Alliance WATER RESOURCES®
Professional Water and Wastewater Operations

1045 Horsehead Rd.
Pikeville, TN 37367

January 20, 2023

Sarah Terpstra
Division of Water Resources
William R Snodgrass TN Tower 11th Floor
312 Rosa L Parks Avenue
Nashville, TN 37243

Dear Ms. Terpstra:

Regarding the permit application for the BCCX Wastewater Treatment Plant TN0056626, I want to take this opportunity to point out some issues important in the day-to-day management of flow and constituent loading to the receiving stream.

1. The existing permit allows the discharge of 0.315 MGD of wastewater effluent to Mill Creek, and the land application of 0.315 MGD of wastewater effluent to a constructed spray field, for a total flow of 0.650 MGD. Based on CTI Engineer comments (NPDES Permit Application Addendum 1.14) the spray field was designed to handle a flow of 0.465 MGD.
2. Sampling.
    a. A 9.45 MG storage tank was constructed during the last construction project. The storage tank receives treated effluent flow and is used to store treated wastewater for land application. There are days when all treated effluent flow is conveyed to the storage tank. With that said, samples are collected regardless of the direction the treated effluent is going (receiving stream or storage tank). I have wondered if we will be required to collect effluent samples when the effluent flow is going to the storage tank.
    b. Settleable Solids data shows that in the past several years there has never been a sample result over 0.1 ml/L. The current schedule is to test for settleable solids once per day, 5 days a week. I would like to see the frequency of the settleable solids drop to 3 times per week.

Thank you for taking the time to consider these issues. If you need any further information, please let me know.

Regards,

Phil Webster

Phil Webster LM

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
	TN0056626	BCCX	

Form 2A NPDES

U.S. Environmental Protection Agency
Application for NPDES Permit to Discharge Wastewater
NEW AND EXISTING PUBLICLY OWNED TREATMENT WORKS

SECTION 1. BASIC APPLICATION INFORMATION FOR ALL APPLICANTS (40 CFR 122.21(j)(1) and (9))

Facility Information

1.1 Facility name
BLEDSOE COUNTY CORRECTIONAL COMPLEX (BCCX)

Mailing address (street or P.O. box)
1045 HORSEHEAD ROAD

City or town	State	ZIP code
PIKEVILLE	TN	37367

Contact name (first and last)	Title	Phone number	Email address
PHIL WEBSTER	LOCAL MANAGER	(931) 994-1416	pwebster@alliancewater.com

Location address (street, route number, or other specific identifier) ☑ Same as mailing address

City or town	State	ZIP code

1.2 Is this application for a facility that has yet to commence discharge?
☐ Yes ➔ See instructions on data submission requirements for new dischargers. ☑ No

Applicant Information

1.3 Is applicant different from entity listed under Item 1.1 above?
☐ Yes ☑ No ➔ SKIP to Item 1.4.

Applicant name

Applicant address (street or P.O. box)

City or town	State	ZIP code

Contact name (first and last)	Title	Phone number	Email address

1.4 Is the applicant the facility's owner, operator, or both? (Check only one response.)
☐ Owner ☑ Operator ☐ Both

1.5 To which entity should the NPDES permitting authority send correspondence? (Check only one response.)
☐ Facility ☑ Applicant ☐ Facility and applicant (they are one and the same)

Existing Environmental Permits

1.6 Indicate below any existing environmental permits. (Check all that apply and print or type the corresponding permit number for each.)

Existing Environmental Permits		
☑ NPDES (discharges to surface water) TN0056626	☐ RCRA (hazardous waste)	☐ UIC (underground injection control)
☐ PSD (air emissions)	☐ Nonattainment program (CAA)	☐ NESHAPs (CAA)
☐ Ocean dumping (MPRSA)	☐ Dredge or fill (CWA Section 404)	☐ Other (specify)

Collection System and Population Served

1.7 Provide the collection system information requested below for the treatment works.

Municipality Served	Population Served	Collection System Type (indicate percentage)	Ownership Status
BCCX	2544	100 % separate sanitary sewer ____ % combined storm and sanitary sewer ☐ Unknown	☐ Own ☑ Maintain ☐ Own ☐ Maintain ☐ Own ☐ Maintain
		____ % separate sanitary sewer ____ % combined storm and sanitary sewer ☐ Unknown	☐ Own ☐ Maintain ☐ Own ☐ Maintain ☐ Own ☐ Maintain
		____ % separate sanitary sewer ____ % combined storm and sanitary sewer ☐ Unknown	☐ Own ☐ Maintain ☐ Own ☐ Maintain ☐ Own ☐ Maintain
		____ % separate sanitary sewer ____ % combined storm and sanitary sewer ☐ Unknown	☐ Own ☐ Maintain ☐ Own ☐ Maintain ☐ Own ☐ Maintain
Total Population Served	2544		

	Separate Sanitary Sewer System	Combined Storm and Sanitary Sewer
Total percentage of each type of sewer line (in miles)	2.5 M 100 %	0 %

Indian Country

1.8 Is the treatment works located in Indian Country?

☐ Yes ☑ No

1.9 Does the facility discharge to a receiving water that flows through Indian Country?

☐ Yes ☑ No

Design and Actual Flow Rates

1.10 Provide design *and* actual flow rates in the designated spaces.

Design Flow Rate: 0.630 mgd

Annual Average Flow Rates (Actual)		
Two Years Ago	**Last Year**	**This Year**
0.370 mgd	0.363 mgd	0.407 mgd

Maximum Daily Flow Rates (Actual)		
Two Years Ago	**Last Year**	**This Year**
0.917 mgd	1.313 mgd	0.691 mgd

Discharge Points by Type

1.11 Provide the total number of effluent discharge points to waters of the United States by type.

Total Number of Effluent Discharge Points by Type				
Treated Effluent	**Untreated Effluent**	**Combined Sewer Overflows**	**Bypasses**	**Constructed Emergency Overflows**
1				

Outfalls and Other Discharge or Disposal Methods

Outfalls Other Than to Waters of the United States

1.12 Does the POTW discharge wastewater to basins, ponds, or other surface impoundments that do not have outlets for discharge to waters of the United States?

☐ Yes ☑ No ➔ SKIP to Item 1.14.

1.13 Provide the location of each surface impoundment and associated discharge information in the table below.

Surface Impoundment Location and Discharge Data

Location	Average Daily Volume Discharged to Surface Impoundment	Continuous or Intermittent (check one)
	gpd	☐ Continuous ☐ Intermittent
	gpd	☐ Continuous ☐ Intermittent
	gpd	☐ Continuous ☐ Intermittent

1.14 Is wastewater applied to land?

☑ Yes ☐ No ➔ SKIP to Item 1.16.

1.15 Provide the land application site and discharge data requested below.

Land Application Site and Discharge Data

Location	Size	Average Daily Volume Applied	Continuous or Intermittent (check one)
BCCX WWTP	42.7 acres	418,000 gpd	☐ Continuous ☑ Intermittent
	acres	gpd	☐ Continuous ☐ Intermittent
	acres	gpd	☐ Continuous ☐ Intermittent

1.16 Is effluent transported to another facility for treatment prior to discharge?

☐ Yes ☑ No ➔ SKIP to Item 1.21.

1.17 Describe the means by which the effluent is transported (e.g., tank truck, pipe).

1.18 Is the effluent transported by a party other than the applicant?

☐ Yes ☐ No ➔ SKIP to Item 1.20.

1.19 Provide information on the transporter below.

Transporter Data

Entity name	Mailing address (street or P.O. box)	
City or town	State	ZIP code
Contact name (first and last)	Title	
Phone number	Email address	

Outfalls and Other Discharge or Disposal Methods Continued

1.20 In the table below, indicate the name, address, contact information, NPDES number, and average daily flow rate of the receiving facility.

Receiving Facility Data

Facility name	Mailing address (street or P.O. box)	
City or town	State	ZIP code
Contact name (first and last)	Title	
Phone number	Email address	
NPDES number of receiving facility (if any) ☐ None	Average daily flow rate mgd	

1.21 Is the wastewater disposed of in a manner other than those already mentioned in Items 1.14 through 1.21 that do not have outlets to waters of the United States (e.g., underground percolation, underground injection)?

☐ Yes ☑ No ➔ SKIP to Item 1.23.

1.22 Provide information in the table below on these other disposal methods.

Information on Other Disposal Methods

Disposal Method Description	Location of Disposal Site	Size of Disposal Site	Annual Average Daily Discharge Volume	Continuous or Intermittent (check one)
		acres	gpd	☐ Continuous ☐ Intermittent
		acres	gpd	☐ Continuous ☐ Intermittent
		acres	gpd	☐ Continuous ☐ Intermittent

Variance Requests

1.23 Do you intend to request or renew one or more of the variances authorized at 40 CFR 122.21(n)? (Check all that apply. Consult with your NPDES permitting authority to determine what information needs to be submitted and when.)

☐ Discharges into marine waters (CWA Section 301(h))

☐ Water quality related effluent limitation (CWA Section 302(b)(2))

☑ Not applicable

Contractor Information

1.24 Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of a contractor?

☑ Yes ☐ No ➔SKIP to Section 2.

1.25 Provide location and contact information for each contractor in addition to a description of the contractor's operational and maintenance responsibilities.

Contractor Information

	Contractor 1	Contractor 2	Contractor 3
Contractor name (company name)	ALLIANCE WATER RESOURCES		
Mailing address (street or P.O. box)	206 SOUTH KEENE STREET		
City, state, and ZIP code	COLUMBIA, MO 65201		
Contact name (first and last)	EVAN ROMO		
Phone number	(636) 358-1648		
Email address	eromo@alliancewater.com		
Operational and maintenance responsibilities of contractor	FULL OPERATION AND MAINTENANCE		

SECTION 2. ADDITIONAL INFORMATION (40 CFR 122.21(j)(1) and (2))

Outfalls to Waters of the United States

Design Flow

2.1 Does the treatment works have a design flow greater than or equal to 0.1 mgd?

☑ Yes ☐ No ➔ SKIP to Section 3.

Inflow and Infiltration

2.2 Provide the treatment works' current average daily volume of inflow and infiltration.

Average Daily Volume of Inflow and Infiltration
0 gpd

Indicate the steps the facility is taking to minimize inflow and infiltration.

See Addendum for rationale.

Topographic Map

2.3 Have you attached a topographic map to this application that contains all the required information? (See instructions for specific requirements.)

☑ Yes ☐ No

Flow Diagram

2.4 Have you attached a process flow diagram or schematic to this application that contains all the required information? (See instructions for specific requirements.)

☑ Yes ☐ No

Scheduled Improvements and Schedules of Implementation

2.5 Are improvements to the facility scheduled?

☐ Yes ☑ No ➔ SKIP to Section 3.

Briefly list and describe the scheduled improvements.

1.

2.

3.

4.

2.6 Provide scheduled or actual dates of completion for improvements.

Scheduled or Actual Dates of Completion for Improvements

Scheduled Improvement (from above)	Affected Outfalls (list outfall number)	Begin Construction (MM/DD/YYYY)	End Construction (MM/DD/YYYY)	Begin Discharge (MM/DD/YYYY)	Attainment of Operational Level (MM/DD/YYYY)
1.					
2.					
3.					
4.					

2.7 Have appropriate permits/clearances concerning other federal/state requirements been obtained? Briefly explain your response.

☐ Yes ☐ No ☑ None required or applicable

Explanation:

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
	TN0056626	BCCX	

SECTION 3. INFORMATION ON EFFLUENT DISCHARGES (40 CFR 122.21(j)(3) to (5))

Description of Outfalls

3.1 Provide the following information for each outfall. (Attach additional sheets if you have more than three outfalls.)

	Outfall Number 001	Outfall Number _____	Outfall Number _____
State	TN		
County	BLEDSOE		
City or town	Pikeville		
Distance from shore	0 ft.	ft.	ft.
Depth below surface	0 ft.	ft.	ft.
Average daily flow rate	0.281 mgd	mgd	mgd
Latitude	35° 73′ 77″	° ′ ″	° ′ ″
Longitude	-85° 25′ 10″	° ′ ″	° ′ ″

Seasonal or Periodic Discharge Data

3.2 Do any of the outfalls described under Item 3.1 have seasonal or periodic discharges?

☑ Yes ☐ No ➔ SKIP to Item 3.4.

3.3 If so, provide the following information for each applicable outfall.

	Outfall Number 001	Outfall Number _____	Outfall Number _____
Number of times per year discharge occurs	32		
Average duration of each discharge (specify units)	24 hrs.		
Average flow of each discharge	0.281 mgd	mgd	mgd
Months in which discharge occurs	JAN-MAY, DEC		

Diffuser Type

3.4 Are any of the outfalls listed under Item 3.1 equipped with a diffuser?

☐ Yes ☑ No ➔ SKIP to Item 3.6.

3.5 Briefly describe the diffuser type at each applicable outfall.

	Outfall Number _____	Outfall Number _____	Outfall Number _____

Waters of the U.S.

3.6 Does the treatment works discharge or plan to discharge wastewater to waters of the United States from one or more discharge points?

☐ Yes ☑ No ➔ SKIP to Section 6.

Receiving Water Description

3.7 Provide the receiving water and related information (if known) for each outfall.

	Outfall Number 001	Outfall Number _____	Outfall Number _____
Receiving water name	MILL CREEK		
Name of watershed, river, or stream system	CANEY FORK RIVER		
U.S. Soil Conservation Service 14-digit watershed code	05130108_0410		
Name of state management/river basin			
U.S. Geological Survey 8-digit hydrologic cataloging unit code	05130108		
Critical low flow (acute)	ND cfs	cfs	cfs
Critical low flow (chronic)	ND cfs	cfs	cfs
Total hardness at critical low flow	ND mg/L of $CaCO_3$	mg/L of $CaCO_3$	mg/L of $CaCO_3$

Treatment Description

3.8 Provide the following information describing the treatment provided for discharges from each outfall.

	Outfall Number 001	Outfall Number _____	Outfall Number _____
Highest Level of Treatment (check all that apply per outfall)	☑ Primary ☑ Equivalent to secondary ☑ Secondary ☑ Advanced ☑ Other (specify) SPRAY FIELD	☐ Primary ☐ Equivalent to secondary ☐ Secondary ☐ Advanced ☐ Other (specify) _____	☐ Primary ☐ Equivalent to secondary ☐ Secondary ☐ Advanced ☐ Other (specify) _____
Design Removal Rates by Outfall			
BOD_5 or $CBOD_5$	85 %	%	%
TSS	85 %	%	%
Phosphorus	☑ Not applicable %	☐ Not applicable %	☐ Not applicable %
Nitrogen	☑ Not applicable %	☐ Not applicable %	☐ Not applicable %
Other (specify) _____	☐ Not applicable %	☐ Not applicable %	☐ Not applicable %

Treatment Description Continued

3.9 Describe the type of disinfection used for the effluent from each outfall in the table below. If disinfection varies by season, describe below.

UV DISINFECTION

	Outfall Number 001	Outfall Number _____	Outfall Number _____
Disinfection type	UV		
Seasons used	ALL		
Dechlorination used?	☑ Not applicable ☐ Yes ☐ No	☐ Not applicable ☐ Yes ☐ No	☐ Not applicable ☐ Yes ☐ No

Effluent Testing Data

3.10 Have you completed monitoring for all Table A parameters and attached the results to the application package?

☑ Yes ☐ No

3.11 Have you conducted any WET tests during the 4.5 years prior to the date of the application on any of the facility's discharges or on any receiving water near the discharge points?

☑ Yes ☐ No ➔ SKIP to Item 3.13.

3.12 Indicate the number of acute and chronic WET tests conducted since the last permit reissuance of the facility's discharges by outfall number or of the receiving water near the discharge points.

	Outfall Number 001		Outfall Number _____		Outfall Number _____	
	Acute	Chronic	Acute	Chronic	Acute	Chronic
Number of tests of discharge water		4				
Number of tests of receiving water						

3.13 Does the treatment works have a design flow greater than or equal to 0.1 mgd?

☑ Yes ☐ No ➔ SKIP to Item 3.16.

3.14 Does the POTW use chlorine for disinfection, use chlorine elsewhere in the treatment process, or otherwise have reasonable potential to discharge chlorine in its effluent?

☐ Yes ➔ Complete Table B, including chlorine. ☑ No ➔ Complete Table B, omitting chlorine.

3.15 Have you completed monitoring for all applicable Table B pollutants and attached the results to this application package?

☑ Yes ☐ No

3.16 Does one or more of the following conditions apply?

- The facility has a design flow greater than or equal to 1 mgd.
- The POTW has an approved pretreatment program or is required to develop such a program.
- The NPDES permitting authority has informed the POTW that it must sample for the parameters in Table C, must sample other additional parameters (Table D), or submit the results of WET tests for acute or chronic toxicity for each of its discharge outfalls (Table E).

☑ Yes ➔ Complete Tables C, D, and E as applicable. ☐ No ➔ SKIP to Section 4.

3.17 Have you completed monitoring for all applicable Table C pollutants and attached the results to this application package?

☐ Yes ☑ No

3.18 Have you completed monitoring for all applicable Table D pollutants required by your NPDES permitting authority and attached the results to this application package?

☐ Yes ☑ No additional sampling required by NPDES permitting authority.

Effluent Testing Data Continued

3.19	Has the POTW conducted either (1) minimum of four quarterly WET tests for one year preceding this permit application or (2) at least four annual WET tests in the past 4.5 years? ☑ Yes ☐ No ➔ Complete tests and Table E and SKIP to Item 3.26.
3.20	Have you previously submitted the results of the above tests to your NPDES permitting authority? ☐ Yes ☑ No ➔ Provide results in Table E and SKIP to Item 3.26.
3.21	Indicate the dates the data were submitted to your NPDES permitting authority and provide a summary of the results.

Date(s) Submitted (MM/DD/YYYY)	Summary of Results

3.22	Regardless of how you provided your WET testing data to the NPDES permitting authority, did any of the tests result in toxicity? ☐ Yes ☐ No ➔ SKIP to Item 3.26.
3.23	Describe the cause(s) of the toxicity:
3.24	Has the treatment works conducted a toxicity reduction evaluation? ☐ Yes ☐ No ➔ SKIP to Item 3.26.
3.25	Provide details of any toxicity reduction evaluations conducted.
3.26	Have you completed Table E for all applicable outfalls and attached the results to the application package? ☑ Yes ☐ Not applicable because previously submitted information to the NPDES permitting authority.

SECTION 4. INDUSTRIAL DISCHARGES AND HAZARDOUS WASTES (40 CFR 122.21(j)(6) and (7))

Industrial Discharges and Hazardous Wastes

4.1	Does the POTW receive discharges from SIUs or NSCIUs? ☐ Yes ☑ No ➔ SKIP to Item 4.7.
4.2	Indicate the number of SIUs and NSCIUs that discharge to the POTW.

Number of SIUs	Number of NSCIUs

4.3	Does the POTW have an approved pretreatment program? ☐ Yes ☐ No
4.4	Have you submitted either of the following to the NPDES permitting authority that contains information substantially identical to that required in Table F: (1) a pretreatment program annual report submitted within one year of the application or (2) a pretreatment program? ☐ Yes ☐ No ➔ SKIP to Item 4.6.
4.5	Identify the title and date of the annual report or pretreatment program referenced in Item 4.4. SKIP to Item 4.7.
4.6	Have you completed and attached Table F to this application package? ☐ Yes ☐ No

Industrial Discharges and Hazardous Wastes Continued

4.7 Does the POTW receive, or has it been notified that it will receive, by truck, rail, or dedicated pipe, any wastes that are regulated as RCRA hazardous wastes pursuant to 40 CFR 261?

☐ Yes ☑ No ➔ SKIP to Item 4.9.

4.8 If yes, provide the following information:

Hazardous Waste Number	Waste Transport Method (check all that apply)	Annual Amount of Waste Received	Units
	☐ Truck ☐ Rail ☐ Dedicated pipe ☐ Other (specify) _____ _____		
	☐ Truck ☐ Rail ☐ Dedicated pipe ☐ Other (specify) _____ _____		
	☐ Truck ☐ Rail ☐ Dedicated pipe ☐ Other (specify) _____ _____		

4.9 Does the POTW receive, or has it been notified that it will receive, wastewaters that originate from remedial activities, including those undertaken pursuant to CERCLA and Sections 3004(7) or 3008(h) of RCRA?

☐ Yes ☑ No ➔ SKIP to Section 5.

4.10 Does the POTW receive (or expect to receive) less than 15 kilograms per month of non-acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e)?

☐ Yes ➔ SKIP to Section 5. ☐ No

4.11 Have you reported the following information in an attachment to this application: identification and description of the site(s) or facility(ies) at which the wastewater originates; the identities of the wastewater's hazardous constituents; and the extent of treatment, if any, the wastewater receives or will receive before entering the POTW?

☐ Yes ☐ No

SECTION 5. COMBINED SEWER OVERFLOWS (40 CFR 122.21(j)(8))

CSO Map and Diagram

5.1 Does the treatment works have a combined sewer system?

☐ Yes ☑ No ➔SKIP to Section 6.

5.2 Have you attached a CSO system map to this application? (See instructions for map requirements.)

☐ Yes ☐ No

5.3 Have you attached a CSO system diagram to this application? (See instructions for diagram requirements.)

☐ Yes ☐ No

CSO Outfall Description

5.4 For each CSO outfall, provide the following information. (Attach additional sheets as necessary.)

	CSO Outfall Number ____	CSO Outfall Number _____	CSO Outfall Number _____
City or town			
State and ZIP code			
County			
Latitude	° ′ ″	° ′ ″	° ′ ″
Longitude	° ′ ″	° ′ ″	° ′ ″
Distance from shore	ft.	ft.	ft.
Depth below surface	ft.	ft.	ft.

CSO Monitoring

5.5 Did the POTW monitor any of the following items in the past year for its CSO outfalls?

	CSO Outfall Number ____	CSO Outfall Number _____	CSO Outfall Number _____
Rainfall	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
CSO flow volume	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
CSO pollutant concentrations	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Receiving water quality	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
CSO frequency	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Number of storm events	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

CSO Events in Past Year

5.6 Provide the following information for each of your CSO outfalls.

	CSO Outfall Number ____	CSO Outfall Number ____	CSO Outfall Number ____
Number of CSO events in the past year	events	events	events
Average duration per event	hours ☐ Actual or ☐ Estimated	hours ☐ Actual or ☐ Estimated	hours ☐ Actual or ☐ Estimated
Average volume per event	million gallons ☐ Actual or ☐ Estimated	million gallons ☐ Actual or ☐ Estimated	million gallons ☐ Actual or ☐ Estimated
Minimum rainfall causing a CSO event in last year	inches of rainfall ☐ Actual or ☐ Estimated	inches of rainfall ☐ Actual or ☐ Estimated	inches of rainfall ☐ Actual or ☐ Estimated

CSO Receiving Waters

5.7 Provide the information in the table below for each of your CSO outfalls.

	CSO Outfall Number ____	CSO Outfall Number ____	CSO Outfall Number ____
Receiving water name			
Name of watershed/ stream system			
U.S. Soil Conservation Service 14-digit watershed code (if known)	☐ Unknown	☐ Unknown	☐ Unknown
Name of state management/river basin			
U.S. Geological Survey 8-Digit Hydrologic Unit Code (if known)	☐ Unknown	☐ Unknown	☐ Unknown
Description of known water quality impacts on receiving stream by CSO (see instructions for examples)			

SECTION 6. CHECKLIST AND CERTIFICATION STATEMENT (40 CFR 122.22(a) and (d))

Checklist and Certification Statement

6.1 In Column 1 below, mark the sections of Form 2A that you have completed and are submitting with your application. For each section, specify in Column 2 any attachments that you are enclosing to alert the permitting authority. Note that not all applicants are required to provide attachments.

Column 1	Column 2	
☑ Section 1: Basic Application Information for All Applicants	☐ w/ variance request(s)	☑ w/ additional attachments
☑ Section 2: Additional Information	☑ w/ topographic map ☐ w/ additional attachments	☑ w/ process flow diagram
☑ Section 3: Information on Effluent Discharges	☑ w/ Table A ☑ w/ Table B ☐ w/ Table C	☐ w/ Table D ☑ w/ Table E ☐ w/ additional attachments
☐ Section 4: Industrial Discharges and Hazardous Wastes	☐ w/ SIU and NSCIU attachments ☐ w/ additional attachments	☐ w/ Table F
☐ Section 5: Combined Sewer Overflows	☐ w/ CSO map ☐ w/ CSO system diagram	☐ w/ additional attachments
☑ Section 6: Checklist and Certification Statement	☐ w/ attachments	

6.2 **Certification Statement**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name (print or type first and last name)	Official title
Ken Scalf	Director
Signature: Ken Scalf	Date signed: 01/19/2023

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number
	TN0056626	BCCX	001

Form Approved 03/05/19
OMB No. 2040-0004

TABLE A. EFFLUENT PARAMETERS FOR ALL POTWS

Pollutant	Maximum Daily Discharge		Average Daily Discharge			Analytical Method[1]	ML or MDL (include units)
	Value	Units	Value	Units	Number of Samples		
Biochemical oxygen demand ☐ BOD_5 or ☑ $CBOD_5$ (report one)	9.6	mg/L	2.0	mg/L	103	5210 B 2016	2.0 ☐ ML ☑ MDL
Fecal coliform	437	#/100 mL	11	#/100 mL	103	9223 B 2016	1.0 ☐ ML ☑ MDL
Design flow rate	0.85	MGD	0.407	MGD	273		
pH (minimum)	6.6	SU					
pH (maximum)	7.9	SU					
Temperature (winter)	23	C	16	C	151		
Temperature (summer)	27	C	22	C	214		
Total suspended solids (TSS)	35	mg/L	2.0	mg/L	104	2540 D 2015	0.3 ☐ ML ☑ MDL

[1] Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

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TABLE B. EFFLUENT PARAMETERS FOR ALL POTWS WITH A FLOW EQUAL TO OR GREATER THAN 0.1 MGD

Pollutant	Maximum Daily Discharge		Average Daily Discharge			Analytical Method[1]	ML or MDL (include units)
	Value	Units	Value	Units	Number of Samples		
Ammonia (as N)	2.85	mg/L	0.12	mg/L	104	HACH 10202 10/202(	0.039 ☐ ML ☑ MDL
Chlorine (total residual, TRC)[2]	NA						☐ ML ☐ MDL
Dissolved oxygen	11.1	mg/L	8.0	mg/L	107	4500 O-G 2016	☐ ML ☐ MDL
Nitrate/nitrite	4.79	mg/L	1.18	mg/L	36	4500 NO3 F 2016	0.100 ☐ ML ☑ MDL
Kjeldahl nitrogen	5.28	mg/L	1.37	mg/L	37	4500 NORG D 2011	1.0 ☐ ML ☑ MDL
Oil and grease	1.5	mg/L	1.5	mg/L	3	1664B	1.5 ☐ ML ☑ MDL
Phosphorus	2.63	mg/L	0.89	mg/L	37	365.4	0.5 ☐ ML ☑ MDL
Total dissolved solids	424	mg/L	421	mg/L	3	2540C-2015	☐ ML ☐ MDL

[1] Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

[2] Facilities that do not use chlorine for disinfection, do not use chlorine elsewhere in the treatment process, and have no reasonable potential to discharge chlorine in their effluent are not required to report data for chlorine.

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2019

1

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number	Form Approved 03/05/19 OMB No. 2040-0004
	TN0056626	BCCX	001	

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

Test Information			
	Test Number 1 CD	**Test Number** 1 FH	**Test Number** ____
Test species	C dubia	P promelas	
Age at initiation of test	<24 hours	<24 hours	
Outfall number	001	001	
Date sample collected	11/11/19	11/11/19	
Date test started	11/12/19	11/12/19	
Duration	7days 0 hours	6days 23hours	
Toxicity Test Methods			
Test method number	EPA 821 R-02-013 1002.0 (2002)	EPA 821 R-02-013 1000.0 (2002)	
Manual title	Short-term methods for estimating the Chronic toxicity of Effluents		
Edition number and year of publication	4th, October 2002	4th, October 2002	
Page number(s)	141-196	53-111	
Sample Type			
Check one:	☐ Grab ☑ 24-hour composite	☐ Grab ☑ 24-hour composite	☐ Grab ☐ 24-hour composite
Sample Location			
Check one:	☐ Before Disinfection ☑ After Disinfection ☐ After Dechlorination	☐ Before Disinfection ☑ After Disinfection ☐ After Dechlorination	☐ Before disinfection ☐ After disinfection ☐ After dechlorination
Point in Treatment Process			
Describe the point in the treatment process at which the sample was collected for each test.	001 - AFTER UV TREATMENT	001 - AFTER UV TREATMENT	
Toxicity Type			
Indicate for each test whether the test was performed to asses acute or chronic toxicity, or both. (Check one response.)	☐ Acute ☑ Chronic ☐ Both	☐ Acute ☑ Chronic ☐ Both	☐ Acute ☐ Chronic ☐ Both

2019
2

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number	Form Approved 03/05/19 OMB No. 2040-0004
	TN0056626	BCCX	001	

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

	Test Number 1 CO	Test Number 1 FH	Test Number ____
Test Type			
Indicate the type of test performed. (Check one response.)	☐ Static ☑ Static-renewal ☐ Flow-through	☐ Static ☑ Static-renewal ☐ Flow-through	☐ Static ☐ Static-renewal ☐ Flow-through
Source of Dilution Water			
Indicate the source of dilution water. (Check one response.)	☑ Laboratory water ☐ Receiving water	☑ Laboratory water ☐ Receiving water	☐ Laboratory water ☐ Receiving water
If laboratory water, specify type.	20% Dilute mineral water	20% Dilute Mineral water	
If receiving water, specify source.			
Type of Dilution Water			
Indicate the type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.	☑ Fresh water ☐ Salt water (specify)	☑ Fresh water ☐ Salt water (specify)	☐ Fresh water ☐ Salt water (specify)
Percentage Effluent Used			
Specify the percentage effluent used for all concentrations in the test series.	0/6.25%/12.5%/25%/50%/100%	0/6.25%/12.5%/25%/50%/100	
Parameters Tested			
Check the parameters tested.	☑ pH ☐ Ammonia ☐ Salinity ☑ Dissolved oxygen ☑ Temperature	☑ pH ☐ Ammonia ☐ Salinity ☑ Dissolved oxygen ☑ Temperature	☐ pH ☐ Ammonia ☐ Salinity ☐ Dissolved oxygen ☐ Temperature
Acute Test Results			
Percent survival in 100% effluent	80% %	%	%
LC_{50}			
95% confidence interval	%	%	%
Control percent survival	%	%	%

2019
3

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number	Form Approved 03/05/19 OMB No 2040-0004
	TN0056626	BCCX	001	

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

	Test Number 1 CD		Test Number 1 FH		Test Number ____	
Acute Test Results Continued						
Other (describe)						
Chronic Test Results						
NOEC	100 %	%	100 %	%		%
IC_{25}	>100 %	%	>100 %	%		%
Control percent survival	90 %	%	97.5 %	%		%
Other (describe)						
Quality Control/Quality Assurance						
Is reference toxicant data available?	☑ Yes	☐ No	☑ Yes	☐ No	☐ Yes	☐ No
Was reference toxicant test within acceptable bounds?	☑ Yes	☐ No	☑ Yes	☐ No	☐ Yes	☐ No
What date was reference toxicant test run (MM/DD/YYYY)?	11/05/2019		11/05/2019			
Other (describe)						

2020
1

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number
	TN0056626	BCCX	001

Form Approved 03/05/19
OMB No. 2040-0004

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

Test Information

	Test Number 12 CD	Test Number 2 FH	Test Number ____
Test species	C dubia	P promelas	
Age at initiation of test	<24 hours	<24 hours	
Outfall number	001	001	
Date sample collected	12/7/20	12/7/20	
Date test started	12/8/20	12/8/20	
Duration	6 days 22 hours	6 days 23 hours	
Toxicity Test Methods			
Test method number	EPA 821 R-02-013 1002.0 (2002)	EPA 821 R-02-013 1000.0 (2002)	
Manual title	Short term methods for estimating the chronic toxicity of effluents		
Edition number and year of publication	4th, October 2002	4th, October 2002	
Page number(s)	141-194	53-111	
Sample Type			
Check one:	☐ Grab ☑ 24-hour composite	☐ Grab ☑ 24-hour composite	☐ Grab ☐ 24-hour composite
Sample Location			
Check one:	☐ Before Disinfection ☑ After Disinfection ☐ After Dechlorination	☐ Before Disinfection ☑ After Disinfection ☐ After Dechlorination	☐ Before disinfection ☐ After disinfection ☐ After dechlorination
Point in Treatment Process			
Describe the point in the treatment process at which the sample was collected for each test.	001 - AFTER UV TREATMENT	001 - AFTER UV TREATMENT	
Toxicity Type			
Indicate for each test whether the test was performed to asses acute or chronic toxicity, or both. (Check one response.)	☐ Acute ☑ Chronic ☐ Both	☐ Acute ☑ Chronic ☐ Both	☐ Acute ☐ Chronic ☐ Both

2020
2

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number	Form Approved 03/05/19 OMB No. 2040-0004
	TN0056626	BCCX	001	

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

	Test Number 2 CD	Test Number 2 FH	Test Number ___
Test Type			
Indicate the type of test performed. (Check one response.)	☐ Static ☑ Static-renewal ☐ Flow-through	☐ Static ☑ Static-renewal ☐ Flow-through	☐ Static ☐ Static-renewal ☐ Flow-through
Source of Dilution Water			
Indicate the source of dilution water. (Check one response.)	☑ Laboratory water ☐ Receiving water	☑ Laboratory water ☐ Receiving water	☐ Laboratory water ☐ Receiving water
If laboratory water, specify type.	20% Dilute Mineral Water	20% Dilute Mineral Water	
If receiving water, specify source.			
Type of Dilution Water			
Indicate the type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.	☑ Fresh water ☐ Salt water (specify)	☑ Fresh water ☐ Salt water (specify)	☐ Fresh water ☐ Salt water (specify)
Percentage Effluent Used			
Specify the percentage effluent used for all concentrations in the test series.	0/6.25%/12.5%/25%/50%/100%	0/6.25%/12.5%/25%/50%/100%	
Parameters Tested			
Check the parameters tested.	☑ pH ☐ Ammonia ☐ Salinity ☑ Dissolved oxygen ☑ Temperature	☑ pH ☐ Ammonia ☐ Salinity ☑ Dissolved oxygen ☑ Temperature	☐ pH ☐ Ammonia ☐ Salinity ☐ Dissolved oxygen ☐ Temperature
Acute Test Results			
Percent survival in 100% effluent	%	%	%
LC_{50}			
95% confidence interval	%	%	%
Control percent survival	%	%	%

2020
3 X 95

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number
	TN0056626	BCCX	001

Form Approved 03/05/19
OMB No. 2040-0004

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

	Test Number 2 CD		Test Number 2 FH		Test Number ____	
Acute Test Results Continued						
Other (describe)						
Chronic Test Results						
NOEC	100 %	%	100 %	%		%
IC_{25}	>100 %	%	>100 %	%		%
Control percent survival	90 %	%	95 %	%		%
Other (describe)						
Quality Control/Quality Assurance						
Is reference toxicant data available?	☑ Yes	☐ No	☑ Yes	☐ No	☐ Yes	☐ No
Was reference toxicant test within acceptable bounds?	☑ Yes	☐ No	☑ Yes	☐ No	☐ Yes	☐ No
What date was reference toxicant test run (MM/DD/YYYY)?	12/01/2020		12/01/2020			
Other (describe)						

2021

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number
	TN0056626	BCCX	001

Form Approved 03/05/19
OMB No. 2040-0004

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

Test Information			
	Test Number 3 CD	**Test Number** 3 FH	**Test Number** ____
Test species	C dubia	P promelas	
Age at initiation of test	<24 hours	<24 hours	
Outfall number	001	001	
Date sample collected	10/18/21	10/18/21	
Date test started	10/19/21	10/19/21	
Duration	5 days 23 hours	7 days 0 hours	
Toxicity Test Methods			
Test method number	EPA 821 R-02-013 1002.0 (2002)	EPA 821 R-02-013 1000.0 (2002)	
Manual title	Short term methods for estimating the chronic toxicity of effluents		
Edition number and year of publication	4th, October 2002	4th, October 2002	
Page number(s)	141-194	53-111	
Sample Type			
Check one:	☐ Grab ☑ 24-hour composite	☐ Grab ☑ 24-hour composite	☐ Grab ☐ 24-hour composite
Sample Location			
Check one:	☐ Before Disinfection ☑ After Disinfection ☐ After Dechlorination	☐ Before Disinfection ☑ After Disinfection ☐ After Dechlorination	☐ Before disinfection ☐ After disinfection ☐ After dechlorination
Point in Treatment Process			
Describe the point in the treatment process at which the sample was collected for each test.	001 - AFTER UV TREATMENT	001 - AFTER UV TREATMENT	
Toxicity Type			
Indicate for each test whether the test was performed to asses acute or chronic toxicity, or both. (Check one response.)	☐ Acute ☑ Chronic ☐ Both	☐ Acute ☑ Chronic ☐ Both	☐ Acute ☐ Chronic ☐ Both

2021
2

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number	Form Approved 03/05/19 OMB No. 2040-0004
	TN0056626	BCCX	001	

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

	Test Number 3 CD	Test Number 3 FH	Test Number ____
Test Type			
Indicate the type of test performed. (Check one response.)	☐ Static ☑ Static-renewal ☐ Flow-through	☐ Static ☑ Static-renewal ☐ Flow-through	☐ Static ☐ Static-renewal ☐ Flow-through
Source of Dilution Water			
Indicate the source of dilution water. (Check one response.)	☑ Laboratory water ☐ Receiving water	☑ Laboratory water ☐ Receiving water	☐ Laboratory water ☐ Receiving water
If laboratory water, specify type.	20% Dilute Mineral Water	20% Dilute Mineral Water	
If receiving water, specify source.			
Type of Dilution Water			
Indicate the type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.	☑ Fresh water ☐ Salt water (specify)	☑ Fresh water ☐ Salt water (specify)	☐ Fresh water ☐ Salt water (specify)
Percentage Effluent Used			
Specify the percentage effluent used for all concentrations in the test series.	0 / 6.25% / 12.5% / 25% / 50% / 100%	0 / 6.25% / 12.5% / 25% / 50% / 100%	

Parameters Tested						
Check the parameters tested.	☑ pH ☐ Salinity ☑ Temperature	☐ Ammonia ☑ Dissolved oxygen	☑ pH ☐ Salinity ☑ Temperature	☐ Ammonia ☑ Dissolved oxygen	☐ pH ☐ Salinity ☐ Temperature	☐ Ammonia ☐ Dissolved oxygen

Acute Test Results			
Percent survival in 100% effluent	%	%	%
LC_{50}			
95% confidence interval	%	%	%
Control percent survival	%	%	%

2021
3

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number
	TN0056626	BCCX	001

Form Approved 03/05/19
OMB No. 2040-0004

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

	Test Number 3 CD	Test Number 3 FH	Test Number ____
Acute Test Results Continued			
Other (describe)			
Chronic Test Results			
NOEC	100 % %	100 % %	%
IC_{25}	>100 % %	>100 % %	%
Control percent survival	100 % %	100 % %	%
Other (describe)			
Quality Control/Quality Assurance			
Is reference toxicant data available?	☑ Yes ☐ No	☑ Yes ☐ No	☐ Yes ☐ No
Was reference toxicant test within acceptable bounds?	☑ Yes ☐ No	☑ Yes ☐ No	☐ Yes ☐ No
What date was reference toxicant test run (MM/DD/YYYY)?	10/19/2021	10/19/2021	
Other (describe)			

2022

1

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number
	TN0056626	BCCX	001

Form Approved 03/05/19
OMB No. 2040-0004

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

Test Information

	Test Number 4 CD	Test Number 4 FH	Test Number ____
Test species	C dubia	P promelas	
Age at initiation of test	<24 hours	<24 hours	
Outfall number	#9 001	001	
Date sample collected	10/19/22	10/19/22	
Date test started	10/20/22	10/20/22	
Duration	5 days 23 hours	6 days 22 hours	
Toxicity Test Methods			
Test method number	EPA 821 R-02-013 1002.0 (2002)	EPA 821 R-02-013 1000.0 (2002)	
Manual title	Short term methods for estimating the Chronic toxicity of effluents		
Edition number and year of publication	4th, October 2002	4th, October 2002	
Page number(s)	141-196	53-111	
Sample Type			
Check one:	☐ Grab ☑ 24-hour composite	☐ Grab ☑ 24-hour composite	☐ Grab ☐ 24-hour composite
Sample Location			
Check one:	☐ Before Disinfection ☑ After Disinfection ☐ After Dechlorination	☐ Before Disinfection ☑ After Disinfection ☐ After Dechlorination	☐ Before disinfection ☐ After disinfection ☐ After dechlorination
Point in Treatment Process			
Describe the point in the treatment process at which the sample was collected for each test.	001 - AFTER UV TREATMENT	001 - AFTER UV TREATMENT	
Toxicity Type			
Indicate for each test whether the test was performed to asses acute or chronic toxicity, or both. (Check one response.)	☐ Acute ☑ Chronic ☐ Both	☐ Acute ☑ Chronic ☐ Both	☐ Acute ☐ Chronic ☐ Both

2022
2

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number	Form Approved 03/05/19 OMB No. 2040-0004
	TN0056626	BCCX	001	

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

	Test Number 4 CD	Test Number 4 FH	Test Number ___
Test Type			
Indicate the type of test performed. (Check one response.)	☐ Static ☑ Static-renewal ☐ Flow-through	☐ Static ☑ Static-renewal ☐ Flow-through	☐ Static ☐ Static-renewal ☐ Flow-through
Source of Dilution Water			
Indicate the source of dilution water. (Check one response.)	☑ Laboratory water ☐ Receiving water	☑ Laboratory water ☐ Receiving water	☐ Laboratory water ☐ Receiving water
If laboratory water, specify type.	20% Dilute Mineral Water	20% Dilute Mineral Water	
If receiving water, specify source.			
Type of Dilution Water			
Indicate the type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.	☑ Fresh water ☐ Salt water (specify)	☑ Fresh water ☐ Salt water (specify)	☐ Fresh water ☐ Salt water (specify)
Percentage Effluent Used			
Specify the percentage effluent used for all concentrations in the test series.	0/6.25%/12.5%/25%/50%/100%	0/6.25%/12.5%/25%/50%/100%	

Parameters Tested						
Check the parameters tested.	☑ pH ☐ Salinity ☑ Temperature	☐ Ammonia ☑ Dissolved oxygen	☑ pH ☐ Salinity ☑ Temperature	☐ Ammonia ☑ Dissolved oxygen	☐ pH ☐ Salinity ☐ Temperature	☐ Ammonia ☐ Dissolved oxygen
Acute Test Results						
Percent survival in 100% effluent	%		%		%	
LC_{50}						
95% confidence interval	%		%		%	
Control percent survival	%		%		%	

2022
3

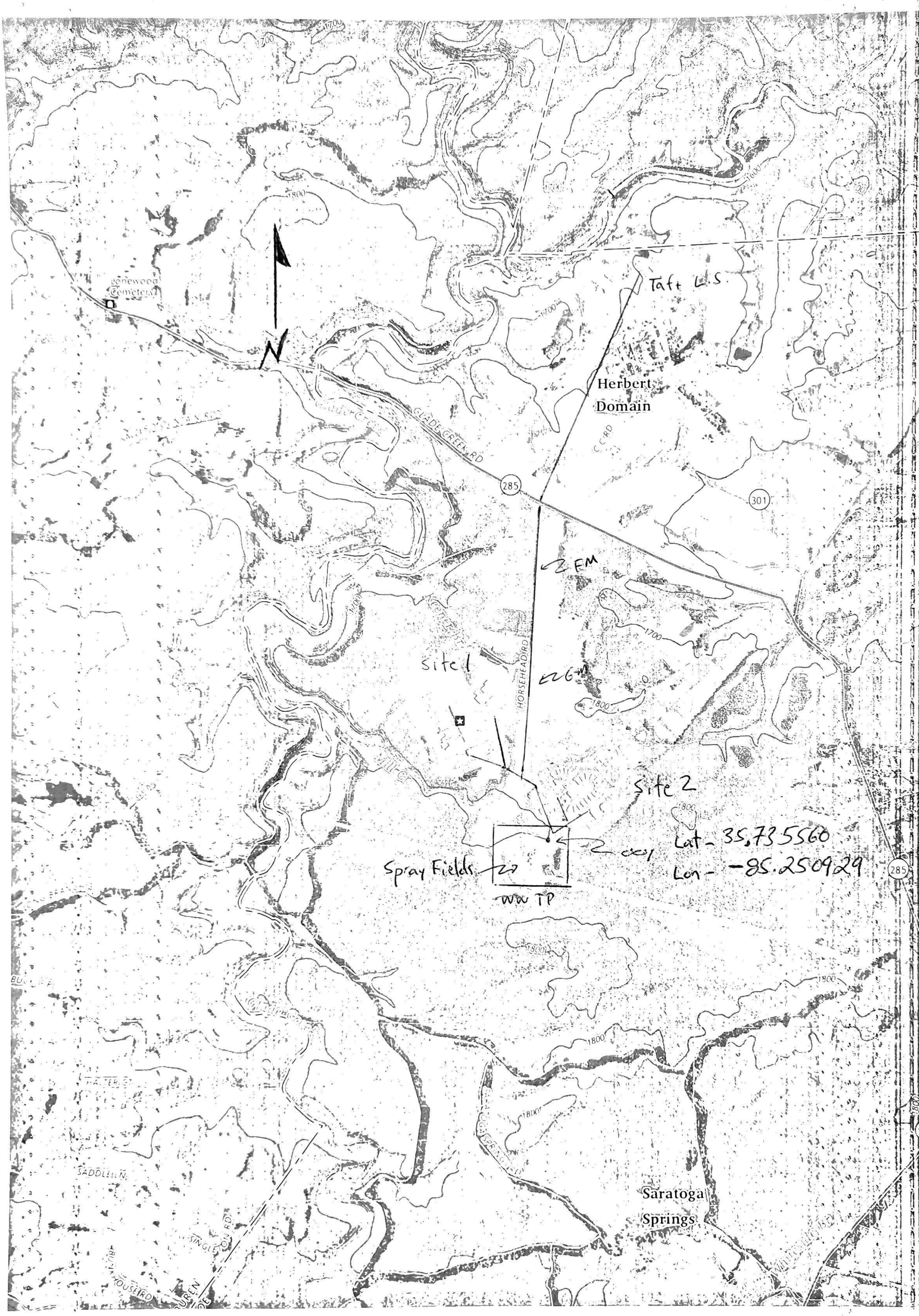
EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number
	TN0056626	BCCX	001

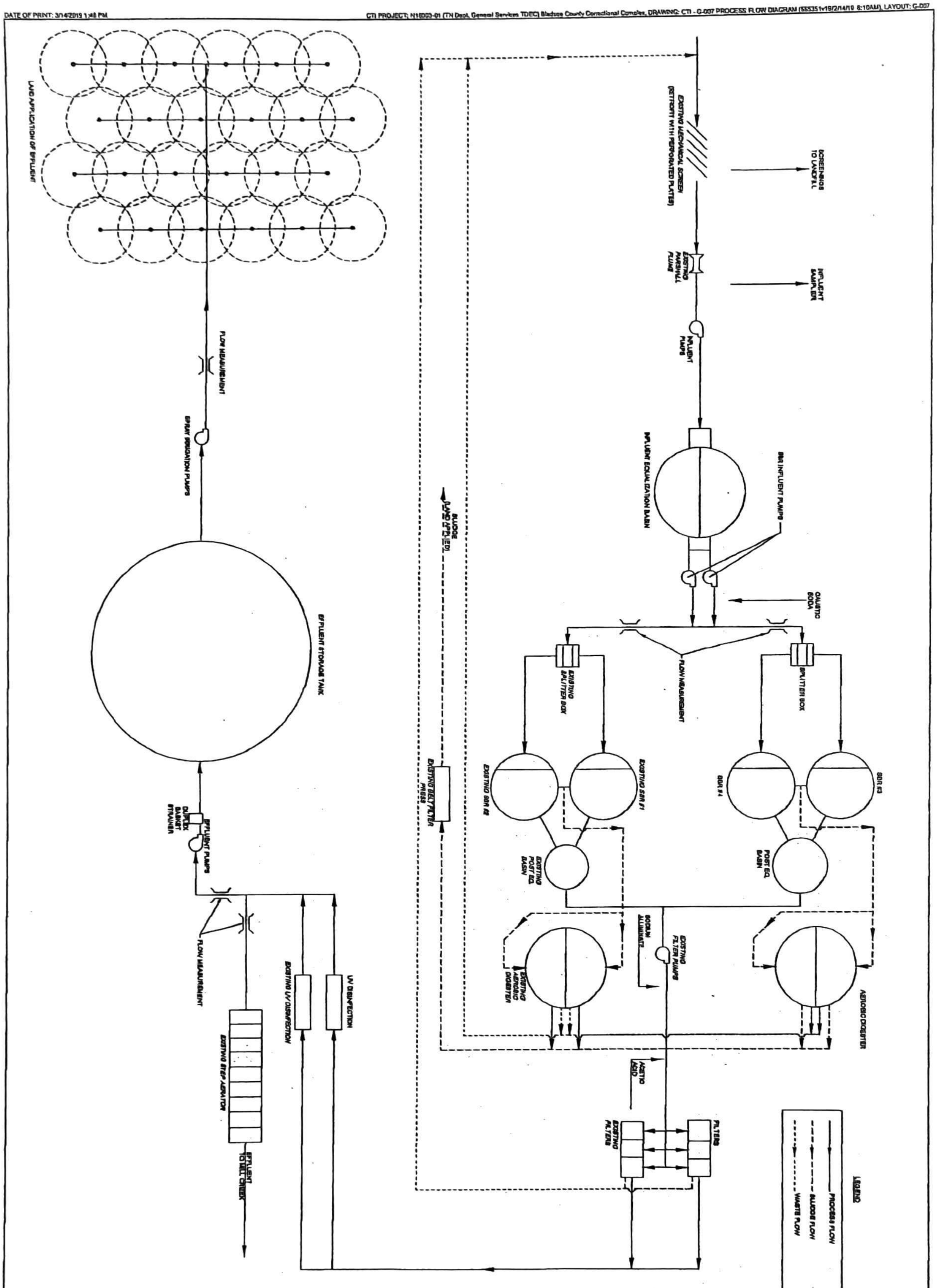
Form Approved 03/05/19
OMB No 2040-0004

TABLE E. EFFLUENT MONITORING FOR WHOLE EFFLUENT TOXICITY

The table provides response space for one whole effluent toxicity sample. Copy the table to report additional test results.

	Test Number 4 CD		Test Number 4 FH		Test Number ____	
Acute Test Results Continued						
Other (describe)						
Chronic Test Results						
NOEC	100 %	%	100 %	%		%
IC_{25}	>100 %	%	>100 %	%		%
Control percent survival	100 %	%	100 %	%		%
Other (describe)						
Quality Control/Quality Assurance						
Is reference toxicant data available?	☑ Yes	☐ No	☑ Yes	☐ No	☐ Yes	☐ No
Was reference toxicant test within acceptable bounds?	☑ Yes	☐ No	☑ Yes	☐ No	☐ Yes	☐ No
What date was reference toxicant test run (MM/DD/YYYY)?	10/4/2022		10/4/2022			
Other (describe)						


N
Lonewood Cemetery
Taft L.S.
Herbert Domain
GLADE CREEK RD
285
301
HORSEHEAD RD
EM
GM
Site 1
Site 2
1700
1800
Lat - 35.735560
Lon - -85.250929
001
Spray Fields
WWTP
SADDLE LN
Saratoga Springs



CTi ENGINEERS, INC.
2554 PERIMETER HILL DRIVE, SUITE 140
NASHVILLE, TN 37211
615-834-8300

WASTEWATER TREATMENT PLANT EXPANSION
BLEDSOE COUNTY CORRECTIONAL COMPLEX

PIKEVILLE, BLEDSOE COUNTY, TENNESSEE SBC PROJECT 142/013-01-2013-06

PROCESS FLOW DIAGRAM

DESIGN	NH
DRAWN	JRH
CHECKED	NH
APPROVED	NH

REVISIONS

NO.	DESCRIPTIONS	DATE	BY	APPD

JOB NO. N16003
ISSUE DATE November 30, 2018
SCALE NTS
DRAWING NO. G-007

2.21.2 APPLICATION RATE

The following calculations are used to determine the irrigation application rate:

- If the previous hour's rainfall rate exceeds 0.016 inches per hour (0.4 inches per day) on-going irrigation will be stopped and no further irrigation will be applied for the succeeding hour.
- If the previous hour's rainfall rate is less than 0.016 inches per hour, the control system will calculate a weighted average previous daily rainfall as follows:
    - The sum of the previous 24 hours of rain will be multiplied by 3.0
    - The sum of the previous hours 25 through 48 of rainfall will be multiplied by 2.0
    - The sum of the previous hours 49 through 72 of rainfall will be multiplied by 1.0
    - The 3 factored sums will then be added together and the total divided by 3.0 to determine the weighted previous day's rainfall.
- The weighted previous day's rainfall will then be subtracted from the 0.4 inches per day to determine the allowed application rate.
    - If the allowed application rate is negative, no irrigation will be applied for the next 24 hours.
    - If the allowed application rate is less than 0.4, a run time factor will be calculated by dividing the allowed application rate by 0.4.
    - The allowed runtime for each zone will be calculated by multiplying the normal allowed runtime for that zone by the run time factor.
- The run time factor will be recalculated prior to beginning irrigation in each time zone.

2.21.3 APPLICATION DYNAMICS

The spray irrigation fields follow a sequential operation dynamic. Zones in the North and South spray fields are operated sequentially. For example:

- Zone S-1 and Zone N-1 can be operated at the same time
- Zone S-1 and Zone S-2 cannot be operated at the same time

Based on the allowable applicated rate, multiple zones on each side can be operated within a day, as long as they follow the sequential dynamic.

2.22 AEROBIC DIGESTERS

The aerobic digester tanks are CROM prestressed concrete tanks that are divided into two (2) compartments by a center division wall. This will allow half of each tank to be drained for cleaning or repair and allow operational flexibility with half the volume available for use. The influent and effluent piping was installed to allow service to either or both cells. Each tank has a capacity of 450,000 gallons.

2.21 SPRAY FIELDS

2.21.1 BACKGROUND

Wastewater effluent to be land applied by spray irrigation at BCCX receives the same level of treatment as the effluent discharged into Mill Creek. Therefore, neither nitrogen loading nor organic loading were a limiting issue in determining the amount of land required for disposal. However, calculations were required to account for the effects of precipitation and evaporation.
The design information for the spray fields includes the following data:

- Application rate: 0.25gpd/SF = 0.40 in/day/SF
- Maximum Sprinkler application rate: 0.35 in/hour/SF
- Maximum allowed application time: 68.75 min/day
- Sprinkler flow at 60 psi: 10.6 gal/min
- Daily sprinkler flow: 728.8 gal/day
- Number of sprinklers: 638
- Maximum application: 464,974.8 gal/day

The maximum application rate cannot be continuously applied due to weather constraints.

Spray Field Water Balance Calculations

Month	P_R(in/mo)	PET (in/mo)	L_{WH} (in/mo)	L_{WH} (gpd/ft^2)
January	7.62	0.10	4.68	0.0941
February	6.72	0.27	5.75	0.1280
March	8.85	0.97	4.32	0.0869
April	6.59	2.30	7.91	0.1644
May	6.13	3.59	9.66	0.1942
June	5.52	4.90	11.58	0.2406
July	6.85	5.44	10.79	0.2170
August	4.73	5.00	12.47	0.2507
September	5.54	3.79	10.45	0.2171
October	4.47	1.98	9.71	0.1952
November	6.11	0.82	6.91	0.1436
December	7.55	0.27	4.92	0.0989
Totals	**76.68 in/yr**	**29.43 in/yr**	**99.15 in/yr**	

P_R = 5-year Return Monthly Precipitation (from TDEC)
PET = Potential Evapotranspiration (from TDEC)
Perc = Application Rate = 0.25 gpd/ft^2 = 146.4 in/year = 12.20 in/mo
L_{WH} = (PET + Perc) - P_R

Area = Q_Y C / L_{WD}
Q_Y = Flow, MG/year
L_{WD} = Design Hydraulic Loading Rate, in/year = ΣL_{WH}
C = 36.83 (conversion factor)
Area = (0.315 mgd) (365 days/year) (36.83) / (99.15 in/year) = 42.71 acres

While these calculations indicate that 42.71 acres are required for the effluent spray irrigation, the calculations do not include any extra area to allow the spray areas to "rest" and do not include any additional area to dispose of stored effluent also while disposing of the daily flow. Since TDEC Design Criteria require 60 days of storage volume, sufficient application area must be included to allow the disposal of the daily flow plus allow the disposal of the stored volume in a reasonable amount of time.

A preliminary soils investigation was conducted on several areas on the BCCX property to determine the most likely areas suitable for surface spray irrigation. None of the areas in the preliminary investigation contained the full amount of contiguous site that was expected to be suitable; however, the largest and apparently most suitable sites were located west of the existing WWTP both north and south of the TVA easement. Both a topographic survey and Extra High Intensity Soils Mapping have been performed on approximately 113 acres in two (2) areas with a net useable area of approximately 65.8 acres. The Area Numbers were assigned based on the areas named for the topographic survey. Area 1 was the WWTP site and Areas 2 and 3 were the areas investigated for soils. The soils areas are listed in the table following:

Soils Areas Investigated		
Area Number	Gross Area (Acres)	Net Area (Acres)
2	36	23.8
3	77	42.0
Totals	113	65.8

It should be noted the net area shown above is greater than the actual area covered by the spray fields. The spray fields were designed to maximize the available area; however, buffers and small or irregular shapes were omitted.

The spray field layout for both Areas 2 and 3 is included in the plans. The area is sufficient for the 0.158 mgd storage volume provided in this project. The storage volume is adequate for 60 days storage for 0.158 mgd; however, the spray fields are adequate for approximately 0.465 mgd. Additional storage and spray fields will be developed to utilize the supplemental area previously investigated prior to expansion of flows beyond current design capacity. Usage over time should verify the actual storage volume necessary.

2.21.2 APPLICATION RATE

The following calculations are used to determine the irrigation application rate:

- If the previous hour's rainfall rate exceeds 0.016 inches per hour (0.4 inches per day) on-going irrigation will be stopped and no further irrigation will be applied for the succeeding hour.
- If the previous hour's rainfall rate is less than 0.016 inches per hour, the control system will calculate a weighted average previous daily rainfall as follows:
    - The sum of the previous 24 hours of rain will be multiplied by 3.0
    - The sum of the previous hours 25 through 48 of rainfall will be multiplied by 2.0
    - The sum of the previous hours 49 through 72 of rainfall will be multiplied by 1.0
    - The 3 factored sums will then be added together and the total divided by 3.0 to determine the weighted previous day's rainfall.
- The weighted previous day's rainfall will then be subtracted from the 0.4 inches per day to determine the allowed application rate.
    - If the allowed application rate is negative, no irrigation will be applied for the next 24 hours.
    - If the allowed application rate is less than 0.4, a run time factor will be calculated by dividing the allowed application rate by 0.4.
    - The allowed runtime for each zone will be calculated by multiplying the normal allowed runtime for that zone by the run time factor.
- The run time factor will be recalculated prior to beginning irrigation in each time zone

2.21.3 APPLICATION DYNAMICS

The spray irrigation fields follow a sequential operation dynamic. Zones in the North and South spray fields are operated sequentially. For example:

- Zone S-1 and Zone N-1 can be operated at the same time
- Zone S-1 and Zone S-2 cannot be operated at the same time

Based on the allowable applicated rate, multiple zones on each side can be operated within a day, as long as they follow the sequential dynamic.

2.22 AEROBIC DIGESTERS

The aerobic digester tanks are CROM prestressed concrete tanks that are divided into two (2) compartments by a center division wall. This will allow half of each tank to be drained for cleaning or repair and allow operational flexibility with half the volume available for use. The influent and effluent piping was installed to allow service to either or both cells. Each tank has a capacity of 450,000 gallons.

Bledsoe County Correctional Complex
Land Application Systam - Maximum Allowed Application Rate

Application Rate (Gal/SF/Day) =	0.25	0.40	in/SF/Day
Maximum Sprinkler Application Rate =		0.35	in/SF/Day
Maximum Allowed Application Time =		68.75	min/day
Sprinkler Flow at 60 psi =		10.6	gal/min
Daily Sprinkler Flow =		728.80	gal/day

Zone	Heads Each	Max. Application Gal/Day
N-1	62	45,185.6
N-2	58	42,270.4
N-3	53	38,626.4
N-4	55	40,084.0
S-1	46	33,524.8
S-2	50	36,440.0
S-3	52	37,897.6
S-4	61	44,456.8
S-5	54	39,355.2
S-6	54	39,355.2
S-7	53	38,626.4
S-8	40	29,152.0
	638	464,974.8

BCCX Wastewater Treatment Plant

TN0056626

January 20, 2023

Addendum to NPDES permit application.

Alternatives Analysis

Option 1 – No action, continue to discharge wastewater effluent to Mill Creek at Mile 1.0 to Glade Creek at mile 3.8.

Option 2 – Pump the wastewater plant effluent to a nearby wastewater system.

Option 3 – Land apply wastewater effluent to a constructed spray field.

Option 4 – Reuse and recycle wastewater effluent on facility grounds.

For a variety of reasons (primarily economic), we choose a combination of option 1 and option 3.

NPDES Permit Application Addendum

BLEDSOE COUNTY CORRECTIONAL COMPLEX
1045 HORSEHEAD LANE
PIKEVILLE TN 37367
TN0056626
BLEDSOE COUNTY

1.14

WASTEWATER APPLIED TO LAND

In the previous CIP (completed in 2022) a 42.7-acre spray field was constructed. Presented below are notes received from Mr. Neal Hall (CTI) who was the chief engineer assigned to the project.

'According to the DDR, the max field application is 464,975 gpd. The following information was copied from the Design Development Report.

8 - Land Application of Effluent

Wastewater effluent to be land applied by spray irrigation at BCCX will receive the same level of treatment as the effluent discharged into Mill Creek. Therefore, neither nitrogen loading nor organic loading will be a limiting issue in determining the amount of land required for disposal. However, calculations must be made which account for the effects of precipitation and evaporation. The design information contained in Appendix G includes the following data:

• Application rate: 0.25gpd/SF = 0.40 in/day/SF

• Maximum Sprinkler application rate: 0.35 in/hour/SF

• Maximum allowed application time: 68.75 min/day

• Sprinkler flow at 60 psi: 10.6 gal/min

• Daily sprinkler flow: 728.8 gal/day

• Number of sprinklers: 638

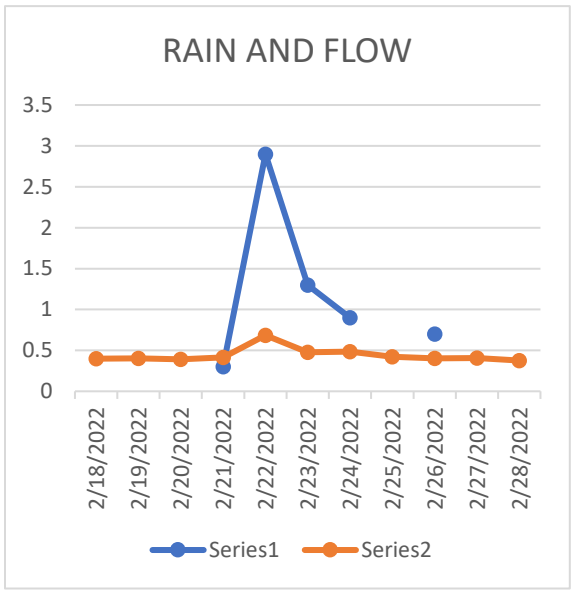
• Maximum application: 464,974.8 gal/day

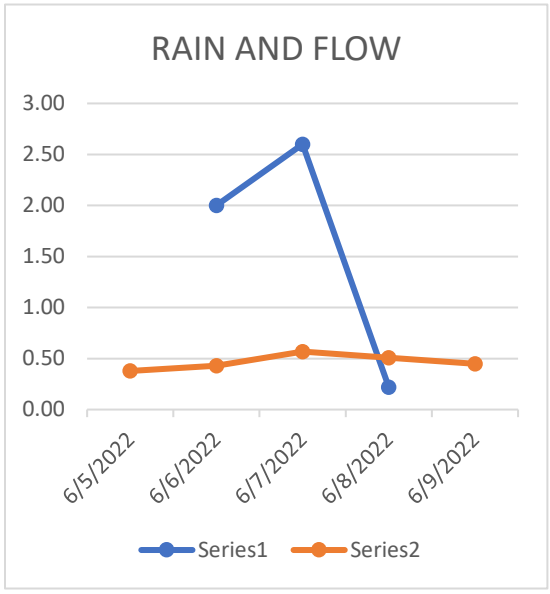
The maximum application rate cannot be continuously applied due to weather constraints."

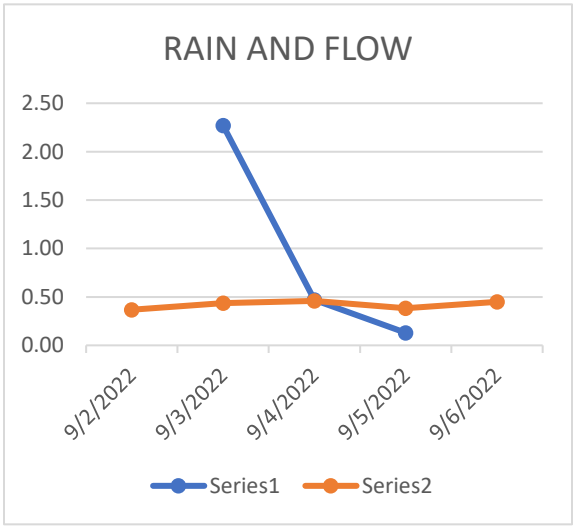
Neal Hall, PE'

2.2

INFLOW AND INFILTRATION







Significant rain events occurred from 2-21-22 to 2-24-22; 6-5-22 to 6-9-22; and 9-2-22 TO 9-6-22. The rain data shown on the blue line did not significantly increase the flow data shown on the red line. This shows (at the present time) that there is not a significant influence on flow from I/I.

3.3

SEASONAL OR PERIODIC DISCHARGE DATA

During the first 9 months of 2022, treated wastewater was discharged to the 001 outfall 32 days, while treated wastewater was discharged to the storage tank (and ultimately sprayed onto the spray fields) 115 days.

3.8

TREATMENT DESCRIPTION

The NPDES permit does not indicate a % removal for CBOD, TSS, or NH3-N. A value of 85% was used in the application.

OTHER

The NPDES permit requires E coli to be reported as an average, not a geometric mean.

The NPDES permit mentions that flow should be split between the 001 outfall and the spray fields and both discharges shall not exceed 0.315 MGD. The permit should allow for the maximum discharge of 0.465 MGD to the spray fields.