

September 14, 2007

Jack C. Bender, Esq.  
Greenebaum Doll & McDonald PLLC  
300 West Vine Street  
Suite 1100  
Lexington, KY 40507-1665

VIA HAND DELIVERY

RE: Cincinnati v EPPC and SD#1, Petition for Hearing and Request for Access

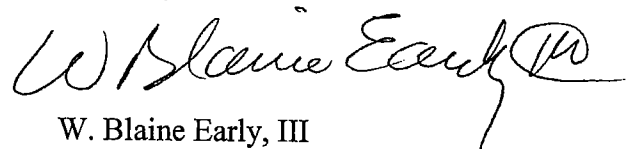
Dear Jack:

As we have discussed, Cincinnati is filing a petition for hearing to challenge the permit for the ERWWTP. Cincinnati is filing the petition to preserve and pursue all of its rights. I believe that at this time Cincinnati does not intend to file an action to enjoin the ERWWTP from beginning operation, but that may change.

Cincinnati, SD#1, ORSANCO, and several governmental officials and organizations have been engaged in discussions on the issues, and Cincinnati wants those discussions to continue. Toward that end, and in the spirit of the discussions that these parties have had, Cincinnati requests immediate access to the ERWWTP site and related facilities to begin sampling of the wastestream and effluent. In particular Cincinnati requests access to take grab samples of the effluent from the ERWWTP and the waste stream from the Kahn's Plant. Cincinnati will share the results of this sampling with SD#1 and the Cabinet if these entities desire those results.

I look forward to hearing from you.

Sincerely,



W. Blaine Early, III

cc: Laura D. Keller, Esq.

CN74:37189:271589:1:LEXINGTON



September 14, 2007

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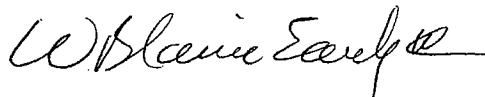
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RE: The City of Cincinnati v. Environmental and Public Protection Cabinet and  
Sanitation District No. 1 of Northern Kentucky - KPDES Permit No. KY0105031  
Petition for Hearing

Dear Counselors:

Enclosed is a copy of the Petition for Hearing in the above-referenced matter which was  
filed on September 13, 2007.

Sincerely,



W. Blaine Early, III

WBE:cs

Enclosure

cc: Daniel J. Schlueter, Esq.  
Laura D. Keller, Esq.



**COMMONWEALTH OF KENTUCKY  
ENVIRONMENTAL AND PUBLIC PROTECTION CABINET  
FILE NO. \_\_\_\_\_  
KPDES PERMIT NO. KY0105031**

**FILED**

SEP 13 2007

Office of Administrative Hearings  
**PETITIONER**

THE CITY OF CINCINNATI

v.

**PETITION FOR HEARING**

RESPONDENT

ENVIRONMENTAL AND PUBLIC  
PROTECTION CABINET

Serve: Office of Legal Services  
Fifth Floor, Capital Plaza Tower  
Frankfort, KY 40601

and

SANITATION DISTRICT NO. 1  
OF NORTHERN KENTUCKY

Serve: 1045 Eaton Drive  
Fort Wright, KY 41017

\* \* \* \* \*

Pursuant to KRS 224.10-420(2) and 401 KAR 5:075 Section 13, Petitioner, the City of Cincinnati, by counsel, hereby petitions the Environmental and Public Protection Cabinet ("Cabinet") for a hearing to contest the determination by the Cabinet's Division of Water ("DOW") to issue the Kentucky Pollutant Discharge Elimination System ("KPDES") Permit No. KY0105031 ("the Permit") to Sanitation District No. 1 ("SD#1").

**I. PARTIES AND BACKGROUND**

1. The City of Cincinnati is a municipal corporation organized and existing pursuant to the laws of the State of Ohio, located across the Ohio River from the Commonwealth of Kentucky. The Greater Cincinnati Water Works, a department of the City of Cincinnati, is a drinking water utility that withdraws water from the Ohio River through intakes located near the Kentucky bank of the river. The City owns property in Kentucky that includes areas adjacent to and under the Ohio River where the intakes are located. After treating the water at the Richard



Miller Plant, the Water Works provides an average of approximately 115 million gallons and up to 220 million gallons of drinking water a day through 3,000 miles of water lines. The Water Works serves over 1 million citizens in most of Hamilton County and parts of Butler, Clermont and Warren Counties in Ohio, as well as in Boone County, Kentucky and the City of Florence. The address of the Greater Cincinnati Water Works is 4747 Spring Grove Avenue, Cincinnati, Ohio 45232. Hereinafter the Petitioner, the City of Cincinnati, will be referred to as the Greater Cincinnati Water Works ("GCWW") (Tel. 513-591-7970; Fax. 513-591-6519).

2. Sanitation District No. 1 ("SD#1") is a political subdivision of the Commonwealth of Kentucky and is a multi-county sanitation district organized and governed pursuant to KRS Chapter 220. SD#1 is responsible for operating and maintaining the majority of the wastewater collection and treatment systems in the Northern Kentucky counties of Boone, Campbell, and Kenton. The address of SD#1 is 1045 Eaton Drive, Fort Wright, Kentucky 41017. SD#1 has constructed and intends to operate a new wastewater treatment facility, the Eastern Regional Waste Water Treatment Plant ("ERWWTP") in Campbell County, Kentucky.

3. The Cabinet is charged with the duty of implementing and enforcing KRS Chapter 224 and administrative regulations promulgated pursuant thereto. The Cabinet is charged by KRS Chapter 224 and its accompanying regulations with the duties to provide for the prevention, abatement and control of water pollution and to review and approve or disapprove applications for permits to discharge pollutants into streams of the Commonwealth. The Cabinet is the state agency charged with implementing the permit system established in the Federal Water Pollution Control Act/Clean Water Act, 33 U.S.C. Section 1251, *et seq.* (the "CWA"). Pursuant to KRS 151.630 and KRS 151.636, the Kentucky General Assembly has mandated that the Cabinet administer the Safe Drinking Water Act ("SDWA") and conduct a source water



assessment and delineation program under the SDWA. The General Assembly's assignment of these statutory duties concerning drinking water indicates that the Cabinet is expected to administer both the SDWA and the CWA while carrying out its functions, including review of discharge permit applications.

4. In May 2004 the Cabinet issued a KPDES permit and a construction permit ("the Initial Permits") to SD#1 for the ERWWTP. GCWW filed a Petition for Hearing on June 7, 2004, to challenge the issuance of these permits (the "Initial Action"). *See* Environmental and Public Protection Cabinet, File No. DOW-26767-039. In March, 2005, SD#1 advised the parties to the Initial Action that it was investigating alternatives to the proposed outfall location for the ERWWTP discharge. The Initial Action was held in abeyance by a March 17, 2005 Order by Hearing Officer Blanton pending any necessary permit amendment, because the changes being considered would require a new or modified KPDES permit. Although GCWW anticipates filing a motion to consolidate this case with the Initial Action, in an abundance of caution to preserve all issues pending in the Initial Action, GCWW incorporates and realleges the arguments set forth in its June 7, 2004 Petition for Hearing opposing the original KPDES and construction permits as if fully set forth here.

5. In September 2005 SD#1 released a draft facilities plan update that changed the discharge location at the ERWWTP. A public hearing was held on October 18, 2005. GCWW representatives attended the hearing and submitted written comments to the facilities plan update. The Cabinet issued its approval of the facilities plan update on February 24, 2006. GCWW challenged the Cabinet's approval of the facilities plan update. *See* Environmental and Public Protection Cabinet, File No. DOW-28146-039. That matter is awaiting the Secretary's Final Order.



6. The Cabinet issued KPDES discharge permit, number KY0105031, to SD#1 on August 16, 2007 (the "Permit").

7. The Permit allows a discharge to Brush Creek, a tributary which flows approximately 5.1 miles through Twelvemile Creek before entering the Ohio River. Twelvemile Creek enters the Ohio River approximately 11 miles upstream from GCWW's water intakes for the Richard Miller Treatment Plant. Due to the low flow of both the Brush and Twelvemile Creeks, they essentially function only as conduits for pollutants discharged from ERWWTP.

8. GCWW is aggrieved by the Cabinet's decision to issue the Permit for the reasons described herein and, including but not limited to, because the discharge authorized by the Permit will degrade the source water used by GCWW for its drinking water supply and for other designated uses of the receiving waters.

9. The Permit is a final determination of the Cabinet that is contrary to law and fact and are injurious to GCWW and the citizens it serves. GCWW demands a formal hearing in this matter for the reasons set forth below.

## **II. GROUNDS FOR PETITION: LEGAL FRAMEWORK**

### **A. The Clean Water Act**

10. The Federal Water Pollution Control Act as amended [The Clean Water Act ("CWA"), 33 U.S.C. §§1251 *et seq.*] sets a national goal to restore and maintain the chemical, physical, and biological integrity of the Nation's waters and to eliminate the discharge of pollutants into surface waters. It is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited. 33 U.S.C. §1251(a).



11. "Pollutant" is defined to include sewage. 33 U.S.C. §1362(6).
12. "Toxic pollutant" is defined as "those pollutants, or combinations of pollutants, including disease-causing agents, which after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to the Administrator, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring." 33 U.S.C. §1262(8).
13. Discharge of any pollutant is unlawful except as in compliance with sections 1311, 1312, 1316, 1317, 1328, 1342, and 1344 of the CWA. 33 U.S.C. §1311.
14. Section 1342 of the CWA establishes a National Pollutant Discharge Elimination System ("NPDES") permit program to implement the Act's prohibition on unauthorized discharges by requiring a permit for every discharge of a pollutant from a point source into the waters of the United States.
15. The CWA provides for the states to administer the NPDES permit program upon approval of EPA. Kentucky has an approved program and issues KPDES Permits pursuant to KRS Chapter 224 Subchapter 70 and 401 KAR Chapter 5.

#### **B. Kentucky's Implementation of CWA**

16. KRS 224.70-110 prohibits the discharge of pollutants or any substance into the waters of the Commonwealth that will cause or contribute to the pollution of those waters in contravention of the standards adopted by the Cabinet.
17. Kentucky has promulgated regulations governing the issuance of discharge permits (KPDES Permits) pursuant to the authority of the CWA. In 401 KAR 5:050 the



Commonwealth declares that the “KPDES administrative regulations promulgated pursuant to KRS Chapter 224 are intended to be compatible with the federal regulations adopted pursuant to CWA.”

**1. Water Quality Standards**

18. Title 33 U.S.C. § 1313 requires states to develop water quality standards applicable to all waters within the states and that EPA approve them. Kentucky’s approved water quality standards are set forth in 401 KAR Chapter 5.

19. Kentucky regulations prohibit the issuance of a KPDES permit “[i]f the conditions cannot ensure compliance with the applicable water quality requirements of Kentucky and all affected states.” 401 KAR 5:055 Section 2(3).

20. Kentucky regulations prohibit the issuance of a KPDES permit to a new source or a new discharger if the discharge from its construction or operation will cause or contribute to the violation of water quality standards. 401 KAR 5:055 Section 2(7).

21. Kentucky’s water quality standards include designated uses, water quality criteria, and an antidegradation policy. See, e.g., 401 KAR 5:026, 401 KAR 5:030, 401 KAR 5:031, and 401 KAR 5:080.

**Designated uses**

22. KRS 224.70-100(1) declares that it is the policy of the Commonwealth to “conserve the waters of the Commonwealth for public water supplies, ...”

23. Kentucky has designated the portion of the Ohio River affected by the discharge for use as a domestic water supply, warm water aquatic habitat, primary contact recreation, and secondary contact recreation. See, e.g., 401 KAR 5:026 Section 5. Twelvemile Creek and Brush Creek also have the designated uses as domestic water supply, warm water aquatic habitat,



primary contact recreation, and secondary contact recreation. *See, e.g.*, 401 KAR 5:026 Section 5.

24. Federal regulations prohibit states from designating waste transport and assimilation as an acceptable designated use. 40 CFR §131.10(a).

25. Listed waters must “meet all criteria applicable to their designated uses, and those criteria listed in 401 KAR 5:031, Section 2, unless the Cabinet grants an exception pursuant to 401 KAR 5:031, Section 10 or 11.” 401 KAR 5:026 Section 1(3).

#### **Water Quality Criteria**

26. Water quality criteria set ambient levels of individual pollutants or describe conditions of water bodies that will protect the designated uses of the water. There are two types of water quality criteria: numeric and narrative. These criteria establish maximum concentrations for pollutant discharge limitations which would not interfere with designated uses.

27. 401 KAR 5:031 Section 2(1)(d) establishes a narrative criterion prohibiting degradation of surface waters by substances that “injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, animals, fish, and other aquatic life.”

28. Narrative criteria can be the basis for limiting by permit the discharge of specific pollutants when the state has no numeric criteria for those pollutants. EPA regulations require the states to develop procedures for implementing narrative criteria and ensuring that those criteria are attained. 33 U.S.C. § 1313; 40 CFR § 131.11.



## **Antidegradation Policy**

29. 401 KAR 5:029 Section 1 establishes that the purposes of 401 KAR 5:026-5:031 are “to safeguard the surface waters of the commonwealth for their designated uses, to prevent the creation of any new pollution of these waters, and to abate any existing pollution.”

30. 401 KAR 5:029 Section 1(2) provides, *inter alia*, that “[i]n allowing degradation or lower water quality, the cabinet shall assure water quality adequate to protect existing uses fully.”

31. The Antidegradation Policy is implemented pursuant to 401 KAR 5:030. 401 KAR 5:030 Section 1(4) states that when a water is impaired as not fully supporting any applicable designated uses, “[a]ll existing uses shall be protected and the level of water quality necessary to protect those existing uses shall be assured in impaired water.”

32. If discharges to impaired waters are allowed, the process “...to assure protection of the water is regulated by the requirements of the Kentucky Pollution Discharge Elimination System.” 401 KAR 5:030 Section 4(b).

## **2. Permit Conditions**

33. Pursuant to the CWA and KRS Chapter 224 and their applicable implementing regulations, effluent limitations in a KPDES permit should be established so that they are enforceable, adequately account for effluent variability, consider available receiving water dilution, protect against acute and chronic impacts, account for compliance monitoring sampling frequency, and assure attainment of the waste load allocation (“WLA”), i.e., the fraction of the Total Maximum Daily Load allocated to the point source being permitted, and water quality standards.

34. 401 KAR 5:065 establishes certain conditions to be imposed on KPDES permits.



35. The Cabinet must include requirements in addition to or more stringent than EPA's effluent limitations guidelines or standards if necessary to achieve water quality standards. *See, e.g.,* 401 KAR 5:065 Section 2.

**Effluent limitations**

36. Effluent limitations are of two kinds: technology-based limitations and water quality-based effluent limitations ("WQBEL"s).

37. 40 CFR §122.44(d) requires that all pollutants in an effluent from an NPDES facility be characterized by the permitting authority to determine the need for WQBELs in the permit. Technology-based effluent limits do not always limit every parameter that is in an effluent. When that is the case and technology-based effluent limits do not exist for a particular pollutant, the state permitting agency must investigate effluents for the presence of specific pollutants for which the State has not adopted numeric criteria, but which may be contributing to a violation of a water quality standards for the water body, including an excursion above a narrative criterion. Thus, if the permitting agency analyzes the effect of an effluent discharge on a receiving water and determines that technology-based effluent limits are not sufficiently stringent to meet water quality standards, the agency is required to develop more stringent WQBELs designed to ensure that water quality standards are met.

38. Kentucky regulations provide that any requirements "in addition to or more stringent than EPA's effluent limitations guidelines or standards" shall be included as permit conditions "if necessary . . . to achieve water quality standards . . . , including any narrative criteria contained in 401 KAR 5:031." 401 KAR 5:065 Section 2(4). This requirement applies to conventional, nonconventional, or toxic pollutants. 401 KAR 5:065 Section 2(4)(a)(1). These "[l]imitations shall control all pollutants or pollutant parameters...which the cabinet determines



are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including narrative criteria for water quality.” *Id.* Additional requirements also shall be included if necessary to confirm to applicable water quality requirements if the discharge affects a state other than Kentucky. 401 KAR 5:065 Section 2(4)(c).

#### **Total Maximum Daily Loads**

39. Section 303(d) of the CWA and 40 CFR §130.7 require states to develop total maximum daily loads (“TMDLs”) for water bodies within the state’s jurisdiction for which existing pollution controls are not stringent enough to attain and maintain water quality standards. Kentucky has developed a list of waterbodies presently not supporting designated uses as required by 40 CFR §130.7(b)(4) and needing TMDL development. *See* 2002 303(d) List of Waters for Kentucky, January, 2003. TMDLs are used to determine waste load allocations which are in turn used to determine applicable WQBELs.

40. TMDLs normally require complex water quality models capable of simulating rainfall events and analyzing cumulative pollutant fate and transport. There currently are no TMDLs in place for the main stem of the Ohio River along the Kentucky border. Kentucky has stated that it intends to have the Ohio River Valley Water Sanitation Commission (“ORSANCO”) do the data collection, modeling and development of TMDLs for the Ohio River along Kentucky’s border. It will be several years before TMDL development will be initiated for the Ohio River along the Kentucky border.



### C. Safe Drinking Water Act

41. The Safe Drinking Water Act, 42 U.S.C. §§300f *et seq.*, regulates public drinking water systems and requires EPA to establish national standards for levels of contaminants in public drinking water to safeguard public health.

42. The SDWA requires states to perform a source water assessment for each public water system for the purpose of managing potential contamination sources and preventing new contaminant threats. Aspects of the source water assessments include determinations of potential sources of contamination and determining the susceptibility of public water systems to those contamination sources. 42 U.S.C. § 300j-13. The source water assessment and protection programs allow integration of drinking water programs with other programs such as the CWA in order to better protect public health and the environment.

43. Federal National Primary Drinking Water Regulations establish maximum contaminant level goals for microbial contaminants of drinking water at a level of “zero” for *Giardia lamblia*, viruses, *Legionella*, total coliforms, and *Cryptosporidium*. 40 C.F.R. 141.52.

44. On August 11, 2003, EPA proposed “The Long Term 2 Enhanced Surface Water Treatment Rule” (“LT2ESWTR” or “LT2”) consisting of a series of rules intended to improve control of microbial pathogens, with particular emphasis on *Cryptosporidium*, a pathogen found in effluents from POTWs. 68 Fed. Reg. 47640 (2003). *Cryptosporidium* causes cryptosporidiosis, an infection that causes diarrhea, abdominal cramping, nausea, vomiting, and fever and can be fatal in sensitive subpopulations such as infants, immune suppressed patients, and the elderly. Because of the impacts of waterborne disease outbreaks, the LT2 imposes requirements on drinking water systems based on the observed presence of *Cryptosporidium* in source waters. LT2 became a final rule on January 5, 2006. 71 Fed. Reg. 654. EPA noted in the



preamble to the final rule that drinking water samples testing positive for *Cryptosporidium* have occurred at drinking water plants that met existing standards, and that the source water quality was a factor in determining *Cryptosporidium* vulnerability. 71 Fed. Reg. at 660. EPA also specifically identified wastewater treatment plant discharges as a source of *Cryptosporidium* contamination. *Id.* at 659; *see also* “*Cryptosporidium*: Drinking Water Health Advisory,” EPA-822-R-01-009, p. 7 (Mar. 2001).

45. The protozoan *Giardia* causes an illness called giardiasis. “*Giardia*: Human Health Criteria Document,” EPA-823-R-002, p. I-6 (Aug. 1998). Symptoms include diarrhea, abdominal cramps, weight loss and vomiting. *Id.* at I-13. The epidemiology is complicated, and drug resistance and relapses can develop. *Id.* at I-13, I-14. *Giardia* cysts may also be present in treated sewage. *See* “*Giardia*: Drinking Water Health Advisory,” EPA-822-R-99-008, p. 3 (November 1999). “Strict control” over human sewage discharges is a recognized way to combat contamination of source waters. “*Giardia*: Human Health Criteria Document,” EPA-823-R-002, p. I-21 (Aug. 1998).

#### **D. Ohio River Valley Water Sanitation Commission**

46. Kentucky has approved, ratified, adopted, and enacted into law the Ohio River Valley Water Sanitation Compact. KRS 224.18-760 (“Compact”).

47. Article I of the Compact recognizes the important use of the Ohio River as a public water source and states, in pertinent part, “[e]ach of the signatory States pledges . . . to enact any necessary legislation to enable each such State to place and maintain the waters of [the Ohio River basin] in a satisfactory sanitary condition, available for safe and satisfactory use as public and industrial water supplies after reasonable treatment . . . .”



48. Article VI of the Compact states, in pertinent part, “[t]he 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 as hereinbefore defined.”

49. The Ohio River Valley Water Sanitation Commission (“ORSANCO”) has adopted pollution control standards for discharges to the Ohio River to protect the designated uses of the Ohio River, including the satisfactory use as a public water supply. These pollution control standards state that “[n]o degradation of the water quality of the Ohio River that would interfere with or become injurious to these uses shall be permitted.”

### **III. GROUNDS FOR PETITION: FACTUAL BASIS**

50. SD#1 is responsible for managing the wastewater treatment facilities in Boone, Campbell, and Kenton Counties in Northern Kentucky located along the southern border of the Ohio River. The District is engaged in the collection, treatment and disposal of wastewater.

51. SD#1 developed a Regional Facility Plan that includes a program to construct two new regional wastewater treatment plants. Under this Plan the ERWWTP is to receive the combined flow from the existing Alexandria, Southern Campbell County Industrial Park (the “Kahn’s WWTP”) and Pond Creek wastewater treatment plants and service growth in the areas. The Alexandria WWTP is permitted to treat approximately 0.725 million gallons per day (MGD) and discharges to Brush Creek. The Kahn’s WWTP is permitted to discharge 0.500 MGD and discharges to the Licking River. The Pond Creek WWTP has a permitted discharge of 0.12 MGD in discharges to Pond Creek, which is a tributary of the Licking River. Discharges from the Kahn’s and Pond Creek plants ultimately enter the Ohio River downstream of the GCWW water intakes. The ERWWTP will replace the existing, aging Alexandria WWTP.



52. SD#1 submitted an application to revise the Initial Permit. GCWW submitted oral and written comments at the public hearing held in October 2006 regarding the proposed revision.

53. The Cabinet issued a revised KPDES Permit No. KY0105031 (the "Permit") on August 16, 2007. See Attachment A. The Cabinet also issued Responses to Comments on the Permit. Attachment B.

54. The Permit is at issue in this petition. The Permit authorizes discharges from the ERWWTP into Brush Creek, a tributary to Twelvemile Creek, which is a tributary of the Ohio River. The discharge into Brush Creek travels approximately 5.1 miles through Twelvemile Creek and then on to the Ohio River. Twelvemile Creek enters the Ohio River at Ohio River Mile Point 451.6, which is approximately 11 miles upstream from GCWW's intakes, located at Ohio River Mile Point 462.8.

55. Water intakes for the Northern Kentucky Water District are downstream from Cincinnati water intakes approximately .1 mile (Kenton County/Ft. Thomas) and .4 mile (Newport).

56. The permitted discharge for the ERWWTP is 4 MGD. Anticipated peak hourly and daily flows are several times that amount, and the actual design capacity of the ERWWTP is also significantly higher. Only the existing Alexandria WWTP currently discharges upstream from GCWW's intakes. The Permit (and the Initial Permit) allows SD#1 to discharge the combined wastes of the existing facilities at a location *upstream* from the GCWW drinking water intake and the intakes of other drinking water plants.

57. The Ohio River, Twelvemile Creek, and Brush Creek, at the relevant locations, have the following use classifications: warmwater aquatic habitat, primary contact recreation,



secondary contact recreation, and domestic water supply. The stream low flow condition for the Ohio River is 11,000 cfs. Twelvemile and Brush Creeks are essentially zero-flow streams.

58. The Cabinet has identified Brush Creek as an impaired water.

59. Part I of the Permit contains effluent limitations for Outfall 001 for the following effluent characteristics: 1) flow, 2) biochemical oxygen demand (5-day) carbonaceous, 3) total suspended solids, 4) *Escherichia coli*, N/100, 5) Ammonia (as N), 6) dissolved oxygen, 7) chloride, 8) total residual chloride, 9) phosphorus, and 10) nitrogen. Monthly biomonitoring is to be performed and shall not exceed 1.00 chronic toxicity units. Monitoring requirements are also imposed on 1) total recoverable copper, 2) total recoverable zinc, 3) total recoverable lead, and 4) hardness as calcium carbonate.

60. In regard to protection of existing uses of the receiving waters, the Cabinet does not explain in its Permit Fact Sheet, the Permit, or its responses to comments how allowing discharges of known human pathogens, including *Cryptosporidium*, *Giardia*, viruses, and injurious chemicals such as endocrine-disrupting compounds, is protective of the existing use of the receiving stream as a domestic water supply, warmwater aquatic habitat, primary contact recreation, or secondary contact recreation.

61. In regard to the water quality standard requiring compliance with water quality criteria, the Permit does not address known constituents of effluents of municipal wastewater facilities that have been identified as health risks, including *Cryptosporidium*, *Giardia*, viruses, and injurious chemicals such as endocrine-disrupting compounds, even though 401 KAR 5:031 Section 2 establishes a narrative criterion that prohibits the degrading of surface waters by substances that “[i]njure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, ...”



62. The Cabinet does not address in the Permit Fact Sheet, the Permit, or its Responses to Comments why it did not develop TMDLs, WLAs, or WQBELs to address the probable exceedance of the narrative criteria prohibiting discharges that will injure human health. In its Response to Comments, the Cabinet stated that preparing TMDLs was not necessary, based on its improper conclusion that the discharge will not contribute to an impairment of the use of the Ohio River. Response to Comments, No. 34, Attachment B.

63. In regard to antidegradation, the Permit Fact Sheet states that “[t]he conditions of 401 KAR 5:029, Section 1 have been satisfied by this permit action.” The Cabinet discusses how it implemented the procedures of 401 KAR 5:030 Section 1(3)(b)(5), but does not explain in the Permit Fact Sheet, the Permit, or the Response to Comments how the Cabinet complied with the requirement in 401 KAR 5:029 Section 1(2) that directs the Cabinet to “assure water quality adequate to protect existing uses fully” when it allows a degradation or lower water quality. The Cabinet also does not explain in the Permit Fact Sheet, the Permit, or Response to Comments how it implemented 401 KAR 5:030 Section 1(4)(b), which mandates that “[a]ll existing uses shall be protected” and the permit shall assure “the level of water quality necessary to protect those existing uses.” See Response to Comments 38, Attachment B; Permit Fact Sheet p. 1 (identifying Brush Creek as an impaired stream).

64. *Cryptosporidium*, *Giardia*, endocrine disruptors and viral agents are recognized as contaminants that pose health risks and are common components of municipal wastewater effluents. For example, Federal National Primary Drinking Water Regulations establish maximum contaminant level goals for microbial contaminants of drinking water at a level of “zero” for *Giardia lamblia*, viruses, *Legionella*, total coliforms, and *Cryptosporidium*. 40 C.F.R. 141.52. LT2 recognizes the importance of control of *Cryptosporidium* infection and imposes



requirements on drinking water systems based on the observed presence of *Cryptosporidium* in source waters. EPA also specifically identified wastewater treatment plant discharges as a source of *Cryptosporidium* contamination. See also “*Cryptosporidium*: Drinking Water Health Advisory,” EPA-822-R-01-009 (Mar. 2001); “*Cryptosporidium*: Human Health Criteria Document,” EPA-822-K-94-001 (Mar. 2001); “*Giardia*: Human Health Criteria Document,” EPA-823-R-002, (Aug. 1998); and “*Giardia*: Drinking Water Health Advisory,” EPA-822-R-99-008 (November 1999). “Strict control” over human sewage discharges is a recognized way to combat contamination of source waters. “*Giardia*: Human Health Criteria Document,” EPA-823-R-002, p. I-21 (Aug. 1998).

65. Outbreaks of infection with *Cryptosporidium* have been observed in the northern Kentucky area. Furthermore, increased pathogen load and endocrine-disrupting compounds have been associated with slaughterhouses and meatpacking plants (such as the Kahn’s Plant) that will send its wastewater to the ERWWTP.

66. The Permit does not adequately address the specific concerns raised by commenters concerning the adverse impacts of discharge of substances known to injure and produce adverse consequences in humans. These substances include *Cryptosporidium*, *Giardia*, endocrine disruptors and viral agents.

67. The Permit does not account for the impact of deposition of pollutants during low stream flow conditions in the Brush and Twelvemile Creek conduits and resuspension and transport of pollutants and solid particulate matter during conditions of high stream flow. The Cabinet relies on speculation rather than analytical data to determine that there is no risk to GCWW source water as a result of discharging into zero flow streams. See Response to Comments No. 13, Attachment B.



68. The Permit does not adequately ensure protection of designated and existing uses and does not adequately ensure control of materials that injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, animals, fish, and other aquatic life. In particular, the Permit does not ensure proper function of the UV treatment system. The UV system proposed by SD#1 will not be effective against enteric viruses. There is no data to prove that SD#1's system will be effective to inactivate oocysts of *Cryptosporidium* and *Giardia*, which may be shielded from treatment by the amount of suspended matter and solid particles of a large size in the waste stream. The Cabinet failed to impose limits on total suspended solids that assure the effectiveness of the system with regard to these pathogens, relying instead on the effectiveness of UV in general and hypothetical TSS limitations. See Response to Comments No. 12, 26, Attachment B. The studies relied on by the Cabinet are bench-scale experiments and are otherwise inapplicable to full-scale wastewater treatment. The Cabinet has failed to impose any requirement to validate the effectiveness of the UV treatment system for these non-bacterial pathogens under the applicable hydraulic and operations conditions. Further, the Permit fails to establish any limit on particle size and establishes TSS effluent limitations as 30 mg/L (monthly average) and 45 mg/L (maximum weekly average), which are well-over the ostensible design capability of 10 mg/L.

69. The Permit does not adequately ensure protection of human health and the environment from certain factors. The Cabinet did not conclude that *Cryptosporidium*, *Giardia*, and viruses were not health risks; rather, the Cabinet improperly determined that the distance between the ERWWTP and GCWW intakes and ERWWTP's UV treatment were sufficient safeguards. See Response to Comments No. 3. There is evidence that the wastewater discharge will "hug" the Kentucky bank where the GCWW intakes are located. Response to Comments



No. 9, evidences a misunderstanding and/or misstatement of opinions expressed by commenters and improper reliance on certain studies. The Cabinet also failed to account for the fact that even very low levels of exposure to *Cryptosporidium* oocysts have important health consequences. For example, based on EPA's evaluation in LT2, even small concentrations of *Cryptosporidium* oocysts (average concentrations over 0.075 cysts/L based on 24-month sampling) in source water exceed a regulatory acceptable infection risk of 1 in 10,000 for a conventional drinking water treatment plant. In addition, instead of protecting the public from emerging pollutants, the Cabinet rejected evidence that the substances are harmful. See Response to Comments No. 6, Attachment B. Permit limitations on coliforms are insufficient to protect the public from the impacts of the pathogens identified by GCWW.

70. The Long Term 2 Enhanced Surface Water Treatment Rule requires drinking water systems to implement *Cryptosporidium* treatment requirements at various levels, based on their risk categorization. As the concentration of *Cryptosporidium* increases in the source water, so does the level of drinking water treatment required. If the ERWWTP discharge increases the concentration of *Cryptosporidium* downstream as GCWW expects, the waters of the Ohio River at and above GCWW's intake will be degraded.

#### **IV. GROUNDS FOR PETITION: VIOLATIONS OF LAW**

71. The Permit violates the water quality standard set forth in 401 KAR 5:026 Section 1, requiring protection of existing designated uses, by allowing the discharge of known pollutants that will be injurious to human health.

72. The Permit violates 401 KAR 5:030 Section 1 (4)(b), by failing to protect all existing uses of an impaired water and not assuring the level of water quality necessary to protect the existing use as domestic water supply by allowing the discharge of pollutants that will be



injurious to human health. The Cabinet arbitrarily applied 401 KAR 5:030 Section 1(3)(b)5, which applies to high quality water, rather than 401 KAR 5:030 Section 1(4), applicable to impaired waters such as Brush Creek.

73. The Permit violates narrative criteria water quality standards set forth in 401 KAR 5:031 Section 2, in that DOW failed to limit or otherwise control the discharge of substances that may cause the objectionable conditions listed therein and failed to condition the permit accordingly, in violation of 401 KAR 5:065 Section 2.

74. The Permit fails to protect existing uses and is not protective of human health because it fails to account for the impact on downstream water users in the event of the discharge of high levels of pathogens during acute events.

75. The Permit fails to comply with water quality standards because it does not insure removal of pharmaceutical residues contained in sanitary wastes, including endocrine disruptors known to be present in treated wastewater effluents and suspected of producing adverse physiological or behavioral responses in humans and wildlife.

76. The Permit fails to comply with water quality standards because, among other failures, the Permit does not require validation of the UV disinfection system and does not insure adequate inactivation of *Cryptosporidium* oocysts, *Giardia* cysts, and human viruses known to be present in treated wastewater effluents and known to produce adverse physiological or behavioral responses in humans.

77. Given that regulations promulgated pursuant to the Safe Drinking Water Act specifically identify *Cryptosporidium* and *Giardia* in drinking water supplies as a threat to human health, *Cryptosporidium* and *Giardia* meet the definition of toxic pollutant in the Clean Water Act. Accordingly, the Cabinet should have reviewed the need for an effluent limitation



for the discharge of *Cryptosporidium* and *Giardia* oocysts. In issuing Permit the Cabinet ignored findings relating to risks to human health posed by protozoan pathogens, viruses, and endocrine-disrupting compounds.

78. The Permit fails to protect the downstream Domestic Water Supply use because it lacks a meaningful provision requiring direct and immediate emergency notice to GCWW in the event of discharge of inadequately treated sewage. The Permit fails to adequately protect downstream users because it is ambiguous and vague and does not impose notification procedures on SD#1 but instead mandates their development without any deadline, and does not specify that GCWW will receive the notification.

79. DOW has not adequately responded to the comments made by GCWW and others concerning the potential adverse impacts to the Ohio River and the critical source water of the GCWW facility, in violation of 401 KAR 5:075 Section 12.

80. The DOW's application of the "Five-Mile Policy" as a rule of thumb for separation of a waste water discharge from a drinking water intake was arbitrary and capricious and not supported by recent scientific studies and fact.

81. No KPDES permit may be issued until TMDLs for pollutants known to be in the discharge and known to be injurious to human health have been determined for the affected portion of the Ohio River.

82. The Permit was issued in violation of 401 KAR 5:006 and Section 208 of the CWA, 33 U.S.C. §1288, because Permit decisions must only be made in accordance with certified and approved water quality management plans. The Response to Comments arbitrarily concludes without explanation that the permit is consistent with a water quality management



plan. See Response to Comments No. 39, Attachment B. However, on information and belief, there is no current and valid water quality management plan for the designated area.

83. The Permit was issued in violation of 401 KAR 5:055 Section 2(3) because it does not ensure compliance with the applicable water quality requirements of Kentucky and all affected states.

84. The Permit is contrary to law in that it allows discharges that violate the provisions of KRS 224.18-760, the ORSANCO Compact and ORSANCO's pollution control standards, because the Permit allows discharges that are injurious to the use of the Ohio River as a public water supply.

85. The decision to issue the Permit violates substantive and procedural due process rights for reasons that include the Cabinet's pre-determined decision to issue the Permit to address wastewater issues in northern Kentucky without regard for the impact of the discharge on human health and the environment, including but not limited to use of the waters receiving the discharge.

86. The decision to approve SD#1's application and to issue the Permit was arbitrary, capricious and contrary to law and fact.

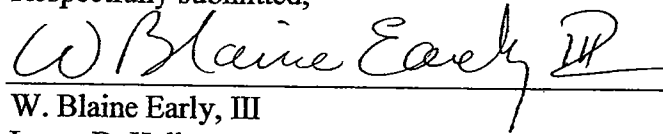
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WHEREFORE, Greater Cincinnati Water Works respectfully requests:

1. That the Permit be determined to have been unlawfully issued and ordered  
revoked; and
2. That Petitioner GCWW be awarded all relief to which it is entitled.

Respectfully submitted,



W. Blaine Early, III

Laura D. Keller

STITES & HARBISON PLLC

250 West Main Street, Suite 2300

Lexington, Kentucky 40507

Telephone: (859) 226-2300

COUNSEL FOR PETITIONER





ERNE FLETCHER  
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET

DEPARTMENT FOR ENVIRONMENTAL PROTECTION

DIVISION OF WATER

14 REILLY ROAD

FRANKFORT, KENTUCKY 40601-1190

www.kentucky.gov

TERESA J. HILL  
SECRETARY

August 16, 2007

Jeff Eger, General Manager  
Sanitation District No. 1  
1045 Eaton Drive  
Fort Wright, Kentucky 41017

Re: Eastern Regional Wastewater Treatment Plant  
KPDES No.: KY0105031  
Campbell County, Kentucky

Dear Mr. Eger:

Enclosed is the Kentucky Pollutant Discharge Elimination System (KPDES) permit for the above-referenced facility. This action constitutes a final permit issuance under 401 KAR 5:075, pursuant to KRS 224.16-050.

This permit will become effective on the date indicated in the attached permit provided that no request for adjudication is granted. All provisions of the permit will be effective and enforceable in accordance with 401 KAR 5:075, unless stayed by the Hearing Officer under Sections 11 and 13.

Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470 and any regulations promulgated thereto. Any person aggrieved by the issuance of a permit final decision may demand a hearing, pursuant to KRS 224.10-420(2), within thirty (30) days from the date of the issuance of this letter. Two (2) copies of request for hearing should be submitted in writing to the Environmental and Public Protection Cabinet, Office of Administrative Hearings, 35-36 Fountain Place, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Environmental and Public Protection Cabinet, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

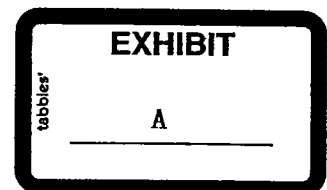
If you have any questions regarding the KPDES decision, please contact Barry Elmore, Municipal Permit Section, KPDES Branch, at (502) 564-8158, extension 459.

Further information on procedures and legal matters pertaining to the hearing request may be obtained by contacting the Office of Administrative Hearings at (502) 564-7312.

Sincerely,

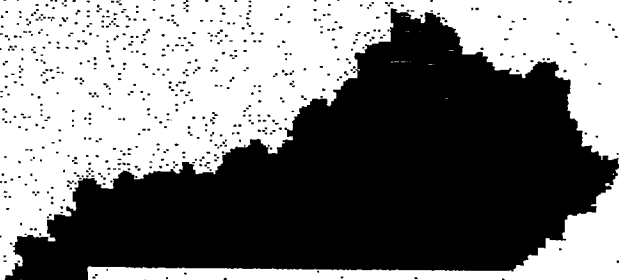
David W. Morgan, Director  
Division of Water

DWM:NG:ng  
Enclosure  
c: Division of Water Files





# KPDES



## KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

# PERMIT

PERMIT NO.: KY0105031

AI NO.: 523

### AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

Sanitation District No. 1  
1045 Eaton Drive  
Fort Wright, Kentucky 41017

is authorized to discharge from a facility located at

Eastern Regional WWTP  
KY Highway 10  
Alexandria, Campbell County, Kentucky

to receiving waters named

Brush Creek at mile point 1.6

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, III, and IV hereof. The permit consists of this cover sheet, and Part I 5 pages, Part II 9 pages, Part III 1 page, and Part IV 3 pages.

This permit became effective on July 1, 2004.

This permit modification shall become effective on September 14, 2007.

This permit and the authorization to discharge shall expire at midnight, April 30, 2008.

A handwritten signature in black ink, appearing to read "David W. Morgan".

August 16, 2007  
Date Signed

David W. Morgan, Director  
Division of Water

Cheryl A. Taylor  
Commissioner

DEPARTMENT FOR ENVIRONMENTAL PROTECTION  
Division of Water, Frankfort Office Park, 14 Reilly Road, Frankfort, Kentucky 40601

Printed on Recycled Paper



# A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 001, Municipal Discharge.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS		
	lbs/day		Other Units (Specify)		Measurement Frequency	Sample Type	Sampling Location
	Monthly Avg.	Weekly Maximum	Monthly Avg.	Weekly Maximum			
Flow, Design (4.0 mgd)	N/A	N/A	Report	Report <sup>1</sup>	Continuous	Continuous	Influent & Effluent
Biochemical Oxygen Demand (5-day), Carbonaceous	499	767	15 mg/l	23 mg/l	3/week	Composite	Influent & Effluent
Total Suspended Solids	1001	1501	30 mg/l	45 mg/l	3/week	Composite	Influent & Effluent
Escherichia Coli, N/100	N/A	N/A	130 <sup>2</sup>	240 <sup>2</sup>	3/week	Grab	Effluent
Ammonia (as N) Summer Winter	133 334	201 499	4.0 mg/l 10.0 mg/l	6.0 mg/l 15.0 mg/l	3/week	Composite	Influent & Effluent
Dissolved Oxygen shall not be less than 7 mg/l	N/A	N/A	0.011 mg/l	0.019 mg/l <sup>1</sup>	3/week	Grab	Effluent
Total Residual Chlorine (TRC) Chloride	N/A	N/A	600 mg/l	1200 mg/l <sup>1</sup>	3/week	Grab	Effluent
Total Phosphorus (as P) Summer Winter	N/A	N/A	1.0 mg/l 2.0 mg/l	Report Report	1/week 1/week	Composite	Influent & Effluent
Total Kjeldahl Nitrogen (TKN)	N/A	N/A	Report	Report	1/week	Composite	Effluent
Chronic Toxicity (TU <sub>c</sub> )	N/A	N/A	N/A	1.00 <sup>1</sup>	1/month	Composite	Effluent

In addition to the specified limits, the monthly average effluent for CBOD<sub>5</sub> and suspended solids concentration shall not exceed 15% of the respective monthly average influent concentration (85% removal). The pH of the effluent shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored three times per week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts. The effluent shall not cause a visible sheen on the receiving water.

The effluent shall not cause a visible sheen on the receiving water.

Summer is May 1 through October 31.

Winter is November 1 through April 30.

<sup>1</sup>Daily maximum limitation

<sup>2</sup>Geometric mean



A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUATION)

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 001, Municipal Discharge.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	lbs/day		mg/l	Measurement Frequency	Sample Type	Sampling Location
	Monthly Avg.	Daily Max.	Monthly Avg.			
Lead, Total Recoverable	N/A	N/A	Report	1/month*	Composite	Effluent
Cadmium, Total Recoverable	N/A	N/A	Report	1/month*	Composite	Effluent
Copper, Total Recoverable	N/A	N/A	Report	1/month*	Composite	Effluent
Zinc, Total Recoverable	N/A	N/A	Report	1/month*	Composite	Effluent
Hardness as Calcium Carbonate (CaCO <sub>3</sub> )	N/A	N/A	Report	1/month*	Composite	Effluent

\* Monitoring shall be done in conjunction with biomonitoring.



A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUATION)

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to administer a pretreatment program pursuant to Outfall Designator 001P.

The permittee shall monitor the influent and effluent as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	Monthly Avg.	mg/l Daily Max.	Measurement Frequency	Sample Type	Sampling Location
Arsenic, Total Recoverable	Report	Report	1/Year	Composite	Influent & Effluent
Cadmium, Total Recoverable	Report	Report	1/Year	Composite	Influent & Effluent
Chloride	Report	Report	1/Year	Composite	Influent & Effluent
Chromium, Hexavalent	Report	Report	1/Year	Composite	Influent & Effluent
Chromium, Total Recoverable	Report	Report	1/Year	Composite	Influent & Effluent
Copper, Total Recoverable	Report	Report	1/Year	Composite	Influent & Effluent
Cyanide, Free (Amenable)	Report	Report	1/Year	Grab	Influent & Effluent
Iron, Total Recoverable	Report	Report	1/Year	Composite	Influent & Effluent
Lead, Total Recoverable	Report	Report	1/Year	Composite	Influent & Effluent
Mercury, Total Recoverable	Report	Report	1/Year	Grab	Influent & Effluent
Nickel, Total Recoverable	Report	Report	1/Year	Composite	Influent & Effluent
Oil & Grease	Report	Report	1/Year	Grab	Influent & Effluent
Phenols, Total	Report	Report	1/Year	Grab	Influent & Effluent
Phosphorus (as P)	Report	Report	1/Year	Composite	Influent & Effluent
Selenium, Total Recoverable	Report	Report	1/Year	Composite	Influent & Effluent
Silver, Total Recoverable	Report	Report	1/Year	Composite	Influent & Effluent
Zinc, Total Recoverable	Report	Report	1/Year	Composite	Influent & Effluent

Mercury sampling and testing shall be done by EPA method number 1631.



A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUATION)

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to administer a pretreatment program pursuant to Outfall Designator 001P.

The permittee shall monitor the sludge as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	ng/kg or other	Monthly	Measurement Frequency	Sample Type	Sampling Location
Arsenic, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Cadmium, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Chromium, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Copper, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Lead, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Mercury, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Molybdenum, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Nickel, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Phosphorus, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Selenium, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Silver, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
Zinc, Total Dry Weight	Report	Report	1/Year	Grab	Sludge
pH, standard units	Report*	Report**	1/Year	Grab	Sludge
Solids, Total Dry Weight, metric tons	Report	Report	1/Year	Grab	Sludge
Solids, Total, percent	Report***	Report	1/Year	Grab	Sludge
Sludge Disposed of by Incineration, MT/Y	Report****	Report	1/Year	Grab	Sludge
Sludge Disposed of by Landfill, MT/Y	Report****	Report	1/Year	Grab	Sludge
Sludge Disposed of by Other Method, MT/Y	Report****	Report	1/Year	Grab	Sludge

\* Instantaneous Minimum  
\*\* Instantaneous Maximum  
\*\*\* Annual Average  
\*\*\*\* Annual Total  
MT/Y Metric Tons Per Year



PART I  
Page I-5  
Permit No.: KY0105031  
AI No.: 523

B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with all requirements on the effective date of this permit.

The notification requirements identified in Part II, page II-5 shall be implemented on the effective date of this permit.



### STANDARD CONDITIONS FOR KPDES PERMIT

The permittee is also advised that all KPDES permit conditions in KPDES Regulation 401 KAR 5:065, Section 1 will apply to all discharges authorized by this permit.

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

Per 401 KAR 5:065, the requirements of Section 1 are expressly stated below:

(1) Duty to Comply.

(a) General requirement. The permittee shall comply with all conditions of this permit. Any permit noncompliance shall constitute a violation of KRS Chapter 224, among which shall be the following remedies: enforcement action, permit revocation, revocation and reissuance, or modification; or denial of a permit renewal application.

(b) Specific duties.

1. The permittee shall comply with effluent standards or prohibitions established under 40 CFR Part 129 as of July 1, 2001, as adopted without change, within the time provided in the federal regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

2. Any person who violates a permit condition as set forth in the KPDES administrative regulations shall be subject to penalties under KRS 224.99-010(1) and (4).

(2) Duty to reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit as required in 401 KAR 5:060, Section 1.

(3) Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with conditions of this permit.

(4) Duty to mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also shall include adequate laboratory controls, and appropriate quality assurance procedures. This provision shall require the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only if the operation is necessary to achieve compliance with the conditions of the permit.

(6) Permit actions. The permit may be modified, revoked and reissued, or revoked for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or a notification of planned changes or anticipated noncompliance, shall not stay any permit condition.

(7) Property rights. This permit shall not convey any property rights of any kind, or any exclusive privilege.



(8) Duty to provide information. The permittee shall furnish to the cabinet, within a reasonable time, any information which the cabinet may request to determine whether cause exists for modifying, revoking and reissuing, or revoking this permit, or to determine compliance with this permit. The permittee shall also furnish to the cabinet, upon request, copies of records required to be kept by this permit.

(9) Inspection and entry. The permittee shall allow the cabinet, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records pertinent to the KPDES program are or may be kept;
- (b) Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of this permit;
- (c) Inspect at reasonable times any facilities, equipment, including monitoring and control equipment, practices, or operations regulated or required under this permit; and
- (d) Sample or monitor at reasonable times, for the purposes of assuring KPDES program compliance or as otherwise authorized by KRS Chapter 224, any substances or parameters at any location.

(10) Monitoring and records.

- (a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- (b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report, or application. This period may be extended by request of the cabinet at any time.
- (c) Records of monitoring information shall include:
  1. The date, exact place, and time of sampling or measurements;
  2. The individuals who performed the sampling or measurements;
  3. The dates analyses were performed;
  4. The individual who performed the analyses;
  5. The analytical techniques or methods used; and
  6. The results of the analyses.
- (d) Monitoring shall be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit.
- (e) Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be subject to penalties under KRS 224.99-010(4).

(11) Signatory requirement. All applications, reports, or information submitted to the cabinet shall be signed and certified as indicated in 401 KAR 5:060, Section 9. Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be subject to penalties under KRS 224.99-010(4).

(12) Reporting requirements.

- (a) Planned changes. The permittee shall give notice to the cabinet as soon as possible of any planned physical alteration or additions to the permitted facility. Notice shall be required only if:
  1. The alteration or addition to a permitted facility may meet one (1) of the criteria for determining whether a facility is a new source in 401 KAR 5:080, Section 5; or
  2. The alteration or addition could significantly change the nature of increase the quantity of pollutants discharged. This notification only applies to pollutants which are subject either to effluent limitations in the permit, or to notification requirements under 401 KAR 5:080, Section 5.



(b) Anticipated noncompliance. The permittee shall give advance notice to the cabinet of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) Transfers. The permit shall not be transferable to any person except after notice to the cabinet. The cabinet may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate other requirements as may be necessary under KRS Chapter 224.

(d) Monitoring reports. Monitoring results shall be reported at the intervals specified in the permit. Monitoring results shall be reported as follows:

1. Monitoring results shall be reported on a Discharge Monitoring Report (DMR).

2. If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

3. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the cabinet in the permit.

(e) Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

(f) Twenty-four (24) hour reporting. The permittee shall follow the provisions of 401 KAR 5:015 and shall orally report any noncompliance which may endanger health or the environment, within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. This report shall be in addition to and not in lieu of any other reporting requirement applicable to the noncompliance. A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The cabinet may waive the written report on a case-by-case basis if the oral report has been received within twenty-four (24) hours. The following shall be included as events which shall be reported within twenty-four (24) hours:

1. Any unanticipated bypass which exceeds any effluent limitation in the permit, as indicated in subsection (13) of this section.

2. Any upset which exceeds any effluent limitation in the permit.

3. Violations of a maximum daily discharge limitation for any of the pollutants listed by the cabinet in the permit to be reported within twenty-four (24) hours, as indicated in 401 KAR 5:065, Section 2(7).

(g) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (d), (e), and (f) of this subsection, when monitoring reports are submitted. The reports shall contain the information listed in paragraph (f) of this subsection.

(h) Other information. Where the permittee becomes aware that it failed to submit any relevant fact in a permit application, or submitted incorrect information in a permit application or in any report to the cabinet, it shall promptly submit these facts or information.

(13) Occurrence of a bypass.

(a) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. This type of bypass shall not be subject to the provisions of paragraphs (b) and (c) of this subsection.

(b) Notice.

1. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass. Compliance with this requirement constitutes compliance with 401 KAR 5:015, Section 1.



2. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in subsection (12)(f) of this section, twenty-four (24) hour notice. Compliance with this requirement constitutes compliance with 401 KAR 5:015, Section 4.
- (c) Prohibition of a bypass.
1. Bypassing shall be prohibited, and the cabinet may take enforcement action against a permittee for bypass, unless:
    - a. The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
    - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition shall not be satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
    - c. The permittee submitted notices as required under paragraph (b) of this subsection.
  2. The cabinet may approve an anticipated bypass, after considering its adverse effects, if the cabinet determines that it will meet the three (3) conditions listed in subparagraph 1a, b, and c of this paragraph.
- (14) Occurrence of an upset.
- (a) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the requirements of paragraph (b) of this subsection are met.
- (b) Conditions necessary for a demonstration of an upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate through properly signed, contemporaneous operating logs, or other relevant evidence that:
1. An upset occurred and that the permittee can identify the causes of the upset;
  2. The permitted facility was at the time being properly operated;
  3. The permittee submitted notice of an upset as required in subsection (12)(f) of this section; and
  4. The permittee complied with any remedial measures required under subsection (4) of this section.
- (c) Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset shall have the burden of proof.
- (15) Additional conditions applicable to specified categories of KPDES permits. The following conditions, in addition to others set forth in this administrative regulation, shall apply to all KPDES permits within the categories specified below:
- (a) Existing manufacturing, commercial, mining, and silvicultural dischargers. In addition to the reporting requirements under subsections (12), (13), and (14) of this section, any existing manufacturing, commercial, mining, and silvicultural discharger shall notify the cabinet as soon as it knows or has reason to know:
1. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
    - a. 100 micrograms per liter (100 µg/l);
    - b. 200 micrograms per liter (200 µg/l) for acrolein and acrylonitrile; 500 micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one (1) milligram per liter (1 mg/l) for antimony;
    - c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 401 KAR 5:060, Section 2(7);
    - d. The level established by the cabinet in accordance with 401 KAR 5:065, Section 2(6).



2. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

- a. 500 micrograms per liter (500 µg/l);
- b. One (1) milligram per liter (1 mg/l) for antimony;
- c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 401 KAR 5:060, Section 2(7); or
- d. The level established by the cabinet in accordance with 401 KAR 5:065, Section 2(6).

(b) POTWs.

1. POTWs shall provide adequate notice to the cabinet of the following:
  - a. Any new introduction of pollutants into that POTW from an indirect discharger which would be subject to the KPDES administrative regulations if it were directly discharging those pollutants; or
  - b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
2. For purposes of this paragraph, adequate notice shall include information on the quality and quantity of effluent introduced into the POTWs and any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

### **SPECIAL REQUIREMENTS**

#### **Domestic Water Supply Requirement**

In order to protect the viability of the downstream drinking water sources the permittee shall develop and implement notification procedures whereby occurrences of partially treated discharges are communicated by the most expeditious manner to the downstream water supplies and the Ohio River Valley Water Sanitation Commission (ORSANCO). These procedures shall detail the methods which will be utilized to notify the impacted water supplier and ORSANCO that such an event has occurred and shall include the names, telephone numbers, and e-mail addresses of the contacts with the subject water supply, ORSANCO, and those responsible persons representing the permittee.



### **SPECIAL POTW REQUIREMENTS**

NOTE: The following requirements apply only to Publicly-Owned Treatment Works.

#### **SLUDGE DISPOSAL**

Sludge shall be disposed of in accordance with 40 CFR Part 503 and 401 KAR 45.

#### **PROHIBITIVE DISCHARGES**

Under no circumstances shall the permittee allow discharge of the following into the system:

- A. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW);
- B. Pollutants which will cause corrosive structural damage to the POTW, but in no case, discharges with a pH lower than 5.0;
- C. Solid or viscous pollutants in amounts which will cause obstruction to the flow in sewers, or other interference with operation of the POTW;
- D. Any pollutant, including oxygen demanding pollutants (BOD<sub>5</sub>, etc.), released in a discharge at such a volume or strength as to cause interference in the POTW;
- E. Heat in amounts, which will inhibit biological activity in the POTW, but in no case, heat in such quantities that the influent to the sewage treatment works exceeds 104° F (40° C);
- F. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass-through;
- G. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems; and,
- H. Any trucked or hauled waste, except at discharge points designated by the POTW.



PRETREATMENT

A. Program Requirements

1. The permittee shall be responsible for the performance of all pretreatment requirements contained in 401 KAR 5:057, Section 6, and pursuant to 40 CFR Part 403, and shall be subject to enforcement actions, penalties, fines, and other remedies by the state, as provided in the Clean Water Act (hereafter the "Act"). The permittee shall implement and enforce its approved POTW pretreatment program. The permittee's approved POTW pretreatment program is hereby made an enforceable condition of this permit. The state may initiate enforcement action against a POTW and against an industrial user for noncompliance with applicable standards and requirements as provided in KRS 224.16-050(1), 224.70-110, and 224.73-120, and pursuant to the Act.
2. The permittee shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d), and 402(b) of the Act. The permittee shall cause industrial users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.
3. The permittee shall perform the pretreatment functions as required in 401 KAR 5:057, Section 6 and 40 CFR Part 403 including, but not limited to:
  - a. Implement the necessary legal authorities as provided in 401 KAR 5:057, Section 6(4)(a). This includes, among other things, the authority to:
    - (1) Deny or condition new or increased contributions of pollutants or changes in the nature of pollutants (401 KAR 5:057, Section 6(4)(a)(1));
    - (2) Require compliance with applicable pretreatment standards (401 KAR 5:057, Section 6(4)(a)(2));
    - (3) Control through permit to ensure compliance (401 KAR 5:057, Section 6(4)(a)(3));
    - (4) Require the development of compliance schedules and submission of reports (401 KAR 5:057, Section 6(4)(a)(4));
    - (5) Carry out inspection, surveillance, and monitoring procedures (401 KAR 5:057, Section 6(4)(a)(5));
    - (6) Obtain remedies for noncompliance by industrial users (401 KAR 5:057, Section 6(4)(a)(6)).
  - b. Implement the programmatic functions as provided in 401 KAR 5:057, Section 6(4)(b). This includes:
    - (1) An industrial waste survey (401 KAR 5:057, Section 6(4)(b)(1 and 2));
    - (2) Notification of appropriate federal, state and/or local standards or limitations (401 KAR 5:057, Section 6(4)(b)(3));
    - (3) Receipt and analysis of self-monitoring reports and other notices, (401 KAR 5:057, Section 6(4)(b)(4));
    - (4) POTW compliance sampling and analysis (401 KAR 5:057, Section 6(4)(b)(5));
    - (5) Noncompliance investigations and enforcement (401 KAR 5:057, Section 6(4)(b)(6));
    - (6) Public participation (401 KAR 5:057, Section 6(4)(b)(7)).
  - c. Provide the required funding, equipment, and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3) and 403.9(b)(4).



4. The permittee shall adopt and enforce local limits that will protect the treatment works against interference, pass-through, and sludge contamination. Local limits shall be revised as necessary by the permittee as provided in 40 CFR 122.21 and CFR 403.5.

B. Semi-Annual Reporting

1. The permittee shall submit semi-annually a pretreatment report to the state. The report due on March 1st shall describe the permittee's pretreatment program activities over the previous year and shall cover the period January through December. The report due on September 1st shall describe the permittee's pretreatment program activities over the previous six (6) months and shall cover the period January through June. In the event that the permittee is not in compliance with any conditions or requirements of this permit, then the permittee shall also include the reasons for noncompliance and state how and when the permittee shall comply with such conditions and requirements. Each report shall contain, but not be limited to, the following information:
  - a. Analytical results of the POTW's influent, effluent, and sludge (including sludge from lagoons) annually, by the 28th of January, for those pollutants identified under Section 307(a) of the Act which are known or suspected to be discharged by industrial users, and for any nonpriority pollutants which the permittee believes may be causing or contributing to interference, pass-through, or adversely impacting sludge quality. The report shall include all pollutants identified on KPDES Discharge Monitoring Report (DMR) for pretreatment influent, effluent, and sludge scan. The frequency of analysis shall not exceed twelve months.
  - b. A discussion of upset, interference, or pass-through incidents, if any, at the POTW treatment plant which the permittee knows or suspects were caused by industrial users of the POTW system. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of the industrial user(s) responsible.
  - c. The cumulative number of industrial users that the permittee has notified regarding baseline monitoring reports and the cumulative number of industrial user responses.
  - d. An updated list of the permittee's industrial users including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The permittee shall provide a brief explanation for each deletion. The list shall identify the industrial users subject to federal categorical standards and which set(s) of standards are applicable. The permittee shall characterize the compliance status of each industrial user by employing the following descriptions:
    - (1) In compliance with baseline monitoring report requirements (where applicable);
    - (2) Consistently achieving compliance;
    - (3) Inconsistently achieving compliance;
    - (4) Significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);
    - (5) On a compliance schedule to achieve compliance (include the date final compliance is required);
    - (6) Not achieving compliance and not on a compliance schedule;
    - (7) The permittee does not know the industrial user's compliance status (with explanation).



PART II

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- e. A summary of the inspection and sampling activities conducted by the permittee during the past six (6) months to gather information and data regarding industrial users. The summary shall include:
    - (1) The names of industrial users subject to surveillance by the permittee and an indication of whether they were inspected, sampled, or both and the frequency of these activities at each user; and
    - (2) The conclusions or results from the inspection or sampling of each industrial user.
  - f. A summary of the compliance and enforcement activities during the past six (6) months, the summary shall include the names of the industrial users affected by the following actions:
    - (1) Warning letter or notices of violation;
    - (2) Administrative orders;
    - (3) Civil actions;
    - (4) Criminal actions;
    - (5) Assessment of monetary penalties. For each industrial user identify the amount of the penalties;
    - (6) Restriction of flow to the POTW; or
    - (7) Disconnection from discharge to the POTW.
  - g. A description of any significant changes in operating the pretreatment program which differ from the information in the permittee's approved pretreatment program including, but not limited to changes concerning: the program's administrative structure; local industrial discharge limitations; monitoring program or monitoring frequencies; legal authority or enforcement policy; funding mechanisms; resource requirements; or staffing levels.
  - h. A summary of the semi-annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.
  - i. A summary of public participation activities to involve and inform the public. This shall include a copy of the annual publication of significant violations, if such publication was needed to comply with 40 CFR 403.8(f)(2)(vii).
  - j. A description of any changes in sludge disposal methods and a discussion of any concerns not described elsewhere in the report.
  - k. Any other information deemed as pertinent by the state in effectively administering an approved pretreatment program.
2. A signed copy of this report shall be submitted by the due dates to the state at the address shown below:

Kentucky Department for Environmental Protection  
Division of Water, KPDES Branch  
14 Reilly Road, Frankfort Office Park  
Frankfort, Kentucky 40601



**PART III**

OTHER REQUIREMENTS

A. Reporting of Monitoring Results

Monitoring results obtained during each monitoring period must be reported on a preprinted Discharge Monitoring Report (DMR) Form that will be mailed to you. The completed DMR for each monitoring period must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the monitoring period for which monitoring results were obtained.

Division of Water  
Frankfort Regional Office  
643 Teton Trail  
Frankfort, Kentucky 40601  
ATTN: Supervisor

Environmental & Public Protection Cabinet  
Dept. for Environmental Protection  
Division of Water/KPDES Branch  
14 Reilly Road, Frankfort Office Park  
Frankfort, Kentucky 40601

B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 through 5:080 and KRS 224, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.



**PART IV  
CHRONIC CONCERNS  
Biomonitoring**

In accordance with PART I of this permit, the permittee shall initiate, within 30 days of the effective date of this permit, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfall 001.

1. Test Requirements

- A. The permittee shall perform one (1) short-term fathead minnow (Pimephales promelas) growth test and one (1) short-term daphnid (Ceriodaphnia sp.) life-cycle test. Tests shall be conducted with appropriate replicates of 100% effluent, a control and a minimum of four (4) evenly spaced effluent concentrations. If the permit limit is less than 100% effluent and greater than or equal to 75% effluent, then one (1) concentration should be 100%. If the permit limit is less than 75% effluent, the permit limit concentration shall be bracketed with two (2) concentrations above and two (2) concentrations below. The selection of the effluent concentrations is subject to revision by the Division. Controls shall be tested concurrently with effluent testing using a synthetic water. The analysis will be deemed reasonable and good only if the minimum control requirements are met (i.e. >80% survival; 60% adults with 3 broods and 15 or more young/surviving female for the Ceriodaphnia test; an average 0.25 mg weight for the minnow growth test). Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period (i.e. monthly or quarterly). Noncompliance with the toxicity limit will be demonstrated if the  $IC_{25}$  (inhibition concentration) for reproduction or growth is less than 100% effluent

- B. Tests shall be conducted on both species at the frequency specified in PART I of this permit.

A minimum of three (3) twenty-four hour composite samples will be collected at a frequency of one (1) sample every other day, or at a frequency to be determined by the permitting authority. For example, the first sample would be used for test initiation, day 1, and for test solution renewal on day 2. The second sample would be used for test solution renewal on days 3 and 4. The third sample would be used for test solution renewal on days 5, 6, and 7. The lapsed time from collection of the last aliquot of the composite and its first use for test initiation, or for test solution renewal shall not exceed 36 hours. Composite samples shall be refrigerated during collection and maintained at 6°C until used.

If after at least six (6) tests, it can be determined that Ceriodaphnia or the Fathead minnow is more sensitive, a request for testing of only that organism can be made to the Division. Upon approval, that organism can be chosen as representative and all subsequent tests can be conducted on only that organism.



2. Reporting Requirements

Results of all tests conducted with any organism shall be reported according to the most recent format provided by the Division of Water (Appendix 10 of 'Methods for Culturing and Conducting Toxicity Tests with *Pimephales promelas* and *Ceriodaphnia dubia* (Fifth Edition)' KDOW, January 2002). Test results shall be submitted to the Division of Water with the next regularly scheduled discharge monitoring report.

3. Chronic Toxicity

If noncompliance with the toxicity limit occurs ( $IC_{25}$  for reproduction or growth is less than 100% effluent), the permittee must conduct a second test within 15 days of the first failure. This test will be used in evaluating the persistence of the toxic event and the possible need for a toxicity reduction evaluation (TRE).

If the second test demonstrates noncompliance with the toxicity limit, the permittee will be required to perform accelerated testing as specified in the following paragraphs.

Complete four (4) additional tests within 90 days of failure of the second test to evaluate the frequency and degree of toxicity. The results of the two (2) tests specified above and of the four (4) additional tests will be used for purposes of this evaluation.

If results from two (2) of any six (6) tests show a significant noncompliance with the chronic limit ( $\geq 1.2$  times the  $TU_c$ ), or results from four (4) of any six (6) tests show chronic toxicity (as defined in 1.A), a Toxicity Reduction Evaluation (TRE) will be required.

The permittee shall provide written notification, within five (5) days of the completion of accelerated testing to the Division of Water, that toxicity persisted and that a TRE would be initiated or that toxicity did not persist and the normal testing would resume.

Should toxicity not prove persistent during the accelerated testing, but reoccur within 12 months of the initial failure at a level  $\geq 1.2$  time the  $TU_c$ , then a TRE shall be initiated without further accelerated testing.



4. Toxicity Reduction Evaluation (TRE)

Having determined the effluent to be toxic, the permittee shall develop and implement an acceptable plan for the identification and treatability of the toxicant(s) within 90 days of completion of accelerated testing. The plan shall be developed in accordance with EPA guidance provided in the following EPA publications and submitted for DEP review and comment:

Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program. March 27, 2001.

Toxicity Reduction Evaluation Guidance For Municipal Wastewater Treatment Plants. August 1999.

Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures. February 1991.

Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures. February 1989.

Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures. February 1989.

Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs). March 1989.

Abstracts of Toxicity Reduction Evaluations. March 1989.

The plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE will establish an implementation schedule not to exceed 24 months for completion of these activities. The implementation schedule shall include monthly progress reports and a final report.

Upon the completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and the actions to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions including an implementation schedule not to exceed 180 days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the conclusion of the TRE, the permittee will notify, within five (5) days, the Division of Water and take appropriate actions to implement the solution within 180 days of determination.

5. Test Methods

All test organisms, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (Fourth Edition), EPA-821-R-02-013, or the most recent edition of this publication.





ERNE FLETCHER  
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET  
DEPARTMENT FOR ENVIRONMENTAL PROTECTION  
DIVISION OF WATER  
14 REILLY ROAD  
FRANKFORT, KENTUCKY 40601-1190  
www.kentucky.gov

TERESA J. HILL  
SECRETARY

**FACT SHEET**

**KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM  
PERMIT TO DISCHARGE TREATED WASTEWATER  
INTO WATERS OF THE COMMONWEALTH**

KPDES No.: KY0105031 Permit Writer: Barry Elmore Date: August 16, 2007  
AI No.: 523

**1. SYNOPSIS OF APPLICATION**

a. Name and Address of Applicant

Sanitation District No. 1  
1045 Eaton Drive  
Fort Wright, Kentucky 41017

b. Facility Location

Eastern Regional WWTP  
KY Highway 10  
Alexandria, Campbell County, Kentucky

c. Description of Applicant's Operation

Engaged in collection, treatment, and disposal of municipal wastewater.

d. Production Capacity

4.0 MGD

e. Description of Existing Pollution Abatement Facilities

Treatment consists of mechanical screenings, grit removal, raw sewage pumping, flow equalization, oxidation ditches (in parallel), final clarifiers (in parallel), ultraviolet light disinfection, post aeration, RAS/WAS pump station, scum pump station, short-term aerated sludge holding, gravity belt thickener/belt filter press, and non-potable water pumping system. The oxidation ditches will contain anaerobic and anoxic selector basins for the purpose of biological phosphorus removal. Waste sludge is pumped from the RAS/WAS pump station to the aerated sludge holding basins for short-term holding. Waste sludge is dewatered by belt filter press. Final sludge disposal is at the Walton Landfill.

jm



f. Permitting Action

This is a major modification of a major KPDES permit for a sanitation district with an existing discharge permit. This modification is to relocate the previously permitted outfall which was not constructed.

This modification permitting action reopens, as per 401 KAR 5:075, Section 2(3)(a), only the permit condition(s) to be modified. All other aspects of the existing permit remain in effect for the duration of the permit.

2. RECEIVING WATER

a. Name/Mile Point

Brush Creek at mile point 1.6, approximately two hundred feet upstream of the existing Alexandria WWTP (KY0023485) outfall.

b. Stream Segment Categorization:

Brush Creek at the point of discharge is categorized as Impaired.

c. Stream Segment Use Classification

Warmwater Aquatic Habitat, Primary/Secondary Contact Recreation, and Domestic Water Supply

The 2004 303(d) List of Waters for Kentucky lists Brush Creek of Twelve Mile Creek as impaired for nonsupport of aquatic life, and for non-support of swimming. The causes of impairment are Organic Enrichment/Low DO, and pathogens. The existing Alexandria Wastewater Treatment Plant is the suspected primary source of these pollutants. Overloading of the Alexandria plant has been the most significant factor contributing to these impairments. Replacement of the Alexandria plant with the increased capacity of the East Regional Waste Water Treatment plant is anticipated to contribute to the restoration of stream uses. This permit specifically includes phosphorus limitations addressing Organic Enrichment, and the pathogen limits for this outfall are consistent with water quality based limitations. A properly operating wastewater treatment plant should neither cause nor contribute to impairment.

d. Stream Low Flow Conditions

The low flow 7Q10 for this stream at the point of discharge is 0.0 cfs.

The harmonic mean flow for this stream at the point of discharge is 0.0 cfs.

The low flow 7Q10 at the nearest downstream drinking water intake (Cincinnati Greater Water Works Richard Miller Plant) is 10,600 cfs, and is on the Ohio River at Kentucky River Mile Index mile point 518.8 (USCOE 462.8). There are essentially three intakes at this point: The Greater Cincinnati Water Works Richard Miller Plant intake, the Northern Kentucky Water District-Fort Thomas intake at mile point 518.7 (USCOE 462.9) and the Northern Kentucky Water District-Newport intake at mile point 517.8 (USCOE 463.8).

The harmonic mean flow at the nearest downstream drinking water intake is 45,300 cfs.



### 3A. REPORTED DISCHARGE AND PROPOSED LIMITS - Municipal Effluent

Serial Number 001

Effluent Characteristics	Reported Discharge <sup>1</sup>		Proposed Limits		COMMENTS
	Average Annual Value	Lowest Monthly Average	Highest Monthly Average	Monthly Average	
Flow, MGD (Design Flow = 4.0 MGD)	NA	NA	NA	Report	401 KAR 5:005
CBODs, mg/l	NA	NA	NA	15	401 KAR 5:065
TSS, mg/l	NA	NA	NA	30	401 KAR 5:031
Fecal Coliform, (N/100 ml)	NA	NA	NA	NA	401 KAR 5:045
Escherichia Coli (N/100 ml)	NA	NA	NA	130 <sup>2</sup>	401 KAR 5:045
Ammonia (as N), mg/l Summer Winter	NA	NA	NA	4.0	401 KAR 5:045
Chloride, mg/l	NA	NA	NA	10.0	401 KAR 5:031
Dissolved Oxygen, mg/l	NA	NA	NA	600	401 KAR 5:045
pH, standard units	NA	NA	NA	Not less than 7 mg/l	401 KAR 5:031
Total Residual Chlorine, mg/l	NA	NA	NA	6.0 - 9.0	401 KAR 5:045
Total Phosphorus, mg/l Summer Winter	NA	NA	NA	0.011	401 KAR 5:031
TKN (as mg/l N)	NA	NA	NA	1.0	401 KAR 5:065
Total Recoverable Cadmium (mg/l)	NA	NA	NA	2.0	401 KAR 5:065
Total Recoverable Copper (mg/l)	NA	NA	NA	Report	401 KAR 5:065
Total Recoverable Lead (mg/l)	NA	NA	NA	Report	401 KAR 5:065
Total Recoverable Zinc (mg/l)	NA	NA	NA	Report	401 KAR 5:065
Hardness (as mg/l CaCO <sub>3</sub> )	NA	NA	NA	Report	401 KAR 5:065
Chronic Toxicity, TU <sub>C</sub>	NA	NA	NA	NA	401 KAR 5:031

<sup>1</sup>This is a new facility with no prior reported discharge values.

<sup>2</sup>Geometric Mean

<sup>3</sup>Daily Max

Summer: May 1 - October 31

Winter: November 1 - April 30

NA-Not Applicable, this is a new facility with no prior reporting.



3B. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 001-Municipal Wastewater Effluent

b. Effluent Characteristics

Flow (MGD)	Total Suspended Solids
CBOD <sub>5</sub>	Dissolved Oxygen
Escherichia Coli	Total Phosphorus (as P)
pH	Total Kjeldahl Nitrogen (TKN)
Ammonia Nitrogen	Total Recoverable Copper
Total Recoverable Cadmium	Total Recoverable Zinc
Total Recoverable Lead	Chronic Toxicity
Hardness	

c. Pertinent Factors

This sanitation district has an approved pretreatment program.

No Total Maximum Daily Load (TMDL) has been approved for Brush Creek of Twelve Mile Creek.

This permit contains a technology based limit for the reduction of phosphorus.

d. Monitoring Requirements

The monitoring frequency, location, and method of measurement for all parameters within this permit are consistent with 401 KAR 5:065 Section 2 (8).

Flow monitoring shall be conducted continuously by recorder.

The influent and the effluent shall be monitored three times per week by 24-hour composite sampling for the following pollutants: Carbonaceous Biochemical Oxygen Demand (5-day), Total Suspended Solids, and Ammonia Nitrogen.

The effluent shall be monitored three times per week by grab sample for the following pollutants: Escherichia Coli, pH, and Dissolved Oxygen.

Total Phosphorus shall be monitored once per week by 24-hour composite sample.

Total Kjeldahl Nitrogen (TKN) shall be monitored once per week by 24-hour composite sample.

Chronic Toxicity shall be monitored monthly by a minimum of three (3) 24-hour composite samples collected every other day.

The following pollutants shall be monitored monthly by 24-hour composite sample: Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Zinc, and Hardness, concurrent with whole effluent toxicity testing.



e. Justification of Conditions

The Kentucky regulations cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

Escherichia Coli and Fecal Coliform Bacteria

The limits for *Escherichia Coli* are consistent with the requirements of 401 KAR 5:031, Section 7, 401 KAR 5:045 Section 4 and 401 KAR 5:080, Section 1(2)(c) 2. The removal of Fecal Coliform Bacteria is consistent with the requirements of 401 KAR 5:080, Section 1 (2) (c)2. Although Fecal Coliform Bacteria has been used as an indicator of fecal contamination, it does contain other species that are not necessarily fecal in origin. EPA recommends *Escherichia Coli*, which is specific to fecal material from warm-blooded animals, as the best indicator of health risk from contact with recreational waters. Therefore, it is the "Best Professional Judgment "BPJ" of the Division of Water that *Escherichia Coli* replace Fecal Coliform Bacteria on this permit.

Carbonaceous Biochemical Oxygen Demand (5-day), Ammonia Nitrogen, and Dissolved Oxygen,

The effluent limitations for the above permit parameters are consistent with 401 KAR 5:031 Section 4 and 401 KAR 5:045 Sections 3 and 5.

Total Suspended Solids

The effluent limitation for the above permit parameter is consistent with 401 KAR 5:045 Section 3.

Chloride

The effluent limitation for the above permit parameter is consistent with 401 KAR 5:031.

Total Residual Chlorine (TRC)

The effluent limitation for the above permit parameter is consistent with 401 KAR 5:031.

Chronic Toxicity

The effluent limitation for the above parameter is consistent with 401 KAR 5:029 Section 4 and 401 KAR 5:031 Section 4.

Total Phosphorus

The effluent limitations for the above permit parameter are consistent with the requirements of 401 KAR 5:065, Section 2(8) and 401 KAR 5:080, Section 1(2)(c)2. The effluent limit for phosphorus shall become effective with the effective date of this permit.

Total Kjeldahl Nitrogen

The monitoring requirements for the above permit parameter are consistent with the requirements of 401 KAR 5:065, Section 2(8)

Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Zinc, Total Recoverable Lead, and Hardness as Calcium Carbonate

The monitoring requirements for the above permit parameter are consistent with 401 KAR 5:065 Section 2 (8).



#### 4A. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall Number 001P - Wastewater Treatment Plant (Pretreatment Requirements)

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Total Recoverable Arsenic (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Recoverable Cadmium (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Chloride (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Hexavalent Chromium (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Recoverable Chromium (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Recoverable Copper (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Free Cyanide (Amenable) (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Recoverable Iron (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Recoverable Lead (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Recoverable Mercury (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Recoverable Nickel (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Oil & Grease (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Phenols (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Phosphorus (as mg/l P)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Recoverable Selenium (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Recoverable Silver (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Recoverable Zinc (mg/l)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6

The abbreviation N/A means Not Applicable. This is a new facility with no prior pretreatment data.



4B. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall Number 001P - Wastewater Treatment Plant (Pretreatment Requirements)

b. Effluent Characteristics

Total Recoverable Cadmium	Total Recoverable Copper
Total Recoverable Lead	Total Recoverable Zinc
Chronic Toxicity	Total Recoverable Arsenic
Chloride	Hexavalent Chromium
Total Recoverable Chromium	
Free Cyanide (Amenable to Chlorination)	
Total Recoverable Iron	Total Recoverable Mercury
Total Recoverable Nickel	Oil & Grease
Total Phenols	Total Recoverable Selenium
Total Recoverable Silver	

c. Pertinent Factors

This sanitation district has an approved pretreatment program.

d. Monitoring Requirements

Influent and effluent 24-hour composites samples shall be collected annually for the following pollutants: Total Recoverable Arsenic, Total Recoverable Cadmium, Chloride, Hexavalent Chromium, Total Recoverable Chromium, Total Recoverable Copper, Total Recoverable Iron, Total Recoverable Lead, Total Recoverable Nickel, Total Recoverable Molybdenum, Total Phosphorus (as P), Total Recoverable Selenium, Total Recoverable Silver, and Total Recoverable Zinc.

Influent and effluent grab samples shall be collected annually for the following pollutants: Free Cyanide (Amenable to Chlorination), Total Recoverable Mercury, Oil & Grease, pH, and Total Phenols.

e. Justification of Limits

The Kentucky regulations cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

Total Recoverable Arsenic, Total Recoverable Cadmium, Chloride, Hexavalent Chromium, Total Recoverable Chromium, Total Recoverable Copper, Free Cyanide (Amenable to Chlorination), Total Recoverable Iron, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Nickel, Molybdenum, Oil & Grease, pH, Total Phenols, Total Phosphorus (as P), Total Recoverable Selenium, Total Recoverable Silver, Total Recoverable Zinc, Percent Total Sludge Solids, and Annual Amount of Sludge Disposed

The monitoring requirements for the above permit parameters are applicable to municipal wastewater treatment plants that have pretreatment programs, as per 401 KAR 5:057, Section 6. Monitoring requirements are applicable for the municipal plant influent, effluent, and sludge in order to monitor potential interference, pass-through, or adverse impact on sludge quality.



## 5A. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall Number 001P - Wastewater Treatment Plant (Pretreatment Sludge Requirements)

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Arsenic, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Cadmium, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Chromium, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Copper, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Lead, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Mercury, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Molybdenum, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Nickel, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
pH (standard units)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Total Phosphorus (as mg/l P)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Selenium, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Silver, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Zinc, Total Dry Weight (mg/kg)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Solids, Total Dry Weight (MT/Y)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Solids, Total (percent)	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
Sludge Disposal Method (MT/Y)					
By Incineration	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
By Landfill	N/A	N/A	Report	Report	401 KAR 5:057, Section 6
By Other Method	N/A	N/A	Report	Report	401 KAR 5:057, Section 6

The abbreviation N/A means Not Applicable. This is a new facility with no prior sludge data.  
 The abbreviation MT/Y means metric tons per year.



5B. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall Number 001P - Wastewater Treatment Plant (Pretreatment Sludge Requirements)

b. Sludge Characteristics

Cadmium, Total Dry Weight	Arsenic, Total Dry Weight
Chromium, Total Dry Weight	Copper, Total Dry Weight
Lead, Total Dry Weight	Mercury, Total Dry Weight
Molybdenum, Total Dry Weight	Nickel, Total Dry Weight
pH	Total Phosphorus
Selenium, Total Dry Weight	Silver, Total Dry Weight
Zinc, Total Dry Weight	Solids, Total Dry Weight
Solids, Total (percent)	Sludge Disposal Method

c. Pertinent Factors

This sanitation district has an approved pretreatment program.

d. Monitoring Requirements

The sludge shall be monitored annually by grab sample for the following pollutants: Cadmium, Total Dry Weight, Arsenic, Total Dry Weight, Chromium, Total Dry Weight, Copper, Total Dry Weight, Lead, Total Dry Weight, Mercury, Total Dry Weight, Molybdenum, Total Dry Weight, Nickel, Total Dry Weight, pH, Total Phosphorus, Selenium, Total Dry Weight, Silver, Total Dry Weight, Zinc, Total Dry Weight, Solids, Total Dry Weight, Solids, Total (percent), and Sludge Disposal Method

e. Justification of Sludge Monitoring

The Kentucky regulations cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

Cadmium, Total Dry Weight, Arsenic, Total Dry Weight, Chromium, Total Dry Weight, Copper, Total Dry Weight, Lead, Total Dry Weight, Mercury, Total Dry Weight, Molybdenum, Total Dry Weight, Nickel, Total Dry Weight, pH, Total Phosphorus, Selenium, Total Dry Weight, Silver, Total Dry Weight, Zinc, Total Dry Weight, Solids, Total Dry Weight, Solids, Total (percent), and Sludge Disposal Method

The monitoring requirements for the above permit parameters are applicable to municipal wastewater treatment plants that have pretreatment programs, as per 401 KAR 5:057, Section 6. Monitoring requirements are applicable for the municipal plant influent, effluent, and sludge in order to monitor potential interference, pass-through, or adverse impact on sludge quality.



6A. **ANTIDEGRADATION FOR KENTUCKY**

The conditions of 401 KAR 5:029, Section 1 have been satisfied by this permit action. In 2005 the Sanitation District No. 1 of Northern Kentucky submitted a revised facility plan developed in accordance with the 401 KAR 5:006. This process included the performance of an alternatives analysis and socioeconomic demonstration by the regional planning authority. Additionally, public comment was solicited during the development process of the draft facility plan. On August 28, 2006 the Division of Water approved the proposed facility plan. Therefore, pursuant to the requirements of 401 KAR 5:030, Section 1(3)(b)5 the permittee has demonstrated compliance with these requirements of the antidegradation implementation procedures specified in 401 KAR 5:030.

6B. **ANTIDEGRADATION FOR AFFECTED STATES**

The need to allow this permit pursuant to the antidegradation policy of Kentucky and other affected states has been demonstrated by the regional facility plans approved on November 1, 2002 and August 28, 2006. Through the planning process, as more fully documented in the plans, the cabinet has found that this permit as written is necessary based on technical, social, and economic criteria found in the plans, and, through the planning alternatives analysis, that there are no better alternatives to this discharge.

7. **PROPOSED COMPLIANCE SCHEDULE FOR ATTAINING EFFLUENT LIMITATIONS**

The permittee will comply with all effluent limitations by the effective date of this permit.

8. **PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE**

**Sludge Management**

Special POTW requirements apply for all Publicly-Owned Treatment Works.

Sludge shall be disposed of in accordance with 40 CFR Part 503 and 401 KAR 45.

The permittee shall not allow prohibited discharges into the system.

This sanitation district has an approved pretreatment program. The permittee shall be responsible for the performance of all pretreatment requirements contained in 401 KAR 5:057, Section 6 and pursuant to 40 CFR Part 403.

**Domestic Water Supply Requirement**

In order to protect the viability of the downstream drinking water sources the permittee shall develop and implement notification procedures whereby occurrences of partially treated discharges are communicated by the most expeditious manner to the downstream water supplies and the Ohio River Valley Water Sanitation Commission (ORSANCO). These procedures shall detail the methods which will be utilized to notify the impacted water supplier and ORSANCO that such an event has occurred and shall include the names, telephone numbers, and e-mail addresses of the contacts with the subject water supply, ORSANCO, and those responsible persons representing the permittee.



9. PERMIT DURATION

This permit expires April 30, 2008.

10. PERMIT INFORMATION

The application, draft permit, fact sheet, public notice, comments received, and additional information is available from the Division of Water at 14 Reilly Road, Frankfort Office Park, Frankfort, Kentucky 40601.

11. REFERENCES AND CITED DOCUMENTS

All material and documents referenced or cited in this fact sheet are a part of the permit information as described above and are readily available at the Division of Water Central Office. Information regarding these materials may be obtained from the person listed below.

12. CONTACT

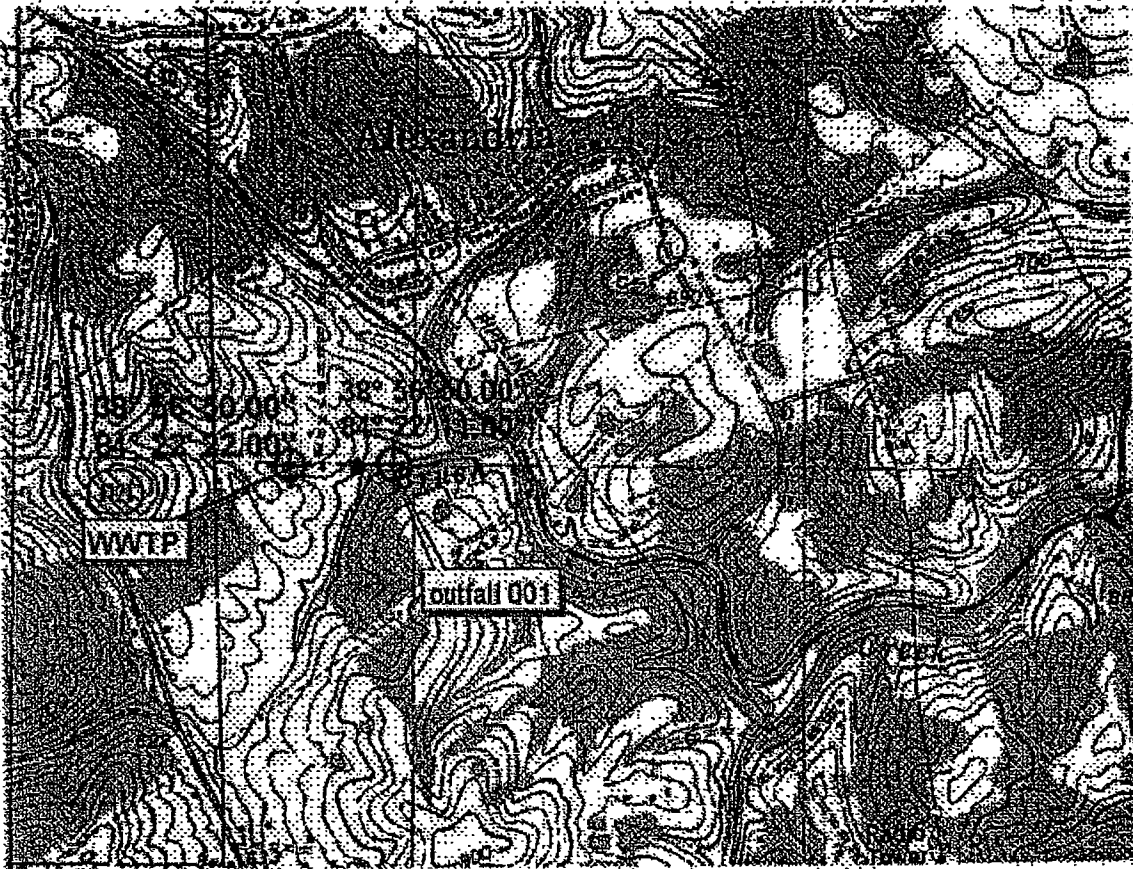
For further information on the draft permit or comment process, contact the individual identified on the Public Notice or the Permit Writer - Barry Elmore at (502) 564-2225, extension 459, or email barry.elmore@ky.gov.

13. PUBLIC NOTICE INFORMATION

Please refer to the attached Public Notice for details regarding the procedures for a final decision, deadline for comments and other information required by 401 KAR 5:075, Section 4(2)(e).



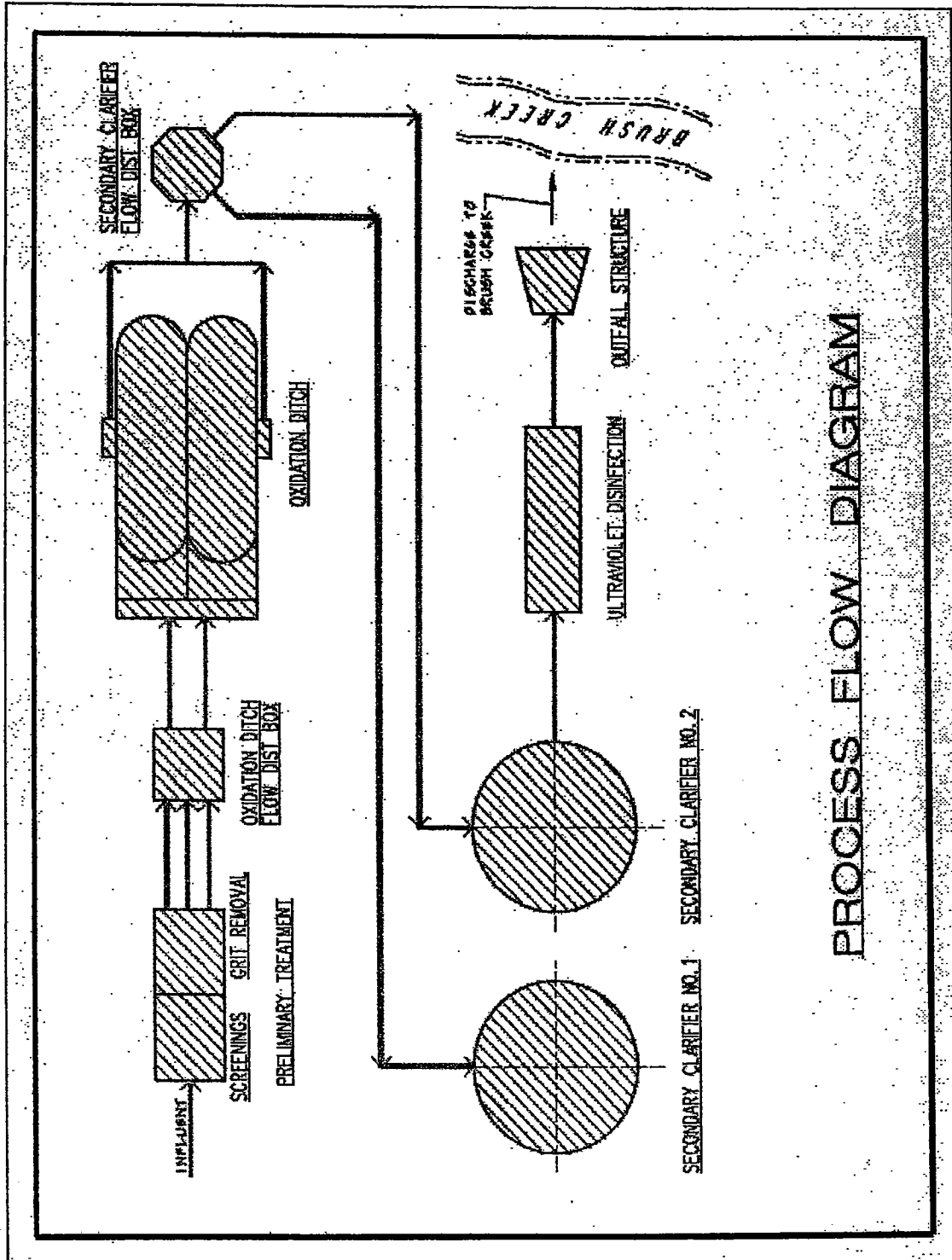
## Eastern Regional WWTP



- KPDES Outfall
- KPDES Facility
  - Active
  - General
  - Inactive









ATTACHMENT A - SSTWAM2004 FOR KY0105031 EASTERN REGIONAL WWTP

Permit Writer	Barry Elmore
Date Entered	8/29/2006
Facility Name	SD1 East Regional WWTP
KPDES Number	KY0105031
Outfall Number	001
Case Number	0
Status:	
Is this an existing facility – Enter “E”	
Is this an existing facility with an increase in pollutant load – Enter “I”	
Is this a new facility – Enter “N”	
Is this a regional facility with an approved up-to-date 201 plan – Enter “R”	
Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter “A”	R
Receiving Water Name	Brush Creek
Discharge Mile Point	1.6
Public Water Supply Name	GCWW – Richard Miller Treatment Plant
Intake Water Name	Ohio River
Intake Mile Point	518.7
Total Effluent Flow (Q <sub>T</sub> )	4 MGD
Receiving Water 7Q10 (Q <sub>RW7Q10</sub> )	0 cfs
Receiving Water Harmonic Mean (Q <sub>RWHM</sub> )	0 cfs
Receiving Water pH	7.5
Receiving Water Temperature	20.00 °C
Intake Water 7Q10 (Q <sub>IW7Q10</sub> )	10600 cfs
Intake Water Harmonic Mean (Q <sub>IWHM</sub> )	45300 cfs
Effluent Hardness	150 (as mg/l CaCO <sub>3</sub> )
Receiving Water Hardness	150 (as mg/l CaCO <sub>3</sub> )
Zone of Initial Dilution (ZID)	1
Mixing Zone (MZ)	0.333
Acute to Chronic Ratio (ACR)	0.1
Impaired	Yes
Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014	Yes

**Calculation Methodology**

**Definitions**

Acute to Chronic Ratio	ACR	Total Effluent Flow	Q <sub>T</sub>
Aquatic Life Acute Criteria	C <sub>A</sub>	Receiving Water 7Q10	Q <sub>RW7Q10</sub>
Aquatic Life Chronic Criteria	C <sub>C</sub>	Receiving Water Harmonic Mean	Q <sub>RWHM</sub>
Human Health Criteria - Fish Only	C <sub>HFO</sub>	Intake Water 7Q10	Q <sub>IW7Q10</sub>
Human Health Criteria - Fish & Water	C <sub>HFW</sub>	Intake Water Harmonic Mean	Q <sub>IWHM</sub>
End of Pipe Effluent Limit	C <sub>T</sub>	Zone of Initial Dilution	ZID
Instream Background Concentration	C <sub>U</sub>	Mixing Zone	MZ
Toxicity Units - Acute	TU <sub>a</sub>	Toxicity Units - Chronic	TU <sub>c</sub>
Effluent Hardness	H <sub>T</sub>	Receiving Water Hardness	H <sub>RW</sub>

**Aquatic Life - Chemical Specific**



ATTACHMENT A - SSTWAM2004 FOR KY0105031 EASTERN REGIONAL WWTP

**Acute**

NO ZID given  $C_T = C_A$

ZID given  $C_T = (C_A - C_U) \times (ZID)$

**Chronic Mixing Zone / Complete Mix**

$$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\} / Q_T$$

**Human Health - Chemical Specific**

**Fish Only: Mixing Zone / Complete Mix**

Carcinogen / Non-Carcinogen

$$C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - C_U(MZ)(Q_{RWHM})\} / Q_T$$

**Fish & Water Only: Mixing Zone / Applicable at point of withdrawal**

Carcinogen

$$C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - C_U(Q_{IWHM})\} / Q_T$$

Non-Carcinogen

$$C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - C_U(Q_{IW7Q10})\} / Q_T$$

**Aquatic Life - Whole Effluent Toxicity**

**Acute (Units TU<sub>a</sub>)**

NO ZID given  $C_T = C_A$

ZID given  $C_T = (C_A - C_U) \times (ZID)$

**Chronic Mixing Zone / Complete Mix (Units TU<sub>c</sub>)**

$$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\} / Q_T$$

Conversion of TU<sub>c</sub> to TU<sub>a</sub>:  $TU_a = TU_c \times ACR = TU_a$

**Metal Aquatic Criteria**

**Pollutant**

Total Recoverable Cadmium

Chromium III

Total Recoverable Copper

Total Recoverable Lead

Total Recoverable Nickel

Total Recoverable Silver

Total Recoverable Zinc

**Acute Criteria**

$$e^{(1.0166 (\ln \text{Hardness}) - 3.824)}$$

$$e^{(0.8190 (\ln \text{Hardness}) + 3.7256)}$$

$$e^{(0.9422 (\ln \text{Hardness}) - 1.700)}$$

$$e^{(1.273 (\ln \text{Hardness}) - 1.460)}$$

$$e^{(0.8460 (\ln \text{Hardness}) + 2.255)}$$

$$e^{(1.72 (\ln \text{Hardness}) - 6.59)}$$

$$e^{(0.8473 (\ln \text{Hardness}) + 0.884)}$$

**Chronic Criteria**

$$e^{(0.7409 (\ln \text{Hardness}) - 4.718)}$$

$$e^{(0.8190 (\ln \text{Hardness}) + 0.6848)}$$

$$e^{(0.8545 (\ln \text{Hardness}) - 1.702)}$$

$$e^{(1.273 (\ln \text{Hardness}) - 4.705)}$$

$$e^{(0.8460 (\ln \text{Hardness}) + 0.0584)}$$

$$e^{(0.8473 (\ln \text{Hardness}) + 0.884)}$$

**Hardness (as mg/l CaCO<sub>3</sub>)**

Zone Initial Dilution (ZID)

Mixing Zone

$$H_{RW} + [H_T + H_{RW}] / ZID$$

$$[(Q_{RW7Q10})(MZ)(H_{RW}) + (Q_T)(H_T)] / [(Q_{RW7Q10})(MZ) + (Q_T)]$$

**Total Ammonia Criteria**

Chronic - applies state wide - unionized criteria of 0.05 mg/l

$$[0.05 \cdot (1 + 10^{(pKa - pH)})] / 1.2$$

$$pKa = (0.0902 + (2730 / (273.1 + T)))$$

T = Temperature °C

Acute - applies to the Ohio River (ORSANCO Criteria)

$$[0.411 / (1 + 10^{(7.204 - pH)})] + [58.4 / (1 + 10^{(pH - 7.204)})]$$

**Bioaccumulative or Persistent**

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concern assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.



### **Antidegradation**

If a new facility or an existing facility that will have a pollutant load increase, the effluent limits are halved unless the receiving stream is impaired or the permittee has demonstrated a negative socioeconomic or cost benefit analysis.

### **Reasonable Potential Analysis**

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

### **New Permits or New Pollutants on Permit Renewals**

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal to or greater than 12 then an effluent limitation will be required.

### **Permit Renewals - Existing Pollutants**



ATTACHMENT A - SSTWAM2004 FOR KY0105031 EASTERN REGIONAL WWTP

<u>Parameter</u>	<u>CAS Number</u>	<u>Carcinogen</u>	<u>Bioaccumulative or Persistent</u>	<u>Effluent Limitations</u>		
				<u>Average</u>	<u>Units</u>	<u>Justification</u>
Chloride	16887005	No	No	600.0000	mg/l	Chronic
Total Recoverable Iron	7439896	No	No	1.0000	mg/l	Chronic
Total Recoverable Arsenic	7440382	Yes	No	0.1500	mg/l	Chronic
Total Recoverable Cadmium	7440439	No	No	0.0004	mg/l	Chronic
Total Recoverable Chromium	7440439	No	No	171.2900	mg/l	Human Health Fish & Water
Total Recoverable Copper	7440508	No	No	0.0132	mg/l	Chronic
Total Recoverable Lead	7439921	No	No	0.0053	mg/l	Chronic
Total Recoverable Mercury	7439976	No	Yes	5.1000E-05	mg/l	Human Health Fish Only
Total Recoverable Nickel	7440020	No	No	0.0735	mg/l	Chronic
Total Recoverable Selenium	7782492	No	No	0.0050	mg/l	Chronic
Total Recoverable Silver	7440224	No	No	N/A	mg/l	Human Health Fish & Water
Total Recoverable Zinc	7440666	No	No	0.1689	mg/l	Chronic
Free Cyanide	57125	No	No	0.0052	mg/l	Chronic
Chromium (VI)	18540299	Yes	No	0.0110	mg/l	Chronic
<u>Hardness</u>						
Metal limitations are developed using the mixed hardness of the effluent and receiving waters	Chronic	Acute				
	150.00	150				

<u>Toxicity</u>			
<u>Type of Test</u>	<u>Maximum</u>	<u>Units</u>	<u>Percent Effluent</u>
Chronic	1.00	TUc	100.00%
			Chronic





ERNIE FLETCHER  
GOVERNOR

**ENVIRONMENTAL AND PUBLIC PROTECTION CABINET**

DEPARTMENT FOR ENVIRONMENTAL PROTECTION

DIVISION OF WATER

14 REILLY ROAD

FRANKFORT, KENTUCKY 40601-1190

[www.kentucky.gov](http://www.kentucky.gov)

August 16, 2007

TERESA J. HILL  
SECRETARY

Sanitation District #1 Northern Kentucky  
1045 Eaton Drive  
Fort Wright, Kentucky 41017

Re: Eastern Regional Wastewater Treatment Plant  
KPDES No.: KY0105031  
1271 East Main Street  
Alexandria, Campbell County, Kentucky

Dear Commenter:

The oral and written comments received during the Oct. 11, 2006, public hearing and the public comment period concerning the above-referenced draft permit modification have been reviewed and responses prepared in accordance with Kentucky Pollutant Discharge Elimination System (KPDES) regulation 401 KAR 5:075, Section 12. The comments have been briefly summarized and Division of Water's responses provided in the following text:

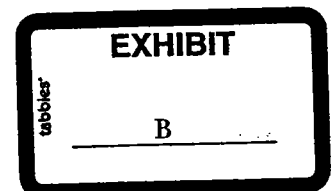
Any person aggrieved by the issuance of a permit final decision may demand a hearing pursuant to KRS 224.10-420(2) within thirty (30) days from the date of the issuance of this letter. Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470, and the regulations promulgated thereto. The request for hearing should be submitted in writing to the Natural Resources and Environmental Protection Cabinet, Office of Administrative Hearings, 35-36 Fountain Place, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Natural Resources and Environmental Protection Cabinet, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

If you have any questions regarding these responses, please contact Jory Becker, KPDES Branch, at (502) 564-3410, ext. 477. Further information on procedures and legal matters pertaining to the hearing request may be obtained by contacting the Office of Administrative Hearings at (502) 564-7312.

Sincerely,

David W. Morgan, Director  
Division of Water

DWM:JMB





Comment No. 1: Construction of the ERWWTP (Eastern Regional Wastewater Treatment Plant) and implementation of the District's regional facility plan is not consistent with SWAP (Source Water Assessment Plans) goals as the regional facilities plan will reduce the source pollution in the Critical Source Water Protection Zone of the Richard Miller Treatment Plant (RMTP) intake.

*Response:* This regional plant and outfall will not increase the risk to the Cincinnati's RMTP intake, and should result in a reduced risk to the Cincinnati RMTP. The regional treatment plant will gain control over numerous, uncontrolled contaminant sources within the Cincinnati RMTP's zones of Critical Concern and High Concern, including failing septic systems, SSOs, and CSOs, as well as adding greater treatment of all current and additional wastewater flow, including UV disinfection.

The SWAP program was designed to determine the number of point and non-point sources of potential pollution present in the designated three zones of drinking water protection, and thereby inform the water treatment plants as to what contaminants should be treated.

Various concerns were expressed by the City of Cincinnati and its agents. These follow:

Comment No. 2: The ORSANCO Compact and related pollution control standards require that the Ohio River be preserved as a safe and satisfactory source for public water supplies, and a guiding principle prohibits the discharge of waste by one state that injuriously affects the uses of the river.

*Response:* The ORSANCO Compact, found at KRS 224.18-760, does require all states to protect the uses of the Ohio River. The Cabinet believes for the reasons stated herein that this permit will fully protect all uses in the Ohio River.

Comment No. 3: A KPDES permit must include requirements in addition to or more stringent than EPA's effluent limitations guidelines or standards if necessary to achieve water quality standards, including narrative criteria. Applicable narrative criteria include the one that prohibits discharges that "injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans."

*Response:* *Cryptosporidium* and *Giardia* have been cited as pathogens which should be regulated under this KPDES permit because they meet the narrative water quality standard found in 401 KAR 5:031, Section 2, which states:

"Surface water shall not be aesthetically or otherwise degraded by substances that:...

(d) Injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, animals, fish and other aquatic life .

There are no other current standards for those pathogens. The ambient environment contains *Cryptosporidium* and *Giardia* from a variety of sources, many of which are not regulated by the Clean Water Act. Elimination of this discharge would do little to change



the risk at the RMTP, 11 miles downstream from the point of the confluence between the Ohio River and Twelve Mile Creek. Because the majority of sources of these pathogens are nonpoint sources, EPA has established rules to regulate them at drinking water plants.

On January 5, 2006, the *Long Term 2 Enhanced Surface Water Treatment Rule* (LT2) became final. LT2 is applicable to all public water systems that use surface water or ground water under the direct influence of surface water. It supplements existing regulations by focusing on *Cryptosporidium* in filtered systems with high source water occurrence and maintains microbial protection while risks from disinfection byproducts are addressed. LT2 focuses on source water monitoring, treatment bins and the microbial toolbox, and disinfection profiling and benchmarking. Water systems must conduct 24 months of source water monitoring for *Cryptosporidium* or *Escherichia* (*E. coli*) depending on the population served by the system. Systems will be classified into one of four "bins" based on the results of their source water monitoring. Additional treatment for *Cryptosporidium* may be required on water systems based upon their bin classification. After completing the initial round of source water monitoring, any system that plans on making a significant change to their disinfection practices must: create disinfection profiles for *Giardia lamblia* and viruses; calculate a disinfection benchmark; and consult with the state prior to making a significant change in disinfection practice.

Numerous safeguards are provided at the ERWWTP to ensure that Cincinnati's drinking water is protected. The Kentucky Administrative Regulations prohibit discharges of sewage within five miles upstream of a drinking water intake. See 401 KAR 5:005 Section 29(1)(b), Water Policy Memorandum No. 84-02 Five Mile Limit Policy, August 28, 1984. By regulation, then, this drinking water intake must be at least five miles from the sewer discharge. In fact, in this particular situation, there are 16 miles between the point of discharge of this effluent into Brush Creek and the intake into the Greater Cincinnati Water Works (GCWW) plant. In addition, a wastewater plant using chlorine disinfection cannot treat *Cryptosporidium* effectively as this parasite is chlorine resistant.

However, UV (ultra violet) light treatment that has been shown to kill the organism, among others that may be present in wastewater effluent, will be provided at the ERWWTP. The microbiological quality of the plant effluent will be significantly improved with the new plant compared to the current situation.

In support of the UV treatment, the permittee submitted a report by Dr. Jennifer Clancy. The report, dated March 8, 2005, provided:

The use of secondary treatment coupled with UV will provide protection against *Cryptosporidium*, although reduction of this parasite is still not a treatment design goal in wastewater systems. Effluent quality is measured by fecal coliforms or *E. coli*. The ability to meet effluent standards for 200 fecal coliforms per 100 mL also provides for *Cryptosporidium* inactivation since these organisms have similar UV susceptibility. The design applied UV dose of  $26 \text{ mJ} \cdot \text{cm}^{-2}$  at peak flows can achieve  $>4 \log_{10}$  (99.99%) and perhaps as much as  $6 \log_{10}$  (99.9999%) oocyst inactivation; even if the actual delivered dose is  $5 \text{ mJ} \cdot \text{cm}^{-2}$ , oocyst inactivation should be  $>3 \log_{10}$  (99.9%). The facility design includes two parallel, completely redundant UV disinfection facility trains with redundant control systems.

In addition, secondary power will be provided in the form of a standby



generator for the entire facility, including UV disinfection, should a primary power failure occur. . . .

Comment No. 4: Permits must also ensure compliance with water quality requirements of all affected states.

*Response:* The Kentucky water quality standards for the pollutants of concern associated with this permit are as stringent as Ohio requirements and have been approved by the U.S. EPA.

Ohio EPA, U.S. EPA Region IV, U.S. EPA Region V, and ORSANCO have all had the opportunity to review and to comment on the draft KPDES permit. None of these agencies has objected to or opposed issuance of the permit. Furthermore, Ohio EPA did not comment on the currently proposed draft of the KPDES discharge into Brush Creek. It is important to note that this discharge is 5 miles further upstream from the RMTP intake than the previously proposed discharge into the Ohio River, on which Ohio EPA commented that special provisions for notification should be given in the KPDES permit due to the proximity of the wastewater discharge and the drinking water intakes of the RMTP, which are located on the Kentucky side of the Ohio River. To address these and other similar concerns, conditions have been added which are effective upon issuance of the permit in Part II, page II-5, for notification of the potentially affected downstream water utilities in the event of a discharge of partially treated wastewater.

Comment No. 5: Having a wastewater discharge so close to Cincinnati's drinking water intakes, which are on the Kentucky bank of the Ohio River, poses a serious, and unnecessary, threat to the source of the region's drinking water.

*Response:* In an effort to address some of the concerns expressed previously with the KPDES permit issued May 12, 2004, the Sanitation District evaluated alternatives to the discharge location from a point on the Ohio River approximately 11 miles upstream from the RMTP as part of the Regional Facility Planning Process. The selected alternative for the location of the discharge was to a point on Brush Creek. Brush Creek is a tributary of Twelve Mile Creek which is a tributary of the Ohio River. This has two positive effects on making the discharge more protective of Cincinnati's drinking water. First, it moves the discharge more than 16 miles away from Greater Cincinnati's drinking water intake. In addition, because the discharge is to a low-flow stream, the effluent limits on the permit have become more stringent. For example, Biochemical Oxygen Demand (BOD<sub>5</sub>), Ammonia, and Chlorides were all limited when the discharge was proposed to the main stem of the Ohio River. Now, however, the allowable average concentrations in the discharge have been reduced. Also, Total Residual Chlorine, Total Phosphorous, Total Nitrogen and chronic Whole Effluent Toxicity (WET) have been added as limited parameters in the discharge.

These additional safeguards will be more protective of the environment and of Cincinnati's intake. It is also anticipated that when the new treatment plant is operational, water quality in Brush Creek will improve sufficiently to allow it to be removed from Kentucky's 303(d) list of impaired waters. This improvement is anticipated because of the improved quality of the effluent from the ERWWTP as compared with that of the existing Alexandria WWTP



The intake for the RMTP is located at ORMP 462.8. The drainage area for the Ohio River above this intake is approximately 71,250 square miles. Based upon an average daily flow of 80,000 cubic feet per second (cfs) [51,705 MGD, million gallons per day] for the Ohio River at the RMTP, the flow from the proposed ERWWTP at the design flow of 4 mgd would represent 0.008 percent of the flow in the Ohio River. Thus, the proposed design flow from the ERWWTP would represent less than one one-hundredth of one percent of the average flow in the Ohio River.

The Cabinet has determined that the discharge from the ERWWTP will be an insignificant source of pollutants to the Ohio River compared to the other existing point and non-point sources and does not increase the threat to Cincinnati's drinking water intake.

Comment No. 6:

The Cabinet failed to address issues relating to pathogens, chemicals and solvents, endocrine-disrupting compounds, miscellaneous contaminants, inadequate mixing between ERWWTP effluent and Ohio River water, wastewater plant upsets and impact of increasing volumes resulting from area growth.

*Response:*

For pathogen, refer to Response to Comment 3. Concern has been expressed about the so-called "emerging pollutants" including such substances as refractory contaminants, synthetic organic chemicals, chlorinated solvents and endocrine-disrupting compounds. The primary concern is that such substances may have an impact on human health and, as a result, violate the narrative water quality in 401 KAR 5:031 standard which states:

Surface water shall not be aesthetically or otherwise degraded by substances that:

Injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, animals, fish and other aquatic life . . .

These substances are often referred to as "emerging pollutants" and the reason is that the U.S. EPA, the Cabinet and the scientific community are only beginning to study and review their impact. While there is some indication that the substances may cause problems for human beings (Daughton 2005, PPCPS, U.S. EPA, Environmental Research Laboratory Sciences, Special Publication nleresdl1), it is important to know that the research so far is inconclusive on which, if any, of the substances, would meet the narrative water quality standard and trigger a requirement for an effluent limitation on the permit. While the Cabinet, along with the U.S. EPA, continue to monitor and study these substances, at this time there is insufficient evidence to establish the effects of these compounds or what an appropriate water quality criteria, if any, should be.

To control contaminants not otherwise addressed by permit limits, the Cabinet applies toxicity testing to the discharge. This permit includes toxicity testing limits at the most stringent level, a chronic limit of 1.0 TUc (*i.e.*, no toxicity in 100 percent effluent). The two toxicity tests that must be performed evaluate effects on survival, growth, development and reproduction of the test organisms. The last three effects (growth, development, reproduction) are the focal points of impacts that might result from exposure to endocrine disrupting chemicals.



Finally, flow and effluent mixing conditions in Brush Creek and the Ohio River were evaluated and limitations have been imposed in the permit that are protective of water quality standards under these conditions.

Comment No. 7: The Cabinet did not consider the importance of the Ohio River as a source of drinking water.

Response: Through its water quality standards, the Cabinet clearly considers the Ohio River a source of drinking water. The Ohio River basin is designated for a drinking water source in 401 KAR 5:026 Section 5. As such, it is subject to the surface water standards found in 401 KAR 5:031 for domestic water supply use in Section 5. Section 5, Table 1 sets forth the maximum allowable in-stream concentrations for specific substances. These standards were used in setting permit limits.

Comment No. 8: The ERWWTP discharge will have a direct impact on the RMTP's drinking water source at its intakes.

Response: See Response to Comments 3, 5, 6, 9 and 12.

Comment No. 9: In August 2005 the USGS, in collaboration with GCWW, conducted a rhodamine dye study to determine mixing conditions in the Ohio River in GCWW's critical zone of protection. This study indisputably demonstrated that the effluent discharge would not be completely mixed by the time the flow reached the GCWW and Northern Kentucky drinking water intakes at this low-flow condition.

Response: The USGS study, to which this comment refers, was conducted in August 2005 and reviewed by the Cabinet. The Cabinet met with the GCWW, specifically, to discuss the effects of this study. The contention of the City of Cincinnati is that the effluent plume will "hug" the shore of the Ohio River and thus not be diluted when it reaches the RMTP intakes. Cincinnati also argues that this demonstrates there is not a complete mix in the river from the effluent. It is important to point out that the Kentucky Administrative Regulations do not calculate dilution based on a "complete mix." 401 KAR 5:029, as a general proposition, sets forth the requirements for mixing zones and states:

(6) Unless assigned on or before the effective date of this administrative regulation, an assigned mixing zone, from the point of discharge in a spatial direction, shall not exceed one-third (1/3) of the width of the receiving stream or one-half (1/2) of the cross sectional area.

In his prefiled written testimony for the Sanitation District in the matter of *City of Cincinnati v. Sanitation District No. 1, et al.*, File No. DOW 28146-039, Dr. David Dilks stated that the dilution data generated by the USGS study indicated that the ERWWTP effluent will be diluted approximately 1,000 fold by the time it reaches the Greater Cincinnati intake. He also noted that Dr. Holly's model, which predicted dilution at different river flows at low-flow conditions predicted the effluent would be diluted approximately 700 fold. The limitations imposed in the permit are protective of water quality standards under these mixing conditions.



However, with regard to the pathogens, this permit is actually more stringent because no mixing zone is assigned to pathogens including the pathogen marker *E. coli*. The limits for pathogens must be met at the end of the pipe. Therefore, the limits were calculated without providing any leeway for a mixing zone. Fecal coliform or *E. coli* content shall not exceed 200 colonies per 100 milliliters (mls) or 130 colonies per 100 ml respectively, as a monthly geometric mean in the ERWWTP effluent. This level of required treatment can be compared to the coliform levels in the sewage coming into the plant for treatment which may be in the order of one to ten million colonies per 100 ml (Bell *et al.* 1981. Applied and Environmental Microbiology, vol. 42, 204-210; Rose, *et.al.* 2004. Water Environmental Research Foundation). Several models have been proposed by Cincinnati and Sanitation District No. 1 including a model by David W. Dilks, Ph.D. of Limno Tech Incorporated and a model by Dr. Forrest M. Holly, Jr., E.E., Forrest Holly & Associates. It is important to remember that these are only proposed theoretical models and constitute the opinion of the modeler. Although the USGS study was sponsored by the Greater Cincinnati Water Works, a scientific study was performed where sampling data was collected from the Ohio River.

In August 2005, Koltun *et. al.* (USGS 2006) injected rhodamine dye into the Ohio River near the mouth of Twelve Mile Creek to assess the vertical and horizontal mixing of a non-degrading constituent (dye) in the river. Dye was found to be vertically mixed (approximately the same concentration at the water surface and at depth in the river at a given location) by 6 miles from the injection point. Dye was indicated to have diffused to both banks 9 to 10 miles downstream from the injection point. It should be noted that the RMTP intake is 11 miles downstream from the injection point. They (Koltun *et al.*) indicated that complete horizontal mixing did not occur and that the highest concentrations of dye tended to be in stream water next to the Kentucky shore of the river. The dye concentrations present in the water works intake were not presented in the study, precluding determination of a numerical dilution factor between the injection and intake points.

Dr. Dilks (March 11, 2005) modeled the lateral (horizontal) mixing of the effluent from the proposed ERWWTP for Sanitation District No. 1. The water quality modeling framework consisted of a U.S. Army Corps of Engineers hydrodynamics model RMA-2V and a U.S. EPA Water Quality Analysis Simulation Program (WASP) model originally developed as part of the U.S. EPA Wet Weather Demonstration Project for the Ohio River conducted by ORSANCO. As seen in the USGS sampling study (USGS 2006), he concluded that the majority of the future effluent from the ERWWTP would initially hug the Kentucky shoreline. Nine miles downstream of Twelve Mile Creek, the concentration on the Ohio side of the river was predicted in the models to be only slightly (4.5%) greater than on the Kentucky shoreline; approaching what "textbooks define as complete mixing." As noted above, the RMTP intake is 11 miles downstream. The effective dilution factor determined in his models at this 9 mile downstream point was 1,600 times.

Dr. Holly (March 7, 2005) also modeled the mixing process of the ERWWTP with the Ohio River down to the RMTP, but he conducted the modeling on behalf of the City of Cincinnati. The water quality modeling framework was based on FLUENT 6.1, a commercially available model. He concluded that the ERWWTP effluent was vertically completely mixed but not horizontally (laterally) with the Ohio River before it reached the RMTP intake. The dilution rates determined by the model (Table V.2) ranged from



approximately 1,428 to 8,576 times for a 4 MGD release and a 32,500 cubic feet per second Ohio River flow rate (flow rate determined by USGS 2006). Although the Holly dilution rates were determined at 11 miles and the Dilks dilution rates appear to be at 9 miles, the Dilks modeling was in the range of that found in the Holly modeling. One investigator (Dilks) concluded that, based on U.S. EPA and Army Corps of Engineers models, complete mixing would occur; the other investigator concluded that based on his model, which potentially is just as valid, complete mixing was unlikely to occur. Both modelers concluded that considerable mixing (1,428 to 8,576 fold dilution) of the ERWWTP effluent would occur before reaching the RMTP intake, and that the most stringent standards that Kentucky, Ohio, and U.S. EPA apply to wastewater treatment plants will be met. The permit provides for a margin of safety greater than one-thousand fold between the ERWWTP and the RMTP. The USGS study is a scientific study carried out under real conditions in the Ohio River.

Comment No. 10: Page 1, item 1.d. Item 1.d. indicates the production capacity is 4.0 MGD, but Table 3A, page 3, lists design flow as 30 MGD.

*Response:* Page 3 of the Fact Sheet, Table 3A incorrectly listed the design flow for the proposed plant to be 30 MGD. Page 1, Item 1 d. of the Fact Sheet correctly lists the flow of the plant to be 4.0 MGD. A correction has been made to page 3 of the Fact Sheet to reflect the proper plant capacity.

Comment No. 11: Page 2, item 1.f. This provision limits the reopening to outfall location.

*Response:* Both 401 KAR 5:075 Section 2 and 401 KAR 5:070 Section 6 state that when a KPDES permit is modified, only the provisions of the modification are subject to being reopened by the Cabinet. However, the relocation of the outfall predicated changes in other requirements within the permit, for which comments are also being considered as part of the permitting action.

Comment No. 12: Page 2, item 2.c. This item indicates one of the reasons for the current impairment is pathogens, yet states that the new and enlarged plant -- discharging far more wastewater than the old plant in this location -- will help restore stream uses. No evidence has been provided as to the efficiency of the plant in reducing or eliminating such pathogens as *Cryptosporidium* and *Giardia*.

*Response:* The ERWWTP does not represent an entirely new discharge. This proposed facility will replace several existing facilities. One of these, the existing Alexandria Wastewater Treatment Plant, is plagued with significant wet weather capacity issues. The discharge from this existing facility is to Brush Creek (a zero-flow stream), which is a tributary to Twelve Mile Creek (a zero-flow stream) which enters the Ohio River at Ohio River Mile Point (ORMP) 451.6.

The Alexandria Plant has long been in poor shape with frequent violations. It has a history of bypassing during wet weather events, an activity which dumps untreated sewage into Brush Creek. Certainly replacing this failing plant will significantly improve the quality of the effluent discharge since all waste will receive adequate treatment. The



new plant will also pick up the discharges of the Southern Campbell Industrial Park WWTP with a flow of .5 MGD and the Pond Creek WWTP permitted to treat .12 MGD.

One of the biggest challenges associated with *Cryptosporidium* is that in its environmentally resilient oocyst form, the parasite can persist in the water environment for extended periods of time and may actually remain viable in the aquatic environment for up to 6 months.

Following the secondary treatment process, the waste stream will be disinfected using UV irradiation. See Response 3. Protection of public health through the control of disease-causing microorganisms is the primary reason for wastewater disinfection. The primary mechanism by which UV light inactivates microorganisms is direct damage to cellular nucleic acids. Although KDOW requires redundant systems to consist of, at a minimum, a spare bank of UV bulbs, the District has elected to install a fully duplicate UV disinfection channel with a completely redundant disinfection system and controls. According to the system manufacturer (Trojan Technologies, Inc.), a commitment to this level of redundancy is extremely rare in the industry. The UV system has a design UV dose of  $26 \text{ mJ}\cdot\text{cm}^{-2}$  at peak flows. Secondary power will be provided in the form of a standby generator for the entire facility, including UV disinfection, in case of a primary power failure.

Technical literature is consistent in finding that 4-log to 6-log inactivation of *Cryptosporidium* occurs in drinking water at UV dosages less than  $20 \text{ mJ}\cdot\text{cm}^{-2}$ .

Dr. Clancy has evaluated the efficiency of UV for treating recycled backwash water which, like treated municipal wastewater, would contain low concentrations of solids. See Response 3. Her research confirms the high effectiveness of UV for inactivation of oocysts in recycled backwash water from drinking water plants.<sup>1</sup> Based upon the design of the UV system at the ERWWTP, Dr. Clancy has found the use of secondary treatment coupled with UV will provide protection against *Cryptosporidium*.

The Sanitation District submitted to the Cabinet an expert report from Clancy Environmental Consultants on March 8, 2005, discussing the effectiveness of UV treatment on *Cryptosporidium*. The report notes:

UV has been demonstrated to be very effective for disinfection of wastewater effluents, CSOs and for reuse applications. UV has many advantages over chemical disinfection including (1) proven ability to disinfect pathogenic bacteria and most viruses, (2) proven effectiveness in meeting federal wastewater effluent standards based on the reduction of indicator organisms in the finished effluents to meet permitted effluent discharge limits, (3) increased safety compared to chlorine handling, (4) no known formation of toxic by-products, (5) increasing costs of chlorination due to regulations curbing chlorine discharge limits – thus

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<sup>1</sup> In a study conducted on a drinking water plant in Pittsburgh, States et al. determined that clarification and filtration generally controlled passage of protozoa into the drinking water, but that “cysts and oocysts are also reintroduced into the drinking water plant via recycling of backwash water.” [States et al., “Protozoa in River Waters: Sources, Occurrence, and Treatment, AWWA Journal, Volume 89, Issue 9, Ref. 35, Appendix 16].



mandating dechlorination, and (6) stringent and costly regulations regarding storage and transport of chlorine gas as part of the Uniform Fire Protection Code.

A review of the Sanitation District's treatment showed, according to the Report:

Two recently completed WERF studies provide important information on the efficacy of UV for inactivation of *Cryptosporidium* in wastewater effluents. Linden *et al* (2004) examined the use of UV specifically for inactivation of *Cryptosporidium* oocysts in wastewater. The results indicate that both low and medium pressure UV irradiation are very effective for inactivation of *Cryptosporidium parvum* oocysts spiked into secondary wastewater effluent. Infectivity assays using cell culture indicated that greater than 3 log<sub>10</sub> inactivation is achieved in wastewater with a UV dose of only 3 mJ/cm<sup>2</sup>.

Comment No. 13: Page 2, item 2.d. If the 7Q10 and harmonic mean flows are 0.0 cfs, then during these conditions, the receiving stream essentially becomes an open channel carrying the effluent with no dilution. During heavy storm events, the settled particles – including pathogens – will be scoured and enter the Ohio River.

*Response:* Although a 7Q10 zero harmonic flow determination for a stream does not mean that the stream will be completely dry, the flow out of the stream at the mouth may at times be near zero. With the added plant discharge, zero flow from Twelve Mile Creek into the Ohio River likely will be even less frequent. Over the five stream miles that the ERWWTP treated discharge is transported through the Brush Creek and Twelve Mile Creek systems, suspended solids that may be released from the plant will mix with the suspended solids present in the creeks, become incorporated into the creek sediments, be deposited on the stream banks and incorporated in soils, die in the case of pathogens because of light, heat, drying and time, or even be consumed by the aquatic life present in the streams. As indicated in the comment, during heavy storm events some of this material may resuspend and move into the Ohio River. Once there, the same transport and fate processes may occur thousands of more times before any of the material reaches the RMTP. The likelihood that any of these particles could be distinguished over similar particles present in the Ohio River or that they will pose a distinguishable risk to the water intake is quite low.

GCWW's monitoring of *Cryptosporidium* and *Giardia* for LT2 in the Ohio River indicates that these pathogens have not historically been present at a level of concern that would trigger additional treatment. This is despite the fact that the Alexandria WWTP discharges an effluent of inferior quality and under the same low-flow stream conditions, yet at a lower discharge rate than the ERWWTP. If settling and resuspension conditions do in fact exist, they would be more likely to occur under current conditions than under the higher discharge flow rates associated with this permit. There has been no evidence that settling and resuspension occur under current conditions.



Comment No. 14:     Page 3, Table 3A. The City cited a report by Dr. Joan Rose in commenting that establishing the effluent limits in monthly, weekly and geometric averages is not protective of human health when attempting to mitigate acute infectious diseases associated with direct contact or ingestion.

*Response:*             Nationally, U.S. EPA has established the frequency and averaging methods to be employed by wastewater treatment plants in monitoring effluents to confirm compliance. Kentucky's monitoring requirements reflect the national requirements. However, following national guidance does not unto itself indicate that human health will be protected with regards to direct contact or ingestion of the effluent even though recreational standards were applied. Dr. Rose's recommendations appear to be based on primary use of wastewater for human consumption or in locations where the public is known to receive direct exposure (*e.g.*, public parks lawn watering) [Rose *et. al.* 2004 WERF]. We would certainly agree that direct use of wastewater would require frequent monitoring and additional treatment before human consumption. The ERWWTP discharge is not proposed to be used as a drinking water or "reclaimed water" source. The ERWWTP has a certain minimal monitoring frequency, however, the plant will be responsible for meeting permit limits at all times. Periodically, the Cabinet will inspect and monitor the facility to assure that the facility is successfully treating wastewater and meeting permit limits. The permit limits for coliforms as a control for pathogens (130 colonies per 100 ml) applied to the ERWWTP effluent were developed to be protective of human health in a recreational scenario (*i.e.*, dermal contact, incidental ingestion of stream water during swimming). Although the regulations require this limit to be applied only during the recreation season in Kentucky (May – October), it is being applied year-round to further assure a high quality effluent.

Comment No. 15:     Page 4, item 3B.d. Whole effluent toxicity testing is not an indicator of human health impact.

*Response:*             One of the purposes of whole effluent toxicity testing is to provide an additional level of protection for aquatic life including chemicals for which permit limits were not implemented. However, it also provides additional controls over possible human health impacts. Scientists, because of ethical and monetary reasons, routinely use animals as surrogates to monitor for human health impacts. Basically, the physiological processes are similar in all organisms. Upon exposure, chemicals that affect the processes in one organism often will affect the same processes in any organism (*e.g.*, daphnia, fish, human). Toxicity in 100 percent whole-effluent chronic bioassays performed on the ERWWTP discharge can be used as an indicator of possible human health impacts and no-effects results as an indication that human health impacts will not occur.

Comment No. 16:     Page 10, item 6.A. Under the same antidegradation stipulations, why not discharge the effluent into the Licking River or to one of its tributaries?

*Response:*             Under the antidegradation stipulations, the alternatives to the Brush Creek discharge were evaluated by the Sanitation District, as a function of the Regional Facility Plan development. The plan concluded that the selected location for the discharge was the most cost effective and environmentally sound alternative.



It has been posed that the discharge be taken to the Licking River rather than to Brush Creek. Permitting this discharge to the Licking River has many problems associated with it, including water quality concerns that this discharge could not mitigate and proximity of the discharge to Northern Kentucky Water District Taylor Mill Water intake. As the Sanitation District also noted, the base flow of the Licking River is much lower than the Ohio River resulting in less assimilation and dilution of the effluents before reaching any drinking water intake. In addition, the Sanitation District cited several substantial impediments to the Licking River discharge. The cost, according to the Sanitation District, of taking the discharge to the Licking River would be prohibitive. Routing a pipeline for the Licking River would be through more developed areas. A number of easements would be required to change the discharge location creating construction delays.

Comment No. 17: Page 10, item 8; KPDES permit, Page II-4: The notification requirements are not explicit enough. They do not provide triggers for notification, instead incorporating by reference a regulation which requires reporting of unanticipated bypasses or upsets which at a minimum ERWWTP should be required to notify GCWW directly.

*Response:* Language has been added to Part II, page II-5 for notification of the potentially affected downstream water utilities in the event of a discharge of partially treated wastewater.

Comment No. 18: Attachment A, page A1. Greater Cincinnati's intakes are closer to the discharge location than Northern Kentucky Water District's Fort Thomas intake. Calculations should take into account the intake *closest* to the discharge location.

*Response:* The Steady State Wasteload Allocation Model (SSTWAM) run contained in Attachment A, page A1 has been corrected to reflect the nearest downstream drinking water intake, which is the GCWW - RMTP. Although Northern Kentucky Water-Fort Thomas was mistakenly identified in the previous model run, the calculations were not affected as a result of the change.

Comment No. 19: The calculations must take into account the maximum flow, not just the average flow of 4 MGD, and also various flow combinations (wastewater plus the tributaries and the river) to determine the true impact on water quality and to determine effluent limits, (e.g., maximum plant effluent with minimum creek and river flow).

*Response:* It is a misstatement to identify 4.0 MGD as the "average" flow from the ERWWTP. 4.0 MGD is the design capacity of the treatment plant and the plant can only accommodate flows exceeding this level for limited periods of time. KPDES permit conditions for municipal dischargers are based on the design flow of the facility.

Comment No. 20: Given that human health is a factor, what criteria were used to determine human safety, health and welfare? Drinking water issues are not evaluated. Part II, Page II-1: The standard conditions (#4) explicitly indicate that the POTW has an obligation to mitigate



Comment No. 25: The Cabinet failed to consider the impact of water-borne pathogens and the removal/inactivation of pathogens that survive in the environment, including *Cryptosporidium*, which is now regulated in the drinking water source (71 Fed.Reg. 653-786, January 2006) and includes limits for *Cryptosporidium*.

Response: *Cryptosporidium*, in its environmentally resilient oocyst form, can persist in the water environment for extended periods of time and may actually remain viable in the aquatic environment for up to 6 months. One study noted:

...*Giardia* and *Cryptosporidium* are common parasites in the Allegheny River with *Giardia* detected in 50% of the samples and *Crypto* in 42%. It is conceivable that if the method detection limits were lower, and recovery efficiencies closer to 100% rather than 25%, these parasites may have been detected in close to 100% of the samples.

Another study submitted by the District testing 257 rivers, streams, lakes and springs in 17 states revealed that *Cryptosporidium* was present in 55 percent of the samples at an average concentration of 43 oocysts/100 L.

In addition, ORSANCO conducted a study in 1996 –1997. The study showed that both *Cryptosporidium* and *Giardia* are present in the Ohio River and its tributaries in the Cincinnati area.

This is so, even though GCWW has commented that “[u]nder current conditions, *Cryptosporidium* has seldom been detected at the RMTP intake.”

A study presently being conducted by the Water Environment Research Foundation (WERF) has found that “total contributions of *Cryptosporidium* oocysts from WWTP effluents to a large diverse watershed [are] found to be nearly insignificant compared to contributions from other sources.” [“Sources and Variability of *Cryptosporidium* in the Milwaukee River Watershed,” WERF Project Number 99-HHE-2]. Similarly, in a recent study conducted by the Maryland Department of the Environment – Water Supply Program, on the Potomac River, it was determined that “Nonpoint sources of *Cryptosporidium* appear to be the dominant contribution to the fairly significant levels of *Cryptosporidium* measured in the raw water sources.” [“Safe Drinking Water Act Annual Compliance Report for Calendar Year 2002,” Maryland Department of the Environment – Water Supply Program, p. 8]. See also Response to Comments 3, 5, 12 and 19.

Comment No. 26: Total suspended solids limits contained in the draft permit are not conducive to the proper operation of the UV disinfection process. See also response to Comments 3 and 12.

Response: The design criteria the Cabinet uses to evaluate the proper sizing of a UV disinfection unit is 65 percent transmissivity at an effluent quality of 30 mg/l total suspended solids. At this effluent quality level, the plant must be able to meet the biological limitations such as that for the indicator *E. coli*. The design of this plant exceeds this minimum criteria by increasing the UV dosage to a level equivalent to 100 percent transmissivity at 30 mg/l total suspended solids. As well, it is expected that the plant will produce effluents with



when there is a reasonable likelihood that the discharge may affect human health or the environment. KDOW has ignored the potential impacts on human health or the environment.

*Response:* See Responses 3, 5, 6, 7, 8, 9, 12, 14 and 15.

Comment No. 21: Attachment A, page A3. The Reasonable Potential Analysis approach is deficient because only pollutants with numerical water quality criteria are considered. This approach renders meaningless the provision requiring protection of narrative water quality criteria, including the provision prohibiting degradation of surface waters by substances that injure, are chronically or acutely toxic to, or produce adverse physiological effects.

*Response:* The Cabinet found that no other substance of concern has the reasonable potential to injure, be chronically or acutely toxic to, or produce adverse effects in protected organisms including humans. This conclusion is also supported in Response 20.

Comment No. 22: Part II, Page II-3, item (13)(a): No duration for allowable bypasses is given.

*Response:* 401 KAR 5:002 Section 1 (36) states a "bypass" means the intentional diversion of sewage or waste-streams from a portion of a facility or industrial user's treatment facility. Since this event does not represent the normal operation of the facility, there is no allowable timeframe where this is permissible under the permit. Page II-4 of the permit states that bypassing will be prohibited. As well, requirements for reporting spill and bypass conditions and penalties associated with failure to report these conditions are set forth in 401 KAR 5:015.

Comment No. 23 Part II, Pages II-4: Notification timing is missing or not explicit.

*Response:* See Response 17.

Comment No. 24: Part IV, Page IV-2, item 3: This section seems to indicate that the toxicity limits could be exceeded for as long as 110 days before a toxicity reduction evaluation is triggered.

*Response:* Biomonitoring, otherwise known as WET testing, is required at the ERWWTP under Part IV of the KPDES permit. In accordance with the permit, a noncompliant result on WET testing requires the permittee to retest the effluent within 15 days of the first failure. Upon failure of the retest the permittee has two options: determine the persistence of the toxicant through an accelerated testing program or begin a toxicity reduction evaluation (TRE). If accelerated testing is chosen as the method of compliance, there will be a total of four additional tests required within 90 days of the failed retest. This results in a total of six WET tests to be performed in a potential 115-day period. If at any time the permittee receives two test results which are "significant" failures, a TRE is triggered. A significant failure in this particular case would be a numeric result of 1.2 TUC. Additionally, if four of the six total tests performed show a failure of toxicity, then a TRE is required.



concentrations of suspended solids in the range of 10 mg/l based on the design, thus increasing the margin of safety for inactivation of biological pollutants.

Comment No. 27: There are no discharge limits for refractory contaminants, such as synthetic organic chemicals and chlorinated solvents. There are no discharge limits for endocrine-disrupting compounds.

Response: See Response to Comment #6.

Comment No. 28: There was no consideration of contaminants with the potential for future regulation.

Response: Additional regulations that establish more stringent treatment standards frequently result in additional capital investments by the affected industry. The U.S. EPA identifies a problem, evaluates alternatives to addressing the problem, and develops regulations to protect human health and the environment. The wastewater industry has been dealing with the issue of new regulations and the associated capital needs since the promulgation of the CWA and the subsequent amendments. In March 1998, the EPA published a list of contaminants known as the Contaminant Candidate List (CCL). The CCL lists contaminants both chemical and microbiological in nature which the agency may consider for future regulation in drinking water. Like emerging pollutants, these are still under study. This list is related to drinking water and not to the treatment of sewage. As noted by Clancy in the March 8, 2005 report:

In order to determine which contaminants might require regulation, the USEPA must gather data to determine if these pathogens represent a health risk and, if by regulating a specific contaminant, a health risk would be minimized. To be able to make these determinations, there is a significant amount of information needed on these organisms. Some CCL 1 microorganisms were newly recognized as agents of waterborne disease (e.g., the microsporidia), while others were suspected of waterborne occurrence (*H. pylori*). This means new research on specific contaminants is required including information on occurrence, health impacts, water treatment, and analytical methods. To do this, USEPA developed both short- and long-term research plans, proposed an unregulated contaminant monitoring program, and undertaken special occurrence studies.

See also Response to Comment 6.

Comment No. 29: There is incomplete mixing between ERWWTP effluent and Ohio River.

Response: See Response to Comment 9.

Based on the comment, some mixing will occur in Brush Creek and Twelve Mile Creek, and based on the USGS (2006), Holly (2005) and Dilks (2005) studies additional mixing will occur in the Ohio River of waters coming out of Twelve Mile Creek (1,428 times to



complete depending on the study accepted). Overall, a considerable margin-of-safety should result in the 16 miles between the ERWWTP and the RMTP.

Comment No. 30: Discharge pipe size and future volume issues.

*Response:* The current design capacity of the ERWWTP is 4.0 MGD. As stated in Response 19, KPDES permit conditions have been set forth based on this capacity. If at a point in the future, the Sanitation District increases the capacity of the ERWWTP, it will require compliance with updates on facility planning defined in 401 KAR 5:006 as well as permitting requirements in 401 KAR 5:005 and 5:065, which include a component for input from the public.

Comment No. 31: The Cabinet failed to consider plant upsets and notification during plant bypasses and upsets.

*Response:* See Responses to Comments 17 and 22.

Comment No. 32: The Cabinet failed to consider relocation and consolidation of current wastewater effluents from the Licking River to the Ohio River upstream of drinking water intakes.

*Response:* In an effort to address some of the concerns expressed previously with the KPDES permit issued May 12, 2004, the Sanitation District evaluated alternatives to the discharge location from a point on the Ohio River approximately 11 miles upstream from the RMTP as part of the Regional Facility Planning Process. The selected alternative for the discharge location was to a point on Brush Creek. Brush Creek is a tributary of Twelve Mile Creek which is a tributary of the Ohio River. This has two positive effects on making the discharge more protective of Cincinnati's drinking water. First, it moves the discharge more than 16 miles away from Greater Cincinnati's drinking water intake. In addition, because the discharge is to a low-flow stream, the effluent limits on the permit have become more stringent. For example, Biochemical Oxygen Demand (BOD<sub>5</sub>), Ammonia, and Chlorides were all limited when the discharge was proposed to the main stem of the Ohio River, however, now the allowable average concentrations in the discharge have been reduced. Also, Total Residual Chlorine, Total Phosphorous, Total Nitrogen and Chronic WET have been added as limited parameters in the discharge. These additional safeguards will be more protective of the environment and of Cincinnati's intake. It is also anticipated that when the new treatment plant is operational, because of the improved quality of the effluent from that of the old Alexandria Plant, the Brush Creek will be removed from the 303(d) list as an impaired water of the Commonwealth. See also Response to Comment 16.

Comment No. 33: The Cabinet shifted the costs from the Kentucky residents utilizing the proposed wastewater facilities to more than a million drinking water customers.

*Response:* When concerns were expressed by members of the Ohio Congressional Delegation, EPA addressed those concerns in a letter of July 21, 2005, which noted:



Your letter expresses concerns about the costs that the City of Cincinnati and its residents will bear in order to address the presence of *Cryptosporidium* and *Giardia* in surface waters resulting from the discharge of wastewater from this plant. While we understand your concerns, the regulations governing the agency's review are proposed state permits provides for objections only on specified grounds, which do not include such considerations, when a permit meets the requirements of the Clean Water Act. In this case, our review concluded that the permit meets the requirements of the Clean Water Act, including the requirement that all applicable water quality standards be achieved. Letter U.S. EPA to Congressman Steve Chabot, July 21, 2005.

Comment No. 34: The Cabinet is required to develop a TMDL for the Ohio River.

Response: Comments contending that the permit requires a Total Maximum Daily Load (TMDL) analysis for the Ohio River are in error. Both federal case law and U.S. EPA guidance hold that the permitting of new discharges to impaired waters is proper and lawful as long as the discharge is determined not to cause or contribute to that impairment, even though a TMDL has not yet been developed for the subject "impaired" waterway. Therefore, it was not necessary for KDOW, Ohio EPA and/or ORSANCO to prepare a pathogen TMDL for the Ohio River prior to issuance of the KPDES permit.

Comment No. 35: Several commenters joined the City of Cincinnati in making many of the above comments, albeit in less detail.

Response: The Cabinet incorporates its responses above to all related comments.

Comment No. 36: Modifications to the Safe Drinking Water Act (SDWA) in 1996 and 2006 have resulted in a shift in manner in which contaminants in drinking water are addressed. The 1996 modification required public water systems do a source water assessment and protection program. A collaborative effort by ORSANCO, the six bordering states, and other federal agencies resulted in a three-tiered delineation of the Ohio River: Zone of Critical Concern, Zone of High Concern, and the entire source water area. The proposed discharge from this facility is located in a Zone of High Concern and is within one mile of a Zone of Critical Concern.

Response: The 1996 amendments to the SDWA (Section 1452) required all public water systems to delineate their area of recharge for the source(s) of water, including systems using surface water and/or groundwater, to conduct an inventory of potential contaminant sources, types and locations, and to assess the risk to the public water system compliance posed by the potential contaminant sources. A source water assessment summary was to be made available to the public for larger systems as part of the Consumer Confidence Report. The source water assessment process has been used by many systems to develop source water management and response strategies, some of which include monitoring, coordinated response to spills, land-use ordinances, and financial incentives to manage or move potential contaminant sources. However, it must be stressed that the delineation scheme and assessment approach carry no inherent regulatory restrictions or provisions precluding the location of any potential contaminant source within any zone of concern.



No state has promulgated such restrictions. The SDWA source water assessment requirements do not require such restrictions must be developed and enforced.

Comment No. 37: Several commenters supported the issuance of the KPDES permit and stated they believed it would improve the quality of life of the citizens of Campbell County.

*Response:* The Cabinet acknowledges the comments.

Comment No. 38: One commenter stated that the Cabinet had failed to comply with the Clean Water Act and Kentucky's antidegradation requirements. The commenter also stated that Kentucky is not complying with Sections 208 and 303(e) of the Clean Water Act.

*Response:* The commenter asserts that the antidegradation requirements for high-quality waters apply to this permit. The commenter cites 401 KAR 5:029 Section 1(1), (2), (3), and (4), which are a portion of the Commonwealth's antidegradation policy. Of those cited subsections, only Section 1(1) applies to this permit because Brush Creek is an impaired water at the point of the ERWWTP's discharge. See the KPDES permit fact sheet, page 2. The antidegradation implementation procedure for impaired waters is found at 401 KAR 5:030 Section 1(4)(b): "All existing uses shall be protected and the level of water quality necessary to protect those existing uses shall be assured in impaired water. The process to allow a discharge into an impaired water and to assure protection of the water is regulated by the requirements in the Kentucky Pollution Discharge Elimination System Program." This KPDES permit assures protection of Brush Creek's water quality.

The commenter also asserts that this permit does not satisfy 401 KAR 5:029's intergovernmental and public participation provisions. Because Brush Creek is impaired, the intergovernmental and public participation provisions of the Cabinet's continuing planning process (401 KAR 5:029 Section 1(2)) do not apply. However, if Brush Creek had qualified as a high-quality water, then the intergovernmental and public participation provisions would have been satisfied by the Cabinet's approval of the Eastern Regional WWTP's Regional Facility Plan Update in August 2006. According to 401 KAR 5:030 Section 1(3)(b)(5), which applies to high-quality waters, "the approval of a POTW's regional facility plan pursuant to 401 KAR 5:006 shall demonstrate compliance with the alternatives analysis and socioeconomic demonstration for a regional facility." In addition, under 401 KAR 5:006 Section 6(1), the Cabinet submitted an environmental assessment report summarizing the Regional Facility Plan Update to the state Clearinghouse in February 2006, which would have satisfied the intergovernmental participation provision of 401 KAR 5:029 Section 1(2).

Comment No. 39: One commenter stated that the Division of Water is prohibited from issuing a KPDES permit prior to certification that the proposed discharge permit is consistent with the 1977 Ohio-Kentucky-Indiana Regional Water Quality Management Plan.

*Response:* 401 KAR 5:006 Section 7 states: "Construction grant, loan, and permit decisions shall be made in accordance with certified and approved water quality management plans, including regional facility plans...." The regulation does not require that the Cabinet "certify" the permit as consistent with the water quality management plan. Nonetheless,



the Cabinet's decision to issue the KPDES permit for the Eastern Regional WWTP is in accord with the 1977 OKI plan.

Comment No. 40: One commenter stated that the Cabinet must comply with the National Environmental Policy Act or a NEPA-like process before it can issue a KPDES permit for the Eastern Regional WWTP.

*Response:* Under 33 U.S.C. § 1371(c) and 40 CFR § 6.602, KPDES permit decisions are not subject to NEPA review. In addition, no NEPA-like process applies to KPDES permit decisions. However, the Cabinet did comply with its Wastewater State Revolving Fund NEPA-like process when it conducted an environmental review of the Regional Facility Plan Update for the Eastern Regional WWTP.

Comment No. 41: One commenter proposed that SD#1 engineer a pilot system that would pump all the wastewater into a lagoon. The wastewater would then be applied to the forests and farmlands of the region.

*Response:* Land application or spray irrigation of wastewater, like discharges, is a regulated activity by the agency. While this approach can often be a viable option, acreage requirements for land application can preclude the option in some instances. In the case of the proposed ERWWTP, extensive acreage that is not available to SD#1 would be required to adequately handle the land application needs.