	70	47	101	129	78	11	12	11	3	2	1	18	0
302.0	6	9	7	120	96	70	122	91	77	6	6	6	3	4	2	16	0
307.7	82	11	14	111	86	89	**276**	57	84	31	14	7	50	28	10	39	1
313.3	185	43	86	187	66	70	**424**	93	113	72	10	12	34	15	24	58	1
317.2	105	27	18	**308**	192	47	131	119	51	34	14	39	24	46	34	53	1
321.5	96	53	24	138	76	46	139	56	84	39	21	9	14	26	2	36	0
327.4	47	36	19	81	46	38	120	126	72	13	14	13	3	3	4	24	0
327.7	57	31	42	70	38	41	142	132	81	28	13	14	10	5	4	30	0
328.0	34	20	36	74	56	37	108	104	63	21	11	18	9	4	10	28	0
332.5	18	23	12	50	46	39	82	91	69	18	8	12	5	2	5	19	0
338.1	61	20	8	38	59	36	105	99	53	22	10	17	17	**<1**	2	26	0
343.5	60	25	18	45	40	44	63	36	52	12	5	9	4	5	5	19	0
349.2	54	29	48	55	46	38	54	55	41	11	7	12	4	11	5	22	0
352.0	39	35	28	35	45	44	55	46	44	13	10	13	1	4	4	18	0
353.8	40	27	33	42	53	46	47	61	75	7	6	9	4	4	2	18	0
359.3	26	34	28	44	45	45	66	52	66	5	7	15	3	2	11	19	0
364.6	38	19	46	32	28	63	46	53	82	6	5	15	4	1	4	17	0
369.8	15	13	38	24	35	33	36	20	93	10	10	15	10	1	1	14	0
375.0	19	23	42	24	37	30	70	75	82	2	12	12	3	1	5	16	0
380.4	24	22	25	26	34	20	46	67	66	9	4	6	**<1**	**<1**	2	18	0
385.4	17	32	21	21	23	22	68	37	42	5	5	3	2	3	**<1**	13	0
390.6	26	13	15	10	24	29	35	23	39	6	4	8	1	1	**<1**	11	0
395.0	21	13	12	22	37	19	81	56	28	4	4	4	**<1**	**<1**	**<1**	16	0
400.4	14	22	21	13	14	10	50	35	47	6	10	11	**<1**	1	4	12	0
405.8	21	15	15	16	10	13	17	36	192	4	8	22	5	2	6	13	0
411.4	26	26	8	7	5	21	36	34	45	7	6	10	2	3	10	11	0
416.4	46	27	14	7	7	6	30	28	35	2	5	6	**<1**	1	10	10	0
421.6	30	19	12	5	6	5	32	38	45	5	5	9	3	1	**<1**	10	0
426.4	12	28	15	6	4	7	25	19	20	5	7	5	6	**<1**	3	9	0
431.4	17	13	**<10**	7	7	3	21	17	19	8	3	5	4	**<1**	10	9	0
436.8	23	14	21	7	3	**<1**	23	18	31	7	10	1	7	5	3	9	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey F																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
441.5	21	16	15	3	3	5	35	22	29	7	6	4	**<1**	3	1	8	0
446.5	24	16	9	3	7	3	26	32	24	2	5	5	5	6	5	8	0
451.6	11	5	**<10**	6	6	13	19	15	21	4	1	4	5	**<1**	6	7	0
455.3	10	14	5	9	5	5	16	19	16	7	8	3	2	1	3	6	0
460.0	11	15	10	1	2	7	22	15	32	5	6	4	2	**<1**	1	6	0
465.4	17	11	13	13	4	15	11	29	31	**<1**	4	13	3	1	15	9	0
468.7	11	9	12	5	3	25	19	33	24	2	4	10	14	1	2	8	0
472.7	70	66	14	34	12	19	66	44	45	59	14	6	29	8	**2910**	36	1
477.6	33	24	44	14	13	35	46	49	36	30	18	86	42	175	**434**	42	1
482.2	46	39	41	11	30	24	54	34	48	13	10	15	58	**261**	181	36	1
486.2	50	36	34	18	16	35	34	47	53	11	11	35	7	148	64	30	0
489.7	41	46	49	11	15	13	31	70	44	12	18	18	15	45	68	27	0
493.2	33	41	50	14	17	25	42	54	39	15	20	27	11	46	41	28	0
498.0	28	22	47	18	6	43	22	19	33	19	25	44	2	30	91	23	0
503.1	24	21	20	14	18	15	21	21	13	24	40	28	**<1**	2	3	15	0
508.3	9	13	24	6	5	16	21	14	20	13	11	12	1	20	5	10	0
513.4	20	17	18	10	6	12	9	11	13	3	5	6	1	2	3	7	0
518.5	13	24	6	5	3	16	17	9	14	6	15	7	5	**<1**	10	9	0
523.4	12	12	9	11	5	11	9	13	7	3	2	2	**<1**	**<1**	4	6	0
528.4	4	12	11	10	5	15	13	7	11	7	4	3	**<1**	1	2	6	0
533.2	19	24	11	7	10	7	10	5	12	4	5	4	**<1**	5	2	7	0
538.5	19	9	17	11	12	11	8	8	10	3	5	6	3	**<1**	10	8	0
543.5	15	7	15	10	6	10	7	11	18	5	5	12	2	2	11	8	0
548.3	36	9	10	13	5	6	119	12	11	12	5	**<1**	5	**<1**	7	11	0
553.6	28	12	6	9	6	6	75	10	8	16	4	7	3	2	1	7	0
558.8	10	5	13	8	7	11	52	11	13	6	5	5	6	3	2	8	0
562.7	15	7	9	4	7	3	30	10	7	13	6	5	4	3	2	6	0
567.6	7	5	5	11	5	5	26	6	5	10	5	6	6	5	4	7	0
572.5	15	6	6	5	4	7	30	10	6	6	1	2	2	**<1**	2	5	0
577.4	6	24	6	5	4	9	36	7	10	7	2	5	**<1**	3	1	6	0
582.9	5	6	1	15	4	6	31	13	14	6	2	4	3	**<1**	**<1**	6	0
587.8	6	2	5	7	2	6	28	13	21	7	2	3	**<1**	1	**<1**	5	0
592.2	4	5	6	7	5	2	28	8	14	3	3	1	3	1	10	5	0
597.1	7	3	8	3	7	8	36	11	8	4	1	2	1	**<1**	1	4	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey F																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
602.2	13	4	7	5	5	5	21	9	15	7	3	5	2	3	**<1**	6	0
604.3	17	2	7	34	10	3	20	22	17	17	2	5	1	3	1	6	0
607.5	20	6	9	15	6	7	30	12	21	41	10	30	3	2	10	11	0
609.7	52	7	3	11	13	7	21	12	16	24	25	28	6	10	14	13	0
612.2	20	4	11	84	8	8	24	15	14	58	29	56	12	4	8	16	0
617.6	36	7	10	21	7	8	42	20	16	**13000**	162	16	81	67	5	32	1
623.1	18	13	7	17	10	5	44	15	26	**326**	35	19	46	17	10	20	1
628.1	23	11	12	60	10	11	57	19	15	**2760**	17	16	184	19	20	30	1

Exceeds Criteria
E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL
E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey G																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
280.8	36	24	31	11	15	12	55	44	43	8	13	5	7	1	5	14	0
285.9	11	24	15	11	15	8	36	33	32	5	8	10	1	1	3	9	0
291.4	26	30	19	4	4	5	18	24	25	2	6	4	10	3	3	8	0
296.6	19	13	21	5	5	12	19	28	26	6	7	6	2	1	3	8	0
302.0	11	11	14	5	10	7	14	24	16	1	3	**<1**	**<1**	1	**<1**	7	0
307.7	21	19	12	126	24	5	37	22	25	162	2	6	139	135	7	24	0
313.3	12	10	6	**286**	22	28	114	22	59	**245**	**247**	96	28	55	98	48	3
317.2	56	11	7	234	12	7	147	55	29	**502**	**367**	**291**	84	27	17	51	3
321.5	59	15	16	93	89	34	199	144	53	**241**	201	230	25	23	7	58	1
327.4	7	12	26	56	-	27	118	64	43	179	**361**	204	5	7	7	35	1
327.7	16	11	15	79	46	24	138	50	36	**423**	**260**	**273**	7	5	5	37	3
328.0	22	13	14	63	53	54	96	105	51	**282**	**248**	167	11	6	17	44	2
332.5	26	13	75	15	44	59	111	99	69	138	108	86	3	5	2	31	0
338.1	12	24	11	46	34	25	66	67	76	104	121	77	1	1	**<1**	25	0
343.5	21	29	29	26	39	29	58	52	38	68	84	60	8	2	3	25	0
349.2	17	16	36	40	28	28	80	47	50	50	67	47	2	1	17	23	0
352.0	18	18	28	24	32	24	46	43	68	69	68	45	5	2	6	23	0
353.8	18	16	35	22	25	30	63	53	77	58	54	83	6	2	11	26	0
359.3	23	10	32	24	29	26	52	130	**340**	53	52	84	9	38	61	41	1
364.6	21	23	24	24	30	35	62	58	155	42	50	39	4	18	8	29	0
369.8	15	12	28	11	25	29	93	86	130	65	44	23	3	1	3	19	0
375.0	11	14	40	19	13	13	58	88	114	20	12	14	10	6	4	18	0
380.4	12	23	28	8	12	15	58	84	115	8	15	25	6	13	15	20	0
385.4	23	16	12	8	8	2	88	118	56	16	20	7	1	3	6	12	0
390.6	13	17	17	6	6	10	93	56	82	3	14	14	8	7	5	14	0
395.0	14	24	17	9	4	5	55	96	60	21	21	16	**<1**	4	1	14	0
400.4	12	11	12	3	3	5	42	31	46	16	37	17	**<1**	**<1**	2	12	0
405.8	14	15	9	2	5	14	110	34	84	14	19	25	7	10	22	16	0
411.4	13	9	7	5	12	2	40	34	58	32	18	16	13	8	8	13	0
416.4	7	10	10	5	3	5	50	31	46	12	12	18	4	3	2	9	0
421.6	11	8	3	11	3	4	54	71	40	13	14	8	**<1**	**<1**	1	10	0
426.4	15	14	5	1	1	3	50	44	29	20	11	11	4	**<1**	4	8	0
431.4	2	4	4	3	5	2	34	47	15	14	10	6	2	1	10	6	0
436.8	11	9	9	5	5	4	76	72	24	-	-	-	-	-	-	13	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey G																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
441.5	6	8	4	3	3	2	76	44	44	-	-	-	2	3	2	6	0
446.5	9	10	12	3	4	3	62	91	43	6	14	5	1	2	1	7	0
451.6	4	3	6	2	2	3	58	68	34	6	14	32	1	1	3	6	0
455.3	4	5	6	**1610**	131	**1350**	42	55	40	10	13	7	4	4	4	22	2
460.0	4	6	6	3	**1260**	**390**	26	52	26	11	13	3	3	2	10	14	2
465.4	5	5	46	5	4	34	44	53	37	14	13	12	1	1	8	10	0
468.7	6	3	28	16	1	10	51	37	56	14	10	11	18	18	13	13	0
472.7	13	5	92	19	13	64	66	52	54	24	56	34	96	60	199	40	0
477.6	19	15	98	9	10	28	42	39	49	29	20	61	67	68	96	34	0
482.2	41	66	199	13	15	14	50	34	28	34	108	75	**510**	**544**	**364**	66	3
486.2	34	53	76	14	8	33	34	55	55	25	53	30	**595**	**580**	**880**	61	3
489.7	27	70	36	8	6	17	41	66	32	19	40	24	38	40	26	27	0
493.2	32	47	46	13	68	88	46	52	64	18	17	24	18	29	26	34	0
498.0	12	15	86	13	33	46	49	46	36	24	33	27	38	36	23	30	0
503.1	24	28	28	10	7	9	58	42	46	33	28	14	11	17	18	21	0
508.3	10	9	38	3	3	5	40	42	43	20	17	18	3	6	36	13	0
513.4	16	21	25	6	10	4	28	24	29	24	32	19	2	1	3	11	0
518.5	10	18	37	2	6	12	32	43	18	12	24	11	2	1	11	10	0
523.4	15	16	28	5	4	6	23	20	23	7	19	23	3	1	2	9	0
528.4	10	13	15	12	3	2	32	27	25	18	13	11	5	2	**<1**	10	0
533.2	6	14	15	4	5	2	26	28	46	15	17	22	4	2	1	8	0
538.5	13	15	14	1	5	3	26	29	35	6	13	15	**<1**	5	3	9	0
543.5	10	12	12	5	4	3	38	36	45	6	10	3	**<1**	**<1**	2	9	0
548.3	12	10	11	5	20	2	16	29	13	44	12	2	5	1	3	8	0
553.6	2	6	10	1	3	4	13	17	23	22	16	6	46	1	2	6	0
558.8	5	15	9	1	1	1	16	28	20	12	14	3	4	10	**<10**	6	0
562.7	10	21	214	7	7	2	17	24	19	10	11	10	3	2	5	10	0
567.6	9	56	19	1	6	3	16	20	10	11	8	5	1	1	1	6	0
572.5	5	13	8	2	2	6	11	17	17	11	10	4	28	20	1	7	0
577.4	8	5	5	3	1	1	16	25	20	17	5	11	2	4	2	5	0
582.9	17	8	4	1	**<1**	2	18	10	14	11	12	5	29	1	**<1**	7	0
587.8	5	5	4	2	**<1**	1	7	11	10	11	3	12	14	8	12	6	0
592.2	4	5	7	1	**<1**	27	24	19	18	10	3	5	32	6	3	8	0
597.1	5	10	11	44	1	2	16	15	18	1	3	9	22	10	15	8	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey G

Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
602.2	12	5	19	**3650**	4	4	29	28	14	5	10	9	22	28	29	18	1
604.3	**293**	6	15	**2280**	3	214	**620**	21	26	69	5	9	200	43	37	47	3
607.5	**840**	64	17	**1010**	93	150	**411**	42	31	15	6	3	49	41	13	51	3
609.7	**460**	**356**	52	**528**	**467**	**1080**	**249**	93	150	11	17	14	162	86	82	123	6
612.2	**17330**	156	53	**890**	119	**4350**	231	30	192	43	8	11	185	56	240	157	3
617.6	**3080**	**498**	161	**>24192**	**1280**	**276**	**1240**	99	74	12	18	6	**680**	**710**	**411**	204	8
623.1	**4350**	148	180	**790**	**276**	162	**860**	80	115	23	6	2	**1260**	**415**	68	146	6
628.1	**13000**	161	214	**9210**	104	**1200**	**1860**	93	**291**	15	7	2	**541**	**465**	44	209	7
631.6	**15530**	**1670**	133	**9800**	**1790**	132	**3970**	**279**	178	-	-	-	**545**	**568**	186	819	8
637.6	**9800**	**7700**	**800**	**8160**	**7700**	**4610**	**4610**	**1260**	98	-	-	-	**1120**	**1520**	**1300**	2301	11
643.1	93	**553**	98	**1050**	**2760**	**780**	**3450**	**2810**	**2380**	-	-	-	46	155	65	472	7
648.9	-	-	-	178	232	**375**	59	49	31	-	-	-	66	131	35	91	1

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey H

Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
607.5	40	39	34	24	8	7	7	10	10	15	14	20	162	122	51	23	0
609.7	50	37	30	16	16	15	4	4	8	19	14	19	219	114	75	23	0
612.2	41	30	46	20	7	29	6	6	6	17	15	34	**307**	144	86	26	1
617.6	144	24	16	32	9	15	10	15	16	72	81	93	**1780**	**1520**	**1310**	63	3
623.1	66	22	12	48	13	20	8	7	7	150	36	30	**4160**	**1150**	**346**	49	3
628.1	79	14	11	55	19	11	9	6	8	210	35	44	**3650**	**1990**	179	49	2
631.6	130	11	8	75	13	16	12	13	5	98	82	37	**1350**	**1470**	**1410**	54	3
637.6	140	30	64	26	16	15	4	2	3	60	73	46	**880**	**930**	**990**	45	3
643.1	52	79	108	23	25	18	1	2	2	33	52	114	148	210	140	30	0
648.9	59	127	50	14	15	15	18	1	4	60	45	36	26	26	15	21	0
654.0	154	57	53	6	9	11	4	3	3	26	27	40	10	17	15	15	0
659.2	78	54	194	12	9	15	1	2	7	23	25	26	8	12	12	15	0
664.2	158	135	192	13	8	13	**<1**	1	3	36	25	24	1	1	4	12	0
669.1	**387**	204	220	22	19	12	**<1**	2	3	31	34	21	4	7	3	19	1
674.5	153	**319**	**325**	10	12	14	**<1**	2	**<1**	6	6	12	5	2	2	13	2
680.4	70	225	142	15	19	12	1	3	1	11	4	9	3	2	2	9	0
685.6	126	141	73	18	30	15	1	2	**<1**	5	3	5	3	1	1	8	0
690.7	107	74	76	10	25	8	**<1**	1	4	3	**<1**	4	3	1	2	8	0
695.6	-	24	20	7	5	4	2	**<1**	**<1**	3	1	1	**<1**	3	3	4	0
700.9	96	167	84	12	15	16	3	2	3	4	6	6	4	1	2	8	0
706.2	64	63	77	4	5	6	**<1**	**<1**	2	9	6	5	3	1	1	7	0
711.5	41	32	37	7	5	3	4	10	20	4	2	5	3	2	2	6	0
717.4	15	22	22	5	3	20	3	1	1	2	1	5	3	**<1**	1	4	0
721.5	-	-	-	6	11	5	2	2	3	8	12	5	2	**<1**	**<1**	4	0
727.0	34	30	20	3	3	3	6	2	2	10	5	16	**<1**	3	2	6	0
732.5	26	25	23	7	5	3	6	5	6	15	**424**	194	8	9	7	14	1
738.8	15	17	28	7	5	10	3	2	3	28	66	61	5	9	5	10	0
742.4	28	25	30	6	4	10	**<1**	10	1	10	25	28	4	9	3	9	0
746.4	19	19	28	7	5	9	1	1	3	2	5	6	2	4	9	5	0
750.6	51	34	102	7	5	5	4	3	4	3	3	12	13	11	14	9	0
754.8	73	30	96	6	3	7	**<1**	1	3	91	7	6	10	8	10	11	0
758.0	44	28	45	11	2	3	91	2	6	**1100**	**550**	**890**	9	10	8	26	3
763.2	58	26	59	99	19	13	**910**	**890**	**960**	124	93	80	4	5	5	56	3
769.1	219	57	61	172	22	12	5	3	12	44	30	6	4	6	1	16	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
Survey H	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
773.6	110	70	34	44	96	21	3	**<1**	1	7	10	15	15	1	3	13	0
778.2	67	76	45	15	26	15	5	2	3	30	33	28	4	10	7	15	0
782.8	70	50	48	5	13	12	5	3	11	93	166	238	2	5	7	18	0
787.0	63	40	45	8	9	17	3	**<1**	2	23	17	30	**<1**	4	14	14	0
792.7	135	99	54	6	9	7	3	2	2	116	102	**249**	4	1	5	14	1
794.2	73	81	84	10	6	13	4	1	25	31	42	**840**	44	13	44	25	1
799.5	61	77	72	13	13	9	3	1	5	**600**	**3450**	**1250**	12	12	9	31	3
805.8	84	80	46	7	5	12	10	3	5	**1250**	**860**	**1550**	13	12	17	34	3
811.3	51	45	66	154	5	3	126	12	3	188	84	34	234	**365**	93	45	1
817.0	20	28	29	33	13	5	17	9	4	46	43	27	32	24	27	19	0
823.2	156	46	50	19	15	7	8	7	10	27	11	22	6	18	8	17	0
829.5	101	78	46	7	5	8	8	1	10	11	8	16	9	19	13	12	0
832.2	49	46	59	16	18	22	12	21	29	25	28	86	29	26	33	29	0
837.2	79	55	34	8	8	12	18	15	29	36	72	73	4	5	12	20	0
842.3	49	53	24	10	3	15	15	11	8	14	24	25	5	3	3	12	0
846.5	33	51	30	9	10	8	7	13	8	46	50	35	5	2	12	14	0
851.3	33	51	30	3	6	4	6	**<1**	5	133	162	178	4	5	5	15	0
855.5	29	29	15	5	2	3	4	4	4	93	50	72	5	3	5	10	0
859.7	34	26	14	2	4	7	3	1	5	21	14	17	4	2	8	7	0
864.4	30	52	13	9	2	1	**<1**	**<1**	2	13	15	19	5	1	1	6	0
869.8	39	24	17	5	3	1	1	**<1**	1	4	6	8	3	3	1	4	0
875.7	30	26	11	**<1**	3	2	1	1	2	8	4	5	7	5	5	5	0
880.7	24	15	12	2	**<1**	2	**<1**	2	**<1**	4	3	4	7	5	4	5	0
885.0	24	8	5	3	3	3	2	**<1**	**<1**	3	5	**<1**	10	4	2	4	0
889.2	22	7	9	**<1**	1	4	1	**<1**	**<1**	2	10	3	2	**<1**	**<1**	4	0
891.7	31	13	6	**<1**	3	1	**<1**	**<1**	1	2	2	3	1	1	1	3	0
897.5	14	8	11	3	1	1	12	4	2	2	2	**<1**	11	3	2	4	0
903.2	17	4	4	2	1	1	**<1**	**<1**	**<1**	1	3	1	1	**<1**	1	2	0
908.0	11	5	3	1	**<1**	**<1**	1	4	1	**<1**	**<1**	10	**<1**	1	1	2	0
912.6	16	5	4	2	**<1**	**<1**	1	2	2	**<1**	1	3	1	**<1**	**<1**	2	0
917.6	6	7	3	1	1	2	2	**<1**	**<1**	**<1**	2	2	1	**<1**	**<1**	2	0
923.4	7	10	5	6	2	1	5	1	3	3	**<1**	**<1**	1	2	**<1**	3	0
928.2	4	7	5	13	4	1	3	3	1	3	**<10**	10	4	2	2	3	0
932.2	5	5	2	10	8	1	1	**<1**	1	2	**<1**	1	5	2	1	2	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey H																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
936.2	40	4	15	10	1	5	18	**<1**	5	3	2	2	22	25	1	6	0
937.7	8	11	6	2	3	5	10	2	5	2	2	1	18	7	4	4	0
940.9	20	11	11	3	4	4	6	6	6	15	2	5	7	7	4	6	0
944.2	40	3	5	2	3	4	6	6	3	4	3	4	2	2	6	4	0
947.5	15	4	5	7	1	1	13	5	3	2	3	3	7	5	7	4	0
952.2	14	11	8	3	3	1	7	4	10	3	3	**<1**	7	5	3	5	0
957.7	5	5	11	7	3	7	4	8	3	2	**<1**	**<1**	5	4	3	5	0
963.0	-	-	-	4	2	2	10	5	3	4	1	2	4	6	4	3	0
969.2	-	-	-	3	5	4	4	5	4	3	5	5	17	7	8	5	0
974.1	-	-	-	7	4	1	5	12	5	5	11	3	12	22	5	6	0
979.2	-	-	-	9	1	24	151	3	41	14	1	37	15	12	11	11	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey I

Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
1.5	31	46	34	104	79	108	39	33	30	63	51	162	46	54	43	54	0
3.3	34	21	**500**	108	86	**620**	34	30	141	88	67	**276**	46	33	211	88	3
6.4	28	32	53	128	144	154	25	26	39	64	98	56	62	91	49	59	0
9.5	20	24	40	66	96	104	25	33	67	116	68	75	20	37	51	48	0
11.4	25	18	38	52	75	**313**	34	39	29	82	55	77	44	44	57	50	1
12.5	24	32	81	125	147	**480**	18	45	46	84	59	79	33	28	70	60	1
14.4	31	20	31	99	75	**397**	27	37	71	79	68	84	32	40	67	56	1
17.7	24	31	47	187	**304**	**277**	31	25	39	93	86	120	26	40	73	64	2
20.5	27	25	50	105	112	192	28	16	39	78	84	108	35	38	31	51	0
20.8	18	30	44	112	126	199	29	24	28	88	73	75	26	54	33	50	0
21.8	19	30	30	83	96	153	15	23	24	64	64	124	15	31	25	40	0
22.9	219	**404**	**263**	107	78	**291**	28	21	**363**	**570**	98	156	50	36	82	120	5
25.5	15	24	70	69	62	209	22	28	50	137	70	107	30	20	37	48	0
25.8	14	24	51	108	55	**443**	24	22	47	81	58	**740**	25	29	45	55	2
26.4	19	26	56	120	76	**309**	36	44	60	82	162	186	25	30	28	59	1
28.3	28	34	53	114	118	**283**	31	46	47	**429**	119	**342**	34	28	40	73	3
32.9	12	21	24	61	70	84	47	46	35	**360**	**370**	**522**	18	26	23	55	3
37.6	17	21	29	50	59	34	45	50	34	**435**	**437**	**607**	27	31	16	55	3
41.2	19	18	30	55	44	147	28	47	34	**370**	**383**	**611**	16	10	16	51	3
44.8	22	15	26	57	39	83	20	34	22	**566**	**527**	**1130**	18	15	29	52	3
48.7	19	44	26	68	51	78	16	23	15	**910**	**740**	**960**	30	13	13	54	3
52.5	19	15	24	46	33	39	10	8	11	**1170**	**1140**	**1140**	5	7	12	36	3
56.4	18	27	15	39	23	20	19	16	11	**1090**	**1200**	**720**	14	5	11	37	3
60.3	20	15	**572**	20	36	**261**	10	13	**312**	**860**	**1140**	**730**	13	5	166	74	6
66.4	37	27	147	47	62	199	51	30	39	**535**	**466**	**547**	186	23	48	88	3
68.2	86	28	114	86	45	124	56	32	67	**478**	**506**	**535**	76	28	187	99	3
70.7	70	37	34	62	60	42	43	55	49	**453**	**400**	**536**	40	33	43	73	3
71.8	58	34	93	64	81	66	37	24	52	**397**	**348**	**408**	25	43	61	74	3
74.9	30	21	26	60	91	86	29	18	30	**258**	178	178	30	21	24	48	1
80.2	20	22	29	51	31	50	25	17	18	141	156	133	22	18	25	36	0
85.6	19	11	11	44	25	49	18	26	18	84	147	114	28	25	18	31	0
91.2	118	46	45	28	28	93	27	17	15	86	133	108	33	17	179	48	0
94.2	11	21	53	34	27	138	13	11	33	126	78	107	25	28	51	36	0
97.8	13	21	44	99	66	78	15	24	14	125	107	96	32	22	37	40	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey I																	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Geometric Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
102.6	10	17	16	107	71	42	18	11	16	96	101	60	28	26	26	32	0
107.7	36	32	29	27	41	22	8	10	14	63	61	57	24	25	14	26	0
113.0	19	8	15	67	44	46	7	5	10	55	49	35	24	33	22	22	0
118.3	14	5	8	31	34	26	16	6	11	17	26	17	15	15	12	15	0
123.7	13	9	6	16	15	15	13	14	5	16	30	15	10	10	16	13	0
124.9	13	12	10	22	26	19	4	7	11	8	14	14	13	10	11	12	0
129.1	10	12	26	18	19	18	10	6	20	13	17	15	16	14	17	15	0
133.4	23	22	25	28	15	24	22	22	14	26	15	12	52	20	14	21	0
138.7	25	25	12	19	18	12	11	11	6	26	11	5	12	12	17	13	0
144.2	32	7	12	13	16	14	8	19	11	26	25	10	16	9	12	14	0
149.6	12	11	24	17	15	8	5	2	10	38	15	8	20	18	9	12	0
155.0	28	13	13	5	6	8	9	4	4	20	14	12	15	5	10	9	0
160.4	191	24	24	9	12	8	10	11	10	10	7	10	13	9	11	14	0
165.8	**5736**	48	19	22	15	9	5	9	9	8	9	3	10	11	5	16	1
171.2	115	26	46	8	12	13	6	5	15	7	8	12	5	5	10	12	0
175.1	41	35	78	16	11	13	16	14	10	16	29	16	13	15	15	19	0
179.4	57	43	47	12	13	18	15	23	12	7	16	14	11	7	17	17	0
183.5	41	21	22	11	10	9	22	22	15	13	20	16	9	15	13	16	0
185.9	186	31	128	17	5	15	18	17	22	17	23	29	31	23	41	27	0
190.8	140	110	**310**	13	12	23	25	24	31	20	15	15	20	18	22	30	1
195.7	47	48	30	24	23	27	15	18	23	15	14	10	25	15	23	22	0
200.7	14	18	24	12	14	15	24	19	25	12	12	8	13	27	34	17	0
205.7	**680**	**490**	**419**	15	17	21	27	20	19	**1370**	**1380**	**520**	**960**	**509**	228	157	8
210.7	**910**	**647**	**500**	15	17	12	16	29	27	**2360**	**1210**	**373**	**910**	210	**590**	162	8
215.7	**960**	**500**	**1370**	16	12	16	34	23	20	**2280**	**3080**	**2100**	215	104	**600**	179	7
220.4	**1550**	**990**	**1300**	8	15	13	26	18	19	**1660**	**1470**	**1670**	**649**	236	**276**	176	8
225.4	**1250**	**1080**	**1480**	16	8	8	31	15	34	**2190**	**3080**	**3450**	108	72	126	156	6
230.4	**830**	**1020**	**930**	14	15	16	41	31	34	**770**	**332**	**550**	86	59	80	113	6
235.6	**2190**	**1200**	**2380**	9	12	8	25	28	34	**2100**	**1300**	**1290**	91	75	21	132	6
240.4	**1080**	**1550**	**2100**	15	18	15	25	25	28	**900**	**810**	**1200**	83	55	45	129	6
245.4	**1660**	**1400**	**1610**	13	16	19	34	19	31	**820**	**820**	**840**	**306**	84	104	150	7
250.4	**1400**	**1260**	**1500**	17	20	13	27	44	28	**2140**	**660**	**527**	**1620**	**395**	**471**	213	9
255.5	**1660**	**1491**	**1520**	13	13	15	38	30	38	**2060**	**2010**	**2490**	**960**	**1420**	**1350**	288	9
260.6	**1720**	**1610**	**1860**	15	12	24	39	41	38	**1550**	**2380**	**1780**	**610**	**526**	**461**	256	9

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

	Survey I																Geometric	
Mile Point	Week 1			Week 2			Week 3			Week 4			Week 5			Mean	# > SS Max
	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB	LDB	MID	RDB		
265.7	**1940**	**1680**	**1990**	15	14	21	63	67	43	**2480**	**990**	**910**	**1160**	**880**	**910**	294	9
269.8	**3080**	**1400**	**1300**	36	46	24	59	64	82	96	175	**700**	**487**	**1120**	**494**	227	7
275.2	**3260**	**1480**	**1560**	21	25	16	48	73	58	153	166	152	228	144	212	148	3
280.8	**1990**	**2480**	**1080**	25	25	30	77	67	63	115	115	**433**	173	141	**382**	164	5
285.9	**1550**	**1520**	**1300**	22	32	29	73	88	65	**515**	72	**601**	**278**	200	**700**	195	7
291.4	**1520**	**1550**	**910**	21	18	22	46	74	57	**599**	199	**295**	**369**	186	**510**	175	7
296.6	**1500**	**1520**	**1120**	35	20	19	56	47	52	**365**	41	210	**487**	**275**	130	145	6

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 mL

E. coli individual sample not to exceed 240 colonies/ 100 mL

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey L				
Mile Point	LDB	MID	RDB	#> SS Max
1.5	6	6	3	0
3.3	20	15	12	0
12.5	16	8	2	0
22.9	172	6	21	0
25.5	14	6	2	0
25.8	16	15	21	0
26.4	14	16	16	0
28.3	12	13	11	0
32.9	5	9	3	0
37.6	2	4	5	0
41.2	3	<1	<1	0
48.7	2	5	10	0
52.5	2	1	3	0
66.4	37	38	28	0
68.2	24	43	133	0
74.9	9	15	5	0
80.2	3	5	3	0
85.6	13	11	8	0
91.2	5	3	6	0
94.2	5	1	3	0
97.8	4	2	3	0
102.6	7	7	10	0
107.7	1	2	<1	0
113	2	3	2	0
118.3	1	2	1	0
123.7	<1	2	3	0
129.1	30	6	1	0
138.7	2	1	1	0
149.6	2	2	1	0
155	<1	1	2	0
165.8	5	5	5	0
171.2	1	2	5	0
175.1	3	7	5	0
183.5	2	<1	1	0
185.9	1	4	7	0
190.8	1	3	10	0
195.7	3	1	<1	0
200.7	<1	1	2	0
205.7	8	1	3	0
210.7	1	<1	2	0
215.7	3	3	4	0
220.4	1	1	<1	0
225.4	<1	6	2	0
230.4	4	<1	1	0
235.6	<1	3	<1	0
245.4	3	4	2	0
250.4	3	5	223	0
255.5	7	5	8	0
260.6	7	2	3	0
265.7	5	4	10	0

Exceeds Criteria
E. coli monthly geometric mean not to exceed 130 colonies/ 100 ml
E. coli individual sample not to exceed 240 colonies/ 100 ml

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey L				
Mile Point	**LDB**	**MID**	**RDB**	**#> SS Max**
269.8	2	9	50	0
275.2	5	1	4	0
280.8	15	6	14	0
285.9	2	3	3	0
291.4	<1	1	2	0
302	1	2	12	0
302	2	2	3	0
307.7	26	31	18	0
313.3	223	**269**	12	1
317.2	37	29	34	0
321.5	30	35	31	0
328	24	15	13	0
332.5	3	7	5	0
338.1	4	2	5	0
343.5	1	1	2	0
349.2	3	2	2	0
352	2	3	2	0
353.8	24	3	18	0
359.3	7	10	8	0
364.6	3	8	5	0
369.8	2	2	4	0
375	1	1	2	0
380.4	3	1	1	0
385.4	3	2	1	0
390.6	2	10	1	0
400.4	1	2	1	0
405.8	2	4	6	0
411.4	6	1	3	0
416.4	6	8	4	0
421.6	4	3	1	0
426.4	<1	3	10	0
431.4	2	1	2	0
436.8	2	1	3	0
446.5	1	<1	4	0
451.6	<1	<1	2	0
460	1	<1	4	0
465.4	5	5	8	0
468.7	5	7	4	0
472.7	13	21	10	0
477.6	19	17	19	0
482.2	35	38	25	0
486.2	35	25	15	0
489.7	36	25	16	0
493.2	15	24	17	0
498	50	35	24	0
503.1	21	17	21	0
508.3	8	12	10	0
513.4	21	23	15	0
518.5	1	<10	1	0
528.4	108	<10	-	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 ml

E. coli individual sample not to exceed 240 colonies/ 100 ml

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey L				
Mile Point	LDB	MID	RDB	#> SS Max
533.2	10	3	2	0
538.5	2	<1	1	0
543.5	5	5	2	0
548.3	1	4	1	0
553.6	<1	1	<1	0
567.6	2	<1	3	0
572.5	<1	<1	<1	0
587.8	1	<1	<1	0
592.2	<1	<1	2	0
597.1	<1	<1	<1	0
602.2	1	1	6	0
604.3	3	<1	6	0
607.5	4	4	3	0
609.7	2	11	6	0
612.2	3	2	1	0
617.6	5	8	3	0
623.1	8	6	4	0
628.1	13	13	15	0
631.6	16	6	5	0
637.6	1	3	1	0
643.1	<1	5	2	0
648.9	3	<1	2	0
654	1	<1	<1	0
659.2	2	<1	2	0
664.2	<1	<1	<1	0
669.1	1	<1	<1	0
674.5	2	1	<1	0
680.4	<1	<1	<1	0
690.7	<1	3	1	0
695.6	<1	<1	<1	0
700.9	<1	10	2	0
706.2	1	2	<1	0
711.5	<1	<1	2	0
727	1	10	3	0
732.5	2	10	5	0
742.4	4	1	<1	0
746.4	1	<1	15	0
750.6	10	15	8	0
754.8	<1	1	10	0
758	**500**	28	2	1
769.1	10	8	8	0
773.6	1	1	1	0
778.2	2	1	<1	0
782.8	<1	<1	4	0
787	<1	1	<1	0
792.7	<1	2	2	0
794.2	6	1	69	0
805.8	9	6	3	0
811.3	11	10	4	0
817	5	4	7	0

Exceeds Criteria

E. coli monthly geometric mean not to exceed 130 colonies/ 100 ml

E. coli individual sample not to exceed 240 colonies/ 100 ml

Appendix F: E. coli Concentration Data in Colonies per 100 mL

Survey L				
Mile Point	LDB	MID	RDB	#> SS Max
823.2	2	<1	2	0
829.5	2	1	<1	0
837.2	8	3	<1	0
842.3	3	<1	2	0
846.5	4	10	4	0
851.3	3	2	1	0
864.4	2	2	2	0
869.8	3	1	2	0
875.7	2	1	<1	0
880.7	<1	<1	<1	0
885	1	1	<1	0
889.2	2	<1	<1	0
891.7	2	2	1	0
897.5	3	<1	<1	0
903.2	<1	1	<1	0
908	2	<1	1	0
912.6	1	<1	2	0
917.6	<1	<1	2	0
923.4	25	9	2	0
932.2	1	3	<1	0
936.2	1	7	3	0
937.7	4	6	4	0
940.9	2	4	4	0
944.2	2	2	15	0
947.5	4	4	2	0
952.2	2	1	4	0
957.7	2	5	5	0
963	2	4	1	0
969.2	2	5	5	0
974.1	7	7	1	0
979.2	10	15	15	0

Exceeds Criteria
E. coli monthly geometric mean not to exceed 130 colonies/ 100 ml
E. coli individual sample not to exceed 240 colonies/ 100 ml

Appendix G:
Contact Recreation
Sampling Results

Appendix G: Contact Recreation Program Bacteria Data Summary

Stations	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences	Number of Individual Exceedences	% of Single Sample Max Exceedences		
Pittsburgh	Oct-05		May-06		Jun-06		Jul-06		Aug-06		Sep-06		Oct-06		May-07		Jun-07		Jul-07		Aug-07		Sep-07		Oct-07		**2006**	**2007**
1.4R	1	20%	4	80%	4	80%	3	60%	3	60%	1	20%	2	40%	0	0%	1	20%	0	0%	4	80%	3	60%	1	20%	57%	30%
1.4M	2	40%	2	40%	4	80%	2	40%	2	40%	1	20%	2	40%	0	0%	1	20%	0	0%	5	100%	3	60%	1	20%	43%	33%
1.4L	2	40%	3	60%	5	100%	3	60%	3	60%	1	20%	2	40%	0	0%	1	20%	1	20%	4	80%	3	60%	1	20%	57%	33%
4.3	3	60%	2	40%	4	80%	4	80%	4	80%	1	20%	2	40%	0	0%	1	20%	0	0%	5	100%	2	40%	1	20%	57%	30%
Total	8	40%	11	55%	17	85%	12	60%	12	60%	4	20%	8	40%	0	0%	4	20%	1	5%	18	90%	11	55%	4	20%		
Wheeling																												
84.2			2	40%	3	60%	0	0%	1	20%	1	20%	4	80%	0	0%	5	100%	0	0%	4	80%	1	20%	3	60%	37%	43%
86.8	1	20%	0	0%	1	20%	0	0%	1	20%	1	20%	3	60%	0	0%	3	60%	0	0%	1	20%	0	0%	0	0%	20%	13%
91.4	0	0%	0	0%	1	20%	0	0%	1	20%	0	0%	3	60%	2	40%	4	80%	0	0%	2	40%	1	20%	0	0%	17%	30%
92.8	1	20%	1	20%	3	60%	1	20%	2	40%	2	40%	4	80%	1	20%	4	80%	0	0%	3	60%	1	20%	3	60%	43%	40%
Total	2	13%	3	15%	8	40%	1	5%	5	25%	4	20%	14	70%	3	15%	16	80%	0	0%	10	50%	3	15%	6	30%		
Huntington																												
305.1	0	0%	1	20%	1	20%	1	20%	0	0%	0	0%	3	60%	1	20%	0	0%	0	0%	0	0%	0	0%	0	0%	20%	3%
308.1	1	20%	0	0%	1	20%	2	40%	2	40%	1	20%	2	40%	2	40%	1	20%	2	40%	4	80%	1	20%	0	0%	27%	33%
314.8	0	0%	0	0%	1	20%	2	40%	0	0%	2	40%	1	20%	1	20%	0	0%	0	0%	1	20%	0	0%	0	0%	20%	7%
Total	1	7%	1	7%	3	20%	5	33%	2	13%	3	20%	6	40%	4	27%	1	7%	2	13%	5	33%	1	7%	0	0%		
Cincinnati																												
462.6	0	0%	0	0%	0	0%	0	0%	1	20%	3	60%	3	60%	0	0%	1	20%	0	0%	0	0%	0	0%	1	20%	23%	7%
463.9															0	0%	0	0%	0	0%	0	0%	0	0%	1	20%		3%
469.9															0	0%	0	0%	0	0%	0	0%	1	20%	2	40%		10%
470	0	0%	0	0%	2	40%	3	60%	2	40%	3	60%	3	60%	0	0%	0	0%	0	0%	1	20%	2	40%	2	40%	43%	17%
477.5	1	20%	0	0%	1	20%	2	40%	0	0%	3	60%	3	60%	0	0%	1	20%	0	0%	0	0%	0	0%	1	20%	30%	7%
Total	1	7%	0	0%	3	20%	5	33%	3	20%	9	60%	9	60%	0	0%	2	8%	0	0%	1	4%	3	12%	7	28%		
Louisville																												
594	1	20%	1	20%	0	0%	0	0%	0	0%	1	20%	0	0%	0	0%	0	0%	0	0%	1	20%	0	0%	2	40%	7%	10%
608.7	0	0%	0	0%	1	20%	1	20%	1	20%	2	40%	0	0%	0	0%	0	0%	1	20%	2	40%	0	0%	0	0%	17%	10%
619.3	0	0%	3	60%	4	80%	3	60%	2	40%	3	60%	3	60%	4	80%	3	60%	1	20%	3	60%	2	40%	2	40%	60%	50%
Total	1	7%	4	27%	5	33%	4	27%	3	20%	6	40%	3	20%	4	27%	3	20%	2	13%	6	40%	2	13%	4	27%		
Evansville																												
791.5	1	20%	2	40%	1	20%	1	20%	1	20%	3	60%	2	40%	0	0%	0	0%	0	0%	2	40%	0	0%	0	0%	33%	7%
793.7	2	40%	5	100%	3	60%	1	20%	3	60%	3	60%	3	60%	1	20%	2	40%	2	40%	4	80%	3	60%	3	60%	60%	50%
797.3	3	60%	5	100%	1	20%	0	0%	1	20%	3	60%	4	80%	0	0%	0	0%	0	0%	0	0%	1	20%	0	0%	47%	3%
Total	6	40%	12	80%	5	33%	2	13%	5	33%	9	60%	9	60%	1	7%	2	13%	2	13%	6	40%	4	27%	3	20%		

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
1.4R	PITTSBURGH	03-May-06		260	246	**EXCEEDS**
1.4R	PITTSBURGH	09-May-06		718	709	**EXCEEDS**
1.4R	PITTSBURGH	16-May-06		4,900	509	**EXCEEDS**
1.4R	PITTSBURGH	23-May-06		420	460	**EXCEEDS**
1.4R	PITTSBURGH	30-May-06		250	71	
			GEOMETRIC MEAN	626	311	**EXCEEDS**
1.4M	PITTSBURGH	03-May-06		290	226	
1.4M	PITTSBURGH	09-May-06		470	310	**EXCEEDS**
1.4M	PITTSBURGH	16-May-06		1,700	1,400	**EXCEEDS**
1.4M	PITTSBURGH	23-May-06		223	61	
1.4M	PITTSBURGH	30-May-06		320	63	
			GEOMETRIC MEAN	440	207	**EXCEEDS**
1.4L	PITTSBURGH	03-May-06		210	234	
1.4L	PITTSBURGH	09-May-06		745	300	**EXCEEDS**
1.4L	PITTSBURGH	16-May-06		6,000	2,000	**EXCEEDS**
1.4L	PITTSBURGH	23-May-06		430	246	**EXCEEDS**
1.4L	PITTSBURGH	30-May-06		180	60	
			GEOMETRIC MEAN	592	291	**EXCEEDS**
4.3	PITTSBURGH	03-May-06		188	223	
4.3	PITTSBURGH	09-May-06		420	310	**EXCEEDS**
4.3	PITTSBURGH	16-May-06		3,900	292	**EXCEEDS**
4.3	PITTSBURGH	23-May-06		270	166	
4.3	PITTSBURGH	30-May-06		151	51	
			GEOMETRIC MEAN	417	176	**EXCEEDS**
1.4R	PITTSBURGH	06-Jun-06		745	560	**EXCEEDS**
1.4R	PITTSBURGH	13-Jun-06		350	280	**EXCEEDS**
1.4R	PITTSBURGH	20-Jun-06		7,100	700	**EXCEEDS**
1.4R	PITTSBURGH	22-Jun-06		2,100	40	**EXCEEDS**
1.4R	PITTSBURGH	27-Jun-06		13,400	6,600	**EXCEEDS**
			GEOMETRIC MEAN	2,205	493	**EXCEEDS**
1.4M	PITTSBURGH	06-Jun-06		1,300	600	**EXCEEDS**
1.4M	PITTSBURGH	13-Jun-06		200	128	
1.4M	PITTSBURGH	20-Jun-06		6,900	500	**EXCEEDS**
1.4M	PITTSBURGH	22-Jun-06		2,300	1,200	**EXCEEDS**
1.4M	PITTSBURGH	27-Jun-06		600	264	**EXCEEDS**
			GEOMETRIC MEAN	1,199	414	**EXCEEDS**
1.4L	PITTSBURGH	06-Jun-06		2,200	1,400	**EXCEEDS**
1.4L	PITTSBURGH	13-Jun-06		410	500	**EXCEEDS**
1.4L	PITTSBURGH	20-Jun-06		5,800	1,500	**EXCEEDS**
1.4L	PITTSBURGH	22-Jun-06		2,900	400	**EXCEEDS**
1.4L	PITTSBURGH	27-Jun-06		1,100	430	**EXCEEDS**
			GEOMETRIC MEAN	1,756	710	**EXCEEDS**
4.3	PITTSBURGH	06-Jun-06		1,000	245	**EXCEEDS**
4.3	PITTSBURGH	13-Jun-06		250	196	
4.3	PITTSBURGH	20-Jun-06		6,600	132	**EXCEEDS**
4.3	PITTSBURGH	22-Jun-06		1,500	60	**EXCEEDS**
4.3	PITTSBURGH	27-Jun-06		1,000	290	**EXCEEDS**
			GEOMETRIC MEAN	1,199	162	**EXCEEDS**
1.4R	PITTSBURGH	06-Jul-06		2,900	1,200	**EXCEEDS**
1.4R	PITTSBURGH	11-Jul-06		271	24	
1.4R	PITTSBURGH	18-Jul-06		410	127	**EXCEEDS**
1.4R	PITTSBURGH	20-Jul-06		200	50	
1.4R	PITTSBURGH	25-Jul-06		250	700	**EXCEEDS**
			GEOMETRIC MEAN	438	167	**EXCEEDS**
1.4M	PITTSBURGH	06-Jul-06		4,800	1,300	**EXCEEDS**
1.4M	PITTSBURGH	11-Jul-06		100	140	
1.4M	PITTSBURGH	18-Jul-06		229	127	
1.4M	PITTSBURGH	20-Jul-06		116	60	
1.4M	PITTSBURGH	25-Jul-06		328	400	**EXCEEDS**
			GEOMETRIC MEAN	334	223	**EXCEEDS**
1.4L	PITTSBURGH	06-Jul-06		5,200	300	**EXCEEDS**
1.4L	PITTSBURGH	11-Jul-06		84	100	
1.4L	PITTSBURGH	18-Jul-06		280	230	
1.4L	PITTSBURGH	20-Jul-06		1,000	70	**EXCEEDS**
1.4L	PITTSBURGH	25-Jul-06		270	800	**EXCEEDS**
			GEOMETRIC MEAN	506	208	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
4.3	PITTSBURGH	06-Jul-06		5,200	2,300	**EXCEEDS**
4.3	PITTSBURGH	11-Jul-06		100	600	**EXCEEDS**
4.3	PITTSBURGH	18-Jul-06		230	63	
4.3	PITTSBURGH	20-Jul-06		1,000	4	**EXCEEDS**
4.3	PITTSBURGH	25-Jul-06		484	1,200	**EXCEEDS**
			GEOMETRIC MEAN	566	211	**EXCEEDS**
1.4R	PITTSBURGH	01-Aug-06		1,491	1,500	**EXCEEDS**
1.4R	PITTSBURGH	08-Aug-06		500	40	**EXCEEDS**
1.4R	PITTSBURGH	15-Aug-06		157	100	
1.4R	PITTSBURGH	22-Aug-06		240	112	
1.4R	PITTSBURGH	29-Aug-06		2,200	12,000	**EXCEEDS**
			GEOMETRIC MEAN	573	381	**EXCEEDS**
1.4M	PITTSBURGH	01-Aug-06		1,200	700	**EXCEEDS**
1.4M	PITTSBURGH	08-Aug-06		260	15	
1.4M	PITTSBURGH	15-Aug-06		108	72	
1.4M	PITTSBURGH	22-Aug-06		192	200	
1.4M	PITTSBURGH	29-Aug-06		1,200	1,500	**EXCEEDS**
			GEOMETRIC MEAN	378	188	**EXCEEDS**
1.4L	PITTSBURGH	01-Aug-06		900	ND	**EXCEEDS**
1.4L	PITTSBURGH	08-Aug-06		627	60	**EXCEEDS**
1.4L	PITTSBURGH	15-Aug-06		72	66	
1.4L	PITTSBURGH	22-Aug-06		90	77	
1.4L	PITTSBURGH	29-Aug-06		3,100	1,100	**EXCEEDS**
			GEOMETRIC MEAN	408	NA	**EXCEEDS**
4.3	PITTSBURGH	01-Aug-06		1,100	ND	**EXCEEDS**
4.3	PITTSBURGH	08-Aug-06		382	300	**EXCEEDS**
4.3	PITTSBURGH	15-Aug-06		509	1,900	**EXCEEDS**
4.3	PITTSBURGH	22-Aug-06		110	108	
4.3	PITTSBURGH	29-Aug-06		1,400	2,300	**EXCEEDS**
			GEOMETRIC MEAN	505	NA	**EXCEEDS**
1.4R	PITTSBURGH	05-Sep-06		700	60	**EXCEEDS**
1.4R	PITTSBURGH	12-Sep-06		96	64	
1.4M	PITTSBURGH	05-Sep-06		1,100	300	**EXCEEDS**
1.4M	PITTSBURGH	12-Sep-06		36	49	
1.4L	PITTSBURGH	05-Sep-06		600	400	**EXCEEDS**
1.4L	PITTSBURGH	12-Sep-06		22	68	
4.3	PITTSBURGH	05-Sep-06		1,600	20	**EXCEEDS**
4.3	PITTSBURGH	12-Sep-06		57	110	
1.4R	PITTSBURGH	02-Oct-06		60	80	
1.4R	PITTSBURGH	09-Oct-06		60		
1.4R	PITTSBURGH	18-Oct-06		1,900	700	**EXCEEDS**
1.4R	PITTSBURGH	24-Oct-06		140	120	
1.4R	PITTSBURGH	31-Oct-06		800	800	**EXCEEDS**
			GEOMETRIC MEAN	238	271	**EXCEEDS**
1.4M	PITTSBURGH	02-Oct-06			40	
1.4M	PITTSBURGH	09-Oct-06		60		
1.4M	PITTSBURGH	18-Oct-06		2,063	1,400	**EXCEEDS**
1.4M	PITTSBURGH	24-Oct-06		96	124	
1.4M	PITTSBURGH	31-Oct-06		300	510	**EXCEEDS**
			GEOMETRIC MEAN	244	244	**EXCEEDS**
1.4L	PITTSBURGH	02-Oct-06		200	400	**EXCEEDS**
1.4L	PITTSBURGH	09-Oct-06		69	190	
1.4L	PITTSBURGH	18-Oct-06		1,100		**EXCEEDS**
1.4L	PITTSBURGH	24-Oct-06		191	70	
1.4L	PITTSBURGH	31-Oct-06		390	210	
			GEOMETRIC MEAN	257	183	**EXCEEDS**
4.3	PITTSBURGH	02-Oct-06		16	164	
4.3	PITTSBURGH	09-Oct-06		52	170	
4.3	PITTSBURGH	18-Oct-06		3,500	60	**EXCEEDS**
4.3	PITTSBURGH	24-Oct-06		200	177	
4.3	PITTSBURGH	31-Oct-06		440	809	**EXCEEDS**
			GEOMETRIC MEAN	191	189	**EXCEEDS**
1.4R	PITTSBURGH	15-May-07		60	8	
1.4R	PITTSBURGH	22-May-07		130	90	
1.4R	PITTSBURGH	24-May-07		40	32	
1.4R	PITTSBURGH	29-May-07		128	51	
1.4R	PITTSBURGH	31-May-07		69	31	
			GEOMETRIC MEAN	77	33	

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
1.4M	PITTSBURGH	15-May-07		20	8	
1.4M	PITTSBURGH	22-May-07		100	74	
1.4M	PITTSBURGH	24-May-07		57	40	
1.4M	PITTSBURGH	29-May-07		68	80	
1.4M	PITTSBURGH	31-May-07		51	24	
			GEOMETRIC MEAN	52	34	
1.4L	PITTSBURGH	15-May-07		56	20	
1.4L	PITTSBURGH	22-May-07		120	210	
1.4L	PITTSBURGH	24-May-07		71	37	
1.4L	PITTSBURGH	29-May-07		116	52	
1.4L	PITTSBURGH	31-May-07		108	96	
			GEOMETRIC MEAN	90	60	
4.3	PITTSBURGH	15-May-07		76	20	
4.3	PITTSBURGH	22-May-07		43	48	
4.3	PITTSBURGH	24-May-07		52	37	
4.3	PITTSBURGH	29-May-07		188	16	
4.3	PITTSBURGH	31-May-07		84	32	
			GEOMETRIC MEAN	77	28	
1.4R	PITTSBURGH	12-Jun-07		132	80	
1.4R	PITTSBURGH	19-Jun-07		48	40	
1.4R	PITTSBURGH	21-Jun-07		450	180	**EXCEEDS**
1.4R	PITTSBURGH	26-Jun-07		80	84	
1.4M	PITTSBURGH	12-Jun-07		84	100	
1.4M	PITTSBURGH	19-Jun-07		50	31	
1.4M	PITTSBURGH	21-Jun-07		800	600	**EXCEEDS**
1.4M	PITTSBURGH	26-Jun-07		51	34	
1.4L	PITTSBURGH	12-Jun-07		108	70	
1.4L	PITTSBURGH	19-Jun-07		80	36	
1.4L	PITTSBURGH	21-Jun-07		580	270	**EXCEEDS**
1.4L	PITTSBURGH	26-Jun-07		57	20	
4.3	PITTSBURGH	12-Jun-07		176	88	
4.3	PITTSBURGH	19-Jun-07		51	40	
4.3	PITTSBURGH	21-Jun-07		700	500	**EXCEEDS**
4.3	PITTSBURGH	26-Jun-07		330	209	
1.4R	PITTSBURGH	02-Jul-07		118	80	
1.4R	PITTSBURGH	19-Jul-07		188	118	
1.4R	PITTSBURGH	24-Jul-07		70	8	
1.4R	PITTSBURGH	26-Jul-07		60	20	
1.4R	PITTSBURGH	31-Jul-07		116	50	
			GEOMETRIC MEAN	102	38	
1.4M	PITTSBURGH	02-Jul-07		120	90	
1.4M	PITTSBURGH	19-Jul-07		180	118	
1.4M	PITTSBURGH	24-Jul-07		24	4	
1.4M	PITTSBURGH	26-Jul-07		100	150	
1.4M	PITTSBURGH	31-Jul-07		92	46	
			GEOMETRIC MEAN	86	49	
1.4L	PITTSBURGH	02-Jul-07		92	60	
1.4L	PITTSBURGH	19-Jul-07		500	218	**EXCEEDS**
1.4L	PITTSBURGH	24-Jul-07		160	4	
1.4L	PITTSBURGH	26-Jul-07		20		
1.4L	PITTSBURGH	31-Jul-07		66	63	
			GEOMETRIC MEAN	99	43	
4.3	PITTSBURGH	02-Jul-07		172	120	
4.3	PITTSBURGH	19-Jul-07		64	140	
4.3	PITTSBURGH	24-Jul-07		69	40	
4.3	PITTSBURGH	26-Jul-07		28		
4.3	PITTSBURGH	31-Jul-07		36	43	
			GEOMETRIC MEAN	60	73	
1.4R	PITTSBURGH	07-Aug-07		2800	1,700	**EXCEEDS**
1.4R	PITTSBURGH	16-Aug-07		2800	4,800	**EXCEEDS**
1.4R	PITTSBURGH	21-Aug-07		3500	600	**EXCEEDS**
1.4R	PITTSBURGH	28-Aug-07		473	236	**EXCEEDS**
1.4R	PITTSBURGH	30-Aug-07		300	155	
			GEOMETRIC MEAN	1,312	709	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
1.4M	PITTSBURGH	07-Aug-07		3,800	1,300	**EXCEEDS**
1.4M	PITTSBURGH	16-Aug-07		2,900	1,900	**EXCEEDS**
1.4M	PITTSBURGH	21-Aug-07		20,000	1,200	**EXCEEDS**
1.4M	PITTSBURGH	28-Aug-07		364	1,600	**EXCEEDS**
1.4M	PITTSBURGH	30-Aug-07		450	500	**EXCEEDS**
			GEOMETRIC MEAN	2,049	1,188	**EXCEEDS**
1.4L	PITTSBURGH	07-Aug-07		2,500	800	**EXCEEDS**
1.4L	PITTSBURGH	16-Aug-07		2,400	1,300	**EXCEEDS**
1.4L	PITTSBURGH	21-Aug-07		3,500	6,000	**EXCEEDS**
1.4L	PITTSBURGH	28-Aug-07		210	164	
1.4L	PITTSBURGH	30-Aug-07		745	155	**EXCEEDS**
			GEOMETRIC MEAN	1,269	692	**EXCEEDS**
4.3	PITTSBURGH	07-Aug-07		2,800	800	**EXCEEDS**
4.3	PITTSBURGH	16-Aug-07		1,100	2,100	**EXCEEDS**
4.3	PITTSBURGH	21-Aug-07		6,000	6,000	**EXCEEDS**
4.3	PITTSBURGH	28-Aug-07		490	200	**EXCEEDS**
4.3	PITTSBURGH	30-Aug-07		500	200	**EXCEEDS**
			GEOMETRIC MEAN	1,353	834	**EXCEEDS**
1.4R	PITTSBURGH	04-Sep-07		2000	400	**EXCEEDS**
1.4R	PITTSBURGH	18-Sep-07		2200	1,600	**EXCEEDS**
1.4R	PITTSBURGH	20-Sep-07		104	44	
1.4R	PITTSBURGH	25-Sep-07		40	70	
1.4R	PITTSBURGH	27-Sep-07		1700	745	**EXCEEDS**
			GEOMETRIC MEAN	500	271	**EXCEEDS**
1.4M	PITTSBURGH	04-Sep-07		1,400	300	**EXCEEDS**
1.4M	PITTSBURGH	18-Sep-07		2,500	340	**EXCEEDS**
1.4M	PITTSBURGH	20-Sep-07		140	54	
1.4M	PITTSBURGH	25-Sep-07		80	70	
1.4M	PITTSBURGH	27-Sep-07		1,500	280	**EXCEEDS**
			GEOMETRIC MEAN	567	161	**EXCEEDS**
1.4L	PITTSBURGH	04-Sep-07		1,100	400	**EXCEEDS**
1.4L	PITTSBURGH	18-Sep-07		3,900	1,300	**EXCEEDS**
1.4L	PITTSBURGH	20-Sep-07		96	74	
1.4L	PITTSBURGH	25-Sep-07		36	40	
1.4L	PITTSBURGH	27-Sep-07		2,000	727	**EXCEEDS**
			GEOMETRIC MEAN	495	257	**EXCEEDS**
4.3	PITTSBURGH	04-Sep-07		100	160	
4.3	PITTSBURGH	18-Sep-07		450	300	**EXCEEDS**
4.3	PITTSBURGH	20-Sep-07		70	74	
4.3	PITTSBURGH	25-Sep-07		20	4	
4.3	PITTSBURGH	27-Sep-07		1,600	900	**EXCEEDS**
			GEOMETRIC MEAN	159	105	
1.4R	PITTSBURGH	02-Oct-07		100	54	
1.4R	PITTSBURGH	09-Oct-07		157	100	
1.4R	PITTSBURGH	16-Oct-07		100	210	
1.4R	PITTSBURGH	23-Oct-07		168	63	
1.4R	PITTSBURGH	30-Oct-07		280	818	**EXCEEDS**
			GEOMETRIC MEAN	149	142	**EXCEEDS**
1.4M	PITTSBURGH	02-Oct-07		140	40	
1.4M	PITTSBURGH	09-Oct-07		92	120	
1.4M	PITTSBURGH	16-Oct-07		269	40	
1.4M	PITTSBURGH	23-Oct-07		116	100	
1.4M	PITTSBURGH	30-Oct-07		3,400	230	**EXCEEDS**
			GEOMETRIC MEAN	267	85	**EXCEEDS**
1.4L	PITTSBURGH	02-Oct-07		170	63	
1.4L	PITTSBURGH	09-Oct-07		260	90	
1.4L	PITTSBURGH	16-Oct-07		140	100	
1.4L	PITTSBURGH	23-Oct-07		260	124	
1.4L	PITTSBURGH	30-Oct-07		520	280	**EXCEEDS**
			GEOMETRIC MEAN	242	115	**EXCEEDS**
4.3	PITTSBURGH	02-Oct-07		140	136	
4.3	PITTSBURGH	09-Oct-07		63	40	
4.3	PITTSBURGH	16-Oct-07		243	91	
4.3	PITTSBURGH	23-Oct-07		96	68	
4.3	PITTSBURGH	30-Oct-07		664	240	**EXCEEDS**
			GEOMETRIC MEAN	169	96	

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
84.2	WHEELING	02-May-06		16	4	
84.2	WHEELING	08-May-06		20	4	
84.2	WHEELING	16-May-06		69	32	
84.2	WHEELING	23-May-06		900	250	**EXCEEDS**
84.2	WHEELING	30-May-06		2,600	500	**EXCEEDS**
			GEOMETRIC MEAN	139	36	
86.8	WHEELING	02-May-06		40	4	
86.8	WHEELING	08-May-06		8	4	
86.8	WHEELING	16-May-06		92	36	
86.8	WHEELING	23-May-06		270	40	
86.8	WHEELING	30-May-06		37	20	
			GEOMETRIC MEAN	49	14	
91.4	WHEELING	02-May-06		28	4	
91.4	WHEELING	08-May-06		4	4	
91.4	WHEELING	16-May-06		176	80	
91.4	WHEELING	23-May-06		80	54	
91.4	WHEELING	30-May-06		40	16	
			GEOMETRIC MEAN	36	16	
92.8	WHEELING	02-May-06		108	54	
92.8	WHEELING	08-May-06		92	76	
92.8	WHEELING	16-May-06		450	600	**EXCEEDS**
92.8	WHEELING	23-May-06		136	96	
92.8	WHEELING	30-May-06		223	49	
			GEOMETRIC MEAN	168	103	
84.2	WHEELING	06-Jun-06		940	510	**EXCEEDS**
84.2	WHEELING	19-Jun-06		132	84	
84.2	WHEELING	22-Jun-06		1,900	271	**EXCEEDS**
84.2	WHEELING	27-Jun-06		870	236	**EXCEEDS**
84.2	WHEELING	29-Jun-06		184	66	
			GEOMETRIC MEAN	519	178	**EXCEEDS**
86.8	WHEELING	06-Jun-06		60	24	
86.8	WHEELING	19-Jun-06		16	28	
86.8	WHEELING	22-Jun-06		1,600	530	**EXCEEDS**
86.8	WHEELING	27-Jun-06		400	128	
86.8	WHEELING	29-Jun-06		211	66	
			GEOMETRIC MEAN	167	79	
91.4	WHEELING	06-Jun-06		24	36	
91.4	WHEELING	19-Jun-06		83	96	
91.4	WHEELING	22-Jun-06		1,300	864	**EXCEEDS**
91.4	WHEELING	27-Jun-06		160	177	
91.4	WHEELING	29-Jun-06		240	120	
			GEOMETRIC MEAN	158	145	**EXCEEDS**
92.8	WHEELING	06-Jun-06		108	80	
92.8	WHEELING	19-Jun-06		850	350	**EXCEEDS**
92.8	WHEELING	22-Jun-06		25,300	18,000	**EXCEEDS**
92.8	WHEELING	27-Jun-06		19,500	19,200	**EXCEEDS**
92.8	WHEELING	29-Jun-06		223	77	
			GEOMETRIC MEAN	1,588	943	**EXCEEDS**
84.2	WHEELING	06-Jul-06		176	136	
84.2	WHEELING	11-Jul-06		72	54	
84.2	WHEELING	18-Jul-06		52	16	
84.2	WHEELING	20-Jul-06		120	30	
84.2	WHEELING	25-Jul-06		100	88	
			GEOMETRIC MEAN	95	50	
86.8	WHEELING	06-Jul-06		90	16	
86.8	WHEELING	11-Jul-06		28	12	
86.8	WHEELING	18-Jul-06		20	20	
86.8	WHEELING	20-Jul-06		44	50	
86.8	WHEELING	25-Jul-06		86	56	
			GEOMETRIC MEAN	45	25	

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
91.4	WHEELING	06-Jul-06		196	200	
91.4	WHEELING	11-Jul-06		4	4	
91.4	WHEELING	18-Jul-06		68	44	
91.4	WHEELING	20-Jul-06		12	4	
91.4	WHEELING	25-Jul-06		57	104	
			GEOMETRIC MEAN	33	27	
92.8	WHEELING	06-Jul-06		220	277	**EXCEEDS**
92.8	WHEELING	11-Jul-06		69	20	
92.8	WHEELING	18-Jul-06		60	52	
92.8	WHEELING	20-Jul-06		160	54	
92.8	WHEELING	25-Jul-06		128	94	
			GEOMETRIC MEAN	113	68	
84.2	WHEELING	01-Aug-06		200	12	
84.2	WHEELING	08-Aug-06		92	100	
84.2	WHEELING	15-Aug-06		430	164	**EXCEEDS**
84.2	WHEELING	22-Aug-06		40	8	
84.2	WHEELING	29-Aug-06		44	32	
			GEOMETRIC MEAN	107	35	
86.8	WHEELING	01-Aug-06		64	54	
86.8	WHEELING	08-Aug-06		188	72	
86.8	WHEELING	15-Aug-06		640	104	**EXCEEDS**
86.8	WHEELING	22-Aug-06		30	12	
86.8	WHEELING	29-Aug-06		64	52	
			GEOMETRIC MEAN	108	48	
91.4	WHEELING	01-Aug-06		88	54	
91.4	WHEELING	08-Aug-06		380	77	
91.4	WHEELING	15-Aug-06		836	174	**EXCEEDS**
91.4	WHEELING	22-Aug-06		12	12	
91.4	WHEELING	29-Aug-06		222	80	
			GEOMETRIC MEAN	149	59	
92.8	WHEELING	01-Aug-06		200	104	
92.8	WHEELING	08-Aug-06		112	192	
92.8	WHEELING	15-Aug-06		1,440	350	**EXCEEDS**
92.8	WHEELING	22-Aug-06		88	40	
92.8	WHEELING	29-Aug-06		420	44	**EXCEEDS**
			GEOMETRIC MEAN	260	104	**EXCEEDS**
84.2	WHEELING	05-Sep-06		80	68	
84.2	WHEELING	12-Sep-06		40	24	
84.2	WHEELING	19-Sep-06		116	220	
84.2	WHEELING	21-Sep-06		880	40	**EXCEEDS**
84.2	WHEELING	26-Sep-06		160	40	
			GEOMETRIC MEAN	139	56	
86.8	WHEELING	05-Sep-06		128	44	
86.8	WHEELING	12-Sep-06		14	23	
86.8	WHEELING	19-Sep-06		211	63	
86.8	WHEELING	21-Sep-06		580	40	**EXCEEDS**
86.8	WHEELING	26-Sep-06		92	20	
			GEOMETRIC MEAN	115	35	
91.4	WHEELING	05-Sep-06		216	54	
91.4	WHEELING	12-Sep-06		57	40	
91.4	WHEELING	19-Sep-06		320	88	
91.4	WHEELING	21-Sep-06		210	56	
91.4	WHEELING	26-Sep-06		156	24	
			GEOMETRIC MEAN	167	48	
92.8	WHEELING	05-Sep-06		500	124	**EXCEEDS**
92.8	WHEELING	12-Sep-06		80	20	
92.8	WHEELING	19-Sep-06		873	100	**EXCEEDS**
92.8	WHEELING	21-Sep-06		226	60	
92.8	WHEELING	26-Sep-06		148	104	
			GEOMETRIC MEAN	259	69	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
84.2	WHEELING	03-Oct-06		1,000	727	**EXCEEDS**
84.2	WHEELING	10-Oct-06		224	60	
84.2	WHEELING	17-Oct-06		1,027	1,300	**EXCEEDS**
84.2	WHEELING	24-Oct-06		770	176	**EXCEEDS**
84.2	WHEELING	30-Oct-06		1,900	1,200	**EXCEEDS**
			GEOMETRIC MEAN	804	413	**EXCEEDS**
86.8	WHEELING	03-Oct-06		580	140	**EXCEEDS**
86.8	WHEELING	10-Oct-06		64	64	
86.8	WHEELING	17-Oct-06		140	220	
86.8	WHEELING	24-Oct-06		900	243	**EXCEEDS**
86.8	WHEELING	31-Oct-06		3,000	1,354	**EXCEEDS**
			GEOMETRIC MEAN	426	230	**EXCEEDS**
91.4	WHEELING	03-Oct-06		283	168	
91.4	WHEELING	10-Oct-06		74	28	
91.4	WHEELING	17-Oct-06		2,800	2,000	**EXCEEDS**
91.4	WHEELING	24-Oct-06		1,160	290	**EXCEEDS**
91.4	WHEELING	31-Oct-06		3,300	1,281	**EXCEEDS**
			GEOMETRIC MEAN	742	323	**EXCEEDS**
92.8	WHEELING	03-Oct-06		580	540	**EXCEEDS**
92.8	WHEELING	10-Oct-06		174	68	
92.8	WHEELING	17-Oct-06		6,000	6,000	**EXCEEDS**
92.8	WHEELING	24-Oct-06		1,082	280	**EXCEEDS**
92.8	WHEELING	31-Oct-06		2,300	1,072	**EXCEEDS**
			GEOMETRIC MEAN	1,085	581	**EXCEEDS**
84.2	WHEELING	01-May-07		80	40	
84.2	WHEELING	08-May-07		48	20	
84.2	WHEELING	15-May-07		4	8	
84.2	WHEELING	22-May-07		210	152	
84.2	WHEELING	29-May-07		8	4	
			GEOMETRIC MEAN	30	21	
86.8	WHEELING	01-May-07		54	36	
86.8	WHEELING	08-May-07		28	20	
86.8	WHEELING	15-May-07		4	16	
86.8	WHEELING	22-May-07		24	16	
86.8	WHEELING	29-May-07		20	4	
			GEOMETRIC MEAN	20	15	
91.4	WHEELING	01-May-07		108	34	
91.4	WHEELING	08-May-07		52	20	
91.4	WHEELING	15-May-07		12	16	
91.4	WHEELING	22-May-07		500	24	**EXCEEDS**
91.4	WHEELING	29-May-07		3,100	20	**EXCEEDS**
			GEOMETRIC MEAN	160	22	
92.8	WHEELING	01-May-07		96	36	
92.8	WHEELING	08-May-07		200	172	
92.8	WHEELING	15-May-07		57	49	
92.8	WHEELING	22-May-07		156	52	
92.8	WHEELING	29-May-07		890	24	**EXCEEDS**
			GEOMETRIC MEAN	172	52	
84.2	WHEELING	05-Jun-07		20,000	20,000	**EXCEEDS**
84.2	WHEELING	12-Jun-07		780	96	**EXCEEDS**
84.2	WHEELING	19-Jun-07		148	391	**EXCEEDS**
84.2	WHEELING	20-Jun-07		9,800	20,000	**EXCEEDS**
84.2	WHEELING	21-Jun-07		20,000	180	**EXCEEDS**
84.2	WHEELING	26-Jun-07		132	60	
			GEOMETRIC MEAN	1,977	738	**EXCEEDS**
86.8	WHEELING	05-Jun-07		184	20,000	**EXCEEDS**
86.8	WHEELING	12-Jun-07		116	28	
86.8	WHEELING	19-Jun-07		300	280	**EXCEEDS**
86.8	WHEELING	20-Jun-07		204	64	
86.8	WHEELING	21-Jun-07		4,600	32	**EXCEEDS**
86.8	WHEELING	26-Jun-07		1,000	103	**EXCEEDS**
			GEOMETRIC MEAN	426	179	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
91.4	WHEELING	05-Jun-07		200	20,000	**EXCEEDS**
91.4	WHEELING	12-Jun-07		308	20	
91.4	WHEELING	19-Jun-07		1,400	246	**EXCEEDS**
91.4	WHEELING	20-Jun-07		10,300	57	**EXCEEDS**
91.4	WHEELING	21-Jun-07		20,000	20,000	**EXCEEDS**
91.4	WHEELING	26-Jun-07		100	54	
			GEOMETRIC MEAN	1,101	427	**EXCEEDS**
92.8	WHEELING	05-Jun-07		20,000	20,000	**EXCEEDS**
92.8	WHEELING	12-Jun-07		152	40	
92.8	WHEELING	19-Jun-07		580	250	**EXCEEDS**
92.8	WHEELING	20-Jun-07		20,000	540	**EXCEEDS**
92.8	WHEELING	21-Jun-07		20,000	20,000	**EXCEEDS**
92.8	WHEELING	26-Jun-07		500	320	**EXCEEDS**
			GEOMETRIC MEAN	2,658	940	**EXCEEDS**
84.2	WHEELING	02-Jul-07		28	16	
84.2	WHEELING	10-Jul-07		60	20	
84.2	WHEELING	17-Jul-07		308	4	
84.2	WHEELING	24-Jul-07		1	66	
84.2	WHEELING	31-Jul-07		16	12	
			GEOMETRIC MEAN	24	16	
86.8	WHEELING	02-Jul-07		20	12	
86.8	WHEELING	10-Jul-07		16	4	
86.8	WHEELING	17-Jul-07		48	4	
86.8	WHEELING	24-Jul-07		4	32	
86.8	WHEELING	31-Jul-07		4	4	
			GEOMETRIC MEAN	12	8	
91.4	WHEELING	02-Jul-07		48	16	
91.4	WHEELING	10-Jul-07		72	28	
91.4	WHEELING	17-Jul-07		8	4	
91.4	WHEELING	24-Jul-07		56	40	
91.4	WHEELING	31-Jul-07		46	24	
			GEOMETRIC MEAN	37	18	
92.8	WHEELING	02-Jul-07		80	136	
92.8	WHEELING	10-Jul-07		66	28	
92.8	WHEELING	17-Jul-07		240	44	
92.8	WHEELING	24-Jul-07		100	86	
92.8	WHEELING	31-Jul-07		180	32	
			GEOMETRIC MEAN	118	54	
84.2	WHEELING	07-Aug-07		148	54	
84.2	WHEELING	14-Aug-07		1,000	360	**EXCEEDS**
84.2	WHEELING	21-Aug-07		670	290	**EXCEEDS**
84.2	WHEELING	23-Aug-07		470	390	**EXCEEDS**
84.2	WHEELING	28-Aug-07		236	242	**EXCEEDS**
			GEOMETRIC MEAN	406	221	**EXCEEDS**
86.8	WHEELING	07-Aug-07		4	4	
86.8	WHEELING	14-Aug-07		30	10	
86.8	WHEELING	21-Aug-07		310	200	
86.8	WHEELING	23-Aug-07		580	390	**EXCEEDS**
86.8	WHEELING	28-Aug-07		84	84	
			GEOMETRIC MEAN	71	48	
91.4	WHEELING	07-Aug-07		28	36	
91.4	WHEELING	14-Aug-07		124	36	
91.4	WHEELING	21-Aug-07		480	128	**EXCEEDS**
91.4	WHEELING	23-Aug-07		1,100	228	**EXCEEDS**
91.4	WHEELING	28-Aug-07		52	88	
			GEOMETRIC MEAN	157	80	
92.8	WHEELING	07-Aug-07		280	84	
92.8	WHEELING	14-Aug-07		280	92	
92.8	WHEELING	21-Aug-07		1,600	440	**EXCEEDS**
92.8	WHEELING	23-Aug-07		1,200	570	**EXCEEDS**
92.8	WHEELING	28-Aug-07		540	350	**EXCEEDS**
			GEOMETRIC MEAN	605	232	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
84.2	WHEELING	04-Sep-07		490	450	**EXCEEDS**
84.2	WHEELING	11-Sep-07		144	36	
84.2	WHEELING	18-Sep-07		250	64	
84.2	WHEELING	20-Sep-07		92	76	
84.2	WHEELING	25-Sep-07		12	52	
			GEOMETRIC MEAN	114	84	
86.8	WHEELING	04-Sep-07		24	32	
86.8	WHEELING	11-Sep-07		12	4	
86.8	WHEELING	18-Sep-07		69	4	
86.8	WHEELING	20-Sep-07		32	16	
86.8	WHEELING	25-Sep-07		12	24	
			GEOMETRIC MEAN	24	11	
91.4	WHEELING	04-Sep-07		182	84	
91.4	WHEELING	11-Sep-07		700	4,500	**EXCEEDS**
91.4	WHEELING	18-Sep-07		12	4	
91.4	WHEELING	20-Sep-07		12	4	
91.4	WHEELING	25-Sep-07		4	10	
			GEOMETRIC MEAN	37	36	
92.8	WHEELING	04-Sep-07		36	96	
92.8	WHEELING	11-Sep-07		1,410	709	**EXCEEDS**
92.8	WHEELING	18-Sep-07		216	92	
92.8	WHEELING	20-Sep-07		28	88	
92.8	WHEELING	25-Sep-07		20	12	
			GEOMETRIC MEAN	91	92	
84.2	WHEELING	02-Oct-07		230	116	
84.2	WHEELING	09-Oct-07		800	340	**EXCEEDS**
84.2	WHEELING	16-Oct-07		20,000	572	**EXCEEDS**
84.2	WHEELING	23-Oct-07		474	1,000	**EXCEEDS**
84.2	WHEELING	30-Oct-07		52	54	
			GEOMETRIC MEAN	619	261	**EXCEEDS**
86.8	WHEELING	02-Oct-07		170	56	
86.8	WHEELING	09-Oct-07		46	24	
86.8	WHEELING	16-Oct-07		211	20	
86.8	WHEELING	23-Oct-07		252	16	
86.8	WHEELING	30-Oct-07		240	50	
			GEOMETRIC MEAN	158	29	
91.4	WHEELING	02-Oct-07		60	32	
91.4	WHEELING	09-Oct-07		108	8	
91.4	WHEELING	16-Oct-07		96	148	
91.4	WHEELING	23-Oct-07		282	52	
91.4	WHEELING	30-Oct-07		128	44	
			GEOMETRIC MEAN	118	39	
92.8	WHEELING	02-Oct-07		71	180	
92.8	WHEELING	09-Oct-07		2,000	260	**EXCEEDS**
92.8	WHEELING	16-Oct-07		76	2,200	**EXCEEDS**
92.8	WHEELING	23-Oct-07		370	104	
92.8	WHEELING	30-Oct-07		1,180	49	**EXCEEDS**
			GEOMETRIC MEAN	342	221	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
305.1	HUNTINGTON	02-May-06		36	16	
305.1	HUNTINGTON	09-May-06		400	420	**EXCEEDS**
305.1	HUNTINGTON	16-May-06		28	4	
305.1	HUNTINGTON	23-May-06		8	8	
305.1	HUNTINGTON	30-May-06		4	8	
			GEOMETRIC MEAN	26	18	
308.1	HUNTINGTON	02-May-06		100	40	
308.1	HUNTINGTON	09-May-06		49	32	
308.1	HUNTINGTON	16-May-06		34	28	
308.1	HUNTINGTON	23-May-06		330	169	
308.1	HUNTINGTON	30-May-06		200	120	
			GEOMETRIC MEAN	102	59	
314.8	HUNTINGTON	02-May-06		151	77	
314.8	HUNTINGTON	09-May-06		88	48	
314.8	HUNTINGTON	16-May-06		84	63	
314.8	HUNTINGTON	23-May-06		63	16	
314.8	HUNTINGTON	30-May-06		116	69	
			GEOMETRIC MEAN	96	48	
305.1	HUNTINGTON	06-Jun-06		28	20	
305.1	HUNTINGTON	13-Jun-06		43	4	
305.1	HUNTINGTON	20-Jun-06		370	410	**EXCEEDS**
305.1	HUNTINGTON	22-Jun-06		197	112	
308.1	HUNTINGTON	06-Jun-06		46	32	
308.1	HUNTINGTON	13-Jun-06		209	24	
308.1	HUNTINGTON	20-Jun-06		189	132	
308.1	HUNTINGTON	22-Jun-06		1,000	460	**EXCEEDS**
314.8	HUNTINGTON	06-Jun-06		120	60	
314.8	HUNTINGTON	13-Jun-06		69	8	
314.8	HUNTINGTON	20-Jun-06		370	380	**EXCEEDS**
314.8	HUNTINGTON	22-Jun-06		112	44	
305.1	HUNTINGTON	06-Jul-06		171	160	
305.1	HUNTINGTON	11-Jul-06		52	20	
305.1	HUNTINGTON	18-Jul-06		200	112	
305.1	HUNTINGTON	20-Jul-06		410	200	**EXCEEDS**
305.1	HUNTINGTON	25-Jul-06		32	12	
			GEOMETRIC MEAN	118	61	
308.1	HUNTINGTON	06-Jul-06		657	560	**EXCEEDS**
308.1	HUNTINGTON	11-Jul-06		430	430	**EXCEEDS**
308.1	HUNTINGTON	18-Jul-06		176	144	
308.1	HUNTINGTON	20-Jul-06		92	108	
308.1	HUNTINGTON	25-Jul-06		243	116	
			GEOMETRIC MEAN	257	213	**EXCEEDS**
314.8	HUNTINGTON	06-Jul-06		600	614	**EXCEEDS**
314.8	HUNTINGTON	11-Jul-06		80	40	
314.8	HUNTINGTON	18-Jul-06		164	108	
314.8	HUNTINGTON	20-Jul-06		1,272	470	**EXCEEDS**
314.8	HUNTINGTON	25-Jul-06		112	80	
			GEOMETRIC MEAN	257	158	**EXCEEDS**
305.1	HUNTINGTON	01-Aug-06		16	12	
305.1	HUNTINGTON	08-Aug-06		16	12	
305.1	HUNTINGTON	15-Aug-06		12	4	
305.1	HUNTINGTON	22-Aug-06		4	4	
305.1	HUNTINGTON	29-Aug-06		8	8	
			GEOMETRIC MEAN	10	7	
308.1	HUNTINGTON	01-Aug-06		574	510	**EXCEEDS**
308.1	HUNTINGTON	08-Aug-06		540	231	**EXCEEDS**
308.1	HUNTINGTON	15-Aug-06		186	88	
308.1	HUNTINGTON	22-Aug-06		116	80	
308.1	HUNTINGTON	29-Aug-06		320	217	
			GEOMETRIC MEAN	292	178	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
314.8	HUNTINGTON	01-Aug-06		32	24	
314.8	HUNTINGTON	08-Aug-06		188	77	
314.8	HUNTINGTON	15-Aug-06		51	20	
314.8	HUNTINGTON	22-Aug-06		20	16	
314.8	HUNTINGTON	29-Aug-06		60	36	
			GEOMETRIC MEAN	52	29	
305.1	HUNTINGTON	05-Sep-06		186	96	
305.1	HUNTINGTON	12-Sep-06		40	51	
305.1	HUNTINGTON	19-Sep-06		71	44	
305.1	HUNTINGTON	21-Sep-06		20	12	
305.1	HUNTINGTON	26-Sep-06		120	112	
			GEOMETRIC MEAN	66	49	
308.1	HUNTINGTON	05-Sep-06		270	124	
308.1	HUNTINGTON	12-Sep-06		176	84	
308.1	HUNTINGTON	19-Sep-06		1,300	600	**EXCEEDS**
308.1	HUNTINGTON	21-Sep-06		249	86	
308.1	HUNTINGTON	26-Sep-06		180	157	
			GEOMETRIC MEAN	308	153	**EXCEEDS**
314.8	HUNTINGTON	05-Sep-06		591	440	**EXCEEDS**
314.8	HUNTINGTON	12-Sep-06		229	100	
314.8	HUNTINGTON	19-Sep-06		955	630	**EXCEEDS**
314.8	HUNTINGTON	21-Sep-06		136	77	
314.8	HUNTINGTON	26-Sep-06		380	209	
			GEOMETRIC MEAN	367	214	**EXCEEDS**
305.1	HUNTINGTON	03-Oct-06		56	20	
305.1	HUNTINGTON	10-Oct-06		246	136	
305.1	HUNTINGTON	17-Oct-06		540	470	**EXCEEDS**
305.1	HUNTINGTON	24-Oct-06		794	470	**EXCEEDS**
305.1	HUNTINGTON	31-Oct-06		440	330	**EXCEEDS**
			GEOMETRIC MEAN	304	182	**EXCEEDS**
308.1	HUNTINGTON	03-Oct-06		330	174	
308.1	HUNTINGTON	10-Oct-06		192	4	
308.1	HUNTINGTON	17-Oct-06		1,118	1,009	**EXCEEDS**
308.1	HUNTINGTON	24-Oct-06		216	317	**EXCEEDS**
308.1	HUNTINGTON	31-Oct-06		294	231	
			GEOMETRIC MEAN	339	139	**EXCEEDS**
314.8	HUNTINGTON	03-Oct-06		112	66	
314.8	HUNTINGTON	10-Oct-06		249	152	
314.8	HUNTINGTON	17-Oct-06		1,000	700	**EXCEEDS**
314.8	HUNTINGTON	24-Oct-06		260	206	
314.8	HUNTINGTON	31-Oct-06		226	217	
			GEOMETRIC MEAN	277	199	**EXCEEDS**
305.1	HUNTINGTON	01-May-07		5,000	3,300	**EXCEEDS**
305.1	HUNTINGTON	08-May-07		28	36	
305.1	HUNTINGTON	15-May-07		16	4	
305.1	HUNTINGTON	22-May-07		8	4	
305.1	HUNTINGTON	29-May-07		4	8	
			GEOMETRIC MEAN	37	27	
308.1	HUNTINGTON	01-May-07		86	63	
308.1	HUNTINGTON	08-May-07		489	450	**EXCEEDS**
308.1	HUNTINGTON	15-May-07		3,200	1,055	**EXCEEDS**
308.1	HUNTINGTON	22-May-07		84	74	
308.1	HUNTINGTON	29-May-07		40	32	
			GEOMETRIC MEAN	214	148	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
314.8	HUNTINGTON	01-May-07		149	103	
314.8	HUNTINGTON	08-May-07		420	310	**EXCEEDS**
314.8	HUNTINGTON	15-May-07		156	80	
314.8	HUNTINGTON	22-May-07		104	69	
314.8	HUNTINGTON	29-May-07		36	36	
			GEOMETRIC MEAN	130	91	
305.1	HUNTINGTON	05-Jun-07		266	191	
305.1	HUNTINGTON	12-Jun-07		12	4	
305.1	HUNTINGTON	19-Jun-07		20	20	
305.1	HUNTINGTON	21-Jun-07		4	4	
305.1	HUNTINGTON	26-Jun-07		12	4	
			GEOMETRIC MEAN	20	12	
308.1	HUNTINGTON	05-Jun-07		114	60	
308.1	HUNTINGTON	12-Jun-07		192	140	
308.1	HUNTINGTON	19-Jun-07		100	69	
308.1	HUNTINGTON	21-Jun-07		49	4	
308.1	HUNTINGTON	26-Jun-07		410	84	**EXCEEDS**
			GEOMETRIC MEAN	134	45	
314.8	HUNTINGTON	05-Jun-07		220	217	
314.8	HUNTINGTON	12-Jun-07		68	28	
314.8	HUNTINGTON	19-Jun-07		77	4	
314.8	HUNTINGTON	21-Jun-07		108	12	
314.8	HUNTINGTON	26-Jun-07		108	20	
			GEOMETRIC MEAN	106	23	
305.1	HUNTINGTON	02-Jul-07		4	4	
305.1	HUNTINGTON	10-Jul-07		4	4	
305.1	HUNTINGTON	17-Jul-07		4	4	
305.1	HUNTINGTON	24-Jul-07		4	8	
305.1	HUNTINGTON	31-Jul-07		4	4	
			GEOMETRIC MEAN	4	5	
308.1	HUNTINGTON	02-Jul-07		88	24	
308.1	HUNTINGTON	10-Jul-07		96	28	
308.1	HUNTINGTON	17-Jul-07		440	420	**EXCEEDS**
308.1	HUNTINGTON	24-Jul-07		370	132	
308.1	HUNTINGTON	31-Jul-07		570	257	**EXCEEDS**
			GEOMETRIC MEAN	239	99	**EXCEEDS**
314.8	HUNTINGTON	02-Jul-07		180	80	
314.8	HUNTINGTON	10-Jul-07		191	77	
314.8	HUNTINGTON	17-Jul-07		66	36	
314.8	HUNTINGTON	24-Jul-07		136	60	
314.8	HUNTINGTON	31-Jul-07		380	12	
			GEOMETRIC MEAN	164	44	
305.1	HUNTINGTON	07-Aug-07		20	12	
305.1	HUNTINGTON	14-Aug-07		8	4	
305.1	HUNTINGTON	21-Aug-07		12	12	
305.1	HUNTINGTON	23-Aug-07		80	32	
305.1	HUNTINGTON	28-Aug-07		16	8	
			GEOMETRIC MEAN	19	11	
308.1	HUNTINGTON	07-Aug-07		623	540	**EXCEEDS**
308.1	HUNTINGTON	14-Aug-07		1,455	590	**EXCEEDS**
308.1	HUNTINGTON	21-Aug-07		5,400	1,409	**EXCEEDS**
308.1	HUNTINGTON	23-Aug-07		3,200	1,064	**EXCEEDS**
308.1	HUNTINGTON	28-Aug-07		40	40	
			GEOMETRIC MEAN	911	453	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
314.8	HUNTINGTON	07-Aug-07		230	66	
314.8	HUNTINGTON	14-Aug-07		203	83	
314.8	HUNTINGTON	21-Aug-07		420	104	**EXCEEDS**
314.8	HUNTINGTON	23-Aug-07		88	66	
314.8	HUNTINGTON	28-Aug-07		240	114	
			GEOMETRIC MEAN	211	84	**EXCEEDS**
305.1	HUNTINGTON	04-Sep-07		8	8	
305.1	HUNTINGTON	11-Sep-07		16	4	
305.1	HUNTINGTON	18-Sep-07		4	4	
305.1	HUNTINGTON	20-Sep-07		4	4	
305.1	HUNTINGTON	25-Sep-07		4	4	
			GEOMETRIC MEAN	6	5	
308.1	HUNTINGTON	04-Sep-07		136	92	
308.1	HUNTINGTON	11-Sep-07		2,000	470	**EXCEEDS**
308.1	HUNTINGTON	18-Sep-07		180	106	
308.1	HUNTINGTON	20-Sep-07		32	24	
308.1	HUNTINGTON	25-Sep-07		68	32	
			GEOMETRIC MEAN	161	81	
314.8	HUNTINGTON	04-Sep-07		77	32	
314.8	HUNTINGTON	11-Sep-07		120	40	
314.8	HUNTINGTON	18-Sep-07		37	20	
314.8	HUNTINGTON	20-Sep-07		51	32	
314.8	HUNTINGTON	25-Sep-07		68	16	
			GEOMETRIC MEAN	65	27	
305.1	HUNTINGTON	02-Oct-07		20	16	
305.1	HUNTINGTON	09-Oct-07		20	4	
305.1	HUNTINGTON	16-Oct-07		4	4	
305.1	HUNTINGTON	23-Oct-07		4	4	
305.1	HUNTINGTON	30-Oct-07		12	4	
			GEOMETRIC MEAN	9	5	
308.1	HUNTINGTON	02-Oct-07		16	12	
308.1	HUNTINGTON	09-Oct-07		32	12	
308.1	HUNTINGTON	16-Oct-07		28	8	
308.1	HUNTINGTON	23-Oct-07		116	69	
308.1	HUNTINGTON	30-Oct-07		40	20	
			GEOMETRIC MEAN	37	17	
314.8	HUNTINGTON	02-Oct-07		74	28	
314.8	HUNTINGTON	09-Oct-07		77	4	
314.8	HUNTINGTON	16-Oct-07		100	60	
314.8	HUNTINGTON	23-Oct-07		66	63	
314.8	HUNTINGTON	30-Oct-07		176	69	
			GEOMETRIC MEAN	92	31	

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
462.6	CINCINNATI	02-May-06		92	108	
462.6	CINCINNATI	09-May-06		4	4	
462.6	CINCINNATI	16-May-06		32	12	
462.6	CINCINNATI	23-May-06		52	24	
462.6	CINCINNATI	30-May-06		28	12	
			GEOMETRIC MEAN	28	17	
470	CINCINNATI	02-May-06		172	68	
470	CINCINNATI	09-May-06		16	8	
470	CINCINNATI	16-May-06		60	43	
470	CINCINNATI	23-May-06		43	36	
470	CINCINNATI	30-May-06		28	16	
			GEOMETRIC MEAN	46	27	
477.5	CINCINNATI	02-May-06		124	40	
477.5	CINCINNATI	09-May-06		206	96	
477.5	CINCINNATI	16-May-06		32	60	
477.5	CINCINNATI	23-May-06		48	20	
477.5	CINCINNATI	30-May-06		16	12	
			GEOMETRIC MEAN	57	35	
462.6	CINCINNATI	06-Jun-06		34	40	
462.6	CINCINNATI	13-Jun-06		16	8	
462.6	CINCINNATI	20-Jun-06		68	84	
462.6	CINCINNATI	22-Jun-06		72	40	
462.6	CINCINNATI	27-Jun-06		160	128	
			GEOMETRIC MEAN	53	42	
470	CINCINNATI	06-Jun-06		74	36	
470	CINCINNATI	13-Jun-06		52	37	
470	CINCINNATI	20-Jun-06		550	260	**EXCEEDS**
470	CINCINNATI	22-Jun-06		580	450	**EXCEEDS**
470	CINCINNATI	27-Jun-06		152	66	
			GEOMETRIC MEAN	180	101	
477.5	CINCINNATI	06-Jun-06		40	28	
477.5	CINCINNATI	13-Jun-06		92	46	
477.5	CINCINNATI	20-Jun-06		28,000	12,300	**EXCEEDS**
477.5	CINCINNATI	22-Jun-06		44	12	
477.5	CINCINNATI	27-Jun-06		300	84	
			GEOMETRIC MEAN	267	110	**EXCEEDS**
462.6	CINCINNATI	06-Jul-06		188	132	
462.6	CINCINNATI	11-Jul-06		50	28	
462.6	CINCINNATI	18-Jul-06		156	88	
462.6	CINCINNATI	20-Jul-06		180	132	
462.6	CINCINNATI	27-Jul-06		84	68	
			GEOMETRIC MEAN	117	78	
470	CINCINNATI	06-Jul-06		71	80	
470	CINCINNATI	11-Jul-06		520	200	**EXCEEDS**
470	CINCINNATI	18-Jul-06		176	71	
470	CINCINNATI	20-Jul-06		403	176	**EXCEEDS**
470	CINCINNATI	27-Jul-06		1,190	530	**EXCEEDS**
			GEOMETRIC MEAN	315	160	**EXCEEDS**
477.5	CINCINNATI	06-Jul-06		63	20	
477.5	CINCINNATI	11-Jul-06		24	12	
477.5	CINCINNATI	18-Jul-06		100	48	
477.5	CINCINNATI	20-Jul-06		430	92	**EXCEEDS**
477.5	CINCINNATI	27-Jul-06		1,682	709	**EXCEEDS**
			GEOMETRIC MEAN	161	60	
462.6	CINCINNATI	01-Aug-06		56	60	
462.6	CINCINNATI	08-Aug-06		128	28	
462.6	CINCINNATI	15-Aug-06		72	11	
462.6	CINCINNATI	22-Aug-06		24	8	
462.6	CINCINNATI	29-Aug-06		11,900	9,000	**EXCEEDS**
			GEOMETRIC MEAN	171	67	

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
470	CINCINNATI	01-Aug-06		1,136	466	**EXCEEDS**
470	CINCINNATI	08-Aug-06		116	16	
470	CINCINNATI	15-Aug-06		80	44	
470	CINCINNATI	22-Aug-06		57	32	
470	CINCINNATI	29-Aug-06		2,700	1,000	**EXCEEDS**
			GEOMETRIC MEAN	277	101	**EXCEEDS**
477.5	CINCINNATI	01-Aug-06		330	176	
477.5	CINCINNATI	08-Aug-06		108	24	
477.5	CINCINNATI	15-Aug-06		128	108	
477.5	CINCINNATI	22-Aug-06		20	8	
477.5	CINCINNATI	29-Aug-06		196	108	
			GEOMETRIC MEAN	112	52	
462.6	CINCINNATI	05-Sep-06		104	28	
462.6	CINCINNATI	12-Sep-06		1,800	991	**EXCEEDS**
462.6	CINCINNATI	19-Sep-06		864	530	**EXCEEDS**
462.6	CINCINNATI	21-Sep-06		116	60	
462.6	CINCINNATI	26-Sep-06		836	440	**EXCEEDS**
			GEOMETRIC MEAN	436	208	**EXCEEDS**
470	CINCINNATI	05-Sep-06		120	24	
470	CINCINNATI	12-Sep-06		2,700	2,100	**EXCEEDS**
470	CINCINNATI	19-Sep-06		3,500	570	**EXCEEDS**
470	CINCINNATI	21-Sep-06		136	66	
470	CINCINNATI	26-Sep-06		718	510	**EXCEEDS**
			GEOMETRIC MEAN	644	250	**EXCEEDS**
477.5	CINCINNATI	05-Sep-06		88	44	
477.5	CINCINNATI	12-Sep-06		1,600	964	**EXCEEDS**
477.5	CINCINNATI	19-Sep-06		627	210	**EXCEEDS**
477.5	CINCINNATI	21-Sep-06		390	140	
477.5	CINCINNATI	26-Sep-06		718	420	**EXCEEDS**
			GEOMETRIC MEAN	477	221	**EXCEEDS**
462.6	CINCINNATI	03-Oct-06		96	60	
462.6	CINCINNATI	10-Oct-06		180	96	
462.6	CINCINNATI	17-Oct-06		5,700	2,200	**EXCEEDS**
462.6	CINCINNATI	24-Oct-06		1,300	900	**EXCEEDS**
462.6	CINCINNATI	31-Oct-06		654	510	**EXCEEDS**
			GEOMETRIC MEAN	609	357	**EXCEEDS**
470	CINCINNATI	03-Oct-06		84	80	
470	CINCINNATI	10-Oct-06		330	144	
470	CINCINNATI	17-Oct-06		2,600	954	**EXCEEDS**
470	CINCINNATI	24-Oct-06		480	400	**EXCEEDS**
470	CINCINNATI	31-Oct-06		673	360	**EXCEEDS**
			GEOMETRIC MEAN	471	275	**EXCEEDS**
477.5	CINCINNATI	03-Oct-06		100	60	
477.5	CINCINNATI	10-Oct-06		171	104	
477.5	CINCINNATI	17-Oct-06		8,900	3,700	**EXCEEDS**
477.5	CINCINNATI	24-Oct-06		330	310	**EXCEEDS**
477.5	CINCINNATI	31-Oct-06		480	400	**EXCEEDS**
			GEOMETRIC MEAN	475	310	**EXCEEDS**
462.6	CINCINNATI	01-May-07		56	56	
462.6	CINCINNATI	08-May-07		20	24	
462.6	CINCINNATI	15-May-07		20	4	
462.6	CINCINNATI	22-May-07		16	20	
462.6	CINCINNATI	29-May-07		28	28	
			GEOMETRIC MEAN	25	20	
463.9	CINCINNATI	01-May-07		92	46	
463.9	CINCINNATI	08-May-07		16	8	
463.9	CINCINNATI	15-May-07		4	12	
463.9	CINCINNATI	22-May-07		4	8	
463.9	CINCINNATI	29-May-07		4	4	
			GEOMETRIC MEAN	10	11	

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
469.9	CINCINNATI	01-May-07		63	57	
469.9	CINCINNATI	08-May-07		24	24	
469.9	CINCINNATI	15-May-07		90	12	
469.9	CINCINNATI	22-May-07		43	28	
469.9	CINCINNATI	29-May-07		20	34	
			GEOMETRIC MEAN	41	27	
470	CINCINNATI	01-May-07		129	86	
470	CINCINNATI	08-May-07		97	74	
470	CINCINNATI	15-May-07		12	10	
470	CINCINNATI	22-May-07		40	8	
470	CINCINNATI	29-May-07		46	32	
			GEOMETRIC MEAN	49	28	
477.5	CINCINNATI	01-May-07		92	92	
477.5	CINCINNATI	08-May-07		20	40	
477.5	CINCINNATI	15-May-07		164	16	
477.5	CINCINNATI	22-May-07		16	8	
477.5	CINCINNATI	29-May-07		16	16	
			GEOMETRIC MEAN	38	24	
462.6	CINCINNATI	05-Jun-07		76	50	
462.6	CINCINNATI	12-Jun-07		20	10	
462.6	CINCINNATI	19-Jun-07		24	16	
462.6	CINCINNATI	21-Jun-07		40	12	
462.6	CINCINNATI	26-Jun-07		791	764	**EXCEEDS**
			GEOMETRIC MEAN	65	37	
463.9	CINCINNATI	05-Jun-07		24	4	
463.9	CINCINNATI	12-Jun-07		10	4	
463.9	CINCINNATI	19-Jun-07		4	4	
463.9	CINCINNATI	21-Jun-07		4	4	
463.9	CINCINNATI	26-Jun-07		46	16	
			GEOMETRIC MEAN	11	5	
469.9	CINCINNATI	05-Jun-07		150	66	
469.9	CINCINNATI	12-Jun-07		52	8	
469.9	CINCINNATI	19-Jun-07		12	20	
469.9	CINCINNATI	21-Jun-07		32	24	
469.9	CINCINNATI	26-Jun-07		160	56	
			GEOMETRIC MEAN	54	27	
470	CINCINNATI	05-Jun-07		288	112	
470	CINCINNATI	12-Jun-07		38	29	
470	CINCINNATI	19-Jun-07		168	96	
470	CINCINNATI	21-Jun-07		69	57	
470	CINCINNATI	26-Jun-07		223	63	
			GEOMETRIC MEAN	123	65	
477.5	CINCINNATI	05-Jun-07		1,327	670	**EXCEEDS**
477.5	CINCINNATI	12-Jun-07		53	38	
477.5	CINCINNATI	19-Jun-07		28	16	
477.5	CINCINNATI	21-Jun-07		71	28	
477.5	CINCINNATI	26-Jun-07		71	8	
			GEOMETRIC MEAN	100	39	
462.6	CINCINNATI	02-Jul-07		24	8	
462.6	CINCINNATI	10-Jul-07		16	4	
462.6	CINCINNATI	17-Jul-07		44	28	
462.6	CINCINNATI	24-Jul-07		4	8	
462.6	CINCINNATI	31-Jul-07		32	8	
			GEOMETRIC MEAN	18	9	
463.9	CINCINNATI	02-Jul-07		32	16	
463.9	CINCINNATI	10-Jul-07		4	4	
463.9	CINCINNATI	17-Jul-07		24	4	
463.9	CINCINNATI	24-Jul-07		4	4	
463.9	CINCINNATI	31-Jul-07		12	4	
			GEOMETRIC MEAN	11	5	

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
469.9	CINCINNATI	02-Jul-07		96	48	
469.9	CINCINNATI	10-Jul-07		20	16	
469.9	CINCINNATI	17-Jul-07		92	44	
469.9	CINCINNATI	24-Jul-07		54	4	
469.9	CINCINNATI	31-Jul-07		20	12	
			GEOMETRIC MEAN	45	17	
470	CINCINNATI	02-Jul-07		32	12	
470	CINCINNATI	10-Jul-07		217	117	
470	CINCINNATI	17-Jul-07		40	28	
470	CINCINNATI	24-Jul-07		28	4	
470	CINCINNATI	31-Jul-07		32	31	
			GEOMETRIC MEAN	48	22	
477.5	CINCINNATI	02-Jul-07		104	44	
477.5	CINCINNATI	10-Jul-07		183	77	
477.5	CINCINNATI	17-Jul-07		168	60	
477.5	CINCINNATI	24-Jul-07		52	12	
477.5	CINCINNATI	31-Jul-07		84	16	
			GEOMETRIC MEAN	107	33	
462.6	CINCINNATI	07-Aug-07		240	108	
462.6	CINCINNATI	14-Aug-07		16	12	
462.6	CINCINNATI	21-Aug-07		152	148	
462.6	CINCINNATI	23-Aug-07		290	150	
462.6	CINCINNATI	28-Aug-07		36	12	
			GEOMETRIC MEAN	91	51	
463.9	CINCINNATI	07-Aug-07		8	4	
463.9	CINCINNATI	14-Aug-07		4	4	
463.9	CINCINNATI	21-Aug-07		24	16	
463.9	CINCINNATI	23-Aug-07		60	44	
463.9	CINCINNATI	28-Aug-07		4	4	
			GEOMETRIC MEAN	11	9	
469.9	CINCINNATI	07-Aug-07		290	172	
469.9	CINCINNATI	14-Aug-07		32	20	
469.9	CINCINNATI	21-Aug-07		24	16	
469.9	CINCINNATI	23-Aug-07		163	104	
469.9	CINCINNATI	28-Aug-07		16	8	
			GEOMETRIC MEAN	57	34	
470	CINCINNATI	07-Aug-07		280	116	
470	CINCINNATI	14-Aug-07		20	8	
470	CINCINNATI	21-Aug-07		3,000	150	**EXCEEDS**
470	CINCINNATI	23-Aug-07		92	44	
470	CINCINNATI	28-Aug-07		40	56	
			GEOMETRIC MEAN	144	51	
477.5	CINCINNATI	07-Aug-07		54	36	
477.5	CINCINNATI	14-Aug-07		76	12	
477.5	CINCINNATI	21-Aug-07		164	80	
477.5	CINCINNATI	23-Aug-07		44	24	
477.5	CINCINNATI	28-Aug-07		4	12	
			GEOMETRIC MEAN	41	25	
462.6	CINCINNATI	04-Sep-07		20	8	
462.6	CINCINNATI	11-Sep-07		28	12	
462.6	CINCINNATI	18-Sep-07		12	4	
462.6	CINCINNATI	20-Sep-07		12	4	
462.6	CINCINNATI	26-Sep-07		28	4	
			GEOMETRIC MEAN	19	6	
463.9	CINCINNATI	04-Sep-07		4	4	
463.9	CINCINNATI	11-Sep-07		4	4	
463.9	CINCINNATI	18-Sep-07		4	4	
463.9	CINCINNATI	20-Sep-07		4	4	
463.9	CINCINNATI	26-Sep-07		4	4	
			GEOMETRIC MEAN	4	4	

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
469.9	CINCINNATI	04-Sep-07		8	16	
469.9	CINCINNATI	11-Sep-07		2,100	1,200	**EXCEEDS**
469.9	CINCINNATI	18-Sep-07		48	36	
469.9	CINCINNATI	20-Sep-07		56	4	
469.9	CINCINNATI	26-Sep-07		148	88	
			GEOMETRIC MEAN	92	48	
470	CINCINNATI	04-Sep-07		77	28	
470	CINCINNATI	11-Sep-07		2,200	973	**EXCEEDS**
470	CINCINNATI	18-Sep-07		52	12	
470	CINCINNATI	20-Sep-07		96	80	
470	CINCINNATI	26-Sep-07		49	330	**EXCEEDS**
			GEOMETRIC MEAN	133	97	
477.5	CINCINNATI	04-Sep-07		4	20	
477.5	CINCINNATI	11-Sep-07		254	112	
477.5	CINCINNATI	18-Sep-07		8	20	
477.5	CINCINNATI	20-Sep-07		44	4	
477.5	CINCINNATI	26-Sep-07		8	8	
			GEOMETRIC MEAN	20	17	
462.6	CINCINNATI	02-Oct-07		16	8	
462.6	CINCINNATI	09-Oct-07		8	12	
462.6	CINCINNATI	16-Oct-07		124	100	
462.6	CINCINNATI	23-Oct-07		460	400	**EXCEEDS**
462.6	CINCINNATI	30-Oct-07		120	50	
			GEOMETRIC MEAN	61	45	
463.9	CINCINNATI	02-Oct-07		4	4	
463.9	CINCINNATI	09-Oct-07		4	4	
463.9	CINCINNATI	16-Oct-07		4	8	
463.9	CINCINNATI	23-Oct-07		700	410	**EXCEEDS**
463.9	CINCINNATI	30-Oct-07		63	20	
			GEOMETRIC MEAN	20	16	
469.9	CINCINNATI	02-Oct-07		34	24	
469.9	CINCINNATI	09-Oct-07		60	34	
469.9	CINCINNATI	16-Oct-07		8,700	4,800	**EXCEEDS**
469.9	CINCINNATI	23-Oct-07		6,200	2,700	**EXCEEDS**
469.9	CINCINNATI	30-Oct-07		4	8	
			GEOMETRIC MEAN	213	153	**EXCEEDS**
470	CINCINNATI	02-Oct-07		60	24	
470	CINCINNATI	09-Oct-07		24	16	
470	CINCINNATI	16-Oct-07		350	836	**EXCEEDS**
470	CINCINNATI	23-Oct-07		6,400	5,100	**EXCEEDS**
470	CINCINNATI	30-Oct-07		56	12	
			GEOMETRIC MEAN	178	114	
477.5	CINCINNATI	02-Oct-07		71	64	
477.5	CINCINNATI	09-Oct-07		171	16	
477.5	CINCINNATI	16-Oct-07		132	71	
477.5	CINCINNATI	23-Oct-07		10,800	5,700	**EXCEEDS**
477.5	CINCINNATI	30-Oct-07		96	24	
			GEOMETRIC MEAN	278	100	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
594	LOUISVILLE	02-May-06		24	12	
594	LOUISVILLE	09-May-06		20	20	
594	LOUISVILLE	16-May-06		400	330	**EXCEEDS**
594	LOUISVILLE	23-May-06		20	12	
594	LOUISVILLE	30-May-06		52	24	
			GEOMETRIC MEAN	46	30	
608.7	LOUISVILLE	02-May-06		20	24	
608.7	LOUISVILLE	09-May-06		12	4	
608.7	LOUISVILLE	16-May-06		40	20	
608.7	LOUISVILLE	23-May-06		48	48	
608.7	LOUISVILLE	30-May-06		240	54	
			GEOMETRIC MEAN	41	22	
619.3	LOUISVILLE	02-May-06		500	320	**EXCEEDS**
619.3	LOUISVILLE	09-May-06		68	28	
619.3	LOUISVILLE	16-May-06		450	211	**EXCEEDS**
619.3	LOUISVILLE	23-May-06		88	40	
619.3	LOUISVILLE	30-May-06		745	590	**EXCEEDS**
			GEOMETRIC MEAN	251	135	**EXCEEDS**
594	LOUISVILLE	06-Jun-06		100	64	
594	LOUISVILLE	13-Jun-06		192	54	
594	LOUISVILLE	20-Jun-06		20	4	
594	LOUISVILLE	27-Jun-06		80	60	
594	LOUISVILLE	29-Jun-06		54	28	
			GEOMETRIC MEAN	70	30	
608.7	LOUISVILLE	06-Jun-06		51	49	
608.7	LOUISVILLE	13-Jun-06		314	410	**EXCEEDS**
608.7	LOUISVILLE	20-Jun-06		100	69	
608.7	LOUISVILLE	27-Jun-06		64	43	
608.7	LOUISVILLE	29-Jun-06		71	32	
			GEOMETRIC MEAN	94	72	
619.3	LOUISVILLE	06-Jun-06		470	380	**EXCEEDS**
619.3	LOUISVILLE	13-Jun-06		1,030	500	**EXCEEDS**
619.3	LOUISVILLE	20-Jun-06		6,000	390	**EXCEEDS**
619.3	LOUISVILLE	27-Jun-06		964	709	**EXCEEDS**
619.3	LOUISVILLE	29-Jun-06		340	140	
			GEOMETRIC MEAN	990	374	**EXCEEDS**
594	LOUISVILLE	06-Jul-06		88	44	
594	LOUISVILLE	18-Jul-06		145	108	
594	LOUISVILLE	20-Jul-06		32	12	
594	LOUISVILLE	25-Jul-06		100	20	
594	LOUISVILLE	27-Jul-06		180	49	
			GEOMETRIC MEAN	94	35	
608.7	LOUISVILLE	06-Jul-06		128	96	
608.7	LOUISVILLE	18-Jul-06		620	727	**EXCEEDS**
608.7	LOUISVILLE	20-Jul-06		108	60	
608.7	LOUISVILLE	25-Jul-06		177	4	
608.7	LOUISVILLE	27-Jul-06		64	12	
			GEOMETRIC MEAN	158	46	
619.3	LOUISVILLE	06-Jul-06		35,400	29,800	**EXCEEDS**
619.3	LOUISVILLE	18-Jul-06		4,000	3,300	**EXCEEDS**
619.3	LOUISVILLE	20-Jul-06		266	186	
619.3	LOUISVILLE	25-Jul-06		400	92	
619.3	LOUISVILLE	27-Jul-06		3,000	100	**EXCEEDS**
			GEOMETRIC MEAN	2,143	700	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
594	LOUISVILLE	01-Aug-06		71	20	
594	LOUISVILLE	08-Aug-06		28	30	
594	LOUISVILLE	15-Aug-06		92	24	
594	LOUISVILLE	23-Aug-06		180	43	
594	LOUISVILLE	29-Aug-06		270	110	
			GEOMETRIC MEAN	98	37	
608.7	LOUISVILLE	01-Aug-06		88	16	
608.7	LOUISVILLE	08-Aug-06		46	16	
608.7	LOUISVILLE	15-Aug-06		100	60	
608.7	LOUISVILLE	23-Aug-06		400	200	
608.7	LOUISVILLE	29-Aug-06		900	764	**EXCEEDS**
			GEOMETRIC MEAN	171	75	
619.3	LOUISVILLE	01-Aug-06		194	108	
619.3	LOUISVILLE	08-Aug-06		48	56	
619.3	LOUISVILLE	15-Aug-06		530	182	**EXCEEDS**
619.3	LOUISVILLE	23-Aug-06		280	48	
619.3	LOUISVILLE	29-Aug-06		6,700	5,300	**EXCEEDS**
			GEOMETRIC MEAN	392	195	**EXCEEDS**
594	LOUISVILLE	06-Sep-06		60	16	
594	LOUISVILLE	12-Sep-06		80	71	
594	LOUISVILLE	19-Sep-06		20	20	
594	LOUISVILLE	21-Sep-06		63	24	
594	LOUISVILLE	26-Sep-06		2,600	1,500	**EXCEEDS**
			GEOMETRIC MEAN	109	61	
608.7	LOUISVILLE	06-Sep-06		108	83	
608.7	LOUISVILLE	12-Sep-06		2,000	800	**EXCEEDS**
608.7	LOUISVILLE	19-Sep-06		32	20	
608.7	LOUISVILLE	21-Sep-06		68	74	
608.7	LOUISVILLE	26-Sep-06		3,900	3,900	**EXCEEDS**
			GEOMETRIC MEAN	284	207	**EXCEEDS**
619.3	LOUISVILLE	06-Sep-06		84	20	
619.3	LOUISVILLE	12-Sep-06		3,100	800	**EXCEEDS**
619.3	LOUISVILLE	19-Sep-06		450	100	**EXCEEDS**
619.3	LOUISVILLE	21-Sep-06		108	88	
619.3	LOUISVILLE	26-Sep-06		4,700	2,500	**EXCEEDS**
			GEOMETRIC MEAN	569	204	**EXCEEDS**
594	LOUISVILLE	03-Oct-06		132	88	
594	LOUISVILLE	12-Oct-06		60	24	
594	LOUISVILLE	18-Oct-06		300	80	
594	LOUISVILLE	25-Oct-06		242	100	
594	LOUISVILLE	31-Oct-06		100	110	
			GEOMETRIC MEAN	142	71	
608.7	LOUISVILLE	03-Oct-06		112	72	
608.7	LOUISVILLE	12-Oct-06		80	48	
608.7	LOUISVILLE	18-Oct-06		290	186	
608.7	LOUISVILLE	25-Oct-06		194	200	
608.7	LOUISVILLE	31-Oct-06		130	60	
			GEOMETRIC MEAN	146	95	
619.3	LOUISVILLE	03-Oct-06		580	300	**EXCEEDS**
619.3	LOUISVILLE	12-Oct-06		214	100	
619.3	LOUISVILLE	18-Oct-06		60,000	60,000	**EXCEEDS**
619.3	LOUISVILLE	25-Oct-06		2,000	450	**EXCEEDS**
619.3	LOUISVILLE	31-Oct-06		210	90	
			GEOMETRIC MEAN	1,256	592	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
594	LOUISVILLE	01-May-07		54	31	
594	LOUISVILLE	08-May-07		52	4	
594	LOUISVILLE	15-May-07		20	4	
594	LOUISVILLE	23-May-07		100	108	
594	LOUISVILLE	30-May-07		40	20	
			GEOMETRIC MEAN	47	16	
608.7	LOUISVILLE	01-May-07		69	49	
608.7	LOUISVILLE	08-May-07		12	4	
608.7	LOUISVILLE	15-May-07		20	12	
608.7	LOUISVILLE	23-May-07		183	20	
608.7	LOUISVILLE	30-May-07		17	8	
			GEOMETRIC MEAN	35	13	
619.3	LOUISVILLE	01-May-07		2,000	129	**EXCEEDS**
619.3	LOUISVILLE	08-May-07		3,900	3,000	**EXCEEDS**
619.3	LOUISVILLE	15-May-07		2,400	80	**EXCEEDS**
619.3	LOUISVILLE	23-May-07		3,100	2,900	**EXCEEDS**
619.3	LOUISVILLE	30-May-07		63	40	
			GEOMETRIC MEAN	1,296	324	**EXCEEDS**
594	LOUISVILLE	05-Jun-07		125	12	
594	LOUISVILLE	12-Jun-07		330	8	
594	LOUISVILLE	14-Jun-07		54	28	
594	LOUISVILLE	19-Jun-07		8	12	
594	LOUISVILLE	21-Jun-07		32	20	
			GEOMETRIC MEAN	56	15	
608.7	LOUISVILLE	05-Jun-07		280	28	
608.7	LOUISVILLE	12-Jun-07		283	4	
608.7	LOUISVILLE	14-Jun-07		229	183	
608.7	LOUISVILLE	19-Jun-07		120	60	
608.7	LOUISVILLE	21-Jun-07		24	9	
			GEOMETRIC MEAN	139	26	
619.3	LOUISVILLE	05-Jun-07		845	112	**EXCEEDS**
619.3	LOUISVILLE	12-Jun-07		764	20	**EXCEEDS**
619.3	LOUISVILLE	14-Jun-07		16	30	
619.3	LOUISVILLE	19-Jun-07		80	4	
619.3	LOUISVILLE	21-Jun-07		2,700	250	**EXCEEDS**
			GEOMETRIC MEAN	295	37	**EXCEEDS**
594	LOUISVILLE	02-Jul-07		96	24	
594	LOUISVILLE	10-Jul-07		91	20	
594	LOUISVILLE	18-Jul-07		51	28	
594	LOUISVILLE	24-Jul-07		28	24	
594	LOUISVILLE	31-Jul-07		80	12	
			GEOMETRIC MEAN	63	21	
608.7	LOUISVILLE	02-Jul-07		66	32	
608.7	LOUISVILLE	10-Jul-07		32	4	
608.7	LOUISVILLE	18-Jul-07		32	8	
608.7	LOUISVILLE	24-Jul-07		37	16	
608.7	LOUISVILLE	31-Jul-07		700	40	**EXCEEDS**
			GEOMETRIC MEAN	71	15	
619.3	LOUISVILLE	02-Jul-07		48	16	
619.3	LOUISVILLE	10-Jul-07		36	8	
619.3	LOUISVILLE	18-Jul-07		4,900	4,400	**EXCEEDS**
619.3	LOUISVILLE	24-Jul-07		88	74	
619.3	LOUISVILLE	31-Jul-07		192	51	
			GEOMETRIC MEAN	170	73	

EXCEEDS- Value Exceeds Commission Criteria

Appendix G: Conatact Recreation Program Bacteria Data (2006-2007) Criteria Violations

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
594	LOUISVILLE	07-Aug-07		54	4	
594	LOUISVILLE	14-Aug-07		37	4	
594	LOUISVILLE	21-Aug-07		2,100	200	**EXCEEDS**
594	LOUISVILLE	23-Aug-07		148	32	
594	LOUISVILLE	28-Aug-07		24	8	
			GEOMETRIC MEAN	108	15	
608.7	LOUISVILLE	07-Aug-07		257	28	
608.7	LOUISVILLE	14-Aug-07		16	4	
608.7	LOUISVILLE	21-Aug-07		709	63	**EXCEEDS**
608.7	LOUISVILLE	23-Aug-07		745	360	**EXCEEDS**
608.7	LOUISVILLE	28-Aug-07		166	16	
			GEOMETRIC MEAN	205	33	**EXCEEDS**
619.3	LOUISVILLE	07-Aug-07		590	84	**EXCEEDS**
619.3	LOUISVILLE	14-Aug-07		200	32	
619.3	LOUISVILLE	21-Aug-07		1,100	600	**EXCEEDS**
619.3	LOUISVILLE	23-Aug-07		1,330	240	**EXCEEDS**
619.3	LOUISVILLE	28-Aug-07		203	92	
			GEOMETRIC MEAN	512	129	**EXCEEDS**
594	LOUISVILLE	04-Sep-07		12	4	
594	LOUISVILLE	11-Sep-07		12	4	
594	LOUISVILLE	18-Sep-07		4	4	
594	LOUISVILLE	25-Sep-07		8	8	
594	LOUISVILLE	27-Sep-07		80	44	
			GEOMETRIC MEAN	13	7	
608.7	LOUISVILLE	04-Sep-07		8	12	
608.7	LOUISVILLE	11-Sep-07		148	83	
608.7	LOUISVILLE	18-Sep-07		48	8	
608.7	LOUISVILLE	25-Sep-07		194	116	
608.7	LOUISVILLE	27-Sep-07		370	80	
			GEOMETRIC MEAN	84	37	
619.3	LOUISVILLE	04-Sep-07		12	12	
619.3	LOUISVILLE	11-Sep-07		350	340	**EXCEEDS**
619.3	LOUISVILLE	18-Sep-07		32	16	
619.3	LOUISVILLE	25-Sep-07		32	8	
619.3	LOUISVILLE	27-Sep-07		520	400	**EXCEEDS**
			GEOMETRIC MEAN	74	46	
594	LOUISVILLE	02-Oct-07		4	4	
594	LOUISVILLE	09-Oct-07		71	16	
594	LOUISVILLE	16-Oct-07		460	330	**EXCEEDS**
594	LOUISVILLE	22-Oct-07		8	12	
594	LOUISVILLE	30-Oct-07		460	340	**EXCEEDS**
			GEOMETRIC MEAN	54	39	
608.7	LOUISVILLE	02-Oct-07		48	12	
608.7	LOUISVILLE	09-Oct-07		63	32	
608.7	LOUISVILLE	16-Oct-07		320	60	
608.7	LOUISVILLE	22-Oct-07		171	49	
608.7	LOUISVILLE	30-Oct-07		63	16	
			GEOMETRIC MEAN	101	28	
619.3	LOUISVILLE	02-Oct-07		217	211	
619.3	LOUISVILLE	09-Oct-07		460	69	**EXCEEDS**
619.3	LOUISVILLE	16-Oct-07		80	104	
619.3	LOUISVILLE	22-Oct-07		186	320	**EXCEEDS**
619.3	LOUISVILLE	30-Oct-07		68	32	
			GEOMETRIC MEAN	159	109	

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
791.5	EVANSVILLE	02-May-06		211	216	
791.5	EVANSVILLE	09-May-06		48	180	
791.5	EVANSVILLE	16-May-06		390	16	
791.5	EVANSVILLE	23-May-06		580	32	**EXCEEDS**
791.5	EVANSVILLE	30-May-06		11,700	250	**EXCEEDS**
			GEOMETRIC MEAN	485	87	**EXCEEDS**
793.7	EVANSVILLE	02-May-06		900	160	**EXCEEDS**
793.7	EVANSVILLE	09-May-06		16	700	**EXCEEDS**
793.7	EVANSVILLE	16-May-06		5,900	60	**EXCEEDS**
793.7	EVANSVILLE	23-May-06		1,220	20	**EXCEEDS**
793.7	EVANSVILLE	30-May-06		12,080	260	**EXCEEDS**
			GEOMETRIC MEAN	1,046	128	**EXCEEDS**
797.3	EVANSVILLE	02-May-06		600	430	**EXCEEDS**
797.3	EVANSVILLE	09-May-06		80	430	**EXCEEDS**
797.3	EVANSVILLE	16-May-06		500	32	**EXCEEDS**
797.3	EVANSVILLE	23-May-06		650	16	**EXCEEDS**
797.3	EVANSVILLE	30-May-06		550	124	**EXCEEDS**
			GEOMETRIC MEAN	386	103	**EXCEEDS**
791.5	EVANSVILLE	06-Jun-06		5,900	63	**EXCEEDS**
791.5	EVANSVILLE	13-Jun-06		69	51	
791.5	EVANSVILLE	20-Jun-06		20	37	
791.5	EVANSVILLE	22-Jun-06		32	54	
791.5	EVANSVILLE	27-Jun-06		60	8	
			GEOMETRIC MEAN	109	35	
793.7	EVANSVILLE	06-Jun-06		2,800	71	**EXCEEDS**
793.7	EVANSVILLE	13-Jun-06		51	54	
793.7	EVANSVILLE	20-Jun-06		864	250	**EXCEEDS**
793.7	EVANSVILLE	22-Jun-06		4,900	7,000	**EXCEEDS**
793.7	EVANSVILLE	27-Jun-06		231	48	
			GEOMETRIC MEAN	675	200	**EXCEEDS**
797.3	EVANSVILLE	06-Jun-06		3,000	60	**EXCEEDS**
797.3	EVANSVILLE	13-Jun-06		56	43	
797.3	EVANSVILLE	20-Jun-06		24	43	
797.3	EVANSVILLE	22-Jun-06		80	190	
797.3	EVANSVILLE	27-Jun-06		80	16	
			GEOMETRIC MEAN	121	51	
791.5	EVANSVILLE	06-Jul-06		36	4	
791.5	EVANSVILLE	11-Jul-06		68	4	
791.5	EVANSVILLE	18-Jul-06		120	48	
791.5	EVANSVILLE	20-Jul-06		57	12	
791.5	EVANSVILLE	25-Jul-06		500	4	**EXCEEDS**
			GEOMETRIC MEAN	97	8	
793.7	EVANSVILLE	06-Jul-06		88	24	
793.7	EVANSVILLE	11-Jul-06		176	8	
793.7	EVANSVILLE	18-Jul-06		310	4	
793.7	EVANSVILLE	20-Jul-06		128	40	
793.7	EVANSVILLE	25-Jul-06		490	8	**EXCEEDS**
			GEOMETRIC MEAN	198	12	
797.3	EVANSVILLE	06-Jul-06		80	24	
797.3	EVANSVILLE	11-Jul-06		66	16	
797.3	EVANSVILLE	18-Jul-06		370	54	
797.3	EVANSVILLE	20-Jul-06		166	40	
797.3	EVANSVILLE	25-Jul-06		270	8	
			GEOMETRIC MEAN	154	23	

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
791.5	EVANSVILLE	01-Aug-06		96	4	
791.5	EVANSVILLE	08-Aug-06		320	11	
791.5	EVANSVILLE	15-Aug-06		1,281	184	**EXCEEDS**
791.5	EVANSVILLE	22-Aug-06		4	8	
791.5	EVANSVILLE	29-Aug-06		40	24	
			GEOMETRIC MEAN	91	17	
793.7	EVANSVILLE	01-Aug-06		108	12	
793.7	EVANSVILLE	08-Aug-06		754	350	**EXCEEDS**
793.7	EVANSVILLE	15-Aug-06		9,000	3,800	**EXCEEDS**
793.7	EVANSVILLE	22-Aug-06		360	60	
793.7	EVANSVILLE	29-Aug-06		736	203	**EXCEEDS**
			GEOMETRIC MEAN	721	181	**EXCEEDS**
797.3	EVANSVILLE	01-Aug-06		128	20	
797.3	EVANSVILLE	08-Aug-06		210	16	
797.3	EVANSVILLE	15-Aug-06		224	71	
797.3	EVANSVILLE	22-Aug-06		150	24	
797.3	EVANSVILLE	29-Aug-06		680	100	**EXCEEDS**
			GEOMETRIC MEAN	228	35	**EXCEEDS**
791.5	EVANSVILLE	05-Sep-06		60	12	
791.5	EVANSVILLE	12-Sep-06		2,800	200	**EXCEEDS**
791.5	EVANSVILLE	19-Sep-06		530	104	**EXCEEDS**
791.5	EVANSVILLE	21-Sep-06		34	40	
791.5	EVANSVILLE	26-Sep-06		1,100	200	**EXCEEDS**
			GEOMETRIC MEAN	320	72	**EXCEEDS**
793.7	EVANSVILLE	05-Sep-06		80	28	
793.7	EVANSVILLE	12-Sep-06		13,700	3,100	**EXCEEDS**
793.7	EVANSVILLE	19-Sep-06		1,100	340	**EXCEEDS**
793.7	EVANSVILLE	21-Sep-06		196	36	
793.7	EVANSVILLE	26-Sep-06		2,300	2,000	**EXCEEDS**
			GEOMETRIC MEAN	885	292	**EXCEEDS**
797.3	EVANSVILLE	05-Sep-06		66	16	
797.3	EVANSVILLE	12-Sep-06		10,000	1,200	**EXCEEDS**
797.3	EVANSVILLE	19-Sep-06		1,045	290	**EXCEEDS**
797.3	EVANSVILLE	21-Sep-06		92	4	
797.3	EVANSVILLE	26-Sep-06		2,000	100	**EXCEEDS**
			GEOMETRIC MEAN	662	74	**EXCEEDS**
791.5	EVANSVILLE	03-Oct-06		290	50	
791.5	EVANSVILLE	10-Oct-06		300	84	
791.5	EVANSVILLE	17-Oct-06		2,700	500	**EXCEEDS**
791.5	EVANSVILLE	24-Oct-06		240	92	
791.5	EVANSVILLE	31-Oct-06		580	400	**EXCEEDS**
			GEOMETRIC MEAN	505	151	**EXCEEDS**
793.7	EVANSVILLE	03-Oct-06		6,000	320	**EXCEEDS**
793.7	EVANSVILLE	10-Oct-06		490	190	**EXCEEDS**
793.7	EVANSVILLE	17-Oct-06		3,200	1,009	**EXCEEDS**
793.7	EVANSVILLE	24-Oct-06		224	140	
793.7	EVANSVILLE	31-Oct-06		380	130	
			GEOMETRIC MEAN	957	257	**EXCEEDS**
797.3	EVANSVILLE	03-Oct-06		1,100	290	**EXCEEDS**
797.3	EVANSVILLE	10-Oct-06		800	210	**EXCEEDS**
797.3	EVANSVILLE	17-Oct-06		3,000	982	**EXCEEDS**
797.3	EVANSVILLE	24-Oct-06		257	116	
797.3	EVANSVILLE	31-Oct-06		680	236	**EXCEEDS**
			GEOMETRIC MEAN	857	277	**EXCEEDS**

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
791.5	EVANSVILLE	01-May-07		136	52	
791.5	EVANSVILLE	08-May-07		70	16	
791.5	EVANSVILLE	15-May-07		12	4	
791.5	EVANSVILLE	22-May-07		40	10	
791.5	EVANSVILLE	29-May-07		44	17	
			GEOMETRIC MEAN	46	14	
793.7	EVANSVILLE	01-May-07		137	4	
793.7	EVANSVILLE	08-May-07		800	300	**EXCEEDS**
793.7	EVANSVILLE	15-May-07		43	30	
793.7	EVANSVILLE	22-May-07		74	28	
793.7	EVANSVILLE	29-May-07		340	234	
			GEOMETRIC MEAN	164	47	
797.3	EVANSVILLE	01-May-07		112	30	
797.3	EVANSVILLE	08-May-07		156	48	
797.3	EVANSVILLE	15-May-07		80	40	
797.3	EVANSVILLE	22-May-07		24	28	
797.3	EVANSVILLE	29-May-07		20	12	
			GEOMETRIC MEAN	58	29	
791.5	EVANSVILLE	05-Jun-07		16	4	
791.5	EVANSVILLE	12-Jun-07		28	8	
791.5	EVANSVILLE	19-Jun-07		12	4	
791.5	EVANSVILLE	21-Jun-07		88	100	
791.5	EVANSVILLE	26-Jun-07		40	4	
			GEOMETRIC MEAN	29	9	
793.7	EVANSVILLE	05-Jun-07		240	40	
793.7	EVANSVILLE	12-Jun-07		216	34	
793.7	EVANSVILLE	19-Jun-07		650	51	**EXCEEDS**
793.7	EVANSVILLE	21-Jun-07		68	12	
793.7	EVANSVILLE	26-Jun-07		460	183	**EXCEEDS**
			GEOMETRIC MEAN	254	43	**EXCEEDS**
797.3	EVANSVILLE	05-Jun-07		310	32	
797.3	EVANSVILLE	12-Jun-07		16	12	
797.3	EVANSVILLE	19-Jun-07		66	16	
797.3	EVANSVILLE	21-Jun-07		30	4	
797.3	EVANSVILLE	26-Jun-07		88	20	
			GEOMETRIC MEAN	61	14	
791.5	EVANSVILLE	02-Jul-07		8	4	
791.5	EVANSVILLE	10-Jul-07		12	8	
791.5	EVANSVILLE	17-Jul-07		8	4	
791.5	EVANSVILLE	24-Jul-07		20	8	
791.5	EVANSVILLE	31-Jul-07		16	12	
			GEOMETRIC MEAN	12	7	
793.7	EVANSVILLE	02-Jul-07		300	80	
793.7	EVANSVILLE	10-Jul-07		28	12	
793.7	EVANSVILLE	17-Jul-07		4	4	
793.7	EVANSVILLE	24-Jul-07		470	224	**EXCEEDS**
793.7	EVANSVILLE	31-Jul-07		410	144	**EXCEEDS**
			GEOMETRIC MEAN	92	42	
797.3	EVANSVILLE	02-Jul-07		100	30	
797.3	EVANSVILLE	10-Jul-07		16	16	
797.3	EVANSVILLE	17-Jul-07		44	8	
797.3	EVANSVILLE	24-Jul-07		12	4	
797.3	EVANSVILLE	31-Jul-07		40	28	
			GEOMETRIC MEAN	32	13	

EXCEEDS- Value Exceeds Commission Criteria

2006-2007 OHIO RIVER BACTERIA SAMPLING
Fixed Monitoring Stations

MILE POINT	STATION	DATE		FECAL COLIFORM #/100mL	E. COLI #/100mL	
791.5	EVANSVILLE	07-Aug-07		8	4	
791.5	EVANSVILLE	14-Aug-07		7	4	
791.5	EVANSVILLE	21-Aug-07		4	4	
791.5	EVANSVILLE	23-Aug-07		470	24	**EXCEEDS**
791.5	EVANSVILLE	28-Aug-07		500	71	**EXCEEDS**
			GEOMETRIC MEAN	35	10	
793.7	EVANSVILLE	07-Aug-07		600	191	**EXCEEDS**
793.7	EVANSVILLE	14-Aug-07		230	180	
793.7	EVANSVILLE	21-Aug-07		650	280	**EXCEEDS**
793.7	EVANSVILLE	23-Aug-07		1,040	92	**EXCEEDS**
793.7	EVANSVILLE	28-Aug-07		457	136	**EXCEEDS**
			GEOMETRIC MEAN	532	164	**EXCEEDS**
797.3	EVANSVILLE	07-Aug-07		28	8	
797.3	EVANSVILLE	14-Aug-07		12	4	
797.3	EVANSVILLE	21-Aug-07		390	24	
797.3	EVANSVILLE	23-Aug-07		230	37	
797.3	EVANSVILLE	28-Aug-07		210	36	
			GEOMETRIC MEAN	91	16	
791.5	EVANSVILLE	04-Sep-07		10	28	
791.5	EVANSVILLE	11-Sep-07		24	4	
791.5	EVANSVILLE	18-Sep-07		4	10	
791.5	EVANSVILLE	20-Sep-07		4	4	
791.5	EVANSVILLE	25-Sep-07		20	4	
			GEOMETRIC MEAN	9	7	
793.7	EVANSVILLE	04-Sep-07		520	160	**EXCEEDS**
793.7	EVANSVILLE	11-Sep-07		470	191	**EXCEEDS**
793.7	EVANSVILLE	18-Sep-07		300	108	
793.7	EVANSVILLE	20-Sep-07		216	120	
793.7	EVANSVILLE	25-Sep-07		10,100	84	**EXCEEDS**
			GEOMETRIC MEAN	693	127	**EXCEEDS**
797.3	EVANSVILLE	04-Sep-07		92	12	
797.3	EVANSVILLE	11-Sep-07		60	40	
797.3	EVANSVILLE	18-Sep-07		32	4	
797.3	EVANSVILLE	20-Sep-07		4	8	
797.3	EVANSVILLE	25-Sep-07		6,200	16	**EXCEEDS**
			GEOMETRIC MEAN	85	12	
791.5	EVANSVILLE	02-Oct-07		12	8	
791.5	EVANSVILLE	09-Oct-07		24	10	
791.5	EVANSVILLE	16-Oct-07		8	4	
791.5	EVANSVILLE	23-Oct-07		192	60	
791.5	EVANSVILLE	30-Oct-07		130	24	
			GEOMETRIC MEAN	36	14	
793.7	EVANSVILLE	02-Oct-07		600	560	**EXCEEDS**
793.7	EVANSVILLE	09-Oct-07		192	84	
793.7	EVANSVILLE	16-Oct-07		500	223	**EXCEEDS**
793.7	EVANSVILLE	23-Oct-07		12,400	7,500	**EXCEEDS**
793.7	EVANSVILLE	30-Oct-07		156	57	
			GEOMETRIC MEAN	645	339	**EXCEEDS**
797.3	EVANSVILLE	02-Oct-07		52	20	
797.3	EVANSVILLE	09-Oct-07		56	20	
797.3	EVANSVILLE	16-Oct-07		60	50	
797.3	EVANSVILLE	23-Oct-07		80	32	
797.3	EVANSVILLE	30-Oct-07		136	57	
			GEOMETRIC MEAN	72	33	

EXCEEDS- Value Exceeds Commission Criteria

Appendix H: Recreation Use Assessment

Appendix H: Contact Recreation Use Assessment

Mile Point	States	July 2003 - June 2004 Geomean Exceedences	July 2004 - June 2005 Geomean Exceedences	May 2006 - October 2006 Geomean Exceedences	September 2007 - October 2007			# > SS Max	% of Samples > SSM (03-07)	Assessment of Longitudinal Data	Contact Recreation 2006 - 2007			OVERALL ASSESSMENT
					LDB	MID	RDB				% > GM	% > SSM	Assessment	Assessment
1.4R											80%	80%	Not Supporting	Not Supporting
1.4M											80%	80%	Not Supporting	Not Supporting
1.4L											80%	90%	Not Supporting	Not Supporting
1.5		Exceeds	Exceeds		6	6	3	0	**31%**	Not Supporting				Not Supporting
3.3		Exceeds	Exceeds		20	15	12	0	**38%**	Not Supporting				Not Supporting
4.3											60%	80%	Not Supporting	Not Supporting
6.4		Exceeds	Exceeds						**31%**	Not Supporting				Not Supporting
9.5	PA	Exceeds	Exceeds						**40%**	Not Supporting				Not Supporting
11.4	PA	Exceeds	Exceeds						**38%**	Not Supporting				Not Supporting
12.5	PA	Exceeds	Exceeds		16	8	2	0	**38%**	Not Supporting				Not Supporting
14.4	PA	Exceeds	Exceeds						**36%**	Not Supporting				Not Supporting
17.7	PA	Exceeds	Exceeds						**40%**	Not Supporting				Not Supporting
20.5	PA	Exceeds	Exceeds						**42%**	Not Supporting				Not Supporting
20.8	PA	Exceeds	Exceeds						**33%**	Not Supporting				Not Supporting
21.8	PA	Exceeds	Exceeds						**36%**	Not Supporting				Not Supporting
22.9	PA	Exceeds	Exceeds		172	6	21	0	**50%**	Not Supporting				Not Supporting
25.5	PA	Exceeds	Exceeds		14	6	2	0	**27%**	Not Supporting				Not Supporting
25.8	PA	Exceeds	Exceeds		16	15	21	0	**33%**	Not Supporting				Not Supporting
26.4	PA	Exceeds	Exceeds		14	16	16	0	**31%**	Not Supporting				Not Supporting
28.3	PA	Exceeds	Exceeds		12	13	11	0	**35%**	Not Supporting				Not Supporting
32.9	PA	Exceeds	Exceeds		5	9	3	0	**38%**	Not Supporting				Not Supporting
37.6	PA	Exceeds			2	4	5	0	**38%**	Not Supporting				Not Supporting
40.2	PA													
41.2	OH-WV				3	<1	<1	0	**38%**	Not Supporting				Not Supporting
44.8	OH-WV	Exceeds							**40%**	Not Supporting				Not Supporting
48.7	OH-WV	Exceeds			2	5	10	0	**33%**	Not Supporting				Not Supporting
52.5	OH-WV				2	1	3	0	**26%**	Not Supporting				Not Supporting
56.4	OH-WV	Exceeds							**30%**	Not Supporting				Not Supporting
60.3	OH-WV								**38%**	Not Supporting				Not Supporting
66.4	OH-WV	Exceeds			37	38	28	0	**31%**	Not Supporting				Not Supporting
66.9	OH-WV	Exceeds							**38%**	Not Supporting				Not Supporting
68.2	OH-WV				24	43	133	0	**17%**	Partial Support				Partial Support
70.7	OH-WV	Exceeds							**29%**	Not Supporting				Not Supporting
71.8	OH-WV	Exceeds	Exceeds						**36%**	Not Supporting				Not Supporting
74.9	OH-WV				9	15	5	0	**17%**	Partial Support				Partial Support
80.2	OH-WV				3	5	3	0	**19%**	Partial Support				Partial Support
84.2	OH-WV										42%	75%	Not Supporting	Not Supporting
85.6	OH-WV				13	11	8	0	**10%**	Full Support				Full Support
86.8	OH-WV										17%	50%	Not Supporting	Not Supporting
91.2	OH-WV	Exceeds			5	3	6	0	**21%**	Not Supporting				Not Supporting
91.4	OH-WV										25%	58%	Not Supporting	Not Supporting
92.8	OH-WV										50%	92%	Not Supporting	Not Supporting
94.2	OH-WV	Exceeds			5	1	3	0	**21%**	Not Supporting				Not Supporting
97.8	OH-WV	Exceeds			4	2	3	0	**17%**	Not Supporting				Not Supporting
102.6	OH-WV	Exceeds			7	7	10	0	**13%**	Not Supporting				Not Supporting
107.7	OH-WV				1	2	<1	0	**6%**	Full Support				Full Support
113.0	OH-WV				2	3	2	0	**6%**	Full Support				Full Support
118.3	OH-WV				1	2	1	0	**6%**	Full Support				Full Support
123.7	OH-WV				<1	2	3	0	**6%**	Full Support				Full Support
124.9	OH-WV								**7%**	Full Support				Full Support
129.1	OH-WV				30	6	1	0	**8%**	Full Support				Full Support
133.4	OH-WV								**7%**	Full Support				Full Support
138.7	OH-WV				2	1	1	0	**6%**	Full Support				Full Support
144.2	OH-WV								**7%**	Full Support				Full Support
149.6	OH-WV				2	2	1	0	**4%**	Full Support				Full Support
155.0	OH-WV				<1	1	2	0	**4%**	Full Support				Full Support
160.4	OH-WV								**0%**	Full Support				Full Support
165.8	OH-WV				5	5	5	0	**6%**	Full Support				Full Support
171.2	OH-WV				1	2	5	0	**4%**	Full Support				Full Support
175.1	OH-WV				3	7	5	0	**4%**	Full Support				Full Support
179.4	OH-WV								**11%**	Partial Support				Partial Support
183.5	OH-WV				2	<1	1	0	**6%**	Full Support				Full Support
185.9	OH-WV				1	4	7	0	**0%**	Full Support				Full Support
190.8	OH-WV				1	3	10	0	**2%**	Full Support				Full Support
195.7	OH-WV				3	1	<1	0	**0%**	Full Support				Full Support
200.7	OH-WV				<1	1	2	0	**0%**	Full Support				Full Support
205.7	OH-WV			Exceeds	8	1	3	0	**17%**	Not Supporting				Not Supporting
210.7	OH-WV			Exceeds	1	<1	2	0	**17%**	Not Supporting				Not Supporting
215.7	OH-WV			Exceeds	3	3	4	0	**15%**	Not Supporting				Not Supporting
220.4	OH-WV			Exceeds	1	1	<1	0	**17%**	Not Supporting				Not Supporting
225.4	OH-WV			Exceeds	<1	6	2	0	**13%**	Not Supporting				Not Supporting
230.4	OH-WV				4	<1	1	0	**13%**	Partial Support				Partial Support
235.6	OH-WV			Exceeds	<1	3	<1	0	**13%**	Not Supporting				Not Supporting
240.4	OH-WV								**13%**	Partial Support				Partial Support
245.4	OH-WV			Exceeds	3	4	2	0	**15%**	Not Supporting				Not Supporting
250.4	OH-WV			Exceeds	3	5	223	0	**23%**	Not Supporting				Not Supporting

Appendix H: Contact Recreation Use Assessment

Mile Point	States	July 2003 - June 2004 Geomean Exceedences	July 2004 - June 2005 Geomean Exceedences	May 2006 - October 2006 Geomean Exceedences	September 2007 - October 2007			# > SS Max	% of Samples > SSM (03-07)	Assessment of Longitudinal Data	Contact Recreation 2006 - 2007			OVERALL ASSESSMENT
					LDB	MID	RDB				% > GM	% > SSM	Assessment	Assessment
255.5	OH-WV			Exceeds	7	5	8	0	**21%**	Not Supporting				Not Supporting
260.6	OH-WV			Exceeds	7	2	3	0	**19%**	Not Supporting				Not Supporting
265.7	OH-WV			Exceeds	5	4	10	0	**19%**	Not Supporting				Not Supporting
269.8	OH-WV			Exceeds	2	9	50	0	**21%**	Not Supporting				Not Supporting
275.2	OH-WV			Exceeds	5	1	4	0	**6%**	Not Supporting				Not Supporting
280.8	OH-WV			Exceeds	15	6	14	0	**10%**	Not Supporting				Not Supporting
285.9	OH-WV			Exceeds	2	3	3	0	**15%**	Not Supporting				Not Supporting
291.4	OH-WV			Exceeds	<1	1	2	0	**15%**	Not Supporting				Not Supporting
296.6	OH-WV			Exceeds					**13%**	Not Supporting				Not Supporting
302.0	OH-WV				1	2	12	0	**2%**	Full Support				Full Support
305.1	OH-WV										9%	36%	Not Supporting	Not Supporting
307.7	OH-WV				26	31	18	0	**8%**	Full Support				Full Support
308.1	OH-WV										64%	82%	Not Supporting	Not Supporting
313.3	OH-WV				223	**269**	12	1	**17%**	Partial Support				Partial Support
314.8	OH-WV										36%	45%	Not Supporting	Not Supporting
317.1	OH-WV													
317.2	KY-OH				37	29	34	0	**13%**	Partial Support				Partial Support
321.5	KY-OH				30	35	31	0	**6%**	Full Support				Full Support
327.4	KY-OH								**7%**	Full Support				Full Support
327.7	KY-OH								**13%**	Partial Support				Partial Support
328.0	KY-OH				24	15	13	0	**8%**	Full Support				Full Support
332.5	KY-OH				3	7	5	0	**2%**	Full Support				Full Support
338.1	KY-OH				4	2	5	0	**4%**	Full Support				Full Support
343.5	KY-OH				1	1	2	0	**2%**	Full Support				Full Support
349.2	KY-OH				3	2	2	0	**4%**	Full Support				Full Support
352.0	KY-OH				2	3	2	0	**6%**	Full Support				Full Support
353.8	KY-OH				24	3	18	0	**2%**	Full Support				Full Support
359.3	KY-OH				7	10	8	0	**10%**	Full Support				Full Support
364.6	KY-OH				3	8	5	0	**4%**	Full Support				Full Support
369.8	KY-OH				2	2	4	0	**6%**	Full Support				Full Support
375.0	KY-OH				1	1	2	0	**4%**	Full Support				Full Support
380.4	KY-OH				3	1	1	0	**4%**	Full Support				Full Support
385.4	KY-OH				3	2	1	0	**8%**	Full Support				Full Support
390.6	KY-OH				2	10	1	0	**4%**	Full Support				Full Support
395.0	KY-OH								**7%**	Full Support				Full Support
400.4	KY-OH				1	2	1	0	**2%**	Full Support				Full Support
405.8	KY-OH				2	4	6	0	**4%**	Full Support				Full Support
411.4	KY-OH				6	1	3	0	**0%**	Full Support				Full Support
416.4	KY-OH				6	8	4	0	**0%**	Full Support				Full Support
421.6	KY-OH				4	3	1	0	**0%**	Full Support				Full Support
426.4	KY-OH				<1	3	10	0	**0%**	Full Support				Full Support
431.4	KY-OH				2	1	2	0	**0%**	Full Support				Full Support
436.8	KY-OH				2	1	3	0	**0%**	Full Support				Full Support
441.5	KY-OH								**0%**	Full Support				Full Support
446.5	KY-OH				1	<1	4	0	**0%**	Full Support				Full Support
451.6	KY-OH				<1	<1	2	0	**0%**	Full Support				Full Support
455.3	KY-OH								**4%**	Full Support				Full Support
460.0	KY-OH				1	<1	4	0	**4%**	Full Support				Full Support
462.6	KY-OH										17%	42%	Not Supporting	Not Supporting
463.9	KY-OH										0%	17%	Partial Support	Partial Support
465.4	KY-OH				5	5	8	0	**4%**	Full Support				Full Support
468.7	KY-OH				5	7	4	0	**6%**	Full Support				Full Support
469.9	KY-OH										17%	33%	Not Supporting	Not Supporting
470.0	KY-OH										33%	67%	Not Supporting	Not Supporting
472.7	KY-OH				13	21	10	0	**10%**	Full Support				Full Support
477.5	KY-OH										33%	50%	Not Supporting	Not Supporting
477.6	KY-OH				19	17	19	0	**8%**	Full Support				Full Support
482.2	KY-OH				35	38	25	0	**17%**	Partial Support				Partial Support
486.2	KY-OH	Exceeds			35	25	15	0	**13%**	Not Supporting				Not Supporting
489.7	KY-OH				36	25	16	0	**6%**	Full Support				Full Support
491.3	KY-OH													
493.2	IN-KY	Exceeds			15	24	17	0	**7%**	Not Supporting				Not Supporting
498.0	IN-KY	Exceeds			50	35	24	0	**6%**	Not Supporting				Not Supporting
503.1	IN-KY				21	17	21	0	**0%**	Full Support				Full Support
508.3	IN-KY				8	12	10	0	**0%**	Full Support				Full Support
513.4	IN-KY				21	23	15	0	**0%**	Full Support				Full Support
518.5	IN-KY				1	<10	1	0	**2%**	Full Support				Full Support
523.4	IN-KY								**7%**	Full Support				Full Support
528.4	IN-KY				108	<10	-	0	**6%**	Full Support				Full Support
533.2	IN-KY				10	3	2	0	**6%**	Full Support				Full Support
538.5	IN-KY				2	<1	1	0	**6%**	Full Support				Full Support
543.5	IN-KY				5	5	2	0	**0%**	Full Support				Full Support
548.3	IN-KY				1	4	1	0	**0%**	Full Support				Full Support
553.6	IN-KY				<1	1	<1	0	**0%**	Full Support				Full Support
558.8	IN-KY								**4%**	Full Support				Full Support
562.7	IN-KY								**4%**	Full Support				Full Support

Appendix H: Contact Recreation Use Assessment

Mile Point	States	July 2003 - June 2004 Geomean Exceedences	July 2004 - June 2005 Geomean Exceedences	May 2006 - October 2006 Geomean Exceedences	September 2007 - October 2007			# > SS Max	% of Samples > SSM (03-07)	Assessment of Longitudinal Data	Contact Recreation 2006 - 2007			OVERALL ASSESSMENT
					LDB	MID	RDB				% > GM	% > SSM	Assessment	Assessment
567.6	IN-KY				2	<1	3	0	**0%**	Full Support				Full Support
572.5	IN-KY				<1	<1	<1	0	**0%**	Full Support				Full Support
577.4	IN-KY								**0%**	Full Support				Full Support
582.9	IN-KY								**0%**	Full Support				Full Support
587.8	IN-KY				1	<1	<1	0	**0%**	Full Support				Full Support
592.2	IN-KY				<1	<1	2	0	**0%**	Full Support				Full Support
594.0	IN-KY										0%	33%	Not Supporting	Not Supporting
597.1	IN-KY				<1	<1	<1	0	**0%**	Full Support				Full Support
602.2	IN-KY				1	1	6	0	**2%**	Full Support				Full Support
604.3	IN-KY				3	<1	6	0	**6%**	Full Support				Full Support
607.5	IN-KY				4	4	3	0	**8%**	Full Support				Full Support
608.7	IN-KY										17%	50%	Not Supporting	Not Supporting
609.7	IN-KY				2	11	6	0	**15%**	Partial Support				Partial Support
612.2	IN-KY			Exceeds	3	2	1	0	**6%**	Not Supporting				Not Supporting
617.6	IN-KY			Exceeds	5	8	3	0	**25%**	Not Supporting				Not Supporting
619.3	IN-KY										75%	100%	Not Supporting	Not Supporting
623.1	IN-KY			Exceeds	8	6	4	0	**19%**	Not Supporting				Not Supporting
628.1	IN-KY			Exceeds	13	13	15	0	**21%**	Not Supporting				Not Supporting
630.0	IN-KY	Exceeds							**40%**	Not Supporting				Not Supporting
631.6	IN-KY	Exceeds		Exceeds	16	6	5	0	**44%**	Not Supporting				Not Supporting
637.6	IN-KY	Exceeds		Exceeds	1	3	1	0	**56%**	Not Supporting				Not Supporting
643.1	IN-KY	Exceeds		Exceeds	<1	5	2	0	**49%**	Not Supporting				Not Supporting
648.9	IN-KY	Exceeds			3	<1	2	0	**36%**	Not Supporting				Not Supporting
654.0	IN-KY	Exceeds			1	<1	<1	0	**25%**	Not Supporting				Not Supporting
659.2	IN-KY	Exceeds			2	<1	2	0	**21%**	Not Supporting				Not Supporting
664.2	IN-KY	Exceeds			<1	<1	<1	0	**27%**	Not Supporting				Not Supporting
669.1	IN-KY	Exceeds			1	<1	<1	0	**29%**	Not Supporting				Not Supporting
674.5	IN-KY	Exceeds			2	1	<1	0	**27%**	Not Supporting				Not Supporting
680.4	IN-KY	Exceeds			<1	<1	<1	0	**22%**	Not Supporting				Not Supporting
685.6	IN-KY	Exceeds							**16%**	Not Supporting				Not Supporting
690.7	IN-KY	Exceeds			<1	3	1	0	**19%**	Not Supporting				Not Supporting
695.6	IN-KY	Exceeds			<1	<1	<1	0	**14%**	Not Supporting				Not Supporting
700.9	IN-KY	Exceeds			<1	10	2	0	**15%**	Not Supporting				Not Supporting
706.2	IN-KY	Exceeds			1	2	<1	0	**15%**	Not Supporting				Not Supporting
711.5	IN-KY				<1	<1	2	0	**13%**	Partial Support				Partial Support
717.4	IN-KY								**13%**	Partial Support				Partial Support
721.5	IN-KY	Exceeds							**21%**	Not Supporting				Not Supporting
727.0	IN-KY	Exceeds			1	10	3	0	**23%**	Not Supporting				Not Supporting
732.5	IN-KY	Exceeds			2	10	5	0	**25%**	Not Supporting				Not Supporting
738.8	IN-KY	Exceeds							**13%**	Not Supporting				Not Supporting
742.4	IN-KY	Exceeds			4	1	<1	0	**17%**	Not Supporting				Not Supporting
746.4	IN-KY	Exceeds			1	<1	15	0	**15%**	Not Supporting				Not Supporting
750.6	IN-KY	Exceeds			10	15	8	0	**15%**	Not Supporting				Not Supporting
754.8	IN-KY	Exceeds			<1	1	10	0	**13%**	Not Supporting				Not Supporting
758.0	IN-KY	Exceeds			**500**	28	2	1	**23%**	Not Supporting				Not Supporting
763.2	IN-KY	Exceeds							**20%**	Not Supporting				Not Supporting
769.1	IN-KY	Exceeds			10	8	8	0	**13%**	Not Supporting				Not Supporting
773.6	IN-KY	Exceeds			1	1	1	0	**15%**	Not Supporting				Not Supporting
778.2	IN-KY	Exceeds			2	1	<1	0	**10%**	Not Supporting				Not Supporting
782.8	IN-KY	Exceeds			<1	<1	4	0	**13%**	Not Supporting				Not Supporting
787.0	IN-KY				<1	1	<1	0	**10%**	Full Support				Full Support
791.5	IN-KY										25%	58%	Not Supporting	Not Supporting
792.7	IN-KY	Exceeds			<1	2	2	0	**10%**	Not Supporting				Not Supporting
793.7	IN-KY										75%	100%	Not Supporting	Not Supporting
794.2	IN-KY	Exceeds			6	1	69	0	**15%**	Not Supporting				Not Supporting
797.3	IN-KY										33%	50%	Not Supporting	Not Supporting
799.5	IN-KY								**20%**	Partial Support				Partial Support
800.0	IN-KY	Exceeds							**27%**	Not Supporting				Not Supporting
805.8	IN-KY	Exceeds			9	6	3	0	**17%**	Not Supporting				Not Supporting
811.3	IN-KY	Exceeds			11	10	4	0	**15%**	Not Supporting				Not Supporting
817.0	IN-KY	Exceeds			5	4	7	0	**19%**	Not Supporting				Not Supporting
823.2	IN-KY	Exceeds			2	<1	2	0	**23%**	Not Supporting				Not Supporting
829.5	IN-KY	Exceeds			2	1	<1	0	**17%**	Not Supporting				Not Supporting
832.2	IN-KY	Exceeds							**9%**	Not Supporting				Not Supporting
837.2	IN-KY	Exceeds			8	3	<1	0	**13%**	Not Supporting				Not Supporting
842.3	IN-KY	Exceeds			3	<1	2	0	**8%**	Not Supporting				Not Supporting
846.5	IN-KY				4	10	4	0	**10%**	Full Support				Full Support
848.0	IN-KY													
851.3	IL-KY				3	2	1	0	**4%**	Full Support				Full Support
855.5	IL-KY								**7%**	Full Support				Full Support
859.7	IL-KY								**7%**	Full Support				Full Support
864.4	IL-KY				2	2	2	0	**8%**	Full Support				Full Support
869.8	IL-KY				3	1	2	0	**8%**	Full Support				Full Support
875.7	IL-KY				2	1	<1	0	**6%**	Full Support				Full Support
880.7	IL-KY				<1	<1	<1	0	**7%**	Full Support				Full Support
885.0	IL-KY				1	1	<1	0	**2%**	Full Support				Full Support

Appendix H: Contact Recreation Use Assessment

Mile Point	States	July 2003 - June 2004 Geomean Exceedences	July 2004 - June 2005 Geomean Exceedences	May 2006 - October 2006 Geomean Exceedences	September 2007 - October 2007 LDB	MID	RDB	# > SS Max	% of Samples > SSM (03-07)	Assessment of Longitudinal Data	Contact Recreation 2006 - 2007 % > GM	% > SSM	Assessment	OVERALL ASSESSMENT Assessment
889.2	IL-KY				2	<1	<1	0	**2%**	Full Support				Full Support
891.7	IL-KY				2	2	1	0	**2%**	Full Support				Full Support
897.5	IL-KY				3	<1	<1	0	**10%**	Full Support				Full Support
903.2	IL-KY				<1	1	<1	0	**13%**	Partial Support				Partial Support
908.0	IL-KY				2	<1	1	0	**8%**	Full Support				Full Support
912.6	IL-KY				1	<1	2	0	**2%**	Full Support				Full Support
917.6	IL-KY				<1	<1	2	0	**6%**	Full Support				Full Support
923.4	IL-KY				25	9	2	0	**6%**	Full Support				Full Support
928.2	IL-KY								**2%**	Full Support				Full Support
932.2	IL-KY				1	3	<1	0	**0%**	Full Support				Full Support
936.2	IL-KY				1	7	3	0	**0%**	Full Support				Full Support
937.7	IL-KY				4	6	4	0	**0%**	Full Support				Full Support
940.9	IL-KY				2	4	4	0	**0%**	Full Support				Full Support
944.2	IL-KY				2	2	15	0	**0%**	Full Support				Full Support
947.5	IL-KY				4	4	2	0	**2%**	Full Support				Full Support
952.2	IL-KY				2	1	4	0	**2%**	Full Support				Full Support
957.7	IL-KY				2	5	5	0	**2%**	Full Support				Full Support
963.0	IL-KY				2	4	1	0	**2%**	Full Support				Full Support
969.2	IL-KY				2	5	5	0	**2%**	Full Support				Full Support
974.1	IL-KY				7	7	1	0	**2%**	Full Support				Full Support
979.2	IL-KY				10	15	15	0	**2%**	Full Support				Full Support

Assessment Utilizing ALL Data

	Miles
Full Support	497.4
Partial Support	56.7
Not Supporting	426.9

Appendix I: Dioxin Sampling Results

Appendix I: Dioxin High Volume Water Sampling Results
1997-2004

			2, 3, 7, 8 TCDD pg/L (ppq)			Dioxin TEQ pg/L (ppq)			Dioxin TEQ Standard
Mile Point	Date	Flow ft^3/s	Dissolved fg/L	Particulate fg/L	Total fg/L	Dissolved fg/L	Particulate fg/L	Total fg/L	5 ppq
4.0	2-Aug-00	16852	2.47 est	12.4	14.9 est	10.9	221	232	violation
4.0	25-Apr-01	38706	1.19	11.3	12.5	4.34	105	109	violation
4.0	13-Jul-04	27214	<3	3.08		16.3	73.4	89.7	violation
10.9	3-Aug-00	17808	4.51	18	22.5	12.0	248	260	violation
10.9	26-Apr-01	35600	1.44	12.6	14.0	3.94	94.0	97.9	violation
10.9	14-Jul-04	29723	<4	1.69		14.6	36.1	50.7	violation
20.2	7-Jul-98	19500	3.65	23.9	27.6	14.7	219	233	violation
20.2	4-Aug-98	5000	<1.56	25.9		23.8	150	174	violation
20.2	15-Sep-98	7700	<0.92	23.9		12.4	158	171	violation
20.2	4-Aug-00	22484	4.2	66.9	71.1	15.6	420	436	violation
20.2	27-Apr-01	33770	2.02	12.8	14.8	4.98	152	157	violation
30.9	5-Aug-00	25615	3.57	<1.18		9.67	248	258	violation
30.9	30-Apr-01	24000	1.95	14.9	16.9	6.20	135	141	violation
30.9	30-Mar-04	61039	<2	12.7		9.03	168	177	violation
30.9	15-Jul-04	27777	<4	2.14		12.9	26.6	39.5	violation
40.0	8-Jul-98	20700	2.02	28	30.0	18.4	245	263	violation
40.0	5-Aug-98	7300	<0.97	19.3		24.3	138	163	violation
40.0	16-Sep-98	7700	<0.92	17.4		15.6	131	146	violation
40.0	8-Aug-00	50098	3.42	55.4	58.8	45.1	701	746	violation
40.0	1-May-01	27700	2.13	15.3	17.4	6.26	114	121	violation
44.6	9-Jul-98	21700	3.16	15.1	18.3	17.3	179	196	violation
44.6	6-Aug-98	7800	<0.49	15.2		24.7	149	174	violation
44.6	17-Sep-98	7100	<0.72	16.3		15.7	117	132	violation
69.9	9-Aug-00	37837	2.57 est	23.9	26.47 est	30.6	402	433	violation
69.9	2-May-01	23600	1.18	10.5	11.7	6.18	70.8	76.9	violation
69.9	4-Nov-04	32286	10.9	7.27	18.2	15.5	91.5	107	violation
99.2	11-Aug-00	26439	5.33			28.4		insufficient data	
99.2	3-May-01	18828	1.29	4.85	6.14	5.95	51.0	56.9	violation
99.2	31-Mar-04	67049	<2.5	10.3		11.2	101	113	violation
99.2	3-Nov-04	33622	15.1	8.08	23.2	20.5	72.4	92.9	violation
129.0	14-Jul-98	17000	2.48	8.26	10.7	20.2	107	127	violation
129.0	11-Aug-98	10500	<0.59	10.4		26.1	109	135	violation
129.0	22-Sep-98	10100	0.92	11.8	12.7	8.21	110	118	violation
129.0	12-Aug-00	28359	<1			24.6		insufficient data	
129.0	4-May-01	15700	2.35	5.66	8.01	7.84	76.5	84.3	violation
149.0	13-Aug-00	15954	<1.36	<1.03	<2.39	20.9	89.1	110	violation
149.0	5-May-01	21500	1.44	8.5	9.94	6.30	76.6	82.9	violation
149.0	25-Mar-04	84867	<3	18.7		24.2	265	290	violation
171.8	14-Aug-00	19291	<1	9.68		15.8	103	118	violation
171.8	7-May-01	12000	1.6	5.7	7.30	6.60	69.9	76.5	violation
171.8	24-Mar-04	97183	<3.5	45.9		33.4	648	681	violation
175.1	15-Jul-98	34600	1.03	19.4	20.4	8.72	282	291	violation
175.1	12-Aug-98	19100	<1.49	15.5		18.6	158	176	violation
175.1	23-Sep-98	14200	<0.25	7.81		7.37	100	108	violation
175.1	16-Aug-00	19644	<1	<0.99	<1.99	15.0	92.3	107	violation
175.1	9-May-01	14600	1.16	6.05	7.21	5.46	97.0	102	violation
184.3	17-Aug-00	17313	6.89	<1.19		29.1	238	267	violation
184.3	10-May-01	25700	1.68	25.2	26.9	12.9	899	912	violation
184.3	23-Mar-04	134274	<3.5	35.1		23.3	534	558	violation
207.7	16-Jul-98	32500	1.66	9.52	11.2	19.6	234	253	violation
207.7	13-Aug-98	20500	<0.32	7.8		21.9	220	242	violation
207.7	24-Sep-98	12000	3.5	6.48	9.98	20.4	131	151	violation
207.7	18-Aug-00	17212	<1.2	<0.95	<2.15	16.5	189	205	violation
207.7	11-May-01	13100	1.94	19	20.9	9.46	321	331	violation
264.0	16-Jul-97	19000	2.71	14	16.7	18.1	317	335	violation
264.0	20-Aug-97	62700	2.02	9.8	11.8	15.0	516	531	violation
264.0	24-Sep-97	14500	<0.99	8.02		12.9	268	281	violation
264.0	18-Jun-98	93700	<2.6	69.7		47.1	1240	1287	violation
264.0	3-Nov-98	9100	2.51	4.26	6.77	11.7	88.6	100	violation
264.0	19-Aug-00	10269	<1.01	<0.9	<1.91	15.3	171	186	violation
264.0	12-May-01	22100	1.72	8.58	10.3	10.0	256	266	violation
281.5	17-Jul-97	21300	5.36	32.3	37.7	16.3	296	312	violation
281.5	21-Aug-97	68800	3.34	44.3	47.6	13.4	891	904	violation
281.5	25-Sep-97	17600	<0.86	30.6		7.14	246	253	violation
281.5	19-Jun-98	175400	7.14	136	143	46.5	1290	1337	violation
281.5	4-Nov-98	15900	8.01	23.6	31.6	18.1	101	119	violation
302.9	18-Jul-97	20400	5.86	29.4	35.3	11.6	199	211	violation
302.9	22-Aug-97	61300	<0.4	44		11.6	482	494	violation
302.9	26-Sep-97	21800	4.85	18	22.9	15.5	117	132	violation
302.9	20-Jun-98	103100	7.12	160	167	52.7	731	784	violation
302.9	5-Nov-98	17000	6.49	19	25.5	16.3	90.6	107	violation
321.5	7-May-99	33300	6.85	12.2	19.1	18.6	64.9	83.6	violation
321.5	15-Jul-99	9890	3.53	11.8	15.3	11.8	54.6	66.3	violation
321.5	20-Apr-00	211000	4.33	284	288	19.3	1291	1310	violation
360.0	9-May-99	48700	3.54	22	25.5	10.4	136	147	violation
360.0	17-Jul-99	13661	4.25	12.7	17.0	9.29	67.2	76.4	violation

Est- Estimated
Assessment determined using Total Dioxin TEQ data

Appendix I: Dioxin High Volume Water Sampling Results
1997-2004

			2, 3, 7, 8 TCDD pg/L (ppq)			Dioxin TEQ pg/L (ppq)			Dioxin TEQ Standard
Mile Point	Date	Flow ft^3/s	Dissolved fg/L	Particulate fg/L	Total fg/L	Dissolved fg/L	Particulate fg/L	Total fg/L	5 ppq
360.0	22-Apr-00	175000	5.94	230	236	17.7	1073	1091	violation
438.6	10-May-99	35800	3.26	1.839	5.10	10.8	102	113	violation
438.6	18-Jul-99	12200	5.61	17.1	22.7	14.6	101	116	violation
438.6	23-Apr-00	174000	10.3 est	380	390.3 est	17.0	1441	1458	violation
486.5	12-May-99	38400	6.75	14.05	20.8	14.8	61.6	76.4	violation
486.5	19-Jul-99	12800	<0.29	<0.41	<.7	10.9	22.7	33.6	violation
486.5	25-Apr-00	177000	7.86	137	145	30.9	694	725	violation
494.5	14-May-99	43000	3.16	12.2	15.4	10.9	86.9	97.8	violation
494.5	21-Jul-99	15600	<0.16	10.8		14.2	63.1	77.4	violation
494.5	26-Apr-00	180000	8.94	122	131	33.2	618	651	violation
548.3	15-May-99	48000	1.66	7.53	9.19	4.92	49.0	53.9	violation
548.3	22-Jul-99	14180	<0.32	5.07		15.4	27.9	43.2	violation
548.3	27-Apr-00	199000	3.94	47.2	51.1	14.2	289	303	violation
625.6	17-May-99	54800	3.13	16.6	19.7	12.3	116	128	violation
625.6	23-Jul-99	23600	<0.42	4.7		11.0	35.5	46.6	violation
625.6	28-Apr-00	210000	8.27	229	237	31.3	1018	1049	violation
625.6	11-Sep-03	80244	10.7	188	199	44.2	774	818	violation
670.7	18-May-99	54700	4.31	15.2	19.5	13.9	104	117	violation
670.7	27-Jul-99	17700	1.98	5.65	7.63	8.03	37.0	45.0	violation
670.7	1-May-00	146000	6.04	127	133	26.0	677	703	violation
670.7	4-Nov-03	91661	6.63	61.8	68.4	28.6	313	341	violation
717.4	19-May-99	66200	2.92	7.55	10.5	11.4	48.7	60.0	violation
717.4	28-Jul-99	19400	2.79	10.7	13.5	13.2	60.3	73.5	violation
717.4	2-May-00	126000	4.25	61.5	65.8	14.5	352	367	violation
717.4	17-Sep-03	34169	6.79	9.95	16.7	30.8	41.8	72.6	violation
722.5	20-May-99	57800	3.33	8.36	11.7	12.3	66.8	79.0	violation
722.5	29-Jul-99	35400	3.22	5.92	9.14	12.2	45.1	57.3	violation
722.5	3-May-00	95500	3.17	65.4	68.6	10.2	404	414	violation
722.5	16-Sep-03	45938	8.13	21.6	29.7	34.0	117	151	violation
765.0	7-May-02	365000	16.2	357	373	93.2	1629	1722	violation
765.0	22-Oct-02	35600	<3.25	19.2		8.94	131	140	violation
765.0	17-May-03	303000	17.3	416	433	86.0	2167	2253	violation
770.0	9-May-02	370000	12.2	285	297	69.2	1639	1708	violation
770.0	23-Oct-02	35300	3.42	21.6	25.0	16.5	154	170	violation
770.0	18-May-03	282000	37.6	202	240	215	1011	1226	violation
847.0	13-May-02	228000	4.39 est	144	148.4 est	25.1	987	1012	violation
847.0	25-Oct-02	49700	5.57	15.3	20.9	31.8	114	145	violation
847.0	20-May-03	201000	20.1	181	201	120	1106	1226	violation
917.0	16-May-02	491058	10.4	182	192	66.0	1150	1216	violation
917.0	30-Oct-02	80600	4 est	17.6	21.6 est	21.7	119	141	violation
917.0	29-May-03	268000	10.3	116	126	64.8	597	662	violation
943.0	19-May-02	773000	5.83 est	205	210.8 est	32.8	773	806	violation
943.0	2-Nov-02	215000	1.55 est	22.8	24.35 est	6.84	166	173	violation
943.0	1-Jun-03	230000	4.75 est	76.5	81.3 est	21.1	502	523	violation
948.0	20-May-02	767000	3.27	83.9	87.2	17.0	590	607	violation
948.0	3-Nov-02	223000	0.991 est	22.1	23.09 est	3.29	154	157	violation
948.0	2-Jun-03	217000	6.75	183	190	41.6	1091	1132	violation
980.0	21-May-02	772000	5.56	56.9	62.5	33.6	382	415	violation
980.0	4-Nov-02	222000	2.78	54.6	57.4	27.5	405	432	violation
980.0	3-Jun-03	229000	13.8 est	288	301.8 est	70.9	1545	1616	violation

Est- Estimated
Assessment determined using Total Dioxin TEQ data

Appendix J:
PCB Sampling
Results

Appendix J: PCB High Volume Water Sampling Results
1997-2004

Mile Point	Date	Flow (cfs)	Dissolved pg/L	Particulate pg/L	Total PCBs pg/L	PCB Standard 64 pg/L
4.0	2-Aug-00	16852		3706.4	insufficient data	
4.0	25-Apr-01	38706	430.3	1148.2	1578.5	violation
4.0	13-Jul-04	27214	2240.3	1084.7	3325.0	violation
10.9	3-Aug-00	17808		4131.0	insufficient data	
10.9	26-Apr-01	35600	590.6	1010.5	1601.1	violation
10.9	14-Jul-04	29723	2120.6	648.5	2769.1	violation
20.2	7-Jul-98	19500	1241.6	2018.1	3259.7	violation
20.2	15-Sep-98	7700	1497.5	1477.9	2975.3	violation
20.2	4-Aug-00	22484		6443.6	insufficient data	
20.2	27-Apr-01	33770	551.0	1434.1	1985.1	violation
30.9	5-Aug-00	25615		4292.6	insufficient data	
30.9	30-Apr-01	24000	814.5	1708.6	2523.2	violation
30.9	30-Mar-04	61039	430.7	1427.0	1857.7	violation
30.9	15-Jul-04	27777	2103.3	485.7	2589.1	violation
40.0	8-Jul-98	20700	1463.6	2714.5	4178.1	violation
40.0	16-Sep-98	7700	1431.7	1647.8	3079.5	violation
40.0	8-Aug-00	50098		11744.0	insufficient data	
40.0	1-May-01	27700	791.8	1494.0	2285.8	violation
44.6	9-Jul-98	21700	1368.7	1755.5	3124.2	violation
44.6	17-Sep-98	7100	1515.8	1417.2	2933.0	violation
69.9	9-Aug-00	37837		5589.6	insufficient data	
69.9	2-May-01	23600	786.1	998.6	1784.7	violation
69.9	4-Nov-04	32286	1317.1	1586.6	2903.7	violation
99.2	11-Aug-00	26439	2910.0		insufficient data	
99.2	3-May-01	18828	774.0	676.4	1450.4	violation
99.2	31-Mar-04	67049	831.0	1845.6	2676.7	violation
99.2	3-Nov-04	33622	1152.9	976.5	2129.3	violation
129.0	14-Jul-98	17000	1206.8	1137.0	2343.8	violation
129.0	11-Aug-98	10500	1403.8		insufficient data	
129.0	22-Sep-98	10100	270.2	906.3	1176.4	violation
129.0	12-Aug-00	28359	2494.9	2052.8	4547.7	violation
129.0	4-May-01	15700	822.1	889.1	1711.2	violation
149.0	13-Aug-00	15954	2173.0	1083.7	3256.7	violation
149.0	5-May-01	21500	848.8	982.4	1831.2	violation
149.0	25-Mar-04	84867	743.2	2930.7	3673.9	violation
171.8	14-Aug-00	19291	1878.0	1205.1	3083.1	violation
171.8	7-May-01	12000	779.1	934.9	1713.9	violation
171.8	24-Mar-04	97183	1100.6	8290.6	9391.2	violation
175.1	15-Jul-98	34600	1072.0	2298.8	3370.8	violation
175.1	12-Aug-98	19100	1198.9	1090.8	2289.7	violation
175.1	23-Sep-98	14200	164.9	743.7	908.6	violation
175.1	16-Aug-00	19644	1575.9	1127.7	2703.6	violation
175.1	9-May-01	14600	775.4	1313.9	2089.2	violation
184.3	17-Aug-00	17313	1620.2	1079.3	2699.5	violation
184.3	10-May-01	25700	845.7	1435.3	2281.1	violation
184.3	23-Mar-04	134274	736.2	3189.5	3925.7	violation
207.7	16-Jul-98	32500	1232.4	804.1	2036.6	violation
207.7	13-Aug-98	20500	1337.3	520.2	1857.5	violation
207.7	24-Sep-98	12000	260.2	279.5	539.7	violation
207.7	18-Aug-00	17212	1299.1	1014.7	2313.9	violation
207.7	11-May-01	13100	879.8	1556.5	2436.3	violation
264.0	20-Aug-97	62700	816.9	798.5	1615.4	violation
264.0	24-Sep-97	14500	758.2	691.6	1449.8	violation
264.0	18-Jun-98	93700		4157.4	insufficient data	
264.0	3-Nov-98	9100		253.7	insufficient data	
264.0	19-Aug-00	10269	1173.3	656.4	1829.7	violation
264.0	12-May-01	22100	872.3	1394.7	2267.1	violation
281.5	21-Aug-97	68800	698.0	1715.8	2413.8	violation
281.5	25-Sep-97	17600	592.7		insufficient data	
281.5	19-Jun-98	175400		2935.7	insufficient data	
281.5	4-Nov-98	15900		334.3	insufficient data	
302.9	22-Aug-97	61300	677.4	1201.3	1878.8	violation
302.9	20-Jun-98	103100		2855.6	insufficient data	
302.9	5-Nov-98	17000		238.7	insufficient data	
321.5	7-May-99	33300		214.7	insufficient data	
321.5	15-Jul-99	9890	695.5	257.9	953.4	violation

Appendix J: PCB High Volume Water Sampling Results
1997-2004

Mile Point	Date	Flow (cfs)	Dissolved pg/L	Particulate pg/L	Total PCBs pg/L	PCB Standard 64 pg/L
321.5	20-Apr-00	211000	360.0	6079.9	6439.9	violation
360.0	9-May-99	48700	591.0	455.7	1046.7	violation
360.0	17-Jul-99	13661	865.1	491.9	1357.0	violation
360.0	22-Apr-00	175000	525.8	8122.3	8648.1	violation
438.6	10-May-99	35800	580.2	409.4	989.6	violation
438.6	18-Jul-99	12200	619.5	309.9	929.4	violation
438.6	23-Apr-00	174000		5072.8	insufficient data	
486.5	12-May-99	38400	1768.7	406.9	2175.6	violation
486.5	19-Jul-99	12800	664.8	218.9	883.7	violation
486.5	25-Apr-00	177000	800.0	3752.1	4552.1	violation
494.5	14-May-99	43000	794.1	393.1	1187.3	violation
494.5	21-Jul-99	15600	1141.4	381.2	1522.6	violation
494.5	26-Apr-00	180000	851.5	3921.5	4773.0	violation
548.3	15-May-99	48000	494.7	213.8	708.5	violation
548.3	22-Jul-99	14180	915.8	126.2	1042.1	violation
548.3	27-Apr-00	199000	465.6	1569.9	2035.6	violation
625.6	17-May-99	54800	658.7		insufficient data	
625.6	23-Jul-99	23600	907.1	204.3	1111.5	violation
625.6	28-Apr-00	210000	820.1	5761.9	6582.1	violation
625.6	11-Sep-03	80244	871.7	3003.5	3875.2	violation
670.7	18-May-99	54700	618.0		insufficient data	
670.7	27-Jul-99	17700	635.9	164.2	800.1	violation
670.7	1-May-00	146000	63.8	4138.3	4202.0	violation
670.7	4-Nov-03	91661	598.0	1428.5	2026.6	violation
717.4	19-May-99	66200	455.7		insufficient data	
717.4	28-Jul-99	19400	480.2	190.1	670.3	violation
717.4	2-May-00	126000	671.0	1894.6	2565.6	violation
717.4	17-Sep-03	34169	456.8	201.5	658.3	violation
722.5	20-May-99	57800	589.3		insufficient data	
722.5	29-Jul-99	35400	482.3	208.0	690.3	violation
722.5	3-May-00	95500	711.2	2213.9	2925.1	violation
722.5	16-Sep-03	45938	696.1	508.2	1204.3	violation
765.0	7-May-02	365000	868.7	6589.8	7458.5	violation
765.0	22-Oct-02	35600	407.2	425.0	832.2	violation
765.0	17-May-03	303000	992.0	11611.5	12603.5	violation
770.0	9-May-02	370000	751.7	6424.6	7176.4	violation
770.0	23-Oct-02	35300	512.0	499.8	1011.9	violation
770.0	18-May-03	282000	1301.7	6278.0	7579.7	violation
847.0	13-May-02	228000	479.2	8207.5	8686.7	violation
847.0	25-Oct-02	49700	518.1	404.1	922.2	violation
847.0	20-May-03	201000	979.0	5480.0	6458.9	violation
917.0	16-May-02	491058	806.2	4833.4	5639.6	violation
917.0	30-Oct-02	80600	324.0	412.1	736.1	violation
917.0	29-May-03	268000	766.2	3611.3	4377.5	violation
943.0	19-May-02	773000	572.6	2469.9	3042.5	violation
943.0	2-Nov-02	215000	206.5	616.1	822.6	violation
943.0	1-Jun-03	230000	444.4	1843.5	2288.0	violation
948.0	20-May-02	767000	539.1	3009.8	3548.9	violation
948.0	3-Nov-02	223000	150.3	451.5	601.7	violation
948.0	2-Jun-03	217000	1403.3	4251.9	5655.2	violation
980.0	21-May-02	772000	636.8	1504.3	2141.0	violation
980.0	4-Nov-02	222000	284.9	1501.1	1786.0	violation
980.0	3-Jun-03	229000	42.1	6696.6	6738.7	violation

Appendix K:
ORFIn Scores

Appendix K: Summary of ORFIn Scores

Year	Mile Point	Pool	Result	% Passing
2006	13.7-30.4	MONTGOMERY	PASS	87%
2006	127.4-157.4	WILLOW ISLAND	PASS	100%
2006	281.6-338.9	GREENUP	PASS	80%
2007	0.0-5.1	EMSWORTH	PASS	100%
2007	55.5-79.8	PIKE ISLAND	PASS	100%
2007	356.2-431.2	MELDAHL	PASS	100%
2006&2007	612.1-720.3	CANNELTON	PASS	90%
2007	721.2-772.1	NEWBURGH	PASS	87%

Appendix K: 2006 and 2007 Ohio River Fish Index Scores

Year	Mile Point	River	Pool	ORFIn Score	Habitat Type	Criteria	Result
2006	13.7	OHIO	MONTGOMERY	47	A	39	PASS
2006	14.1	OHIO	MONTGOMERY	45	A	39	PASS
2006	15.8	OHIO	MONTGOMERY	41	B	33	PASS
2006	16.6	OHIO	MONTGOMERY	37	B	33	PASS
2006	19.3	OHIO	MONTGOMERY	29	B	33	**FAIL**
2006	22	OHIO	MONTGOMERY	47	A	39	PASS
2006	23.1	OHIO	MONTGOMERY	39	A	39	PASS
2006	26.3	OHIO	MONTGOMERY	43	A	39	PASS
2006	27	OHIO	MONTGOMERY	23	B	33	**FAIL**
2006	27.1	OHIO	MONTGOMERY	49	A	39	PASS
2006	27.3	OHIO	MONTGOMERY	41	B	33	PASS
2006	27.6	OHIO	MONTGOMERY	37	B	33	PASS
2006	28.7	OHIO	MONTGOMERY	49	A	39	PASS
2006	30.1	OHIO	MONTGOMERY	43	A	39	PASS
2006	30.4	OHIO	MONTGOMERY	49	A	39	PASS
2006	127.4	OHIO	WILLOW ISLAND	49	B	33	PASS
2006	128	OHIO	WILLOW ISLAND	53	A	39	PASS
2006	128.5	OHIO	WILLOW ISLAND	53	A	39	PASS
2006	130.6	OHIO	WILLOW ISLAND	53	A	39	PASS
2006	132.4	OHIO	WILLOW ISLAND	47	B	33	PASS
2006	135.9	OHIO	WILLOW ISLAND	41	B	33	PASS
2006	137.8	OHIO	WILLOW ISLAND	45	B	33	PASS
2006	138.9	OHIO	WILLOW ISLAND	45	B	33	PASS
2006	140.9	OHIO	WILLOW ISLAND	49	A	39	PASS
2006	141.1	OHIO	WILLOW ISLAND	53	B	33	PASS
2006	141.7	OHIO	WILLOW ISLAND	51	B	33	PASS
2006	145.2	OHIO	WILLOW ISLAND	47	B	33	PASS
2006	150.8	OHIO	WILLOW ISLAND	47	B	33	PASS
2006	153.2	OHIO	WILLOW ISLAND	43	B	33	PASS
2006	157.4	OHIO	WILLOW ISLAND	45	B	33	PASS
2006	281.6	OHIO	GREENUP	39	B	33	PASS
2006	283.4	OHIO	GREENUP	47	B	33	PASS
2006	290.2	OHIO	GREENUP	22	B	33	**FAIL**
2006	291.2	OHIO	GREENUP	18	B	33	**FAIL**
2006	294.3	OHIO	GREENUP	41	B	33	PASS
2006	297.3	OHIO	GREENUP	43	B	33	PASS
2006	302.5	OHIO	GREENUP	53	A	39	PASS
2006	305.8	OHIO	GREENUP	35	B	33	PASS
2006	308.7	OHIO	GREENUP	43	B	33	PASS
2006	323.5	OHIO	GREENUP	37	A	39	**FAIL**
2006	332.5	OHIO	GREENUP	35	B	33	PASS
2006	335.9	OHIO	GREENUP	45	B	33	PASS
2006	336.4	OHIO	GREENUP	41	B	33	PASS
2006	336.7	OHIO	GREENUP	35	B	33	PASS
2006	338.9	OHIO	GREENUP	47	B	33	PASS

Appendix K: 2006 and 2007 Ohio River Fish Index Scores

Year	Mile Point	River	Pool	ORFIn Score	Habitat Type	Criteria	Result
2006	650.3	OHIO	CANNELTON	39	B	33	PASS
2006	652.9	OHIO	CANNELTON	45	B	33	PASS
2006	655.8	OHIO	CANNELTON	45	B	33	PASS
2006	660.9	OHIO	CANNELTON	20	B	33	**FAIL**
2006	667.7	OHIO	CANNELTON	15	B	33	**FAIL**
2006	672.8	OHIO	CANNELTON	35	B	33	PASS
2006	687.3	OHIO	CANNELTON	19	B	33	**FAIL**
2006	692	OHIO	CANNELTON	33	B	33	PASS
2006	697.9	OHIO	CANNELTON	35	B	33	PASS
2006	698.3	OHIO	CANNELTON	35	B	33	PASS
2006	711.6	OHIO	CANNELTON	39	B	33	PASS
2007	2.2	ALLEGHENY	EMSWORTH	53	B	33	PASS
2007	5	ALLEGHENY	EMSWORTH	43	B	33	PASS
2007	5.7	ALLEGHENY	EMSWORTH	55	B	33	PASS
2007	2.6	MONONGAHELA	EMSWORTH	51	B	33	PASS
2007	4.5	MONONGAHELA	EMSWORTH	39	B	33	PASS
2007	4.8	MONONGAHELA	EMSWORTH	53	B	33	PASS
2007	5.7	MONONGAHELA	EMSWORTH	51	B	33	PASS
2007	6.3	MONONGAHELA	EMSWORTH	51	B	33	PASS
2007	9.1	MONONGAHELA	EMSWORTH	43	B	33	PASS
2007	10.8	MONONGAHELA	EMSWORTH	49	A	39	PASS
2007	0.2	OHIO	EMSWORTH	45	B	33	PASS
2007	1.9	OHIO	EMSWORTH	35	B	33	PASS
2007	4	OHIO	EMSWORTH	57	B	33	PASS
2007	4.3	OHIO	EMSWORTH	45	B	33	PASS
2007	5.1	OHIO	EMSWORTH	41	B	33	PASS
2007	55.5	OHIO	PIKE ISLAND	51	A	39	PASS
2007	56.2	OHIO	PIKE ISLAND	55	A	39	PASS
2007	58.2	OHIO	PIKE ISLAND	51	A	39	PASS
2007	60.1	OHIO	PIKE ISLAND	53	A	39	PASS
2007	60.4	OHIO	PIKE ISLAND	45	A	39	PASS
2007	62.8	OHIO	PIKE ISLAND	49	A	39	PASS
2007	64.3	OHIO	PIKE ISLAND	51	B	33	PASS
2007	64.8	OHIO	PIKE ISLAND	49	B	33	PASS
2007	68.4	OHIO	PIKE ISLAND	53	A	39	PASS
2007	72.9	OHIO	PIKE ISLAND	49	B	33	PASS
2007	75.2	OHIO	PIKE ISLAND	45	A	39	PASS
2007	78.1	OHIO	PIKE ISLAND	41	B	33	PASS
2007	79	OHIO	PIKE ISLAND	43	B	33	PASS
2007	79.2	OHIO	PIKE ISLAND	45	B	33	PASS
2007	79.8	OHIO	PIKE ISLAND	47	B	33	PASS
2007	356.2	OHIO	MELDAHL	49	B	33	PASS
2007	363.6	OHIO	MELDAHL	49	B	33	PASS
2007	365.7	OHIO	MELDAHL	55	B	33	PASS
2007	378.6	OHIO	MELDAHL	41	B	33	PASS
2007	380.4	OHIO	MELDAHL	49	A	39	PASS
2007	384.9	OHIO	MELDAHL	43	B	33	PASS
2007	395.1	OHIO	MELDAHL	45	B	33	PASS
2007	396.6	OHIO	MELDAHL	45	A	39	PASS
2007	397.4	OHIO	MELDAHL	51	B	33	PASS
2007	404.8	OHIO	MELDAHL	45	B	33	PASS
2007	410	OHIO	MELDAHL	53	A	39	PASS
2007	410.6	OHIO	MELDAHL	51	A	39	PASS
2007	423.5	OHIO	MELDAHL	51	B	33	PASS
2007	427.9	OHIO	MELDAHL	53	B	33	PASS
2007	431.2	OHIO	MELDAHL	51	B	33	PASS

Appendix K: 2006 and 2007 Ohio River Fish Index Scores

Year	Mile Point	River	Pool	ORFIn Score	Habitat Type	Criteria	Result
2007	612.1	OHIO	CANNELTON	45	B	33	PASS
2007	612.2	OHIO	CANNELTON	43	C	19.68	PASS
2007	614.1	OHIO	CANNELTON	49	B	33	PASS
2007	617.7	OHIO	CANNELTON	45	B	33	PASS
2007	621.2	OHIO	CANNELTON	49	B	33	PASS
2007	623.8	OHIO	CANNELTON	45	B	33	PASS
2007	628.2	OHIO	CANNELTON	43	A	39	PASS
2007	639.7	OHIO	CANNELTON	53	B	33	PASS
2007	648.6	OHIO	CANNELTON	39	B	33	PASS
2007	656.4	OHIO	CANNELTON	53	B	33	PASS
2007	661.6	OHIO	CANNELTON	51	A	39	PASS
2007	680.7	OHIO	CANNELTON	41	A	39	PASS
2007	682.3	OHIO	CANNELTON	55	A	39	PASS
2007	689.8	OHIO	CANNELTON	47	B	33	PASS
2007	694.5	OHIO	CANNELTON	49	B	33	PASS
2007	696.1	OHIO	CANNELTON	43	B	33	PASS
2007	707.5	OHIO	CANNELTON	45	B	33	PASS
2007	709.8	OHIO	CANNELTON	49	B	33	PASS
2007	720.3	OHIO	CANNELTON	45	B	33	PASS
2007	721.2	OHIO	NEWBURGH	55	B	33	PASS
2007	724.8	OHIO	NEWBURGH	49	B	33	PASS
2007	736.7	OHIO	NEWBURGH	41	B	33	PASS
2007	740.4	OHIO	NEWBURGH	41	B	33	PASS
2007	742.4	OHIO	NEWBURGH	17	B	33	**FAIL**
2007	747.3	OHIO	NEWBURGH	21	B	33	**FAIL**
2007	748.8	OHIO	NEWBURGH	49	B	33	PASS
2007	749.3	OHIO	NEWBURGH	43	B	33	PASS
2007	752	OHIO	NEWBURGH	45	B	33	PASS
2007	754.3	OHIO	NEWBURGH	41	B	33	PASS
2007	754.8	OHIO	NEWBURGH	43	B	33	PASS
2007	759.7	OHIO	NEWBURGH	43	B	33	PASS
2007	762.5	OHIO	NEWBURGH	43	B	33	PASS
2007	768.9	OHIO	NEWBURGH	35	B	33	PASS
2007	772.1	OHIO	NEWBURGH	45	B	33	PASS

Appendix L: Fish Tissue Mercury Data

Appendix L: Mercury (Hg) levels detected in fish tissue samples 2005-2006

Year	Mile Point	Pool	Species	Sample Size	Hg (mg/kg)	Exceedences
2005	26.1	MONTGOMERY	SAUGER	3	0.1	no
2006	26.1	MONTGOMERY	CHANNEL CATFISH (SMALL)	3	0.09	no
2006	26.1	MONTGOMERY	SAUGER	3	0.11	no
2006	31.7	MONTGOMERY	COMMON CARP	3	0.071	no
2006	31.7	MONTGOMERY	SMALLMOUTH BUFFALO	3	0.088	no
2006	31.7	MONTGOMERY	CHANNEL CATFISH (LARGE)	3	0.095	no
2006	31.7	MONTGOMERY	FLATHEAD CATFISH	1	0.11	no
2006	31.7	MONTGOMERY	BLUEGILL	3	0.034	no
2006	31.7	MONTGOMERY	SMALLMOUTH BASS	3	0.063	no
2006	31.7	MONTGOMERY	BLACK CRAPPIE	2	0.087	no
2006	31.7	MONTGOMERY	FRESHWATER DRUM	3	0.13	no
2005	54.4	NEW CUMBERLAND	COMMON CARP	3	0.081	no
2005	54.4	NEW CUMBERLAND	SMALLMOUTH BUFFALO	3	0.1	no
2005	54.4	NEW CUMBERLAND	CHANNEL CATFISH (LARGE)	3	0.27	no
2005	54.4	NEW CUMBERLAND	CHANNEL CATFISH (SMALL)	3	0.19	no
2005	54.4	NEW CUMBERLAND	FLATHEAD CATFISH	2	0.067	no
2005	54.4	NEW CUMBERLAND	WHITE BASS	2	0.11	no
2005	54.4	NEW CUMBERLAND	SMALLMOUTH BASS	3	0.091	no
2005	54.4	NEW CUMBERLAND	BLACK CRAPPIE	2	0.076	no
2005	54.4	NEW CUMBERLAND	WALLEYE	3	0.076	no
2005	54.4	NEW CUMBERLAND	SAUGER	4	0.079	no
2005	54.4	NEW CUMBERLAND	FRESHWATER DRUM	3	0.15	no
2005	100	HANNIBAL	SAUGER	3	0.12	no
2006	161.7	WILLOW ISLAND	COMMON CARP	3	0.2	no
2006	161.7	WILLOW ISLAND	SMALLMOUTH BUFFALO	3	0.17	no
2006	161.7	WILLOW ISLAND	CHANNEL CATFISH (LARGE)	3	0.041	no
2006	161.7	WILLOW ISLAND	CHANNEL CATFISH (SMALL)	3	0.074	no
2006	161.7	WILLOW ISLAND	FLATHEAD CATFISH	3	0.17	no
2006	161.7	WILLOW ISLAND	BLUEGILL	3	0.077	no
2006	161.7	WILLOW ISLAND	LARGEMOUTH BASS	3	0.099	no
2006	161.7	WILLOW ISLAND	SAUGER	3	0.14	no
2006	161.7	WILLOW ISLAND	FRESHWATER DRUM	2	0.32	**yes**
2005	237.5	RACINE	COMMON CARP	3	0.057	no
2005	237.5	RACINE	SMALLMOUTH BUFFALO	3	0.088	no
2005	237.5	RACINE	CHANNEL CATFISH (LARGE)	3	0.17	no
2005	237.5	RACINE	CHANNEL CATFISH (SMALL)	3	0.13	no
2005	237.5	RACINE	FLATHEAD CATFISH	3	0.15	no
2005	237.5	RACINE	LARGEMOUTH BASS	3	0.11	no
2005	237.5	RACINE	BLACK CRAPPIE	3	0.22	no
2005	237.5	RACINE	SAUGER	1	0.044	no
2005	237.5	RACINE	FRESHWATER DRUM	1	0.14	no

Appendix L: Mercury (Hg) levels detected in fish tissue samples 2005-2006

Year	Mile Point	Pool	Species	Sample Size	Hg (mg/kg)	Exceedences
2006	341	GREENUP	COMMON CARP	4	0.1	no
2006	341	GREENUP	(LARGE)	3	0.11	no
2006	341	GREENUP	(SMALL)	3	0.12	no
2006	341	GREENUP	CHANNEL CATFISH (LARGE)	5	0.069	no
2006	341	GREENUP	CHANNEL CATFISH (SMALL)	4	0.058	no
2006	341	GREENUP	FLATHEAD CATFISH	4	0.19	no
2006	341	GREENUP	BLUEGILL	2	0.1	no
2006	341	GREENUP	REDEAR SUNFISH	1	0.036	no
2006	341	GREENUP	LARGEMOUTH BASS (LARGE)	3	0.096	no
2006	341	GREENUP	LARGEMOUTH BASS (SMALL)	3	0.051	no
2006	341	GREENUP	SAUGER	2	0.13	no
2006	341	GREENUP	FRESHWATER DRUM	2	0.13	no
2005	439.8	MARKLAND	SAUGER	3	0.087	no
2005	439.8	MARKLAND	SAUGER	3	0.087	no
2005	531.5	MARKLAND	COMMON CARP	5	0.1	no
2005	531.5	MARKLAND	SMALLMOUTH BUFFALO	3	0.1	no
2005	531.5	MARKLAND	CHANNEL CATFISH	4	0.055	no
2005	531.5	MARKLAND	CHANNEL CATFISH (LARGE)	3	0.17	no
2005	531.5	MARKLAND	CHANNEL CATFISH (SMALL)	3	0.22	no
2005	531.5	MARKLAND	FLATHEAD CATFISH	4	0.22	no
2005	531.5	MARKLAND	HYBRID STRIPER	4	0.044	no
2005	531.5	MARKLAND	LARGEMOUTH BASS	3	0.12	no
2005	531.5	MARKLAND	BLACK CRAPPIE	3	0.061	no
2005	531.5	MARKLAND	SAUGER	3	0.06	no
2005	531.5	MARKLAND	FRESHWATER DRUM	3	0.073	no
2005	577.5	MCALPINE	CHANNEL CATFISH (LARGE)	3	0.1	no
2005	577.5	MCALPINE	SAUGER	2	0.14	no
2006	577.5	MCALPINE	CHANNEL CATFISH	2	0.15	no
2006	577.5	MCALPINE	SAUGER	1	0.091	no
2006	720.7	CANNELTON	CHANNEL CATFISH (LARGE)	3	0.12	no
2006	720.7	CANNELTON	CHANNEL CATFISH (SMALL)	3	0.095	no
2006	720.7	CANNELTON	FLATHEAD CATFISH	1	0.097	no
2006	720.7	CANNELTON	HYBRID STRIPER	4	0.16	no
2006	720.7	CANNELTON	LARGEMOUTH BASS	1	0.082	no
2006	720.7	CANNELTON	BLACK CRAPPIE	1	0.046	no
2006	720.7	CANNELTON	SAUGER	1	0.26	no
2006	720.7	CANNELTON	FRESHWATER DRUM	1	0.11	no
2005	846	JT MYERS	COMMON CARP	3	0.024	no
2005	846	JT MYERS	SMALLMOUTH BUFFALO	3	0.06	no
2005	846	JT MYERS	CHANNEL CATFISH (LARGE)	5	0.087	no
2005	846	JT MYERS	CHANNEL CATFISH (SMALL)	5	0.14	no
2005	846	JT MYERS	FLATHEAD CATFISH	5	0.14	no
2005	846	JT MYERS	BLUEGILL	2	0.062	no
2005	846	JT MYERS	BLACK CRAPPIE	1	0.074	no
2005	846	JT MYERS	SAUGER	3	0.098	no
2005	846	JT MYERS	SAUGER	3	0.11	no
2005	846	JT MYERS	FRESHWATER DRUM	4	0.065	no
2005	890	SMITHLAND	CHANNEL CATFISH	1	0.069	no
2006	890	SMITHLAND	CHANNEL CATFISH	3	0.15	no
2005	976	OPEN WATER	CHANNEL CATFISH (SMALL)	2	0.081	no

Appendix M:
Fish Consumption Advisory Summary

Appendix M: Summary of fish consumption advisories for states bordering the Ohio River. For additional information, please refer to the state's full fish consumption advisory, available in its entirety online.

State	Location	Species	Number of meals: General population	Number of meals: Special population	Contaminants
Pennsylvania	From RM 0 to Montgomery Lock & Dam (RM 31.7)	Walleye, sauger, white bass, freshwater drum	1 meal/month		PCBs
		Carp, channel catfish	Do Not Eat		
	From Montgomery Lock and Dam (RM 31.7) to the state border (RM 40.0) *Based on advisory issued by Ohio and West Virginia	White bass, hybrid striped bass, freshwater drum, walleye (17" and over)	1 meal/month		PCBs
		Flathead catfish, channel catfish (< 17")	6 meals/year		
		Channel catfish (> 17"), carp	Do Not Eat		
Follow the general, statewide one meal per week advisory to limit your exposure to contaminants.					
Source: Pennsylvania DEP (http://www.depweb.state.pa.us/watersupply/lib/watersupply/fishadvisory07-tbl.pdf)					
West Virginia	Entire length in WV	Carp, channel catfish (>17")	Do Not Eat		PCBs, mercury, dioxin
		Channel catfish (<17"), flathead catfish (all sizes)	6 meals/year		
		Small mouth buffalo, Freshwater drum	1 meal/month		
		Black bass (<12"), channel catfish (>17"), sauger, brown trout, all suckers	2 meals/month		Mercury, PCBs
		Black bass (>12"), walleye, saugeye, white bass, hybrid striped bass	1 meal/month		
		Channel catfish (<17"), all other species	1 meal/week		
Source: West Virginia Department of Health and Human Resources (http://www.wvdhhr.org/fish/current.asp)					
Ohio	Entire length in OH	Channel catfish, flathead catfish (>20"), small mouth buffalo (>24")	1 meal/2 months		PCBs
		Common carp, flathead catfish (<20"), freshwater drum, hybrid striped bass, sauger, small mouth buffalo (<24"), walleye, white bass	1 meal/month		
The Ohio Department of Health advises that all persons limit consumption of sport fish caught from all waterbodies in Ohio to one meal per week, unless there is a more restrictive advisory (see the "Limit Your Meals From These Waters" section).					
Source: Ohio EPA (http://www.epa.state.oh.us/dsw/fishadvisory/2007NewFishAdvisories.pdf)					

Appendix M: Summary of fish consumption advisories for states bordering the Ohio River. For additional information, please refer to the state's full fish consumption advisory, available in its entirety online.

State	Location	Species	Number of meals: General population	Number of meals: Special population	Contaminants
Kentucky	Mouth of Big Sandy River (RM 317.1) to Markland Lock & Dam (RM 436.2)	Paddlefish (and eggs), channel catfish (>21")	6 meals/year	Do Not Eat	No contaminants identified
		Carp, channel catfish (<21"), smallmouth buffalo, white bass, freshwater drum, hybrid striped bass	1 meal/month	6 meals/year	
		White crappie	no advisory	1 meal/week	
		Sauger, flathead catfish, black basses	1 meal/week	1 meal/month	
	Markland Lock & Dam (RM 436.2) to Cannelton Lock & Dam (RM 605.0)	Paddlefish (and eggs), channel catfish (>21")	6 meals/year	Do Not Eat	No contaminants identified
		Channel catfish (<21"), carp, hybrid striped bass, white bass, freshwater drum	1 meal/month	6 meals/year	
		Sauger, flathead catfish, black basses	1 meal/week	1 meal/month	
	Cannelton Lock & Dam (RM 605.0) to Mississippi River (RM 981.0)	Paddlefish (and eggs)	6 meals/year	Do Not Eat	No contaminants identified
		Channel catfish, carp, blue catfish (>14"), freshwater drum, hybrid striped bass, white bass	1 meal/month	6 meals/year	
		Blue catfish (<14"), flathead catfish, sauger, black basses, bigmouth buffalo	1 meal/week	1 meal/month	
		White crappie	no advisory	1 meal/week	
A statewide mercury advisory was issued in April 2000 for all freshwater fish from Kentucky waters, including the Ohio River. Women of childbearing age and children 6 years and younger should eat no more than one meal per week of any freshwater fish.					
Source: Kentucky Cabinet for Health Services (http://www.water.ky.gov/sw/advisories/fish.htm)					
Indiana	Entire length in IN	Carp (<33"), channel catfish (14-19"), flathead catfish (17-23"), freshwater drum (≥13"), largemouth bass (≥13"), paddlefish, sauger/walleye/saugeye (13-17"), spotted bass (≥13"), white/striped/hybrid bass (10-20")	1 meal/month	Do Not Eat	PCBs
		Carp (>33"), channel catfish (19-26"), flathead catfish (>23"), sauger/walleye/saugeye (>17"), smallmouth bass (13-15"), white/striped/hybrid bass (≥20")	1 meal/2 months	Do Not Eat	
		Smallmouth bass (≥15"), flathead catfish (≥23"), channel catfish (≥26")	Do Not Eat	Do Not Eat	
Source: Indiana State Department of Health (http://www.in.gov/isdh/dataandstats/fish/2007/pdf/ohio_river.pdf)					
Illinois	Entire length in IL	Channel catfish (>15"), blue catfish, freshwater drum (<14")	1 meal/week		PCBs
		Carp, freshwater drum (>14"), sauger	1 meal/month		
		Largemouth bass	1 meal/week	1 meal/month	Mercury
Source: Illinois Department of Health (http://dnr.state.il.us/fish/digest/digest.pdf)					

Appendix N: Nutrients Sampling Results 2005-2007

Appendix N: Ohio River Nutrient Data 2005 - 2007

Sample Location	Mile Point	Date	Ammonia-Nitrogen (mg/L)	Nitrate/Nitrite-Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorous (mg/L)
West View	5	01/06/05	0.05	0.857	3.98	0.98
West View	5	01/20/05	0.07	0.764	0.586	0.037
West View	5	02/09/05	0.11	0.901	0.65	0.011
West View	5	02/24/05	0.04	0.803	0.611	<0.010
West View	5	03/16/05	0.05	0.784	0.504	0.041
West View	5	03/24/05	0.09	0.748	0.842	0.075
West View	5	04/12/05	<0.03	0.569	0.884	0.042
West View	5	04/28/05	<0.03	0.657	0.696	0.098
West View	5	05/19/05	<0.030	0.52	1.45	<0.010
West View	5	06/08/05	<0.03	0.813	2.37	0.028
West View	5	06/23/05	<0.03	0.922	1.87	0.04
West View	5	07/07/05	<0.03	0.987	<0.10	0.047
West View	5	07/20/05	<0.03	0.75	0.407	0.046
West View	5	08/04/05	<0.03	0.835	0.492	0.032
West View	5	08/17/05	<0.03	1.06	0.54	0.032
West View	5	09/07/05	<0.03	0.527	0.735	0.012
West View	5	09/21/05	0.06	0.816	0.56	0.016
West View	5	10/06/05	0.04	0.85	0.614	0.283
West View	5	10/19/05	0.05	1.05	0.613	0.127
West View	5	11/02/05	0.07	0.833	0.42	0.049
West View	5	11/16/05	0.05	0.551	0.475	0.051
West View	5	12/08/05	0.05	0.626	0.626	0.033
West View	5	12/21/05	0.08	0.82	0.645	0.048
West View	5	01/05/06	0.06	0.956	0.498	0.062
West View	5	01/18/06	0.06	0.711	0.41	0.049
West View	5	02/08/06	0.03	0.757	0.238	0.029
West View	5	02/22/06	0.06	0.56	<0.100	0.033
West View	5	03/08/06	0.06	0.863	0.201	0.022
West View	5	03/23/06	<0.03	0.652	0.352	0.031
West View	5	04/05/06	<0.03	0.775	0.32	0.241
West View	5	04/20/06	0.04	0.562	0.463	0.066
West View	5	05/16/06	0.05	0.825	0.302	0.058
West View	5	06/06/06	0.05	0.702	0.464	0.025
West View	5	06/21/06	0.03	0.613	0.526	0.038
West View	5	07/12/06	0.03	0.713	<0.100	0.03
West View	5	07/26/06	<0.03	0.489	0.515	0.049
West View	5	08/07/06	<0.03	0.796	0.547	0.068
West View	5	08/23/06	0.08	0.661	0.58	0.027
West View	5	09/06/06	0.04	0.509	0.509	0.027
West View	5	09/21/06	0.03	0.547	0.448	<0.010
West View	5	10/04/06	0.04	0.558	0.236	0.031
West View	5	10/19/06	0.04	0.568	1.12	0.128
West View	5	11/09/06	0.07	0.646	0.271	0.022
West View	5	11/29/06	0.07	0.677	0.258	<0.010
West View	5	12/11/06	<0.03	0.614	0.174	0.02
West View	5	12/20/06	0.04	0.704	0.411	0.031
West View	5	01/08/07	0.04	0.689	0.522	0.058
West View	5	01/25/07	<0.03	0.801	0.439	0.011
West View	5	02/08/07	<0.03	0.924	0.248	0.026
West View	5	02/22/07	0.08	0.98	0.496	0.055
West View	5	03/05/07	<0.03	1.06	0.595	0.038
West View	5	03/19/07	0.06	0.965	0.329	0.025
West View	5	04/03/07	0.03	0.71	0.324	0.033
West View	5	04/18/07	0.09	0.891	0.683	0.096
West View	5	05/07/07	0.05	0.633	0.177	0.047
West View	5	05/22/07	<0.03	0.779	0.475	0.022
West View	5	06/04/07	0.05	0.734	0.527	0.032

Appendix N: Ohio River Nutrient Data 2005 - 2007

Sample Location	Mile Point	Date	Ammonia-Nitrogen (mg/L)	Nitrate/Nitrite-Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorous (mg/L)
West View	5	06/18/07	<0.03	0.811	0.542	0.04
West View	5	07/11/07	0.12	1.18	0.397	0.029
West View	5	07/23/07	0.05	0.882	0.509	0.04
Liverpool	40.2	01/03/05	0.1	0.839	0.893	0.087
Liverpool	40.2	01/18/05	0.03	0.84	0.841	0.067
Liverpool	40.2	02/07/05	0.15	1.07	0.869	0.022
Liverpool	40.2	02/22/05	0.06	0.906	0.909	0.059
Liverpool	40.2	03/21/05	0.09	0.982	0.491	0.038
Liverpool	40.2	03/31/05	<0.030	0.761	0.808	0.304
Liverpool	40.2	04/18/05	<0.03	0.752	0.679	0.023
Liverpool	40.2	05/02/05	0.05	0.709	0.905	0.111
Liverpool	40.2	05/16/05	0.06	0.957	1.74	0.03
Liverpool	40.2	06/06/05	<0.03	0.778	2.51	0.039
Liverpool	40.2	06/21/05	<0.03	0.875	1.77	<0.010
Liverpool	40.2	07/11/05	0.11	0.775	0.283	0.024
Liverpool	40.2	07/18/05	0.06	1.21	0.454	0.072
Liverpool	40.2	08/01/05	<0.03	0.785	1.23	0.052
Liverpool	40.2	08/15/05	0.09	1.05	0.573	0.023
Liverpool	40.2	09/08/05	<0.03	0.733	0.633	0.04
Liverpool	40.2	09/20/05	0.18	0.867	1.52	0.038
Liverpool	40.2	10/05/05	0.05	0.921	0.339	0.127
Liverpool	40.2	10/24/05	0.08	1.28	0.664	0.158
Liverpool	40.2	10/31/05	<0.03	1.46	0.511	0.107
Liverpool	40.2	11/14/05	0.06	0.88	0.461	0.125
Liverpool	40.2	12/05/05	0.08	0.684	1.12	0.111
Liverpool	40.2	12/19/05	0.1	0.993	0.775	0.068
Liverpool	40.2	01/10/06	0.07	1.02	0.547	0.062
Liverpool	40.2	01/17/06	0.05	0.892	0.577	0.066
Liverpool	40.2	02/16/06	<0.03	1.01	0.27	0.017
Liverpool	40.2	02/22/06	<0.03	0.81	0.143	0.128
Liverpool	40.2	03/06/06	0.1	1.07	0.353	0.042
Liverpool	40.2	03/21/06	0.05	0.841	0.486	0.068
Liverpool	40.2	04/03/06	<0.03	1.09	0.216	0.032
Liverpool	40.2	04/19/06	0.15	0.813	0.455	0.038
Liverpool	40.2	05/03/06	0.04	0.789	0.317	0.024
Liverpool	40.2	06/19/06	0.06	0.831	0.513	<0.010
Follansbee	70.8	01/04/05	0.13	0.967	0.832	0.148
Follansbee	70.8	01/21/05	0.05	0.815	1.17	0.048
Follansbee	70.8	02/07/05	0.11	0.933	1.13	<0.010
Follansbee	70.8	02/22/05	0.06	0.91	0.644	0.136
Follansbee	70.8	03/07/05	0.12	0.967	1.11	0.304
Follansbee	70.8	03/21/05	0.1	0.977	0.554	0.072
Follansbee	70.8	04/04/05	0.07	0.746	0.978	0.153
Follansbee	70.8	04/19/05	<0.03	0.76	0.641	0.082
Follansbee	70.8	05/16/05	<0.030	0.655	1.47	0.086
Follansbee	70.8	05/25/05	0.05	0.771	1.97	0.03
Follansbee	70.8	06/06/05	<0.03	0.702	1.94	0.033
Follansbee	70.8	06/20/05	0.04	1.03	1.78	0.03
Follansbee	70.8	07/08/05	<0.03	1.05	<0.10	0.034
Follansbee	70.8	07/18/05	<0.03	1.04	0.849	0.025
Follansbee	70.8	08/02/05	<0.03	0.68	1.22	0.019
Follansbee	70.8	09/06/05	0.08	1.04	0.853	0.046
Follansbee	70.8	09/19/05	0.07	0.756	1.13	0.053
Follansbee	70.8	10/04/05	0.1	1.38	0.828	0.067
Follansbee	70.8	10/17/05	0.1	0.828	0.63	0.103
Follansbee	70.8	10/31/05	0.07	1.16	0.499	0.086
Follansbee	70.8	11/21/05	0.05	0.797	0.573	0.12
Follansbee	70.8	12/06/05	0.15	0.81	0.935	0.097
Follansbee	70.8	12/19/05	0.11	0.96	0.655	0.082

Appendix N: Ohio River Nutrient Data 2005 - 2007

Sample Location	Mile Point	Date	Ammonia-Nitrogen (mg/L)	Nitrate/Nitrite-Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorous (mg/L)
Follansbee	70.8	01/03/06	0.13	1.11	1.07	0.121
Follansbee	70.8	01/17/06	0.09	0.805	0.79	0.074
Follansbee	70.8	02/17/06	0.09	0.804	0.396	0.034
Follansbee	70.8	02/21/06	0.08	0.972	<0.100	0.037
Follansbee	70.8	03/06/06	0.1	0.964	0.551	0.072
Follansbee	70.8	03/23/06	0.07	0.81	0.513	0.036
Follansbee	70.8	04/03/06	0.06	1.06	0.288	0.033
Follansbee	70.8	04/21/06	0.07	0.717	0.537	0.017
Follansbee	70.8	05/04/06	0.08	0.836	0.384	0.018
Follansbee	70.8	05/15/06	0.05	0.93	0.397	0.13
Follansbee	70.8	06/05/06	0.05	0.902	0.555	0.059
Follansbee	70.8	06/19/06	0.04	0.803	0.527	0.024
Wheeling	86.8	01/03/05	0.1	0.832	0.734	0.069
Wheeling	86.8	01/18/05	0.03	0.831	0.68	0.067
Wheeling	86.8	02/07/05	0.15	0.935	0.315	<0.010
Wheeling	86.8	02/22/05	0.05	0.856	0.794	0.016
Wheeling	86.8	03/07/05	0.09	0.898	0.853	0.301
Wheeling	86.8	03/21/05	0.08	0.948	1.32	0.058
Wheeling	86.8	04/05/05	0.04	0.697	0.89	0.1
Wheeling	86.8	04/18/05	<0.03	0.717	0.476	0.071
Wheeling	86.8	05/02/05	0.04	0.773	0.941	0.157
Wheeling	86.8	05/05/05	<0.03	0.601	1.53	0.048
Wheeling	86.8	05/17/05	<0.030	0.617	1.58	0.038
Wheeling	86.8	06/06/05	<0.03	0.662	2.31	0.035
Wheeling	86.8	06/21/05	<0.03	0.925	2.15	0.025
Wheeling	86.8	07/05/05	<0.03	1.01	<0.10	0.024
Wheeling	86.8	07/18/05	0.06	0.959	0.682	0.042
Wheeling	86.8	08/01/05	<0.03	0.756	1.17	0.029
Wheeling	86.8	08/15/05	0.04	0.862	0.54	0.052
Wheeling	86.8	09/06/05	0.04	1.44	0.8	0.117
Wheeling	86.8	09/20/05	0.06	0.775	1.22	0.022
Wheeling	86.8	10/17/05	0.05	0.934	0.555	0.135
Wheeling	86.8	11/07/05	0.06	0.915	0.48	0.034
Wheeling	86.8	11/21/05	0.08	0.826	0.63	0.033
Wheeling	86.8	12/05/05	0.06	0.755	1.01	0.235
Wheeling	86.8	12/19/05	0.1	0.901	0.579	0.064
Wheeling	86.8	01/03/06	0.11	0.983	1.04	0.192
Wheeling	86.8	01/17/06	0.07	0.814	0.569	0.082
Wheeling	86.8	02/07/06	0.06	1.05	0.585	0.096
Wheeling	86.8	02/21/06	0.08	0.824	0.328	0.04
Wheeling	86.8	03/06/06	0.07	0.918	0.384	0.037
Wheeling	86.8	03/20/06	0.05	0.81	0.543	0.037
Wheeling	86.8	04/03/06	0.05	1.03	0.315	0.021
Wheeling	86.8	04/18/06	0.05	0.855	0.293	0.046
Wheeling	86.8	05/01/06	0.04	0.65	0.188	0.017
Wheeling	86.8	05/15/06	0.03	0.828	0.227	0.031
Wheeling	86.8	06/05/06	0.05	0.841	0.466	0.133
Wheeling	86.8	06/19/06	<0.03	0.779	0.354	0.017
Wheeling	86.8	07/10/06	0.04	0.898	0.495	0.062
Wheeling	86.8	07/24/06	0.05	0.681	0.414	0.055
Wheeling	86.8	08/07/06	0.05	0.663	0.569	0.049
Wheeling	86.8	08/21/06	0.06	0.841	0.612	0.048
Wheeling	86.8	09/18/06	0.03	0.74	0.318	0.105
Wheeling	86.8	10/02/06	0.04	0.77	0.596	0.034
Wheeling	86.8	10/16/06	0.09	0.806	0.338	0.042
Wheeling	86.8	11/06/06	0.04	0.614	0.5	0.056
Wheeling	86.8	11/27/06	0.04	0.794	0.348	0.038
Wheeling	86.8	12/04/06	0.07	0.851	0.265	0.035
Wheeling	86.8	12/28/06	0.07	0.755	0.593	0.098

Appendix N: Ohio River Nutrient Data 2005 - 2007

Sample Location	Mile Point	Date	Ammonia-Nitrogen (mg/L)	Nitrate/Nitrite-Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorous (mg/L)
Wheeling	86.8	01/08/07	0.05	0.802	0.697	0.11
Wheeling	86.8	01/22/07	<0.03	0.832	0.584	0.052
Wheeling	86.8	02/05/07	0.08	1.02	0.327	0.025
Wheeling	86.8	02/20/07	<0.03	1.27	0.556	0.046
Wheeling	86.8	03/05/07	<0.03	1.1	0.966	0.14
Wheeling	86.8	03/19/07	0.05	0.94	0.565	0.094
Wheeling	86.8	04/02/07	0.04	0.794	0.391	0.051
Wheeling	86.8	04/16/07	0.07	0.725	0.512	0.048
Wheeling	86.8	05/07/07	0.03	0.617	0.335	0.031
Wheeling	86.8	05/23/07	<0.03	0.708	0.371	0.031
Wheeling	86.8	06/04/07	<0.03	0.683	0.433	0.033
Wheeling	86.8	06/18/07	0.08	0.884	0.546	0.035
Wheeling	86.8	07/09/07	0.06	1.03	0.557	0.021
Wheeling	86.8	07/23/07	0.07	0.962	0.449	0.02
Huntington	306	01/05/05	0.08	1.32	1.25	0.417
Huntington	306	01/21/05	0.04	0.915	1.29	0.09
Huntington	306	02/07/05	0.04	0.84	0.822	0.065
Huntington	306	02/21/05	0.04	1.02	0.866	0.048
Huntington	306	03/07/05	0.04	0.77	0.869	0.249
Huntington	306	03/21/05	0.04	0.712	0.503	0.051
Huntington	306	04/04/05	<0.03	0.63	0.993	0.218
Huntington	306	04/18/05	<0.03	0.771	0.569	0.027
Huntington	306	05/05/05	<0.03	0.75	2.55	0.133
Huntington	306	05/17/05	<0.030	0.484	1.09	0.049
Huntington	306	06/06/05	<0.03	0.572	2.06	0.031
Huntington	306	06/22/05	<0.03	0.546	2.02	0.018
Huntington	306	07/06/05	<0.03	0.769	<0.10	0.02
Huntington	306	07/20/05	<0.03	0.914	0.356	0.03
Huntington	306	08/01/05	<0.03	0.621	1.03	0.038
Huntington	306	08/19/05	<0.03	0.658	0.542	0.017
Huntington	306	09/07/05	0.04	0.825	0.862	0.056
Huntington	306	09/26/05	<0.03	0.877	0.126	0.036
Huntington	306	10/04/05	<0.03	0.98	0.479	0.028
Huntington	306	10/18/05	<0.03	0.879	0.515	0.068
Huntington	306	11/02/05	0.03	1.14	0.243	0.078
Huntington	306	11/30/05	0.07	0.669	0.471	0.137
Huntington	306	12/06/05	0.07	0.814	1.19	0.399
Huntington	306	12/20/05	0.06	0.825	0.531	0.075
Huntington	306	01/04/06	0.1	1.02	0.667	0.12
Huntington	306	01/16/06	0.2	0.883	0.652	0.122
Huntington	306	02/06/06	0.05	0.992	0.636	0.187
Huntington	306	02/21/06	0.05	0.937	0.343	0.062
Huntington	306	03/06/06	<0.03	0.848	0.326	0.038
Huntington	306	03/21/06	0.05	0.942	0.622	0.173
Huntington	306	04/04/06	<0.03	0.914	0.38	0.112
Huntington	306	04/17/06	<0.03	0.798	0.5	0.081
Huntington	306	05/01/06	0.05	0.661	0.28	0.029
Huntington	306	05/15/06	<0.03	0.66	0.28	0.024
Huntington	306	06/05/06	0.03	1.21	0.533	0.565
Huntington	306	06/21/06	<0.03	0.954	0.345	0.105
Huntington	306	07/11/06	0.03	0.796	0.451	0.069
Huntington	306	07/24/06	0.03	0.887	0.507	0.088
Huntington	306	08/09/06	0.03	0.539	0.546	0.036
Huntington	306	08/21/06	0.06	0.666	0.809	0.212
Huntington	306	09/05/06	0.1	0.788	0.634	0.075
Huntington	306	09/20/06	<0.03	0.813	0.555	0.036
Huntington	306	10/04/06	0.03	0.784	0.291	0.064
Huntington	306	10/17/06	0.03	0.831	0.366	0.065
Huntington	306	11/07/06	<0.03	0.681	0.66	0.104

Appendix N: Ohio River Nutrient Data 2005 - 2007

Sample Location	Mile Point	Date	Ammonia-Nitrogen (mg/L)	Nitrate/Nitrite-Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorous (mg/L)
Huntington	306	11/30/06	0.04	0.742	0.928	0.158
Huntington	306	12/05/06	0.06	0.839	0.405	0.046
Huntington	306	12/19/06	0.07	0.792	0.321	0.042
Huntington	306	01/10/07	<0.03	0.884	0.663	0.194
Huntington	306	01/29/07	0.04	0.857	0.433	0.064
Huntington	306	02/08/07	0.03	0.982	0.373	0.031
Huntington	306	02/22/07	<0.03	0.975	0.793	0.116
Huntington	306	03/07/07	<0.03	1.11	1.51	0.223
Huntington	306	03/20/07	0.06	0.838	1.21	0.25
Huntington	306	04/10/07	0.04	0.73	0.545	0.014
Huntington	306	05/07/07	0.21	0.766	0.309	0.046
Huntington	306	05/23/07	<0.03	0.5	0.362	0.031
Huntington	306	06/11/07	<0.03	0.613	0.33	0.011
Huntington	306	06/20/07	<0.03	0.668	0.519	0.031
Huntington	306	07/10/07	0.05	0.973	0.443	<0.010
Huntington	306	07/30/07	0.47	0.695	0.42	<0.010
Ashland	319.7	01/13/05	0.03	0.796	0.944	0.232
Ashland	319.7	02/23/05	0.04	0.743	0.678	0.032
Ashland	319.7	03/29/05	0.06	0.62	0.587	0.085
Ashland	319.7	04/26/05	0.07	0.612	0.665	0.03
Ashland	319.7	04/27/05	0.07	0.594	0.815	0.062
Ashland	319.7	05/19/05	0.03	0.472	1.5	0.024
Ashland	319.7	06/08/05	0.04	0.523	2.55	0.028
Ashland	319.7	06/20/05	<0.03	0.593	1.79	0.1
Ashland	319.7	07/18/05	0.03	0.677	0.552	0.017
Ashland	319.7	07/19/05	0.03	0.67	0.43	0.054
Ashland	319.7	08/08/05	<0.03	0.663	0.455	0.015
Ashland	319.7	08/15/05	<0.03	0.569	0.545	0.018
Ashland	319.7	09/13/05	<0.03	0.803	0.333	0.021
Ashland	319.7	10/03/05	0.04	0.924	0.575	0.024
Ashland	319.7	10/13/05	0.04	0.996	0.543	0.124
Ashland	319.7	11/07/05	0.03	1.18	0.707	0.027
Ashland	319.7	12/14/05	0.06	0.764	0.507	0.027
Ashland	319.7	01/05/06	0.07	0.954	0.935	0.074
Ashland	319.7	01/12/06	0.06	0.963	0.538	0.079
Ashland	319.7	02/15/06	0.04	1.05	0.792	0.042
Ashland	319.7	02/21/06	0.04	0.787	0.728	0.066
Ashland	319.7	03/07/06	0.1	0.856	0.65	0.062
Ashland	319.7	03/27/06	0.04	0.854	0.367	0.019
Ashland	319.7	04/24/06	0.11	0.492	0.373	0.03
Ashland	319.7	05/08/06	0.03	0.582	0.236	0.011
Ashland	319.7	06/05/06	<0.03	0.922	0.445	<0.010
N. Kentucky	462.9	01/04/05	0.06	1.02	1.61	0.342
N. Kentucky	462.9	01/25/05	0.04	1.09	1.25	0.136
N. Kentucky	462.9	02/07/05	0.05	1.02	1.05	0.038
N. Kentucky	462.9	02/22/05	0.04	0.974	0.854	0.044
N. Kentucky	462.9	03/07/05	0.04	0.828	0.812	0.357
N. Kentucky	462.9	03/21/05	<0.03	0.807	0.328	0.049
N. Kentucky	462.9	04/04/05	<0.03	0.734	0.719	0.165
N. Kentucky	462.9	04/18/05	<0.03	0.904	0.713	0.156
N. Kentucky	462.9	05/02/05	<0.03	1.09	0.955	0.134
N. Kentucky	462.9	05/17/05	<0.030	0.702	1.05	0.073
N. Kentucky	462.9	06/06/05	<0.03	0.64	1.85	0.025
N. Kentucky	462.9	06/21/05	0.03	0.728	2.25	0.018
N. Kentucky	462.9	07/07/05	<0.03	0.44	<0.10	0.085
N. Kentucky	462.9	07/18/05	<0.03	0.81	<0.10	<0.01
N. Kentucky	462.9	08/01/05	0.05	0.517	1.15	0.036
N. Kentucky	462.9	08/15/05	<0.03	0.657	0.392	<0.010
N. Kentucky	462.9	09/07/05	<0.03	0.677	0.604	0.127

Appendix N: Ohio River Nutrient Data 2005 - 2007

Sample Location	Mile Point	Date	Ammonia-Nitrogen (mg/L)	Nitrate/Nitrite-Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorous (mg/L)
N. Kentucky	462.9	09/19/05	0.06	0.781	1.21	0.047
N. Kentucky	462.9	10/03/05	<0.03	0.993	0.371	0.243
N. Kentucky	462.9	10/17/05	0.04	1.17	0.634	0.053
N. Kentucky	462.9	11/07/05	0.03	1.77	0.591	0.091
N. Kentucky	462.9	11/21/05	0.04	1.08	0.65	0.057
N. Kentucky	462.9	12/05/05	0.04	0.925	0.73	0.111
N. Kentucky	462.9	01/03/06	0.08	1.18	0.726	0.114
N. Kentucky	462.9	01/17/06	0.04	1.33	0.461	0.114
N. Kentucky	462.9	02/21/06	0.04	1.11	0.436	0.061
N. Kentucky	462.9	03/07/06	<0.03	0.912	0.16	0.061
N. Kentucky	462.9	03/20/06	0.03	1.18	0.589	0.149
N. Kentucky	462.9	04/04/06	<0.03	1.11	0.282	0.32
N. Kentucky	462.9	04/18/06	<0.03	0.864	0.416	0.029
N. Kentucky	462.9	05/02/06	0.08	0.718	0.208	0.015
N. Kentucky	462.9	05/16/06	<0.03	0.674	0.147	0.029
N. Kentucky	462.9	06/06/06	0.04	1.44	0.371	0.029
N. Kentucky	462.9	06/21/06	0.03	1.58	0.378	0.012
N. Kentucky	462.9	07/05/06	0.04	1	0.402	0.057
N. Kentucky	462.9	07/17/06	<0.03	0.979	0.607	0.106
N. Kentucky	462.9	08/08/06	0.06	0.764	0.476	0.055
N. Kentucky	462.9	08/22/06	<0.03	0.735	0.46	0.033
N. Kentucky	462.9	09/05/06	<0.03	0.807	0.543	0.059
N. Kentucky	462.9	09/18/06	<0.03	0.858	0.463	0.093
N. Kentucky	462.9	10/03/06	0.11	0.678	0.3	0.084
N. Kentucky	462.9	10/16/06	0.04	0.951	<0.100	0.112
N. Kentucky	462.9	11/06/06	<0.03	0.837	0.554	0.135
N. Kentucky	462.9	11/20/06	0.03	0.91	0.542	0.298
N. Kentucky	462.9	12/04/06	0.03	0.913	0.413	0.065
N. Kentucky	462.9	12/18/06	0.04	0.899	0.37	0.052
N. Kentucky	462.9	01/10/07	<0.03	0.876	0.513	0.128
N. Kentucky	462.9	01/23/07	0.04	0.98	0.954	0.194
N. Kentucky	462.9	02/12/07	<0.03	1.09	0.403	0.047
N. Kentucky	462.9	02/20/07	<0.03	1.02	0.437	0.016
N. Kentucky	462.9	03/05/07	<0.03	0.927	0.869	0.16
N. Kentucky	462.9	03/19/07	0.08	1.07	0.601	0.138
N. Kentucky	462.9	04/03/07	<0.03	0.942	0.389	0.073
N. Kentucky	462.9	04/16/07	0.05	0.88	0.442	0.019
N. Kentucky	462.9	05/08/07	0.06	0.814	0.247	0.042
N. Kentucky	462.9	05/23/07	<0.03	0.492	0.597	0.014
N. Kentucky	462.9	06/04/07	<0.03	0.483	0.927	0.019
N. Kentucky	462.9	06/19/07	<0.03	0.617	0.483	0.029
N. Kentucky	462.9	07/09/07	0.05	0.538	0.482	<0.010
N. Kentucky	462.9	07/23/07	0.03	0.698	0.388	<0.010
Louisville	600	01/04/05	0.08	1.32	1.25	0.417
Louisville	600	01/18/05	0.04	1.07	1.78	0.248
Louisville	600	02/07/05	0.05	1.07	0.805	0.044
Louisville	600	02/21/05	0.05	1.13	0.994	0.05
Louisville	600	03/07/05	0.04	0.923	0.527	0.231
Louisville	600	03/21/05	<0.03	0.955	0.349	0.068
Louisville	600	04/04/05	<0.03	0.886	0.879	0.167
Louisville	600	04/18/05	<0.03	1	0.621	0.077
Louisville	600	05/02/05	0.16	1.06	0.964	0.124
Louisville	600	05/16/05	<0.030	0.843	1.33	0.056
Louisville	600	06/07/05	0.03	0.996	2.95	0.032
Louisville	600	06/20/05	<0.03	0.926	1.72	0.012
Louisville	600	07/05/05	<0.03	1.06	<0.10	0.036
Louisville	600	07/18/05	<0.03	1.09	0.42	0.043
Louisville	600	08/01/05	<0.03	0.691	1.2	0.028
Louisville	600	08/15/05	<0.03	0.717	0.479	<0.010

Appendix N: Ohio River Nutrient Data 2005 - 2007

Sample Location	Mile Point	Date	Ammonia-Nitrogen (mg/L)	Nitrate/Nitrite-Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorous (mg/L)
Louisville	600	09/07/05	0.03	1.06	0.718	0.063
Louisville	600	09/27/05	0.06	0.979	0.547	0.046
Louisville	600	10/17/05	0.04	1.32	0.357	0.069
Louisville	600	11/01/05	0.03	1.92	0.57	0.087
Louisville	600	11/15/05	0.04	1.59	0.592	0.089
Louisville	600	12/05/05	0.05	1.26	1.16	0.239
Louisville	600	01/03/06	0.06	1.64	1.09	0.15
Louisville	600	01/17/06	0.06	1.49	0.676	0.112
Louisville	600	02/20/06	0.05	1.42	0.259	0.074
Louisville	600	03/06/06	<0.03	1.35	0.275	0.053
Louisville	600	03/23/06	0.04	1.28	0.463	0.092
Louisville	600	04/06/06	0.05	1.3	0.384	0.116
Louisville	600	04/17/06	<0.03	1.03	0.427	0.086
Louisville	600	05/01/06	0.03	0.858	1.87	0.058
Louisville	600	05/22/06	<0.03	1.55	0.364	0.109
Louisville	600	06/05/06	0.05	1.52	0.393	0.047
Louisville	600	06/19/06	0.11	2.35	0.562	0.083
Louisville	600	07/10/06	0.03	1.17	0.402	0.1
Louisville	600	07/24/06	0.03	1.13	0.398	0.086
Louisville	600	08/07/06	0.04	1.08	0.505	0.094
Louisville	600	08/21/06	0.04	0.814	0.785	0.053
Louisville	600	09/05/06	0.03	1.11	0.36	0.078
Louisville	600	09/19/06	<0.03	0.984	0.328	0.09
Louisville	600	10/03/06	0.04	1.02	0.417	0.12
Louisville	600	10/16/06	0.06	1.13	0.135	0.084
Louisville	600	11/06/06	0.03	1	0.669	0.204
Louisville	600	12/11/06	0.07	1.27	0.498	0.123
Louisville	600	12/18/06	0.21	1.18	0.544	0.098
Louisville	600	01/22/07	0.03	0.993	0.744	0.105
Louisville	600	02/05/07	0.04	1.37	0.323	0.043
Louisville	600	02/20/07	<0.03	1.41	0.706	0.122
Louisville	600	03/05/07	<0.03	1.16	1.93	0.482
Louisville	600	04/02/07	<0.03	1.04	1.09	0.163
Louisville	600	04/16/07	0.04	0.897	1.04	0.185
Louisville	600	05/07/07	0.13	0.97	0.458	0.069
Louisville	600	05/21/07	0.03	0.8	0.459	<0.010
Louisville	600	06/04/07	0.05	0.705	0.469	0.027
Louisville	600	06/20/07	0.1	0.747	0.668	0.052
Louisville	600	07/09/07	0.06	0.994	0.567	0.03
Louisville	600	07/23/07	0.06	0.952	0.504	0.034
Evansville	791.5	01/04/05	0.07	1.13	0.889	0.246
Evansville	791.5	01/19/05	0.04	1.2	1.03	0.169
Evansville	791.5	02/09/05	0.07	1.23	1.19	0.109
Evansville	791.5	02/23/05	0.05	1.16	1.38	0.227
Evansville	791.5	03/08/05	0.08	1.09	1.02	0.347
Evansville	791.5	03/21/05	0.05	0.934	0.54	0.104
Evansville	791.5	04/05/05	0.03	0.942	0.988	0.2
Evansville	791.5	04/19/05	<0.03	1.08	0.668	0.138
Evansville	791.5	05/04/05	<0.03	1.32	1.79	0.113
Evansville	791.5	05/17/05	<0.030	1.08	0.843	0.07
Evansville	791.5	06/06/05	<0.03	0.841	2.16	0.049
Evansville	791.5	06/21/05	<0.03	0.77	2.11	0.033
Evansville	791.5	07/12/05	0.05	1.03	1.58	0.026
Evansville	791.5	07/20/05	<0.03	1.1	0.423	0.042
Evansville	791.5	08/01/05	<0.03	0.701	1.11	0.029
Evansville	791.5	08/16/05	<0.03	0.949	0.61	<0.010
Evansville	791.5	09/12/05	<0.03	0.832	0.857	0.051
Evansville	791.5	09/20/05	0.04	0.903	1.99	0.087
Evansville	791.5	10/04/05	<0.03	1.01	0.676	0.091

Appendix N: Ohio River Nutrient Data 2005 - 2007

Sample Location	Mile Point	Date	Ammonia-Nitrogen (mg/L)	Nitrate/Nitrite-Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorous (mg/L)
Evansville	791.5	10/17/05	0.03	1.09	0.752	0.072
Evansville	791.5	11/07/05	0.03	1.7	0.623	0.071
Evansville	791.5	11/15/05	0.04	1.19	1.21	0.579
Evansville	791.5	12/05/05	0.06	1.34	1.23	0.302
Evansville	791.5	12/21/05	0.08	1.21	0.656	0.077
Evansville	791.5	01/09/06	0.05	1.6	1.02	0.551
Evansville	791.5	01/17/06	0.05	0.981	0.768	0.173
Evansville	791.5	02/22/06	0.05	1.33	0.545	0.104
Evansville	791.5	03/07/06	0.03	1.53	0.294	0.072
Evansville	791.5	03/21/06	<0.03	0.971	1.18	0.401
Evansville	791.5	04/12/06	<0.03	1.25	0.696	0.237
Evansville	791.5	04/18/06	<0.03	1.07	<0.100	0.187
Evansville	791.5	05/03/06	0.06	0.953	0.342	0.081
Evansville	791.5	05/16/06	<0.03	0.956	0.301	0.085
Evansville	791.5	06/05/06	<0.03	1.41	0.657	0.094
Evansville	791.5	06/19/06	0.03	2.01	0.425	0.064
Evansville	791.5	07/10/06	<0.03	1.22	0.415	0.126
Evansville	791.5	08/09/06	0.07	1.17	0.515	0.086
Evansville	791.5	08/22/06	0.04	1.12	0.643	0.08
Evansville	791.5	09/06/06	<0.03	0.963	0.616	0.078
Evansville	791.5	09/19/06	<0.03	1.01	0.395	0.176
Evansville	791.5	10/09/06	<0.03	1.21	0.417	0.195
Evansville	791.5	10/18/06	0.04	1.2	0.458	0.196
Evansville	791.5	11/06/06	<0.03	0.959	1.06	0.239
Evansville	791.5	12/04/06	0.04	1.08	0.655	0.149
Evansville	791.5	01/08/07	<0.03	1.15	0.683	0.192
Evansville	791.5	01/22/07	<0.03	1.37	0.559	0.11
Evansville	791.5	02/05/07	0.04	1.31	0.505	0.094
Evansville	791.5	02/21/07	<0.03	1.47	0.698	0.144
Evansville	791.5	03/05/07	<0.03	1.13	1.32	1.03
Evansville	791.5	04/02/07	0.05	0.993	1.05	0.174
Evansville	791.5	04/16/07	<0.03	1.02	0.564	0.147
Evansville	791.5	05/07/07	0.12	1.2	0.404	0.096
Evansville	791.5	05/21/07	<0.03	0.779	0.475	0.022
Evansville	791.5	06/05/07	0.06	0.851	0.379	0.025
Evansville	791.5	06/18/07	<0.03	0.656	0.636	0.032
Evansville	791.5	07/17/07	0.05	0.927	0.577	0.02
Evansville	791.5	07/23/07	0.07	0.827	0.402	0.034
Paducah	935.5	01/03/05	0.17	0.531	0.632	0.152
Paducah	935.5	01/24/05	0.05	0.672	1.28	0.094
Paducah	935.5	02/07/05	0.05	0.57	0.781	0.065
Paducah	935.5	02/21/05	<0.03	0.558	0.789	0.024
Paducah	935.5	03/08/05	0.03	0.488	0.913	0.265
Paducah	935.5	03/28/05	0.07	0.498	1.23	0.446
Paducah	935.5	04/04/05	<0.03	0.41	0.694	0.095
Paducah	935.5	04/18/05	<0.03	0.437	0.825	0.191
Paducah	935.5	05/02/05	0.04	0.347	0.937	0.09
Paducah	935.5	05/16/05	0.06	0.375	1.29	0.022
Paducah	935.5	06/06/05	<0.03	0.1	2.11	0.022
Paducah	935.5	06/20/05	<0.03	0.217	2.14	0.016
Paducah	935.5	07/05/05	<0.03	0.58	<0.10	0.097
Paducah	935.5	07/18/05	<0.03	<0.100	0.452	0.031
Paducah	935.5	08/01/05	<0.03	0.178	0.694	0.154
Paducah	935.5	08/15/05	<0.03	0.103	0.614	0.034
Paducah	935.5	09/06/05	0.04	0.142	0.9	0.127
Paducah	935.5	09/19/05	0.04	0.147	1.04	0.065
Paducah	935.5	10/18/05	<0.03	0.348	0.407	0.108
Paducah	935.5	11/07/05	<0.03	0.527	0.355	0.064
Paducah	935.5	11/21/05	0.07	0.316	0.53	0.081

Appendix N: Ohio River Nutrient Data 2005 - 2007

Sample Location	Mile Point	Date	Ammonia-Nitrogen (mg/L)	Nitrate/Nitrite-Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorous (mg/L)
Paducah	935.5	12/05/05	0.08	0.364	1.02	0.091
Paducah	935.5	12/19/05	0.06	0.339	0.459	0.076
Paducah	935.5	01/09/06	0.04	0.399	0.432	0.139
Paducah	935.5	01/17/06	0.06	0.372	0.646	0.156
Paducah	935.5	02/06/06	0.08	0.529	0.588	0.147
Paducah	935.5	02/21/06	0.07	0.546	1.03	0.121
Paducah	935.5	03/06/06	0.03	0.557	0.298	0.099
Paducah	935.5	03/21/06	0.05	0.787	0.843	0.221
Paducah	935.5	04/03/06	<0.03	0.772	1.37	0.639
Paducah	935.5	04/19/06	0.05	0.375	0.828	0.502
Paducah	935.5	05/02/06	0.1	0.456	0.911	0.203
Paducah	935.5	05/15/06	0.04	0.387	0.583	0.203
Paducah	935.5	06/05/06	0.03	0.376	0.565	0.145
Paducah	935.5	06/20/06	0.03	0.191	0.754	0.151
Paducah	935.5	07/24/06	0.04	0.151	0.609	0.075
Paducah	935.5	08/07/06	0.05	0.103	0.475	0.076
Paducah	935.5	08/21/06	0.1	0.283	0.656	0.075
Paducah	935.5	09/05/06	<0.03	0.146	0.634	0.126
Paducah	935.5	09/18/06	0.09	0.168	0.99	0.331
Paducah	935.5	10/03/06	0.03	0.344	0.733	0.175
Paducah	935.5	10/16/06	0.14	0.401	0.487	0.106
Paducah	935.5	11/06/06	0.07	0.411	0.602	0.141
Paducah	935.5	11/20/06	0.05	0.476	0.356	0.098
Paducah	935.5	12/07/06	0.08	0.376	0.306	0.072
Paducah	935.5	12/18/06	0.06	0.759	0.304	0.086
Paducah	935.5	01/08/07	0.05	0.409	0.769	0.081
Paducah	935.5	01/22/07	0.04	0.594	0.657	0.099
Paducah	935.5	02/05/07	<0.03	0.905	0.302	0.069
Paducah	935.5	02/19/07	<0.03	0.792	0.613	0.084
Paducah	935.5	03/05/07	<0.03	0.459	0.637	0.025
Paducah	935.5	04/02/07	0.04	0.623	0.61	0.113
Paducah	935.5	04/16/07	0.05	0.628	0.844	0.085
Paducah	935.5	05/07/07	0.18	0.394	0.549	0.098
Paducah	935.5	06/04/07	0.08	0.556	0.803	0.064
Paducah	935.5	06/19/07	<0.03	0.297	0.533	0.066
Paducah	935.5	07/11/07	0.08	0.334	0.502	0.046
Paducah	935.5	07/23/07	0.07	0.15	0.455	0.09

Appendix O: Integrated Sampling Results

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Ag (ug/L)	<0.1			
			14-Sep-05	5.4		<0.1			
			25-Oct-05	12.3		<0.1			
			02-Nov-06	77.7		<0.1			
Montgomery	19.3		03-Aug-05	0	Ag (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	<0.1	<0.1
Montgomery	23.2		03-Aug-05	0	Ag (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	<0.1	<0.1
Montgomery	27.6		03-Aug-05	0	Ag (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	<0.1	<0.1
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Ag (ug/L)	<0.1			
			14-Sep-05	5.6		<0.1			
			25-Oct-05	14.5		<0.1			
			02-Nov-06	89.4		<0.1			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Ag (ug/L)	<0.1			
			15-Sep-05	5.9		<0.1			
			26-Oct-05	31.9		<0.1			
			06-Sep-06	43.1		<0.1			
Willow Island	132.4		01-Sep-05	0	Ag (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	138.9		01-Sep-05	0	Ag (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	145.2		01-Sep-05	0	Ag (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	150.8		01-Sep-05	0	Ag (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	157.4		01-Sep-05	0	Ag (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Ag (ug/L)	<0.1			
			15-Sep-05	11.9		<0.1			
			26-Oct-05	52.5		<0.1			
			06-Sep-06	42.9		<0.1			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Ag (ug/L)	<0.1			
			07-Aug-07	31.8		<0.1			
Newburgh	725		09-May-06	0	Ag (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	736.7		09-May-06	0	Ag (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	747.3		09-May-06	0	Ag (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	754.9		09-May-06	0	Ag (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	762.3		10-May-06	0	Ag (ug/L)		<0.1	<0.1	<0.1
			08-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	772		10-May-06	0	Ag (ug/L)		<0.1	<0.1	<0.1
			08-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Ag (ug/L)	<0.1			
			08-Aug-07	52.7		<0.1			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Al (ug/L)	22.44			
			14-Sep-05	5.4		23.37			
			25-Oct-05	12.3		11.49			
			02-Nov-06	77.7		221.77			

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Montgomery	19.3		03-Aug-05	0	Al (ug/L)		27.35	25.63	24.75
			14-Sep-05	0			24.44	26.42	33.34
			25-Oct-05	0			11.07	10.73	10
			02-Nov-06	0			22.75	23.7	21.71
Montgomery	23.2		03-Aug-05	0	Al (ug/L)		29.16	26.54	28.84
			14-Sep-05	0			19.33	23.82	20.75
			25-Oct-05	0			10.42	9.78	9.86
			02-Nov-06	0			20.63	22.18	20.26
Montgomery	27.6		03-Aug-05	0	Al (ug/L)		25.66	24.05	23.73
			14-Sep-05	0			18.71	14.29	15.02
			25-Oct-05	0			10.08	9.31	9.52
			02-Nov-06	0			18.48	22.39	17.12
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Al (ug/L)	28.1			
			14-Sep-05	5.6		15.83			
			25-Oct-05	14.5		8.59			
			02-Nov-06	89.4		18.45			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Al (ug/L)	14.1			
			15-Sep-05	5.9		15.12			
			26-Oct-05	31.9		12.72			
			06-Sep-06	43.1		11.98			
Willow Island	132.4		01-Sep-05	0	Al (ug/L)		14.99	14.88	15.6
			15-Sep-05	0			13.31	15.17	12.45
			26-Oct-05	0			11.05	12.39	11.54
			06-Sep-06	0			11.79	11.87	10.76
Willow Island	138.9		01-Sep-05	0	Al (ug/L)		16.6	15.74	14.94
			15-Sep-05	0			11.41	12.21	12.8
			26-Oct-05	0			9.3	10.38	10.91
			06-Sep-06	0			11.14	10.85	10.81
Willow Island	145.2		01-Sep-05	0	Al (ug/L)		14.64	14.23	13.54
			15-Sep-05	0			11.08	10.34	11.88
			26-Oct-05	0			8.86	8.78	9.02
			06-Sep-06	0			10.6	10.74	10.58
Willow Island	150.8		01-Sep-05	0	Al (ug/L)		13.79	14.81	12.37
			15-Sep-05	0			10.73	9.48	10.53
			26-Oct-05	0			8.41	6.73	8.68
			06-Sep-06	0			9.16	9.43	8.85
Willow Island	157.4		01-Sep-05	0	Al (ug/L)		12.85	13.21	13.59
			15-Sep-05	0			11.27	9.92	11.23
			26-Oct-05	0			8.05	7.45	8.83
			06-Sep-06	0			9.53	8.23	9.35
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Al (ug/L)	12.55			
			15-Sep-05	11.9		11.39			
			26-Oct-05	52.5		7.64			
			06-Sep-06	42.9		9.79			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Al (ug/L)	6.91			
			07-Aug-07	31.8		5.32			
Newburgh	725		09-May-06	0	Al (ug/L)		6.69	6.84	6.77
			07-Aug-07	0			6.46	4.81	5.62
Newburgh	736.7		09-May-06	0	Al (ug/L)		7.58	6.77	6.5
			07-Aug-07	0			6.2	5.5	5.73
Newburgh	747.3		09-May-06	0	Al (ug/L)		6.24	7.55	7.87
			07-Aug-07	0			4.31	3.88	4.51
Newburgh	754.9		09-May-06	0	Al (ug/L)		6.43	6.32	7.72
			07-Aug-07	0			4.23	5.78	5.73
Newburgh	762.3		10-May-06	0	Al (ug/L)		6.15	5.98	6.19
			08-Aug-07	0			5.14	5.92	5.03
Newburgh	772		10-May-06	0	Al (ug/L)		6.36	6.65	6.93
			08-Aug-07	0			5.76	6.5	5.66
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Al (ug/L)	11.67			
			08-Aug-07	52.7		7.7			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	As (ug/L)	0.57			
			14-Sep-05	5.4		0.56			
			25-Oct-05	12.3		0.6			
			02-Nov-06	77.7		0.36			
Montgomery	19.3		03-Aug-05	0	As (ug/L)		0.55	0.59	0.57
			14-Sep-05	0			0.53	0.55	0.55
			25-Oct-05	0			0.6	0.68	0.6
			02-Nov-06	0			0.34	0.4	0.36

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Montgomery	23.2		03-Aug-05	0	As (ug/L)		0.54	0.51	0.51
			14-Sep-05	0			0.63	0.6	0.55
			25-Oct-05	0			0.57	0.62	0.65
			02-Nov-06	0			0.26	0.52	0.33
Montgomery	27.6		03-Aug-05	0	As (ug/L)		0.71	0.69	0.74
			14-Sep-05	0			0.71	0.84	0.95
			25-Oct-05	0			0.76	0.7	0.69
			02-Nov-06	0			0.41	0.38	0.58
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	As (ug/L)	0.73			
			14-Sep-05	5.6		0.73			
			25-Oct-05	14.5		0.73			
			02-Nov-06	89.4		0.4			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	As (ug/L)	0.75			
			15-Sep-05	5.9		0.78			
			26-Oct-05	31.9		0.98			
			06-Sep-06	43.1		0.73			
Willow Island	132.4		01-Sep-05	0	As (ug/L)		0.79	0.72	0.79
			15-Sep-05	0			0.72	0.9	0.72
			26-Oct-05	0			0.81	0.81	0.8
			06-Sep-06	0			0.74	0.72	0.72
Willow Island	138.9		01-Sep-05	0	As (ug/L)		0.79	0.74	0.79
			15-Sep-05	0			0.82	0.73	0.77
			26-Oct-05	0			0.8	0.93	0.99
			06-Sep-06	0			0.71	0.75	0.71
Willow Island	145.2		01-Sep-05	0	As (ug/L)		0.74	0.81	0.78
			15-Sep-05	0			0.82	0.84	0.86
			26-Oct-05	0			0.89	0.87	0.9
			06-Sep-06	0			0.73	0.74	0.71
Willow Island	150.8		01-Sep-05	0	As (ug/L)		0.76	0.73	0.74
			15-Sep-05	0			0.83	0.8	0.8
			26-Oct-05	0			0.84	0.77	0.92
			06-Sep-06	0			0.73	0.77	0.77
Willow Island	157.4		01-Sep-05	0	As (ug/L)		0.75	0.77	0.71
			15-Sep-05	0			0.79	0.81	0.83
			26-Oct-05	0			0.8	0.87	0.77
			06-Sep-06	0			0.69	0.76	0.75
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	As (ug/L)	0.77			
			15-Sep-05	11.9		0.81			
			26-Oct-05	52.5		0.83			
			06-Sep-06	42.9		0.76			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	As (ug/L)	0.54			
			07-Aug-07	31.8		1.1			
Newburgh	725		09-May-06	0	As (ug/L)		0.61	0.51	0.51
			07-Aug-07	0			1.11	0.96	0.97
Newburgh	736.7		09-May-06	0	As (ug/L)		0.55	0.55	0.58
			07-Aug-07	0			0.92	1.05	1.05
Newburgh	747.3		09-May-06	0	As (ug/L)		0.54	0.58	0.58
			07-Aug-07	0			1.01	0.91	0.88
Newburgh	754.9		09-May-06	0	As (ug/L)		0.6	0.52	0.57
			07-Aug-07	0			0.85	1.02	1.03
Newburgh	762.3		10-May-06	0	As (ug/L)		0.53	0.42	0.6
			08-Aug-07	0			1.07	0.89	0.89
Newburgh	772		10-May-06	0	As (ug/L)		0.57	0.59	0.52
			08-Aug-07	0			0.87	1.01	0.96
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	As (ug/L)	0.67			
			08-Aug-07	52.7		0.99			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Ba (ug/L)	48.26			
			14-Sep-05	5.4		38.12			
			25-Oct-05	12.3		42.74			
			02-Nov-06	77.7		35.98			
Montgomery	19.3		03-Aug-05	0	Ba (ug/L)		48.87	48.72	47.34
			14-Sep-05	0			43.39	39.89	32.54
			25-Oct-05	0			47.13	45.99	44.18
			02-Nov-06	0			32.88	32.66	31.16
Montgomery	23.2		03-Aug-05	0	Ba (ug/L)		46.75	42.73	44.62
			14-Sep-05	0			30.81	32.86	37.58
			25-Oct-05	0			43.81	42.86	42.38
			02-Nov-06	0			30.28	31.62	28.39

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Montgomery	27.6		03-Aug-05	0	Ba (ug/L)		41.42	45.15	43.27
			14-Sep-05	0			34.98	34.4	30.79
			25-Oct-05	0			42.63	43.16	43.33
			02-Nov-06	0			30.39	33.25	28.88
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Ba (ug/L)	44.28			
			14-Sep-05	5.6		36.67			
			25-Oct-05	14.5		40.32			
			02-Nov-06	89.4		35.54			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Ba (ug/L)	47.02			
			15-Sep-05	5.9		49.18			
			26-Oct-05	31.9		38.3			
			06-Sep-06	43.1		41.83			
Willow Island	132.4		01-Sep-05	0	Ba (ug/L)		51.35	50.87	52.06
			15-Sep-05	0			44.3	44.52	36.93
			26-Oct-05	0			40.21	39.92	39.77
			06-Sep-06	0			41.57	40.93	41.61
Willow Island	138.9		01-Sep-05	0	Ba (ug/L)		52.19	51.58	53.03
			15-Sep-05	0			42.49	42.65	41.41
			26-Oct-05	0			37.62	40.06	40.51
			06-Sep-06	0			42.96	42.57	40.31
Willow Island	145.2		01-Sep-05	0	Ba (ug/L)		50.48	52.74	48.5
			15-Sep-05	0			42.17	40.15	41.85
			26-Oct-05	0			42.47	42.63	42.11
			06-Sep-06	0			45.22	43.99	44.76
Willow Island	150.8		01-Sep-05	0	Ba (ug/L)		47.79	52.45	44.56
			15-Sep-05	0			38.72	39.95	42.79
			26-Oct-05	0			43.23	36.35	42.36
			06-Sep-06	0			45.73	45.28	46.1
Willow Island	157.4		01-Sep-05	0	Ba (ug/L)		53.97	53.68	47.85
			15-Sep-05	0			39.96	41.7	42.85
			26-Oct-05	0			44.12	43.67	43.21
			06-Sep-06	0			46.14	45.88	46.54
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Ba (ug/L)	51.5			
			15-Sep-05	11.9		48.47			
			26-Oct-05	52.5		40.55			
			06-Sep-06	42.9		45.46			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Ba (ug/L)	31.51			
			07-Aug-07	31.8		54.34			
Newburgh	725		09-May-06	0	Ba (ug/L)		33.05	32.07	32.18
			07-Aug-07	0			54.96	45.83	52.05
Newburgh	736.7		09-May-06	0	Ba (ug/L)		33.42	33.47	32.63
			07-Aug-07	0			47.51	50.29	51.27
Newburgh	747.3		09-May-06	0	Ba (ug/L)		32.38	33.21	32.28
			07-Aug-07	0			51.87	48.08	48.81
Newburgh	754.9		09-May-06	0	Ba (ug/L)		33.85	33.07	34.01
			07-Aug-07	0			43.75	52.01	49.96
Newburgh	762.3		10-May-06	0	Ba (ug/L)		34.61	33.72	35.13
			08-Aug-07	0			51.3	46.93	45.51
Newburgh	772		10-May-06	0	Ba (ug/L)		33.55	34.36	34.19
			08-Aug-07	0			47.59	52.81	45.57
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Ba (ug/L)	35.59			
			08-Aug-07	52.7		50.19			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Ca (mg/L)	36.53			
			14-Sep-05	5.4		33.47			
			25-Oct-05	12.3		46.2			
			02-Nov-06	77.7		22.22			
Montgomery	19.3		03-Aug-05	0	Ca (mg/L)		43.72	40.88	38.67
			14-Sep-05	0			40.69	41.49	40.83
			25-Oct-05	0			38.77	38.19	38
			02-Nov-06	0			21.85	19	17.51
Montgomery	23.2		03-Aug-05	0	Ca (mg/L)		38.45	36.76	42.15
			14-Sep-05	0			36.36	39.22	33.51
			25-Oct-05	0			39.19	38.2	38.35
			02-Nov-06	0			20.58	18.46	15.06
Montgomery	27.6		03-Aug-05	0	Ca (mg/L)		36.65	34.04	36.21
			14-Sep-05	0			42.62	41.57	39.8
			25-Oct-05	0			40.5	38.27	39.19
			02-Nov-06	0			20.72	21.52	25.17

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Ca (mg/L)	35.71			
			14-Sep-05	5.6		31.38			
			25-Oct-05	14.5		46.08			
			02-Nov-06	89.4		19.7			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Ca (mg/L)	38.35			
			15-Sep-05	5.9		42.83			
			26-Oct-05	31.9		47.65			
			06-Sep-06	43.1		31.85			
Willow Island	132.4		01-Sep-05	0	Ca (mg/L)		51.25	48.46	47.93
			15-Sep-05	0			40.53	55	50.09
			26-Oct-05	0			37.81	38.59	40.6
			06-Sep-06	0			31.09	31.65	30.64
Willow Island	138.9		01-Sep-05	0	Ca (mg/L)		49.11	39.34	46.06
			15-Sep-05	0			54.04	54.94	54.68
			26-Oct-05	0			37.14	40.35	39.02
			06-Sep-06	0			30.64	31.2	28.96
Willow Island	145.2		01-Sep-05	0	Ca (mg/L)		50.64	51.98	49.8
			15-Sep-05	0			54.53	58.88	53.25
			26-Oct-05	0			39.08	40.33	40.57
			06-Sep-06	0			33.17	32.11	35.24
Willow Island	150.8		01-Sep-05	0	Ca (mg/L)		38.17	51.28	49.05
			15-Sep-05	0			54.15	54.07	56.3
			26-Oct-05	0			43.47	35.11	41.02
			06-Sep-06	0			32.7	32.47	33.98
Willow Island	157.4		01-Sep-05	0	Ca (mg/L)		50.37	52.66	49.93
			15-Sep-05	0			54.06	53.25	56.57
			26-Oct-05	0			40.94	40.23	40.68
			06-Sep-06	0			35.47	33.68	34.02
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Ca (mg/L)	39.77			
			15-Sep-05	11.9		42.06			
			26-Oct-05	52.5		43.18			
			06-Sep-06	42.9		35.48			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Ca (mg/L)	32			
			07-Aug-07	31.8		36.82			
Newburgh	725		09-May-06	0	Ca (mg/L)		30.85	32.13	32.35
			07-Aug-07	0			37.09	30.78	35.21
Newburgh	736.7		09-May-06	0	Ca (mg/L)		33.55	34.45	33.05
			07-Aug-07	0			31.75	33.69	34.25
Newburgh	747.3		09-May-06	0	Ca (mg/L)		32.55	32.53	32.39
			07-Aug-07	0			34.51	30.9	32.17
Newburgh	754.9		09-May-06	0	Ca (mg/L)		32.57	33.71	33.86
			07-Aug-07	0			28.79	34.29	32.54
Newburgh	762.3		10-May-06	0	Ca (mg/L)		33.8	34.96	34.63
			08-Aug-07	0			33.7	30.56	29.53
Newburgh	772		10-May-06	0	Ca (mg/L)		34.29	34.62	35.33
			08-Aug-07	0			31.16	34.78	29.71
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Ca (mg/L)	35.47			
			08-Aug-07	52.7		33.01			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Cd (ug/L)	<0.1			
			14-Sep-05	5.4		<0.1			
			25-Oct-05	12.3		<0.1			
			02-Nov-06	77.7		<0.1			
Montgomery	19.3		03-Aug-05	0	Cd (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	<0.1	<0.1
Montgomery	23.2		03-Aug-05	0	Cd (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	<0.1	<0.1
Montgomery	27.6		03-Aug-05	0	Cd (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	<0.1	<0.1
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Cd (ug/L)	<0.1			
			14-Sep-05	5.6		<0.1			
			25-Oct-05	14.5		<0.1			
			02-Nov-06	89.4		<0.1			

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Cd (ug/L)	<0.1			
			15-Sep-05	5.9		<0.1			
			26-Oct-05	31.9		<0.1			
			06-Sep-06	43.1		<0.1			
Willow Island	132.4		01-Sep-05	0	Cd (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	138.9		01-Sep-05	0	Cd (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	145.2		01-Sep-05	0	Cd (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	150.8		01-Sep-05	0	Cd (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	157.4		01-Sep-05	0	Cd (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Cd (ug/L)	<0.1			
			15-Sep-05	11.9		<0.1			
			26-Oct-05	52.5		<0.1			
			06-Sep-06	42.9		<0.1			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Cd (ug/L)	<0.1			
			07-Aug-07	31.8		<0.1			
Newburgh	725		09-May-06	0	Cd (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	736.7		09-May-06	0	Cd (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	747.3		09-May-06	0	Cd (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	754.9		09-May-06	0	Cd (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	762.3		10-May-06	0	Cd (ug/L)		<0.1	<0.1	<0.1
			08-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	772		10-May-06	0	Cd (ug/L)		<0.1	<0.1	<0.1
			08-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Cd (ug/L)	<0.1			
			08-Aug-07	52.7		<0.1			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Cl (mg/L)	34			
			14-Sep-05	5.4		40			
			25-Oct-05	12.3		48			
			02-Nov-06	77.7		20			
Montgomery	19.3		03-Aug-05	0	Cl (mg/L)		34	34	34
			14-Sep-05	0			42	34	32
			25-Oct-05	0			48	50	44
			02-Nov-06	0			16	16	16
Montgomery	23.2		03-Aug-05	0	Cl (mg/L)		34	32	36
			14-Sep-05	0			36	36	36
			25-Oct-05	0			46	44	44
			02-Nov-06	0			18	14	16
Montgomery	27.6		03-Aug-05	0	Cl (mg/L)		36	36	34
			14-Sep-05	0			40	46	48
			25-Oct-05	0			50	48	50
			02-Nov-06	0			16	20	16
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Cl (mg/L)	36			
			14-Sep-05	5.6		38			
			25-Oct-05	14.5		50			
			02-Nov-06	89.4		20			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Cl (mg/L)	44			
			15-Sep-05	5.9		70			
			26-Oct-05	31.9		46			
			06-Sep-06	43.1		36			

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	132.4		01-Sep-05	0	Cl (mg/L)		46	44	48
			15-Sep-05	0			62	60	60
			26-Oct-05	0			50	54	46
			06-Sep-06	0			36	36	38
Willow Island	138.9		01-Sep-05	0	Cl (mg/L)		48	48	48
			15-Sep-05	0			60	60	62
			26-Oct-05	0			52	48	
			06-Sep-06	0			38	40	38
Willow Island	145.2		01-Sep-05	0	Cl (mg/L)		54	54	52
			15-Sep-05	0			60	50	56
			26-Oct-05	0			50	50	52
			06-Sep-06	0			42	38	40
Willow Island	150.8		01-Sep-05	0	Cl (mg/L)		50	52	52
			15-Sep-05	0			56	56	56
			26-Oct-05	0			52	52	50
			06-Sep-06	0			38	38	40
Willow Island	157.4		01-Sep-05	0	Cl (mg/L)		58	54	56
			15-Sep-05	0			50	56	54
			26-Oct-05	0			54	56	54
			06-Sep-06	0			40	40	40
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Cl (mg/L)	56			
			15-Sep-05	11.9		38			
			26-Oct-05	52.5		58			
			06-Sep-06	42.9		46			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Cl (mg/L)	22			
			07-Aug-07	31.8		44			
Newburgh	725		09-May-06	0	Cl (mg/L)		22	22	20
			07-Aug-07	0			40	38	38
Newburgh	736.7		09-May-06	0	Cl (mg/L)		22	22	20
			07-Aug-07	0			40	36	42
Newburgh	747.3		09-May-06	0	Cl (mg/L)		24	20	22
			07-Aug-07	0			42	40	38
Newburgh	754.9		09-May-06	0	Cl (mg/L)		22	22	22
			07-Aug-07	0			40	40	36
Newburgh	762.3		10-May-06	0	Cl (mg/L)		24	22	22
			08-Aug-07	0			34	40	36
Newburgh	772		10-May-06	0	Cl (mg/L)		22	24	22
			08-Aug-07	0			40	34	44
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Cl (mg/L)	24			
			08-Aug-07	52.7		40			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Cr (ug/L)	<0.1			
			14-Sep-05	5.4		<0.1			
			25-Oct-05	12.3		0.18			
			02-Nov-06	77.7		0.16			
Montgomery	19.3		03-Aug-05	0	Cr (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	0.11
			25-Oct-05	0			0.41	0.19	0.13
			02-Nov-06	0			0.11	<0.1	<0.1
Montgomery	23.2		03-Aug-05	0	Cr (ug/L)		<0.1	0.14	0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			0.12	0.1	<0.1
			02-Nov-06	0			0.34	0.15	0.12
Montgomery	27.6		03-Aug-05	0	Cr (ug/L)		0.26	0.37	0.18
			14-Sep-05	0			<0.1	<0.1	0.14
			25-Oct-05	0			0.15	0.22	0.18
			02-Nov-06	0			0.26	0.11	0.11
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Cr (ug/L)	0.22			
			14-Sep-05	5.6		<0.1			
			25-Oct-05	14.5		0.16			
			02-Nov-06	89.4		0.58			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Cr (ug/L)	0.37			
			15-Sep-05	5.9		0.22			
			26-Oct-05	31.9		0.28			
			06-Sep-06	43.1		0.78			
Willow Island	132.4		01-Sep-05	0	Cr (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	0.65	0.21
			26-Oct-05	0			0.1	0.11	<0.1
			06-Sep-06	0			0.14	0.79	0.56

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Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	138.9		01-Sep-05	0	Cr (ug/L)		<0.1	<0.1	0.17
			15-Sep-05	0			0.12	<0.1	0.27
			26-Oct-05	0			<0.1	0.16	0.13
			06-Sep-06	0			0.1	<0.1	0.11
Willow Island	145.2		01-Sep-05	0	Cr (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	0.22	0.26
			26-Oct-05	0			0.15	0.21	0.12
			06-Sep-06	0			0.4	0.13	0.13
Willow Island	150.8		01-Sep-05	0	Cr (ug/L)		<0.1	<0.1	0.14
			15-Sep-05	0			0.31	<0.1	0.14
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			0.75	0.59	0.41
Willow Island	157.4		01-Sep-05	0	Cr (ug/L)		0.15	0.15	0.11
			15-Sep-05	0			<0.1	0.13	0.17
			26-Oct-05	0			<0.1	0.16	0.2
			06-Sep-06	0			0.71	0.56	0.34
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Cr (ug/L)	0.14			
			15-Sep-05	11.9		0.11			
			26-Oct-05	52.5		0.34			
			06-Sep-06	42.9		0.23			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Cr (ug/L)	0.12			
			07-Aug-07	31.8		0.27			
Newburgh	725		09-May-06	0	Cr (ug/L)		0.19	0.21	0.23
			07-Aug-07	0			0.28	0.43	0.52
Newburgh	736.7		09-May-06	0	Cr (ug/L)		0.15	0.11	<0.1
			07-Aug-07	0			0.56	0.64	0.29
Newburgh	747.3		09-May-06	0	Cr (ug/L)		0.28	0.37	0.37
			07-Aug-07	0			0.22	0.2	0.28
Newburgh	754.9		09-May-06	0	Cr (ug/L)		0.16	<0.1	0.14
			07-Aug-07	0			0.5	0.62	0.85
Newburgh	762.3		10-May-06	0	Cr (ug/L)		0.11	<0.1	0.12
			08-Aug-07	0			0.38	0.22	0.52
Newburgh	772		10-May-06	0	Cr (ug/L)		0.13	0.11	0.11
			08-Aug-07	0			0.6	0.25	0.34
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Cr (ug/L)	0.12			
			08-Aug-07	52.7		0.26			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Cu (ug/L)	1.3			
			14-Sep-05	5.4		1.52			
			25-Oct-05	12.3		1.62			
			02-Nov-06	77.7		0.94			
Montgomery	19.3		03-Aug-05	0	Cu (ug/L)		1.34	1.37	1.45
			14-Sep-05	0			1.55	1.57	1.77
			25-Oct-05	0			1.74	1.68	1.91
			02-Nov-06	0			0.9	0.86	0.99
Montgomery	23.2		03-Aug-05	0	Cu (ug/L)		1.45	1.29	1.3
			14-Sep-05	0			1.44	1.59	1.69
			25-Oct-05	0			1.75	1.65	1.71
			02-Nov-06	0			0.84	1.11	0.88
Montgomery	27.6		03-Aug-05	0	Cu (ug/L)		1.46	1.56	1.47
			14-Sep-05	0			1.78	1.78	1.75
			25-Oct-05	0			1.66	1.76	1.76
			02-Nov-06	0			0.89	0.93	1.18
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Cu (ug/L)	1.87			
			14-Sep-05	5.6		1.71			
			25-Oct-05	14.5		1.79			
			02-Nov-06	89.4		1			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Cu (ug/L)	2.63			
			15-Sep-05	5.9		2.47			
			26-Oct-05	31.9		2.87			
			06-Sep-06	43.1		1.89			
Willow Island	132.4		01-Sep-05	0	Cu (ug/L)		3.17	2.55	2.68
			15-Sep-05	0			2.41	2.9	2.27
			26-Oct-05	0			2.71	2.9	2.86
			06-Sep-06	0			1.98	2.02	1.86
Willow Island	138.9		01-Sep-05	0	Cu (ug/L)		2.81	2.85	2.87
			15-Sep-05	0			2.36	2.34	2.44
			26-Oct-05	0			2.71	2.89	3
			06-Sep-06	0			1.74	1.81	1.8

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	145.2		01-Sep-05	0	Cu (ug/L)		3.48	3.21	2.86
			15-Sep-05	0			2.49	2.25	2.34
			26-Oct-05	0			2.82	2.91	2.92
			06-Sep-06	0			2.13	1.89	1.82
Willow Island	150.8		01-Sep-05	0	Cu (ug/L)		2.39	2.76	2.69
			15-Sep-05	0			2.17	2.02	2.26
			26-Oct-05	0			2.66	2.16	2.78
			06-Sep-06	0			1.86	1.83	1.92
Willow Island	157.4		01-Sep-05	0	Cu (ug/L)		2.65	2.63	3.15
			15-Sep-05	0			2.15	2.22	2.32
			26-Oct-05	0			2.67	2.63	2.85
			06-Sep-06	0			2.14	1.95	1.95
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Cu (ug/L)	2.39			
			15-Sep-05	11.9		2.34			
			26-Oct-05	52.5		3.2			
			06-Sep-06	42.9		2.05			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Cu (ug/L)	1.22			
			07-Aug-07	31.8		1.75			
Newburgh	725		09-May-06	0	Cu (ug/L)		1.28	1.38	1.12
			07-Aug-07	0			1.84	1.85	1.94
Newburgh	736.7		09-May-06	0	Cu (ug/L)		1.35	1.35	1.3
			07-Aug-07	0			2.2	1.8	2.14
Newburgh	747.3		09-May-06	0	Cu (ug/L)		1.31	1.36	1.47
			07-Aug-07	0			1.88	1.85	1.77
Newburgh	754.9		09-May-06	0	Cu (ug/L)		1.32	1.28	1.29
			07-Aug-07	0			1.44	1.95	1.82
Newburgh	762.3		10-May-06	0	Cu (ug/L)		1.43	1.35	1.32
			08-Aug-07	0			1.93	2.1	2.01
Newburgh	772		10-May-06	0	Cu (ug/L)		1.45	1.54	1.62
			08-Aug-07	0			1.58	1.87	1.74
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Cu (ug/L)	1.45			
			08-Aug-07	52.7		1.96			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Fe (ug/L)	<50			
			14-Sep-05	5.4		69			
			25-Oct-05	12.3		<50			
			02-Nov-06	77.7		79.8			
Montgomery	19.3		03-Aug-05	0	Fe (ug/L)		<50	<50	<50
			14-Sep-05	0			<50	<50	<50
			25-Oct-05	0			<50	<50	<50
			02-Nov-06	0			70.1	85.2	80.2
Montgomery	23.2		03-Aug-05	0	Fe (ug/L)		<50	<50	<50
			14-Sep-05	0			<50	51	<50
			25-Oct-05	0			<50	<50	<50
			02-Nov-06	0			80.6	90.9	88.1
Montgomery	27.6		03-Aug-05	0	Fe (ug/L)		57	53	67
			14-Sep-05	0			<50	<50	<50
			25-Oct-05	0			<50	<50	<50
			02-Nov-06	0			53.2	72.3	90
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Fe (ug/L)	<50			
			14-Sep-05	5.6		<50			
			25-Oct-05	14.5		<50			
			02-Nov-06	89.4		80.2			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Fe (ug/L)	<50			
			15-Sep-05	5.9		<50			
			26-Oct-05	31.9		<50			
			06-Sep-06	43.1		<50			
Willow Island	132.4		01-Sep-05	0	Fe (ug/L)		<50	<50	<50
			15-Sep-05	0			<50	<50	<50
			26-Oct-05	0			<50	<50	<50
			06-Sep-06	0			<50	<50	<50
Willow Island	138.9		01-Sep-05	0	Fe (ug/L)		<50	<50	<50
			15-Sep-05	0			<50	<50	<50
			26-Oct-05	0			<50	<50	<50
			06-Sep-06	0			<50	<50	<50
Willow Island	145.2		01-Sep-05	0	Fe (ug/L)		<50	<50	<50
			15-Sep-05	0			<50	<50	<50
			26-Oct-05	0			<50	<50	<50
			06-Sep-06	0			133.1	<50	<50

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	150.8		01-Sep-05	0	Fe (ug/L)		<50	<50	<50
			15-Sep-05	0			<50	50	<50
			26-Oct-05	0			<50	<50	<50
			06-Sep-06	0			<50	<50	<50
Willow Island	157.4		01-Sep-05	0	Fe (ug/L)		<50	<50	<50
			15-Sep-05	0			<50	50	51
			26-Oct-05	0			<50	<50	<50
			06-Sep-06	0			<50	<50	<50
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Fe (ug/L)	<50			
			15-Sep-05	11.9		<50			
			26-Oct-05	52.5		<50			
			06-Sep-06	42.9		<50			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Fe (ug/L)	<50			
			07-Aug-07	31.8		<50			
Newburgh	725		09-May-06	0	Fe (ug/L)		<50	<50	<50
			07-Aug-07	0			<50	<50	<50
Newburgh	736.7		09-May-06	0	Fe (ug/L)		<50	<50	<50
			07-Aug-07	0			<50	<50	<50
Newburgh	747.3		09-May-06	0	Fe (ug/L)		<50	<50	<50
			07-Aug-07	0			<50	<50	<50
Newburgh	754.9		09-May-06	0	Fe (ug/L)		<50	<50	<50
			07-Aug-07	0			<50	<50	<50
Newburgh	762.3		10-May-06	0	Fe (ug/L)		<50	<50	<50
			08-Aug-07	0			<50	<50	<50
Newburgh	772		10-May-06	0	Fe (ug/L)		<50	<50	<50
			08-Aug-07	0			<50	<50	<50
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Fe (ug/L)	<50			
			08-Aug-07	52.7		<50			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Hardness (mg/L)	144			
			14-Sep-05	5.4		128			
			25-Oct-05	12.3		192			
			02-Nov-06	77.7		80			
Montgomery	19.3		03-Aug-05	0	Hardness (mg/L)		280	120	160
			14-Sep-05	0			120	120	120
			25-Oct-05	0			152	144	148
			02-Nov-06	0			72	68	72
Montgomery	23.2		03-Aug-05	0	Hardness (mg/L)		132	136	128
			14-Sep-05	0			108	108	108
			25-Oct-05	0			148	148	140
			02-Nov-06	0			68	64	60
Montgomery	27.6		03-Aug-05	0	Hardness (mg/L)		132	124	124
			14-Sep-05	0			116	124	124
			25-Oct-05	0			148	156	152
			02-Nov-06	0			72	68	68
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Hardness (mg/L)	120			
			14-Sep-05	5.6		116			
			25-Oct-05	14.5		144			
			02-Nov-06	89.4		76			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Hardness (mg/L)	152			
			15-Sep-05	5.9		212			
			26-Oct-05	31.9		148			
			06-Sep-06	43.1		116			
Willow Island	132.4		01-Sep-05	0	Hardness (mg/L)		156	152	160
			15-Sep-05	0			168	160	176
			26-Oct-05	0			168	140	156
			06-Sep-06	0			112	112	116
Willow Island	138.9		01-Sep-05	0	Hardness (mg/L)		160	160	148
			15-Sep-05	0			172	160	160
			26-Oct-05	0			156	152	152
			06-Sep-06	0			116	116	116
Willow Island	145.2		01-Sep-05	0	Hardness (mg/L)		160	156	164
			15-Sep-05	0			168	168	164
			26-Oct-05	0			156	148	156
			06-Sep-06	0			124	128	160
Willow Island	150.8		01-Sep-05	0	Hardness (mg/L)		160	148	152
			15-Sep-05	0			164	136	168
			26-Oct-05	0			156	164	160
			06-Sep-06	0			96	120	124

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	157.4		01-Sep-05	0	Hardness (mg/L)		148	152	168
			15-Sep-05	0			160	164	168
			26-Oct-05	0			148	156	172
			06-Sep-06	0			120	128	128
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Hardness (mg/L)	152			
			15-Sep-05	11.9		120			
			26-Oct-05	52.5		160			
			06-Sep-06	42.9		124			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Hardness (mg/L)	132			
			07-Aug-07	31.8		148			
Newburgh	725		09-May-06	0	Hardness (mg/L)		132	128	136
			07-Aug-07	0			160	160	160
Newburgh	736.7		09-May-06	0	Hardness (mg/L)		128	128	124
			07-Aug-07	0			176	164	164
Newburgh	747.3		09-May-06	0	Hardness (mg/L)		136	128	132
			07-Aug-07	0			168	148	156
Newburgh	754.9		09-May-06	0	Hardness (mg/L)		132	132	136
			07-Aug-07	0			168	160	156
Newburgh	762.3		10-May-06	0	Hardness (mg/L)		132	136	148
			08-Aug-07	0			156	164	152
Newburgh	772		10-May-06	0	Hardness (mg/L)		132	132	128
			08-Aug-07	0			152	172	160
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Hardness (mg/L)	144			
			08-Aug-07	52.7		160			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Hg (ng/L)	<1.5			
			14-Sep-05	5.4		<1.5			
			25-Oct-05	12.3		<1.5			
			02-Nov-06	77.7		4.07			
Montgomery	19.3		03-Aug-05	0	Hg (ng/L)		<1.5	<1.5	<1.5
			14-Sep-05	0			<1.5	<1.5	<1.5
			25-Oct-05	0			<1.5	<1.5	<1.5
			02-Nov-06	0			<1.5	<1.5	<1.5
Montgomery	23.2		03-Aug-05	0	Hg (ng/L)		<1.5	<1.5	<1.5
			14-Sep-05	0			<1.5	<1.5	<1.5
			25-Oct-05	0			<1.5	<1.5	<1.5
			02-Nov-06	0			<1.5	<1.5	<1.5
Montgomery	27.6		03-Aug-05	0	Hg (ng/L)		<1.5	<1.5	<1.5
			14-Sep-05	0			<1.5	<1.5	<1.5
			25-Oct-05	0			1.76	<1.5	<1.5
			02-Nov-06	0			<1.5	2.33	<1.5
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Hg (ng/L)	<1.5			
			14-Sep-05	5.6		<1.5			
			25-Oct-05	14.5		<1.5			
			02-Nov-06	89.4		<1.5			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Hg (ng/L)	<1.5			
			15-Sep-05	5.9		<1.5			
			26-Oct-05	31.9		<1.5			
			06-Sep-06	43.1		5.27			
Willow Island	132.4		01-Sep-05	0	Hg (ng/L)		<1.5	<1.5	<1.5
			15-Sep-05	0			<1.5	<1.5	<1.5
			26-Oct-05	0			<1.5	<1.5	<1.5
			06-Sep-06	0			<1.5	<1.5	<1.5
Willow Island	138.9		01-Sep-05	0	Hg (ng/L)		<1.5	<1.5	<1.5
			15-Sep-05	0			<1.5	<1.5	<1.5
			26-Oct-05	0			<1.5	<1.5	<1.5
			06-Sep-06	0			<1.5	<1.5	<1.5
Willow Island	145.2		01-Sep-05	0	Hg (ng/L)		<1.5	<1.5	<1.5
			15-Sep-05	0			<1.5	1.53	<1.5
			26-Oct-05	0			<1.5	<1.5	<1.5
			06-Sep-06	0			<1.5	<1.5	<1.5
Willow Island	150.8		01-Sep-05	0	Hg (ng/L)		<1.5	<1.5	
			15-Sep-05	0			<1.5	<1.5	<1.5
			26-Oct-05	0			<1.5	<1.5	<1.5
			06-Sep-06	0			<1.5	<1.5	2.73
Willow Island	157.4		01-Sep-05	0	Hg (ng/L)		<1.5	<1.5	<1.5
			15-Sep-05	0			<1.5	<1.5	<1.5
			26-Oct-05	0			<1.5	<1.5	<1.5
			06-Sep-06	0			<1.5	<1.5	<1.5

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Hg (ng/L)	<1.5			
			15-Sep-05	11.9		<1.5			
			26-Oct-05	52.5		<1.5			
			06-Sep-06	42.9		<1.5			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Hg (ng/L)	<1.5			
			07-Aug-07	31.8		<1.5			
Newburgh	725		09-May-06	0	Hg (ng/L)		<1.5	<1.5	<1.5
			07-Aug-07	0			<1.5	<1.5	<1.5
Newburgh	736.7		09-May-06	0	Hg (ng/L)		<1.5	<1.5	<1.5
			07-Aug-07	0			<1.5	<1.5	<1.5
Newburgh	747.3		09-May-06	0	Hg (ng/L)		<1.5	<1.5	<1.5
			07-Aug-07	0			<1.5	<1.5	<1.5
Newburgh	754.9		09-May-06	0	Hg (ng/L)		<1.5	<1.5	<1.5
			07-Aug-07	0			<1.5	<1.5	<1.5
Newburgh	762.3		10-May-06	0	Hg (ng/L)		<1.5	<1.5	<1.5
			08-Aug-07	0			<1.5	<1.5	<1.5
Newburgh	772		10-May-06	0	Hg (ng/L)		<1.5	<1.5	<1.5
			08-Aug-07	0			<1.5	<1.5	<1.5
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Hg (ng/L)	<1.5			
			08-Aug-07	52.7		<1.5			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Mg (mg/L)	10.92			
			14-Sep-05	5.4		10.69			
			25-Oct-05	12.3		13.72			
			02-Nov-06	77.7		5.24			
Montgomery	19.3		03-Aug-05	0	Mg (mg/L)		10.62	10.44	10.57
			14-Sep-05	0			10.1	9.92	10.74
			25-Oct-05	0			13.71	14.27	10.3
			02-Nov-06	0			4.92	4.32	4.1
Montgomery	23.2		03-Aug-05	0	Mg (mg/L)		10.13	9.01	9.7
			14-Sep-05	0			9.01	10.21	8.24
			25-Oct-05	0			12.95	12.19	11.71
			02-Nov-06	0			4.49	4.18	3.95
Montgomery	27.6		03-Aug-05	0	Mg (mg/L)		10.15	9.99	10.3
			14-Sep-05	0			9.13	9.74	8.95
			25-Oct-05	0			13.5	12.24	13.9
			02-Nov-06	0			4.7	4.83	5.63
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Mg (mg/L)	10.1			
			14-Sep-05	5.6		9.17			
			25-Oct-05	14.5		13.74			
			02-Nov-06	89.4		4.98			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Mg (mg/L)	12.3			
			15-Sep-05	5.9		13.37			
			26-Oct-05	31.9		13.2			
			06-Sep-06	43.1		8.79			
Willow Island	132.4		01-Sep-05	0	Mg (mg/L)		12.38	12.09	12.1
			15-Sep-05	0			12.14	13.2	11.81
			26-Oct-05	0			11.89	11.81	12.98
			06-Sep-06	0			8.92	8.94	9.01
Willow Island	138.9		01-Sep-05	0	Mg (mg/L)		12.78	11.56	11.98
			15-Sep-05	0			13.18	14.15	13.22
			26-Oct-05	0			11.4	10.44	10.13
			06-Sep-06	0			9.31	9.21	8.87
Willow Island	145.2		01-Sep-05	0	Mg (mg/L)		12.66	12.39	12.66
			15-Sep-05	0			13.41	13.87	13.6
			26-Oct-05	0			13.59	13.73	14.21
			06-Sep-06	0			9.7	9.49	9.67
Willow Island	150.8		01-Sep-05	0	Mg (mg/L)		11.19	12.5	12.02
			15-Sep-05	0			13.43	14.82	16.02
			26-Oct-05	0			13.35	11.88	15.35
			06-Sep-06	0			9.93	9.8	9.8
Willow Island	157.4		01-Sep-05	0	Mg (mg/L)		12.11	12.39	11.62
			15-Sep-05	0			12.9	16.86	16.32
			26-Oct-05	0			13.79	14.31	14.76
			06-Sep-06	0			9.93	9.94	10.05
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Mg (mg/L)	12.14			
			15-Sep-05	11.9		14.46			
			26-Oct-05	52.5		14.11			
			06-Sep-06	42.9		9.61			

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Mg (mg/L)	10.56			
			07-Aug-07	31.8		14.63			
Newburgh	725		09-May-06	0	Mg (mg/L)		11.1	11.25	11.37
			07-Aug-07	0			14.73	12.3	14.15
Newburgh	736.7		09-May-06	0	Mg (mg/L)		10.62	10.62	10.5
			07-Aug-07	0			12.91	13.9	13.78
Newburgh	747.3		09-May-06	0	Mg (mg/L)		10.44	10.71	10.93
			07-Aug-07	0			14.05	12.9	13.02
Newburgh	754.9		09-May-06	0	Mg (mg/L)		10.73	10.68	10.59
			07-Aug-07	0			12.15	14.37	13.66
Newburgh	762.3		10-May-06	0	Mg (mg/L)		10.63	10.34	10.84
			08-Aug-07	0			14.38	12.86	12.38
Newburgh	772		10-May-06	0	Mg (mg/L)		10.61	10.63	10.67
			08-Aug-07	0			12.92	14.47	12.59
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Mg (mg/L)	11.85			
			08-Aug-07	52.7		13.72			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Mn (ug/L)	0.78			
			14-Sep-05	5.4		1.1			
			25-Oct-05	12.3		1.19			
			02-Nov-06	77.7		73.87			
Montgomery	19.3		03-Aug-05	0	Mn (ug/L)		1.16	0.68	0.89
			14-Sep-05	0			1.73	1.31	1.8
			25-Oct-05	0			3.51	4.11	3.81
			02-Nov-06	0			73.95	77.96	80.06
Montgomery	23.2		03-Aug-05	0	Mn (ug/L)		0.88	1.22	0.96
			14-Sep-05	0			2.43	1.3	1.47
			25-Oct-05	0			4.18	6.94	5.96
			02-Nov-06	0			70.13	81.09	74.4
Montgomery	27.6		03-Aug-05	0	Mn (ug/L)		1.43	2.97	1.58
			14-Sep-05	0			1.08	1.45	0.88
			25-Oct-05	0			10.17	7.04	7.39
			02-Nov-06	0			76.73	75.26	58.95
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Mn (ug/L)	1.29			
			14-Sep-05	5.6		0.84			
			25-Oct-05	14.5		5.65			
			02-Nov-06	89.4		92.42			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Mn (ug/L)	0.68			
			15-Sep-05	5.9		0.59			
			26-Oct-05	31.9		5.75			
			06-Sep-06	43.1		2.69			
Willow Island	132.4		01-Sep-05	0	Mn (ug/L)		4.7	2.68	6.16
			15-Sep-05	0			1.59	1.54	2.28
			26-Oct-05	0			10.6	8.95	13.32
			06-Sep-06	0			7.84	5.82	9.23
Willow Island	138.9		01-Sep-05	0	Mn (ug/L)		4.09	2.11	5.82
			15-Sep-05	0			3.06	0.92	1.24
			26-Oct-05	0			8.43	7.33	12.07
			06-Sep-06	0			15.31	4.71	13.22
Willow Island	145.2		01-Sep-05	0	Mn (ug/L)		1.14	1.57	2.45
			15-Sep-05	0			1.74	0.53	2.55
			26-Oct-05	0			8.27	4.53	7.13
			06-Sep-06	0			19.15	4.32	11.7
Willow Island	150.8		01-Sep-05	0	Mn (ug/L)		2.22	1.65	2.5
			15-Sep-05	0			1.06	1.13	1.26
			26-Oct-05	0			4.16	4.02	4.66
			06-Sep-06	0			17.05	3.98	6.45
Willow Island	157.4		01-Sep-05	0	Mn (ug/L)		2.67	3.84	3.24
			15-Sep-05	0			3.14	2.25	2.26
			26-Oct-05	0			15.79	10.02	7.52
			06-Sep-06	0			22.2	6.87	22.13
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Mn (ug/L)	2.51			
			15-Sep-05	11.9		0.65			
			26-Oct-05	52.5		7.34			
			06-Sep-06	42.9		15.96			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Mn (ug/L)	13.66			
			07-Aug-07	31.8		0.27			
Newburgh	725		09-May-06	0	Mn (ug/L)		18.54	16.85	15.09
			07-Aug-07	0			2.18	0.99	1.25

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Newburgh	736.7		09-May-06	0	Mn (ug/L)		13.47	12.49	12.86
			07-Aug-07	0			2.03	1.17	0.9
Newburgh	747.3		09-May-06	0	Mn (ug/L)		11.38	12.87	16.21
			07-Aug-07	0			1.67	0.93	3.03
Newburgh	754.9		09-May-06	0	Mn (ug/L)		10.11	9.6	12.41
			07-Aug-07	0			1.03	2.15	7.35
Newburgh	762.3		10-May-06	0	Mn (ug/L)		10.15	9.62	15.34
			08-Aug-07	0			1.08	6.04	7.63
Newburgh	772		10-May-06	0	Mn (ug/L)		8.33	8.62	9.08
			08-Aug-07	0			6.07	0.86	2.86
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Mn (ug/L)	21.55			
			08-Aug-07	52.7		1.99			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	NH3-N (mg/L)	0.04			
			14-Sep-05	5.4		0.04			
			25-Oct-05	12.3		0.08			
			02-Nov-06	77.7		0.05			
Montgomery	19.3		03-Aug-05	0	NH3-N (mg/L)		<0.03	<0.03	<0.03
			14-Sep-05	0			0.04	0.04	0.04
			25-Oct-05	0			0.09	0.09	0.11
			02-Nov-06	0			0.05	0.04	0.05
Montgomery	23.2		03-Aug-05	0	NH3-N (mg/L)		<0.03	<0.03	<0.03
			14-Sep-05	0			0.04	0.04	0.04
			25-Oct-05	0			0.07	0.07	0.06
			02-Nov-06	0			0.05	0.05	0.05
Montgomery	27.6		03-Aug-05	0	NH3-N (mg/L)		<0.03	<0.03	<0.03
			14-Sep-05	0			0.04	0.04	0.04
			25-Oct-05	0			0.07	0.07	0.08
			02-Nov-06	0			0.05	0.05	0.05
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	NH3-N (mg/L)	<0.03			
			14-Sep-05	5.6		0.07			
			25-Oct-05	14.5		0.08			
			02-Nov-06	89.4		0.06			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	NH3-N (mg/L)	0.1			
			15-Sep-05	5.9		0.04			
			26-Oct-05	31.9		0.05			
			06-Sep-06	43.1		0.06			
Willow Island	132.4		01-Sep-05	0	NH3-N (mg/L)		0.1	0.09	0.09
			15-Sep-05	0			0.06	0.05	0.05
			26-Oct-05	0			0.07	0.07	0.09
			06-Sep-06	0			0.06	0.06	0.06
Willow Island	138.9		01-Sep-05	0	NH3-N (mg/L)		0.09	0.09	0.09
			15-Sep-05	0			0.04	0.04	0.03
			26-Oct-05	0			0.07	0.06	0.06
			06-Sep-06	0			0.06	0.06	0.06
Willow Island	145.2		01-Sep-05	0	NH3-N (mg/L)		0.09	0.08	0.1
			15-Sep-05	0			0.06	0.03	0.06
			26-Oct-05	0			0.05	0.04	0.05
			06-Sep-06	0			0.08	0.06	0.07
Willow Island	150.8		01-Sep-05	0	NH3-N (mg/L)		0.1	0.1	0.1
			15-Sep-05	0			0.05	0.06	0.04
			26-Oct-05	0			0.05	0.05	0.05
			06-Sep-06	0			0.08	0.07	0.06
Willow Island	157.4		01-Sep-05	0	NH3-N (mg/L)		0.1	0.1	0.11
			15-Sep-05	0			0.05	0.06	0.06
			26-Oct-05	0			0.06	0.06	0.05
			06-Sep-06	0			0.07	0.06	0.06
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	NH3-N (mg/L)	0.1			
			15-Sep-05	11.9		0.07			
			26-Oct-05	52.5		0.05			
			06-Sep-06	42.9		0.08			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	NH3-N (mg/L)	0.04			
			07-Aug-07	31.8		0.07			
Newburgh	725		09-May-06	0	NH3-N (mg/L)		0.04	0.04	0.04
			07-Aug-07	0			0.07	0.05	0.05
Newburgh	736.7		09-May-06	0	NH3-N (mg/L)		0.04	0.04	0.04
			07-Aug-07	0			<0.03	0.05	0.05
Newburgh	747.3		09-May-06	0	NH3-N (mg/L)		<0.03	<0.03	<0.03
			07-Aug-07	0			<0.03	<0.03	<0.03

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Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Newburgh	754.9		09-May-06	0	NH3-N (mg/L)		<0.03	<0.03	<0.03
			07-Aug-07	0			<0.03	<0.03	0.03
Newburgh	762.3		10-May-06	0	NH3-N (mg/L)		<0.03	<0.03	<0.03
			08-Aug-07	0			<0.03	0.03	0.04
Newburgh	772		10-May-06	0	NH3-N (mg/L)		<0.03	<0.03	<0.03
			08-Aug-07	0			<0.03	<0.03	0.03
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	NH3-N (mg/L)	<0.03			
			08-Aug-07	52.7		0.03			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Ni (ug/L)	1.81			
			14-Sep-05	5.4		2.19			
			25-Oct-05	12.3		2.88			
			02-Nov-06	77.7		2.67			
Montgomery	19.3		03-Aug-05	0	Ni (ug/L)		1.82	1.8	1.75
			14-Sep-05	0			1.87	1.84	1.8
			25-Oct-05	0			2.75	2.66	2.66
			02-Nov-06	0			2.91	2.6	2.79
Montgomery	23.2		03-Aug-05	0	Ni (ug/L)		1.82	1.79	1.77
			14-Sep-05	0			1.41	1.48	1.39
			25-Oct-05	0			2.79	2.66	2.6
			02-Nov-06	0			2.8	2.86	2.33
Montgomery	27.6		03-Aug-05	0	Ni (ug/L)		1.6	1.95	1.72
			14-Sep-05	0			1.74	1.93	1.68
			25-Oct-05	0			2.56	2.71	2.51
			02-Nov-06	0			2.47	2.47	2.02
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Ni (ug/L)	1.64			
			14-Sep-05	5.6		1.56			
			25-Oct-05	14.5		2.51			
			02-Nov-06	89.4		2.62			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Ni (ug/L)	2.42			
			15-Sep-05	5.9		2.6			
			26-Oct-05	31.9		2.07			
			06-Sep-06	43.1		1.4			
Willow Island	132.4		01-Sep-05	0	Ni (ug/L)		2.59	2.27	2.43
			15-Sep-05	0			2.46	2.78	2.19
			26-Oct-05	0			2.17	2.13	1.99
			06-Sep-06	0			1.35	1.28	1.33
Willow Island	138.9		01-Sep-05	0	Ni (ug/L)		2.38	2.57	2.46
			15-Sep-05	0			2.33	2.46	2.69
			26-Oct-05	0			2.08	2.13	2.24
			06-Sep-06	0			1.39	1.3	1.39
Willow Island	145.2		01-Sep-05	0	Ni (ug/L)		2.45	2.37	2.66
			15-Sep-05	0			2.33	2.43	2.45
			26-Oct-05	0			2.4	2.44	2.14
			06-Sep-06	0			1.51	1.51	1.44
Willow Island	150.8		01-Sep-05	0	Ni (ug/L)		2.07	2.46	2.21
			15-Sep-05	0			2.58	2.28	2.38
			26-Oct-05	0			2.17	1.95	2.29
			06-Sep-06	0			1.5	1.47	1.62
Willow Island	157.4		01-Sep-05	0	Ni (ug/L)		2.4	2.43	2.37
			15-Sep-05	0			2	2.46	2.27
			26-Oct-05	0			2.35	2.13	2.35
			06-Sep-06	0			1.49	1.52	1.47
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Ni (ug/L)	2.3			
			15-Sep-05	11.9		2.18			
			26-Oct-05	52.5		2.54			
			06-Sep-06	42.9		1.67			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Ni (ug/L)	1.09			
			07-Aug-07	31.8		2.08			
Newburgh	725		09-May-06	0	Ni (ug/L)		1.2	1.19	0.95
			07-Aug-07	0			2.15	1.73	2.28
Newburgh	736.7		09-May-06	0	Ni (ug/L)		1.19	1.16	1.1
			07-Aug-07	0			2.09	1.88	2.04
Newburgh	747.3		09-May-06	0	Ni (ug/L)		1.14	1.2	1.31
			07-Aug-07	0			1.86	1.74	1.76
Newburgh	754.9		09-May-06	0	Ni (ug/L)		1.12	1.05	1.11
			07-Aug-07	0			1.5	2.06	1.88
Newburgh	762.3		10-May-06	0	Ni (ug/L)		1.17	0.99	1.18
			08-Aug-07	0			1.88	1.69	2.02

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Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Newburgh	772		10-May-06	0	Ni (ug/L)		1.16	1.25	1.13
			08-Aug-07	0			1.51	1.86	1.63
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Ni (ug/L)	1.27			
			08-Aug-07	52.7		1.95			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	NO2-NO3-N (mg/L)	0.699			
			14-Sep-05	5.4		0.745			
			25-Oct-05	12.3		0.922			
			02-Nov-06	77.7		0.595			
Montgomery	19.3		03-Aug-05	0	NO2-NO3-N (mg/L)		0.671	0.644	0.65
			14-Sep-05	0			0.64	0.68	0.662
			25-Oct-05	0			1.01	0.995	1.01
			02-Nov-06	0			0.566	0.512	0.593
Montgomery	23.2		03-Aug-05	0	NO2-NO3-N (mg/L)		0.631	0.624	0.588
			14-Sep-05	0			0.572	0.624	0.559
			25-Oct-05	0			0.986	1.01	1.01
			02-Nov-06	0			0.611	0.6	0.636
Montgomery	27.6		03-Aug-05	0	NO2-NO3-N (mg/L)		0.645	0.611	0.647
			14-Sep-05	0			0.573	0.814	0.877
			25-Oct-05	0			1.11	1.04	1.05
			02-Nov-06	0			0.61	0.606	0.702
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	NO2-NO3-N (mg/L)	0.593			
			14-Sep-05	5.6		0.646			
			25-Oct-05	14.5		1.11			
			02-Nov-06	89.4		0.597			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	NO2-NO3-N (mg/L)	0.902			
			15-Sep-05	5.9		1.11			
			26-Oct-05	31.9		0.895			
			06-Sep-06	43.1		0.535			
Willow Island	132.4		01-Sep-05	0	NO2-NO3-N (mg/L)		0.957	0.959	0.973
			15-Sep-05	0			1.04	1.05	1.07
			26-Oct-05	0			0.896	0.879	0.902
			06-Sep-06	0			0.489	0.526	0.543
Willow Island	138.9		01-Sep-05	0	NO2-NO3-N (mg/L)		0.901	0.925	0.932
			15-Sep-05	0			1.03	1.04	1.03
			26-Oct-05	0			0.918	0.904	0.955
			06-Sep-06	0			0.591	0.543	0.566
Willow Island	145.2		01-Sep-05	0	NO2-NO3-N (mg/L)		0.855	0.885	0.883
			15-Sep-05	0			1.05	1.03	1.06
			26-Oct-05	0			1.02	0.991	1.04
			06-Sep-06	0			0.599	0.522	0.566
Willow Island	150.8		01-Sep-05	0	NO2-NO3-N (mg/L)		0.832	0.833	0.803
			15-Sep-05	0			1.04	1.05	1.03
			26-Oct-05	0			1.02	1.05	1.03
			06-Sep-06	0			0.667	0.572	0.636
Willow Island	157.4		01-Sep-05	0	NO2-NO3-N (mg/L)		0.762	0.809	0.851
			15-Sep-05	0			1.03	1.06	1.07
			26-Oct-05	0			1.02	1.02	1.07
			06-Sep-06	0			0.724	0.732	0.696
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	NO2-NO3-N (mg/L)	0.718			
			15-Sep-05	11.9		0.644			
			26-Oct-05	52.5		1.02			
			06-Sep-06	42.9		0.765			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	NO2-NO3-N (mg/L)	0.812			
			07-Aug-07	31.8		0.738			
Newburgh	725		09-May-06	0	NO2-NO3-N (mg/L)		0.814	0.819	0.824
			07-Aug-07	0			0.839	0.836	0.785
Newburgh	736.7		09-May-06	0	NO2-NO3-N (mg/L)		0.818	0.824	0.829
			07-Aug-07	0			0.731	0.794	0.789
Newburgh	747.3		09-May-06	0	NO2-NO3-N (mg/L)		0.826	0.833	0.836
			07-Aug-07	0			0.65	0.686	0.777
Newburgh	754.9		09-May-06	0	NO2-NO3-N (mg/L)		0.787	0.799	0.971
			07-Aug-07	0			0.806	0.84	1.01
Newburgh	762.3		10-May-06	0	NO2-NO3-N (mg/L)		0.848	0.9	1.01
			08-Aug-07	0			0.826	0.896	0.919
Newburgh	772		10-May-06	0	NO2-NO3-N (mg/L)		0.852	0.848	0.932
			08-Aug-07	0			1.16	1.17	1.2
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	NO2-NO3-N (mg/L)	1.01			
			08-Aug-07	52.7		0.988			

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Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Pb (ug/L)	<0.1			
			14-Sep-05	5.4		<0.1			
			25-Oct-05	12.3		0.17			
			02-Nov-06	77.7		0.16			
Montgomery	19.3		03-Aug-05	0	Pb (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	0.11	<0.1
Montgomery	23.2		03-Aug-05	0	Pb (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	0.12	<0.1
Montgomery	27.6		03-Aug-05	0	Pb (ug/L)		<0.1	0.18	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	<0.1	<0.1
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Pb (ug/L)	<0.1			
			14-Sep-05	5.6		<0.1			
			25-Oct-05	14.5		<0.1			
			02-Nov-06	89.4		0.11			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Pb (ug/L)	0.1			
			15-Sep-05	5.9		<0.1			
			26-Oct-05	31.9		<0.1			
			06-Sep-06	43.1		<0.1			
Willow Island	132.4		01-Sep-05	0	Pb (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	138.9		01-Sep-05	0	Pb (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	145.2		01-Sep-05	0	Pb (ug/L)		<0.1	0.11	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	150.8		01-Sep-05	0	Pb (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	157.4		01-Sep-05	0	Pb (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Pb (ug/L)	<0.1			
			15-Sep-05	11.9		<0.1			
			26-Oct-05	52.5		<0.1			
			06-Sep-06	42.9		<0.1			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Pb (ug/L)	<0.1			
			07-Aug-07	31.8		<0.1			
Newburgh	725		09-May-06	0	Pb (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	736.7		09-May-06	0	Pb (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	747.3		09-May-06	0	Pb (ug/L)		<0.1	<0.1	0.14
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	754.9		09-May-06	0	Pb (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	762.3		10-May-06	0	Pb (ug/L)		<0.1	<0.1	<0.1
			08-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	772		10-May-06	0	Pb (ug/L)		<0.1	<0.1	<0.1
			08-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Pb (ug/L)	<0.1			
			08-Aug-07	52.7		<0.1			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Phenols (ug/L)	<5			
			14-Sep-05	5.4		<5			
			25-Oct-05	12.3		<5			
			02-Nov-06	77.7		<5			

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Montgomery	19.3		03-Aug-05	0	Phenols (ug/L)		<5	<5	<5
			14-Sep-05	0			<5	<5	<5
			25-Oct-05	0			<5	<5	<5
			02-Nov-06	0			<5	<5	<5
Montgomery	23.2		03-Aug-05	0	Phenols (ug/L)		<5	<5	<5
			14-Sep-05	0			<5	<5	<5
			25-Oct-05	0			<5	<5	<5
			02-Nov-06	0			12.5	6	<5
Montgomery	27.6		03-Aug-05	0	Phenols (ug/L)		<5	<5	<5
			14-Sep-05	0			<5	<5	<5
			25-Oct-05	0			<5	<5	<5
			02-Nov-06	0			<5	<5	<5
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Phenols (ug/L)	<5			
			14-Sep-05	5.6		<5			
			25-Oct-05	14.5		<5			
			02-Nov-06	89.4		10			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Phenols (ug/L)	<5			
			15-Sep-05	5.9		<5			
			26-Oct-05	31.9		<5			
			06-Sep-06	43.1		<5			
Willow Island	132.4		01-Sep-05	0	Phenols (ug/L)		<5	<5	<5
			15-Sep-05	0			<5	<5	<5
			26-Oct-05	0			<5	<5	<5
			06-Sep-06	0			<5	<5	<5
Willow Island	138.9		01-Sep-05	0	Phenols (ug/L)		<5	<5	<5
			15-Sep-05	0			<5	<5	R
			26-Oct-05	0			<5	<5	<5
			06-Sep-06	0			<5	<5	<5
Willow Island	145.2		01-Sep-05	0	Phenols (ug/L)		<5	<5	<5
			15-Sep-05	0			<5	<5	<5
			26-Oct-05	0			<5	<5	<5
			06-Sep-06	0			<5	<5	<5
Willow Island	150.8		01-Sep-05	0	Phenols (ug/L)		<5	<5	<5
			15-Sep-05	0			<5	<5	R
			26-Oct-05	0			<5	<5	<5
			06-Sep-06	0			<5	<5	<5
Willow Island	157.4		01-Sep-05	0	Phenols (ug/L)		<5	<5	<5
			15-Sep-05	0			<5	<5	<5
			26-Oct-05	0			<5	<5	<5
			06-Sep-06	0			<5	<5	<5
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Phenols (ug/L)	<5			
			15-Sep-05	11.9		R			
			26-Oct-05	52.5		<5			
			06-Sep-06	42.9		<5			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Phenols (ug/L)	<5			
			07-Aug-07	31.8		<5			
Newburgh	725		09-May-06	0	Phenols (ug/L)		<5	<5	<5
			07-Aug-07	0			<5	<5	<5
Newburgh	736.7		09-May-06	0	Phenols (ug/L)		<5	<5	<5
			07-Aug-07	0			<5	<5	<5
Newburgh	747.3		09-May-06	0	Phenols (ug/L)		<5	<5	<5
			07-Aug-07	0			<5	<5	<5
Newburgh	754.9		09-May-06	0	Phenols (ug/L)		<5	<5	<5
			07-Aug-07	0			<5	<5	<5
Newburgh	762.3		10-May-06	0	Phenols (ug/L)		<5	<5	<5
			08-Aug-07	0			<5	<5	<5
Newburgh	772		10-May-06	0	Phenols (ug/L)		<5	<5	<5
			08-Aug-07	0			<5	<5	<5
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Phenols (ug/L)	<5			
			08-Aug-07	52.7		<5			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Sb (ug/L)	<0.5			
			14-Sep-05	5.4		<0.5			
			25-Oct-05	12.3		<0.5			
			02-Nov-06	77.7		<0.5			
Montgomery	19.3		03-Aug-05	0	Sb (ug/L)		<0.5	<0.5	<0.5
			14-Sep-05	0			<0.5	<0.5	<0.5
			25-Oct-05	0			<0.5	<0.5	<0.5
			02-Nov-06	0			<0.5	<0.5	<0.5

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Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Montgomery	23.2		03-Aug-05	0	Sb (ug/L)		<0.5	<0.5	<0.5
			14-Sep-05	0			<0.5	<0.5	<0.5
			25-Oct-05	0			<0.5	<0.5	<0.5
			02-Nov-06	0			<0.5	<0.5	<0.5
Montgomery	27.6		03-Aug-05	0	Sb (ug/L)		<0.5	<0.5	<0.5
			14-Sep-05	0			<0.5	<0.5	<0.5
			25-Oct-05	0			<0.5	<0.5	<0.5
			02-Nov-06	0			<0.5	<0.5	<0.5
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Sb (ug/L)	<0.5			
			14-Sep-05	5.6		<0.5			
			25-Oct-05	14.5		<0.5			
			02-Nov-06	89.4		<0.5			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Sb (ug/L)	<0.5			
			15-Sep-05	5.9		<0.5			
			26-Oct-05	31.9		<0.5			
			06-Sep-06	43.1		<0.5			
Willow Island	132.4		01-Sep-05	0	Sb (ug/L)		<0.5	<0.5	<0.5
			15-Sep-05	0			<0.5	<0.5	<0.5
			26-Oct-05	0			<0.5	<0.5	<0.5
			06-Sep-06	0			<0.5	<0.5	<0.5
Willow Island	138.9		01-Sep-05	0	Sb (ug/L)		<0.5	<0.5	<0.5
			15-Sep-05	0			<0.5	<0.5	<0.5
			26-Oct-05	0			<0.5	<0.5	<0.5
			06-Sep-06	0			<0.5	<0.5	<0.5
Willow Island	145.2		01-Sep-05	0	Sb (ug/L)		<0.5	<0.5	<0.5
			15-Sep-05	0			<0.5	<0.5	<0.5
			26-Oct-05	0			<0.5	<0.5	<0.5
			06-Sep-06	0			<0.5	<0.5	<0.5
Willow Island	150.8		01-Sep-05	0	Sb (ug/L)		<0.5	<0.5	<0.5
			15-Sep-05	0			<0.5	<0.5	<0.5
			26-Oct-05	0			<0.5	<0.5	<0.5
			06-Sep-06	0			<0.5	<0.5	<0.5
Willow Island	157.4		01-Sep-05	0	Sb (ug/L)		<0.5	<0.5	<0.5
			15-Sep-05	0			<0.5	<0.5	<0.5
			26-Oct-05	0			<0.5	<0.5	<0.5
			06-Sep-06	0			<0.5	<0.5	<0.5
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Sb (ug/L)	<0.5			
			15-Sep-05	11.9		<0.5			
			26-Oct-05	52.5		<0.5			
			06-Sep-06	42.9		<0.5			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Sb (ug/L)	<0.5			
			07-Aug-07	31.8		<0.5			
Newburgh	725		09-May-06	0	Sb (ug/L)		<0.5	<0.5	<0.5
			07-Aug-07	0			<0.5	<0.5	<0.5
Newburgh	736.7		09-May-06	0	Sb (ug/L)		<0.5	<0.5	<0.5
			07-Aug-07	0			<0.5	<0.5	<0.5
Newburgh	747.3		09-May-06	0	Sb (ug/L)		<0.5	<0.5	<0.5
			07-Aug-07	0			<0.5	<0.5	<0.5
Newburgh	754.9		09-May-06	0	Sb (ug/L)		<0.5	<0.5	<0.5
			07-Aug-07	0			<0.5	<0.5	<0.5
Newburgh	762.3		10-May-06	0	Sb (ug/L)		<0.5	<0.5	<0.5
			08-Aug-07	0			<0.5	<0.5	<0.5
Newburgh	772		10-May-06	0	Sb (ug/L)		<0.5	<0.5	<0.5
			08-Aug-07	0			<0.5	<0.5	<0.5
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Sb (ug/L)	<0.5			
			08-Aug-07	52.7		<0.5			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Se (ug/L)	0.81			
			14-Sep-05	5.4		0.73			
			25-Oct-05	12.3		0.96			
			02-Nov-06	77.7		<0.5			
Montgomery	19.3		03-Aug-05	0	Se (ug/L)		0.79	0.78	0.67
			14-Sep-05	0			0.54	0.72	0.8
			25-Oct-05	0			0.82	0.81	0.79
			02-Nov-06	0			<0.5	<0.5	<0.5
Montgomery	23.2		03-Aug-05	0	Se (ug/L)		0.72	0.66	0.73
			14-Sep-05	0			0.62	0.7	0.65
			25-Oct-05	0			0.72	0.84	0.83
			02-Nov-06	0			<0.5	<0.5	<0.5

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Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Montgomery	27.6		03-Aug-05	0	Se (ug/L)		0.61	0.69	0.62
			14-Sep-05	0			0.7	0.85	0.81
			25-Oct-05	0			0.79	0.79	0.78
			02-Nov-06	0			<0.5	<0.5	<0.5
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Se (ug/L)	0.92			
			14-Sep-05	5.6		0.77			
			25-Oct-05	14.5		0.82			
			02-Nov-06	89.4		<0.5			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Se (ug/L)	0.81			
			15-Sep-05	5.9		0.96			
			26-Oct-05	31.9		0.93			
			06-Sep-06	43.1		0.75			
Willow Island	132.4		01-Sep-05	0	Se (ug/L)		0.84	0.99	0.9
			15-Sep-05	0			1.01	1.27	0.95
			26-Oct-05	0			0.84	0.74	0.93
			06-Sep-06	0			<0.5	0.97	0.91
Willow Island	138.9		01-Sep-05	0	Se (ug/L)		0.89	0.97	1.06
			15-Sep-05	0			1.06	0.83	1.05
			26-Oct-05	0			0.92	1	1.22
			06-Sep-06	0			<0.5	<0.5	0.58
Willow Island	145.2		01-Sep-05	0	Se (ug/L)		1.09	1.07	0.88
			15-Sep-05	0			0.95	1.07	1.06
			26-Oct-05	0			0.84	0.93	0.74
			06-Sep-06	0			0.88	0.9	0.78
Willow Island	150.8		01-Sep-05	0	Se (ug/L)		0.88	0.98	1.08
			15-Sep-05	0			1.16	1.18	1
			26-Oct-05	0			1.03	0.92	1.03
			06-Sep-06	0			<0.5	0.99	<0.5
Willow Island	157.4		01-Sep-05	0	Se (ug/L)		0.98	1.1	1.05
			15-Sep-05	0			0.94	1.18	1.15
			26-Oct-05	0			0.92	0.92	0.84
			06-Sep-06	0			0.7	0.73	0.82
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Se (ug/L)	0.93			
			15-Sep-05	11.9		0.88			
			26-Oct-05	52.5		0.9			
			06-Sep-06	42.9		0.96			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Se (ug/L)	0.61			
			07-Aug-07	31.8		0.93			
Newburgh	725		09-May-06	0	Se (ug/L)		0.56	<0.5	0.51
			07-Aug-07	0			0.99	0.81	0.9
Newburgh	736.7		09-May-06	0	Se (ug/L)		0.52	<0.5	<0.5
			07-Aug-07	0			0.83	0.92	0.98
Newburgh	747.3		09-May-06	0	Se (ug/L)		0.74	0.7	<0.5
			07-Aug-07	0			0.97	0.83	0.89
Newburgh	754.9		09-May-06	0	Se (ug/L)		<0.5	<0.5	0.51
			07-Aug-07	0			0.71	0.86	0.9
Newburgh	762.3		10-May-06	0	Se (ug/L)		0.65	0.53	0.54
			08-Aug-07	0			0.97	0.76	0.85
Newburgh	772		10-May-06	0	Se (ug/L)		<0.5	0.59	0.77
			08-Aug-07	0			0.7	0.82	0.85
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Se (ug/L)	0.54			
			08-Aug-07	52.7		0.99			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	SO4 (mg/L)	95			
			14-Sep-05	5.4		110			
			25-Oct-05	12.3		135			
			02-Nov-06	77.7		54			
Montgomery	19.3		03-Aug-05	0	SO4 (mg/L)		130	140	120
			14-Sep-05	0			110	90	105
			25-Oct-05	0			135	135	135
			02-Nov-06	0			50	42	38
Montgomery	23.2		03-Aug-05	0	SO4 (mg/L)		120	120	110
			14-Sep-05	0			85	100	85
			25-Oct-05	0			130	135	135
			02-Nov-06	0			48	42	40
Montgomery	27.6		03-Aug-05	0	SO4 (mg/L)		95	95	95
			14-Sep-05	0			90	105	100
			25-Oct-05	0			125	130	130
			02-Nov-06	0			54	48	42

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Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	SO4 (mg/L)	100			
			14-Sep-05	5.6		90			
			25-Oct-05	14.5		125			
			02-Nov-06	89.4		50			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	SO4 (mg/L)	135			
			15-Sep-05	5.9		155			
			26-Oct-05	31.9		115			
			06-Sep-06	43.1		76			
Willow Island	132.4		01-Sep-05	0	SO4 (mg/L)		130	125	125
			15-Sep-05	0			100	100	160
			26-Oct-05	0			115	120	115
			06-Sep-06	0			72	72	74
Willow Island	138.9		01-Sep-05	0	SO4 (mg/L)		145	130	130
			15-Sep-05	0			160	170	165
			26-Oct-05	0			115	115	
			06-Sep-06	0			78	74	78
Willow Island	145.2		01-Sep-05	0	SO4 (mg/L)		135	125	135
			15-Sep-05	0			150	140	150
			26-Oct-05	0			125	120	125
			06-Sep-06	0			84	78	82
Willow Island	150.8		01-Sep-05	0	SO4 (mg/L)		145	150	135
			15-Sep-05	0			160	150	145
			26-Oct-05	0			130	125	125
			06-Sep-06	0			86	84	88
Willow Island	157.4		01-Sep-05	0	SO4 (mg/L)		120	125	120
			15-Sep-05	0			135	160	145
			26-Oct-05	0			125	125	115
			06-Sep-06	0			88	88	88
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	SO4 (mg/L)	130			
			15-Sep-05	11.9		100			
			26-Oct-05	52.5		120			
			06-Sep-06	42.9		88			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	SO4 (mg/L)	64			
			07-Aug-07	31.8		102			
Newburgh	725		09-May-06	0	SO4 (mg/L)		62	60	62
			07-Aug-07	0			98	106	100
Newburgh	736.7		09-May-06	0	SO4 (mg/L)		60	64	64
			07-Aug-07	0			102	86	104
Newburgh	747.3		09-May-06	0	SO4 (mg/L)		64	64	64
			07-Aug-07	0			96	86	94
Newburgh	754.9		09-May-06	0	SO4 (mg/L)		62	66	64
			07-Aug-07	0			86	90	102
Newburgh	762.3		10-May-06	0	SO4 (mg/L)		64	66	64
			08-Aug-07	0			86	96	84
Newburgh	772		10-May-06	0	SO4 (mg/L)		62	64	64
			08-Aug-07	0			86	94	88
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	SO4 (mg/L)	74			
			08-Aug-07	52.7		88			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	TKN (mg/L)	1.22			
			14-Sep-05	5.4		0.94			
			25-Oct-05	12.3		0.603			
			02-Nov-06	77.7		0.48			
Montgomery	19.3		03-Aug-05	0	TKN (mg/L)		1.23	1.29	1.18
			14-Sep-05	0			0.762	0.718	0.776
			25-Oct-05	0			0.701	1.3	0.797
			02-Nov-06	0			0.675	0.566	0.605
Montgomery	23.2		03-Aug-05	0	TKN (mg/L)		1.1	1.28	1.23
			14-Sep-05	0			0.819	0.78	0.805
			25-Oct-05	0			0.777	0.682	0.696
			02-Nov-06	0			0.622	0.529	0.63
Montgomery	27.6		03-Aug-05	0	TKN (mg/L)		1.87	1.25	1.24
			14-Sep-05	0			0.838	<0.2	1.04
			25-Oct-05	0			0.745	0.698	0.692
			02-Nov-06	0			0.571	0.578	0.559
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	TKN (mg/L)	1.29			
			14-Sep-05	5.6		0.839			
			25-Oct-05	14.5		0.718			
			02-Nov-06	89.4		0.58			

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	TKN (mg/L)	0.205			
			15-Sep-05	5.9		0.655			
			26-Oct-05	31.9		0.662			
			06-Sep-06	43.1		0.471			
Willow Island	132.4		01-Sep-05	0	TKN (mg/L)		0.299	0.326	0.298
			15-Sep-05	0			0.752	0.743	0.778
			26-Oct-05	0			0.699	0.87	0.939
			06-Sep-06	0			0.517	0.541	0.555
Willow Island	138.9		01-Sep-05	0	TKN (mg/L)		0.361	0.323	0.259
			15-Sep-05	0			0.664	0.799	0.72
			26-Oct-05	0			0.714	0.711	0.756
			06-Sep-06	0			0.45	0.504	0.509
Willow Island	145.2		01-Sep-05	0	TKN (mg/L)		0.296	0.281	0.365
			15-Sep-05	0			0.762	0.665	0.746
			26-Oct-05	0			0.73	0.762	0.44
			06-Sep-06	0			0.484	0.478	0.409
Willow Island	150.8		01-Sep-05	0	TKN (mg/L)		<0.2	0.345	0.215
			15-Sep-05	0			0.764	0.546	0.818
			26-Oct-05	0			0.298	0.361	0.328
			06-Sep-06	0			0.48	0.486	0.463
Willow Island	157.4		01-Sep-05	0	TKN (mg/L)		0.231	0.21	0.302
			15-Sep-05	0			0.697	0.664	0.689
			26-Oct-05	0			0.484	0.511	0.289
			06-Sep-06	0			0.578	0.439	0.441
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	TKN (mg/L)	0.271			
			15-Sep-05	11.9		0.43			
			26-Oct-05	52.5		0.766			
			06-Sep-06	42.9		0.546			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	TKN (mg/L)	0.273			
			07-Aug-07	31.8		0.714			
Newburgh	725		09-May-06	0	TKN (mg/L)		0.256	0.278	0.269
			07-Aug-07	0			0.653	0.645	0.599
Newburgh	736.7		09-May-06	0	TKN (mg/L)		0.265	0.31	0.428
			07-Aug-07	0			0.648	0.809	0.612
Newburgh	747.3		09-May-06	0	TKN (mg/L)		0.295	0.205	<0.2
			07-Aug-07	0			0.583	0.486	0.509
Newburgh	754.9		09-May-06	0	TKN (mg/L)		0.215	0.276	0.236
			07-Aug-07	0			0.63	0.59	0.435
Newburgh	762.3		10-May-06	0	TKN (mg/L)		0.312	0.293	0.323
			08-Aug-07	0			0.472	0.304	0.37
Newburgh	772		10-May-06	0	TKN (mg/L)		0.24	0.2	0.26
			08-Aug-07	0			0.5	0.534	0.542
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	TKN (mg/L)	0.231			
			08-Aug-07	52.7		0.49			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Tl (ug/L)	<0.1			
			14-Sep-05	5.4		<0.1			
			25-Oct-05	12.3		0.12			
			02-Nov-06	77.7		<0.1			
Montgomery	19.3		03-Aug-05	0	Tl (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	<0.1	<0.1
Montgomery	23.2		03-Aug-05	0	Tl (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	<0.1	<0.1
Montgomery	27.6		03-Aug-05	0	Tl (ug/L)		<0.1	<0.1	<0.1
			14-Sep-05	0			<0.1	<0.1	<0.1
			25-Oct-05	0			<0.1	<0.1	<0.1
			02-Nov-06	0			<0.1	<0.1	<0.1
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Tl (ug/L)	<0.1			
			14-Sep-05	5.6		<0.1			
			25-Oct-05	14.5		<0.1			
			02-Nov-06	89.4		<0.1			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Tl (ug/L)	<0.1			
			15-Sep-05	5.9		<0.1			
			26-Oct-05	31.9		<0.1			
			06-Sep-06	43.1		<0.1			

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	132.4		01-Sep-05	0	Tl (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	138.9		01-Sep-05	0	Tl (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	145.2		01-Sep-05	0	Tl (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	150.8		01-Sep-05	0	Tl (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	157.4		01-Sep-05	0	Tl (ug/L)		<0.1	<0.1	<0.1
			15-Sep-05	0			<0.1	<0.1	<0.1
			26-Oct-05	0			<0.1	<0.1	<0.1
			06-Sep-06	0			<0.1	<0.1	<0.1
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Tl (ug/L)	<0.1			
			15-Sep-05	11.9		<0.1			
			26-Oct-05	52.5		<0.1			
			06-Sep-06	42.9		<0.1			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Tl (ug/L)	<0.1			
			07-Aug-07	31.8		<0.1			
Newburgh	725		09-May-06	0	Tl (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	736.7		09-May-06	0	Tl (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	747.3		09-May-06	0	Tl (ug/L)		<0.1	<0.1	0.13
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	754.9		09-May-06	0	Tl (ug/L)		<0.1	<0.1	<0.1
			07-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	762.3		10-May-06	0	Tl (ug/L)		<0.1	<0.1	<0.1
			08-Aug-07	0			<0.1	<0.1	<0.1
Newburgh	772		10-May-06	0	Tl (ug/L)		<0.1	<0.1	<0.1
			08-Aug-07	0			<0.1	<0.1	0.11
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Tl (ug/L)	<0.1			
			08-Aug-07	52.7		<0.1			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	TOC (mg/L)	6.88			
			14-Sep-05	5.4		2.93			
			25-Oct-05	12.3		3.57			
			02-Nov-06	77.7		2.73			
Montgomery	19.3		03-Aug-05	0	TOC (mg/L)		7.61	7.31	6.98
			14-Sep-05	0			2.66	2.49	2.43
			25-Oct-05	0			3.39	3.22	3.33
			02-Nov-06	0			2.8	2.93	2.96
Montgomery	23.2		03-Aug-05	0	TOC (mg/L)		7.75	7.47	7.45
			14-Sep-05	0			2.42	2.58	2.61
			25-Oct-05	0			3.61	3.64	3.62
			02-Nov-06	0			3	3.07	2.88
Montgomery	27.6		03-Aug-05	0	TOC (mg/L)		8.49	8.59	8.51
			14-Sep-05	0			2.88	3.21	3.6
			25-Oct-05	0			3.73	3.55	3.7
			02-Nov-06	0			2.77	2.92	3.57
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	TOC (mg/L)	8.49			
			14-Sep-05	5.6		3.03			
			25-Oct-05	14.5		3.72			
			02-Nov-06	89.4		3.06			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	TOC (mg/L)	7.84			
			15-Sep-05	5.9		2.6			
			26-Oct-05	31.9		2.9			
			06-Sep-06	43.1		2.41			
Willow Island	132.4		01-Sep-05	0	TOC (mg/L)		8.47	7.59	7.42
			15-Sep-05	0			2.55	2.8	2.32
			26-Oct-05	0			3.03	3.11	3.07
			06-Sep-06	0			3.23	3.02	2.92

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	138.9		01-Sep-05	0	TOC (mg/L)		7.53	7.31	6.9
			15-Sep-05	0			2.32	2.97	2.86
			26-Oct-05	0			2.76	2.85	2.9
			06-Sep-06	0			2.57	2.88	2.75
Willow Island	145.2		01-Sep-05	0	TOC (mg/L)		7.22	7.57	7.02
			15-Sep-05	0			3.01	2.77	2.95
			26-Oct-05	0			2.87	2.82	2.81
			06-Sep-06	0			3.01	2.97	2.67
Willow Island	150.8		01-Sep-05	0	TOC (mg/L)		6.69	6.81	7
			15-Sep-05	0			3.05	2.84	2.95
			26-Oct-05	0			2.92	2.76	2.98
			06-Sep-06	0			2.95	2.92	2.8
Willow Island	157.4		01-Sep-05	0	TOC (mg/L)		6.86	7.28	7.67
			15-Sep-05	0			2.84	2.74	3.22
			26-Oct-05	0			3.19	3.33	3.42
			06-Sep-06	0			2.81	2.78	2.96
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	TOC (mg/L)	8.12			
			15-Sep-05	11.9		3.33			
			26-Oct-05	52.5		3.28			
			06-Sep-06	42.9		2.72			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	TOC (mg/L)	2.86			
			07-Aug-07	31.8		3.14			
Newburgh	725		09-May-06	0	TOC (mg/L)		2.91	2.57	2.81
			07-Aug-07	0			3.46	3.73	3.25
Newburgh	736.7		09-May-06	0	TOC (mg/L)		2.72	2.64	2.9
			07-Aug-07	0			3.59	3.57	3.46
Newburgh	747.3		09-May-06	0	TOC (mg/L)		2.85	2.51	2.46
			07-Aug-07	0			3.52	3.51	3.3
Newburgh	754.9		09-May-06	0	TOC (mg/L)		2.43	2.4	2.33
			07-Aug-07	0			3.6	3.87	3.73
Newburgh	762.3		10-May-06	0	TOC (mg/L)		2.4	2.14	2.38
			08-Aug-07	0			3.61	3.35	3.56
Newburgh	772		10-May-06	0	TOC (mg/L)		2.36	2.2	2.5
			08-Aug-07	0			3.36	3.49	3.83
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	TOC (mg/L)	2.5			
			08-Aug-07	52.7		3.53			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	TP (mg/L)	0.015			
			14-Sep-05	5.4		0.031			
			25-Oct-05	12.3		0.092			
			02-Nov-06	77.7		0.038			
Montgomery	19.3		03-Aug-05	0	TP (mg/L)		0.02	0.034	0.012
			14-Sep-05	0			0.019	0.023	0.023
			25-Oct-05	0			0.144	0.112	0.13
			02-Nov-06	0			0.041	0.044	0.051
Montgomery	23.2		03-Aug-05	0	TP (mg/L)		0.02	0.023	0.018
			14-Sep-05	0			0.032	0.025	0.03
			25-Oct-05	0			0.396	0.08	0.114
			02-Nov-06	0			0.043	0.054	0.048
Montgomery	27.6		03-Aug-05	0	TP (mg/L)		0.022	0.022	0.022
			14-Sep-05	0			0.102	0.043	0.055
			25-Oct-05	0			0.09	0.087	0.112
			02-Nov-06	0			0.045	0.038	0.047
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	TP (mg/L)	0.014			
			14-Sep-05	5.6		0.054			
			25-Oct-05	14.5		0.098			
			02-Nov-06	89.4		0.042			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	TP (mg/L)	0.151			
			15-Sep-05	5.9		0.033			
			26-Oct-05	31.9		0.238			
			06-Sep-06	43.1		0.039			
Willow Island	132.4		01-Sep-05	0	TP (mg/L)		0.08	0.073	0.098
			15-Sep-05	0			0.022	0.038	0.061
			26-Oct-05	0			0.098	0.087	0.154
			06-Sep-06	0			0.063	0.049	0.055
Willow Island	138.9		01-Sep-05	0	TP (mg/L)		0.048	0.057	0.069
			15-Sep-05	0			0.147	0.143	R
			26-Oct-05	0			0.086	0.146	0.073
			06-Sep-06	0			0.048	0.048	0.054

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Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	145.2		01-Sep-05	0	TP (mg/L)		0.401	0.045	0.1
			15-Sep-05	0			R	R	0.052
			26-Oct-05	0			0.073	0.097	0.078
			06-Sep-06	0			0.058	0.047	0.034
Willow Island	150.8		01-Sep-05	0	TP (mg/L)		0.057	0.053	0.037
			15-Sep-05	0			0.057		
			26-Oct-05	0			0.043	0.038	0.046
			06-Sep-06	0			0.073	0.054	0.041
Willow Island	157.4		01-Sep-05	0	TP (mg/L)		0.276	0.11	0.023
			15-Sep-05	0					
			26-Oct-05	0			0.04	0.052	0.087
			06-Sep-06	0			0.06	0.043	0.04
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	TP (mg/L)	0.015			
			15-Sep-05	11.9		0.04			
			26-Oct-05	52.5		0.185			
			06-Sep-06	42.9		0.067			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	TP (mg/L)	0.041			
			07-Aug-07	31.8		0.017			
Newburgh	725		09-May-06	0	TP (mg/L)		0.057	0.057	0.07
			07-Aug-07	0			0.022	0.024	0.018
Newburgh	736.7		09-May-06	0	TP (mg/L)		0.056	0.09	0.055
			07-Aug-07	0			0.026	0.023	0.012
Newburgh	747.3		09-May-06	0	TP (mg/L)		0.055	0.044	0.041
			07-Aug-07	0			0.047	<0.01	0.03
Newburgh	754.9		09-May-06	0	TP (mg/L)		0.06	0.061	0.048
			07-Aug-07	0			<0.01	0.019	<0.01
Newburgh	762.3		10-May-06	0	TP (mg/L)		0.076	0.052	0.051
			08-Aug-07	0			<0.01	<0.01	0.021
Newburgh	772		10-May-06	0	TP (mg/L)		0.096	0.074	0.032
			08-Aug-07	0			0.019	0.016	0.017
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	TP (mg/L)	0.06			
			08-Aug-07	52.7		<0.01			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	TSS (mg/L)	6.5			
			14-Sep-05	5.4		7.4			
			25-Oct-05	12.3		5.14			
			02-Nov-06	77.7		24.2			
Montgomery	19.3		03-Aug-05	0	TSS (mg/L)		9.25	7.5	7.8
			14-Sep-05	0			8.2	9.2	7.8
			25-Oct-05	0			15.4	13.8	17.6
			02-Nov-06	0			28.4	31	32.4
Montgomery	23.2		03-Aug-05	0	TSS (mg/L)		8	10.2	8.75
			14-Sep-05	0			9.2	10.2	8.2
			25-Oct-05	0			11.2	10.8	9.5
			02-Nov-06	0			29.4	33.4	37
Montgomery	27.6		03-Aug-05	0	TSS (mg/L)		8.4	8.2	9.25
			14-Sep-05	0			8	10	10.4
			25-Oct-05	0			11	12.2	9
			02-Nov-06	0			36	32.2	28.6
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	TSS (mg/L)	6.5			
			14-Sep-05	5.6		5.25			
			25-Oct-05	14.5		6.8			
			02-Nov-06	89.4		28.2			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	TSS (mg/L)	6.4			
			15-Sep-05	5.9		4.33			
			26-Oct-05	31.9		6			
			06-Sep-06	43.1		10.3			
Willow Island	132.4		01-Sep-05	0	TSS (mg/L)		6.4	6.8	5.6
			15-Sep-05	0			6.6	6.8	5.8
			26-Oct-05	0			19.2	24	17.7
			06-Sep-06	0			18	15.7	14
Willow Island	138.9		01-Sep-05	0	TSS (mg/L)		6	9.2	4.8
			15-Sep-05	0			5.4	7	5.8
			26-Oct-05	0			21.2	25.2	
			06-Sep-06	0			17.7	15.3	12.3
Willow Island	145.2		01-Sep-05	0	TSS (mg/L)		7.2	7.2	6.4
			15-Sep-05	0			6	5.8	5.4
			26-Oct-05	0			25.4	41.7	24
			06-Sep-06	0			15.3	15.7	9

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Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	150.8		01-Sep-05	0	TSS (mg/L)		4.4	4.8	4.8
			15-Sep-05	0			5.6	6.2	4.4
			26-Oct-05	0			19.6	14.3	19.6
			06-Sep-06	0			14.3	14.3	12.7
Willow Island	157.4		01-Sep-05	0	TSS (mg/L)		4.4	3.6	4.4
			15-Sep-05	0			6.8	6.8	5.2
			26-Oct-05	0			12.3	13.8	17.4
			06-Sep-06	0			14.7	12	9.67
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	TSS (mg/L)	4			
			15-Sep-05	11.9		6.6			
			26-Oct-05	52.5		8			
			06-Sep-06	42.9		21			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	TSS (mg/L)	5.25			
			07-Aug-07	31.8		4.2			
Newburgh	725		09-May-06	0	TSS (mg/L)		8.5	7.25	9.75
			07-Aug-07	0			3.8	6.4	5.6
Newburgh	736.7		09-May-06	0	TSS (mg/L)		7.75	6.5	7.25
			07-Aug-07	0			7.2	7.8	4.6
Newburgh	747.3		09-May-06	0	TSS (mg/L)		7.5	6.5	7
			07-Aug-07	0			5.2	4.4	3.4
Newburgh	754.9		09-May-06	0	TSS (mg/L)		6.5	6	7.25
			07-Aug-07	0			5	3.4	2.8
Newburgh	762.3		10-May-06	0	TSS (mg/L)		10	6.25	7
			08-Aug-07	0			3.2	3	3.8
Newburgh	772		10-May-06	0	TSS (mg/L)		11	7	5.5
			08-Aug-07	0			5.4	5.6	3.4
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	TSS (mg/L)	9.75			
			08-Aug-07	52.7		3			
Montgomery	13.3	Dashields L&D	03-Aug-05	5.6	Zn (ug/L)	1.08			
			14-Sep-05	5.4		<1			
			25-Oct-05	12.3		5.83			
			02-Nov-06	77.7		5.9			
Montgomery	19.3		03-Aug-05	0	Zn (ug/L)		<1	1.14	1.06
			14-Sep-05	0			1.12	<1	<1
			25-Oct-05	0			1.98	2.28	2.18
			02-Nov-06	0			2.42	1.42	1.66
Montgomery	23.2		03-Aug-05	0	Zn (ug/L)		8.41	1.03	1.33
			14-Sep-05	0			2.35	<1	2.32
			25-Oct-05	0			1.66	1.51	3.34
			02-Nov-06	0			1.17	1.59	1.16
Montgomery	27.6		03-Aug-05	0	Zn (ug/L)		1.5	1.81	<1
			14-Sep-05	0			1.22	4.94	1.28
			25-Oct-05	0			3.05	2.9	2.49
			02-Nov-06	0			2.24	1.06	1.48
Montgomery	31.7	Montgomery L&D	03-Aug-05	6.7	Zn (ug/L)	1.73			
			14-Sep-05	5.6		<1			
			25-Oct-05	14.5		1.92			
			02-Nov-06	89.4		<1			
Willow Island	126.4	Hannibal L&D	01-Sep-05	22.3	Zn (ug/L)	<1			
			15-Sep-05	5.9		1.16			
			26-Oct-05	31.9		4.37			
			06-Sep-06	43.1		<1			
Willow Island	132.4		01-Sep-05	0	Zn (ug/L)		2.26	1.65	1.82
			15-Sep-05	0			1.31	1.32	1.29
			26-Oct-05	0			2.11	1.51	1.43
			06-Sep-06	0			<1	1.06	<1
Willow Island	138.9		01-Sep-05	0	Zn (ug/L)		2.1	2.6	1.54
			15-Sep-05	0			1.32	1.27	1.41
			26-Oct-05	0			2.19	2.17	1.67
			06-Sep-06	0			<1	<1	1.09
Willow Island	145.2		01-Sep-05	0	Zn (ug/L)		1.55	1.84	2.41
			15-Sep-05	0			1.46	1.12	1.34
			26-Oct-05	0			1.56	1.32	1.33
			06-Sep-06	0			1.08	1.18	1.25
Willow Island	150.8		01-Sep-05	0	Zn (ug/L)		2.02	1.79	1.22
			15-Sep-05	0			1.25	4.15	1.39
			26-Oct-05	0			1.43	2.37	1.55
			06-Sep-06	0			1.31	1.12	<1

Appendix O: Integrated Sampling Stations 2005 - 2007

Pool Designation	River Mile	Lock and Dam Sites	Date	Flow (kcfs)	Parameter	Lockwall	LDB	MID	RDB
Willow Island	157.4		01-Sep-05	0	Zn (ug/L)		1.47	1.67	2.17
			15-Sep-05	0			1.13	1.45	1.33
			26-Oct-05	0			1.51	1.77	1.59
			06-Sep-06	0			1.2	1.04	<1
Willow Island	161.7	Willow Island L&D	01-Sep-05	22.6	Zn (ug/L)	1.58			
			15-Sep-05	11.9		<1			
			26-Oct-05	52.5		2.32			
			06-Sep-06	42.9		1.16			
Newburgh	720.7	Cannelton L&D	09-May-06	51.9	Zn (ug/L)	2.26			
			07-Aug-07	31.8		<1			
Newburgh	725		09-May-06	0	Zn (ug/L)		<1	1.09	<1
			07-Aug-07	0			<1	4.27	1.25
Newburgh	736.7		09-May-06	0	Zn (ug/L)		<1	<1	<1
			07-Aug-07	0			2.48	<1	1.23
Newburgh	747.3		09-May-06	0	Zn (ug/L)		1.35	<1	<1
			07-Aug-07	0			<1	<1	<1
Newburgh	754.9		09-May-06	0	Zn (ug/L)		1.82	1.32	<1
			07-Aug-07	0			<1	1.29	1.15
Newburgh	762.3		10-May-06	0	Zn (ug/L)		1.16	<1	1.23
			08-Aug-07	0			<1	1.12	1.03
Newburgh	772		10-May-06	0	Zn (ug/L)		1.14	<1	<1
			08-Aug-07	0			1.11	<1	<1
Newburgh	776.1	Newburgh L&D	10-May-06	55.5	Zn (ug/L)	1.68			
			08-Aug-07	52.7		<1			

Appendix O: Pollution Control Standards

Ohio River Valley Water Sanitation Commission

POLLUTION CONTROL STANDARDS

for discharges to the Ohio River

2006 Revision

Notice of Requirements

You are hereby notified that, having considered all the evidence presented at public hearings, the Ohio River Valley Water Sanitation Commission, at its regularly held meeting on October 5, 2006, acting in accordance with and pursuant to the authority contained in Article VI of the Ohio River Valley Water Sanitation Compact, adopted and promulgated, subject to revision as changing conditions require, Pollution Control Standards 2006 Revision for the modification or treatment of all sewage from municipalities or other political subdivisions, public or private institutions, corporations or watercraft, and for the modification or treatment of all industrial wastes discharged or permitted to flow into the Ohio River from the point of confluence of the Allegheny and Monongahela Rivers at Pittsburgh, Pennsylvania, designated as Ohio River mile point 0.0 to Cairo Point, Illinois, located at the confluence of the Ohio and Mississippi Rivers, and being 981.0 miles downstream from Pittsburgh, Pennsylvania.

Under the terms and provisions of the Ohio River Valley Water Sanitation Compact, all sewage from municipalities or other political subdivisions, public or private institutions, corporations or watercraft and all industrial wastes discharged or permitted to flow into the Ohio River will be required to be modified or treated to the extent specified in the standards established as above set forth.

To the extent that Pollution Control Standards (2003 Revision), which were established by Commission action October 16, 2003, have been amended or restated by virtue of Pollution Control Standards 2006, the Pollution Control Standards 2003 Revision, including any definitions and application procedures appended to or incorporated therein, are rescinded.

Alan H. Vicory, Jr.
Executive Director and Chief Engineer

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APPENDICES

Ohio River Valley Water Sanitation Commission

POLLUTION CONTROL STANDARDS

for discharges to the Ohio River

2006 Revision

I. AUTHORITY AND PURPOSE

The Ohio River Valley Water Sanitation Compact (the Compact) was signed in 1948 by the Governors of the States of Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia, and West Virginia, following the consent of the United States Congress and enactment of the Compact into law by the legislatures of the eight states. The Compact created the Ohio River Valley Water Sanitation Commission (the Commission) as a body corporate with powers and duties set forth in it for the purpose of abating water pollution within the Compact District. Article I of the Compact mandates that all waters in the District be placed and maintained in a satisfactory, sanitary condition, available for certain beneficial uses. It is the mission of the Commission to insure protection of these uses and to preserve the waters for other legitimate purposes.

The Compact grants the Commission authority to carry out its mission. Article VI states that "the guiding principle of this Compact shall be that pollution by sewage or industrial wastes originating within a signatory State shall not injuriously affect the various uses of the interstate waters." Minimum requirements for the treatment of sewage and industrial waste then are established in Article VI, as well as the authority of the Commission to require higher degrees of treatment where they are determined to be necessary after investigation, due notice, and hearing. Article VI concludes by authorizing the Commission to "adopt, prescribe, and promulgate rules, regulations and standards for administering and enforcing the provisions of this article."

Article IX of the Compact grants the Commission authority to issue orders, after investigation and hearing, for the purpose of achieving compliance with its standards. Any court of general jurisdiction or any United States District Court in the signatory states may be used by the Commission in order to enforce such orders.

It is the policy of the Commission to rely on the member states for the primary enforcement of its standards. Each of the member states is authorized to do so under the legislation that enabled its membership in the Compact. Each of the member states is authorized to administer the federal/state National Pollutant Discharge Elimination System (NPDES) as established in Section 402 of the Federal Clean Water Act. Sections

301(b)(1)(C) and 510 of the Federal Act require that permits issued under that system incorporate applicable standards promulgated by an interstate agency wherever they are more stringent than comparable state or federal standards. The NPDES permits are therefore the primary means by which the Commission's Standards are implemented and enforced.

These standards set forth the uses to be protected in the Ohio River (Section III), as established in the Compact, establish water quality criteria to assure that those uses will be achieved (Section IV), and set waste water discharge requirements (Section V) needed to attain the water quality criteria. The standards also recognize the rights of individual states to adopt and apply more stringent regulations.

Specific waste water discharge requirements are established in these regulations and must be incorporated into discharge permits issued under the authority of the NPDES or state discharge permitting programs when they are more stringent than:

1) applicable U.S. EPA technology-based effluent guidelines required under Sections 301, 304, 306, and 307 of the Federal Clean Water Act, or

2) any state treatment requirements, effluent standards, or water quality-based effluent limits.

In the absence of promulgated Federal effluent guidelines pursuant to Sections 301, 304, 306, and 307 of the Clean Water Act, the Compact signatory states have the responsibility to establish effluent limitations to be included in any discharge permit, consistent with the standards contained herein using best professional judgment on a case-by-case basis.

II. DEFINITIONS

A. "Acute Criteria" means the highest concentrations of toxic substances to which organisms can be exposed for a brief period of time (as measured by approved short-term exposure tests) without causing mortality or other unacceptable effects.

B. "Biological Integrity" means the ability of an aquatic ecosystem to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to those best attainable given ecoregional attributes and the modified habitat types of the river.

C. "Chronic Criteria" means the highest concentrations of toxic substances to which organisms can be exposed indefinitely without causing long-term harmful effects on growth and/or reproduction or other unacceptable effects (as measured by approved long-term exposure tests).

D. “Combined Sewer Overflow” means a discharge from a sewer system designed to convey sanitary waste waters and storm water through a single-pipe system to a treatment facility, at a point in the system prior to the treatment facility.

E. “Compact,” as used in these regulations, means the Ohio River Valley Water Sanitation Compact and is an agreement entered into by and between the states of Indiana, West Virginia, Ohio, New York, Illinois, Kentucky, Pennsylvania, and Virginia, which pledges each to the other of the signatory states faithful cooperation in the control of existing and future pollution of the waters in the Ohio River Basin. This Compact created the Ohio River Valley Water Sanitation Commission.

F. “Cooling Water” means water used as a heat transfer medium for once-through cooling or cooling tower blow down to which no industrial wastes, toxic wastes, residues from potable water treatment plants, untreated sewage, or other wastes, exclusive of antifouling agents approved by the appropriate regulatory agencies, are added prior to discharge.

G. “Contact Recreation” means recreational activities where the human body may come in direct contact with water of the Ohio River.

H. “Dry Weather Flow Conditions” means flow conditions within a combined sewer system resulting from one or more of the following: flows of domestic sewage, ground water infiltration, commercial and industrial wastewaters, and any non-precipitation event related flows. Other non-precipitation event related flows that are included in dry weather flow conditions will be decided by the permitting agency based on site specific conditions.

I. “Early Life Stages” of fish means the pre-hatch embryonic period, the post-hatch free embryo or yolk-sac fry, and the larval period, during which the organism feeds. Juvenile fish, which are anatomically rather similar to adults, are not considered an early life stage.

J. “Industrial Wastes” means any liquid, gaseous, or solid materials or waste substances or combination thereof other than cooling water as herein defined, resulting from any process or operation including storage and transportation, manufacturing, commercial, agricultural, and government operations.

K. “Mixing Zone” means that portion of the water body receiving a discharge where effluent and receiving waters are not totally mixed and uniform with the result that the zone is not representative of the receiving waters and may not meet all ambient water quality standards or other requirements of any signatory state applicable to the particular receiving waters. All applicable water quality criteria must be met at the edge of the mixing zone.

L. "Net Discharge" is determined by excluding the amount of a pollutant in the intake water when determining the quality of a discharge if both the intake and discharge are from and to the same body of water.

M. "96 hour LC_{50}" as used in these regulations, means the concentration of a substance that kills 50 percent of the test organisms within 96 hours. The test organisms shall be representative important species indigenous to the Ohio River or standard test organisms.

N. The "Ohio River," as used in these regulations, extends from the point of confluence of the Allegheny and Monongahela rivers at Pittsburgh, Pennsylvania, designated as Ohio River mile point 0.0 to Cairo Point, Illinois, located at the confluence of the Ohio and Mississippi Rivers, 981.0 miles downstream from Pittsburgh.

O. "Ohio River Valley Water Sanitation Commission" (the Commission) means a body corporate created by authority of the Compact and is the operating agency established to implement the Compact. It consists of three representatives of each signatory state and three representatives of the federal government.

P. "Other Wastes" means any waste other than sewage, cooling water, residues from potable water treatment plants, industrial wastes or toxic wastes which, if discharged to the Ohio River, could cause or contribute to any violations of these regulations, or of any water quality standards of any signatory state, or which may be deleterious to the designated uses. Other wastes include, but are not limited to: garbage, refuse, decayed wood, sawdust, shavings, bark and other wood debris and residues resulting from secondary processing, sand, lime cinders, ashes, offal, night soil, silt, oil, tar, dyestuffs, acids, chemicals, heat or other materials and substances not sewage or industrial wastes which may cause or might reasonably be expected to cause or contribute to the pollution of the Ohio River.

Q. "Persistent Substances" means those substances that have a half-life for degradation under natural environmental conditions of more than four days. All other substances are non-persistent.

R. "Pollution" means the human-made or human-induced alteration of the chemical, physical, biological and radiological integrity of the waters of the Ohio River.

S. "Representative Aquatic Species" means those species of aquatic life whose protection and propagation will assure the sustained presence of a balanced indigenous community. Such species are representative in the sense that maintenance of suitable water quality conditions will assure the overall protection and sustain propagation of the balanced, indigenous community.

T. "Residues from Potable Water Treatment Plants" means those wastes emanating from processes used in water purification. Such processes may include sedimentation, chemical coagulation, filtration, iron and manganese removal, softening and disinfection.

U. “Sewage” means water-carried human or animal wastes from such sources as residences; industrial, commercial, or government establishments; public or private institutions; or other places. For the purposes of these standards, the mixture of sewage with industrial wastes, toxic wastes, or other wastes, shall be subject to treatment requirements for those types of wastes, but shall also be regarded as sewage.

V. “Substantially Complete Removal” means removal to the lowest practicable level attainable with current technology.

W. “Toxic Wastes” means wastes containing substances or combinations of substances in concentrations which might reasonably be expected to cause death, disease, behavioral abnormalities, genetic mutations, physiological malfunctions, including those in reproduction, or physical deformations in fish, other aquatic life, wildlife, livestock, or humans.

X. “Waste Water” means sewage and/or industrial wastes as herein defined.

III. DESIGNATED USES

The Ohio River, as hereinbefore defined, has been designated by the Compact as available for safe and satisfactory use as public and industrial water supplies after reasonable treatment, suitable for recreational usage, capable of maintaining fish and other aquatic life, and adaptable to such other uses as may be legitimate. It is the purpose of these Pollution Control Standards to safeguard the waters of the Ohio River for these designated uses. No degradation of the water quality of the Ohio River that would interfere with or become injurious to these uses shall be permitted.

IV. WATER QUALITY CRITERIA

A. General

The minimum conditions which the waste water discharge requirements (Section V) are intended to achieve in the receiving waters outside the mixing zone are as follows:

1. Freedom from anything that will settle to form objectionable sludge deposits which interfere with designated water uses.

2. Freedom from floating debris, scum, oil and other floating material in amounts sufficient to be unsightly or deleterious.

3. Freedom from materials producing color or odors to such a degree as to create unaesthetic conditions or a nuisance.

4. Freedom from substances in concentrations which are toxic or harmful to humans, animals, or fish and other aquatic life; which would in any manner adversely affect the flavor, color, odor, or edibility of fish and other aquatic life, wildlife, or livestock; or which are otherwise detrimental to the designated uses specified in Section III.

B. Aquatic Life Protection

To protect aquatic life**,** the following criteria shall be met outside the mixing zone:

1. BIOLOGICAL: The biological integrity of the Ohio River shall be safeguarded, protected and preserved.

2. DISSOLVED OXYGEN: The average concentration shall be at least 5.0 mg/L for each calendar day; the minimum concentration shall not be less than 4.0 mg/L. During the April 15-June 15 spawning season, a minimum concentration of 5.0 mg/L shall be maintained at all times.

3. TEMPERATURE: Allowable stream temperatures are:

Month/Date	Period Average		Maximum	
January 1-31	45°F	7.2°C	50°F	10.0°C
February 1-29	45	7.2	50	10.0
March 1-15	51	10.6	56	13.3
March 16-31	54	12.2	59	15.0
April 1-15	58	14.4	64	17.8
April 16-30	64	17.8	69	20.6
May 1-15	68	20.0	73	22.8
May 16-31	75	23.9	80	26.7
June 1-15	80	26.7	85	29.4
June 16-30	83	28.3	87	30.6
July 1-31	84	28.9	89	31.7
August 1-31	84	28.9	89	31.7
September 1-15	84	28.9	87	30.6
September 16-30	82	27.8	86	30.0
October 1-15	77	25.0	82	27.8
October 16-31	72	22.2	77	25.0
November 1-30	67	19.4	72	22.2
December 1-31	52	11.1	57	13.9

4. pH: No value below 6.0 standard units nor above 9.0 standard units.

5. AMMONIA:

a. Acute Criterion Concentration: The one-hour average concentration of total ammonia-nitrogen (mg/L) shall not exceed, more than once every three years on the average, the ACC (acute criterion) calculated using the following equation:

$$ACC = \frac{0.411}{1 + 10^{(7.204\text{-pH})}} + \frac{58.4}{1 + 10^{(\text{pH-}7.204)}}$$

b. Chronic Criterion Concentration: The 30-day average concentration of total ammonia-nitrogen (in mg/L) shall not exceed, more than once every three years, the CCC (chronic criterion) calculated using the following equations:

i. When fish early life stages are present (from March 1 to October 31):

$$CCC = \left(\frac{0.0577}{1+10^{(7.688\text{-pH})}} + \frac{2.487}{1+10^{(\text{pH-}7.688)}} \right) \text{*MIN[2.85 OR } (1.45 * 10^{[.028 * (25-T)]})]$$

Where: T = Temperature, °C

Note: For the above equation, multiply the parenthetical equation by 2.85 when temperature is less than or equal to 14.51ºC. When temperature is greater than 14.51ºC, multiply the parenthetical equation by $(1.45 * 10^{(0.028*(25-T))})$.

ii. When fish early life stages are absent (from November 1 to the last day of February:

$$CCC = \left(\frac{0.0577}{1 + 10^{(7.688\text{-pH})}} + \frac{2.487}{1 + 10^{(\text{pH-}7.688)}} \right) * (1.45 * 10^{0.028 * (25 - (\text{MAX [T OR 7]}))})$$

Where: T = Temperature, °C

Note: For the above equation, the last term should be $10^{(0.028*(25-T))}$ for all temperatures greater than 7ºC. When temperatures are 7ºC or less, the last term in the equation should be $10^{(0.028*(25-7))}$ or $10^{(0.504)}$

iii. In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the chronic criterion.

Note: Acute and chronic criteria concentrations for total ammonia-nitrogen (in mg/L) or different combinations of pH and temperature are shown in Appendix A.

6. CHEMICAL CONSTITUENTS:

a. Not to exceed the following concentrations:

Constituent	Chronic Criterion Concentration (µg/L)	Acute Criterion Concentration (µg/L)
Arsenic (dissolved)	150	340
Chromium (VI)(dissolved)	11	16
Cyanide (free)	5.2	22
Mercury (dissolved)	0.77	1.4
Selenium (total)	5	20

b. For constituents with criteria dependent upon water hardness, dissolved metals acute aquatic life criteria shall be calculated as the total recoverable acute criteria multiplied by the conversion factor according to the table below:

Constituent	Total Recoverable Acute Criterion (µg/L)	Dissolved Criterion Conversion Factor
Cadmium	$e^{(1.128(\ln Hard)-3.6867)}$	1.136672-[ln(Hard)*0.041838]
Chromium (III)	$e^{(0.819(\ln Hard+3.7256)}$	0.316
Copper	$e^{(0.9422(\ln Hard)-1.700}$	0.960
Lead	$e^{(1.273(\ln Hard)-1.460)}$	1.46203-[ln(Hard)*0.145712]
Nickel	$e^{(0.846(\ln Hard)+2.255)}$	0.998
Silver	$e^{(1.72(\ln Hard)-6.52)}$	0.850
Zinc	$e^{(0.8473(\ln Hard)+0.884)}$	0.978

c. For constituents with criteria dependent upon water hardness, dissolved metals chronic aquatic life criteria shall be calculated as the total recoverable chronic criterion multiplied by the conversion factor according to the following table:

Constituent	Total Recoverable Chronic Criterion (µg/L)	Dissolved Criterion Conversion Factor
Cadmium	$e^{(0.7852(\ln Hard)-2.715)}$	1.101672-[ln(Hard)*0.041838]
Chromium (III)	$e^{(0.819(\ln Hard)+0.6848)}$	0.860
Copper	$e^{(0.8545(\ln Hard)-1.702)}$	0.960
Lead	$e^{(1.273(\ln Hard)-4.705)}$	1.46203-[ln(Hard)*0.145712]
Nickel	$e^{(0.846(\ln Hard)+0.0584)}$	0.997
Zinc	$e^{(0.8473(\ln Hard)+0.884)}$	0.986

d. Concentrations for metals are dissolved (except selenium, which is total recoverable), unless it can be demonstrated to the satisfaction of the Commission and its member states, that a more appropriate analytical technique is available which provides a measurement of that portion of the metal present which causes toxicity to aquatic life.

e. Waste water discharge requirements for these constituents shall be expressed as total recoverable limits, and shall be based on the dissolved aquatic life criteria, the appropriate translators (as listed in Appendix B), the in-stream concentration upstream of the point of discharge, and the minimum appropriate design flow as contained in Appendix C. The appropriate design flow shall be the seven day, ten year low flow for chronic criteria, and the one day, ten year low flow for acute criteria. Translators, other than those listed in Appendix B, may be used after a successful demonstration to the Commission and its member states. Criteria for cadmium, trivalent chromium, copper, lead, nickel, silver and zinc at specified hardness values are listed in Appendix B.

7. OTHER TOXIC SUBSTANCES:

Water quality criteria for substances not otherwise specified in this section shall be derived based on the following:

a. For the Protection of Aquatic Life, methodologies set forth in U.S. EPA's final Water Quality Guidance for the Great Lakes System, adopted in the Federal Register, March 23, 1995, shall be used (see Appendix D).

b. Limiting concentrations other than those derived from the above may be used for the protection of aquatic life when justified on the basis of scientifically defensible evidence.

C. Human Health Protection

To protect human health, the following criteria shall be met outside the mixing zone:

1. BACTERIA:

a. Protection of public water supply use -- public water supply use shall be protected at all times. Fecal coliform bacteria content shall not exceed 2,000/100 mL as a monthly geometric mean based on not less than five samples per month.

b. Maximum allowable level of fecal coliform bacteria for contact recreation -- for the months of May through October, content shall not exceed 200/100 mL as a monthly geometric mean based on not less than five samples per month; nor exceed 400/100 mL in more than ten percent of all samples taken during the month.

c. Maximum allowable level of *E. coli* bacteria for contact recreation -- for the months of May through October, measurements of *E. coli* bacteria may be substituted for fecal coliform. Content shall not exceed 130/100 mL as a monthly geometric mean, based on not less than five samples per month, nor exceed 240/100 mL in any sample.

2. CHEMICAL CONSTITUENTS:

Not to exceed the following concentrations:

Constituent	Concentration (mg/L)
Arsenic (total)	0.010
Barium (total)	1.0
Chloride	250
Fluoride	1.0
Mercury (total)	0.000012
Nitrite + Nitrate Nitrogen	10.0
Nitrite Nitrogen	1.0
Phenolics	0.005
Silver (total)	0.05
Sulfate	250

3. RADIONUCLIDES: Gross total alpha activity (including radium-226, but excluding radon and uranium) shall not exceed 15 picocuries per liter (pCi/L) and combined radium-226 and radium-228 shall not exceed 4 pCi/L. Concentration of total gross beta particle activity shall not exceed 50 pCi/L; the concentration of total strontium-90 shall not exceed 8 pCi/L.

4. OTHER TOXIC SUBSTANCES: Water quality criteria for substances not otherwise specified in this section shall be derived based on the following:

a. For the protection of human health, criteria are listed in Appendix E to these regulations.

i. For substances identified as human carcinogens, waste water discharge requirements shall be developed based on the in-stream concentration above the point of discharge, and calculated so as to prevent one additional cancer per one million population at the harmonic mean stream flow (see Appendix C).

ii. For substances not identified as human carcinogens, waste water discharge requirements shall be developed based on the in-stream concentration above the point of discharge and calculated to meet the water quality criteria at the minimum 7-day, 10-year flow (see Appendix C).

b. Limiting concentrations other than those derived from the above may be used for the protection of human health when justified on the basis of scientifically defensible evidence.

D. Site-Specific Criteria

Alternative site-specific criteria for the constituents listed herein may be approved if they are demonstrated to be appropriate to the satisfaction of the Commission. Such demonstrations shall utilize methods contained in the Water Quality Standards Handbook (US EPA publication EPA823-B94005A, August 1994).

V. WASTE WATER DISCHARGE REQUIREMENTS

A. General

1. No discharge of sewage, industrial wastes, toxic wastes, other wastes, cooling water or residues from potable water treatment plants shall cause or contribute to a violation of these waste water discharge requirements, shall preclude the attainment of any designated use of the main stem waters of the Ohio River, or cause or contribute to a violation of the water quality criteria set forth in Section IV.

2. All discharges of sewage, industrial wastes, toxic wastes, other wastes, cooling water or residues from potable water treatment plants shall be treated or otherwise modified so as to provide:

   a. Substantially complete removal of settleable solids, which may form sludge deposits;

   b. Substantially complete removal of oil, debris, scum and other floating material;

   c. Reduction of total suspended solids and other materials to such a degree that the discharge will not produce a substantial negative visible contrast to natural conditions in turbidity, color or odor of the river, or impart taste to potable water supplies, or cause tainting of fish flesh;

   d. Reduction of all substances in amounts which, when concentrated or combined in the receiving stream, would result in conditions toxic or harmful to humans, animals, or fish and other aquatic life; which would in any manner adversely affect the flavor, color, odor, or edibility of fish and other aquatic life, wildlife, or livestock; or which are otherwise detrimental to the designated water uses specified in Section III.

3. Each holder of an individual NPDES permit shall post and maintain a permanent marker at the establishment under permit as follows:

   a. A marker shall be posted on the stream bank at each outfall discharging directly to the Ohio River.

   b. The marker shall consist, at a minimum, of the name of the establishment to which the permit was issued, the permit number, and the outfall number. The information shall be printed in letters not less than two inches in height.

   c. The marker shall be a minimum of 2 feet by 2 feet and shall be a minimum of 3 feet above ground level.

B. Sewage

1. MINIMUM LEVEL OF TREATMENT:

Sewage shall be treated prior to discharge, to meet the following effluent limitations in addition to the requirements of Section V.A.

   a. Biochemical Oxygen Demand

      i. Five-day biochemical oxygen demand (BOD_5) - the arithmetic mean of the values for effluent samples collected in a month shall not exceed 30 mg/L, and the arithmetic mean of the values for effluent samples collected in a week shall not exceed 45 mg/L.

      ii. Five-day carbonaceous biochemical oxygen demand ($CBOD_5$) may be substituted for BOD_5, provided that the arithmetic mean of the values for effluent samples collected in a month shall not exceed 25 mg/L, and the arithmetic mean of the values of effluent samples collected in a week shall not exceed 40 mg/L.

   b. Suspended Solids

   The arithmetic mean of the values for effluent samples collected in a month shall not exceed 30 mg/L, and the arithmetic mean of the values for effluent samples collected in a week shall not exceed 45 mg/L.

c. pH

The effluent values for pH shall be maintained within the limits of 6.0 to 9.0 standard units.

d. Bacteria

i. The geometric mean of the fecal coliform bacteria content of effluent samples collected in a month shall not exceed 2,000/100 mL.

ii. During the months of May through October, the geometric mean of the fecal coliform bacteria content of effluent samples collected in a month shall not exceed 200/100 mL, and no more than 10 percent of the values shall exceed 400/100 mL.

iii. During the months of May through October, *E. coli* may be substituted for fecal coliform provided the geometric mean of the values for effluent samples collected in a month shall not exceed 130/100 mL, and no more than 10 percent of the values shall exceed 240/100 mL.

2. ALTERNATIVE TREATMENT:

Such facilities as waste stabilization ponds and trickling filters shall be deemed to provide effective treatment of sewage, provided that the requirements of Sections V.A., V.B.1.(c) and (d) are met, that the effluent does not cause any violations of applicable states' water quality standards or Sections III and IV of these regulations, and that the following requirements are met:

a. Biochemical Oxygen Demand

i. Five-day biochemical oxygen demand (BOD_5) -- the arithmetic mean of the values for effluent samples collected in a month shall not exceed 45 mg/L; and the arithmetic mean of the values for effluent samples collected in a week shall not exceed 65 mg/L.

ii. Five-day carbonaceous biochemical oxygen demand ($CBOD_5$) may be substituted for BOD_5, provided that the levels are not less stringent than the following: the arithmetic mean of the values for effluent samples collected in a month shall not exceed 40 mg/L and; the arithmetic mean of the values for effluent samples collected in a week shall not exceed 60 mg/L.

b. Suspended Solids

The arithmetic mean of the values for effluent samples collected in a month shall not exceed 45 mg/L; and the arithmetic mean of the values for effluent samples collected in a week shall not exceed 65 mg/L.

3. COMBINED SEWER SYSTEMS:

a. Prohibition of Dry Weather Discharges

No combined sewer overflow (CSO) to the Ohio River shall occur under dry weather flow conditions unless the discharge is caused by elevated river stage. All discharges from combined sewers must be in compliance with the NPDES permit and the National Combined Sewer Overflow Control Policy.

b. System Overflows During Wet Weather

A direct discharge, if caused by temporary excess flows due to storm water collected and conveyed through combined sewer systems, shall not be considered in violation of these waste water discharge requirements, providing that the discharger is demonstrating compliance with the nine minimum controls as specified in the National Combined Sewer Overflow Control Policy. The nine minimum controls are as follows:

i. Proper operation and regular maintenance programs for the sewer system and the CSOs;
ii. Maximum use of the collection system for storage;
iii. Review and modification of pre-treatment requirements to assure CSO impacts are minimized;
iv. Maximization of flow to the POTW for treatment;
v. Prohibition of CSOs during dry weather;
vi. Control of solid and floatable materials in CSOs;
vii. Pollution prevention;
viii. Public notification to ensure that the public receives adequate notice of CSO occurrences and CSO impacts;
ix. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

In addition, the system must be operated in accordance with an approved Long Term Control Plan (LTCP), where required, and the discharge must not interfere with the attainment of the water quality criteria set forth in Section IV except in situations where alternative criteria are authorized by the permitting agency and the Commission. Authorization of such alternative criteria shall be based upon and justified through a Use Attainability Analysis (UAA) consistent with

40CFR131.10g. The LTCP must be developed and implemented to fully attain the alternative criteria.

The approved LTCP and UAA will identify the conditions, at or above which, the contact recreation use and associated bacteria criteria cannot be achieved, and will identify alternative bacteria criteria that can be achieved. The alternative bacteria criteria shall apply for the period during which conditions exist and shall not exceed 2000 fecal coliform per 100 mL as a monthly geometric mean for the protection of public water supplies.

c. Treatment of Flows from Combined Sewer Systems during Wet Weather Conditions

In cases where municipal wastewater treatment plants serving combined sewer areas have primary treatment capacity in excess of secondary treatment capacity, opportunities may exist for partial treatment of combined flows which would otherwise be discharged as untreated combined sewer overflows. In such cases, in order to maximize the treatment of wet weather flows from combined sewer systems and reduce the frequency and duration of combined sewer overflow (CSO) events, bypass of the secondary treatment during wet weather conditions may be allowed on an interim basis, provided the following conditions are met:

i. the facilities are properly operated and maintained,

ii. the maximum possible quantity of waste water (determined through an approved engineering study) receives secondary treatment in accordance with discharge requirements, and

iii. the discharge does not cause exceedances of water quality criteria in the Ohio River outside the mixing zone.

Bypasses of secondary treatment which are necessary in order to implement a CSO long-term control plan which includes primary treatment options at the municipal wastewater treatment plant may be allowed, provided it is not technically or financially feasible to provide secondary treatment of greater amounts of wet weather flow. The consideration of feasible alternatives should be documented in the development of the long-term control plan.

C. Industrial Wastes, Including Toxic Wastes

1. The minimum level of treatment for industrial wastes including toxic wastes, prior to discharge shall be in accordance with national effluent limitations and guidelines adopted by the Administrator of the United States Environmental Protection Agency pursuant to Sections 301 and 302

of the Federal Clean Water Act, national standards of performance for new sources adopted pursuant to Section 306 of the Federal Clean Water Act, and national toxic and pretreatment effluent limitations, adopted pursuant to Section 307 of the Federal Clean Water Act or in accordance with the standards of the state in which the discharge occurs.

2. Effluent limitations for discharges of industrial wastes including toxic wastes may be based on the net discharge of pollutants provided that the following conditions are met:

   a. Any determination for net discharge of pollutants must be made on a pollutant-by-pollutant, outfall-by-outfall basis.

   b. A net discharge of pollutants would only be allowed in the absence of a TMDL applicable to the discharge.

   c. The facility withdraws 100 percent of the intake water containing the pollutant from the same body of water into which the discharge is made.

   d. The facility does not contribute any additional mass of the identified intake pollutant to its wastewater.

   e. The facility does not alter the identified intake pollutant chemically or physically in a manner that would cause adverse water quality impacts to occur that would not occur if the pollutants were left in-stream.

   f. The facility does not increase the identified intake pollutant concentration, as defined by the permitting authority, at the edge of the mixing zone, or at the point of discharge if a mixing zone is not allowed, as compared to the pollutant concentration in the intake water, unless the increased concentration does not cause or contribute to an excursion above an applicable water quality standard.

   g. The timing and location of the discharge would not cause adverse water quality impacts to occur that would not occur if the identified intake pollutant were left in-stream.

D. Residues from Potable Water Treatment Plants

The use of controlled discharge for residues from potable water treatment plant processes of sedimentation, coagulation and filtration may be authorized provided that, as a minimum, the discharge meets all the requirements of Section IV.A. and V.A.

E. Cooling Water

1. A discharge of cooling water shall meet the requirements of Section V.A. and shall not cause violations of the temperature criteria set forth in Section IV.B.3., except as authorized by a variance issued pursuant to Section 316(a) of the Federal Clean Water Act.

2. Any cooling water additives that will ultimately be discharged to the environment must be approved by the appropriate state agency.

F. Other Wastes

The discharge of Other Wastes (other than those specified above) shall meet the requirements of Section V.A. and shall not cause or contribute to a violation of the water quality criteria set forth in Section IV.

VI. MIXING ZONE DESIGNATION

A. Where mixing zones are allowed by the permitting authority, the specific numerical limits for any mixing zone shall be determined on a case-by-case basis, and shall include considerations for existing uses, linear distance (i.e., length and width) from the point of discharge, surface area involved, and volume of receiving water within the defined zone.

B. Conditions within the mixing zone shall not be injurious to human health, in the event of a temporary exposure.

C. Acute water quality criteria, as specified in Section IV.B.6, will apply at all points within the mixing zone; except that, states may at their discretion allow a smaller zone in the immediate vicinity of the point of discharge sometimes referred to as a zone of initial dilution in which acute criteria are exceeded, provided the zone does not impact the water of another state, but the acute criteria must be met at the edge of the acute mixing zone or zone of initial dilution. Acute mixing zones shall be calculated in accordance with one of the approaches presented in appendix F, or by such other method as may be demonstrated to be appropriate to the Commission.

D. The mixing zone shall be free from substances attributable to sewage, industrial wastes, toxic wastes, other wastes, cooling water, or residues from potable water treatment plants in quantities which:

1. Settle to form sludge deposits;

2. Float as debris, scum, or oil;

3. Contaminate natural sediments so as to cause or contribute to a violation of:

   a. appropriate stream criteria outside the mixing zone, or

   b. any condition of the designated uses of the water.

4. Impart a disagreeable flavor or odor to flesh of fish or other aquatic life, wildlife or livestock which are consumed by humans and which acquire such a flavor because of passage through or ingestion of the waters from the mixing zone.

E. The mixing zone shall be located so as not to interfere significantly with migratory movements and passage of fish, other aquatic life, and wildlife. No mixing zone shall adversely impact water quality so as to interfere with potable or industrial water supplies, bathing areas**,** reproduction of fish, other aquatic life and wildlife.

F. In no case shall a permitting authority grant a mixing zone that would likely jeopardize the continued existence of any endangered or threatened species listed under Section 4 of the Federal Endangered Species Act or result in the destruction or adverse modification of such species' critical habitat.

G. Mixing zones shall be prohibited for Bioaccumulative Chemicals of Concern (BCCs) as set forth in this paragraph. Discharges containing BCCs which were in existence on or before October 16, 2003 will have mixing zones eliminated for such pollutants as soon as practicable but no later than October 16, 2013; however, no increase in such discharges will be allowed. Discharges of BCCs that come into existence after October 16, 2003 are subject to this prohibition immediately. BCCs are defined as any chemicals that accumulate in aquatic organisms by a human health bioaccumulation factor (BAF) greater than 1000 (after considering various specified factors), and have the potential upon entering surface waters to cause adverse effects, either by themselves or in the form of their toxic transformation, as a result of that accumulation. Currently, the list of BCCs (as described in the Final Rule to Amend the Final Water Quality Guidance for the Great Lakes System to Prohibit Mixing Zones for Bioaccumulative Chemicals of Concern, includes:

Bioaccumulative Chemicals of Concern

Lindane	Mirex
Hexachlorocyclohexane	Hexachlorobenzene
alpha-Hexachlorocyclohexane	Chlordane
beta-Hexachlorocyclohexane	DDD
delta-Hexachlorocyclohexane	DDT
Hexachlorobutadiene	DDE
Photomirex	Octachlorostyrene
1,2,4,5-Tetrachlorobenzene	PCBs
Toxaphene	2,3,7,8-TCDD
Pentachlorobenzene	Mercury
1,2,3,4-Tetrachlorobenzene	Dieldrin

H. If mixing zones from two or more proximate sources interact or overlap, the combined effect must be evaluated to ensure that applicable values will be met in the area where any applicable mixing zones overlap.

VII. LIMITATION

Nothing contained in these regulations shall be construed to limit the powers of any state signatory to the Compact to promulgate more stringent criteria, conditions and restrictions to further lessen or prevent the pollution of waters within its jurisdiction.

VIII. VARIANCE

A. The Commission may grant a variance from the provisions of Section V of these standards, provided that the uses set forth in Section III are maintained and that the water quality criteria set forth in Section IV are met. The applicant for a variance shall adhere to the following:

1. The specific reasons for the variance shall be clearly stated in writing;

2. The burden of proof is upon the applicant to assure that the uses set forth in Section III are maintained;

3. Prior concurrence of the state where the applicant's discharge is located and those state(s) that may be affected must be obtained;

4. Such additional information shall be provided to the Commission upon request.

B. A variance may be granted for a period not to exceed the life of the applicable discharge permit; the applicant may apply for a variance renewal prior to the expiration of the permit.

IX. ANALYTICAL METHODS

Tests or analytical determinations establish compliance or non-compliance with the Waste Water Discharge Requirements and stream criteria established herein shall be made in accordance with accepted procedures such as those contained in the: (a) latest edition of Standard Methods for the Examination of Water and Waste Water prepared and published jointly by the American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF); (b) Annual Book of ASTM Standards, Part 31 - Water published by the American Society for Testing and Materials; (c) Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR 136) by the U.S. Environmental Protection Agency; or (d) by such other methods as are approved by the Commission as equal or superior to or not available within methods in documents listed above, provided such other test methods are available to the public.

X. SEVERABILITY CLAUSE

Should any one or more of the Pollution Control Standards hereby established or should any one or more provisions of the regulations herein contained be held or determined to be invalid, illegal or unenforceable, for any reason whatsoever, all other standards and other provisions shall remain effective.

Appendix A

Acute And Chronic Criteria Concentrations
For Total Ammonia-Nitrogen (in mg/L)
For Varying Combinations Of pH And Temperature

Table A1: pH-Dependent Values of the Acute Criteria for Total Ammonia-Nitrogen

pH	Acute Criterion (mg/L)		pH	Acute Criterion (mg/L)
6.0	55.0		7.6	17.0
6.1	54.2		7.7	14.4
6.2	53.2		7.8	12.1
6.3	52.0		7.9	10.1
6.4	50.5		8.0	8.41
6.5	48.8		8.1	6.95
6.6	46.8		8.2	5.73
6.7	44.6		8.3	4.71
6.8	42.0		8.4	3.88
6.9	39.2		8.5	3.20
7.0	36.1		8.6	2.65
7.1	32.9		8.7	2.20
7.2	29.5		8.8	1.84
7.3	26.2		8.9	1.56
7.4	23.0		9.0	1.32
7.5	19.9			

Table A2: Temperature and pH-Dependent Values of the Chronic Criteria for Total Ammonia-Nitrogen (when Fish Early Life Stages Present: March 1 - October 31)

pH	Temperature, Celsius									
	0	14	16	18	20	22	24	26	28	30
6.0	6.95	6.95	6.32	5.55	4.88	4.29	3.77	3.31	2.91	2.56
6.1	6.91	6.91	6.28	5.52	4.86	4.27	3.75	3.30	2.90	2.55
6.2	6.87	6.87	6.24	5.49	4.82	4.24	3.73	3.28	2.88	2.53
6.3	6.82	6.82	6.19	5.45	4.79	4.21	3.70	3.25	2.86	2.51
6.4	6.75	6.75	6.13	5.39	4.74	4.17	3.66	3.22	2.83	2.49
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.90
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.88	0.77
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.97	0.86	0.75	0.66
8.3	1.52	1.52	1.39	1.22	1.07	0.94	0.83	0.73	0.64	0.56
8.4	1.29	1.29	1.17	1.03	0.91	0.80	0.70	0.62	0.54	0.48
8.5	1.09	1.09	0.99	0.87	0.76	0.67	0.59	0.52	0.46	0.40
8.6	0.92	0.92	0.84	0.73	0.65	0.57	0.50	0.44	0.39	0.34
8.7	0.78	0.78	0.71	0.62	0.55	0.48	0.42	0.37	0.33	0.29
8.8	0.66	0.66	0.60	0.53	0.46	0.41	0.36	0.32	0.28	0.24
8.9	0.56	0.56	0.51	0.45	0.40	0.35	0.31	0.27	0.24	0.21
9.0	0.49	0.49	0.44	0.39	0.34	0.30	0.26	0.23	0.20	0.18

Table A3: Temperature and pH-Dependent Values of the Chronic Criteria for Total Ammonia-Nitrogen (when Fish Early Life Stages Absent: November 1 – February 29)

pH	Temperature, Celsius									
	0-7	8	9	10	11	12	13	14	15	16
6.0	11.3	10.6	9.92	9.30	8.72	8.20	7.70	7.20	6.70	6.30
6.1	11.2	10.5	9.87	9.25	8.67	8.13	7.62	7.15	6.70	6.28
6.2	11.2	10.5	9.81	9.19	8.62	8.08	7.58	7.10	6.66	6.24
6.3	11.1	10.4	9.73	9.12	8.55	8.02	7.52	7.05	6.61	6.19
6.4	11.0	10.3	9.63	9.03	8.47	7.94	7.44	6.98	6.54	6.13
6.5	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.99
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.95	0.89	0.84
8.7	1.26	1.18	1.11	1.04	0.98	0.92	0.86	0.80	0.75	0.71
8.8	1.07	1.01	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.60
8.9	0.92	0.86	0.81	0.76	0.71	0.66	0.62	0.58	0.55	0.51
9.0	0.79	0.74	0.69	0.65	0.61	0.57	0.54	0.50	0.47	0.44

Note: At 15°C and above, the criteria for fish ELS absent is the same as the criteria for fish ELS present.

Appendix B

Dissolved Metals Translators

Table B1: Dissolved Metals Translators

Constituent	Acute Criterion Translator	Chronic Criterion Translator
Arsenic	1.000	1.000
Cadmium	1/(1.136672-[ln(hard)*0.041838]	1/(1.101672-[ln(hard)*0.041838]
Chromium III	3.165	1.163
Chromium VI	1.018	1.040
Copper	1.042	1.042
Lead	1/(1.46203-[ln(hard)*0.145712]	1/(1.46203-[ln(hard)*0.145712]
Mercury	1.176	1.176
Nickel	1.002	1.003
Silver	1.176	---
Zinc	1.022	1.014

Table B2: Numerical Values Of Dissolved Metals Criteria At Specified Hardness Levels

Hardness	Cadmium		Chromium III		Copper		Lead	
	Chronic Criterion (µg/L)	Acute Criterion (µg/L)	Chronic Criterion (µg/L)	Acute Criterion (µg/L)	Chronic Criterion (µg/L)	Acute Criterion (µg/L)	Chronic Criterion (µg/L)	Acute Criterion (µg/L)
50	1.34	2.01	42.0	323	4.95	6.99	1.17	30.1
100	2.24	4.26	74.1	570	8.96	13.4	2.52	64.6
150	3.02	6.62	103	794	12.7	19.7	3.90	100
200	3.73	9.03	131	1005	16.2	25.8	5.31	136
250	4.40	11.5	157	1207	19.6	31.9	6.72	172
300	5.03	14.01	182	1401	22.9	37.8	8.13	209

Hardness	Nickel		Silver		Zinc	
	Chronic Criterion (µg/L)	Acute Criterion (µg/L)	Chronic Criterion (µg/L)	Acute Criterion (µg/L)	Chronic Criterion (µg/L)	Acute Criterion (µg/L)
50	28.9	260	---	1.0	65.7	65.1
100	52.0	468	---	3.4	118	117
150	73.3	660	---	6.9	167	165
200	93.4	842	---	11.4	213	211
250	113	1,017	---	16.7	257	255
300	132	1,186	---	22.8	300	297

Appendix C

Critical Flow Values

FROM	TO	Minimum 7-day 10-year Low-Flow, cfs[1]	Minimum 1-day 10-year Low-Flow, cfs[2]	Harmonic Mean Flow, cfs[2]
Pittsburgh (MP 0.0)	Montgomery Dam (MP 31.7)	4,730	4,200	16,200
Montgomery Dam (MP 31.7)	Willow Island Dam (MP 161.7)	5,880	5,000	20,500
Willow Island Dam (MP 161.7)	Racine Dam (MP 237.5)	6,560	5,170	24,500
Racine Dam (MP 237.5)	R.C. Byrd Dam (MP 279.2)	6,700	5,170	26,000
R.C. Byrd Dam (MP 279.2)	Guyandotte River (MP 305.2)	9,120	5,870	34,500
Guyandotte River (MP 305.2)	Big Sandy River (MP 317.1)	9,300	6,000	35,900
Big Sandy River (MP 317.1)	Greenup Dam (MP 341.0)	10,000	7,000	38,400
Greenup Dam (MP 341.0)	Meldahl Dam (MP 436.2)	10,600	7,960	42,100
Meldahl Dam (MP 436.2)	McAlpine Dam (MP 606.8)	10,600	8,670	45,300
McAlpine Dam (MP 606.8)	Newburgh Dam (MP 776.1)	11,000	8,670	49,000
Newburgh Dam (MP 776.1)	Uniontown Dam (MP 846.0)	12,900	10,000	60,900
Uniontown Dam (MP 846.0)	Smithland Dam (MP 918.5)	16,900	12,700	78,600
Smithland Dam (MP 918.5)	Cairo Point (MP 981.0)	51,000	40,900	175,000

[1]Minimum 7-day, 10-year flow (in cubic feet per second) provided by the U.S. Corps of Engineers
[2]Based on Commission analysis of stream flow data provided by the U.S. Corps of Engineers

Appendix D

Great Lakes Water Quality Initiative Methodologies for Development of Aquatic Life Criteria and Values Methodology for Deriving Aquatic Life Criteria:

Tier I

Great Lakes States and Tribes shall adopt provisions consistent with (as protective as) this appendix.

I. Definitions

A. **Material of Concern.** When defining the material of concern the following should be considered:

1. Each separate chemical that does not ionize substantially in most natural bodies of water should usually be considered a separate material, except possibly for structurally similar organic compounds that only exist in large quantities as commercial mixtures of the various compounds and apparently have similar biological, chemical, physical, and toxicological properties.

2. For chemicals that ionize substantially in most natural bodies of water (e.g., some phenols and organic acids, some salts of phenols and organic acids, and most inorganic salts and coordination complexes of metals and metalloid), all forms that would be in chemical equilibrium should usually be considered one material. Each different oxidation state of a metal and each different non-ionizable covalently bonded organometallic compound should usually be considered a separate material.

3. The definition of the material of concern should include an operational analytical component. Identification of a material simply as "sodium," for example, implies "total sodium," but leaves room for doubt. If "total" is meant, it must be explicitly stated. Even "total" has different operational definitions, some of which do not necessarily measure "all that is there" in all samples. Thus, it is also necessary to reference or describe the analytical method that is intended. The selection of the operational analytical component should take into account the analytical and environmental chemistry of the material and various practical considerations, such as labor and equipment requirements, and whether the method would require measurement in the field or would allow measurement after samples are transported to a laboratory.

a. The primary requirements of the operational analytical component are that it be appropriate for use on samples of receiving water, that it be compatible with the available toxicity and bioaccumulation data without making extrapolations that are too hypothetical, and that it rarely results in underprotection or overprotection of aquatic organisms and their uses. Toxicity is the property of a material, or combination of materials, to adversely affect organisms.

b. Because an ideal analytical measurement will rarely be available, an appropriate compromise measurement will usually have to be used. This compromise measurement must fit with the general approach that if an ambient concentration is lower than the criterion, unacceptable effects will probably not occur, i.e., the compromise measure must not err on the side of underprotection when measurements are made on a surface water. What is an appropriate measurement in one situation might not be appropriate for another. For example, because the chemical and physical properties of an effluent are usually quite different from those of the receiving water, an analytical method that is appropriate for analyzing an effluent might not be appropriate for expressing a criterion, and vice versa. A criterion should be based on an appropriate analytical measurement, but the criterion is not rendered useless if an ideal measurement either is not available or is not feasible.

   Note: The analytical chemistry of the material might have to be taken into account when defining the material or when judging the acceptability of some toxicity tests, but a criterion must not be based on the sensitivity of an analytical method. When aquatic organisms are more sensitive than routine analytical methods, the proper solution is to develop better analytical methods.

4. It is now the policy of EPA that the use of dissolved metal to set and measure compliance with water quality standards is the recommended approach, because dissolved metal more closely approximates the bioavailable fraction of metal in the water column than does total recoverable metal. One reason is that a primary mechanism for water column toxicity is adsorption at the gill surface which requires metals to be in the dissolved form. Reasons for the consideration of total recoverable metals criteria include risk management considerations not covered by evaluation of water column toxicity. A risk manager may consider sediments and food chain effects and may decide to take a conservative approach for metals, considering that metals are very persistent chemicals. This approach could include the use of total recoverable metal in water quality standards. A range of different risk management decisions can be justified. EPA recommends that State water quality standards be based on dissolved metal. EPA will also approve a State risk management decision to adopt standards based on total

recoverable metal, if those standards are otherwise approvable under this program.

B. **Acute Toxicity.** Concurrent and delayed adverse effect(s) that results from an acute exposure and occurs within any short observation period which begins when the exposure begins, may extend beyond the exposure period, and usually does not constitute a substantial portion of the life span of the organism. (Concurrent toxicity is an adverse effect to an organism that results from, and occurs during, its exposure to one or more test materials.) Exposure constitutes contact with a chemical or physical agent. Acute exposure, however, is exposure of an organism for any short period which usually does not constitute a substantial portion of its life span.

C. **Chronic Toxicity.** Concurrent and delayed adverse effect(s) that occurs only as a result of a chronic exposure. Chronic exposure is exposure of an organism for any long period or for a substantial portion of its life span.

II. Collection Of Data

A. Collect all data available on the material concerning toxicity to aquatic animals and plants.

B. All data that are used should be available in typed, dated, and signed hard copy (e.g., publication, manuscript, letter, memorandum, etc.) with enough supporting information to indicate that acceptable test procedures were used and that the results are reliable. In some cases, it might be appropriate to obtain written information from the investigator, if possible. Information that is not available for distribution shall not be used.

C. Questionable data, whether published or unpublished, must not be used. For example, data must be rejected if they are from tests that did not contain a control treatment, and tests in which too many organisms in the control treatment died or showed signs of stress or disease.

D. Data on technical grade materials may be used if appropriate, but data on formulated mixtures and emulsifiable concentrates of the material must not be used.

E. For some highly volatile, hydrolyzable, or degradable materials, it might be appropriate to use only results of flow-through tests in which the concentrations of test material in test solutions were measured using acceptable analytical methods. A flow-through test is a test with aquatic organisms in which test solutions flow into constant-volume test chambers either intermittently (e.g., every few minutes) or continuously, with the excess flowing out.

F. Data must be rejected if obtained using:

1. Brine shrimp, because they usually only occur naturally in water with salinity greater than 35 g/kg.

2. Species that do not have reproducing wild populations in North America.

3. Organisms that were previously exposed to substantial concentrations of the test material or other contaminants.

4. Saltwater species except for use in deriving acute-chronic ratios. An ACR is a standard measure of the acute toxicity of a material divided by an appropriate measure of the chronic toxicity of the same material under comparable conditions.

G. Questionable data, data on formulated mixtures and emulsifiable concentrates, and data obtained with species non-resident to North America or previously exposed organisms may be used to provide auxiliary information but must not be used in the derivation of criteria.

III. Required Data

A. Certain data should be available to help ensure that each of the major kinds of possible adverse effects receives adequate consideration. An adverse effect is a change in an organism that is harmful to the organism. Exposure means contact with a chemical or physical agent. Results of acute and chronic toxicity tests with representative species of aquatic animals are necessary so that data available for tested species can be considered a useful indication of the sensitivities of appropriate untested species. Fewer data concerning toxicity to aquatic plants are usually available because procedures for conducting tests with plants and interpreting the results of such tests are not as well developed.

B. To derive a Tier I criterion for aquatic organisms and their uses, the following must be available:

1. Results of acceptable acute (or chronic) tests (see section IV or VI of this appendix) with at least one species of freshwater animal in at least eight different families such that all of the following are included:
   a) The family Salmonidae in the class Osteichthyes;
   b) One other family (preferably a commercially or recreationally important, warmwater species) in the class Osteichthyes (e.g., bluegill, channel catfish);
   c) A third family in the phylum Chordata (e.g., fish, amphibian);
   d) A planktonic crustacean (e.g., a cladoceran, copepod);
   e) A benthic crustacean (e.g., ostracod, isopod, amphipod, crayfish);

f) An insect (e.g., mayfly, dragonfly, damselfly, stonefly, caddisfly, mosquito, midge);
g) A family in a phylum other than Arthropoda or Chordata (e.g., Rotifera, Annelida, Mollusca);
h) A family in any order of insect or any phylum not already represented.

2. Acute-chronic ratios (see section VI of this appendix) with at least one species of aquatic animal in at least three different families provided that of the three species:
   a) At least one is a fish,
   b) At least one is an invertebrate, and
   c) At least one species is an acutely sensitive freshwater species.

3. Results of at least one acceptable test with a freshwater algae or vascular plant is desirable but not required for criterion derivation (see section VIII of this appendix). If plants are among the aquatic organisms most sensitive to the material, results of a test with a plant in another phylum (division) should also be available.

C. If all required data are available, a numerical criterion can usually be derived except in special cases. For example, derivation of a chronic criterion might not be possible if the available ACRs vary by more than a factor of ten with no apparent pattern. Also, if a criterion is to be related to a water quality characteristic (see sections V and VII of this appendix), more data will be required.

D. Confidence in a criterion usually increases as the amount of available pertinent information increases. Thus, additional data are usually desirable.

IV. Final Acute Value

A. Appropriate measures of the acute (short-term) toxicity of the material to a variety of species of aquatic animals are used to calculate the Final Acute Value (FAV). The calculated FAV is a calculated estimate of the concentration of a test material such that 95 percent of the genera (with which acceptable acute toxicity tests have been conducted on the material) have higher Genus Mean Acute Values (GMAVs). An acute test is a comparative study in which organisms, that are subjected to different treatments, are observed for a short period usually not constituting a substantial portion of their life span. However, in some cases, the Species Mean Acute Value (SMAV) of a commercially or recreationally important species is lower than the calculated FAV, then the SMAV replaces the calculated FAV in order to provide protection for that important species.

B. Acute toxicity tests shall be conducted using acceptable procedures. For good examples of acceptable procedures see American Society for Testing and

Materials (ASTM) Standard E 729, Guide for Conducting Acute Toxicity Tests with Fishes, Macroinvertebrates and Amphibians.

C. Results of acute tests during which the test organisms were fed should not be used, unless data indicate that the food did not affect the toxicity of the test material.

D. Results of acute tests conducted in unusual dilution water, e.g., dilution water in which total organic carbon or particulate matter exceeded 5 mg/L, should not be used, unless a relationship is developed between acute toxicity and organic carbon or particulate matter, or unless data show that organic carbon or particulate matter, etc., do not affect toxicity.

E. Acute values must be based upon endpoints which reflect the total severe adverse impact of the test material on the organisms used in the test. Therefore, only the following kinds of data on acute toxicity to aquatic animals shall be used:

   1. Tests with daphnids and other cladocerans must be started with organisms less than 24 hours old and tests with midges must be started with second or third instar larvae. It is preferred that the results should be the 48-hour EC50 based on the total percentage of organisms killed and immobilized. If such an EC50 is not available for a test, the 48-hour LC50 should be used in place of the desired 48-hour EC50. An EC50 or LC50 of longer than 48 hours can be used as long as the animals were not fed and the control animals were acceptable at the end of the test. An EC50 is a statistically or graphically estimated concentration that is expected to cause one or more specified effects in 50 percent of a group of organisms under specified conditions. An LC50 is a statistically or graphically estimated concentration that is expected to be lethal to 50 percent of a group of organisms under specified conditions.

   2. It is preferred that the results of a test with embryos and larvae of barnacles, bivalve mollusks (clams, mussels, oysters and scallops), sea urchins, lobsters, crabs, shrimp and abalones be the 96-hour EC50 based on the percentage of organisms with incompletely developed shells plus the percentage of organisms killed. If such an EC50 is not available from a test, of the values that are available from the test, the lowest of the following should be used in place of the desired 96-hour EC50: 48- to 96-hour EC50s based on percentage of organisms with incompletely developed shells plus percentage of organisms killed, 48- to 96-hour EC50s based upon percentage of organisms with incompletely developed shells, and 48-hour to 96-hour LC50s.

   3. It is preferred that the result of tests with all other aquatic animal species and older life stages of barnacles, bivalve mollusks (clams, mussels, oysters and scallops), sea urchins, lobsters, crabs, shrimp and abalones be the 96-hour EC50 based on percentage of organisms exhibiting loss of

equilibrium plus percentage of organisms immobilized plus percentage of organisms killed. If such an EC50 is not available from a test, of the values that are available from a test the lower of the following should be used in place of the desired 96-hour EC50: the 96-hour EC50 based on percentage of organisms exhibiting loss of equilibrium plus percentage of organisms immobilized and the 96-hour LC50.

4. Tests whose results take into account the number of young produced, such as most tests with protozoans, are not considered acute tests, even if the duration was 96 hours or less.

5. If the tests were conducted properly, acute values reported as "greater than" values and those that are above the solubility of the test material should be used, because rejection of such acute values would bias the FAV by eliminating acute values for resistant species.

F. If the acute toxicity of the material to aquatic animals has been shown to be related to a water quality characteristic such as hardness or particulate matter for freshwater animals, refer to section V of this appendix.

G. The agreement of the data within and between species must be considered. Acute values that appear to be questionable in comparison with other acute and chronic data for the same species and for other species in the same genus must not be used. For example, if the acute values available for a species or genus differ by more than a factor of ten, rejection of some or all of the values would be appropriate, absent countervailing circumstances.

H. If the available data indicate that one or more life stages are at least a factor of two more resistant than one or more other life stages of the same species, the data for the more resistant life stages must not be used in the calculation of the SMAV because a species cannot be considered protected from acute toxicity if all of the life stages are not protected.

I. For each species for which at least one acute value is available, the SMAV shall be calculated as the geometric mean of the results of all acceptable flow-through acute toxicity tests in which the concentrations of test material were measured with the most sensitive tested life stage of the species. For a species for which no such result is available, the SMAV shall be calculated as the geometric mean of all acceptable acute toxicity tests with the most sensitive tested life stage, i.e., results of flow-through tests in which the concentrations were not measured and results of static and renewal tests based on initial concentrations (nominal concentrations are acceptable for most test materials if measured concentrations are not available) of test material. A renewal test is a test with aquatic organisms in which either the test solution in a test chamber is removed and replaced at least once during the test or the test organisms are transferred into a new test solution of the same composition at least once during the test. A static test is a test with aquatic organisms in which the solution and organisms that are in a test chamber at the beginning of the test remain in the chamber until the end of the test, except for removal of dead test organisms.

Note 1: Data reported by original investigators must not be rounded off. Results of all intermediate calculations must not be rounded off to fewer than four significant digits.

Note 2: The geometric mean of N numbers is the N^{th} root of the product of the N numbers. Alternatively, the geometric mean can be calculated by adding the logarithms of the N numbers, dividing the sum by N, and taking the antilog of the quotient. The geometric mean of two numbers is the square root of the product of the two numbers, and the geometric mean of one number is that number. Either natural (base e) or common (base 10) logarithms can be used to calculate geometric means as long as they are used consistently within each set of data, i.e., the antilog used must match the logarithms used.

Note 3: Geometric means, rather than arithmetic means, are used here because the distributions of sensitivities of individual organisms in toxicity tests on most materials and the distributions of sensitivities of species within a genus are more likely to be lognormal than normal. Similarly, geometric means are used for ACRs because quotients are likely to be closer to lognormal than normal distributions. In addition, division of the geometric mean of a set of numerators by the geometric mean of the set of denominators will result in the geometric mean of the set of corresponding quotients.

J. For each genus for which one or more SMAVs are available, the GMAV shall be calculated as the geometric mean of the SMAVs available for the genus.

K. Order the GMAVs from high to low.

L. Assign ranks, R, to the GMAVs from "1" for the lowest to "N" for the highest. If two or more GMAVs are identical, assign them successive ranks.

M. Calculate the cumulative probability, P, for each GMAV as R/(N + 1).

N. Select the four GMAVs which have cumulative probabilities closest to 0.05 (if there are fewer than 59 GMAVs, these will always be the four lowest GMAVs).

O. Using the four selected GMAVs, and Ps, calculate:

$$L = \frac{\Sigma(\ln\ GMAV) - S(\Sigma(\sqrt{P}))}{4}$$

$$S^2 = \frac{\Sigma((\ln\ GMAV)^2) - \frac{(\Sigma(\ln\ GMAV))^2}{4}}{\Sigma(P) - \frac{(\Sigma(\sqrt{P}))^2}{4}}$$

$$A = S(\sqrt{0.05}) + L$$

$$FAV = e^A$$

Note: Natural logarithms (logarithms to base e, denoted as ln) are used herein merely because they are easier to use on some hand calculators and computers than common (base 10) logarithms. Consistent use of either will produce the same result.

P. If for a commercially or recreationally important species, the geometric mean of the acute values from flow-through tests in which the concentrations of test material were measured is lower than the calculated Final Acute Value (FAV), then that geometric mean must be used as the FAV instead of the calculated FAV.

Q. See section VI of this appendix.

V. Final Acute Equation

A. When enough data are available to show that acute toxicity to two or more species is similarly related to a water quality characteristic, the relationship shall be taken into account as described in sections V.B through V.G of this appendix or using analysis of covariance. The two methods are equivalent and produce identical results. The manual method described below provides an understanding of this application of covariance analysis, but computerized versions of covariance analysis are much more convenient for analyzing large data sets. If two or more factors affect toxicity, multiple regression analysis shall be used.

B. For each species for which comparable acute toxicity values are available at two or more different values of the water quality characteristic, perform a least squares regression of the acute toxicity values on the corresponding values of the water quality characteristic to obtain the slope and its 95 percent confidence limits for each species.

   Note: Because the best documented relationship is that between hardness and acute toxicity of metals in fresh water and a log-log relationship fits these data, geometric means and natural logarithms of both toxicity and water quality are used in the rest of this section. For relationships based on other water quality characteristics, such as pH or temperature, no transformation or a different transformation might fit the data better, and appropriate changes will be necessary throughout this section.

C. Decide whether the data for each species are relevant, taking into account the range and number of the tested values of the water quality characteristic and the degree of agreement within and between species. For example, a slope based on six data points might be of limited value if it is based only on data for a very narrow range of values of the water quality characteristic. A slope based on only two data points, however, might be useful if it is consistent with other information and if the two points cover a broad enough range of the water quality characteristic. In addition, acute values that appear to be questionable in comparison with other acute and chronic data available for the same species and for other species in the same genus should not be used. For example, if after adjustment for the water quality characteristic, the acute values available for a species or genus differ by more than a factor of ten, rejection of some or all of the values would be appropriate, absent countervailing justification. If useful slopes are not available for at least one fish and one invertebrate or if the available slopes are too dissimilar or if too few data are available to adequately define the relationship between acute toxicity and the water quality characteristic, return to section IV.G of this appendix, using the results of tests conducted under conditions and in waters similar to those commonly used for toxicity tests with the species.

D. For each species, calculate the geometric mean of the available acute values and then divide each of the acute values for the species by the geometric mean for the species. This normalizes the acute values so that the geometric mean of the normalized values for each species individually and for any combination of species is 1.0.

E. Similarly normalize the values of the water quality characteristic for each species individually using the same procedure as above.

F. Individually for each species perform a least squares regression of the normalized acute values of the water quality characteristic. The resulting slopes and 95 percent confidence limits will be identical to those obtained in section V.B. of this appendix. If, however, the data are actually plotted, the line of best fit for each individual species will go through the point 1,1 in the center of the graph.

G. Treat all of the normalized data as if they were all for the same species and perform a least squares regression of all of the normalized acute values on the corresponding normalized values of the water quality characteristic to obtain the pooled acute slope, V, and its 95 percent confidence limits. If all of the normalized data are actually plotted, the line of best fit will go through the point 1,1 in the center of the graph.

H. For each species calculate the geometric mean, W, of the acute toxicity values and the geometric mean, X, of the values of the water quality characteristic. (These were calculated in sections V.D and V.E of this appendix).

I. For each species, calculate the logarithm, Y, of the SMAV at a selected value, Z, of the water quality characteristic using the equation:

$$Y = \ln W - V(\ln X - \ln Z)$$

J. For each species calculate the SMAV at X using the equation:

$$SMAV = e^{Y}$$

Note: Alternatively, the SMAVs at Z can be obtained by skipping step H above, using the equations in steps I and J to adjust each acute value individually to Z, and then calculating the geometric mean of the adjusted values for each species individually. This alternative procedure allows an examination of the range of the adjusted acute values for each species.

K. Obtain the FAV at Z by using the procedure described in sections IV.J through IV.O of this appendix.

L. If, for a commercially or recreationally important species the geometric mean of the acute values at Z from flow-through tests in which the concentrations of the test material were measured is lower than the FAV at Z, then the geometric mean must be used as the FAV instead of the FAV.

M. The Final Acute Equation is written as:

$$FAV = e^{(V[\ln(\text{water quality characteristic})] + A - V[\ln Z])},$$

where V = pooled acute slope, and A = ln(FAV at Z).

Because V, A, and Z are known, the FAV can be calculated for any selected value of the water quality characteristic.

VI. Final Chronic Value

A. Depending on the data that are available concerning chronic toxicity to aquatic animals, the Final Chronic Value (FCV) can be calculated in the same manner as the FAV or by dividing the FAV by the Final Acute-Chronic Ratio (FACR). In some cases, it might not be possible to calculate a FCV. The FCV is (a) a calculated estimate of the concentration of a test material such that 95 percent of the genera (with which acceptable chronic toxicity tests have been conducted on the material) have higher GMCVs, or (b) the quotient of an FAV divided by an appropriate ACR, or (c) the SMCV of an important and/or critical species, if the SMCV is lower than the calculated estimate or the quotient, whichever is applicable.

   Note: As the name implies, the ACR is a way of relating acute and chronic toxicities.

B. Chronic values shall be based on results of flow-through (except renewal is acceptable for daphnids) chronic tests in which the concentrations of test material in the test solutions were properly measured at appropriate times during the test. A chronic test is a comparative study in which organisms, that are subjected to different treatments, are observed for a long period or a substantial portion of their life span.

C. Results of chronic tests in which survival, growth, or reproduction in the control treatment was unacceptably low shall not be used. The limits of acceptability will depend on the species.

D. Results of chronic tests conducted in unusual dilution water, e.g., dilution water in which total organic carbon or particulate matter exceeded 5 mg/L, should not be used, unless a relationship is developed between chronic toxicity and organic carbon or particulate matter, or unless data show that organic carbon, particulate matter, etc., do not affect toxicity.

E. Chronic values must be based on endpoints and lengths of exposure appropriate to the species. Therefore, only results of the following kinds of chronic toxicity tests shall be used:

   1. Life-cycle toxicity tests consisting of exposures of each of two or more groups of individuals of a species to a different concentration of the test material throughout a life cycle. To ensure that all life stages and life processes are exposed, tests with fish should begin with embryos or newly hatched young less than 48 hours old, continue through maturation and reproduction, and should end not less than 24 days (90 days for salmonids) after the hatching of the next generation. Tests with daphnids should begin with young less than 24 hours old and last for not less than 21 days, and for ceriodaphnids not less than seven days. For good examples of acceptable procedures see American Society for Testing and Materials

(ASTM) Standard E 1193 Guide for conducting renewal life-cycle toxicity tests with Daphnia magna and ASTM Standard E 1295 Guide for conducting three-brood, renewal toxicity tests with Ceriodaphnia dubia. Tests with mysids should begin with young less than 24 hours old and continue until seven days past the median time of first brood release in the controls. For fish, data should be obtained and analyzed on survival and growth of adults and young, maturation of males and females, eggs spawned per female, embryo viability (salmonids only), and hatchability. For daphnids, data should be obtained and analyzed on survival and young per female. For mysids, data should be obtained and analyzed on survival, growth, and young per female.

2. Partial life-cycle toxicity tests consist of exposures of each of two more groups of individuals of a species of fish to a different concentration of the test material through most portions of a life cycle. Partial life-cycle tests are allowed with fish species that require more than a year to reach sexual maturity, so that all major life stages can be exposed to the test material in less than 15 months. A life-cycle test is a comparative study in which organisms, that are subjected to different treatments, are observed at least from a life stage in one generation to the same life-stage in the next generation. Exposure to the test material should begin with immature juveniles at least two months prior to active gonad development, continue through maturation and reproduction, and end not less than 24 days (90 days for salmonids) after the hatching of the next generation. Data should be obtained and analyzed on survival and growth of adults and young, maturation of males and females, eggs spawned per female, embryo viability (salmonids only), and hatchability.

3. Early life-stage toxicity tests consisting of 28- to 32-day (60 days post hatch for salmonids) exposures of the early life stages of a species of fish from shortly after fertilization through embryonic, larval, and early juvenile development. Data should be obtained and analyzed on survival and growth.

   Note: Results of an early life-stage test are used as predictions of results of life cycle and partial life-cycle tests with the same species. Therefore, when results of a life cycle or partial life-cycle test are available, results of an early life-stage test with the same species should not be used. Also, results of early life-stage tests in which the incidence of mortalities or abnormalities increased substantially near the end of the test shall not be used because the results of such tests are possibly not good predictions of comparable life-cycle or partial life-cycle tests.

F. A chronic value may be obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test or by analyzing chronic data using regression analysis.

1. A lower chronic limit is the highest tested concentration:
   a) In an acceptable chronic test;
   b) Which did not cause an unacceptable amount of adverse effect on any of the specified biological measurements; and
   c) Below which no tested concentration caused an unacceptable effect.

2. An upper chronic limit is the lowest tested concentration:
   a) In an acceptable chronic test;
   b) Which did cause an unacceptable amount of adverse effect on one or more of the specified biological measurements; and
   c) Above which all tested concentrations also caused such an effect.

Note: Because various authors have used a variety of terms and definitions to interpret and report results of chronic tests, reported results should be reviewed carefully. The amount of effect that is considered unacceptable is often based on a statistical hypothesis test, but might also be defined in terms of a specified percent reduction from the controls. A small percent reduction (e.g., three percent) might be considered acceptable even if it is statistically significantly different from the control, whereas a large percent reduction (e.g., 30 percent) might be considered unacceptable even if it is not statistically significant.

G. If the chronic toxicity of the material to aquatic animals has been shown to be related to a water quality characteristic such as hardness or particulate matter for freshwater animals, refer to section VII of this appendix.

H. If chronic values are available for species in eight families as described in section III.B.1 of this appendix, a SMCV shall be calculated for each species for which at least one chronic value is available by calculating the geometric mean of the results of all acceptable life-cycle and partial life-cycle toxicity tests with the species; for a species of fish for which no such result is available, the SMCV is the geometric mean of all acceptable early life-stage tests. Appropriate GMCVs shall also be calculated. A GMCV is the geometric mean of the SMCVs for the genus. The FCV shall be obtained using the procedure described in sections IV.J through IV.O of this appendix, substituting SMCV and GMCV for SMAV and GMAV respectively. See section VI.M of this appendix.

Note: Section VI.I through VI.L is for use when chronic values are not available for species in eight taxonomic families as described in section III.B.1 of this appendix.

I. For each chronic value for which at least one corresponding appropriate acute value is available, calculate an ACR, using for the numerator the geometric mean of the results of all acceptable flow-through (except static is acceptable for daphnids and midges) acute tests in the same dilution water in which the concentrations are measured. For fish, the acute test(s) should be conducted with juveniles. The acute test(s) should be part of the same study as the chronic test. If acute tests were not conducted as part of the same study, but were conducted as part of a different study in the same laboratory and dilution water, then they may be used. If no such acute tests are available, results of acute tests conducted in the same dilution water in a different laboratory may be used. If no such acute tests are available, an ACR shall not be calculated.

J. For each species, calculate the SMACR as the geometric mean of all ACRs available for that species.

K. For some materials, the ACR seems to be the same for all species, but for other materials the ratio seems to increase or decrease as the SMAV increases. Thus the FACR can be obtained in three ways, depending on the data available:

1. If the species mean ACR seems to increase or decrease as the MAVs increase, the FACR shall be calculated as the geometric mean of the ACRs for species whose SMAVs are close to the FAV.

2. If no major trend is apparent and the ACRs for all species are within a factor of ten, the FACR shall be calculated as the geometric mean of all of the SMACRs.

3. If the most appropriate SMACRs are less than 2.0, and especially if they are less than 1.0, acclimation has probably occurred during the chronic test. In this situation, because continuous exposure and acclimation cannot be assured to provide adequate protection in field situations, the FACR should be assumed to be 2, so that the FCV is equal to the Criterion Maximum Concentration (CMC). See section X.B of this appendix.

   If the available SMACRs do not fit one of these cases, a FACR may not be obtained and a Tier I FCV probably cannot be calculated.

L. Calculate the FCV by dividing the FAV by the FACR:

$$FCV = FAV/FACR$$

If there is a Final Acute Equation rather than a FAV, see section V of this appendix.

M. If the SMCV of a commercially or recreationally important species is lower than the calculated FCV, then that SMCV must be used as the FCV instead of the calculated FCV.

N. See section VIII of this appendix.

VII. Final Chronic Equation

A. A Final Chronic Equation can be derived in two ways. The procedure described in section VII.A. of this appendix will result in the chronic slope being the same as the acute slope. The procedure described in sections VII.B. through N of this appendix will usually result in the chronic slope being different from the acute slope.

1. If ACRs are available for enough species at enough values of the water quality characteristic to indicate that the ACR appears to be the same for all species and appears to be independent of the water quality characteristic, calculate the FACR as the geometric mean of the available SMACRs.

2. Calculate the FCV at the selected value Z of the water quality characteristic by dividing the FAV at Z (see section V.M of this appendix) by the FACR.

3. Use V = pooled acute slope (see section V.M of this appendix), and L = pooled chronic slope.

4. See section VII.M of this appendix.

B. When enough data are available to show that chronic toxicity to at least one species is related to a water quality characteristic, the relationship should be taken into account as described in sections C through G below or using analysis of covariance. The two methods are equivalent and produce identical results. The manual method described below provides an understanding of this application of covariance analysis, but computerized versions of covariance analysis are much more convenient for analyzing large data sets. If two or more factors affect toxicity, multiple regression analysis shall be used.

C. For each species for which comparable chronic toxicity values are available at two or more different values of the water quality characteristic, perform a least squares regression of the chronic toxicity values on the corresponding values of the water quality characteristic to obtain the slope and its 95 percent confidence limits for each species.

Note: Because the best documented relationship is that between hardness and acute toxicity of metals in fresh water and a log-log relationship fits these data, geometric means and natural logarithms of both toxicity and water quality are used in the rest of this section. For relationships based on other water quality characteristics, such as pH or temperature, no transformation or a different transformation might fit the data better, and appropriate changes will be necessary throughout this section. It is probably preferable, but not necessary, to use the same transformation that was used with the acute values in section V of this appendix.

D. Decide whether the data for each species are relevant, taking into account the range and number of the tested values of the water quality characteristic and the degree of agreement within and between species. For example, a slope based on six data points might be of limited value if it is based only on data for a very narrow range of values of the water quality characteristic. A slope based on only two data points, however, might be more useful if it is consistent with other information and if the two points cover a broad range of the water quality characteristic. In addition, chronic values that appear to be questionable in comparison with other acute and chronic data available for the same species and for other species in the same genus in most cases should not be used. For example, if after adjustment for the water quality characteristic, the chronic values available for a species or genus differ by more than a factor of 10, rejection of some or all of the values is, in most cases, absent countervailing circumstances, appropriate. If a useful chronic slope is not available for at least one species or if the available slopes are too dissimilar or if too few data are available to adequately define the relationship between chronic toxicity and the water quality characteristic, it might be appropriate to assume that the chronic slope is the same as the acute slope, which is equivalent to assuming that the ACR is independent of the water quality characteristic. Alternatively, return to section VI.H of this appendix, using the results of tests conducted under conditions and in waters similar to those commonly used for toxicity tests with the species.

E. Individually for each species, calculate the geometric mean of the available chronic values and then divide each chronic value for a species by the mean for the species. This normalizes the chronic values so that the geometric mean of the normalized values for each species individually, and for any combination of species, is 1.0.

F. Similarly, normalize the values of the water quality characteristic for each species individually.

G. Individually for each species, perform a least squares regression of the normalized chronic toxicity values on the corresponding normalized values of the water quality characteristic. The resulting slopes and the 95 percent confidence limits will be identical to those obtained in section VII.B of this appendix. Now, however, if the data are actually plotted, the line of best fit for each individual species will go through the point 1,1 in the center of the graph.

H. Treat all of the normalized data as if they were all the same species and perform a least squares regression of all of the normalized chronic values on the corresponding normalized values of the water quality characteristic to obtain the pooled chronic slope, L, and its 95 percent confidence limits. If all normalized data are actually plotted, the line of best fit will go through the point 1,1 in the center of the graph.

I. For each species, calculate the geometric mean, M, of the toxicity values and the geometric mean, P, of the values of the water quality characteristic. (These are calculated in sections VII.E and F of this appendix.)

J. For each species, calculate the logarithm, Q, of the SMCV at a selected value, Z, of the water quality characteristic using the equation:

$$Q = \ln M - L(\ln P - \ln Z)$$

Note: Although it is not necessary, it is recommended that the same value of the water quality characteristic be used here as was used in section V of this appendix.

K. For each species, calculate a SMCV at Z using the equation:

$$SMCV = e^{Q}$$

Note: Alternatively, the SMCV at Z can be obtained by skipping section VII.J of this appendix, using the equations in sections VII.J and K of this appendix to adjust each chronic value individually to Z, and then calculating the geometric means of the adjusted values for each species individually. This alternative procedure allows an examination of the range of the adjusted chronic values for each species.

L. Obtain the FCV at Z by using the procedure described in sections IV.J through O of this appendix.

M. If the SMCV at Z of a commercially or recreationally important species is lower than the calculated FCV at Z, then that SMCV shall be used as the FCV at Z instead of the calculated FCV.

N. The Final Chronic Equation is written as:

$$FCV = e^{(L[\ln(\text{water quality characteristic})] + \ln S - L[\ln Z])}$$

where:

L = pooled chronic slope
S = FCV at Z.

Because L, S, and Z are known, the FCV can be calculated for any selected value of the water quality characteristic.

VIII. Final Plant Value

A. A Final Plant Value (FPV) is the lowest plant value that was obtained with an important aquatic plant species in an acceptable toxicity test for which the concentrations of the test material were measured and the adverse effect was biologically important. Appropriate measures of the toxicity of the material to aquatic plants are used to compare the relative sensitivities of aquatic plants and animals. Although procedures for conducting and interpreting the results of toxicity tests with plants are not well-developed, results of tests with plants usually indicate that criteria which adequately protect aquatic animals and their uses will, in most cases, also protect aquatic plants and their uses.

B. A plant value is the result of a 96-hour test conducted with an alga or a chronic test conducted with an aquatic vascular plant.

Note: A test of the toxicity of a metal to a plant shall not be used if the medium contained an excessive amount of a completing agent, such as EDTA, that might affect the toxicity of the metal. Concentrations of EDTA above 200 µg/L should be considered excessive.

C. The FPV shall be obtained by selecting the lowest result from a test with an important aquatic plant species in which the concentrations of test material are measured and the endpoint is biologically important.

IX. Other Data

Pertinent information that could not be used in earlier sections might be available concerning adverse effects on aquatic organisms. The most important of these are data on cumulative and delayed toxicity, reduction in survival, growth, or reproduction, or any other adverse effect that has been shown to be biologically important. Delayed toxicity is an adverse effect to an organism that results from, and occurs after the end of, its exposure to one or more test materials. Especially important are data for species for which no other data are available. Data from behavioral, biochemical, physiological, microcosm, and field studies might also be available. Data might be available from tests conducted in unusual dilution water (see sections IV.D and VI.D of this appendix), from chronic tests in which the concentrations were not measured (see section VI.B of this appendix), from tests with previously exposed organisms (see section II.F.3 of this appendix), and from tests on formulated mixtures or emulsifiable concentrates (see section II.D of this appendix). Such data might affect a criterion if the data were obtained with an important species, the test concentrations were measured, and the endpoint was biologically important.

X. Criterion

A. A criterion consists of two concentrations: the Criterion Maximum Concentration (CMC) and the Criterion Continuous Concentration (CCC).

B. The CMC is equal to one-half the FAV. The CMC is an estimate of the highest concentration of a material in the water column to which an aquatic community can be exposed briefly without resulting in an unacceptable effect.

C. The CCC is equal to the lowest of the FCV or the FPV (if available) unless other data (see section IX of this appendix) show that a lower value should be used. The CCC is an estimate of the highest concentration of a material in the water column to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. If toxicity is related to a water quality characteristic, the CCC is obtained from the Final Chronic Equation or FPV (if available) that results in the lowest concentrations in the usual range of the water quality characteristic, unless other data (see section IX) show that a lower value should be used.

D. Round both the CMC and the CCC to two significant digits.

E. The criterion is stated as:
The procedures described in the Tier I methodology indicate that, except possibly where a commercially or recreationally important species is very sensitive, aquatic organisms should not be affected unacceptably if the four-day average concentration of (1) does not exceed (2) µg/L more than once every three years on the average and if the one-hour average concentration does not exceed (3) µg/L more than once every three years on the average.
where:

(1) = Insert name of material
(2) = Insert the CCC
(3) = Insert the CMC

If the CMC averaging period of one hour or the CCC averaging period of four days is inappropriate for the pollutant, or if the once-in-three-year allowable excursion frequency is inappropriate for the pollutant or for the sites to which a criterion is applied, then the State may specify alternative averaging periods or frequencies. The choice of an alternative averaging period or frequency shall be justified by a scientifically defensible analysis demonstrating that the alternative values will protect the aquatic life uses of the water. Appropriate laboratory data and/or well-designed field biological surveys shall be submitted to EPA as justification for differing averaging periods and/or frequencies of exceedance.

XI. Final Review

A. The derivation of the criterion should be carefully reviewed by rechecking each step of the Guidance in this part. Items that should be especially checked are:

1. If unpublished data are used, are they well documented?

2. Are all required data available?

3. Is the range of acute values for any species greater than a factor of ten?

4. Is the range of SMAVs for any genus greater than a factor of ten?

5. Is there more than a factor of ten difference between the four lowest GMAVs?

6. Are any of the lowest GMAVs questionable?

7. Is the FAV reasonable in comparison with the SMAVs and GMAVs?

8. For any commercially or recreationally important species, is the geometric mean of the acute values from flow-through tests in which the concentrations of test material were measured lower than the FAV?

9. Are any of the chronic values used questionable?

10. Are any chronic values available for acutely sensitive species?

11. Is the range of acute-chronic ratios greater than a factor of ten?

12. Is the FCV reasonable in comparison with the available acute and chronic data?

13. Is the measured or predicted chronic value for any commercially or recreationally important species below the FCV?

14. Are any of the other data important?

15. Do any data look like they might be outliers?

16. Are there any deviations from the guidance in this part? Are they acceptable?

B. On the basis of all available pertinent laboratory and field information, determine if the criterion is consistent with sound scientific evidence. If it is not, another criterion, either higher or lower, shall be derived consistent with the Guidance in this part.

Methodology for Deriving Aquatic Life Values:

Tier II

XII. Secondary Acute Value

If all eight minimum data requirements for calculating an FAV using Tier I are not met, a Secondary Acute Value (SAV) shall be calculated for a chemical as follows:

To calculate a SAV, the lowest GMAV in the database is divided by the Secondary Acute Factor (SAF) (Table A-1 of this appendix) corresponding to the number of satisfied minimum data requirements listed in the Tier I methodology (section III.B.1 of this appendix). Requirements for definitions, data collection and data review, contained in sections I, II, and IV shall be applied to calculation of a SAV. If all eight minimum data requirements are satisfied, a Tier I criterion calculation may be possible. In order to calculate a SAV, the database must contain, at a minimum, a genus mean acute value (GMAV) for one of the following three genera in the family Daphnidae - *Ceriodaphnia sp*., *Daphnia sp*., or *Simocephalus sp.*

If appropriate, the SAV shall be made a function of a water quality characteristic in a manner similar to that described in Tier I.

XIII. Secondary Acute-Chronic Ratio

If three or more experimentally determined ACRs, meeting the data collection and review requirements of Section VI of this appendix, are available for the chemical, determine the FACR using the procedure described in Section VI. If fewer than three acceptable experimentally determined ACRs are available, use enough assumed ACRs of 18 so that the total number of ACRs equals three. Calculate the Secondary Acute-Chronic Ratio (SACR) as the geometric mean of the three ACRs. Thus, if no experimentally determined ACRs are available, the SACR is 18.

XIV. Secondary Chronic Value

Calculate the Secondary Chronic Value (SCV) using one of the following:

A. $$SCV = \frac{FAV}{SACR}$$ (use FAV from Tier I)

B. $$SCV = \frac{SAV}{FACR}$$

C. $SCV = \frac{SAV}{SACR}$

If appropriate, the SCV will be made a function of a water quality characteristic in a manner similar to that described in Tier I.

XV. Commercially Or Recreationally Important Species

If for a commercially or recreationally important species the geometric mean of the acute values or chronic values from flow-through tests in which the concentrations of the test materials were measured is lower than the calculated SAV or SCV, then that geometric mean must be used as the SAV or SCV instead of the calculated SAV or SCV.

XVI. Tier II Value

A. A Tier II value shall consist of two concentrations: the Secondary Maximum Concentration (SMC) and the Secondary Continuous Concentration (SCC).

B. The SMC is equal to one-half of the SAV.

C. The SCC is equal to the lowest of the SCV or the Final Plant Value, if available, unless other data (see section IX of this appendix) show that a lower value should be used.

If toxicity is related to a water quality characteristic, the SCC is obtained from the Secondary Chronic Equation or FPV, if available, that results in the lowest concentrations in the usual range of the water quality characteristic, unless other data (see section IX of this appendix) show that a lower value should be used.

D. Round both the SMC and the SCC to two significant digits.

E. The Tier II value is stated as:

The procedures described in the Tier II methodology indicate that, except possibly where a locally important species is very sensitive, aquatic organisms should not be affected unacceptably if the four-day average concentration of (1) does not exceed (2) µg/L more than once every three years on the average and if the one-hour average concentration does not exceed (3) µg/L more than once every three years on the average.

Where:

(1) = insert name of material
(2) = insert the SCC
(3) = insert the SMC

As discussed above, States and Tribes have the discretion to specify alternative averaging periods or frequencies.

XVII. Appropriate Modifications

On the basis of all available pertinent laboratory and field information, determine if the Tier II value is consistent with sound scientific evidence. If it is not, another value, either higher or lower, shall be derived consistent with the Guidance in this part.

Table A-1: Secondary Acute Factors

Number of Minimum Data Requirements Satisfied	Adjustment Factor
1	21.9
2	13.0
3	8.0
4	7.0
5	6.1
6	5.2
7	4.3

XVIII. Definitions

The following definitions apply in this part. Terms not defined in this section have the meaning given by the Clean Water Act and EPA implementing regulations.

- **Acute-chronic ratio (ACR)** is a standard measure of the acute toxicity of a material divided by an appropriate measure of the chronic toxicity of the same material under comparable conditions.
- **Acute toxicity** is concurrent and delayed adverse effect(s) that results from an acute exposure and occurs within any short observation period which begins when the exposure begins, may extend beyond the exposure period, and usually does not constitute a substantial portion of the life span of the organism.
- **Adverse effect** is any deleterious effect to organisms due to exposure to a substance. This includes effects which are or may become debilitating, harmful or toxic to the normal functions of the organism, but does not include non-harmful effects such as tissue discoloration alone or the induction of enzymes involved in the metabolism of the substance.
- **Bioaccumulation** is the net accumulation of a substance by an organism as a result of uptake from all environmental sources.
- **Bioaccumulation factor (BAF)** is the ratio (in L/kg) of a substance's concentration in tissue of an aquatic organism to its concentration in the ambient water, in situations where both the organism and its food are exposed and the ratio does not change substantially over time.

- **Bioaccumulative chemical of concern (BCC)** is any chemical that has the potential to cause adverse effects which, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor greater than 1000, after considering metabolism and other physicochemical properties that might enhance or inhibit bioaccumulation, in accordance with the methodology in appendix B of this part. Chemicals with half-lives of less than eight weeks in the water column, sediment, and biota are not BCCs. The minimum BAF information needed to define an organic chemical as a BCC is either a field-measured BAF or a BAF derived using the BSAF methodology. The minimum BAF information needed to define an inorganic chemical, including an organometal, as a BCC is either a field-measured BAF or a laboratory-measured BCF. BCCs include, but are not limited to, the pollutants identified as BCCs in section VI.G.
- **Bioconcentration** is the net accumulation of a substance by an aquatic organism as a result of uptake directly from the ambient water through gill membranes or other external body surfaces.
- **Bioconcentration factor (BCF)** is the ratio (in L/kg) of a substance's concentration in tissue of an aquatic organism to its concentration in the ambient water, in situations where the organism is exposed through the water only and the ratio does not change substantially over time.
- **Biota-sediment accumulation factor (BSAF)** is the ratio (in kg of organic carbon/kg of lipid) of a substance's lipid-normalized concentration in tissue of an aquatic organism to its organic carbon-normalized concentration in surface sediment, in situations where the ratio does not change substantially over time, both the organism and its food are exposed, and the surface sediment is representative of average surface sediment in the vicinity of the organism.
- **Carcinogen** is a substance which causes an increased incidence of benign or malignant neoplasms, or substantially decreases the time to develop neoplasms, in animals or humans.
- **Chronic toxicity** is concurrent and delayed adverse effect(s) that occurs only as a result of a chronic exposure.
- **Criterion continuous concentration (CCC)** is an estimate of the highest concentration of a material in the water column to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect.
- **Criterion maximum concentration (CMC)** is an estimate of the highest concentration of a material in the water column to which an aquatic community can be exposed briefly without resulting in an unacceptable effect.
- **EC50** is a statistically or graphically estimated concentration that is expected to cause one or more specified effects in 50 percent of a group of organisms under specified conditions.
- **Endangered or threatened species** are those species that are listed as endangered or threatened under section 4 of the Endangered Species Act.
- **Existing discharger** is any building, structure, facility, or installation from which there is or may be a "discharge of pollutants" (as defined in 40 CFR 122.2), that is not a new discharger.
- **Final acute value (FAV)** is (a) a calculated estimate of the concentration of a test material such that 95 percent of the genera (with which acceptable acute toxicity

tests have been conducted on the material) have higher GMAVs, or (b) the SMAV of an important and/or critical species, if the SMAV is lower than the calculated estimate.

- **Final chronic value (FCV)** is (a) a calculated estimate of the concentration of a test material such that 95 percent of the genera (with which acceptable chronic toxicity tests have been conducted on the material) have higher GMCVs, (b) the quotient of an FAV divided by an appropriate acute-chronic ratio, or (c) the SMCV of an important and/or critical species, if the SMCV is lower than the calculated estimate or the quotient, whichever is applicable.
- **Final plant value (FPV)** is the lowest plant value that was obtained with an important aquatic plant species in an acceptable toxicity test for which the concentrations of the test material were measured and the adverse effect was biologically important.
- **Genus mean acute value (GMAV)** is the geometric mean of the SMAVs for the genus.
- **Genus mean chronic value (GMCV)** is the geometric mean of the SMCVs for the genus.
- **Human cancer criterion (HCC)** is a Human Cancer Value (HCV) for a pollutant that meets the minimum data requirements for Tier I.
- **Human cancer value (HCV)** is the maximum ambient water concentration of a substance at which a lifetime of exposure from either: drinking the water, consuming fish from the water, and water-related recreation activities; or consuming fish from the water, and water-related recreation activities, will represent a plausible upper-bound risk of contracting cancer of one in 100,000 using the exposure assumptions specified in the Methodologies for the Development of Human Health Criteria and Values.
- **Human noncancer criterion (HNC)** is a Human Noncancer Value (HNV) for a pollutant that meets the minimum data requirements for Tier I.
- **Human noncancer value (HNV)** is the maximum ambient water concentration of a substance at which adverse noncancer effects are not likely to occur in the human population from lifetime exposure via either: drinking the water, consuming fish from the water, and water-related recreation activities; or consuming fish from the water, and water-related recreation activities using the Methodologies for the Development of Human Health Criteria and Values.
- **LC50** is a statistically or graphically estimated concentration that is expected to be lethal to 50 percent of a group of organisms under specified conditions.
- **Load allocation (LA)** is the portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources or to natural background sources, as more fully defined at 40 CFR 130.2(g). Nonpoint sources include: in-place contaminants, direct wet and dry deposition, groundwater inflow, and overland runoff.
- **Loading capacity** is the greatest amount of loading that a water can receive without violating water quality standards.
- **Lowest observed adverse effect level (LOAEL)** is the lowest tested dose or concentration of a substance which resulted in an observed adverse effect in exposed test organisms when all higher doses or concentrations resulted in the same or more severe effects.

- **Method detection level** is the minimum concentration of an analyte (substance) that can be measured and reported with a 99 percent confidence that the analyte concentration is greater than zero as determined by the procedure set forth in appendix B of 40 CFR part 136.
- **Minimum level (ML)** is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specified sample weights, volumes and processing steps have been followed.
- **New discharger** is any building, structure, facility, or installation from which there is or may be a "discharge of pollutants" (as defined in 40 CFR 122.2).
- **No observed adverse effect level (NOAEL)** is the highest tested dose or concentration of a substance which resulted in no observed adverse effect in exposed test organisms where higher doses or concentrations resulted in an adverse effect.
- **No observed effect concentration (NOEC)** is the highest concentration of toxicant to which organisms are exposed in a full life cycle or partial life-cycle (short-term) test, that causes no observable adverse effects on the test organisms (i.e., the highest concentration of toxicant in which the values for the observed responses are not statistically significantly different from the controls).
- **Quantification level** is a measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calibrated at a specified concentration above the method detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.
- **Quantitative structure activity relationship (QSAR)** or structure activity relationship (SAR) is a mathematical relationship between a property (activity) of a chemical and a number of descriptors of the chemical. These descriptors are chemical or physical characteristics obtained experimentally or predicted from the structure of the chemical.
- **Risk associated dose (RAD)** is a dose of a known or presumed carcinogenic substance in (mg/kg)/day which, over a lifetime of exposure, is estimated to be associated with a plausible upper bound incremental cancer risk equal to one in 100,000.
- **Species mean acute value (SMAV)** is the geometric mean of the results of all acceptable flow-through acute toxicity tests (for which the concentrations of the test material were measured) with the most sensitive tested life stage of the species. For a species for which no such result is available for the most sensitive tested life stage, the SMAV is the geometric mean of the results of all acceptable acute toxicity tests with the most sensitive tested life stage.
- **Species mean chronic value (SMCV)** is the geometric mean of the results of all acceptable life-cycle and partial life-cycle toxicity tests with the species; for a species of fish for which no such result is available, the SMCV is the geometric mean of all acceptable early life-stage tests.
- **Stream design flow** is the stream flow that represents critical conditions, upstream from the source, for protection of aquatic life, human health, or wildlife.

- **Threshold effect** is an effect of a substance for which there is a theoretical or empirically established dose or concentration below which the effect does not occur.
- **Tier I criteria** are numeric values derived by use of the Tier I methodologies in appendixes A, C and D of this part, the methodology in appendix B of this part, and the procedures in appendix F of this part, that either have been adopted as numeric criteria into a water quality standard or are used to implement narrative water quality criteria.
- **Tier II values** are numeric values derived by use of the Tier II methodologies in appendixes A and C of this part, the methodology in appendix B of this part, and the procedures in appendix F of this part, that are used to implement narrative water quality criteria.
- **Total maximum daily load (TMDL)** is the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background, as more fully defined at 40 CFR 130.2(i). A TMDL sets and allocates the maximum amount of a pollutant that may be introduced into a water body and still assure attainment and maintenance of water quality standards.
- **Uncertainty factor (UF)** is one of several numeric factors used in operationally deriving criteria from experimental data to account for the quality or quantity of the available data.
- **Uptake** is acquisition of a substance from the environment by an organism as a result of any active or passive process.
- **Waste load allocation (WLA)** is the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution, as more fully defined at 40 CFR 130.2(h). In the absence of a TMDL approved by EPA pursuant to 40 CFR 130.7 or an assessment and remediation plan developed and approved in accordance with procedure 3.A of appendix F of this part, a WLA is the allocation for an individual point source, that ensures that the level of water quality to be achieved by the point source is derived from and complies with all applicable water quality standards.
- **Wet weather point source** means any discernible, confined and discrete conveyance from which pollutants are, or may be, discharged as the result of a wet weather event. Discharges from wet weather point sources shall include only: discharges of storm water from a municipal separate storm sewer as defined at 40 CFR 122.26(b)(8); storm water discharge associated with industrial activity as defined at 40 CFR 122.26(b)(14); discharges of storm water and sanitary wastewaters (domestic, commercial, and industrial) from a combined sewer overflow; or any other storm water discharge for which a permit is required under section 402(p) of the Clean Water Act. A storm water discharge associated with industrial activity which is mixed with process wastewater shall not be considered a wet weather point source.

Appendix E

Clean Water Act Section 304(a)
Human Health Criteria for Priority Pollutants

Priority Pollutant	Human Health Criteria (µg/L)
Antimony	5.6[A]
Copper	1300[G]
Methylmercury	0.3 mg/kg[D]
Nickel	610[A]
Selenium	170[H]
Thallium	1.7[A]
Zinc	7400[G]
Cyanide	700[A]
Asbestos	7 million fibers/L[C]
2,3,7,8-TCDD (Dioxin)	0.000000005[B]
Acrolein	190
Acrylonitrile	0.051[A,B]
Benzene	2.2[A,B]
Bromoform	4.3[A,B]
Carbon Tetrachloride	0.23[A,B]
Chlorobenzene	680[A,G,H]
Chlorodibromomethane	0.4[A,B]
Chloroform	5.7[B,F]
Dichlorobromomethane	0.55[A,B]
1,2-Dichloroethane	0.38[A,B]
1,1-Dichloroethylene	0.057[B]
1,2-Dichloropropane	0.5[A,B]
1,3-Dichloropropene	10
Ethylbenzene	3100[A]
Methyl Bromide	47[A]
Methylene Chloride	4.6[A,B]
1,1,2,2-Tetrachloroethane	0.17[A,B]
Tetrachloroethylene	0.69[B]
Toluene	6800[A,H]
1,2-Trans-Dichloroethylene	700[A,H]
1,1,2-Trichloroethane	0.59[A,B]

Priority Pollutant	Human Health Criteria (µg/L)
Pentachlorophenol	0.27[A,B]
Phenol	21000[A,G]
2,4,6-Trichlorophenol	1.4[A,B]
Acenaphthene	670[A,G]
Anthracene	8300[A]
Benzidine	0.000086[A,B]
Benzo(a) Anthracene	0.0038[A,B]
Benzo(a) Pyrene	0.0038[A,B]
Benzo(b) Fluoranthene	0.0038[A,B]
Benzo(k) Fluoranthene	0.0038[A,B]
Bis(2-Chloroethyl) Ether	0.03[A,B]
Bis(2-Chloroisopropyl) Ether	1400[A]
Bis(2-Ethylhexyl)Phthalate	1.2[A,B]
Butylbenzyl Phthalate	1500[A]
2-Chloronaphthalene	1000[A]
Chrysene	0.0038[A,B]
Dibenzo(a,h) Anthracene	0.0038[A,B]
1,2-Dichlorobenzene	2700[A]
1,3-Dichlorobenzene	320
1,4-Dichlorobenzene	400[H]
3,3'-Dichlorobenzidine	0.021[A,B]
Diethyl Phthalate	17000[A]
Dimethyl Phthalate	270000
Di-n-Butyl Phthalate	2000[A]
2,4-Dinitrotoluene	0.11[B]
1,2-Diphenylhydrazine	0.036[A,B]
Fluoranthene	130[A]
Fluorene	1100[A]
Hexachlorobenzene	0.00028[A,B]
Hexachlorobutadiene	0.44[A,B]
Hexachlorocyclopentadiene	240[G,H]

Priority Pollutant	Human Health Criteria (ug/L)
Trichloroethylene	2.5[B]
Vinyl Chloride	2.0[B]
2-Chlorophenol	81[A,G]
2,4-Dichlorophenol	77[A,G]
2,4-Dimethylphenol	380[A]
2-Methyl-4,6-Dinitrophenol	13
2,4-Dinitrophenol	69
Pyrene	830[A]
1,2,4-Trichlorobenzene	260
Aldrin	0.000049[A,B]
alpha-BHC	0.0026[A,B]
beta-BHC	0.0091[A,B]
gamma-BHC (Lindane)	0.019[B]
Chlordane	0.0008[A,B]
4,4'-DDT	0.00022[A,B]
4,4'-DDE	0.00022[A,B]
4,4'-DDD	0.00031[A,B]

Priority Pollutant	Human Health Criteria (ug/L)
Hexachloroethane	1.4[A,B]
Ideno(1,2,3-cd) Pyrene	0.0038[A,B]
Isophorone	35[A,B]
Nitrobenzene	17[A]
N-Nitrosodimethylamine	0.00069[A,B]
N-Nitrosodi-n-Propylamine	0.005[A,B]
N-Nitrosodiphenylamine	3.3[A,B]
Dieldrin	0.000052[A,B]
alpha-Endosulfan	62[A]
beta-Endosulfan	62[A]
Endosulfan Sulfate	62[A]
Endrin	0.76[A]
Endrin Aldehyde	0.29[A]
Heptachlor	0.000079[A,B]
Heptachlor Epoxide	0.000039[A,B]
Polychlorinated Biphenyls	0.000064[A,B,E]
Toxaphene	0.00028[A,B]

Footnotes:

A This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) from the 1980 Ambient Water Quality Criteria document was retained in each case.

B This criterion is based on carcinogenicity of 10^{-6} risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of 10^{-5}, move the decimal point in the recommended criterion one place to the right).

C This criterion for asbestos is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act (SDWA).

D This fish tissue residue criterion for methylmercury is based on a total fish consumption rate of 0.0175 kg/day.

E This criterion applies to total PCBs, (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses.)

F Although a new RfD is available in IRIS, the surface water criteria will not be revised until the National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) is completed, since public comment on the relative source contribution (RSC) for chloroform is anticipated.

G The organoleptic effect criterion is more stringent than the value for priority toxic pollutants.

H EPA has issued a more stringent MCL. Refer to drinking water regulations (40 CFR 141) or Safe Drinking Water Hotline (1-800-426-4791) for values.

I This human health criterion is the same as originally published in the Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value is now published in the Gold Book.

J EPA under the Safe Drinking Water Act has issued a more stringent Maximum Contaminant Level (MCL). Refer to drinking water regulations 40CFR141 or Safe Drinking Water Hotline (1-800-426-4791) for values.

K This criterion for manganese is not based on toxic effects, but rather is intended to minimize objectionable qualities such as laundry stains and objectionable tastes in beverages.

APPENDIX F

Alternate Approaches For Calculating Acute Mixing Zones

Alternative 1

Apply the acute criterion at the end-of-pipe.

Alternative 2 (for high velocity discharges => 3 m/s)

The acute criterion should be met within 50 times the discharge length scale (50 times square root of the cross-sectional pipe area). The scientific basis for this alternative is that these conditions will ensure that the acute criterion is met within a few minutes under practically all conditions.

Alternative 3 (for low velocity discharges < 3 m/s)

The acute criterion should be met:

1) Within 10% of the distance from the end-of-pipe to the edge of the regulatory mixing zone in any direction. This will restrict the acute zone to a relatively small area around the discharge pipe.
2) Within a distance of 50 times the square root of the pipe diameter (discharge length scale). This will ensure a dilution factor of at least ten at the edge of the acute mixing zone.
3) Within a distance of 5 times the local in any horizontal direction water depth. This will ensure that mixing zones are not established in shallow, near-shore waters.

Alternative 4 (demonstration by discharger)

A discharger may demonstrate that a drifting organism would not be exposed to 1-hour average concentrations exceeding acute aquatic life criteria or would not receive harmful exposure when evaluated by other valid toxicological analyses.

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