Hearing Officer's Report of Proceedings

December 9, 2020, Public Hearing
Special Order by Consent (SOC)
City of Greensboro – T.Z. Osborne WWTP – Guilford County

I. History / Background

The City of Greensboro's T.Z. Osborne Wastewater Treatment Plant (WWTP) currently operates as a 40 million gallons per day (MGD) designed capacity wastewater treatment plant that discharges to South Buffalo Creek in the Cape Fear River Basin and currently utilizes tertiary treatment technology (Figure 1). Following completion of its current expansion project (estimated for completion in Spring 2021), the facility will have a treatment capacity of 56 MGD. The facility was originally permitted in November 1981 under North Carolina National Pollutant Discharge Elimination System (NPDES) permit NC0047384. The current permit expired on June 30, 2019 but has been administratively continued as the City's renewal application was received on November 26, 2018. The facility's NPDES permit does not currently contain discharge limits for 1,4-dioxane.

In a November 2017 Technical Fact Sheet (Fact Sheet), the United States Environmental Protection Agency (EPA) describes 1,4-dioxane as "a synthetic industrial chemical that is completely miscible in water." Its primary historical use was as a stabilizer for chlorinated solvents. The EPA Fact Sheet states that 1,4-dioxane is a by-product present in numerous goods such as paint strippers, dyes, greases, antifreeze and aircraft deicing fluids, and in some consumer and personal care products (deodorants, shampoos, cosmetics, etc.). The EPA states in its Fact Sheet (Appendix N) "the physical and chemical properties and behavior of 1,4-dioxane create challenges for its characterization and treatment. It is highly mobile and does not readily biodegrade in the environment." These properties, plus its widespread presence in industrial and consumer products, cause the compound to be identifiable in quantifiable concentrations in groundwater and within surface waters downstream of industrialized and urbanized areas. 1,4-dioxane can enter a publicly owned treatment works (POTW) as a constituent of industrial and domestic wastewater. Most wastewater treatment plants are not currently designed to remove compounds such as 1,4-dioxane; therefore, it can pass through the treatment system and enter surface waters as part of the effluent discharge.

EPA Integrated Risk Information System (IRIS) has classified 1,4-dioxane as likely to be carcinogenic to humans. A Federal maximum contaminant level (MCL) has not been established for 1,4-dioxane in drinking water. EPA issued a Health Advisory for 1,4-dioxane (Appendix O) recommending concentrations not exceed 35 µg/L in drinking water as protection of a 1 in 10,000 excess estimated lifetime cancer risk. EPA risk assessments indicate the drinking water concentration representing a 1 in 1,000,000 excess estimated lifetime cancer risk level for 1,4-dioxane is 0.35 µg/L.

15A NCAC 02B .0208 provides the narrative water quality standard for toxic substances and includes equations for translating the narrative standard to numeric values (referred to here as in-stream target values). The narrative water quality standard for toxic substances and the corresponding equations used to translate that narrative standard are critical to providing regulatory values for substances that do not have individual numeric water quality standards The in-stream target values calculated from using the translator equations in 15A NCAC 02B .0208(a) are implemented and enforced as standards by the North Carolina Department of Environmental Quality (DEQ) and their use in NPDES permitting is supported in Title 40 of the Code of Federal Regulations (40 CFR §122.44).

The EPA's Third Unregulated Contaminant Monitoring Rule (UCMR 3) required public water supply systems throughout the United States to monitor for the presence of contaminants, including 1,4-dioxane, during the years 2013 through 2015. Results of UCMR 3 monitoring indicated the presence of 1,4-dioxane in North Carolina's public water was most prevalent where the source water was from the Cape Fear River Basin. Based on these findings, the DEQ conducted follow up instream sampling studies to better determine the concentrations of 1,4-dioxane and their potential sources within the basin. Results of the DEQ studies found detectable concentrations of 1,4-dioxane downstream of the discharge point from the City of Greensboro's T. Z. Osborne WWTP.

As a result of this information, the City of Greensboro (the City) began a voluntary 1,4-dioxane source identification and reduction plan starting in 2015, which included monitoring WWTP

influent and effluent and the City's wastewater collection system. By October 2015, the City's program had identified one of its Significant Industrial Users (SIU) as a quantifiable source of 1,4-dioxane discharged to the T.Z. Osborne WWTP. The SIU agreed to conduct its own voluntary source reduction program. Since implementing the program, the discharge of 1,4-dioxane from the T.Z. Osborne WWTP has decreased by more than 50% for the four-year period from February 2016 to September 2020.

On October 31, 2017, after EPA Test Method 624.1 was promulgated in the 2017 Methods Update Rule, the Division of Water Resources (DWR; the Division) issued an administrative letter to the City which required them to begin monthly effluent monitoring at the T.Z. Osborne WWTP for 1,4-dioxane and to report the results on monthly discharge monitoring reports (DMRs), beginning with the December 2017 report. These results have routinely indicated the presence of 1,4-dioxane in the WWTP effluent. The Division instituted its own sampling study of the T.Z. Osborne WWTP effluent in October 2019, conducting monitoring of the discharge and sharing final data with the City. Sampling effluent data from the T.Z. Osborne WWTP discharge has indicated instances where the EPA drinking water Health Advisory concentration of 35 µg/L for 1,4-dioxane may have been exceeded at downstream drinking water intakes. After an effluent concentration of 957.5 µg/L was observed on the City's monthly DMR on August 7, 2019, the Division issued a Notice of Violation (NOV) to the City on November 14, 2019 (Appendix P).

Per G.S. § 143-215.2(a), the North Carolina Environmental Management Commission (EMC; the Commission) may issue, modify, or revoke a Special Order to any person whom it finds responsible for causing or contributing to any pollution of the waters of the State within the area for which standards have been established. The order may direct the person to take or refrain from taking an action, or to achieve a result, within a period of time specified by the Special Order so as to alleviate or eliminate the pollution. The Commission is authorized to enter into consent special orders by agreement with the person responsible for polluting the water, and the consent order, when entered into by the Commission after public review and comment, shall have the same force and effect as a Special Order of the Commission issued pursuant to hearing.

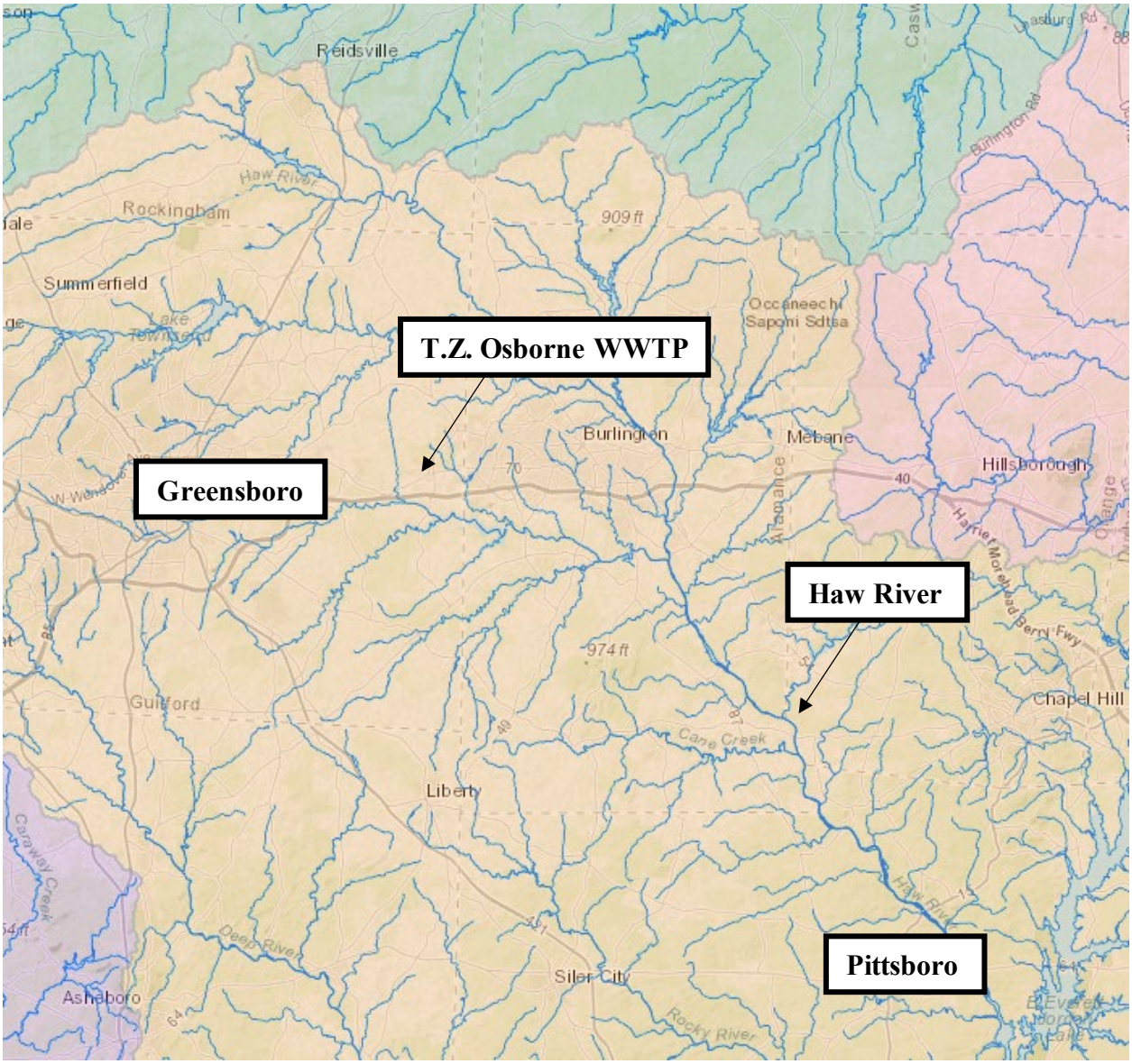
On November 21, 2019, the Division received an application from the City for a Special Order by Consent (SOC) to address issues associated with 1,4-dioxane discharges from the T.Z. Osborne WWTP effluent. The purpose of the SOC is to reduce concentrations of 1,4-dioxane being discharged by the City into the receiving stream (South Buffalo Creek) to protect the drinking water sources downstream of the T.Z. Osborne WWTP effluent discharge.

An initial SOC draft was public noticed June 22, 2020, seeking public comment through July 24, 2020. Based on comments received during the initial public notice, DEQ revised the SOC the City accepted. The revisions included a decrease of the SOC Year One compliance value to 50 µg/L, language clarifications, and the addition of a Frequently Asked Questions (FAQ) document to answer questions received during the initial public comment period. The revised SOC was publicly noticed on November 6, 2020, a public hearing was held on December 9, 2020, and the public comment period closed on December 14, 2020. This publicly noticed revised SOC included:

- Upon the execution date of the SOC, the City would be required to increase its 1,4-dioxane effluent monitoring frequency to weekly and meet the Year One SOC compliance value of 50 µg/L. The SOC included other requirements of the City such as further investigation of 1,4-dioxane dischargers and background levels of 1,4-dioxane that already exist in local surface and drinking waters. The City would also be required to report by telephone to the Division within 24 hours after receiving any data indicating 1,4-dioxane concentration greater than 50 µg/L. In addition to any other reporting required, the City would be required to submit a written report on Year One activities and data.
- Upon the first day of SOC Year Two, the City would need to meet the Year Two SOC compliance value of 35 µg/L and continue weekly 1,4-dioxane effluent monitoring. SOC Year Two would require the City to calculate a T.Z. Osborne WWTP effluent 1,4-dioxane mass balance using all collected industrial, domestic, commercial, drinking water, and collection system data. Similar to Year One, the City would also report by telephone within 24 hours after receiving any data indicating 1,4-dioxane concentration greater than 35 µg/L. The City would also be required to submit a written report on Year Two activities, data, and conditions.

- The City would pay an upfront penalty of $5,000.00 as settlement of all alleged violations related to 1,4-dioxane discharges beginning on December 1, 2017 through the execution date of the SOC. Stipulated penalties for failure to meet the deadlines and requirements set out in this SOC were also included.
- If the City could not consistently achieve the SOC's effluent compliance value during Year One, the City would be required to submit a report that considers the investigation of alternate or additional treatment processes for removal of 1,4-dioxane at major industrial sources as well as investigation of the technical and economic feasibility of treatment technologies for the removal of 1,4-dioxane at wastewater treatment plants and water treatment facilities.

Figure 1. Map of the Piedmont-Triad area.



II. December 9, 2020 Public Hearing and Comments Summary

A. Summary of November 2020 Public Notice of Revised SOC and Public Hearing

Public notice for consideration of the revised SOC and notification of a public hearing on the matter were published in the Greensboro News & Record on November 6, 2020; Chatham News and Record on November 12, 2020; Raleigh News & Observer on November 8, 2020; Fayetteville Observer on November 11, 2020; and Wilmington StarNews on November 8, 2020. The public notice directed those wishing to find more information about the revised SOC to the DEQ website's "NPDES Wastewater" page under the "Hot Topics" heading. The public hearing was scheduled for Wednesday, December 9, 2020.

DEQ issued a press release on November 9, 2020 about the public notice. Press releases were also issued on November 24, 2020, when the public comment period was extended from December 9, 2020 to December 14, 2020, and on December 7, 2020, as a reminder of the public hearing and comment period. A public hearing was held on Wednesday, December 9, 2020 at 6:00 pm via a Cisco WebEx video conference.

Fifty-three (53) people attended the public hearing, including sixteen (16) staff members of the Division of Water Resources, six (6) employees of the City of Greensboro, two (2) employees of the Southern Environmental Law Center (SELC), two (2) employees of the City of Asheboro, three (3) employees of the Town of Cary, three (3) employees of the Fayetteville Public Works Commission, one (1) employee of the Piedmont Triad Regional Water Authority, one (1) member of the Haw River Assembly, one (1) consultant for the Fayetteville Public Works Commission, two (2) consultants for the City of Reidsville, one (1) employee of Shamrock Environmental, two (2) members of the news media, and twelve (12) members of the public. The hearing was called to order by EMC Commissioner Marion Deerhake, the Hearing Officer for the event. Commissioner Deerhake offered opening comments regarding the hearing and its scope. A presentation on the revised SOC was provided by Brianna Young, DEQ Division of Water Resources Compliance and Expedited Permitting Unit. Commissioner Deerhake informed attendees that all comments were due no later than December 14, 2020 in order to be included in the record.

Three (3) individuals registered in advance of the hearing to provide oral comments.

After ensuring that all attendees who wished to speak had been given that opportunity, the assembled group was reminded of their opportunity to submit written comments on the matter by noon (12:00 p.m.) on Monday, December 14.

Items providing documentation of the public notice, public hearing, and public comment are identified in Appendices A through Q of this report.

B. Summary of Comments Received During Public Hearing and Public Notice Period on the Revised SOC with Responses

The Division received oral comments from three (3) commenters during the public hearing and written comments from five (5) commenters by the comment deadline. The following is a summary of the comments received during the December 9, 2020 public hearing and the emails and other written comments received by DWR during the public comment period.

1. A common concern raised was that the current 1,4-dioxane compliance values within the SOC are too lenient. Commenters recommended lowering the effluent compliance values for both years of the SOC, with suggestions of 35 µg/L, 1.0 µg/L, 0.35 µg/L, or the current discharge value at T.Z. Osborne WWTP. Some commenters stated that the SOC makes no effort to encourage the City of Greensboro to reduce concentrations to the lowest possible level.

Response: The North Carolina narrative standard for toxic substances [15A NCAC 02B .0208(a)(2)(A)(ii)] sets guidelines to calculate an instream target value, which equates to 0.35 µg/L for 1,4-dioxane in water supply (WS) classified waters (a value to protect the occurrence of 1 excess incidence of cancer in 1,000,000 people, referred to as a "1 in 1,000,000 cancer risk"). DEQ negotiated with the City to set a Year One compliance value of 50 µg/L and to conform with the EPA Health Advisory level of 35 µg/L (a 1 in 10,000 cancer risk) for Year Two. These compliance values were agreed upon as the purpose of the revised SOC is to protect downstream drinking

water sources at the EPA Health Advisory level of 35 µg/L. Based on public comments, the Year One and Year Two compliance values will be decreased to 45 µg/L and 33 µg/L, respectively. This also allows the City's pretreatment program to work as designed and allows industry to develop long-term solutions to decrease the concentration in the future. DEQ's future goal is to reach instream surface water concentrations lower than 35 µg/L for 1,4-dioxane. DEQ will take future action at the end of the SOC to work with the City towards the North Carolina instream target value of 0.35 µg/L. Reaching this instream target value is not possible at this time due to technology limitations, sampling method limitations, and the need to address the sources of background concentrations of 1,4-dioxane that have been discovered in surface waters of the Piedmont-Triad area (Appendix M).

2. Commenters expressed concern about the issue of transparency and requested for City and DEQ activities and documents (such as slug control plan and source reduction plan) be available to the public.

Response: Based on public comments received, the proposed SOC shall require effluent sampling results be posted on the City's website, along with other documents required by the proposed SOC. Some items the commenters requested be made publicly available (such as the slug control plan and source reduction program) are part of the City's delegated pretreatment program but are still part of the public record and will be reviewed during DEQ inspections and audits. The public may request information, at any time, if they wish to review it.

3. Commenters requested that the SOC require that downstream drinking water users be notified of any potential spikes of 1,4-dioxane as soon as possible.

Response: The proposed SOC requires that the City report by telephone within 24 hours to the Division's Winston-Salem Regional Office (WSRO) after receiving any data (including any individual result from a grab, composite, or split sample if taken) indicating a T.Z. Osborne WWTP effluent 1,4-dioxane concentration greater than the SOC Year's Compliance Value (45 µg/L in Year One and 33 µg/L in Year Two). The City is also required to submit a written report on any finalized data regarding the exceedance, its cause, effects, and its duration to WSRO within 5

business days by email of the City's first knowledge of the exceedance. Current laboratory technology for analyzing 1,4-dioxane samples involves a waiting time for results of anywhere between 3 to 14 days. Therefore, it is difficult to disseminate this information to downstream stakeholders in a more timely fashion. However, if after review of sampling results DEQ determines that the City's effluent discharge has the potential to cause concentrations of the 1,4-dioxane in downstream drinking water supplies to exceed the EPA Health Advisory concentration of 35 µg/L, DEQ will notify the downstream water treatment plants as soon as possible. DEQ currently notifies downstream water treatment plants of sanitary sewer overflows and other releases that have the potential to impact drinking water.

4. Commenters requested that the City increase Significant Industrial User (SIU) monitoring frequency to ensure appropriate pretreatment program supervision.

Response: Per 40 CFR 403.8 (Pretreatment Program Requirements: Development and Implementation by POTW), the City has been delegated authority to oversee its pretreatment program; therefore, the City has the authority to determine the inspection frequency. The revised SOC requires "select SIUs" (i.e., those sources discharging greater than 100 µg/L of 1,4-dioxane to the WWTP collection system) be inspected two times per year; however, based on comments received, the inspection frequency of these select SIUs will be increased to three times per year.

5. One commenter expressed concern that indirect dischargers are not adequately addressed in the SOC and that such concentration loads should also be restricted to not exceed established annual compliance values.

Response: Indirect dischargers are not point sources like some industries and, therefore, are more difficult to monitor and control. Negotiations between DEQ and the City have determined that addressing dischargers less than 100 µg/L is outside the scope of this proposed SOC. The purpose of the proposed SOC is to protect public drinking water sources downstream of the T.Z. Osborne WWTP effluent discharge by identifying and working with larger dischargers to the City's collection system.

6. Commenters advocated for DEQ to create a clear and transparent long-term watershed management strategy for 1,4-dioxane with 0.35 µg/L as its target value.

Response: While a comprehensive watershed management strategy for the entire Cape Fear River Basin, as well as a watershed-wide water quality model, would be valuable, DEQ's position is that such efforts should be part of a larger basinwide program and are not achievable within the scope of this SOC.

7. Commenters stated that DEQ should assist Greensboro to set a numeric value for the 1,4-dioxane mass balance if the result exceeds the SOC Year Two compliance value.

Response: Year Two of the proposed SOC requires the City of Greensboro to calculate a T.Z. Osborne WWTP effluent 1,4-dioxane mass balance using all data (industrial, domestic, commercial, drinking water, collection system) and submit to DEQ. DEQ is willing to provide assistance to the City if requested on how to develop the mass balance. The mass balance shall be based on the SOC compliance values.

8. Commenters stated that DEQ and the City of Greensboro have known about 1,4-dioxane discharges for years, and that it is unclear if the SOC will truly protect the drinking water supplies.

Response: The purpose of the proposed SOC is to reduce concentrations of 1,4-dioxane being discharged into the receiving stream in order to protect drinking water sources downstream of the T.Z. Osborne WWTP effluent discharge. This will be done by establishing a discharge concentration level aimed to protect the public water supply intakes at the EPA published Health Advisory level of 35 µg/L at the drinking water intakes.

9. Commenters stated that the City should already know what industrial polluters are sending to their WWTP and implementing permit limits through the pretreatment program.

Response: By October 2015, the City's voluntary source reduction program identified one of its SIUs as a quantifiable source of 1,4-dioxane to the T.Z. Osborne WWTP.

10. Commenters stated that SIUs should be identified and held responsible for treating their own waste, and that the City and DEQ must require industries to stop discharging 1,4-dioxane.

Response: By October 2015, the City's voluntary source reduction program identified one of its SIUs as a quantifiable source of 1,4-dioxane to the T.Z. Osborne WWTP. The SIU voluntarily agreed to conduct its own source reduction plan, since which the discharge of 1,4-dioxane from the T.Z. Osborne WWTP has decreased by over 50% from February 2016 to present.

11. Commenters stated DEQ has taken a different approach with the City of Greensboro on the T.Z. Osborne WWTP discharge of unpermitted pollutants than that which DEQ took with Chemours' discharge of unpermitted pollutants.

Response: DEQ approaches facilities individually to address compliance concerns as each facility in the state is unique in its circumstances. Chemours differs from the T.Z. Osborne WWTP because Chemours has direct control over what is in its discharge. In contrast, the T.Z. Osborne WWTP does not generate 1,4-dioxane. Its pretreatment program authority is intended to give the City means to protect its collection and treatment systems by regulating the wastewater influent from industrial sources. The City's pretreatment program is inspected annually by the DEQ Division of Water Resources.

12. Commenter stated that DEQ should revise the SOC or the EMC should reject the SOC if DEQ does not, as the SOC takes a largely voluntary approach and is contrary to rules for SOCs as the SOC makes no effort to hold the City of Greensboro to the best it can to remove 1,4-dioxane or provide a pathway to achieve compliance with state water quality standards.

Response: It is DEQ's position that the proposed SOC will work toward protecting drinking water sources for downstream users as the effluent concentration discharged from the City's WWTP is required to be less than the EPA drinking water Health Advisory of 35 µg/L by the start of SOC Year Two. In addition to the proposed SOC requirement that the City meet these compliance

values, they will also be required to perform other investigative actions. DEQ will follow the City's progress and work with the City towards reducing the concentration of 1,4-dioxane being discharged from the T.Z. Osborne WWTP in its effluent. In the future, DEQ intends to work with other WWTPs and/or industries across the state to address 1,4-dioxane being released into the environment to achieve the 1,4-dioxane instream target value. In addition, in 2021, DEQ will propose for the EMC's consideration a 1,4-dioxane instream surface water quality standard as part of the Clean Water Act's required Triennial Review rulemaking.

13. Commenters stated the City of Greensboro currently has an unpermitted discharge of 1,4-dioxane in violation of the Clean Water Act, and that the NPDES permit should have limits for 1,4-dioxane added based on what technology can achieve.

Response: The City's current NPDES permit expired on June 30, 2019 but has been administratively continued as the City's renewal application was received on November 26, 2018. The facility's NPDES permit does not currently contain discharge limits for 1,4-dioxane. However, during this permit renewal review, 1,4-dioxane permit limits and monitoring will be part of the evaluation, and DEQ will determine how to address 1,4-dioxane in the City's new permit.

Table 1. Summary of public comments and responses

Comment	Response
Current compliance values within the SOC are too lenient - values should be lowered. SOC makes no effort to encourage the City to reduce to lowest possible concentrations.	The Year One and Year Two compliance values will be decreased to 45 µg/L and 33 µg/L, respectively. Reaching the NC instream target value of 0.35 µg/L is not possible at this time due to technology limitations, sampling method limitations, and the need to address the sources of background concentrations of 1,4-dioxane in surface waters.
Concern expressed about transparency. Request for City and DEQ activities and documents be publicly available.	Proposed SOC shall require effluent sampling results and other SOC documents be posted on City's website. Public may request information, such as inspections and audits, at any time.
SOC should require downstream drinking water users be notified of any potential spikes of 1,4-dioxane as soon as possible.	Proposed SOC requires the City report within 24 hours after receiving any data indicating a WWTP effluent 1,4-dioxane concentration greater than the SOC Compliance Value. Current laboratory technology involves a results

Comment	Response
	waiting time of 3 to 14 days. If DEQ determines effluent discharge has potential to cause 1,4-dioxane concentrations in downstream drinking water supplies to exceed 35 µg/L, DEQ will notify downstream water treatment plants as soon as possible.
City should increase SIU monitoring frequency to ensure appropriate pretreatment program supervision.	The proposed SOC will increase inspection frequency of select SIUs to three times per year.
Indirect dischargers are not adequately addressed in the SOC and their 1,4-dioxane loads should be restricted to not exceed established annual compliance values.	Indirect dischargers are not point sources and, therefore, are more difficult to monitor and control. Negotiations between DEQ and the City determined that addressing dischargers less than 100 µg/L is outside the scope of this SOC.
DEQ should create a transparent, long-term 1,4-dioxane watershed management strategy.	Such efforts should be part of a larger basinwide program and not achievable within the scope of this SOC.
DEQ should assist the City to set a numeric value for the 1,4-dioxane mass balance if the result exceeds the SOC Year Two compliance value.	DEQ is willing to provide assistance to the City if requested on how to develop the mass balance. The mass balance shall be based on the SOC compliance values.
DEQ and the City have known about 1,4-dioxane discharges for years, and it is unclear if the SOC will truly protect drinking water supplies.	The purpose of this SOC is to protect the public water supply intakes at the EPA published Health Advisory level of 35 µg/L at the drinking water intakes.
City should already know what industrial polluters are sending to their WWTP and implement permit limits through the pretreatment program.	By October 2015, the City identified one of its SIUs as a quantifiable source of 1,4-dioxane, who then began sampling and source reduction.
SIUs should be identified and held responsible for treating their own waste. The City and DEQ must require industries to stop discharging 1,4-dioxane.	The identified SIU voluntarily implemented its own source reduction plan, reducing 1,4-dioxane discharge to the T.Z. Osborne WWTP by over 50% since February 2016.
DEQ has taken a different approach with the City than it took with Chemours' discharge of unpermitted pollutants.	DEQ approaches facilities individually to address compliance concerns. Chemours has direct control over what is in its discharge. The T.Z. Osborne WWTP does not generate 1,4-dioxane. Its pretreatment program authority is intended to give the City means to protect its collection and treatment systems by regulating the wastewater influent from industrial sources.
DEQ should revise the SOC or the EMC should reject the SOC if DEQ does not as the SOC takes a largely voluntary approach and is contrary to rules for SOCs. The SOC	SOC will work toward protecting drinking water sources for downstream users as the effluent concentration discharged from the City's WWTP is required to be less than the

Comment	Response
makes no effort to hold the City to the best it can to remove 1,4-dioxane or provide a pathway to achieve compliance with state water quality standards.	EPA drinking water Health Advisory of 35 µg/L by the start of SOC Year Two. In the future, DEQ intends to work with other WWTPs and/or industries across the state to address 1,4-dioxane being released into the environment to achieve the NC 1,4-dioxane instream target value of 0.35 µg/L.
The City's NPDES permit should have limits for 1,4-dioxane added based on what technology can achieve.	During the facility's next permit renewal review, 1,4-dioxane permit limits and monitoring will be part of the evaluation.

III. Recommendations

The Hearing Officer recommends that the Environmental Management Commission approve the proposed SOC as presented in Appendix Q, which has been signed by the City of Greensboro, and that the Chairman's signature be affixed to the document to effect its complete execution.

Revisions include:

- Reduces compliance values for 1,4-dioxane in SOC Year One from 50 µg/L to 45 µg/L and in Year Two from 35 µg/L to 33 µg/L.
- Clarifies that wastewater effluent analyses and reports are also required with sampling throughout the SOC.
- Requires certain SOC documents to be put on the City's website to increase transparency of data and information to address 1,4-dioxane.
- Increases inspection frequency of select SIUs (those discharging greater than 100 µg/L of 1,4-dioxane) from two times per year to three times per year.
- Clarifies language of "meet" SOC compliance values to state the City "shall not exceed" Year One and Year Two compliance values.
- In addition to the existing requirement to meet during Year One, add a requirement for the City to meet with DEQ during Year Two on a quarterly basis to present progress updates and provide a written meeting summary.
- Includes deadline for submission to DEQ of an implementation schedule for Best Management Practices (BMP) that must be approved by DEQ before the City can proceed.

- Adds direct callouts in the stipulated penalties table to the applicable SOC sections.
- Includes a stipulation that the SOC effective date shall not be prior to May 1, 2021.

IV. Appendices

Appendix A	SOC Application
Appendix B	Publicly Noticed Revised SOC Signed by the City of Greensboro
Appendix C	Public Notices of the SOC and Public Hearing
Appendix D	Affidavits and Notices of Public Notice from the *Greensboro News & Record, Chatham News and Record, Raleigh News & Observer, Fayetteville Observer, and Wilmington StarNews*
Appendix E	Pre-Registered Attendees
Appendix F	All Virtual Hearing Attendees
Appendix G	Public Hearing Presentation
Appendix H	Emailed Comments Submitted by Therese Vick (Blue Ridge Environmental Defense League)
Appendix I	Emailed Comments Submitted by Jeannie Ambrose (Private Citizen)
Appendix J	Emailed Comments Submitted by Emily Sutton (Haw River Assembly)
Appendix K	Emailed Comments Submitted by Geoff Gisler (Southern Environmental Law Center)
Appendix L	Emailed Comments Submitted by Mick Noland (Fayetteville Public Works Commission)
Appendix M	Frequently Asked Questions (FAQ)
Appendix N	EPA 2017 Technical Fact Sheet
Appendix O	EPA 2018 Drinking Water Health Advisory
Appendix P	DEQ NOV to the City of Greensboro
Appendix Q	Proposed SOC Signed by the City of Greensboro

519-010

A17

City of Greensboro
North Carolina

Water Resources Department

November 20, 2019 Certified Mail 7015 0640 0006 7211 3612 Return Receipt Requested

NC Department of Environmental Quality
NPDES Compliance & Expedited Permit Unit
1617 Mail Service Center
Raleigh, North Carolina 27600-1617

RE: City of Greensboro Special Order By Consent for T. Z. Osborne NCDES Permit NC0047384

To Whom It May Concern:

Enclosed please find an original and two (2) copies of a Special Order by Consent Application package that includes:

- City of Greensboro SOC Application (with narrative for Parts IV. And VI.) signed by Steven D. Drew, Water Resources Director
- Hazen and Sawyer Engineers Certification (to address Part V.) signed by Aaron D. Babson, P. E.
- City of Greensboro City Council Resolution authorizing the City of Greensboro to enter into a Special Order by Consent with NCDEQ/Environmental Management Commission with signatures of: Mayor, Nancy Vaughan; Mayor Pro Tem Yvonne J. Johnson; and City Attorney Charles Watts

Please feel free to contact me if you need additional information.

Steven D. Drew
Water Resources Director

cc: Mike Borchers, Water Resources Department Assistant Director (via email)
Elijah Williams, Water Reclamation Manager (via email)
Bradley Flynt, T. Z. Osborne ORC (via email)
Martie Groome, Laboratory and Industrial Waste Section Supervisor (via email)
Alicia Goots, Laboratory Coordinator (via email)
Andrew Kelly, City of Greensboro Assistant City Attorney (via email)
Julie Grzyb, NCDEQ, NPDES Supervisor (via email)
Lon Snider, NCDEQ, Winston Salem Regional Office Supervisor (via email)
Glenn Dunn, Poyner Spruill (via email)

RECEIVED
NCDEQ/DWR
21 NOV 2019
Non-Discharge
Permitting Unit

19-0750
315-19

A18 #6

RESOLUTION FOR A SPECIAL ORDER BY CONSENT (SOC)
BETWEEN THE CITY OF GREENSBORO AND THE
NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY

WHEREAS, Water Resources requests approval to pursue and negotiate a Special Order by Consent (SOC) with the North Carolina Department of Environmental Quality;

WHEREAS, the T. Z. Osborne Water Reclamation Facility has a permit to discharge treated wastewater to South Buffalo Creek, a tributary to the Haw River, classified WS-V waters of this State in the Cape Fear River Basin;

WHEREAS, the discharge is allowed under National Pollutant Discharge Elimination System (NPDES) Permit Number NC0047384 effective July 1, 2014, and expired on June 30, 2019, and administratively extended until reissued by the state;

WHEREAS, the City of Greensboro has voluntarily worked to reduce the concentrations of the unregulated constituent, 1,4-dioxane, discharged from the T. Z. Osborne Water Reclamation Facility;

WHEREAS, the SOC will officially outline the steps that Greensboro will continue to take to further reduce concentrations of 1,4-dioxane in order to protect downstream drinking water sources;

WHEREAS, the T. Z. Osborne Water Reclamation Facility agrees to maintain and operate the wastewater treatment system at its maximum level of efficiency during the interim period of the Special Order by Consent and thereafter; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GREENSBORO:

That the City is authorized to enter into a Special Order by Consent from the Environmental Management Commission and the City hereby authorizes Steven D. Drew, Water Resources Director, to sign and execute this document on behalf of the City of Greensboro.

THE FOREGOING RESOLUTION WAS ADOPTED
BY THE CITY COUNCIL OF THE CITY OF
GREENSBORO ON THE 19th DAY
OF NOVEMBER, 2019

Tebony C. Rose
DEPUTY CITY CLERK

APPROVED AS TO FORM

CITY ATTORNEY

Yvonne J. Johnson

Nancy Vaughan

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

APPLICATION FOR A SPECIAL ORDER BY CONSENT (SOC)

I. PERMIT RELATED INFORMATION:

1. Applicant (corporation, individual, or other): ***CITY OF GREENSBORO***

2. Print or Type Owner's or Signing Official's Name and Title:

STEVEN D. DREW, WATER RESOURCES DIRECTOR

3. Facility Name (as shown on Permit): ***T. Z. OSBORNE WWTP***

4. Owner Phone: ***(336) 373-7893*** *(or)*

5. Owner Email: ***steve.drew@greensboro-nc.gov***

4. Application Date: ***NOVEMBER 20, 2019***

5. NPDES Permit No. (if applicable): ***NC0047384***

6. Name of the specific wastewater treatment facility (*if different from I.3. above*):

SAME

II. PRE-APPLICATION MEETING:

Prior to submitting this completed application form, applicants must meet with the appropriate regional office staff to discuss whether or not an SOC is appropriate for this situation. Please note the date this meeting occurred and who represented the permittee: Representative: _____ Date: ***10-23-2019***.

DEQ WSRO Staff: Lon Snider, Jenny Graznak DEQ Raleigh Staff: Jeff Poupart, Julie Grzyb
City of Greensboro Staff: Elijah Williams, Martie Groome, Alicia Goots

III. ADDITIONAL FLOW OR FLOW REALLOCATION: *NOT APPLICABLE*

In accordance with NCGS 143-215.67(b), only facilities owned by a unit of government may request additional flow.

Additional flow may be allowed under an SOC only in specific circumstances. These circumstances may include eliminating discharges that are not compliant with an NPDES or Non-discharge permit. These circumstances do not include failure to perform proper maintenance of treatment systems, collection systems or disposal systems. When requesting additional flow, the facility must include its justification and supporting documentation.

If the requested additional flow is **non-domestic**, the facility must be able to demonstrate the ability to effectively treat the waste and dispose of residuals. The applicant must provide a detailed analysis of the constituents in the proposed non-domestic wastewater.

The total domestic additional flow requested: _____ gallons per day.

The total non-domestic additional flow requested: _____ gallons per day.

The total additional flow (*sum of the above*): _____ gallons per day.

Please attach a detailed description or project listing of the proposed allocation for additional flow, with an explanation of how flow quantities were estimated. Further, any additional flow requested must be justified by a complete analysis, by the permittee, that additional flow will not adversely impact wastewater collection/treatment facilities or surface waters.

IV. NECESSITY NARRATIVE:

Please attach a narrative providing a detailed explanation of the circumstances regarding the necessity of the proposed SOC. Include the following issues:

- **Existing and/or unavoidable future violations(s) of permit conditions or limits(s),
- The existing treatment process and any process modifications that have been made to date to ensure optimum performance of existing facilities, ***NOT APPLICABLE***
- Collection system rehabilitation work completed or scheduled (including dates),
- **Coordination with industrial users regarding their discharges or pretreatment facilities. Identify any non-compliant significant industrial users and measure(s) proposed or already taken to bring the pretreatment facilities back into compliance. If any industrial facilities are currently under consent agreements, please attach these agreements,
- **Date and outcome of last Industrial Waste Survey, ** ***SEE NARRATIVE***
- Whether or not the facility is acting as a regional facility receiving wastewater from other municipalities having independent pretreatment programs. ***NOT APPLICABLE***

V. CERTIFICATION:

The applicant must submit a report prepared by an independent professional with expertise in wastewater treatment. This report must address the following:

- An evaluation of existing treatment units, operational procedures and recommendations as to how the efficiencies of these facilities can be maximized. The person in charge of such evaluation must sign this document.
- A certification that these facilities could not be operated in a manner that would achieve compliance with final permit limits. The person making such determination must sign this certification.
- The effluent limits that the facility could be expected to meet if operated at their maximum efficiency during the term of the requested SOC (be sure to consider interim construction phases).
- Any other actions taken to correct problems prior to requesting the SOC.

VI. PREDICTED COMPLIANCE SCHEDULE:

The applicant must submit a detailed listing of activities along with time frames that are necessary to bring the facility into compliance. This schedule should include milestone dates for beginning construction, ending construction, and achieving final compliance at a minimum. In determining the milestone dates, the following should be considered:

- Time for submitting plans, specifications and appropriate engineering reports to DWR for review and approval. ***NOT APPLICABLE***
- Occurrence of major construction activities that are likely to affect facility performance (units out of service, diversion of flows, etc.) to include a plan of action to minimize impacts to surface waters. ***NOT APPLICABLE***
- Infiltration/Inflow work, if necessary. ***NOT APPLICABLE***
- **Industrial users achieving compliance with their pretreatment permits if applicable.
- Toxicity Reduction Evaluations (TRE), if necessary. ***NOT APPLICABLE***

VII. FUNDING SOURCES IDENTIFICATION:

The applicant must list the sources of funds utilized to complete the work needed to bring the facility into compliance. Possible funding sources include but are not limited to loan commitments, bonds, letters of credit, block grants and cash reserves. The applicant must show that the funds are available, or can be secured in time to meet the schedule outlined as part of this application.

If funding is not available at the beginning of the SOC process, the permittee must submit a copy of all funding applications to ensure that all efforts are being made to secure such funds.

Note: A copy of the application should be sufficient to demonstrate timeliness unless regional office has reason to request all information associated with securing funding.

THE DIVISION OF WATER RESOURCES WILL NOT ACCEPT THIS APPLICATION PACKAGE UNLESS ALL OF THE APPLICABLE ITEMS ARE INCLUDED WITH THE SUBMITTAL.

Required Items:

a. One original and two copies of the completed and appropriately executed application form, along with all required attachments.

   - If the SOC is for a City / Town, the person signing the SOC must be a ranking elected official or other duly authorized employee.
   - If the SOC is for a Corporation / Company / Industry / Other, the person signing the SOC must be a principal executive officer of at least the level of vice-president, or his duly authorized representative.
   - If the SOC is for a School District, the person signing the SOC must be the Superintendent of Schools or other duly authorized employee.

Note: Reference to signatory requirements in SOCs may be found in the North Carolina Administrative Code [T15A NCAC 2H .1206(a)(3)].

b. The non-refundable Special Order by Consent (SOC) processing fee of $400.00. A check must be made payable to The Department of Environment and Natural Resources. **[DEPARTMENT OF ENVIRONMENTAL QUALITY]**

c. An evaluation report prepared by an independent consultant with expertise in wastewater. (in triplicate)

APPLICANT'S CERTIFICATION:
(NO MODIFICATION TO THIS CERTIFICATION IS ACCEPTABLE)

I, ***STEVEN D. DREW***, attest this application for a Special Order by Consent (SOC) has been reviewed by me and is accurate and complete to the best of my knowledge. I understand if all required parts of this application are not completed and if all required supporting information and attachments are not included, this application package may be returned as incomplete. *(Please be advised that the return of this application does not prevent DWR from collecting all outstanding penalties upon request).* **Furthermore, I attest by my signature that I fully understand that an upfront penalty, which may satisfy as a full settlement of outstanding violations, may be imposed.** {Note: Reference to upfront penalties in Special Orders by Consent may be found in the North Carolina Administrative Code [T15A NCAC 2H .1206(c)(3)].}

Signature of Signing Official Date 11/20/19

STEVEN D. DREW
Printed Name of Signing Official

THE COMPLETED APPLICATION PACKAGE, INCLUDING THE ORIGINAL AND TWO COPIES OF ALL SUPPORTING INFORMATION AND MATERIALS, SHOULD BE SENT TO THE FOLLOWING ADDRESS:

NORTH CAROLINA DIVISION OF WATER RESOURCES
NPDES COMPLIANCE & EXPEDITED PERMIT UNIT
1617 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1617

IF THIS APPLICATION IS FOR A NON-DISCHARGE SYSTEM, THEN SEND TO:

NORTH CAROLINA DIVISION OF WATER QUALITY
AQUIFER PROTECTION SECTION
1636 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1636

NARRATIVE ADDENDUM:
City of Greensboro Special Order by Consent (SOC) Application - November 20, 2019

IV. NECESSITY NARRATIVE:

Please attach a narrative providing a detailed explanation of the circumstances regarding the necessity of the proposed SOC. Include the following issues:

- **Existing and/or unavoidable future violations(s) of permit conditions or limits(s),

Although the T. Z. Osborne WWTP does not currently have an NPDES permit limit for 1,4-dioxane, the City of Greensboro seeks an SOC to provide documentation and guidance for the continued proactive voluntary activities to address and further reduce the levels of 1,4-dioxane discharged from the WWTP. Our ultimate goal is to be good stewards of the environment by protecting downstream drinking water supplied and water quality standards.

- **Coordination with industrial users regarding their discharges or pretreatment facilities. Identify any non-compliant significant industrial users and measure(s) proposed or already taken to bring the pretreatment facilities back into compliance. If any industrial facilities are currently under consent agreements, please attach these agreements,

The City of Greensboro developed and implemented a 1,4-dioxane investigation and reduction plan in 2015. The plan included a literature search, WWTP and collection system trunkline sampling and analyses. We also facilitated meetings, in coordination with industrial users, NCDEQ, and other WWTPs. After seven months of sampling, analyses, and data review, the investigation indicated Shamrock Environmental Corporation (Shamrock) was the significant source.

When notified, Shamrock voluntarily implemented their own 1,4-dioxane investigation and reduction strategy that included source reduction and the addition of 1,4-dioxane to their waste characterization review for each client. In addition, Shamrock has committed to explore the latest technology and pretreatment systems for 1,4-dioxane reduction.

The City of Greensboro will continue to oversee the work with Shamrock, which could include a consent agreement and/or a SIU Permit modification.

- **Date and outcome of last Industrial Waste Survey,

The City of Greensboro submitted an Industrial Waste Survey (IWS) to NCDEQ Pretreatment Staff on October 1, 2019. Over 768 industrial users were contacted, surveyed, and/or visited during the process. Five industrial dischargers were identified for further follow-up activities (Wastewater Permit Application submittal, on-site visits, etc.) to determine if they meet the EPA definition of Significant Industrial User. A report on the final resolutions for the five outstanding dischargers will be submitted to NCDEQ by January 1, 2020.

VI. PREDICTED COMPLIANCE SCHEDULE:

The applicant must submit a detailed listing of activities along with time frames that are necessary to bring the facility into compliance. This schedule should include milestone dates for beginning construction, ending construction, and achieving final compliance at a minimum. In determining the milestone dates, the following should be considered:

- **Industrial users achieving compliance with their pretreatment permits if applicable.

SOC Year One:

- *Review and modify, if necessary, previous monitoring plan from 2015*
  - *Revisit trunkline monitoring (1600 miles of sewer line) at previously identified junction locations, including North Buffalo Transfer Line*
  - *Determine other minor sources of 1,4-dioxane*
  - *Investigate and determine background levels of 1,4-dioxane*
  - *Compile data, validate results, determine findings and further actions*
- *Continue collaboration and oversight of Shamrock Environmental re: discharge of 1,4-dioxane*
  - *Review voluntary source reduction program and slug control plan*
  - *Increase inspection of Shamrock to twice per year*
- *Contact, interview and survey identified minor sources*
- *Report all T.Z. Osborne effluent 1,4-dioxane results by email to NCDEQ as soon as all data is received and has been validated, to allow NCDEQ to notify interested parties*
  - *Increase T.Z. Osborne 1,4-dioxane effluent eDMR monitoring frequency to 2/month when NCDEQ Special Study ends*
- *Within 12 months of effective date of SOC, submit report to NCDEQ on Year One activities.*

SOC Year Two:

- *Work with minor sources to reduce or eliminate 1,4-dioxane discharges*
- *Based on NCDEQ Special Study including City of Greensboro split sample data, determine:*
  - *Long-term achievable effectiveness of Shamrock's source reduction efforts and resulting T. Z. Osborne WWTP effluent reductions*
  - *Calculate T. Z. Osborne 1,4-dioxane mass balance using all data (industrial, domestic, and collection system data)*
- *Within 24 months of effective date of SOC, submit report to NCDEQ on Year Two activities.*

SOC Year Three:

- *Based on information generated in Years One and Two, determine, along with NCDEQ, a T. Z. Osborne WWTP effluent target that is technically based, attainable and protective. This target would also include consideration of background concentrations in incoming potable water, domestic discharges, and other uncontrollable sources.*
- *Conduct headworks analysis calculations for 1,4-dioxane relative to target effluent concentration*
  - *Implement headworks analysis via Industrial User Wastewater Discharge Permits*
- *Within 36 months of effective date of SOC, submit report to NCDEQ on Year Three activities.*

Hazen *Technical Memorandum*

November 16, 2019

To: Steven D. Drew
Director of Water Resources
City of Greensboro, NC
Water Resources Department

From: Patricia Drummey Stiegel, PE
Aaron D. Babson, PE

cc: Elijah L. Williams, PE
Martie Groome
Bradley Flynt

Re: Certification of T.Z. Osborne WWTP Treatment Capabilities
NPDES Permit No. NC0047384

Special Order by Consent Third Party Certification of TZ Osborne WWTP

Introduction

The TZ Osborne WWTP is a conventional wastewater treatment facility that consistently complies with effluent limits. It does not have treatment processes designed to remove emerging constituents such as 1,4-Dioxane. This memorandum addresses Section V-Certification of the Application for a Special Order by Consent.

Hazen

November 16, 2019

1. Evaluation of existing treatment units, operational procedures and recommendations as to how the efficiencies of the T.Z. Osborne WWTP can be maximized

The T.Z. Osborne Wastewater Treatment Plant is a 40-mgd treatment facility designed to meet all existing NPDES permit requirements. Improvements are underway to expand the plant to 56 mgd and upgrade the secondary process to Biological Nutrient Removal (BNR). Treatment processes at the plant include preliminary, primary, secondary, and tertiary conventional wastewater treatment.

Preliminary treatment includes step screens followed by influent pumping. The influent pump station has a firm capacity of 75 mgd, consisting of four 25 mgd vertical, centrifugal non-clog pumps that operate on variable frequency drives. Stirred vortex grit removal follows the influent pump station.

The T.Z. Osborne WWTP has 6 primary clarifiers, 4 rectangular and 2 circular, which receive flow from the preliminary treatment facilities.

The secondary treatment facilities at the T.Z. Osborne WWTP include the following: aeration basins, secondary clarifiers, return activated sludge (RAS) and waste activated sludge (WAS) pumping and aeration equipment for providing oxygen to the biological process. There are a total of 12 aeration basins, with Basins 1-4 having twice the capacity of the other basins. The aeration basins currently operate in a two-stage process. T.Z. Osborne WWTP has a total of 10 circular secondary clarifiers, 7 with a diameter of 130 feet and 3 with a diameter of 160 feet.

Tertiary treatment includes filtration and disinfection. The facility has a total of 6 traveling bridge cloth media filters, and filtration is followed by sodium hypochlorite disinfection. A total of 6 chlorine contact tanks provide contact time for disinfection. Sodium bisulfite is then dosed to remove residual sodium hypochlorite before treated effluent is discharged to South Buffalo Creek in the Cape Fear River Basin.

The plant is operated in an efficient manner. The T.Z. Osborne WWTP is not capable of treating 1,4-Dioxane and therefore, operational changes are not available to remove this constituent.

2. Certification T.Z. Osborne WWTP could not be operated to remove 1,4-Dioxane to achieve compliance with final permit limits

1,4-Dioxane is a synthetic industrial chemical and is often a by-product present in many goods, including paint strippers, dyes, greasers, antifreeze and aircraft deicing fluids and in some consumer products. T.Z. Osborne WWTP operates under an existing NPDES permit that does not include 1,4-Dioxane effluent limits. The plant is not designed to remove 1,4-Dioxane and does not have the capability to treat this constituent with existing conventional treatment or after the completion of ongoing upgrades.

Hazen

November 16, 2019

3. The effluent limits that the facility could be expected to meet if operated at their maximum efficiency during the term of the requested SOC (be sure to consider interim construction phases).

Not Applicable for this SOC

4. Any other actions taken to correct problems prior to requesting the SOC

The City of Greensboro submitted a "Corrective Action Plan" to NC DEQ NPDES/Pretreatment on September 23, 2019. This document outlines activities by the City of Greensboro Industrial Waste Section in relation to locating sources of and reducing discharges of 1,4-Dioxane to the Greensboro sanitary sewer system.

City of Greensboro
North Carolina

Water Resources Department

November 20, 2019 Certified Mail 7015 0640 0006 7211 3612 Return Receipt Requested

RECEIVED
DEC 02 2019
NCDEQ/DWR/NPDES

NC Department of Environmental Quality
NPDES Compliance & Expedited Permit Unit
1617 Mail Service Center
Raleigh, North Carolina 27600-1617

RE: City of Greensboro Special Order By Consent for T. Z. Osborne NCDES Permit NC0047384

To Whom It May Concern:

Enclosed please find an original and two (2) copies of a Special Order by Consent Application package that includes:

- City of Greensboro SOC Application (with narrative for Parts IV. And VI.) signed by Steven D. Drew, Water Resources Director
- Hazen and Sawyer Engineers Certification (to address Part V.) signed by Aaron D. Babson, P. E.
- City of Greensboro City Council Resolution authorizing the City of Greensboro to enter into a Special Order by Consent with NCDEQ/Environmental Management Commission with signatures of: Mayor, Nancy Vaughan; Mayor Pro Tem Yvonne J. Johnson; and City Attorney Charles Watts

Please feel free to contact me if you need additional information.

Steven D. Drew
Water Resources Director

cc: Mike Borchers, Water Resources Department Assistant Director (via email)
Elijah Williams, Water Reclamation Manager (via email)
Bradley Flynt, T. Z. Osborne ORC (via email)
Martie Groome, Laboratory and Industrial Waste Section Supervisor (via email)
Alicia Goots, Laboratory Coordinator (via email)
Andrew Kelly, City of Greensboro Assistant City Attorney (via email)
Julie Grzyb, NCDEQ, NPDES Supervisor (via email)
Lon Snider, NCDEQ, Winston Salem Regional Office Supervisor (via email)
Glenn Dunn, Poyner Spruill (via email)

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

APPLICATION FOR A SPECIAL ORDER BY CONSENT (SOC)

I. PERMIT RELATED INFORMATION:

1. Applicant (corporation, individual, or other): ***CITY OF GREENSBORO***

2. Print or Type Owner's or Signing Official's Name and Title:

STEVEN D. DREW, WATER RESOURCES DIRECTOR

3. Facility Name (as shown on Permit): ***T. Z. OSBORNE WWTP***

4. Owner Phone: ***(336) 373-7893*** *(or)*

5. Owner Email: ***steve.drew@greensboro-nc.gov***

4. Application Date: ***NOVEMBER 20, 2019***

5. NPDES Permit No. (if applicable): ***NC0047384***

6. Name of the specific wastewater treatment facility (*if different from I.3. above*):

SAME

II. PRE-APPLICATION MEETING:

Prior to submitting this completed application form, applicants must meet with the appropriate regional office staff to discuss whether or not an SOC is appropriate for this situation. Please note the date this meeting occurred and who represented the permittee: Representative: _____ Date: ***10-23-2019***.

DEQ WSRO Staff: Lon Snider, Jenny Graznak DEQ Raleigh Staff: Jeff Poupart, Julie Grzyb
City of Greensboro Staff: Elijah Williams, Martie Groome, Alicia Goots

III. ADDITIONAL FLOW OR FLOW REALLOCATION: ***NOT APPLICABLE***

In accordance with NCGS 143-215.67(b), only facilities owned by a unit of government may request additional flow.

Additional flow may be allowed under an SOC only in specific circumstances. These circumstances may include eliminating discharges that are not compliant with an NPDES or Non-discharge permit. These circumstances do not include failure to perform proper maintenance of treatment systems, collection systems or disposal systems. When requesting additional flow, the facility must include its justification and supporting documentation.

If the requested additional flow is **non-domestic**, the facility must be able to demonstrate the ability to effectively treat the waste and dispose of residuals. The applicant must provide a detailed analysis of the constituents in the proposed non-domestic wastewater.

The total domestic additional flow requested: _____ gallons per day.

The total non-domestic additional flow requested: _____ gallons per day.

The total additional flow (*sum of the above*): _____ gallons per day.

Please attach a detailed description or project listing of the proposed allocation for additional flow, with an explanation of how flow quantities were estimated. Further, any additional flow requested must be justified by a complete analysis, by the permittee, that additional flow will not adversely impact wastewater collection/treatment facilities or surface waters.

IV. NECESSITY NARRATIVE:

Please attach a narrative providing a detailed explanation of the circumstances regarding the necessity of the proposed SOC. Include the following issues:

- **Existing and/or unavoidable future violations(s) of permit conditions or limits(s),
- The existing treatment process and any process modifications that have been made to date to ensure optimum performance of existing facilities, ***NOT APPLICABLE***
- Collection system rehabilitation work completed or scheduled (including dates),
- **Coordination with industrial users regarding their discharges or pretreatment facilities. Identify any non-compliant significant industrial users and measure(s) proposed or already taken to bring the pretreatment facilities back into compliance. If any industrial facilities are currently under consent agreements, please attach these agreements,
- **Date and outcome of last Industrial Waste Survey, ***** SEE NARRATIVE***
- Whether or not the facility is acting as a regional facility receiving wastewater from other municipalities having independent pretreatment programs. ***NOT APPLICABLE***

V. CERTIFICATION:

The applicant must submit a report prepared by an independent professional with expertise in wastewater treatment. This report must address the following:

- An evaluation of existing treatment units, operational procedures and recommendations as to how the efficiencies of these facilities can be maximized. The person in charge of such evaluation must sign this document.
- A certification that these facilities could not be operated in a manner that would achieve compliance with final permit limits. The person making such determination must sign this certification.
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- Time for submitting plans, specifications and appropriate engineering reports to DWR for review and approval. ***NOT APPLICABLE***
- Occurrence of major construction activities that are likely to affect facility performance (units out of service, diversion of flows, etc.) to include a plan of action to minimize impacts to surface waters. ***NOT APPLICABLE***
- Infiltration/Inflow work, if necessary. ***NOT APPLICABLE***
- **Industrial users achieving compliance with their pretreatment permits if applicable.
- Toxicity Reduction Evaluations (TRE), if necessary. ***NOT APPLICABLE***

VII. FUNDING SOURCES IDENTIFICATION:

The applicant must list the sources of funds utilized to complete the work needed to bring the facility into compliance. Possible funding sources include but are not limited to loan commitments, bonds, letters of credit, block grants and cash reserves. The applicant must show that the funds are available, or can be secured in time to meet the schedule outlined as part of this application.

If funding is not available at the beginning of the SOC process, the permittee must submit a copy of all funding applications to ensure that all efforts are being made to secure such funds.

Note: A copy of the application should be sufficient to demonstrate timeliness unless regional office has reason to request all information associated with securing funding.

THE DIVISION OF WATER RESOURCES WILL NOT ACCEPT THIS APPLICATION PACKAGE UNLESS ALL OF THE APPLICABLE ITEMS ARE INCLUDED WITH THE SUBMITTAL.

Required Items:

a. One original and two copies of the completed and appropriately executed application form, along with all required attachments.

   - If the SOC is for a City / Town, the person signing the SOC must be a ranking elected official or other duly authorized employee.
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Note: Reference to signatory requirements in SOCs may be found in the North Carolina Administrative Code [T15A NCAC 2H .1206(a)(3)].

b. The non-refundable Special Order by Consent (SOC) processing fee of $400.00. A check must be made payable to The Department of Environment and Natural Resources. **[DEPARTMENT OF ENVIRONMENTAL QUALITY]**

c. An evaluation report prepared by an independent consultant with expertise in wastewater. (in triplicate)

APPLICANT'S CERTIFICATION:
(NO MODIFICATION TO THIS CERTIFICATION IS ACCEPTABLE)

I, ***STEVEN D. DREW***, attest this application for a Special Order by Consent (SOC) has been reviewed by me and is accurate and complete to the best of my knowledge. I understand if all required parts of this application are not completed and if all required supporting information and attachments are not included, this application package may be returned as incomplete. *(Please be advised that the return of this application does not prevent DWR from collecting all outstanding penalties upon request).* **Furthermore, I attest by my signature that I fully understand that an upfront penalty, which may satisfy as a full settlement of outstanding violations, may be imposed.** {Note: Reference to upfront penalties in Special Orders by Consent may be found in the North Carolina Administrative Code [T15A NCAC 2H .1206(c)(3)].}

Signature of Signing Official Date 11/20/19

STEVEN D. DREW
Printed Name of Signing Official

THE COMPLETED APPLICATION PACKAGE, INCLUDING THE ORIGINAL AND TWO COPIES OF ALL SUPPORTING INFORMATION AND MATERIALS, SHOULD BE SENT TO THE FOLLOWING ADDRESS:

NORTH CAROLINA DIVISION OF WATER RESOURCES
NPDES COMPLIANCE & EXPEDITED PERMIT UNIT
1617 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1617

IF THIS APPLICATION IS FOR A NON-DISCHARGE SYSTEM, THEN SEND TO:

NORTH CAROLINA DIVISION OF WATER QUALITY
AQUIFER PROTECTION SECTION
1636 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1636

NARRATIVE ADDENDUM:

City of Greensboro Special Order by Consent (SOC) Application - November 20, 2019

IV. NECESSITY NARRATIVE:

Please attach a narrative providing a detailed explanation of the circumstances regarding the necessity of the proposed SOC. Include the following issues:

- **Existing and/or unavoidable future violations(s) of permit conditions or limits(s),

Although the T. Z. Osborne WWTP does not currently have an NPDES permit limit for 1,4-dioxane, the City of Greensboro seeks an SOC to provide documentation and guidance for the continued proactive voluntary activities to address and further reduce the levels of 1,4-dioxane discharged from the WWTP. Our ultimate goal is to be good stewards of the environment by protecting downstream drinking water supplied and water quality standards.

- **Coordination with industrial users regarding their discharges or pretreatment facilities. Identify any non-compliant significant industrial users and measure(s) proposed or already taken to bring the pretreatment facilities back into compliance. If any industrial facilities are currently under consent agreements, please attach these agreements,

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When notified, Shamrock voluntarily implemented their own 1,4-dioxane investigation and reduction strategy that included source reduction and the addition of 1,4-dioxane to their waste characterization review for each client. In addition, Shamrock has committed to explore the latest technology and pretreatment systems for 1,4-dioxane reduction.

The City of Greensboro will continue to oversee the work with Shamrock, which could include a consent agreement and/or a SIU Permit modification.

- **Date and outcome of last Industrial Waste Survey,

The City of Greensboro submitted an Industrial Waste Survey (IWS) to NCDEQ Pretreatment Staff on October 1, 2019. Over 768 industrial users were contacted, surveyed, and/or visited during the process. Five industrial dischargers were identified for further follow-up activities (Wastewater Permit Application submittal, on-site visits, etc.) to determine if they meet the EPA definition of Significant Industrial User. A report on the final resolutions for the five outstanding dischargers will be submitted to NCDEQ by January 1, 2020.

VI. PREDICTED COMPLIANCE SCHEDULE:

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- **Industrial users achieving compliance with their pretreatment permits if applicable.

SOC Year One:

- *Review and modify, if necessary, previous monitoring plan from 2015*
  - *Revisit trunkline monitoring (1600 miles of sewer line) at previously identified junction locations, including North Buffalo Transfer Line*
  - *Determine other minor sources of 1,4-dioxane*
  - *Investigate and determine background levels of 1,4-dioxane*
  - *Compile data, validate results, determine findings and further actions*
- *Continue collaboration and oversight of Shamrock Environmental re: discharge of 1,4-dioxane*
  - *Review voluntary source reduction program and slug control plan*
  - *Increase inspection of Shamrock to twice per year*
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  - *Increase T.Z. Osborne 1,4-dioxane effluent eDMR monitoring frequency to 2/month when NCDEQ Special Study ends*
- *Within 12 months of effective date of SOC, submit report to NCDEQ on Year One activities.*

SOC Year Two:

- *Work with minor sources to reduce or eliminate 1,4-dioxane discharges*
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  - *Long-term achievable effectiveness of Shamrock's source reduction efforts and resulting T. Z. Osborne WWTP effluent reductions*
  - *Calculate T. Z. Osborne 1,4-dioxane mass balance using all data (industrial, domestic, and collection system data)*
- *Within 24 months of effective date of SOC, submit report to NCDEQ on Year Two activities.*

SOC Year Three:

- *Based on information generated in Years One and Two, determine, along with NCDEQ, a T. Z. Osborne WWTP effluent target that is technically based, attainable and protective. This target would also include consideration of background concentrations in incoming potable water, domestic discharges, and other uncontrollable sources.*
- *Conduct headworks analysis calculations for 1,4-dioxane relative to target effluent concentration*
  - *Implement headworks analysis via Industrial User Wastewater Discharge Permits*
- *Within 36 months of effective date of SOC, submit report to NCDEQ on Year Three activities.*

Hazen *Technical Memorandum*

November 16, 2019

To: Steven D. Drew
Director of Water Resources
City of Greensboro, NC
Water Resources Department

From: Patricia Drummey Stiegel, PE
Aaron D. Babson, PE

cc: Elijah L. Williams, PE
Martie Groome
Bradley Flynt

Re: Certification of T.Z. Osborne WWTP Treatment Capabilities
NPDES Permit No. NC0047384

Special Order by Consent Third Party Certification of TZ Osborne WWTP

Introduction

The TZ Osborne WWTP is a conventional wastewater treatment facility that consistently complies with effluent limits. It does not have treatment processes designed to remove emerging constituents such as 1,4-Dioxane. This memorandum addresses Section V-Certification of the Application for a Special Order by Consent.

Hazen

November 16, 2019

1. Evaluation of existing treatment units, operational procedures and recommendations as to how the efficiencies of the T.Z. Osborne WWTP can be maximized

The T.Z. Osborne Wastewater Treatment Plant is a 40-mgd treatment facility designed to meet all existing NPDES permit requirements. Improvements are underway to expand the plant to 56 mgd and upgrade the secondary process to Biological Nutrient Removal (BNR). Treatment processes at the plant include preliminary, primary, secondary, and tertiary conventional wastewater treatment.

Preliminary treatment includes step screens followed by influent pumping. The influent pump station has a firm capacity of 75 mgd, consisting of four 25 mgd vertical, centrifugal non-clog pumps that operate on variable frequency drives. Stirred vortex grit removal follows the influent pump station.

The T.Z. Osborne WWTP has 6 primary clarifiers, 4 rectangular and 2 circular, which receive flow from the preliminary treatment facilities.

The secondary treatment facilities at the T.Z. Osborne WWTP include the following: aeration basins, secondary clarifiers, return activated sludge (RAS) and waste activated sludge (WAS) pumping and aeration equipment for providing oxygen to the biological process. There are a total of 12 aeration basins, with Basins 1-4 having twice the capacity of the other basins. The aeration basins currently operate in a two-stage process. T.Z. Osborne WWTP has a total of 10 circular secondary clarifiers, 7 with a diameter of 130 feet and 3 with a diameter of 160 feet.

Tertiary treatment includes filtration and disinfection. The facility has a total of 6 traveling bridge cloth media filters, and filtration is followed by sodium hypochlorite disinfection. A total of 6 chlorine contact tanks provide contact time for disinfection. Sodium bisulfite is then dosed to remove residual sodium hypochlorite before treated effluent is discharged to South Buffalo Creek in the Cape Fear River Basin.

The plant is operated in an efficient manner. The T.Z. Osborne WWTP is not capable of treating 1,4-Dioxane and therefore, operational changes are not available to remove this constituent.

2. Certification T.Z. Osborne WWTP could not be operated to remove 1,4-Dioxane to achieve compliance with final permit limits

1,4-Dioxane is a synthetic industrial chemical and is often a by-product present in many goods, including paint strippers, dyes, greasers, antifreeze and aircraft deicing fluids and in some consumer products. T.Z. Osborne WWTP operates under an existing NPDES permit that does not include 1,4-Dioxane effluent limits. The plant is not designed to remove 1,4-Dioxane and does not have the capability to treat this constituent with existing conventional treatment or after the completion of ongoing upgrades.

Hazen

November 16, 2019

3. The effluent limits that the facility could be expected to meet if operated at their maximum efficiency during the term of the requested SOC (be sure to consider interim construction phases).

Not Applicable for this SOC

4. Any other actions taken to correct problems prior to requesting the SOC

The City of Greensboro submitted a "Corrective Action Plan" to NC DEQ NPDES/Pretreatment on September 23, 2019. This document outlines activities by the City of Greensboro Industrial Waste Section in relation to locating sources of and reducing discharges of 1,4-Dioxane to the Greensboro sanitary sewer system.

19-0750
315-19

RESOLUTION FOR A SPECIAL ORDER BY CONSENT (SOC)
BETWEEN THE CITY OF GREENSBORO AND THE
NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY

WHEREAS, Water Resources requests approval to pursue and negotiate a Special Order by Consent (SOC) with the North Carolina Department of Environmental Quality;

WHEREAS, the T. Z. Osborne Water Reclamation Facility has a permit to discharge treated wastewater to South Buffalo Creek, a tributary to the Haw River, classified WS-V waters of this State in the Cape Fear River Basin;

WHEREAS, the discharge is allowed under National Pollutant Discharge Elimination System (NPDES) Permit Number NC0047384 effective July 1, 2014, and expired on June 30, 2019, and administratively extended until reissued by the state;

WHEREAS, the City of Greensboro has voluntarily worked to reduce the concentrations of the unregulated constituent, 1,4-dioxane, discharged from the T. Z. Osborne Water Reclamation Facility;

WHEREAS, the SOC will officially outline the steps that Greensboro will continue to take to further reduce concentrations of 1,4-dioxane in order to protect downstream drinking water sources;

WHEREAS, the T. Z. Osborne Water Reclamation Facility agrees to maintain and operate the wastewater treatment system at its maximum level of efficiency during the interim period of the Special Order by Consent and thereafter; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GREENSBORO:

That the City is authorized to enter into a Special Order by Consent from the Environmental Management Commission and the City hereby authorizes Steven D. Drew, Water Resources Director, to sign and execute this document on behalf of the City of Greensboro.

THE FOREGOING RESOLUTION WAS ADOPTED
BY THE CITY COUNCIL OF THE CITY OF
GREENSBORO ON THE 19th DAY
OF NOVEMBER, 2019

Jebony C. Rose
DEPUTY CITY CLERK

APPROVED AS TO FORM

CITY ATTORNEY

Yvonne J. Johnson

Nancy Vaughan

NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION

COUNTY OF GUILFORD

IN THE MATTER OF NORTH CAROLINA NPDES PERMIT NC0047384 HELD BY CITY OF GREENSBORO	))))))	SPECIAL ORDER BY CONSENT EMC SOC WQ S19-010

Pursuant to the provisions of North Carolina General Statutes (G.S.) 143-215.2, this Special Order by Consent is entered into by the City of Greensboro, hereinafter referred to as the City, and the North Carolina Environmental Management Commission, an agency of the State of North Carolina created by G.S. 143B-282, and hereinafter referred to as the Commission.

1. The City and the Commission hereby stipulate the following:

   a. This Special Order by Consent (Special Order or SOC) addresses issues related to the discharge of elevated levels of 1,4-dioxane from the T. Z. Osborne WWTP to South Buffalo Creek. On November 14, 2019, the North Carolina Department of Environmental Quality (the Department) issued a Notice of Violation (NOV) to the City related to the elevated discharges of 1,4-dioxane.

   b. The City holds North Carolina NPDES permit NC0047384 for operation of an existing wastewater treatment works, and for making an outlet therefrom, for treated wastewater to South Buffalo Creek, Class WS-V, NSW waters of this State in the Cape Fear River Basin. NPDES Permit NC0047384 does not currently contain discharge limitations for 1,4-dioxane.

   c. In its November 2017 Technical Fact Sheet on 1,4-dioxane, the United States Environmental Protection Agency (EPA) describes this compound as "a synthetic industrial chemical that is completely miscible in water." Its primary historical use was as a stabilizer of chlorinated solvents. The EPA fact sheet states 1,4-dioxane is a by-product present in many goods, including paint strippers, dyes, greases, antifreeze and aircraft deicing fluids, and in some consumer and personal care products (deodorants, shampoos and cosmetics). EPA has classified 1,4-dioxane as a likely human carcinogen; however, to date no federal maximum contaminant level (MCL) has been established for 1,4-dioxane in drinking water.

   d. The EPA Fact Sheet states "the physical and chemical properties and behavior of 1,4-dioxane create challenges for its characterization and treatment. It is highly mobile and does not readily biodegrade in the environment." These properties, plus its widespread

presence in industrial and consumer products, cause the compound to be identifiable in reportable concentrations in groundwater, and within surface water downstream of industrialized and urbanized areas.

e. EPA has issued a health advisory for 1,4-dioxane recommending concentrations not exceed 35 µg/L in drinking water as protection of a 1 in 10,000 excess estimated lifetime cancer risk. EPA risk assessments indicate the drinking water concentration representing a 1 in 1,000,000 cancer risk level for 1,4-dioxane is 0.35 µg/L.

f. 1,4-dioxane can enter a publicly owned treatment works as a constituent of industrial and domestic wastewater. Most wastewater treatment plants are not currently designed for the removal of compounds such as 1,4-dioxane; therefore, it can pass through the treatment system and enter surface waters within the effluent discharge.

g. The EPA's Third Unregulated Contaminant Monitoring Rule (UCMR 3) required public water supply systems throughout the United States to monitor for the presence of contaminants, including 1,4-dioxane, during the years 2013-2015.

h. Results of UCMR 3 monitoring indicated the presence of 1,4-dioxane in North Carolina was most prevalent within the Cape Fear River Basin. The North Carolina Department of Environmental Quality (Department or DEQ) conducted follow up stream sampling studies to better determine the concentrations of 1,4-dioxane, and their potential sources within the basin. Results of the DEQ studies noted above indicated detectable concentrations of 1,4-dioxane downstream of the discharge from the City of Greensboro's T. Z. Osborne WWTP.

i. Beginning in 2015, the City of Greensboro voluntarily began a 1,4-dioxane source identification and reduction plan, which included monitoring of WWTP influent and effluent and the City's wastewater collection system. The City's efforts included meetings with industrial users to ask their assistance in identifying potential sources. Information from the industrial community and collection system monitoring revealed where to focus reduction efforts. By October 2015, the City's program had identified one of its Significant Industrial Users (SIU) as a quantifiable source of 1,4-dioxane to the WWTP. The SIU voluntarily agreed to conduct its own source reduction plan. Since the implementation of the plan, the discharge of 1,4-dioxane from the T. Z. Osborne wastewater treatment facility has been reduced by over 50% for the four-year period from February 2016 to the present.

j. On October 31, 2017, the Division of Water Resources (DWR), via administrative letter, required the City to begin monthly monitoring of the effluent from the T. Z. Osborne WWTP for 1,4-dioxane and to report the results of their analyses on monthly monitoring reports, beginning with the report for December 2017.

k. Results from T. Z. Osborne WWTP effluent monitoring have routinely indicated the presence of 1,4-dioxane. On August 7, 2019, an effluent concentration of 957.5 µg/L was reported. DEQ calculations predict that 1,4-dioxane concentrations of this

magnitude within the T. Z. Osborne WWTP effluent discharge may cause the instream concentration of 1,4-dioxane to exceed the 35 µg/L EPA health advisory level at a downstream drinking water supply raw water intake location.

l. The Department has instituted a special study of the T. Z. Osborne WWTP effluent, conducting its own monitoring of the discharge and sharing its data with the City.

m. Sampling of waters downstream of the T. Z. Osborne WWTP discharge has indicated instances when the EPA health advisory concentration of 35 µg/L for 1,4-dioxane has been exceeded. The sampling results indicate that Greensboro's discharge contributes to the exceedances but they do not establish that Greensboro's discharge is the sole source of the exceedances.

n. The purpose of this Special Order is to reduce the concentrations of 1,4-dioxane being discharged from the T.Z. Osborne WWTP. It is not intended to resolve, be applicable to, or encompass all other point and non-point sources that may be causing or contributing to elevated levels of 1,4-dioxane in the Cape Fear River Basin. The initial and primary goal of this Special Order is that the City's effluent discharge will not cause concentrations of 1,4-dioxane in downstream drinking water supplies to exceed the EPA health advisory concentration of 35 µg/L.

o. The discharge of elevated levels of 1,4-dioxane causes or contributes to pollution of the waters of this State named above, and the City is within the jurisdiction of the Commission as set forth in G.S. Chapter 143, Article 21.

p. The Commission and the City acknowledge that the activities enumerated in this Special Order are designed to reduce 1,4-dioxane concentrations within the Cape Fear River Basin, and that significant future reductions will require both technological advances and the cooperative institutional resolve of all affected parties. Acknowledging that the physical and chemical properties of 1,4-dioxane create challenges for its treatment and/or removal from municipal wastewater, and that large scale treatment technologies for the removal of 1,4-dioxane at municipal WWTPs do not currently exist, this Special Order recognizes that source reduction will be the primary and most effective means of reducing 1,4-dioxane concentrations in the T. Z. Osborne WWTP effluent and the Cape Fear River Basin.

q. Since this Special Order is by Consent, neither party will file a petition for a contested case or for judicial review concerning its terms.

2. The City of Greensboro, desiring to significantly reduce its contributions of 1,4-dioxane to the Cape Fear River Basin, hereby agrees to undertake the following activities in accordance with the indicated time schedule:

   a. Increase T.Z. Osborne's WWTP 1,4-dioxane effluent eDMR monitoring frequency for grab samples to weekly when the Department's Special Study ends.

b. Special Order Year One [to be achieved upon the the execution date of this SOC and continued for the first 12 months]:

1) Provide the Department with a copy of the City's existing 1,4-dioxane monitoring plan, and implement of the following:
   i. Resample at previously identified junction locations, including North Buffalo Transfer Pump Station (1650 miles of sewer line as of January 10, 2020).
   ii. Determine trunkline and industrial contributions and investigate further as concentrations or loadings warrant.
   iii. Investigate and determine background levels of 1,4-dioxane that shall include the following: 1) industrial contributions, 2) domestic contributions, 3) commercial contributions, 4) all drinking water contributions, and 5) surface intake water contributions.
   iv. Meet with the Department's Winston-Salem Regional Office on a quarterly basis.
   v. As circumstances warrant, review and modify the existing 1,4-dioxane monitoring plan. Provide the Department a copy of proposed changes prior to their implementation.

2) Contact, interview, and survey indirect dischargers with identifiable, contributing, 1,4-dioxane concentrations of greater than 100 µg/l.

3) Require analyses of all potential (new) industrial flows to the collection system for the presence of 1,4-dioxane prior to the City's approval or acceptance of the wastewater. The City may require the same or similar analyses of new commercial flows at its discretion. The City shall also obtain a description of the character of any new discharge, its estimated volume, and its location within the collection system.

4) Continue collaboration and oversight regarding industrial dischargers of 1,4-dioxane to the WWTP.
   i. Identify Significant Industrial Users (SIUs) that are indirect sources of 1,4-dioxane.
   ii. Develop source reduction program.
   iii. Review adequacy of slug control plans and update if necessary.
   iv. Increase inspection of selected SIU sources to twice per year [per 2(b)(2)].
   v. Submit summary of oversight activities in Year One Report.

5) Meet the Department's calculated effluent Year One daily maximum grab sample SOC compliance value of 50 µg/l ("Year One SOC Compliance value") to protect downstream drinking water intakes.

6) Develop and implement an ongoing 1,4-dioxane public education outreach plan with applicability toward individual, commercial and industrial users of City Water Resources Department services. Submit a summary of the plan in Year One Report.

7) Report all T.Z. Osborne WWTP grab and composite effluent 1,4-dioxane results monthly by email to the Department (in a format acceptable to DEQ) no later than the last calendar day of the month following the completed reporting period.

8) Report by telephone within 24 hours to the Division's Winston-Salem Regional Office (WSRO) after receiving any data (including any individual result from a grab, composite, or split sample if taken) indicating a T. Z. Osborne WWTP effluent 1,4-dioxane concentration $\geq$ 50 µg/l. The City is also required to submit a written report on any finalized data regarding the exceedance, its cause, effects, and its duration to the WSRO within 5 business days by email of the City's first knowledge of the exceedance.

9) Modify SIU permits or develop other pretreatment program mechanisms as necessary.

10) In addition to any other reporting required by the Department, no later than forty-five (45) calendar days after the end of Year One, the City shall submit to the Department a written report on the Year One activities. The report may be submitted by hard copy or electronic means and must contain the following (at a minimum):
    i. Summary of the City's investigation results [outlined in 2(b)(1)].
    ii. Summary of any potential (new) industrial or commercial flows to the collection system [outlined in 2(b)(3)].
    iii. Any oversight activities [outlined in 2(b)(4) and 2(b)(9)].
    iv. Public education outreach plan [outlined in 2(b)(6)].
    v. A table of all monitoring results for 1,4-dioxane collected during the SOC Year One.
    vi. In the case of noncompliance with the Year One SOC compliance value, a statement of the reason(s) for noncompliance, remedial action(s) taken, and a statement on the extent to which subsequent dates or times for accomplishment of listed activities may be affected.
    vii. Based on Year One data and any follow-up monitoring activities, including IU inspections and oversight and City of Greensboro split sample data, determine the following and provide a summary to the Department:
        - Long-term achievable effectiveness of source reduction efforts and resulting T. Z. Osborne WWTP effluent reductions
        - Industrial contributions
        - Domestic contributions
        - Commercial contributions
        - Surface and drinking water contributions

c. <u>Special Order Year Two [to be achieved upon the first day of Year Two and continued for the second 12 months]</u>:

1) Continue investigating industrial sources and engage with sources not defined as SIUs (concentrations above the yearly 1,4-dioxane SOC compliance value) to reduce or eliminate 1,4-dioxane discharges.

2) Report all T.Z. Osborne WWTP grab and composite effluent 1,4-dioxane results monthly by email to the Department (in a format acceptable to DEQ) no later than the last calendar day of the month following the completed reporting period.

3) Meet the Department's calculated effluent Year Two daily maximum grab sample SOC compliance value of 35 µg/l ("Year Two SOC Compliance value") to protect of downstream drinking water intakes based on EPA's drinking water health advisory.

4) Report by telephone within 24 hours to the Department's Winston-Salem Regional Office (WSRO) after receiving any data (including any individual result from a grab, composite, or split sample if taken) indicating a T. Z. Osborne WWTP effluent 1,4-dioxane concentration $\geq$ 35 µg/l. The City is also required to submit a written report on any finalized data regarding the exceedance, its cause, effects, and its duration to the WSRO within 5 business days by email of the City's first knowledge of the exceedance.

5) Modify SIU permits or develop other pretreatment program mechanisms as necessary.

6) Calculate a T. Z. Osborne WWTP effluent 1,4-dioxane mass balance using all data (industrial, domestic, commercial, drinking water, and collection system data) and submit to the Department in the Year Two Report.

7) In addition to any other reporting required by the Department, no later than forty-five (45) calendar days after the end of Year Two, the City shall submit to the Department a written report on the Year Two activities. The report may be submitted by hard copy or electronic means and must contain the following (at a minimum):
   i. Summary of the City's oversight activities [outlined in 2(c)(1) and 2(c)(5)].
   ii. Public education outreach plan [outlined in 2(b)(6)].
   iii. 1,4-dioxane mass balance [outlined in 2(c)(6)].
   iv. A table of all monitoring results for 1,4-dioxane collected during the SOC Year Two.
   v. In the case of noncompliance with the Year Two SOC compliance value, a statement of the reason(s) for noncompliance, remedial action(s) taken, and a statement on the extent to which subsequent dates or times for accomplishment of listed activities may be affected.

3. In the case source reduction alone may not lead to the effluent SOC compliance value being consistently achieved, the following shall apply:

a. Develop a Best Management Practices/1,4-dioxane Minimization Plan.

b. If ≥ 25% of eDMR data exceed the Year One SOC compliance value of 50 µg/L at the end of SOC Year One, the City shall submit a report that considers items 1, 2, and 3 below, to the Division within 45 calendar days after the end of SOC Year One for the Division's approval on how the City will address 1,4-dioxane in the T.Z. Osborne WWTP effluent.

   1) Investigation of alternate/additional treatment processes for removal of 1,4-dioxane at major industrial sources.

   2) Investigation of the technical and economic feasibility of treatment technologies for the removal of 1,4-dioxane at wastewater treatment plants.

   3) Investigation of the technical and economic feasibility of treatment technologies for removal of 1,4-dioxane at drinking water treatment facilities.

4. The City of Greensboro, desiring to resolve the matters contributing to alleged water quality standard violations associated with its discharge of 1,4-dioxane from the T. Z. Osborne WWTP, hereby agrees to pay an upfront penalty in the amount of $5,000.00 as settlement of the alleged violations noted in the November 14, 2019 NOV correspondence as well as any and all other alleged violations related to 1,4-dioxane beginning December 1, 2017 through the execution date of this SOC.

   A certified check in the amount of $5,000 must be made payable to the Department of Environmental Quality and sent to the Director of the Division of Water Resources (DWR) at 1617 Mail Service Center, Raleigh North Carolina 27699-1617 not later than thirty (30) calendar days following the date on which this Special Order is approved and executed by the Commission, and received by the City.

   a. Stipulated Penalties. The City agrees that unless excused under Paragraph 5, the City will pay the Director of DWR, by check payable to the North Carolina Department of Environmental Quality, stipulated penalties according to the following schedule for failure to meet the deadlines and requirements set out in Section 2.

Description	Stipulated Penalty
Failure to provide 24-hour notice of elevated discharge levels to WSRO in the Compliance Schedule in Section 2. of this Special Order	$1,000 per event; $100/day thereafter
Failure to submit complete Annual Reports in the Compliance Schedule in	$1,000 per event; $100/day thereafter

Section 2. of this Special Order by specified date	
Failure to meet the grab sample effluent daily maximum SOC compliance value in SOC Year One or Year Two	Exceedance 1-5 per SOC year: $1,000 per event, per SOC year Exceedance 6-10 per SOC year: $2,000 per event, per SOC year Exceedance 11 and up per SOC year: $3,000 per event, per SOC year
Failure to achieve any other requirement of this Special Order	$1,000 per event

5. The City and the Commission agree that the stipulated penalties are not due if the City satisfies DWR that noncompliance was caused solely by:

   a) An act of God;

   b) An act of war;

   c) An intentional act or omission of a third party, but this defense shall not be available if the act or omission is that of an employee or agent of the defendant or if the act or omission occurs in connection with a contractual relationship with the permittee;

   d) An extraordinary event beyond the permittee's control. Contractor delays or failure to obtain funding will not be considered as events beyond the permittee's control; or

   e) Any combination of the above causes.

   Failure by the City to within thirty (30) calendar days of receipt of a written demand either to pay the penalties, or challenge them by a contested case petition pursuant to G.S. 150B-23, will be grounds for a collection action, which the Attorney General is hereby authorized to initiate. The only issue in such an action will be whether the thirty (30) calendar days has elapsed.

6. This Special Order by Consent and any terms and/or conditions contained herein, hereby supersede any and all previous Special Orders, Enforcement Compliance Schedule Letters, terms, conditions, and limits contained therein issued in connection with NPDES permit NC0047384.

7. Noncompliance with the terms of this Special Order by Consent is subject to enforcement action in addition to the above stipulated penalties, including injunctive relief pursuant to G.S. 143-215.6.C. Noncompliance with the terms of this Special Order will not be subject to civil penalties in addition to the above stipulated penalties.

8. This Special Order may be modified at the Commission's discretion, provided the Commission is satisfied that the City has made good faith efforts to complete the Compliance Schedule activities specified herein.

9. The permittee, upon complete execution of this Special Order by Consent, will be expected to comply with all schedule dates, terms, and conditions of this document.

10. This Special Order by Consent shall expire on XXXXXXXXX.

For City of Greensboro Water Resources Department:

_____ Date 10/14/20

Michael Borchers, Director of Water Resources
City of Greensboro

For the North Carolina Environmental Management Commission:

_____ Date _____

Chair of the Commission

PUBLIC NOTICE
STATE OF NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION
1617 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1617

NOTIFICATION OF INTENT TO ISSUE A CONSENT ORDER

Public notice of intent to issue a State Consent Order to the following:

The City of Greensboro (P.O. Box 3136, Greensboro, NC 27402-3136) has requested Special Order by Consent No. S19-010 for its T.Z. Osborne WWTP, a 40.0 MGD wastewater treatment facility under the authority of discharge permit NC0047384. The T.Z. Osborne WWTP discharges treated wastewater to South Buffalo Creek in the Cape Fear River Basin.

The Environmental Management Commission proposes to issue the Order per Article 21 of Chapter 143, N.C. General Statutes, and other regulations. Compliance with this Order requires rehabilitation of the wastewater to address elevated discharges of 1,4-dioxane. The City of Greensboro shall comply with the NPDES permit limits with the exception of the interim limitations identified in the Order. This Order will expire **two (2) years from the SOC effective date.**

A copy of the Order is available upon request by contacting Jenny Graznak of the Division of Water Resources at 336-776-9695, or available online at https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/npdes-wastewater-permits. Written comments on the draft Consent Order may be sent to the attention of Ms. Brianna Young, N.C. Division of Water Resources, 1617 Mail Service Center, Raleigh, N.C. 27699-1617, or may be submitted by email to: publiccomments@ncdenr.gov. Please be sure to include "T.Z. Osborne WWTP SOC" in the email's subject line. Comments on the proposed Order received no later than **December 9, 2020** will be considered in the final determination.

PUBLIC HEARING
The N.C. Department of Environmental Quality will hold a public hearing to accept comments on the aforementioned Special Order by Consent from 6:00 pm until the hearing officer adjourns the meeting on Wednesday, December 9, 2020. This public meeting will be held via Cisco's WebEx teleconferencing service instead of an in-person meeting. Speaker registration will end at 12:00 PM on Wednesday, December 9, 2020. Information on the hearing and how to register can be found online at https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/npdes-wastewater-permits.

City of Greensboro T.Z. Osborne WWTP (NC0047384) Special Order by Consent and Public Hearing Public Notice

Purpose: To receive comments on the proposed Special Order by Consent (SOC) between the Environmental Management Commission (EMC) and the City of Greensboro for the T.Z. Osborne WWTP (NPDES Permit NC0047384). This proposed SOC was first public noticed from June 22, 2020 through July 24, 2020. Based on the comments received on the proposed SOC, the Department of Environmental Quality (DEQ) Division of Water Resources (DWR) has made changes to the proposed SOC, and the City of Greensboro has accepted these changes. The updated proposed SOC is being re-public noticed. A public hearing has been scheduled as well based on the volume of interest received during the initial public notice period.

Documents:
Public Notice Announcement (PDF document)
Proposed SOC (PDF document)
Frequency Asked Questions (PDF document)

Please submit comments via any of the methods below:

Email: publiccomments@ncdenr.gov (Please type "T.Z. Osborne WWTP SOC" in the subject line)

Postal Mail: NC Division of Water Resources (Attn: Brianna Young), 1617 Mail Service Center Raleigh, NC 27699-1617

Voicemail: 336-776-9691 (Please state your name and any affiliation before commenting)

Public Hearing:

In the abundance of caution, to address protective measures to help prevent the spread of COVID-19, DWR is scheduling a digital public hearing on the proposed SOC between the EMC and the City of Greensboro for the T.Z. Osborne WWTP (NPDES Permit NC0047384). The public hearing will be held via Cisco's WebEx teleconferencing service instead of an in-person meeting.

Public Hearing Date and Location: Wednesday, December 9, 2020 at 6:00 PM via Webex
Comment Period Duration: Sunday, November 8, 2020 – Wednesday, December 9, 2020

Participants can join the meeting starting at 5:45 PM.

Cisco WebEx Link:
https://ncdenrits.webex.com/ncdenrits/onstage/g.php?MTID=e8221fc4b7c96729a1508f52e886d5124
Meeting Number (Access Code): 178 487 5557
Meeting Password: dHMTVgya798

Cisco WebEx by Phone: +1-415-655-0003 US TOLL
Meeting number (access code): 178 487 5557

* If you wish to speak at the digital public hearing, you must register, provide the required information, and follow instructions on ways to join the public hearing. Registration must be completed by 12:00

PM on December 9, 2020. To register, please click the following link:
https://forms.office.com/Pages/ResponsePage.aspx?id=3IF2etC5mkSFw-zCbNftGRcM2xmuszROiks3JDQp2_RUOE83MDlQTDA5VUxHUFNDOTQzR0tDMElYUC4u

* For instructions on ways to join the public hearing, please visit our website at:
https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/npdes-wastewater-permits

* If you have technical difficulties, the following automated voicemail has been set up to receive your verbal comments: 336-776-9691

PUBLIC NOTICE
STATE OF NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION
1617 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1617

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The City of Greensboro (P.O. Box 3136, Greensboro, NC 27402-3136) has requested Special Order by Consent No. S19-010 for its T.Z. Osborne WWTP, a 40.0 MGD wastewater treatment facility under the authority of discharge permit NC0047384. The T.Z. Osborne WWTP discharges treated wastewater to South Buffalo Creek in the Cape Fear River Basin.

The Environmental Management Commission proposes to issue the Order per Article 21 of Chapter 143, N.C. General Statutes, and other regulations. Compliance with this Order requires rehabilitation of the wastewater to address elevated discharges of 1,4-dioxane. The City of Greensboro shall comply with the NPDES permit limits with the exception of the interim limitations identified in the Order. This Order will expire **two (2) years from the SOC effective date.**

A copy of the Order is available upon request by contacting Jenny Graznak of the Division of Water Resources at 336-776-9695, or available online at https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/npdes-wastewater-permits. Written comments on the draft Consent Order may be sent to the attention of Ms. Brianna Young, N.C. Division of Water Resources, 1617 Mail Service Center, Raleigh, N.C. 27699-1617, or may be submitted by email to: publiccomments@ncdenr.gov. Please be sure to include "T.Z. Osborne WWTP SOC" in the email's subject line. Comments on the proposed Order received no later than **December 9, 2020** will be considered in the final determination.

PUBLIC HEARING
The N.C. Department of Environmental Quality will hold a public hearing to accept comments on the aforementioned Special Order by Consent from 6:00 pm until the hearing officer adjourns the meeting on Wednesday, December 9, 2020. This public meeting will be held via Cisco's WebEx teleconferencing service instead of an in-person meeting. Speaker registration will end at 12:00 PM on Wednesday, December 9, 2020. Information on the hearing and how to register can be found online at https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/npdes-wastewater-permits.

DocuSigned by:
8328B44CE9EB4A1...

Date: 11/4/2020

for S. Daniel Smith
Director, Division of Water Resources
By Authority of the Environmental Management Commission

Public Hearing Scheduled for Special Order by Consent for City of Greensboro's Wastewater Treatment Plant

Raleigh, North Carolina

Nov 9, 2020

The Department of Environmental Quality's Division of Water Resources (DWR) will hold a public hearing (https://urldefense.com/v3/__https:/u7061146.ct.sendgrid.net/ls/click?upn=4tNED-2FM8iDZJQyQ53jATUftoisMQHja7xpLbARkvPyhjFh6ydWEmcy4kgn-2FZjbZWPfgVoOLKEoOxP-2FQVm1S0YjIKtsVxd26WbfkiELeB52OcKykZNgMfKo48cRLn9iG6Vx8tb-2FDQ3aXcxz2i8t72H-2FAS3Ws9cZ3FtfPDB-2FQVekc-3Dt4sg_B9Otf2NiCCHzonv8SELghBSSbuIbkc34xonBqezAIbc1jh5NZqBeiizZrgogfVYNzHMzRgRXWcmb-2FO7CgcJIQ3GEV2XAucgw145C-2FtawASWAsF9T9KnptL5l1M9YopWvEKDW5wucyOfAYGEatlk7hjv9iav65Ouh1j8LDcBmmVy4uDSaERSXAkZ2RABztI18RKdGpp6BWLDALIAo7aIhpxJd1zuhrD7Pqt6ErC2BjvnF0snetwIMiaYo5u1gZ4B-2Bdw8fWEFfju1iIiVe31R47ek5uacy76AedMHy2pCIPOLsF6zsnWHEoHfk1iShiznAMvpXyShDFopD73oHVt-2B6vYZZl1fF-2Bk9SUMQVmkuxeig-3D__;!!HYmSToo!N-vf4d-7hUuEye0OegmzpWGGJHtX2tfcUgh4J3ZueE54p8hgTq1a2vtv8GOmlb84f_3e$)

on Wednesday, December 9, 2020 on a proposed Special Order by Consent (SOC) for the City of Greensboro's T.Z. Osborne Wastewater Treatment Plant (https://urldefense.com/v3/__https:/u7061146.ct.sendgrid.net/ls/click?upn=4tNED-2FM8iDZJQyQ53jATUftoisMQHja7xpLbARkvPyhjFh6ydWEmcy4kgn-2FZjbZWPfgVoOLKEoOxP-2FQVm1S0YrJetp-2BFLtrJXoBugNWYJjNN-2FfHMiOoaHDJotUK78wc2ad-2Fu1A70H79fPSPYnIW0ZiXyu9uaojiJWLy3JntAOuI-3DXvmV_B9Otf2NiCCHzonv8SELghBSSbuIbkc34xonBqezAIbc1jh5NZqBeiizZrgogfVYNzHMzRgRXWcmb-2FO7CgcJIQ3GEV2XAucgw145C-2FtawASWAsF9T9KnptL5l1M9YopWvEKDW5wucyOfAYGEatlk7hjv9iav65Ouh1j8LDcBmmVy4uDSaERSXAkZ2RABztI18RKdGpp6BWLDALIAo7aIhp-2Banqj9YPthClh-2B-2B-2FVRAIMBGQ2FjUCTe5R-2FRU-2BF53OokHdhuVPLYyHbIZhyjt2EQ27b9xWMyx6bFShJYuhHfJVkorbJ8341tP1adzzas6TgSLoTq19xUngNV82OSHifUZl5mOWt32zFdzPdNDkZdN2s-3D__;!!HYmSToo!N-vf4d-7hUuEye0OegmzpWGGJHtX2tfcUgh4J3ZueE54p8hgTq1a2vtv8GOmlen4y-Vm$)

(WWTP) NPDES discharge permit. The proposed SOC addresses issues related to the discharge of elevated levels of 1,4-dioxane from the WWTP to South Buffalo Creek in the Cape Fear River Basin.

1,4-dioxane is an emerging compound that EPA has identified as a likely human carcinogen.

Based on the level of public interest during the initial public comment period on the draft SOC, DWR will hold a remote public hearing. DWR has made changes to the SOC based on comments received, which include an adjustment to the SOC year-one compliance value, language clarifications, and the addition of a FAQ document (https://urldefense.com/v3/__https:/u7061146.ct.sendgrid.net/ls/click?upn=4tNED-2FM8iDZJQyQ53jATUftoisMQHja7xpLbARkvPyhjFh6ydWEmcy4kgn-2FZjbZWPfgVoOLKE2BFLtrJXoBugNWYJjOHLG4b3RJne1T3-2Fxwei15UKrQMVbEPnpCGHaB9TOkUsjvEqRb-2B4Cz8sN9sC8aQ5B8-3Dwafi_B9Otf2NiCCHzonv8SELghBSSbuIbkc34xonBqez2FO7CgcJIQ3GEV2XAucgw145C-2FtawASWAsF9T9KnptL5l1M9YopWvEKDW5wucyOfAYGEatlk7hjv9iav65Ouh1j8LDcBmmVy4uDSaERSXAkZ2RABztI18RKdGpp6BWLDALIAo7aIhp3TA7XrhmLGDCJx2BPEVo7hV038wpw2WVzHW4p-2B-2F9EPlQbx-2Fd3vZJaNVBFZLrAos5Nv2zd-2BmLQUhSxlR6-2FXG25FwZlteaI9mvuKZLf3mhds-3D__;!!HYmSToo!N-vf4d-7hUuEye0OegmzpWGGJHtX2tfcUgh4J3ZueE54p8hgTq1a2vtv8GOmlbsgswZG$)

to answer questions received from the first comment period. The City of Greensboro has accepted all of the changes, and the revised, proposed SOC is being provided for public input.

To prevent the spread of COVID-19, the hearing will be held remotely and the public is invited to provide comments online or by phone.

Date: Wednesday, December 9, 2020

Time: 6 p.m. (Attendees may begin joining at 5:45 PM)

Join online: WebEx (https://urldefense.com/v3/__https:/u7061146.ct.sendgrid.net/ls/click?upn=4tNED-2FM8iDZJQyQ53jATUcVY3EnzPYYgA0MRycBtoDTfvso5TN9r4jIMLBHPT0V5KYi-2B4UI3DE2yV_B9Otf2NiCCHzonv8SELghBSSbuIbkc34xonBqezAIbc1jh5NZqBeiizZrgogfVYNzHMzRgRXWcmb-2FO7CgcJIQ3GEV2XAucgw145C-2FtawASWAsF9T9KnptL5l1M9YopWvEKDW5wucyOfAYGEatlk7hjv9iav65Ouh1j8LDcBmmVy4uDSaERSXAkZ2RABztI18RKdGpp6BWLDALIAo7aIhpy175pPDWToyCMv2Bt-2FjrciLLInDSI8GVll-2FxEFJm3QssRe9Dry6k-3D__;!!HYmSToo!N-vf4d-7hUuEye0OegmzpWGGJHtX2tfcUgh4J3ZueE54p8hgTq1a2vtv8GOmlXmbhYFM$)

Join by phone: 1-415-655-0003; (access code): 178 487 5557

To speak during the hearing, registration (https://urldefense.com/v3/__https:/u7061146.ct.sendgrid.net/ls/click?upn=4tNED-2FM8iDZJQyQ53jATUcVfv4eCy3FLEcFKjGMvZjoAuUFlinuXbwrwXd-2BZk-2F02zVXugG-2BFWi6FYfvmGNzuXhIFN0wE-2F9QX1gcBbMLq6jNgJXn-2FcliUE5IvoYAHco2m6Q103kOduExzvjjxF0AiwcDhPa2B-2BgvkvM8xZPtD9h8-3D0VbV_B9Otf2NiCCHzonv8SELghBSSbuIbkc34xonBqezAIbc1jh5NZqBeiizZrgogfVYNzHMzRgRXWcmb-2FO7CgcJIQ3GEV2XAucgw145C-2FtawASWAsF9T9KnptL5l1M9YopWvEKDW5wucyOfAYGEatlk7hjv9iav65Ouh1j8LDcBmmVy4uDSaERSXAkZ2RABztI18RKdGpp6BWLDALIAo7aIhp-2FlTS9r5j5Bi-2FPDdyjELrlUg-2Fw9K6z8968HK1AkQ-2FLBZ0iZQ-2BUzYdIuuTjwVkzlRYh-2FXK2rIivVLrb1xeYF3o3t4AA-2FZv2hlnfRwAkTSgAiPy4VhK4CzeMGmoGv4AH6QKWk5bIr7rEft-2Bwx8iPfIqFU-3D__;!!HYmSToo!N-vf4d-7hUuEye0OegmzpWGGJHtX2tfcUgh4J3ZueE54p8hgTq1a2vtv8GOmldVj-i-h$)

is required by 12:00 p.m., Wednesday, December 9, 2020.

In addition to the public hearing, comments on the SOC may be submitted now through December 9, 2020 by emailing publiccomments@ncdenr.gov (mailto:publiccomments@ncdenr.gov) with "T.Z. Osborne WWTP SOC" in the subject line. Comments may also be provided by calling 336-776-9691 and leaving a recorded message. Please state your name and any affiliation before commenting. Written comments may be mailed via USPS to:

N.C. Division of Water Resources
Water Quality Permitting Section
Attn: Brianna Young
1617 Mail Service Center
Raleigh, N.C. 27699-1617

Comments received by December 9, 2020 will be considered in the final determination of this order by the Environmental Management Commission. Documents related to the proposal may be reviewed here
(https://urldefense.com/v3/__https:/u7061146.ct.sendgrid.net/ls/click?upn=4tNED-2FM8iDZJQyQ53jATUcVfv4eCy3FLEcFKjGMvZjoAuUFlinuXbwrwXd-2BZk-2F02zVXugG-2BFWi6FYfvmGNzuXhIFN0wE-2F9QX1gcBbMLq6jNgJXn-2FcliUE5IvoYAHco2m6Q103kOduExzvjjxF0AiwcDhPa2B-2BgvkvM8xZPtD9h8-3DCImh_B9Otf2NiCCHzonv8SELghBSSbuIbkc34xonBqezAIbc1jh5NZqBeiizZrgogfVYNzHMzRgRXWcmb-2FO7CgcJIQ3GEV2XAucgw145C-2FtawASWAsF9T9KnptL5l1M9YopWvEKDW5wucyOfAYGEatlk7hjv9iav65Ouh1j8LDcBmmVy4uDSaERSXAkZ2RABztI18RKdGpp6BWLDALIAo7aIhp1yCfO7j48pmpTMt2FFXZpBY2ZQ9F-2BEd-2F5opzm5e-2FJj-2B46G5xEeGTta-2BlqadpJsoZ-2BC-2FvnCkhynyfC9gJ56Y-2Bck6Oo8Y3PtptvdqE90HC6KnDaWM7nawsUUAu6ow-2BSeD3aw5C3D__;!!HYmSToo!N-vf4d-7hUuEye0OegmzpWGGJHtX2tfcUgh4J3ZueE54p8hgTq1a2vtv8GOmldxOmm_7$)
.

This press release is related to:

Water Resources (/news/press-releases?field_agency_department_tid=438&field_agency_department_tid_op=or)

NCDENR (/news/press-releases)

Contact Information

Anna Gurney
anna.gurney@ncdenr.gov (mailto:anna.gurney@ncdenr.gov)
919-707-8604

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NORTH CAROLINA Environmental Quality NC DEQ

Public Comment Period Extended for Special Order by Consent at City of Greensboro's Wastewater Treatment Plant

Raleigh, North Carolina

Nov 24, 2020

The Department of Environmental Quality's Division of Water Resources (DWR) has extended the public comment period to noon on Monday, December 14, for the proposed Special Order by Consent (SOC) for the City of Greensboro's T.Z. Osborne Wastewater Treatment Plant (http://files.nc.gov/ncdeq/Surface%20Water%20Protection/NPDES/permits/S19-010-Signed-SOC-to-hearing-10-14-2020.pdf) (WWTP) NPDES discharge permit. The public hearing (https://files.nc.gov/ncdeq/Surface%20Water%20Protection/NPDES/permits/SOC-S19-010-Second-Public-Notice.pdf) is scheduled for Wednesday, December 9, 2020.The proposed SOC addresses issues related to the discharge of elevated levels of 1,4-dioxane from the WWTP to South Buffalo Creek in the Cape Fear River Basin. 1,4-dioxane is an emerging compound that EPA has identified as a likely human carcinogen.

Based on the level of public interest during the initial public comment period on the draft SOC, DWR will hold a remote public hearing. DWR has made changes to the SOC based on comments received, which include an adjustment to the SOC year-one compliance value, language clarifications, and the addition of a FAQ document (http://files.nc.gov/ncdeq/Surface%20Water%20Protection/NPDES/permits/S19-010-TZ-Osborne-WWTP-FAQ-final.pdf) to answer questions received from the first comment period. The City of Greensboro has accepted all of the changes, and the revised, proposed SOC is being provided for public input.

To prevent the spread of COVID-19, the hearing will be held remotely and the public is invited to provide comments online or by phone.

Date: Wednesday, December 9, 2020
Time: 6 p.m. (Attendees may begin joining at 5:45 PM)
Join online: WebEx (https://ncdenrits.webex.com/ncdenrits/onstage/g.php?MTID=e8221fc4b7c96729a1508f52e886d5124)
Join by phone: 1-415-655-0003; (access code): 178 487 5557
To speak during the hearing, registration (https://forms.office.com/Pages/ResponsePage.aspx?id=3IF2etC5mkSFw-zCbNftGRcM2xmuszROiks3JDQp2_RUOE83MDlQTDA5VUxHUFNDOTQzR0tDMElYUC4u) is required by 12:00 p.m., Wednesday, December 9, 2020.

In addition to the public hearing, comments on the SOC may be submitted now through noon on December 14, 2020 by emailing publiccomments@ncdenr.gov (mailto:publiccomments@ncdenr.gov) with "T.Z. Osborne WWTP SOC" in the subject line. Comments may also be provided by calling 336-776-9691 and leaving a recorded message. Please state your name and any affiliation before commenting. Written comments may be mailed via USPS to:

N.C. Division of Water Resources
Water Quality Permitting Section
Attn: Brianna Young
1617 Mail Service Center
Raleigh, N.C. 27699-1617

Comments received by noon December 14, 2020 will be considered in the final determination of this order by the Environmental Management Commission. Documents related to the proposal may be reviewed here (/about/divisions/water-resources/water-resources-permits/wastewater-branch/npdes-wastewater-permits).

This press release is related to:

Water Resources (/news/press-releases?field_agency_department_tid=438&field_agency_department_tid_op=or) NCDENR (/news/press-releases)

Contact Information

Anna Gurney
anna.gurney@ncdenr.gov (mailto:anna.gurney@ncdenr.gov)
919-707-8604

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NORTH CAROLINA Environmental Quality NC DEQ

Reminder: Public Hearing Occurs Wednesday for Special Order by Consent on City of Greensboro's Wastewater Treatment Plant

Raleigh, North Carolina

Dec 7, 2020

The Department of Environmental Quality's Division of Water Resources (DWR) will remotely hold a public hearing on Wednesday, December 9, 2020 at 6 p.m. for the proposed Special Order by Consent (SOC) for the City of Greensboro's T.Z. Osborne Wastewater Treatment Plant (https://files.nc.gov/ncdeq/Surface%20Water%20Protection/NPDES/permits/S19-010-Signed-SOC-to-hearing-10-14-2020.pdf) (WWTP) NPDES discharge permit. DEQ is accepting public comments until noon Monday, December 14, 2020.

The proposed SOC addresses issues related to the discharge of elevated levels of 1,4-dioxane from the WWTP to South Buffalo Creek in the Cape Fear River Basin. 1,4-dioxane is an emerging compound that EPA has identified as a likely human carcinogen. The City of Greensboro has accepted all of the proposed changes, and the revised SOC is being provided for public input. Adjustments include a year-one compliance value and language clarifications. A FAQ document (https://files.nc.gov/ncdeq/Surface%20Water%20Protection/NPDES/permits/S19-010-TZ-Osborne-WWTP-FAQ-final.pdf) is available for review.

To prevent the spread of COVID-19, the hearing will be held remotely and the public is invited to provide comments online or by phone.

Date: Wednesday, December 9, 2020

Time: 6 p.m. (Attendees may begin joining at 5:45 p.m.)

Join online: WebEx (https://ncdenrits.webex.com/mw3300/mywebex/default.do?nomenu=true&siteurl=ncdenrits&service=6&rnd=0.9705059028422041&main_url=https%3A%2F%2Fncdenrits.webex.com%2Fec3300%2Feventcenter%2Fevent%2EventAction.do%3FtheAction%3Ddetail%26%26%26EMK%3D4832534b000000045683585fce5cb4cfeff9dfb290e36a907710de5e2

Join by phone: 1-415-655-0003; (access code): 178 487 5557

To speak during the hearing, registration (https://forms.office.com/Pages/ResponsePage.aspx?id=3IF2etC5mkSFw-zCbNftGRcM2xmuszROiks3JDQp2_RUOE83MDlQTDA5VUxHUFNDOTQzR0tDMElYUC4u) is required by 12:00 p.m., Wednesday, December 9, 2020.

In addition to the public hearing, comments on the SOC may be submitted now through noon on December 14, 2020 by emailing publiccomments@ncdenr.gov (mailto:publiccomments@ncdenr.gov) with "T.Z. Osborne WWTP SOC" in the subject line. Comments may also be provided by calling 336-776-9691 and leaving a recorded message. Please state your name and any affiliation before commenting. Written comments may be mailed via USPS to:

N.C. Division of Water Resources
Water Quality Permitting Section
Attn: Brianna Young
1617 Mail Service Center
Raleigh, N.C. 27699-1617

Comments received by noon December 14, 2020 will be considered in the final determination of this order by the Environmental Management Commission. Documents related to the proposal may be reviewed here (https://urldefense.com/v3/__https:/u7061146.ct.sendgrid.net/ls/click?upn=4tNED-2FM8iDZJQyQ53jATUcVfv4eCy3FLEcFKjGMvZjoAuUFlinuXbwrwXd-2BZk-2F02zVXugG-2BFWi6FYfvmGNzuXhIFN0wE-2F9QX1gcBbMLq6jNgJXn-2FcliUE5IvoYAHco2m6QI03kOduExzvjjxF0AiwcDhPa2B-2BgvkvM8xZPtD9h8-3DCImh_B9Otf2NiCCHzonv8SELghBSSbuIbkc34xonBqezAIbc1jh5NZqBeiizZrgogfVYNzHMzRgRXWcmb-2FO7CgcJIQ3GEV2XAucgw145C-2FtawASWAsF9T9KnptL5l1M9YopWvEKDW5wucyOfAYGEatlk7hjv9iav65Ouh1j8LDcBmmVy4uDSaERSXAkZ2RABztI18RKdGpp6BWLDALIAo7aIhp1yCfO7j48pmpTMtBxTMXQpEFbjP-2FFXZpBY2ZQ9F-2BEd-2F5opzm5e-2FJj-2B46G5xEeGTta-2BlqadpJsoZ-2BC-2FvnCkhynyfC9gJ56Y-2Bck6Oo8Y3PtptvdqE90HC6KnDaWM7nawsUUAu6ow-2BSeD3aw5CFV3a-2B-2Bk-3D__;!!HYmSToo!N-vf4d-7hUuEye0OegmzpWGGJHtX2tfcUgh4J3ZueE54p8hgTq1a2vtv8GOmldxOmm_7$)

.

This press release is related to:

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Contact Information

Anna Gurney
919-707-8604

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Chatham News + Record

NORTH CAROLINA
CHATHAM COUNTY

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AFFIDAVIT OF PUBLICATION

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified and authorized by law to administer oaths, personally appeared Florence Turner, who being first duly sworn, deposes and says: that he (she) is

Accounts Receivable Clerk

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of the Chatham Media Group, LLC., engaged in the publication of a newspaper known as, Chatham News+Record, published, issued, and entered as second class mail in the Town of Siler City, in said County and State; that he (she) is authorized to make this affidavit and sworn statement; that the notice or legal advertisement, a true copy of which is attached hereto, was published in the Chatham News+Record on the following dates:

November 12 2020

and that the said newspaper in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements and qualifications of Section 1-597 of the General Statues of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statues of North Carolina.

This 12th day of November, 2020

Florence Turner

(Signature of person making affidavit)

KAREN W PYRTLE NOTARY PUBLIC CHATHAM COUNTY, NC

Sworn to and subscribed before me, this 12th day of November, 2020

Karen W. Pyrtle

Notary Public

My Commission expires: June 19th, 2024

PUBLIC NOTICE
STATE OF NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION
1617 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1617
NOTIFICATION OF INTENT TO ISSUE A CONSENT ORDER

Public notice of intent to issue a State Consent Order to the following: The City of Greensboro (P.O. Box 3136, Greensboro, NC 27402-3136) has requested Special Order by Consent No. S19-010 for its T.Z. Osborne WWTP, a 40.0 MGD wastewater treatment facility under the authority of discharge permit NC0047384. The T.Z. Osborne WWTP discharges treated wastewater to South Buffalo Creek in the Cape Fear River Basin.

The Environmental Management Commission proposes to issue the Order per Article 21 of Chapter 143, N.C. General Statutes, and other regulations. Compliance with this Order requires rehabilitation of the wastewater to address elevated discharges of 1,4-dioxane. The City of Greensboro shall comply with the NPDES permit limits with the exception of the interim limitations identified in the Order. This Order will expire two (2) years from the SOC effective date.

A copy of the Order is available upon request by contacting Jenny Graznak of the Division of Water Resources at 336-776-9695, or available online at https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/npdes-wastewater-permits. Written comments on the draft Consent Order may be sent to the attention of Ms. Brianna Young, N.C. Division of Water Resources, 1617 Mail Service Center, Raleigh, N.C. 27699-1617, or may be submitted by email to: publiccomments@ncdenr.gov. Please be sure to include "T.Z. Osborne WWTP SOC" in the email's subject line. Comments on the proposed Order received no later than December 9, 2020 will be considered in the final determination.

PUBLIC HEARING - The N.C. Department of Environmental Quality will hold a public hearing to accept comments on the aforementioned Special Order by Consent from **6:00 pm until the hearing officer adjourns the meeting on Wednesday, December 9, 2020.** This public meeting will be held via Cisco's WebEx teleconferencing service instead of an in-person meeting. **Speaker registration will end at 12:00 PM on Wednesday, December 9, 2020.** Infor-

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Attention:

DEPARTMENT OF WATER RESOURCES
1617 MAIL SERVICE CENTER
RALEIGH, NC 276991617

PUBLIC NOTICE
STATE OF NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION
1617 MAIL SERVICE CENTER, RALEIGH, NORTH CAROLINA 27699-1617
NOTIFICATION OF INTENT TO ISSUE A CONSENT ORDER

Public notice of intent to issue a State Consent Order to the following:

The City of Greensboro (P.O. Box 3136, Greensboro, NC 27402-3136) has requested Special Order by Consent No. S19-010 for its T.Z. Osborne WWTP, a 40.0 MGD wastewater treatment facility under the authority of discharge permit NC0047384. The T.Z. Osborne WWTP discharges treated wastewater to South Buffalo Creek in the Cape Fear River Basin.

The Environmental Management Commission proposes to issue the Order per Article 21 of Chapter 143, N.C. General Statutes, and other regulations. Compliance with this Order requires rehabilitation of the wastewater to address elevated discharges of 1,4-dioxane. The City of Greensboro shall comply with the NPDES permit limits with the exception of the interim limitations identified in the Order. This Order will expire **two (2) years from the SOC effective date** .

A copy of the Order is available upon request by contacting Jenny Graznak of the Division of Water Resources at 336-776-9695, or available online at https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/npdes-wastewater-permits. Written comments on the draft Consent Order may be sent to the attention of Ms. Brianna Young, N.C. Division of Water Resources, 1617 Mail Service Center, Raleigh, N.C. 27699-1617, or may be submitted by email to: publiccomments@ncdenr.gov. Please be sure to include "T.Z. Osborne WWTP SOC" in the email's subject line. Comments on the proposed Order received no later than December 9, 2020 will be considered in the final determination.

PUBLIC HEARING
The N.C. Department of Environmental Quality will hold a public hearing to accept comments on the aforementioned Special Order by Consent from 6:00 pm until the hearing officer adjourns the meeting on Wednesday, December 9, 2020. This public meeting will be held via Cisco's WebEx teleconferencing service instead of an in-person meeting. Speaker registration will end at 12:00 PM on Wednesday, December 9, 2020. Information on the hearing and how to register can be found online at https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/npdes wastewater-permits .

N&O: November 8, 2020

STATE OF NORTH CAROLINA

COUNTY OF WAKE

Before the undersigned, a Notary Public of Johnston County, North Carolina, duly commissioned and authorized to administer oaths, affirmations, etc., personally appeared BETSY WOMBLE, who being duly sworn or affirmed, according to law, doth depose and say that he or she is Accounts Receivable Specialist of the News & Observer Publishing Company, a corporation organized and doing business under the Laws of the State of North Carolina, and publishing a newspaper known as The News & Observer, Wake County and State aforesaid, the said newspaper in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina, and that as such he or she makes this affidavit; and is familiar with the books, files and business of said corporation and by reference to the files of said publication the attached advertisement

1 Insertion(s)

Published On:
November 08, 2020

Betsy Womble

BETSY WOMBLE, Accounts Receivable Specialist

Wendy Dawson

Electronic Notary Public
State of North Carolina
Sworn to and subscribed before me this
9th day of November, 2020

My Commission Expires: 7/10/2023

WENDY DAWSON
Notary Public
North Carolina
Johnston County

AFFIDAVIT OF PUBLICATION

STATE OF NORTH CAROLINA
COUNTY OF NEW HANOVER

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Before the undersigned, a Notary Public of Said County and State,

Jarimy Springer

Who, being duly sworn or affirmed, according to the law, says that he/she is

Accounting Specialist

of THE STAR-NEWS, a corporation organized and doing business under the Laws of the State of North Carolina, and publishing a newspaper known as STAR-NEWS in the City of Wilmington

PUBLIC NOTICE STATE OF NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION 1617 MAIL SERVICE CENTER RALEIGH, NORTH CAROLINA 27699-1617 NOTIFICATION OF INTENT TO ISSUE A CONSENT ORDER Public notice of intent to issue a State Consent Order to the following

was inserted in the aforesaid newspaper in space, and on dates as follows:

11/7 1x

And at the time of such publication Star-News was a newspaper meeting all the requirements and qualifications prescribed by Sec. No. 1-597 G.S. of N.C.

Jarimy Springer

Title: **Accounting Specialist**

Sworn or affirmed to, and subscribed before me this 24th day of November, A.D., 2020

In Testimony Whereof, I have hereunto set my hand and affixed my official seal the day and year aforesaid.

Dawn Bean

Notary Public

My commission expires 4th day of Nov., 2023

DAWN BEAN NOTARY PUBLIC NEW HANOVER COUNTY, NC

going affidavit with the advertisement thereto annexed it is adjudged by the Court that the said publication was duly and properly made and that the summons has been duly and legally served on the defendant(s).

This _____ day of _____, ____

_____
Clerk of Superior Court

MAIL TO:

Showing results **1** through **5** of **5**
(1 Pages)

Show results beginning at page:

1

Chatham News & Record, The
Nov. 12, 2020
Miscellaneous Notices

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Fayetteville Observer
Nov. 11, 2020
Miscellaneous Notices

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11/11 5226594

StarNews
Nov. 8, 2020
Miscellaneous Notices

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News & Observer
Nov. 8, 2020
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News & Record
Nov. 6, 2020
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ID	Start time	Completion time	Email	Name	First and Last Name:	Title:	Employer/Representing:	Email Address:	Street Mailing Address:	City, State, and Zip Code:	Do you wish to speak at the hearing?	How did you hear about this hearing?
1	11/10/20 21:09:10	11/10/20 21:16:02	anonymous		KIRK REID		MYSELF	KVREID50@YAHOO.COM	1331 WEST FRIENDLY AVE	GREENSBORO, NC 27403	No	Webpage
2	11/30/20 14:40:53	11/30/20 14:46:06	anonymous		Rhonda Locklear	W/R Environmental Programs Manager	Fayetteville Public Works Commission	rhonda.locklear@faypwc.com	P.O. Box 1089	Fayetteville, NC 28302	No	Listserv
3	12/7/20 16:30:46	12/7/20 16:37:47	anonymous		Mick Noland	Chief Operating Officer, Water Resources Division	Fayetteville Public Works Commission	mick.noland@faypwc.com	955 Old Wilmington Road	Fayetteville, N C 28301	Yes	Email
4	12/8/20 12:19:09	12/8/20 12:25:42	anonymous		Emily Sutton	Haw Riverkeeper	Haw River Assembly	emily@hawriver.org	PO Box 187	Bynum, NC 27228	Yes	Webpage
5	12/8/20 23:14:57	12/8/20 23:17:28	anonymous		Marrtie Groome	Laboratory and Industrial Waste Section Supervisor	City of Greensboro	martie.groome@greensboro-nc.gov	2350 Huffine Mill Road	McLeansville, NC 27301	No	
6	12/8/20 23:17:37	12/8/20 23:19:39	anonymous		Elijah Williams	Water Reclamation Manager	City of Greensboro	elijah.williams@greensboro-nc.gov	2350 Huffine Mill Road	McLeansville NC 27301	No	
7	12/8/20 23:19:42	12/8/20 23:20:37	anonymous		Alicia Goots	Laboratory Coordinator	City of Greensboro	alicia.goots@greensboro-nc.gov	2350 Huffine Mill Road	McLeansville NC 27301	No	
8	12/9/20 11:20:51	12/9/20 11:21:34	anonymous		Geoff Gisler		Southern Environmental Law Center	ggisler@selcnc.org		Chapel Hill, NC 27516	Yes	Email

Event Name: Greensboro Proposed SOC Public Hearing
Event Date/Time: December 9, 2020 at 6pm

Attendance Count	User Type	FirstName	LastName	Email	Invited	Registered	Attended
1	Panelist	Jeff	Poupart	jeff.poupart@ncdenr.gov	Yes	No	Yes
2	Panelist	Marion	Deerhake	m.e.deerhake@gmail.com	Yes	No	Yes
3	Panelist	Jenny	Graznak	jenny.graznak@ncdenr.gov	Yes	No	Yes
4	Panelist	Brianna	Young	brianna.young@ncdenr.gov	Yes	No	Yes
5	Panelist	John	Hennessy	john.hennessy@ncdenr.gov	Yes	No	Yes
6	Panelist	Lon	Snider	lon.snider@ncdenr.gov	Yes	No	Yes
7	Attendee	Martie	Groome	martie.groome@greensboro-nc.gov	No	No	Yes
8	Attendee	Mick	Noland	mick.noland@faypwc.com	No	No	Yes
9	Attendee	Anna	Gurney	anna.gurney@ncdenr.gov	No	No	Yes
10	Attendee	Lisa	sorg	lisa@ncpolicywatch.com	No	No	Yes
11	Attendee	Jean	Zhuang	jzhuang@selcnc.org	No	No	Yes
12	Attendee	Ashley	McGroarty	amcgroarty@shamrockenviro.com	No	No	Yes
13	Attendee	Ashley	McGroarty	amcgroarty@shamrockenviro.com	No	No	Yes
14	Attendee	Monty	Hagler	monty@rlfcommunications.com	No	No	Yes
15	Attendee	steve	tedder	tedderfarmconsulting@gmail.com	No	No	Yes
16	Attendee	LAINE	ROBERTS	laine.roberts@greensboro-nc.gov	No	No	Yes
17	Attendee	Nora	Deamer	nora.deamer@ncdenr.gov	No	No	Yes
18	Attendee	Thomas	Marino	tommarino7@gmail.com	No	No	Yes
19	Attendee	Robert	Barker	robert.barker@ncdenr.gov	No	No	Yes
20	Attendee	Jamie	Revels	jamie.revels@townofcary.org	No	No	Yes
21	Attendee	Jamie	Revels	jamie.revels@townofcary.org	No	No	Yes
22	Attendee	Kim	Nimmer	kim.nimmer@ncdenr.gov	No	No	Yes
23	Attendee	Anjali	Orlando	anjali.orlando@ncdenr.gov	No	No	Yes
24	Attendee	Michael	Borchers	michael.borchers@greensboro-nc.gov	No	No	Yes
25	Attendee	Michael	Murphy	murphylissa@hotmail.com	No	No	Yes
26	Attendee	N	B	speedn8@gmail.com	No	No	Yes
27	Attendee	Kimberly	Sowell	kimberly.sowell@greensboro-nc.gov	No	No	Yes
28	Attendee	Kurtis	Proffit	proffitkb@gmail.com	No	No	Yes
29	Attendee	Meredith	Hamilton	mhamilton@cshlaw.com	No	No	Yes

30	Attendee	Sue	Homewood	sue.homewood@ncdenr.gov	No	No	Yes
31	Attendee	GJ	Sutherland	gjdsutherland@gmail.com	No	No	Yes
32	Attendee	Jason	Green	jason.green@faypwc.com	No	No	Yes
33	Attendee	Dennis	Hodge	africanfriend@gmail.com	No	No	Yes
34	Attendee	Sean	Sullivan	ssullivan@robinsonbradshaw.com	No	No	Yes
35	Attendee	Jim	H	jh546@hotmail.com	No	No	Yes
36	Attendee	Jaime	Robinson	jaime.robinson@jacobs.com	No	No	Yes
37	Attendee	Sarah	Braman	sarah.braman@townofcary.org	No	No	Yes
38	Attendee	Sarah	Braman	sarah.braman@townofcary.org	No	No	Yes
39	Attendee	Tammy	H	tammy.l.hill@ncdenr.gov	No	No	Yes
40	Attendee	isaac	groves	igroves@thetimesnews.com	No	No	Yes
41	Attendee	Elijah	Williams	elijah.williams@greensboro-nc.gov	No	No	Yes
42	Attendee	Emily	Sutton	emily@hawriver.org	No	No	Yes
43	Attendee	Kent	Wiggins	kent.wiggins@ncdenr.gov	No	No	Yes
44	Attendee	Michele	Dawes	mdawes@ci.asheboro.nc.us	No	No	Yes
45	Attendee	Geoff	Gisler	ggisler@selcnc.org	No	No	Yes
46	Attendee	Robert	Hirt	robert.hirt@townofcary.org	No	No	Yes
47	Attendee	Greg	Flory	gflory@ptrwa.org	No	No	Yes
48	Attendee	Kristine	Williams	kristine.williams@greensboro-nc.gov	No	No	Yes
49	Attendee	Peter	Kamensky	therealpolishog@gmail.com	No	No	Yes
50	Attendee	Craig	Bromby	craig.a.bromby@gmail.com	No	No	Yes
51	Attendee	James	West	james.west@faypwc.com	No	No	Yes
52	Attendee	Julie	Grzyb	julie.grzyb@ncdenr.gov	No	No	Yes
53	Attendee	Derek	Denard	dcdenard@gmail.com	No	No	Yes
54	Attendee	james	brown	jbrown@yahoo.com	No	No	Yes
55	Attendee	connie	brower	connie.brower@ncdenr.gov	No	No	Yes
56	Attendee	Sarah	Laughlin	slaughlin@ci.asheboro.nc.us	No	No	Yes

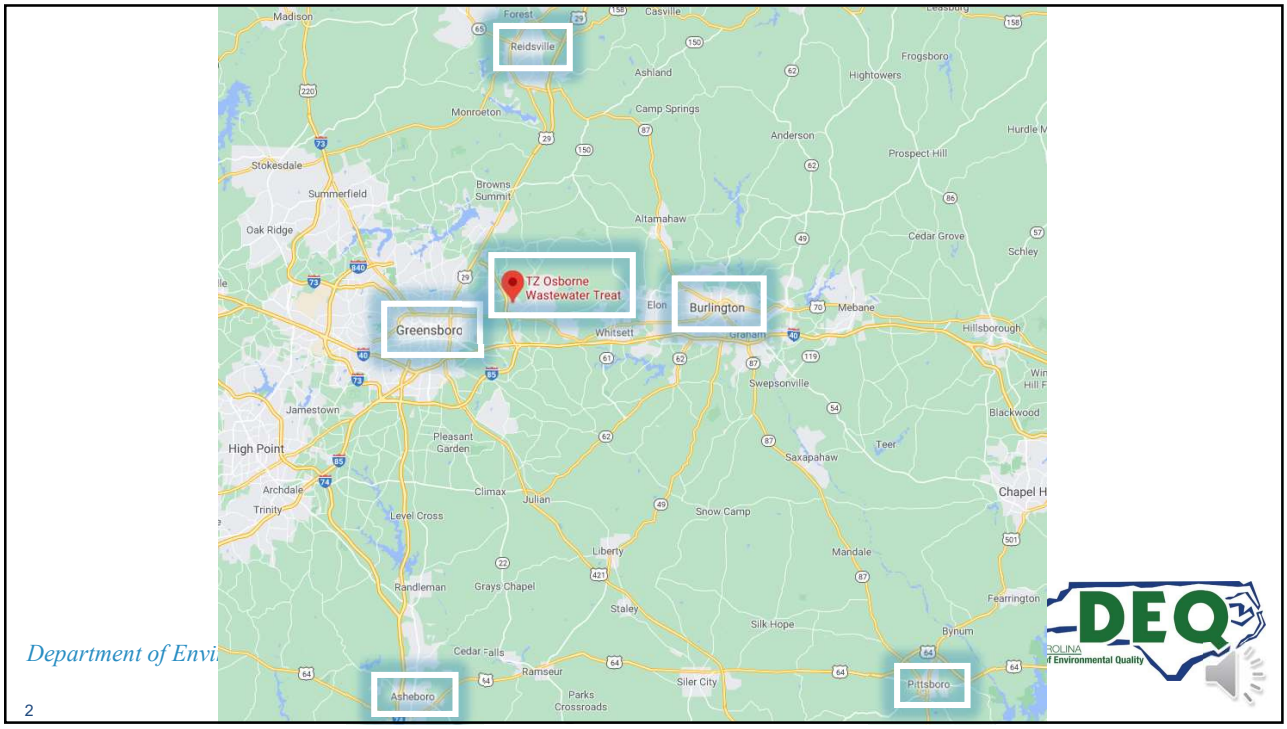
City of Greensboro's T.Z. Osborne WWTP

Proposed Special Order by Consent (SOC) Public Hearing

December 9, 2020

Department of Environmental Quality

1



Department of Envi

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2

What is 1,4-dioxane?

According to the 2017 EPA fact sheet, 1,4-dioxane is:

- A synthetic industrial chemical that is completely dissolves in water
- A by-product present in paint stripper, dye, grease, antifreeze, deicer, and even consumer and personal care products such as deodorants, shampoos, and cosmetics
- Highly mobile and does not readily biodegrade in the environment
- Identifiable in reportable concentrations in groundwater and surface water, especially downstream of urban areas

EPA has classified 1,4-dioxane as a likely human carcinogen, but no federal maximum contaminant level (MCL) has been established for it in drinking water.

3

3

1,4-dioxane in drinking water

How 1,4-dioxane enters surface water and drinking water:

- 1,4-dioxane enters a WWTP from industrial and domestic wastewater
- Most WWTPs are not currently designed to remove 1,4-dioxane, so it passes through the WWTP and enters surface waters with the effluent discharge
- Most drinking water treatment processes are unable to remove 1,4-dioxane from surface waters

EPA's response to 1,4-dioxane:

- EPA issued a health advisory recommending concentrations not exceed 35 µg/L in drinking water to protect for a 1 in 10,000 estimated lifetime cancer risk
- EPA risk assessments indicate that a drinking water concentration of 0.35 µg/L represents a 1 in 1,000,000 cancer risk level

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Pretreatment Program Delegation

Department of Environmental Quality

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City of Greensboro's History

- From 2013 to 2015, results of monitoring by public water supply systems in North Carolina indicated the presence of 1,4-dioxane in the Cape Fear River Basin.
  - Results of follow up DEQ studies noted detectable concentrations downstream of the T.Z. Osborne WWTP's discharge.
- In 2015, the City voluntarily started a 1,4-dioxane source identification and reduction plan.
- By October 2015, the City identified one industry as a quantifiable source of 1,4-dioxane to the WWTP.
  - The industry voluntarily agreed to conduct its own source reduction plan.
- Since 2016, the discharge of 1,4-dioxane from the T.Z. Osborne WWTP has reduced by over 50%.

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DEQ's Response

- December 2017: DEQ required the City to begin monthly monitoring of the effluent from the T.Z. Osborne WWTP for 1,4-dioxane
  - Results routinely indicated the presence of 1,4-dioxane
- August 2019: an effluent concentration of 957.5 µg/L was reported on their monthly monitoring report
  - DEQ calculations predicted 1,4-dioxane effluent concentrations of that magnitude could cause the instream concentration downstream to exceed the 35 µg/L EPA health advisory level for drinking water
- October 2019: DEQ began its own sampling of 1,4-dioxane in the T.Z. Osborne WWTP effluent
  - DEQ sampling results indicate that the T.Z. Osborne WWTP discharge contributes to exceedances downstream
- November 2019: DEQ issued a Notice of Violation to the City for the elevated discharge of 1,4-dioxane from August 2019

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What is an SOC?

A Special Order by Consent (SOC):

- May be an appropriate course of action if a facility is unable to consistently comply with the terms, conditions, or limitations in an NPDES Permit
- A negotiated agreement between a permittee and the Environmental Management Commission (EMC)
- A tool used to help facilities achieve compliance
- Temporarily relaxes parameter limits to allow time for a facility to make necessary improvements or changes

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Why does Greensboro need an SOC?

T.Z. Osborne WWTP is permitted by DEQ to discharge treated wastewater to South Buffalo Creek, which is in the Cape Fear River Basin.

- The discharge permit does not currently contain limits for 1,4-dioxane.

The primary goal of the SOC is to reduce 1,4-dioxane concentrations from the T.Z. Osborne WWTP discharge such that concentrations in downstream drinking water supplies will not exceed the EPA health advisory concentration of 35 µg/L.

- It is not intended to resolve, be applicable to, or encompass all other point and non-point sources that may be causing or contributing to elevated levels of 1,4-dioxane in the Cape Fear River Basin.
- Source reduction will be the primary and most effective means of reducing 1,4-dioxane concentrations in the T.Z. Osborne WWTP effluent and the Cape Fear River Basin.

NORTH CAROLINA Department of Environmental Quality

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What other future actions can be taken?

Significant future reductions of 1,4-dioxane will require technological advances to remove the compound at industries and WWTPs.

However, large scale treatment technologies for the removal of 1,4-dioxane at municipal WWTPs does not currently exist.

NORTH CAROLINA Department of Environmental Quality

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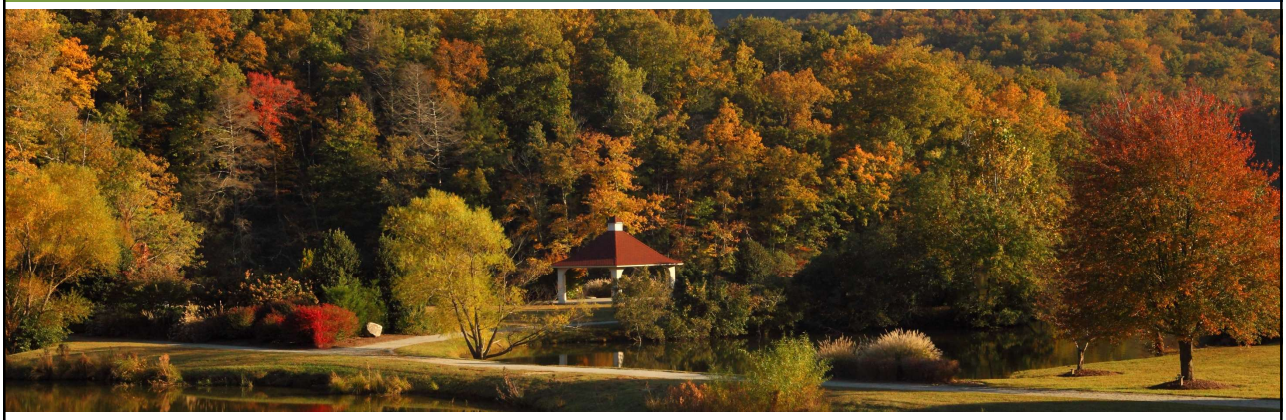
Actions to be Undertaken in the Proposed SOC for the T.Z. Osborne WWTP



Department of Environmental Quality

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SOC Year One

- Upon the execution date of the SOC, meet the effluent Year One daily maximum grab sample SOC compliance value of 50 µg/l ("Year One SOC Compliance value") to protect downstream drinking water intakes
- Increase 1,4-dioxane effluent monitoring frequency to weekly
- Develop and implement an ongoing 1,4-dioxane public education outreach plan with applicability toward individual, commercial and industrial users of City Water Resources Department services
- Contact, interview, and survey indirect dischargers with identifiable, contributing, 1,4-dioxane concentrations of greater than 100 µg/l
- Modify SIU permits or develop other pretreatment program mechanisms as necessary

Department of Environmental Quality

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SOC Year One (cont.)

- Require analyses of all new industrial flows to the collection system for the presence of 1,4-dioxane prior to the City's acceptance of the wastewater. The City may require the same or similar analyses of new commercial flows.
  - The City shall also obtain a description of the character of any new discharge, its estimated volume, and its location within the collection system.
- Continue collaboration and oversight regarding industrial dischargers of 1,4-dioxane to the WWTP:
  - Identify SIUs that are indirect sources of 1,4-dioxane
  - Develop a source reduction program
  - Review slug control plans and update if necessary
  - Increase inspection of selected SIUs to twice per year

Department of Environmental Quality

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SOC Year One (cont.)

Provide DEQ a copy of the City's existing 1,4-dioxane monitoring plan, and implement the following:

- Determine contributions to the collection system and investigate further as concentrations or loadings warrant
- Investigate and determine background levels of 1,4-dioxane that shall include the following:
  - Industrial, domestic, commercial, drinking water, and surface intake water contributions
- Meet with DEQ Winston-Salem Regional Office on a quarterly basis
- As circumstances warrant, review and modify the existing 1,4-dioxane monitoring plan. Provide DEQ a copy of proposed changes prior to their implementation.

Department of Environmental Quality

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SOC Year One (cont.)

Report by telephone within 24 hours to the Winston-Salem Regional Office after receiving any data indicating a T.Z. Osborne WWTP effluent 1,4-dioxane concentration ≥ 50 µg/l.

- The City is also required to submit a written report on any finalized data regarding the exceedance, its cause, effects, and its duration to the WSRO within 5 business days of the City's first knowledge of the exceedance.

Department of Environmental Quality

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SOC Year One (cont.)

In addition to any other reporting required, the City shall submit a written report on the Year One activities. The report must contain the following (at a minimum):

- Summary of the City's investigation results
- Summary of any potential (new) industrial or commercial flows to the collection system
- Any oversight activities
- Public education outreach plan
- A table of all monitoring results for 1,4-dioxane collected during the SOC Year One
- In the case of noncompliance with the Year One SOC compliance value, a statement of the reason(s) for noncompliance, remedial action(s) taken, and a statement on the extent to which subsequent dates or times for accomplishment of listed activities may be affected.
- Based on Year One data and any follow-up monitoring activities, including IU inspections and oversight and the City's split sample data, determine the following and provide a summary:
  - Long-term achievable effectiveness of source reduction efforts and resulting T.Z. Osborne WWTP effluent reductions
  - Industrial, domestic, commercial, surface, and drinking water contributions

Department of Environmental Quality

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SOC Year Two

- Upon the first day of SOC Year Two, meet the effluent Year Two daily maximum grab sample SOC compliance value of 35 µg/l ("Year Two SOC Compliance value") to protect of downstream drinking water intakes
- Continue weekly 1,4-dioxane effluent monitoring frequency
- Continue investigating industrial sources and engage with sources not defined as SIUs to reduce or eliminate 1,4-dioxane discharges
- Calculate a T.Z. Osborne WWTP effluent 1,4-dioxane mass balance using all data (industrial, domestic, commercial, drinking water, and collection system data)
- Modify SIU permits or develop other pretreatment program mechanisms as necessary

Department of Environmental Quality

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SOC Year Two (cont.)

Report by telephone within 24 hours to the Winston-Salem Regional Office after receiving any data indicating a T.Z. Osborne WWTP effluent 1,4-dioxane concentration ≥ 35 µg/l.

- The City is also required to submit a written report on any finalized data regarding the exceedance, its cause, effects, and its duration within 5 business days of the City's first knowledge of the exceedance.

Department of Environmental Quality

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SOC Year Two (cont.)

In addition to any other reporting required by DEQ, the City shall submit to DEQ a written report on the Year Two activities. The report must contain the following (at a minimum):

- Summary of the City's oversight activities
- Public education outreach plan
- 1,4-dioxane mass balance
- A table of all monitoring results for 1,4-dioxane collected during the SOC Year Two
- In the case of noncompliance with the Year Two SOC compliance value, a statement of the reason(s) for noncompliance, remedial action(s) taken, and a statement on the extent to which subsequent dates or times for accomplishment of listed activities may be affected.

Department of Environmental Quality

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Additional Requirements

Develop a Best Management Practices/1,4-dioxane Minimization Plan

In the case source reduction alone may not lead to the effluent SOC compliance value being consistently achieved, the following shall apply:

- If ≥ 25% of discharge data exceed the Year One SOC compliance value (50 µg/L), the City shall submit to DEQ for approval a report that considers how the City will address 1,4-dioxane in the T.Z. Osborne WWTP effluent through:
  1) Investigation of alternate/additional treatment processes for removal of 1,4-dioxane at major industrial sources.
  2) Investigation of the technical and economic feasibility of treatment technologies for the removal of 1,4-dioxane at wastewater treatment plants.
  3) Investigation of the technical and economic feasibility of treatment technologies for removal of 1,4-dioxane at drinking water treatment facilities.

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SOC Stipulated Penalties

- The City of Greensboro agrees to pay an upfront penalty in the amount of $5,000.00 as settlement of the alleged violations
- The City agrees that unless excused, the City will pay stipulated penalties according to the following schedule for failure to meet the deadlines and requirements:

Description	Stipulated Penalty
Failure to provide 24-hour notice of elevated discharge levels to WSRO in the Compliance Schedule in Section 2. of this Special Order	$1,000 per event; $100/day thereafter
Failure to submit complete Annual Reports in the Compliance Schedule in Section 2. of this Special Order by specified date	$1,000 per event; $100/day thereafter
Failure to meet the grab sample effluent daily maximum SOC compliance value in SOC Year One or Year Two	Exceedance 1-5 per SOC year: $1,000 per event, per SOC year Exceedance 6-10 per SOC year: $2,000 per event, per SOC year Exceedance 11 and up per SOC year: $3,000 per event, per SOC year
Failure to achieve any other requirement of this Special Order	$1,000 per event

Department of Environmental Quality

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T.Z. Osborne WWTP SOC Timeline

- Initial SOC draft Public Notice: June 22, 2020 – July 24, 2020
- Based on comments received during the initial public notice, DEQ made changes to the proposed SOC and the City of Greensboro accepted them, which included adjustment of the SOC Year One compliance value, language clarifications, and the addition of an FAQ document to answer questions received during the initial public notice.
- Updated SOC and Public Hearing Public Notices: November 6, 2020 – December 9, 2020
  - Written comments due by noon (12pm) on December 14, 2020
- Today's public hearing is the result of the high level of interest in the proposed SOC and allows DEQ additional opportunity to receive public comments.

Department of Environmental Quality

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Public Comments May Be Provided By:

Department of Environmental Quality

- Public Hearing
- Email: publiccomments@ncdenr.gov (Please type "T.Z. Osborne WWTP SOC" in the subject line)
- Voicemail: 336-776-9691 (Please state name and any affiliation before stating comments)
- USPS: NC Division of Water Resources, Water Quality Permitting Section (Attn: Brianna Young), 1617 Mail Service Center Raleigh, NC 27699-1617

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Young, Brianna A

From: Therese Vick <therese.vick@gmail.com>
Sent: Monday, December 14, 2020 10:54 AM
To: SVC_DENR.publiccomments
Cc: Debbie Hall; Keely Wood
Subject: [External] T.Z. Osborne WWTP SOC

To Whom it May Concern:

Having read over the "Special Order by Consent" (SOC) I do not see any mechanism that will ensure that downstream users will be notified by the Department of Environmental Quality (DEQ) should any spikes be seen in reporting or a discharge occur. This has been a **continuing** problem with this facility; the City of Greensboro has attempted to bury pertinent information that could be discovered in public records, and DEQ failed to notify downstream water systems. DEQ should include provisions in the SOC requiring that the public and downstream water users/systems be notified of any problems immediately. Please see BREDL comments submitted in September 2019 below.

Sincerely,

Therese Vick

September 16, 2020

Hello,

On behalf of Blue Ridge Environmental Defense League (BREDL) and our Chatham and Lee County chapters I request that the North Carolina Department of Environmental Quality hold a public meeting and extend the comment deadline on the proposed Special Order by Consent (SOC) for the TZ Osborne Wastewater Treatment Plant. BREDL has members in Chatham and Lee counties that drink water from the Cape Fear River.

The history of this and other facilities that discharge into the Cape Fear does not indicate that transparency is paramount; and apparently, transparency is a problem for local government. From City of Greensboro emails obtained by NC Policy Watch: "The report will be public record eventually"
Her boss: "It's OK buried in the report. Just don't want it to stick out like a sore thumb"
Please see:
http://www.ncpolicywatch.com/2020/07/22/pw-special-report-while-toxic-chemical-polluted-cape-fear-river-basin-some-utilities-officials-dismissed-public-health-risk/
http://www.ncpolicywatch.com/2020/07/23/pw-special-report-part-two-lax-local-regulation-allows-toxic-carcinogen-to-infiltrate-drinking-water-across-the-cape-fear-river-basin/

And: http://www.ncpolicywatch.com/2020/07/23/pw-special-report-part-two-lax-local-regulation-allows-toxic-carcinogen-to-infiltrate-drinking-water-across-the-cape-fear-river-basin/

Downstream communities deserve protection, and this SOC is not protective. It is incumbent on the DEQ to review the past practices of this and other facilities responsible for discharging 1,4 dioxane into the Cape Fear River- including any and all attempts to cover-up, bury and hide public information.

Therese Vick

Do not share this email unless you have my express permission to do so

Therese Vick
North Carolina Healthy Sustainable Communities/Coal Ash Campaign Coordinator
Research Director
Blue Ridge Environmental Defense League
therese.vick@gmail.com
The Office of Imminent Disaster
919-345-3673
www.bredl.org
@tvickBREDL Twitter

Be kind to all you meet, each of us carries a burden that others cannot see—

Young, Brianna A

From: Jeannie Ambrose <jeanniea@centurylink.net>
Sent: Monday, December 14, 2020 11:40 AM
To: SVC_DENR.publiccomments
Subject: [External] T.Z. Osborne WWTP SOC-Public Comment-JA
Attachments: 2020-DEC 14-DEQ Public Comment-Greensboro T.Z. Osborne WWTP SOC-FINAL-JA submitted .pdf

Thank you for the opportunity to submit public comments.

Jeannie Ambrose

DEQ Public Comment
Greensboro T.Z. Osborne WWTP Special Order by Consent
December 14, 2020

I understand that the intent of the proposed, revised Greensboro T.Z. Osborne WWTP Special Order by Consent is not to resolve but reduce the concentration of 1,4-dioxane-contaminated effluent discharged in the Cape Fear River Basin. Living downstream, I am aware of the many man-made and naturally occurring chemicals affecting the drinking water quality threatening human and environmental health. The ongoing drinking water quality issues in Pittsboro is one specific case that shows how difficult it is for a community to find another drinking water source less contaminated or the resources to upgrade or build a new WWTP capable of treating/reducing the level of these contaminates of emerging concern.

For these reasons, I support the following recommendations to further protect our natural resources and reduce risks to environmental and human health:
1. The Significant Industrial Users upstream that are the source of chemical contaminates must be identified and held responsible for treating their waste stream.
2. Permit target levels of 1,4-Dioxane in the effluent from the T.Z. Osborne WWTP should be no higher than 35µg/L in the first year and no higher than 1.0 µg/L [lowest level measurable] in the second year. Sampling data should be made available to the public.
3. The public should be informed of the treatment methods [e.g., slug control plan] used, along with any violations and the compliance results in the Annual Sewage and Water Reclamation Report.

Thank you for revising the Greensboro T.Z. Osborne WWTP SOC in response to public input and providing the opportunity to submit public comments on this version of the SOC for consideration.

Jeannie Ambrose
Pittsboro, NC

Young, Brianna A

From: Emily Sutton <emily@hawriver.org>
Sent: Monday, December 14, 2020 4:53 PM
To: SVC_DENR.publiccomments
Subject: [External] T.Z. Osborne WWTP SOC comments
Attachments: Greensboro Talking points SOC.pdf

Ms. Young,
Please see attached comments.
Thank you.

Emily Sutton
Haw Riverkeeper

Haw River Assembly
P.O.Box 187
Bynum NC 27228
O: (919) 542-5790
C: (573) 979-1038
www.hawriver.org

Haw River Assembly
Phone: (919) 542-5790
P.O Box 187
Bynum, NC
www.hawriver.org

Greensboro Special Order by Consent

On November 14, 2019, DEQ issued a Notice of Violation and Intent to Assess Civil Penalties against the City of Greensboro for a discharge of 1,4-dioxane of 957.5 µg/L that occurred on August 7, 2019. This was due to a discharge from a Significant Industrial User, Shamrock Environmental, a company that treats industrial waste.

Following much public engagement on the initial Special Order by Consent, the NC Department of Environmental Quality (NCDEQ) has released a second draft of the Special Order by Consent to public comment.

Three changes have been made:

1. The compliance value in Year One has been reduced to 50 ug/L.
2. The word "voluntary" has been removed in record to source reduction in year one
3. Clarification has been made that states compliance values take effect on the first day of each year.

In addition to those changes, we request NCDEQ make the following adjustments.

- The Environmental Protection Agency has set an advisory level based on a 1 in 10,000 cancer rate of 35 ug/L for 1,4 dioxane discharges. The narrative set by NCDEQ in the Standard for Toxic Substances (15A NCAC 02B .0208 STANDARDS FOR TOXIC SUBSTANCES AND TEMPERATURE) states that known carcinogens must not exceed a 1 in 1,000,000 cancer rate. This narrative standard sets the limit of 1,4 dioxane discharge to 0.35 ug/L. However, this standard is not being enforced.
- Due to limitations in technology, the practical quantitation limit (the lowest level the approved method can detect) is 1.0 ug/L. This practical quantitation limit should be the compliance value for year two in order to adequately protect downstream communities. The agency acknowledges that there are background levels present in the river system, and achieving the in-stream target value of 0.35 ug/L in water supply watersheds will prove to be a challenge due to those levels. Additional inputs from direct dischargers should be minimized to the Practical Quantitation Limit of 1.0ug/L.
- The Special Order by Consent states that T.Z. Osborne will be conducting weekly sampling, which we are encouraged by. Source removal is a priority, and will prove to be the most effective way to minimize industrial pollutants from reaching surface waters. However, this data should be publicly available and shared with downstream communities.

- The Special Order by Consent also references a “slug control plan” which has not been made public. These slugs of high levels of concentrated toxins must be more adequately monitored and prevented.
- In addition to transparency for the public in regards to monitoring data and a slug control plan, plans for developing a source reduction plan should also be shared publicly as a resource for education and outreach to industrial users throughout the state. If properly managed and enforced, this could be a proactive step to limiting 1,4-dioxane discharges beyond Greensboro’s wastewater treatment plant.
- Under the current plan, indirect dischargers will only be included in additional interviewing and surveys if the contribution exceeds 100ug/L. It is unclear how often these dischargers will be monitored. If the goal is to minimize source reduction rather than treatment at the water treatment plant, no discharger should exceed the yearly compliance value, which should be no greater than 35 ug/L in Year One and no greater than the PQL of 1.0 ug/L in Year Two.
- Under the current plan, Significant Industrial Users are monitored only twice per year. This is inadequate and will not allow proper “slug control” or enforcement of limitations.
- The agency has given Greensboro little guidance on setting a numeric value for a 1,4 dioxane mass balance. Understanding that the data collected will inform this balance, we recommend that the agency provide clear direction if that balance exceeds the PQL of 1.0ug/L in Year Two.

Thank you,

Emily Sutton
Haw Riverkeeper
Haw River Assembly
emily@hawriver.org

Young, Brianna A

From: Geoff Gisler <ggisler@selcnc.org>
Sent: Monday, December 14, 2020 11:15 AM
To: SVC_DENR.publiccomments
Cc: Jean Zhuang; Kelly Moser; kemp@cfrw.us; Dana Sargent (dana@cfrw.us); emily@hawriver.org; Kerri Allen; 'Grady McCallie'
Subject: [External] T.Z. Osborne WWTP SOC comments
Attachments: 2020-12-14 _Comments on Revised SOC TZ Osborne.PDF; 2020_07_24 - SELC Comments on T.Z. Osborne WWTP Special Order by Consent.PDF

Dear Ms. Young:
Please accept the attached comments on the Proposed Special Order by Consent for the T.Z. Osborne WWTP. These comments are submitted on behalf of Cape Fear River Watch, Haw River Assembly, the North Carolina Coastal Federation, and the North Carolina Conservation Network. Sincerely,
Geoff

Geoffrey R. Gisler
Senior Attorney | Southern Environmental Law Center
601 West Rosemary Street, Suite 220
Chapel Hill, North Carolina 27516
T: 919-967-1450 | F: 919-929-9421

SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 919-967-1450 | 601 WEST ROSEMARY STREET, SUITE 220 CHAPEL HILL, NC 27516-2356 | Facsimile 919-929-9421

December 14, 2020

Via Email
N.C. Division of Water Resources
Water Quality Permitting Section
Attn: Brianna Young
1617 Mail Service Center
Raleigh, N.C. 27699-1617
publiccomments@ncdenr.gov

Re: Proposed Special Order by Consent: City of Greensboro's T.Z. Osborne Wastewater Treatment Plant

Dear Ms. Young:

Please accept these comments on the revised Special Order by Consent for the City of Greensboro's T.Z. Osborne wastewater treatment plant ("Order"). The Southern Environmental Law Center submits these comments on behalf of Cape Fear River Watch, Haw River Assembly, the North Carolina Coastal Federation, and the North Carolina Conservation Network. Unfortunately the Order fails to address the issues included in our July 24, 2020 letter on the original order, which we attach and incorporate by reference, and allows Greensboro to discharge 50 ug/l of 1,4 dioxane in year 1 and 35 ug/l in year 2 and beyond. As a result, the Haw River and drinking water for communities downstream will continue to be contaminated by Greensboro's pollution. The Division and Greensboro have known about dangerous levels of 1,4 dioxane being discharged from the T.Z. Osborne facility since at least 2015, yet the Order continues a largely voluntary approach to this critical problem and abandons any effort to comply with applicable water quality standards. Therefore, the Order should be withdrawn.

North Carolinians in Pittsboro, Fayetteville, and Wilmington should not be forced to drink water with 1,4 dioxane at levels that are likely to cause cancer. As the Division recognizes in its Frequently Asked Questions document that accompanied the Order, state law prohibits Greensboro from discharging 1,4 dioxane at the levels allowed under the Order—even upon completion of all required elements. In the FAQ document, the Division acknowledges that the water quality standard for 1,4 dioxane for water supply waters is 0.35 ug/l.[1] The agency states that this is the threshold "for acceptable risks based on best available data."[2] The Order does not, however, require Greensboro to reduce 1,4 dioxane discharges to a level that will meet that standard or result in "acceptable risks." It would, instead, allow Greensboro to discharge 1,4 dioxane up to 100 times the acceptable risk level. Therefore, the Order presents—based on the

[1] Division of Water Resources, North Carolina Department of Environmental Quality, *Frequently Asked Questions: Special Order by Consent (SOC) for the City of Greensboro T.X. Osborne WWTP* at 2 ("FAQ"); *see also* 15A N.C. Admin. Code 02B.0208 (dictating toxic substances standard implementation).
[2] FAQ at 2.

agency's own analysis—an unacceptable risk, does not provide a pathway to compliance for the City, and cannot be issued under state rules.

The remainder of the revised order would require Greensboro to survey its industrial users and to identify the sources of 1,4 dioxane that contribute to the T.Z. Osborne facility's Clean Water Act violations. The problem, however, is that each of the requirements is already mandated by federal law. That law requires Greensboro to, among many other things:

- "Deny or condition new or increased contributions of pollutants . . . by Industrial users where such contributions . . . would cause the POTW to violate its NPDES permit;"[3]
- "Require compliance with applicable Pretreatment Standards and Requirements by Industrial Users;"[4]
- "Control . . . the contribution to the POTW by each Industrial User;"[5]
- "Require (A) the development of a compliance schedule by each Industrial User for the installation of technology required to meet applicable Pretreatment Standards and Requirements and (B) the submission of all notices and self-monitoring reports from Industrial Users as are necessary to assess and assure compliance by Industrial Users;"[6]
- "Carry out all inspection surveillance and monitoring procedures necessary to determine, independent of information supplied by Industrial Users, compliance or noncompliance with applicable Pretreatment Standards and Requirements by Industrial Users;"[7]
- "Obtain remedies for noncompliance by any Industrial User with any Pretreatment Standard and Requirement;"[8]
- "Identify the character and volume of pollutants contributed to the POTW by the Industrial Users;"[9] and
- "[I]mmediately and effectively to halt or prevent any discharge of pollutants to the [publicly owned treatment works] which reasonably appears to present an imminent endangerment to the health or welfare of persons."[10]

The revised order is both less stringent and less comprehensive than the existing requirements. If DEQ actually wants to protect downstream users, the agency should enforce existing pretreatment program regulations.

The Order is also contrary to the rules for special orders by consent. The only purpose of a special order by consent is to "establish[] a schedule of corrective actions necessary to achieve compliance" with state laws implementing the Clean Water Act, including relevant water quality standards.[11] An application for a special order by consent must propose "the permit limits that the facility can be expected to meet if operated at its maximum efficiency during the term of the

[3] 40 C.F.R. §403.8(f)(1)(i).
[4] *Id.* at §403.8(f)(1)(ii).
[5] *Id.* at §403.8(f)(1)(iii).
[6] *Id.* at §403.8(f)(1)(iv).
[7] *Id.* at §403.8(f)(1)(v).
[8] *Id.* at §403.8(f)(1)(vi).
[9] *Id.* at §403.8(f)(2)(ii).
[10] *Id.*
[11] 15A N.C. Admin. Code 02H.1206(a)(1).

SOC."[12] In other words, the limits imposed must be based on the *best* performance that facility can attain. The permit application must provide "a predicted schedule for activities necessary to achieve permit compliance."[13] The order itself must "ensure that the applicant makes continued progress toward achieving compliance with its permit requirements."[14]

The Order, contrary to the rules, makes no effort to hold Greensboro to the best it can do to remove 1,4 dioxane or to achieve compliance with state water quality standards. By allowing Greensboro to discharge 35 ug/l in perpetuity, the Division has abandoned the requirement that Greensboro must perform at its "maximum efficiency" during the period covered by the Order and, by the end of the SOC, comply with water quality standards. The rules do not allow the Division to do so.

Many of the issues the Division must resolve elsewhere are complicated. This is not one of those issues. The law is clear, Greensboro is required to prevent industrial users from contaminating its discharge with 1,4 dioxane because it is not authorized to discharge the chemical. The City has had five years to identify those industrial users and require their compliance. The pretreatment program clearly gives the City the authority, mandate, and tools to achieve compliance.

The water quality standard is equally clear. The Division has recognized that the applicable water quality standard is 0.35 ug/l.

Most importantly, the consequences of Greensboro's failure to properly manage its pretreatment program and DEQ's failure to enforce controlling law are clear: communities from Pittsboro to Wilmington will continue to drink water with toxic levels of 1,4 dioxane. Those same communities are burdened by high levels of per- and polyfluoroalkyl substances. DEQ has the authority and obligation to relieve this burden by enforcing the existing law and holding Greensboro and its industrial users responsible for their pollution.

We respectfully request that DEQ withdraw the proposed special order by consent and enforce the existing law to its fullest extent.

Sincerely,

Geoffrey R. Gisler
Senior Attorney

Attachment

[12] *Id.* at 02H.1206(a)(2)(F)(iv).
[13] *Id.* at 02H.1206(a)(2)(G).
[14] *Id.* at 02H.1206(b)(1).

SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 919-967-1450 601 WEST ROSEMARY STREET, SUITE 220 CHAPEL HILL, NC 27516-2356 Facsimile 919-929-9421

July 24, 2020

VIA E-MAIL
Ms. Brianna Young
N.C. Division of Water Resources
1617 Mail Service Center, Raleigh, N.C. 27699
publiccomments@ncdenr.gov

Re: Southern Environmental Law Center Comments on T.Z. Osborne WWTP Special Order by Consent

Dear Ms. Young:

The Southern Environmental Law Center offers the following comments on the draft Special Order by Consent ("agreement") proposed by the City of Greensboro ("Greensboro" or "the City") and the North Carolina Department of Environmental Quality ("DEQ") for wastewater discharges from the City's T.Z. Osborne Wastewater Treatment Plant. These comments are submitted on behalf of Haw River Assembly, Cape Fear River Watch, North Carolina Conservation Network, Center for Environmental Heath, North Carolina Coastal Federation, and the North Carolina Chapter of the Sierra Club.

Greensboro's T.Z. Osborne Wastewater Treatment Plant ("T.Z. Osborne" or "treatment plant") treats wastewater from industrial facilities in Greensboro and parts of Guilford County, North Carolina. Some of these industries use or produce 1,4-dioxane in their processes and send wastewater containing the chemical to T.Z. Osborne. Because the City's treatment plant has not been removing 1,4-dioxane as part of its wastewater treatment process, it discharges the chemical into the Cape Fear River Basin. And because drinking water utilities cannot remove 1,4-dioxane with conventional treatment, downstream communities are forced to drink water contaminated by Greensboro's pollution.

Since at least 2015, Greensboro and DEQ have known that the City has been contaminating downstream drinking water supplies with 1,4-dioxane pollution. Yet the discharges continue at concentrations that threaten human health. Under the agreement, DEQ would allow Greensboro to continue to taint the drinking water of downstream communities for years to come.

Instead, DEQ must use its authority under the Clean Water Act to impose strict limits in the City's National Pollutant Discharge Elimination System ("NPDES") permit for 1,4-dioxane. As required by the Clean Water Act, Greensboro would in turn properly regulate its industries and stop them from releasing 1,4-dioxane into the City's treatment system. Only then can Greensboro and DEQ protect the health and safety of those downstream.

I. The public cannot wait for Greensboro to stop its toxic discharges of 1,4-dioxane.

Greensboro's discharges of 1,4-dioxane have been going on for years, if not decades. The public should not have to wait any longer for meaningful action. Voluntary actions taken by industry are not sufficient when, as a result, downstream communities must involuntarily drink contaminated water.

A. 1,4-dioxane is toxic.

1,4-dioxane is a man-made chemical that is a byproduct of many industrial processes.[1] The chemical is toxic to humans,[2] causing liver and kidney damage.[3] EPA itself classifies it as "likely to be carcinogenic,"[4] and California lists it as known to cause cancer.[5] Not only is 1,4-dioxane toxic, but it does not degrade and moves quickly through the environment.[6] Because of the harms 1,4-dioxane causes, EPA established a drinking water health advisory with an associated estimated lifetime cancer risk of one in a million at a concentration of 0.35 micrograms per liter ("µg/L").[7] The health advisory is set at the level at which there would be no more than one case of cancer per one million people exposed ("one-in-a-million cancer level"). DEQ has similarly established a human health criterion of 0.35 µg/L for 1,4-dioxane in water supplies.[8]

B. Greensboro and DEQ have known about Greensboro's 1,4-dioxane pollution since at least 2015.

Greensboro and DEQ have known about the City's pollution for years. Data collected under EPA's Unregulated Contaminant Monitoring Rule 3 from 2013 to 2015 showed that North Carolina's Cape Fear River Basin had some of the highest levels of 1,4-dioxane in drinking water in the country, including downstream of Greensboro.[9] Researchers at N.C. State University also alerted DEQ to 1,4-dioxane pollution in the Haw River downstream of Greensboro.[10] Around that time, DEQ's own sampling further revealed "hot spots" of the

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[1] *Technical Fact Sheet – 1,4-Dioxane*, EPA 1-2 (2017), https://www.epa.gov/sites/production/files/2014-03/documents/ffrro_factsheet_contaminant_14-dioxane_january2014_final.pdf ("EPA, *Technical Fact Sheet – 1,4-Dioxane*"); Detlef Knappe, *1,4-Dioxane Occurrence in the Haw River and in Pittsboro Drinking Water*, N.C. STATE UNIV. (Sept. 23, 2019) ("Knappe 2019 Presentation").

[2] EPA, *Technical Fact Sheet – 1,4-Dioxane*, *supra* note 1, at 1.

[3] *Id.*; EPA, *Integrated Risk Information System, Chemical Assessment Summary: 1,4,-dioxane* at 2, https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0326_summary.pdf (last visited on July 10, 2020).

[4] EPA, *Technical Fact Sheet – 1,4-Dioxane*, *supra* note 1, at 1.

[5] *1,4-Dioxane*, CAL. WATER BOARDS (June 26, 2019), https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/14-Dioxane.html.

[6] EPA, *Technical Fact Sheet – 1,4-Dioxane*, *supra* note 1, at 1-2.

[7] *2018 Edition of the Drinking Water Standards and Health Advisories*, EPA OFFICE OF WATER 4 (2018), https://www.epa.gov/sites/production/files/2018-03/documents/dwtable2018.pdf.

[8] *NC_StdsTable_09222017*, N.C. DEPT. ENVTL. QUALITY (2017), https://deq.nc.gov/nc-stdstable-09222017.

[9] *Occurrence Data for the Unregulated Contaminant Monitoring Rule*, EPA, https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule (last visited July 10, 2020).

[10] Rebecca Sadosky, *NC 1,4-Dioxane Study: A SDWA/CWA Collaboration*, N.C. DEPT. ENVTL. QUALITY 12 (June 5, 2018) ("Sadosky Presentation").

chemical downstream of the City.[11] DEQ's stream monitoring data, collected from 2014 through 2016, found concentrations as high as 543 µg/L downstream of Greensboro's treatment plant—far higher than the average concentration of 1.8 µg/L measured immediately upstream of the plant.[12]

As a result of the data, Greensboro was identified as a major source of 1,4-dioxane contamination. The City in turn began investigating the cause of its pollution in 2015, including the industries that were releasing the chemical into Greensboro's sewer system.[13]

Starting in December 2017, DEQ also required Greensboro to monitor T. Z. Osborne's effluent for 1,4-dioxane.[14] The results of these monitoring activities regularly showed the presence of the chemical at concentrations many times higher than its one-in-a-million cancer level.[15]

C. Despite five years of study, the contamination continues.

The years of voluntary collaboration between DEQ and Greensboro to reduce 1,4-dioxane in the City's treatment plant has not removed the threat of the chemical. As recently as August 2019, Greensboro's wastewater discharges into the Cape Fear River Basin contained 1,4-dioxane levels of 957.5 µg/L.[16] This caused a severe increase of 1,4-dioxane in Pittsboro's finished drinking water to concentrations of 114 µg/L—325 times higher than EPA's health advisory.[17] No one told the people in Pittsboro about the contamination at the time. By the time Greensboro reported the discharge to DEQ on September 27, 2019,[18] the polluted water had passed through Pittsboro's drinking water system and into people's homes. DEQ acknowledged the threat that Greensboro's discharges posed to human health by issuing a notice of violation, stating that the City violated state rules requiring that waste "shall not render the waters injurious to public health . . . ."[19]

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[11] *1,4-Dioxane and Bromide Monitoring Plan*, N.C. DEPT. ENVTL. QUALITY 1 (Mar. 28, 2017), https://files.nc.gov/ncdeq/Water%20Quality/Environmental%20Sciences/Dioxane/BromideDioxaneSamplingPlan20170328.pdf .

[12] Sadosky Presentation, *supra* note 10, at 25; *1,4-Dioxane Monitoring in the Cape Fear River Basin of North Carolina*, NC DEPT. ENVTL. QUALITY 11 (Feb. 22, 2017), https://files.nc.gov/ncdeq/Water%20Quality/Environmental%20Sciences/Dioxane/DioxaneYear2ReportWithMemo_20170222.pdf.

[13] N.C. Dept. of Envtl. Qual., Draft Special Order by Consent at 2 ("SOC"), included as Attachment 1.

[14] *Id.*

[15] *See* May 2018 T.Z. Osborne Discharge Monitoring Report – Permit No. NC0047384 ("May 2018 DMR") (reporting a monthly average concentration of 331.833 µg/L); August 2018 T.Z. Osborne Discharge Monitoring Report – Permit No. NC0047384 ("August 2018 DMR") (reporting a monthly average concentration of 408 µg/L); March 2019 T.Z. Osborne Discharge Monitoring Report – Permit No. NC0047384 ("March 2019 DMR") (reporting a monthly average concentration of 24.2 µg/L). These reports are included as Attachment 2.

[16] N.C. Dept. of Envtl. Quality, Notice of Violation & Intent to Assess Civil Penalties, NOV-2019-PC-0728 (Nov. 6, 2019) ("NOV"), included as Attachment 3.

[17] Knappe 2019 Presentation, *supra* note 1; HAW RIVER ASSEMBLY, *How Safe is Pittsboro's Drinking Water?*, http://hawriver.org/wp-content/uploads/2018/10/How-Safe-is-Your-Drinking-Water.pdf (last visited July 10, 2020).

[18] Press Release, N.C. Dept. of Envtl. Quality, *DEQ Investigating 1,4 Dioxane Release* (Oct. 15, 2019), https://deq.nc.gov/news/press-releases/2019/10/15/deq-investigating-14-dioxane-release (last visited July 20, 2020).

[19] NOV, *supra* note 16, at 1 (stating that the City violated North Carolina regulation 15A N.C. Admin. Code 02B .0211(12)).

Further downstream, Fayetteville and Wilmington have also had 1,4-dioxane in their drinking water.[20] Frustrated by DEQ's delays in addressing 1,4-dioxane pollution, members of the Fayetteville Public Works Commission have urged DEQ to take immediate action.[21]

The situation is even more urgent because Greensboro is not the only source of 1,4-dioxane in the Cape Fear.[22] Other municipalities also contribute to the pollution that flows into downstream communities' water supplies.[23] As discussed below, the existence of multiple sources emphasizes the need to control and eliminate Greensboro's discharge.

II. The agreement between DEQ and Greensboro will not result in meaningful reductions anytime soon.

The agreement between Greensboro and DEQ is wholly inadequate. Both the City and DEQ have been investigating the City's discharges for years—yet the agreement sets an unenforceable, insufficient goal and does not require the City to take action to protect the communities downstream.

Even though Greensboro has known about, and been investigating, its pollution since at least 2015, the agreement gives the City more time to study its pollution. After the first year, the City can comply with the agreement by showing through a daily maximum grab sample that the 1,4-dioxane in its discharge falls below 60 ug/L.[24] Then after a second year, the City can comply with the agreement by showing through a daily maximum grab sample that the 1,4-dioxane in its discharge falls below 35 ug/L.[25] Throughout this time, any violation of these sampling targets results only in additional investigation into the City's pollution and negligible penalties. These requirements are insufficient for many reasons.

First, if the City fails to meet these targets, there are no real consequences. The City would have to pay a small penalty, state the reasons for its noncompliance, and describe any actions taken in response.[26] Even if *over a quarter* of the City's discharge data exceeds 60 ug/L at the end of the first year, Greensboro would be allowed to delay any action once again by

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[20] Knappe 2019 Presentation, *supra* note 1.

[21] Greg Barnes, F*ayetteville water has rising amounts of probable carcinogen. Why aren't regulators stopping it?*, THE FAYETTEVILLE OBSERVER (Jun. 9, 2018), https://www.fayobserver.com/news/20180609/fayetteville-water-has-rising-amounts-of--probable-carcinogen-why-arent-regulators-stopping-it.

[22] Pittsboro and other downstream communities are also suffering from other industrial toxins, including per- and polyfluoroalkyl substances ("PFAS"). In the absence of action from regulators and upstream municipalities, affected communities have been forced to find solutions themselves—including installing expensive filtration systems or providing bottled water at schools. Greg Barnes, *Duke to study PFAS health effects in Pittsboro residents*, N.C. HEALTH NEWS (July 29, 2019), https://www.northcarolinahealthnews.org/2019/07/29/pfas-health-effects-in-pittsboro-residents-studied/.

[23] *1,4-Dioxane in the Cape Fear River Basin of North Carolina: An Initial Screening and Source Identification Study*, N.C. DEPT. OF ENVTL. QUALITY 4 (Jan. 25, 2016), https://files.nc.gov/ncdeq/Water%20Quality/Environmental%20Sciences/ECO/DioxaneReport_Yr1Final-20160127.pdf ("DEQ 2016 1,4-Dioxane Report").

[24] SOC at 4.

[25] *Id.* at 6.

[26] *Id.* at 5 (asking the City to make a "statement of the reason(s) for noncompliance, remedial action(s) taken, and a statement on the extent to which subsequent dates or times for accomplishment of listed activities may be affected"); *Id.* at 7–8 (providing for minimal penalties).

further investigating its pollution problem.[27] If the City cannot "consistently achieve[]" the second year goal of 35 µ/L, then it need only "develop a Best Management Practices/1,4-dioxane Minimization Plan."[28] There are no specific requirements for that plan—omitting any requirement that Greensboro or its industries install treatment technology or implement other pollution controls.

Moreover, the agreement's sampling goals are not protective: 60 µg/L is over 170 times higher than the one-in-a-million cancer level adopted in EPA's health advisory for 1,4-dioxane. The target applicable after the second year—35 µg/L—is still 100 times higher than the health advisory level. Neither would protect the public even if Greensboro were the only source of 1,4-dioxane in the river. Given the reality that other sources continue to contribute 1,4-dioxane to the river, both goals are plainly insufficient. As discussed below in section III(D), they also violate North Carolina's water quality standards.

Finally, a grab sample is taken at one point in time. The City's 1,4-dioxane discharges have had spikes that, in turn, cause spikes of the chemical in drinking water downstream.[29] The grab samples required by the agreement would not capture those extreme events that have endangered communities in the past.

This agreement between the City and Greensboro does nothing to protect the people living in Pittsboro, Fayetteville and other communities that drink water from the Cape Fear River. It continues to allow the City to delay action, elevating Greensboro's interests over those of downstream communities.

III. DEQ must issue a permit with strict 1,4-dioxane limits based on available treatment technology and compliance with water quality standards.

The Clean Water Act prohibits the discharge of any pollutant without a National Pollutant Discharge Elimination System ("NPDES") permit.[30] As conceded by the order, Greensboro is discharging a pollutant from a point source without a NPDES permit authorizing that discharge.[31] The Clean Water Act does not allow DEQ to circumvent the permitting process to allow pollution without conducting a proper permitting analysis.

As courts have stated, "[o]nly Congress may amend the [Clean Water Act] to create exemptions from regulation[,]"[32] and in the case of the Clean Water Act, "Congress intended the NPDES permit to be the only means by which a discharger from a point source may escape the total prohibition of [§] 301(a)."[33] Accordingly, "[A State] has no authority to create a permit

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[27] *Id.* at 7 (asking the City to "submit a report that *considers* . . .1) *Investigation* of alternate/additional treatment processes . . . at major industrial sources[;]2) *Investigation* of the . . . feasibility of treatment technology . . . at wastewater treatment plants[; and] 3) *Investigation* of the . . . feasibility of treatment technologies . . . at drinking water treatment facilities") (emphasis added).
[28] *Id.* at 6–7.
[29] *See infra* Section I(C).
[30] 33 U.S.C. §§ 1311(a), 1342(a)(1).
[31] SOC at 1 ("NPDES Permit NC0047384 does not currently contain discharge limitations for 1,4-dioxane.").
[32] *N. Plains Res. Council v. Fid. Expl. & Dev. Co.*, 325 F.3d 1155, 1164 (9th Cir. 2003) (citing Am. Mining Congress v. E.P.A., 965 F.2d 759, 772 (9th Cir.1992)).
[33] *Nat. Res. Def. Council, Inc. v. Costle,* 568 F.2d 1369, 1374 (D.C. Cir. 1977).

exemption from the [Clean Water Act] for discharges that would otherwise be subject to the NPDES permitting process."[34]

Instead of relying on a voluntary agreement that does not include any enforceable limits to regulate Greensboro's discharge, DEQ must issue the City a NPDES permit under the Clean Water Act. As discussed below, the permit must include strict limits on 1,4-dioxane based on available treatment technology and compliance with water quality standards.

A. Greensboro's discharge of 1,4-dioxane is an unpermitted discharge in violation of the Clean Water Act.

The most recent NPDES permit for the T. Z. Osborne WWTP—NPDES Permit No. NC0047384—was issued by DEQ in June 2014.[35] Greensboro applied for renewal of this NPDES permit in 2013.[36] Greensboro's application did not disclose its discharge of 1,4-dioxane,[37] nor did the permit issued by DEQ authorize the discharge of 1,4-dioxane.[38] Therefore, Greensboro's 1,4-dioxane discharges are unpermitted discharges in violation of the Clean Water Act.

DEQ has acknowledged that disclosure of toxic pollutants, including 1,4-dioxane, is required by the Clean Water Act and state water quality laws. The agency has stated that "the permit applicant's burden […] is to disclose […] the presence of known constituents in a discharge that pose a potential risk to human health."[39] Without such disclosure, the application's permit would not "shield the permittee from liability," since the discharged pollutant would not be "within the 'reasonable contemplation' of the permitting agency when it issued the permit due to nondisclosure by the permittee."[40] The EPA Environmental Appeals Board's decision in *In re: Ketchikan Pulp Company* further emphasized the importance of disclosure,[41] and this decision has been adopted by the Fourth Circuit. In *Piney Run Pres. Ass'n v. Cty. Comm'rs*, the Fourth Circuit stated: "To the extent that a permit holder discharges a pollutant that it did not disclose, it violates the NPDES permit and the [Clean Water Act]."[42]

Moreover, municipalities that own and operate wastewater treatment plants are required to "fully and effectively exercise[] and implement[]" their authority to

[34] *N. Plains Res. Council*, 325 F.3d at 1164; *see also W. Va. Highlands Conservancy, Inc. v. Huffman*, 651 F. Supp. 2d 512, 518 (S.D.W. Va. 2009).
[35] NPDES Permit No. NC004784 for the T.Z. Osborne Wastewater Treatment Plant, N.C. DEPT. OF ENVTL. QUALITY (June 6, 2014) [hereinafter "NPDES Permit No. NC004784"], included as Attachment 4.
[36] Permit Renewal Application No. NC004784, N.C. DEPT. OF ENVTL. QUALITY (Nov. 26, 2018), included as Attachment 5.
[37] *Id.*
[38] NPDES Permit No. NC004784, *supra* note 35.
[39] Amended Complaint, N.C. Dept. of Envtl. Quality v. Chemours, 17 CVS 580, 6–7 (N.C. Super. 2018) (citing 33 U.S.C. § 1342(k), *Piney Run Pres. Ass'n v. Cty. Comm'rs*, 268 F.3d 255, 265 (4th Cir. 2001)).
[40] *Id.*
[41] *See In re Ketchikan Pulp Co.*, 7 E.A.D. 605 (EPA) (1998).
[42] *Piney Run*, 268 F.3d. at 268.

"[i]dentify the character and volume of pollutants contributed to the [publicly owned treatment works]" by their industries.[43]

Because Greensboro did not disclose the presence of 1,4-dioxane in its NPDES permit application, it does not have a NPDES permit authorizing it to discharge 1,4-dioxane from these point sources into the Cape Fear River Basin. Therefore, Greensboro has violated, and continues to violate, the Clean Water Act.

B. DEQ and Greensboro must exercise their authority to require industries to stop discharging 1,4-dioxane.

Federal and state laws do not allow for mandatory pollution control requirements to be supplanted by voluntary agreements. In particular, the Clean Water Act pretreatment program mandates that DEQ and Greensboro use their authority under the Act to prevent industries from releasing chemicals that cannot be removed by the City's treatment plant, and that threaten human health—it does not allow DEQ to rely on the "cooperative institutional resolve of all affected parties"[44] before the agency addresses toxic contamination in drinking water supplies. The continued discharge of 1,4-dioxane from the City of Greensboro's treatment plant after years of voluntary action demonstrates why.

DEQ has stated that treatment technologies for 1,4-dioxane "are anticipated to be prohibitively expensive for local governments and the citizens served by public utilities," and that the best way to stop 1,4-dioxane pollution is "reduction, elimination and/or capture and treatment at industrial sources using or generating 1,4-dioxane."[45] The agreement between DEQ and Greensboro similarly acknowledges that "source reduction will be the primary and most effective means of reducing 1,4-dioxane concentrations . . . ."[46] The Clean Water Act provides how industrial sources are eliminated—it mandates that DEQ and Greensboro require industries to stop their 1,4-dioxane pollution. For instance, as discussed further below in Section III(C), the permitting process includes analysis of available technology that enables the agency and City to determine how to prevent or control discharges.[47] The agreement between Greensboro and DEQ bypasses that process.

The Clean Water Act pretreatment program governs the discharge of industrial wastewater to publicly owned treatment plants. These industrial wastewater discharges require permits, known as pretreatment permits.[48] Once appropriate limits are included in a treatment plant's NPDES permit, the municipality that runs the treatment plant—in this case, Greensboro—is required to regulate its industries so that they do not cause the treatment plant to violate its own NPDES permit.[49] This is how the Clean Water Act "assures the public that [industrial] dischargers cannot contravene the [Clean Water Act's] objectives of eliminating or at

[43] 40 C.F.R. § 403.8(f)(1)(vi)(B).
[44] SOC at 3.
[45] *See* DEQ 2016 1,4-Dioxane Report, *supra* note 23, at 5.
[46] SOC at 3.
[47] *See infra* Section III(C).
[48] *See* 40 C.F.R. § 403.
[49] 40 C.F.R. § 403.8(f)(1).

least minimizing discharges of toxic and other pollutants simply by discharging indirectly through [wastewater treatment plants] rather than directly to receiving waters."[50] As is appropriate, the pretreatment program is intended to place the burden of treating polluted discharges on the entity that creates the pollution—rather than on the taxpayers that support municipally owned treatment plants, or downstream communities that depend on rivers as public water supplies.[51]

Moreover, municipalities that own and operate wastewater treatment plants, such as Greensboro, are required to "immediately and effectively to halt or prevent any discharge of pollutants to the [publicly owned treatment works] which reasonably appears to present an imminent endangerment to the health or welfare of persons."[52] Together, these laws ensure that municipally owned treatment plants do not become dumping grounds for uncontrolled industrial waste. DEQ has an oversight role under the program. DEQ's obligations under the pretreatment program include the "[r]eview, approval, denial and oversight" of pretreatment programs.[53]

Greensboro, therefore, cannot allow industries to discharge pollutants that will endanger human health,[54] or allow industries to cause the City's treatment plant to violate its own NPDES permit.[55] Greensboro must include limits on pollutants in pretreatment permits so that the City does not exceed its own permit limits.[56] At the same time, DEQ must issue NPDES permits with strict 1,4-dioxane limits based on available treatment technology that also comply with water quality standards.[57] These permit limits force municipalities like Greensboro to properly regulate its industries, because the City is required to "fully and effectively exercise[] and implement[]" its regulatory authority over its industries to meet such limits.[58] The pretreatment program, therefore, mandates that DEQ and Greensboro strictly regulate 1,4-dioxane; and is structured to put the burden of cleaning up the pollution on the industries that create it.

Greensboro has begun to address the 1,4-dioxane pollution coming from its industries, but the City and DEQ's failure to use their full authority under the pretreatment program has resulted in years of delay and has endangered downstream communities. In 2015, the City was already investigating its industrial sources of 1,4-dioxane.[59] One industry reduced its 1,4-dioxane discharge, which somewhat reduced the 1,4-dioxane in the City's effluent.[60] But Greensboro did not require 1,4-dioxane limits in any industrial pretreatment permits, and DEQ did not force the City to regulate the chemical by including limits in the City's NPDES permit, as

[50] General Pretreatment Regulations for Existing and New Sources, 52 Fed. Reg. 1586, 1590 (Jan. 14, 1987) (codified at 40 C.F.R. § 403).
[51] *Id.*
[52] 40 C.F.R. § 403.8(f)(1)(vi)(B).
[53] Memorandum of Agreement Between the State of North Carolina and the United States Environmental Protection Agency Region 4, 24 (Oct. 15, 2007), included as Attachment 6.
[54] 40 C.F.R. § 403.8(f)(1)(vi)(B).
[55] *Id. at* § 403.8(f)(1).
[56] *Id. at* § 403.5(d).
[57] *See infra* Sections III(C), (D).
[58] 40 C.F.R. § 403.8(f).
[59] SOC at 2.
[60] *Id.*

required by the Clean Water Act. As a result, Pittsboro and other communities downstream continued to receive contaminated water.[61]

The consequences of that failure continue to be evident. The City continued to discharge 1,4-dioxane.[62] In August 2019, Greensboro was caught discharging a particularly large amount of 1,4-dioxane that caused unprecedented spikes in drinking water supplies downstream.[63] One of the City's industries—Shamrock Environmental Corporation—was found to be responsible.[64] The company now touts that it has installed technology to remove the chemical.[65] This voluntary action, however, comes after people downstream had already consumed Shamrock and Greensboro's toxic wastewater.[66] If Greensboro had included 1,4-dioxane limits in its industries' pretreatment permits after the City found out about its pollution in 2015, people downstream would not have had to drink water contaminated by the City's pollution for the past five years.

The proposed agreement between Greensboro and DEQ still does not require 1,4-dioxane limits in the City's NPDES permit, or in any industrial pretreatment permits.[67] Not only does the agreement violate the mandate of the Clean Water Act pretreatment program, it continues to threaten communities downstream by failing to require action from Greensboro and its industries.

C. <u>DEQ should issue a NPDES permit with strict 1,4-dioxane limits based on what the technology can achieve.</u>

The agreement between Greensboro and DEQ states that "significant future reductions will require [] technological advances."[68] But the Clean Water Act does not allow DEQ to wait for technological advances. The Act is a technology-forcing statute. It is designed to stimulate technological improvements, and not to allow harmful pollution to continue to be discharged in hopes that someday someone will find a better solution. The Act, therefore, requires DEQ to assess technology available now to remove pollutants, and to set permit limits based on that technology.

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[61] *See* Knappe 2019 Presentation, *supra* note 1; HAW RIVER ASSEMBLY, *supra* note 17.
[62] DEQ only started to require regular of monitoring of 1,4-dioxane in the past couple of years, but monitoring reports regularly showed the presence of the chemical in the City's effluent. *See* May 2018 DMR, *supra* note 15 (reporting a monthly average concentration of 331.8 408 µg/L); August 2018 DMR, *supra* note 15 (reporting a monthly average concentration of 408 µg/L); March 2019 DMR, *supra* note 15 (reporting a monthly average concentration of 24.2 µg/L). These reports are included as Attachment 2.
[63] Greg Barnes, N.C. Health News, *DEQ identifies Greensboro company responsible for discharging chemical*, CAROLINA PUBLIC PRESS (Oct. 16, 2019), https://carolinapublicpress.org/29409/deq-identifies-greensboro-company-responsible-for-discharging-chemical/ (last visited July 10, 2020).
[64] Taft Wireback, *Greensboro dioxane settlement looms to environment's distress*, GREENSBORO NEWS & RECORD (July 3, 2020), https://www.greensboro.com/news/local_news/greensboro-dioxane-settlement-looms-to-environments-distress/article_aa64e73f-9cd5-5c23-83fc-6b4431df0231.html.
[65] *Id.*
[66] *See* Knappe 2019 Presentation, *supra* note 1; HAW RIVER ASSEMBLY, *supra* note 17.
[67] The SOC contains general language that Greensboro "[m]odify SIU permits or develop other pretreatment program mechanisms as necessary," but it does not actually require that the City impose limits that comply with the Clean Water Act or that will be protective. SOC at 5-6.
[68] SOC at 3.

The Clean Water Act requires permitting agencies to, at the very least, incorporate, technology-based effluent limitations on the discharge of pollutants.[69] Technology-based effluent limits are "the minimum level of control that *must be imposed* in a permit."[70] North Carolina water quality laws further state that municipalities must be treated like an industrial discharger if an industry "significantly impact[s]" a municipal treatment system.[71] In this situation, the agency must assess technology-based effluent limits for Greensboro, even if effluent limits and guidelines have not been published and adopted.[72]

Treatment technologies for 1,4-dioxane are available. For instance, the chemical can be removed using advanced oxidation processes, such as using ultraviolet light in combination with hydrogen peroxide.[73] Such a process has been used at the Tucson International Airport Area Superfund Site to remove legacy 1,4-dioxane contamination.[74] That treatment system is able to remove over 97 percent of the chemical from polluted water.[75] One of Greensboro's industries, Shamrock Environmental Corporation, claims to have installed technology to eliminate not only 1,4-dioxane, but other pollutants as well.[76] DEQ must assess treatment technology available for Greensboro and its other industries.

D. <u>State law on toxic substances requires that Greensboro's discharge does not result in levels above .35 ug/L in South Buffalo Creek.</u>

The state toxic substances standard mandates that Greensboro's discharge does not cause levels downstream of the plant to exceed .35 µg/L in South Buffalo Creek—a drinking water supply. The agreement between Greensboro and DEQ, on the other hand, only asks that the City *try* to get to 35 µg/L—100 times higher than the level mandated by the standard.[77]

In addition to including technology-based effluent limits in the permit, Greensboro must affirmatively demonstrate, and DEQ must ensure, that water quality standards will not be violated. If there is a "reasonable potential" that water quality standards will be exceeded, DEQ must include water quality-based effluent limits in the permit.[78]

1,4-dixoane is a likely carcinogen and is regulated under the North Carolina toxic substances standard. The standard requires that "the concentration of toxic substances, either alone or in combination with other wastes, in surface waters shall not render waters injurious to

[69] 40 C.F.R. § 125.3(a); *see also* 33 U.S.C. § 1311.
[70] 40 C.F.R. § 125.3(a) (emphasis added).
[71] 15A N.C. ADMIN. CODE 02B .0406 (a), (e).
[72] *Id.*
[73] Amie C. McElroy, et al., *1,4-Dioxane in drinking water: emerging for 40 years and still unregulated*, 7 Current Opinion in Envtl. Science & Health 117, 119 (2019), included as Attachment 7.
[74] *See Advanced Treatment for 1,4-Dioxane – Tucson Removes Contamination Through UV-oxidation*, TrojanUV CaseStudies (2019), included as Attachment 8.
[75] *Id.* at 2; *see also Educational Brochure,* Tucson Airport Area Remediation Project, included as Attachment 9.
[76] Wireback, *supra* note 64.
[77] SOC at 6. As previously discussed, there are no real consequences if the City does not achieve this goal.
[78] 40 CFR § 122.44(d)(1)(i), *see also* 33 U.S.C. § 1311(b)(1)(C); 15A N.C. ADMIN. CODE 2H .0112(c) (stating that DWR must "reasonably ensure compliance with applicable water quality standards and regulations.").

[…] public health, or impair the waters for any designated uses."[79] The standard further mandates that "[t]he concentration of toxic substances shall not exceed the level necessary to protect human health…"[80] It is Greensboro's burden to demonstrate that it can meet this standard—the discharge authorized by the agreement does not.

For carcinogens, in particular, the state toxic substances standard requires that concentrations "shall not result in unacceptable health risks," which is further defined as "more than one case of cancer per one million people exposed (10-6 risk level)."[81] For 1,4-dioxane, that level is .35 µg/L.[82] Therefore, in order to comply with the toxic substance standard, Greensboro must demonstrate, and DEQ must reasonably ensure, that the City's discharges do not cause levels in South Buffalo Creek to exceed .35 µg/L.

DEQ must also reasonably ensure compliance with North Carolina's prohibition against allowing "[o]ils, deleterious substances, colored, or other wastes" in waters classified as Class C waters—which include the waters that would receive Greensboro's discharge[83]—"to render the waters injurious to public health, secondary recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses."[84]

Consequently, DEQ must use its authority under the Clean Water Act to issue Greensboro a permit with strict 1,4-dioxane limits based on available technology and compliance with water quality standards.

IV. The failures in Greensboro and DEQ's agreement will mean that people downstream will continue to drink contaminated water.

Greensboro's efforts to protect its industries and delay action—and DEQ's complicity in those efforts—have had severe consequences for people downstream: they have been drinking water polluted with a likely carcinogen for years. This agreement continues on that path, with wholly inadequate goals for pollution reduction and no meaningful requirement to achieve those goals. We therefore urge DEQ to use its full authority under the Clean Water Act to require the City to properly regulate its industries so that downstream communities are protected.

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[79] 15A N.C. ADMIN. CODE 2B .0208(a). North Carolina regulations define toxic substances broadly as "any substance or combination of substances […], that, after discharge and upon exposure […], either directly from the environment or indirectly […], *has the potential* to cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions or suppression in reproduction or growth) or physical deformities in [] organisms or their offspring." 15A N.C. ADMIN. CODE 2B .0202(54) (emphasis added).

[80] 15A N.C. ADMIN. CODE 2B .0208(a)(2).

[81] *Id.* at 2B .0208(a)(2)(B).

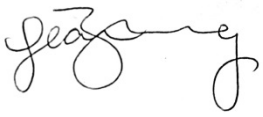
[82] SOC at 2 ("EPA risk assessments indicate that the drinking water concentration representing a 1 in 1,000,000 cancer risk level for 1,4-dioxane is 0.35 µg/L.").

[83] 15A N.C. ADMIN. CODE. 02B .0211(12). Greensboro's treatment plant discharges to Water Supply V waters, which are also protected as Class C waters. SOC at 1; 15A N.C. ADMIN. CODE 02B .0218.

[84] 15A N.C. ADMIN. CODE 02B .0211(12) ("[o]ils, deleterious substances, colored, or other wastes shall not render the waters injurious to public health, secondary recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses").

Thank you for considering these comments. Please contact me at 919-967-1450 or jzhuang@selcnc.org if you have any questions regarding this letter.

Sincerely,



Jean Zhuang

Tirrill Moore

SOUTHERN ENVIRONMENTAL LAW CENTER
601 W. Rosemary Street, Suite 220
Chapel Hill, NC 27516
919-967-1450

Attachments

Young, Brianna A

From: Mick Noland <mick.noland@faypwc.com>
Sent: Friday, December 11, 2020 4:46 PM
To: SVC_DENR.publiccomments
Cc: Elaina Ball; James West; Sean Sullivan (ssullivan@robinsonbradshaw.com); jaime.robinson
Subject: [External] T. Z. Osborne WWTP SOC
Attachments: T.Z. Osborne WWTP SOC.pdf

Please find attached Fayetteville Public Works Commission's comments relative to the revised, proposed T. Z. Osborne WWTP SOC (second comment period). Hard copy has been mailed.

Thank you, Mick

Mick Noland, PE
Chief Operations Officer
Water Resources Division
Fayetteville Public Works Commission
955 Old Wilmington Road
P O Box 1089
Fayetteville, NC 28302
(W) 910-223-4733
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FAYETTEVILLE PUBLIC WORKS COMMISSION
955 OLD WILMINGTON RD
P.O. BOX 1089
FAYETTEVILLE, NORTH CAROLINA 28302-1089
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December 11, 2020

Ms. Brianna Young
NC Division of Water Resources
Water Quality Permitting Section
1617 Mail Service Center
Raleigh, NC 27699-1617

Subject: T.Z. Osborne WWTP SOC

Dear Ms. Young,

Fayetteville Public Works Commission (PWC) remains concerned about elevated loading of 1,4-dioxane into the Cape Fear River. The Cape Fear River is the primary source of drinking water for Fayetteville, and PWC continues to believe that a comprehensive watershed management strategy for reduction of 1,4-dioxane is critical for the long-term protection of this resource. Fayetteville PWC previously provided comments on the first proposed version of the Special Order by Consent (SOC) for the City of Greensboro's (City) T.Z. Osborne WWTP (published for public comment on June 22, 2020) by way of a letter dated July 23, 2020 (First Comments). Fayetteville PWC incorporates its First Comments into the additional comments provided below regarding the second version of the SOC (published for public comment on November 4, 2020).
First, Fayetteville PWC agrees with the underlying assumption of the second version of the SOC that source reduction will be the most effective means of reducing 1,4-dioxane concentrations in the Cape Fear River Basin. While the changes between the first and second versions of the SOC certainly strengthen it, Fayetteville PWC is respectfully requesting the North Carolina Division of Water Resources (DWR) consider the following additional comments:

1. The reduction of the compliance value in Year One of the SOC from 60 µg/L to 50 µg/L remains too lenient. The City has demonstrated the ability to keep 1,4-dioxane levels in their effluent well below 35 µg/l. We believe the City's effluent should be limited in a manner that is consistent with the City's demonstrated ability to control 1,4-dioxane discharge concentrations. It is PWC's understanding that the City has conducted source evaluations and identified its primary source as Diamond Shamrock. PWC maintains that Diamond Shamrock should be able to either stop treating waste streams that contain 1,4-dioxane or utilize batch treatment and test that waste stream prior to discharge. As such, there is no reasonable justification for allowing continued discharge of elevated levels of 1,4 dioxane from Diamond Shamrock's facility to the T.Z Osborne WWTP. Fayetteville PWC continues to believe that the Year One compliance value should be 35 µg/L and that the Year Two compliance value be capped at the current discharge levels i.e. 35 µg/L as well.

2. A long-term strategy and written plan to control loading to the Cape Fear River is needed. DEQ's own data demonstrate that samples of waters downstream of the T.Z. Osborne WWTP discharge show exceedances of EPA's health advisory concentration of 35 µg/L for 1,4-dioxane. DEQ's data also demonstrate that the City is not the sole source of 1,4-dioxane in the Cape Fear River. Without a comprehensive watershed management strategy for controlling the total load of 1,4-dioxane discharged into the Cape Fear River, DEQ has no rational basis to conclude that the SOC, even when combined with the reduction efforts of other sources of this pollutant, will achieve sufficient load reductions to comply with EPA's health advisory concentration.

3. DEQ should make available a watershed-wide water quality model or develop one if it has not already done so, to give downstream drinking water suppliers real data regarding the predicted 1,4-dioxane concentrations at times of critical flow at different locations along the Cape Fear River (downstream of Reidsville and at drinking water intakes of the Town of Pittsboro and Fayetteville PWC, for example). Because 1,4-dioxane does not break down in the environment, a mass balance or spreadsheet approach to predicting concentrations should be a good starting point for this modeling effort. This is possible using each permitted discharge value (converted to cubic feet per second [cfs]), annual average stream flows (cfs) at multiple river stations, and discharge concentrations (both known and if limits were applied). DEQ should develop this watershed-scale analysis and be transparent in its distribution of the results.

4. DEQ states that the initial and primary goal of this Special Order is that the City's effluent discharge will not cause concentrations of the 1,4-dioxane in downstream drinking water supplies to exceed the EPA health advisory concentration of 35 µg/L. Again, because the City is not the only source of 1,4-dioxane in the watershed, use of a mass balance model is necessary in order to conclude that the SOC will achieve DEQ's primary goal for it. Based on the information currently available, Fayetteville PWC cannot weigh the likelihood that downstream drinking water supplies will be protected, and it is unclear how DEQ can either. A watershed-wide water quality model should be used to guide a science-based approach for the development of a reliable and technically defensible watershed management strategy for 1,4-dioxane. This plan must include reduction targets from the major sources, a consistent plan for how to incorporate 1,4-dioxane into NPDES permits, continued sampling, and a schedule to reliably meet the EPA health advisory for drinking water.

5. Additional data reporting requirements should be incorporated into this SOC and any other future SOCs for 1,4-dioxane in the Cape Fear River watershed so that the mass balance model can be meaningfully updated. Transparency is needed to ensure public trust in the process and to monitor progress against the strategy's timelines.

6. Fayetteville PWC recognizes DEQ's point that even with full source removal of 1,4-dioxane from effluent discharges, there may "still be a background level present from other historical sources in surface waters that prevent POTWs from obtaining the in-stream

Target Value of 0.35 µg/L in surface waters classified as water supply." However, in the absence of a rulemaking proceeding to establish a numerical water quality standard for 1,4-dioxane, Fayetteville PWC believes 0.35 ug/L should indeed be the Target Value used as the basis of a watershed management strategy for 1,4-dioxane given the multiple drinking water suppliers reliant on the Cape Fear River for their customers and the requirements of 15A NCAC 02B.0208(a)(2)(B) (prohibiting surface water standards for carcinogens from causing an increased cancer risk greater than 1 in 1,000,000).

We reiterate that we believe each utility in the Cape Fear River watershed has an obligation to work collaboratively to protect public health through the sharing of data, engagement in activities such as the 1,4-dioxane stakeholder group and making earnest progress in limiting emerging compounds in our public water supplies. We expect DEQ to continue to make water quality data and the watershed-wide water quality model for the Cape Fear River watershed available in a timely manner and to hold sources of these compounds accountable for their removal from discharges.

Sincerely,

Fayetteville Public Works Commission

Mick Noland

Mick Noland, PE
Chief Operations Officer
Water Resources Division
Fayetteville Public Works Commission

CC: Elaina Ball
James West
Sean Sullivan, Robinson Bradshaw
Jaime Robinson, CH2M Hill/Jacobs

This Frequently Asked Questions (FAQ) is based on comments received during the public comment period of the Special Order by Consent (SOC) for the City of Greensboro T.Z. Osborne WWTP.

In 2015, North Carolina Department of Environmental Quality (DEQ) sampling indicated elevated levels of 1,4-dioxane in South Buffalo Creek below the City of Greensboro's T.Z. Osborne WWTP effluent discharge. In response, the City of Greensboro began a 1,4-dioxane source identification and reduction plan which included monitoring of the City's wastewater treatment plant (WWTP) and wastewater collection system. By October 2015, the City had identified one of its Significant Industrial Users (SIU) as one source of 1,4-dioxane to the WWTP. The identified SIU began its own source reduction plan, and the levels of 1,4-dioxane in the T.Z. Osborne WWTP effluent discharge subsequently decreased by 50% since 2016.

Beginning in December 2017, DEQ required the City of Greensboro to begin monthly effluent sampling at the T.Z. Osborne WWTP and report data on monthly discharge monitoring reports. As part of the City of Greensboro's efforts to further reduce 1,4-dioxane from the T.Z. Osborne WWTP effluent, the City applied for a Special Order by Consent (SOC) in November 2019. After a draft SOC was agreed to by both parties, it was sent to public notice, which ran from June 22, 2020 through July 24, 2020. This public notice period allowed interested parties to review the proposed SOC and submit comments. During this public notice period, DEQ received 344 comments from 331 individual commenters. The primary concerns raised were that DEQ has the authority to regulate and hold responsible the City of Greensboro and industry, that discharge concentrations should be reduced, and that a public hearing should be held on the proposed SOC.

In response to public comments received on the proposed SOC, DEQ made several changes to the document and the City of Greensboro agreed to these changes. The most significant of the changes includes: (1) the reduction of the compliance value in Year One of the SOC, (2) the removal of the word voluntary in regard to source reduction in Year One of the SOC, and (3) the clarification that the compliance values for each SOC year take effect on the respective first day of each year. The revised version of the SOC incorporates the changes mentioned above and will go out to a second public notice period with an accompanying public hearing.

What is 1,4-dioxane? Why is it in the environment?

1,4-dioxane is a chemical compound and byproduct found in many consumer goods such as paint strippers, dyes, greases, plastics, antifreeze, aircraft deicing fluids, and in trace amounts in some consumer products such as deodorants, shampoo, and cosmetics. 1,4-dioxane can also be used as a purifying agent in pharmaceuticals manufacturing. Traces of 1,4-dioxane may be present in food supplements and packaging adhesives or on food crops treated with pesticides. Due to this broad range of uses, 1,4-dioxane is widely distributed in the environment.

With this widespread environmental distribution, 1,4-dioxane has been detected in some drinking water supplies and reservoirs at levels greater than 1.0 µg/L. Therefore, even if Significant Industrial Users (SIUs) are able to stop releasing 1,4-dioxane to POTWs in wastewater flows, there may still be a background level present from other historical sources in surface waters that would prevent POTWs from obtaining the In-stream Target Value of 0.35 µg/L in surface waters classified as water supply.

What are 1,4-dioxane regulatory requirements?

Regulations in 15A North Carolina Administrative Code (NCAC) 02B, administered by the Environmental Management Commission (EMC), provides DEQ the ability to offer numeric interpretations of narrative standards for toxics detected in the surface waters of North Carolina. A value of 0.35 micrograms per liter (µg/L) is calculated as the "In-Stream Target Value" for the protection of humans in "water supply" (WS) classified waters. An "In-stream Target Value" reflects calculations for acceptable risks based on best available data. These values assume a cancer risk level of one additional occurrence of cancer per million people.

In September 2017, EPA established a standard wastewater analytical method for sampling 1,4-dioxane in 40 CFR Part 136 as Analytical Method 624.1. Grab samples are the required collection method, and the practical quantitation limit (PQL) (i.e. the lowest level the method can detect) is 1.0 µg/L due to limitations in current technology.

North Carolina regulates drinking water suppliers using the EPA Safe Drinking Water Act Maximum Contaminants Level (MCLs). Currently, there are no federal EPA MCL requirements for 1,4-dioxane for finished drinking water consumption. The EPA's Office of Water developed Health Advisory levels for 1,4-dioxane of 35 µg/L. Health advisories provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. EPA's health advisories are non-enforceable, non-regulatory, and provide technical information to state agencies and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination. EPA's health advisory level for 1,4-dioxane offers a margin of protection for all Americans throughout their life from adverse health effects resulting from exposure to 1,4-dioxane in drinking water. The EPA chose a cancer risk level at 1 additional occurrence of cancer per 10,000 persons as the target risk. While the EPA has listed 1,4-dioxane as a chemical of concern, after review, it was not selected for regulation development. Therefore, the non-regulatory Health Advisory of 35 µg/L remains in effect.

The state has considered the calculated In-stream Target Values and the US EPA's Drinking Water Health Advisory value for 1,4-dioxane when developing 1,4-dioxane reduction plans in order to protect aquatic life and fish and water consumption uses downstream. The state continues to monitor surface water quality throughout North Carolina to provide insight into the potential effects of 1,4-dioxane concentrations reported.

How does the pretreatment program work?

The Pretreatment Program is a nationwide program designed to prevent pass-through, interference, and other adverse impacts to publicly owned treatment works (POTWs) from industrial wastewater. Process wastewater discharged to POTWs from industrial facilities has the potential to include chemical substances and contaminants. In general, POTWs are not designed to treat toxic or chemical contaminants, so the pretreatment program functions to reduce, eliminate, or alter these pollutants before they can enter the sanitary sewer system. Otherwise, these substances could pass through the

wastewater treatment system without being treated or can interfere with the treatment process, making it less effective.

This program is mandated under the federal Clean Water Act (CWA). DEQ delegates pretreatment program responsibilities to local governments that own and operate POTWs, which in turn permit SIUs within their systems. These requirements are enforced through the NPDES permit issued to POTWs by DEQ. Local POTW officials are most familiar with their industrial users and are generally in the best position to recognize and correct problems within their own treatment systems. Greensboro's Pretreatment Program is administered by DEQ as the Oversight Authority with the City of Greensboro as the Control Authority. POTWs are required to meet the mandated CWA pretreatment objectives by establishing discharge standards for pollutants of concern and identifying and issuing permits to SIUs. POTWs ensure SIUs comply with permits by conducting facility inspections and reviewing submitted reports. POTWs must adopt the federal pretreatment standards into their sewer use ordinance and develop local limits to adequately protect their collection and treatment systems. There are over 600 SIUs who discharge industrial wastewater to more than 110 POTWs throughout the State of North Carolina.

What is an SOC? How does it relate to the T.Z. Osborne WWTP?

A Special Order by Consent (SOC) is an agreement between DEQ and a permittee to bring a facility into compliance when the facility is unable to consistently comply with the terms, conditions, or limitations in a permit. An SOC allow limits for particular parameters to be relaxed, but only for a time determined while tangible actions are undertaken to fix the underlying problems causing the noncompliance .

On November 14, 2019, DEQ issued a Notice of Violation and Intent to Assess Civil Penalties against the City of Greensboro for a discharge of 1,4-dioxane of 957.5 µg/L that occurred on August 7, 2019. DEQ calculations predict that 1,4-dioxane concentrations of this magnitude within the T. Z. Osborne WWTP effluent discharge may have caused the instream concentration of 1,4-dioxane to exceed the 35 µg/L EPA health advisory level at a downstream drinking water supply raw water intake location. The purpose of the City of Greensboro's SOC is to reduce concentrations of 1,4-dioxane being discharged into the receiving stream in order to protect drinking water sources downstream of the T.Z. Osborne WWTP effluent discharge. This will be done by ensuring the drinking water standard of 35 µg/L is met at the point of the drinking water intakes.

How is DEQ addressing 1,4-dioxane discharges from the T.Z. Osborne WWTP?

DEQ is working with the City of Greensboro to address discharges of 1,4-dioxane from the T.Z. Osborne WWTP. One measure to accomplish this is through the SOC, which mandates reductions in the level of 1,4-dioxane in the receiving stream primarily through source reduction. Source reduction could include SIUs treating their wastewater before discharging it into the collection system. Additional measures will be taken by DEQ to address the North Carolina In-stream Target Value at the discharge location of the T.Z. Osborne WWTP as well as in all surface waters across the state.

One such mechanism to further reduce 1,4-dioxane concentrations in surface waters may be through National Pollutant Discharge Elimination System (NPDES) permits. Future NPDES permits for the T.Z. Osborne WWTP may include an effluent limit for 1,4-dioxane and/or special conditions that dictate actions the City of Greensboro may need to take in order to meet the allowable 1,4-dioxane In-stream Target Value at the point of discharge.

A111

Technical Fact Sheet – 1,4-Dioxane

November 2017

TECHNICAL FACT SHEET – 1,4-DIOXANE

At a Glance

- Flammable liquid and a fire hazard. Potentially explosive if exposed to light or air.
- Found at many federal facilities because of its widespread use as a stabilizer in certain chlorinated solvents, paint strippers, greases and waxes.
- Short-lived in the atmosphere, may leach readily from soil to groundwater, migrates rapidly in groundwater and is relatively resistant to biodegradation in the subsurface.
- Classified by EPA as "likely to be carcinogenic to humans" by all routes of exposure.
- Short-term exposure may cause eye, nose and throat irritation; long-term exposure may cause kidney and liver damage.
- Federal screening levels, state health-based drinking water guidance values and federal occupational exposure limits have been established.
- Modifications to existing sample preparation procedures may be required to achieve the increased sensitivity needed for detection of 1,4-dioxane.
- Common treatment technologies include advanced oxidation processes and bioremediation.
- No federal maximum contaminant level (MCL) has been established for 1,4-dioxane in drinking water.

Introduction

This fact sheet, developed by the U.S. Environmental Protection Agency (EPA) Federal Facilities Restoration and Reuse Office (FFRRO), provides a summary of the emerging contaminant 1,4-dioxane, including physical and chemical properties; environmental and health impacts; existing federal and state guidelines; detection and treatment methods; and additional sources of information. This fact sheet is intended for use by site managers who may address 1,4-dioxane at cleanup sites or in drinking water supplies and for those in a position to consider whether 1,4-dioxane should be added to the analytical suite for site investigations.

1,4-Dioxane is a likely human carcinogen and has been found in groundwater at sites throughout the United States. The physical and chemical properties and behavior of 1,4-dioxane create challenges for its characterization and treatment. It is highly mobile and does not readily biodegrade in the environment.

What is 1,4-dioxane?

- 1,4-Dioxane is a synthetic industrial chemical that is completely miscible in water (EPA 2006; ATSDR 2012).
- Synonyms include dioxane, dioxan, p-dioxane, diethylene dioxide, diethylene oxide, diethylene ether and glycol ethylene ether (EPA 2006; ATSDR 2012; Mohr 2001).
- 1,4-Dioxane is unstable at elevated temperatures and pressures and may form explosive mixtures with prolonged exposure to light or air (EPA 2006; HSDB 2011).
- 1,4-Dioxane is a likely contaminant at many sites contaminated with certain chlorinated solvents (particularly 1,1,1-trichloroethane [TCA]) because of its widespread use as a stabilizer for chlorinated solvents (EPA 2013a; Mohr 2001). Historically, the main use (90 percent) of 1,4-dioxane was as a stabilizer of chlorinated solvents such as TCA (ATSDR 2012). Use of TCA was phased out under the 1995 Montreal Protocol and the use of 1,4-dioxane as a solvent stabilizer was terminated (ECJRC 2002; NTP 2016). Lack of recent reports for other previously reported uses suggest that many other industrial, commercial and consumer uses were also stopped.

- It is a by-product present in many goods, including paint strippers, dyes, greases, antifreeze and aircraft deicing fluids, and in some consumer products (deodorants, shampoos and cosmetics) (ATSDR 2012; Mohr 2001).
- 1,4-Dioxane is used as a purifying agent in the manufacture of pharmaceuticals and is a by-product in the manufacture of polyethylene terephthalate (PET) plastic (Mohr 2001).
- Traces of 1,4-dioxane may be present in some food supplements, food containing residues from packaging adhesives or on food crops treated with pesticides that contain 1,4-dioxane (ATSDR 2012; DHHS 2011).

Exhibit 1: Physical and Chemical Properties of 1,4-Dioxane (ATSDR 2012)

Property	1,4-Dioxane
Chemical Abstracts Service (CAS) number	123-91-1
Physical description (physical state at room temperature)	Clear, flammable liquid with a faint, pleasant odor
Molecular weight (g/mol)	88.11
Water solubility	Miscible
Melting point (^{o}C)	11.8
Boiling point (^{o}C) at 760 mm Hg	101.1
Vapor pressure at 25^{o}C (mm Hg)	38.1
Specific gravity	1.033
Octanol-water partition coefficient (log K_{ow})	-0.27
Organic carbon partition coefficient (log K_{oc})	1.23
Henry's law constant at 25 ^{o}C (atm-m^{3}/mol)	4.80 X 10^{-6}

Abbreviations: g/mol – grams per mole; ^{o}C – degrees Celsius; mm Hg – millimeters of mercury; atm-m^{3}/mol – atmosphere-cubic meters per mole

Existence of 1,4-dioxane in the environment

- 1,4-Dioxane is typically found at some solvent release sites and PET manufacturing facilities (ATSDR 2012; Mohr 2001).
- It is short-lived in the atmosphere, with an estimated 1- to 3-day half-life due to photooxidation (ATSDR 2012; DHHS 2011).
- Migration to groundwater is weakly retarded by sorption of 1,4-dioxane to soil particles; it is expected to move rapidly from soil to groundwater (EPA 2006; ATSDR 2012).
- It is relatively resistant to biodegradation in water and soil, although recent studies have identified degrading bacteria (Inoue 2016; Pugazhendi 2015; Sales 2013).
- It does not bioaccumulate, biomagnify, or bioconcentrate in the food chain (ATSDR 2012; Mohr 2001).
- 1,4-Dioxane is frequently present at sites with TCA contamination (Mohr 2001; Adamson 2014).
- It may migrate rapidly in groundwater, ahead of other contaminants (DHHS 2011; EPA 2006).
- Where delineated, 1,4-dioxane is frequently found within previously delineated chlorinated solvent plumes and existing monitoring networks (Adamson 2014).
- As of 2016, 1,4-dioxane had been identified at more than 34 sites on the EPA National Priorities List (NPL); it may be present (but samples were not analyzed for it) at many other sites (EPA 2016b).

What are the routes of exposure and the potential health effects of 1,4-dioxane?

- Exposure may occur through ingestion of contaminated food and water, or dermal contact. Worker exposures may include inhalation of vapors (ATSDR 2012; DHHS 2011; EU 2002).
- Potential exposure could occur during production and use of 1,4-dioxane as a stabilizer or solvent (DHHS 2011; EU 2002).
- Short-term exposure to high levels of 1,4-dioxane may result in nausea, drowsiness, headache, and irritation of the eyes, nose and throat (ATSDR 2012; EPA 2013b; NIOSH 2010; EU 2002). 1,4-Dioxane is readily absorbed through the lungs and gastrointestinal tract. Some 1,4-dioxane may also pass through the skin, but studies indicate that much of it will evaporate before it is absorbed. Distribution is rapid and uniform in the lung, liver, kidney, spleen, colon and skeletal muscle tissue (ATSDR 2012).
- 1,4-Dioxane is weakly genotoxic and reproductive effects in humans are unknown; however, a developmental study on rats indicated that 1,4-dioxane may be slightly toxic to the developing fetus (ATSDR 2012; Giavini and others 1985).
- Animal studies showed increased incidences of nasal cavity, liver and gall bladder tumors after exposure to 1,4-dioxane (ATSDR 2012; DHHS 2011; EPA IRIS 2013).
- EPA has classified 1,4-dioxane as “likely to be carcinogenic to humans” by all routes of exposure (EPA IRIS 2013).
- The U.S. Department of Health and Human Services states that “1,4-dioxane is reasonably anticipated to be a human carcinogen based on sufficient evidence of carcinogenicity from studies in experimental animals” (DHHS 2011).
- The National Institute for Occupational Safety and Health (NIOSH) considers 1,4-dioxane a potential occupational carcinogen (NIOSH 2010).
- The European Union has classified 1,4-dioxane as having limited evidence of carcinogenic effect (EU 2002).

Are there any federal and state guidelines and health standards for 1,4-dioxane?

- EPA’s Integrated Risk Information System (IRIS) database includes a chronic oral reference dose (RfD) of 0.03 milligrams per kilogram per day (mg/kg/day) based on liver and kidney toxicity in animals and a chronic inhalation reference concentration (RfC) of 0.03 milligrams per cubic meter (mg/m^3) based on atrophy and respiratory metaplasia inside the nasal cavity of animals (EPA IRIS 2013).
- The cancer risk assessment for 1,4-dioxane is based on an oral slope factor of 0.1 mg/kg/day and the drinking water unit risk is 2.9×10^{-6} micrograms per liter (µg/L) (EPA IRIS 2013).
- EPA risk assessments indicate that the drinking water concentration representing a 1×10^{-6} cancer risk level for 1,4-dioxane is 0.35 µg/L (EPA IRIS 2013).
- No federal maximum contaminant level (MCL) for drinking water has been established (EPA 2012).
- 1,4-Dioxane is included on the fourth drinking water contaminant candidate list and is included in the Third Unregulated Contaminant Monitoring Rule (EPA 2009; EPA 2016a).
- EPA’s drinking water equivalent level is 1 mg/L (EPA 2012). EPA has calculated a screening level of 0.46 µg/L for tap water, based on a 1 in 10^{-6} lifetime excess cancer risk (EPA 2017b).
- EPA established a 1-day health advisory of 4.0 milligrams per liter (mg/L) and a 10-day health advisory of 0.4 mg/L in drinking water for a 10-kilogram child and a lifetime health advisory of 0.2 mg/L in drinking water (EPA 2012).
- EPA has calculated a residential soil screening level (SSL) of 5.3 milligrams per kilogram (mg/kg) and an industrial SSL of 24 mg/kg. The soil-to-groundwater risk-based SSL is 9.4×10^{-5} mg/kg (EPA 2017b).
- EPA has calculated a residential air screening level of 0.56 micrograms per cubic meter ($µg/m^3$) and an industrial air screening level of 2.5 $µg/m^3$ (EPA 2017b).
- A reportable quantity of 100 pounds has been established under the Comprehensive Environmental Response, Compensation, and Liability Act (EPA 2011).
- The Occupational Safety and Health Administration (OSHA) established a permissible

exposure limit (PEL) for 1,4-dioxane of 100 parts per million (ppm) or 360 mg/m^3 as an 8-hour time weighted average (TWA). While OSHA has established a PEL for 1,4-dioxane, OSHA has recognized that many of its PELs are outdated and inadequate for ensuring the protection of worker health. OSHA recommends that employers follow the California OSHA limit of 0.28 ppm, the NIOSH recommended exposure limit of 1 ppm as a 30-minute ceiling, or the American Conference of Governmental Industrial Hygienists threshold limit value of 20 ppm (OSHA 2017).

- Various states have established drinking water and groundwater guidelines, including the following:

State	Guideline (µg/L)	Source
Alaska	77	AL DEC 2016
California	1.0	Cal/EPA 2011
Colorado	0.35	CDPHE 2017
Connecticut	3.0	CTDPH 2013
Delaware	6.0	DE DNR 1999
Florida	3.2	FDEP 2005
Indiana	7.8	IDEM 2015
Maine	4.0	MEDEP 2016
Massachusetts	0.3	MADEP 2004
Mississippi	6.09	MS DEQ 2002
New Hampshire	0.25	NH DES 2011
New Jersey	0.4	NJDEP 2015
North Carolina	3.0	NCDENR 2015
Pennsylvania	6.4	PADEP 2011
Texas	9.1	TCEQ 2016
Vermont	3.0	VTDEP 2016
Washington	0.438	WA ECY 2015
West Virginia	6.1	WV DEP 2009

What detection and site characterization methods are available for 1,4-dioxane?

- As a result of the limitations in the analytical methods to detect 1,4-dioxane, it has been difficult to identify its occurrence in the environment. The miscibility of 1,4-dioxane in water causes poor purging efficiency and results in high detection limits (ATSDR 2012; EPA 2006; Mohr 2001).
- The Contract Laboratory Program SOW SOM02.3 includes a CRQL of 2.0 µg/L in water, 67 µg/kg in low soil and 2,000 µg/kg in medium soil (EPA 2013c).
- Conventional analytical methods can detect 1,4-dioxane only at concentrations 100 times greater than the concentrations of volatile organic compounds. Modifications of existing analytical methods and their sample preparation procedures may be needed to achieve lower detection limits for 1,4-dioxane (EPA 2006; Mohr 2001).
- High-temperature sample preparation techniques improve the recovery of 1,4-dioxane. These techniques include purging at elevated temperature (EPA SW-846 Method 5030); equilibrium headspace analysis (EPA SW-846 Method 5021); vacuum distillation (EPA SW-846 Method 8261); and azeotropic distillation (EPA SW-846 Method 5031) (EPA 2006).
- NIOSH Method 1602 uses gas chromatography – flame ionization detection (GC-FID) to determine the concentration of 1,4-dioxane in air (ATSDR 2012; NIOSH 2010).
- EPA SW-846 Method 8015D uses gas chromatography (GC) to determine the concentration of 1,4-dioxane in environmental samples. Samples may be introduced into the GC column by a variety of techniques including the injection of the concentrate from azeotropic distillation (EPA SW-846 Method 5031). The lower quantitation limits for 1,4-dioxane in aqueous matrices by azeotropic microdistillation are 12 µg/L (reagent water), 15 µg/L (groundwater) and 16 µg/L (leachate) (EPA 2003).
- EPA SW-846 Method 8260B detects 1,4-dioxane in a variety of solid waste matrices using GC and mass spectrometry (MS). The detection limit

depends on the instrument and choice of sample preparation method (ATSDR 2012).

- A laboratory study is underway to develop a passive flux meter (PFM) approach to enhance the capture of 1,4-dioxane in the PFM sorbent to improve accuracy. Results to date show that the PFM is capable of quantifying low absorbing compounds such as 1,4-dioxane (DoD SERDP 2013b).
- EPA Method 1624 uses isotopic dilution gas chromatography – mass spectrometry (GC-MS) to detect 1,4-dioxane in water, soil and municipal discharges. The detection limit for this method is 10 µg/L (ATSDR 2012; EPA 2001b).
- EPA SW-846 Method 8270 uses liquid-liquid extraction and isotope dilution by capillary column GC-MS. This method is often modified for the detection of low levels of 1,4-dioxane in water (EPA 2007).
- EPA Method 522 uses solid phase extraction and GC-MS with selected ion monitoring for the detection of 1,4-dioxane in drinking water with detection limits as low as 0.02 µg/L (EPA 2008).
- GC-MS detection methods using solid phase extraction followed by desorption with an organic solvent have been developed to remove 1,4-dioxane from the aqueous phase. Detection limits as low as 0.03 µg/L have been achieved by passing the aqueous sample through an activated carbon column, following by elution with acetone-dichloromethane (ATSDR 2012; Kadokami and others 1990).
- Lab studies indicate effective methods for monitoring growth of dioxane-degrading bacteria in culture (Gedalanga 2014).
- Studies are underway to develop and assess methods for performing compound-specific isotope analysis (CSIA) on low levels of 1,4-dioxane in groundwater (DoD SERDP 2016).

What technologies are being used to treat 1,4-dioxane?

- Pump-and-treat remediation can treat dissolved 1,4-dioxane in groundwater and control groundwater plume migration, but requires ex-situ treatment tailored for the unique properties of 1,4-dioxane (e.g., its low octanol-water partition coefficient makes 1,4-dioxane hydrophilic) (EPA 2006; Kiker and others 2010).
- Commercially available advanced oxidation processes using hydrogen peroxide with ultraviolet light or ozone can be used to treat 1,4-dioxane in wastewater (Asano and others 2012; EPA 2006).
- Peroxone and iron activated persulfate oxidation of 1,4-dioxane might aid in the cleanup of VOC-contaminated sites (Eberle 2015; Zhong 2015; Li 2016; SERDP 2013d).
- In-situ chemical oxidation can be successfully combined with bioaugmentation for managing dioxane contamination (DoD SERDP 2013d; Adamson 2015).
- Ex-situ bioremediation using a fixed-film, moving-bed biological treatment system is also used to treat 1,4-dioxane in groundwater (EPA 2006).
- Electrical resistance heating may be an effective treatment method (Oberle 2015).
- Phytoremediation is being explored as a means to remove the compound from shallow groundwater. Pilot-scale studies have demonstrated the ability of hybrid poplars to take up and effectively degrade or deactivate 1,4-dioxane (EPA 2001a, 2013a; Ferro and others 2013).
- Microbial degradation in engineered bioreactors has been documented under enhanced conditions or where selected strains of bacteria capable of degrading 1,4-dioxane are cultured, but the impact of the presence of chlorinated solvent co-contaminants on biodegradation of 1,4-dioxane needs to be further investigated (EPA 2006, 2013a; Mahendra and others 2013).
- Results from a 2012 laboratory study found 1,4-dioxane-transforming activity to be relatively common among monooxygenase-expressing bacteria; however, both TCA and 1,1-dichloroethene inhibited 1,4-dioxane degradation by bacterial isolates (DoD SERDP 2012).
- Isobutane-metabolizing bacteria can consistently degrade low (<100 ppb) concentrations of 1,4-dioxane, often to concentrations <1 ppb. These organisms also can degrade many chlorinated co-contaminants such as TCA and 1,1-dichoroethene (1,1-DCE) (DoD SERDP 2013c).
- Ethane effectively serves as a cometabolite for facilitating the biodegradation of 1,4-dioxane at relevant field concentrations (DoD SERDP 2013f).
- Biodegradation rates are subject to interactions among transition metals and natural organic ligands in the environment. (Pornwongthong 2014; DoD SERDP 2013e).

- Photocatalysis has been shown to remove 1,4-dioxane in aqueous solutions. Laboratory studies documented that the surface plasmon resonance of gold nanoparticles on titanium dioxide (Au – TiO2) promotes the photocatalytic degradation of 1,4-dioxane (Min and others 2009; Vescovi and others 2010).
- Other in-well combined treatment technologies being assessed include air sparging; soil vapor extraction (SVE); enhanced bioremediation-oxidation; and dynamic subsurface groundwater circulation (Odah and others 2005).
- 1,4-Dioxane was reduced by greater than 90 percent in the treatment zone with no apparent downward migration of 1,4-dioxane using enhanced or extreme SVE, which uses a combination of increased air flow, sweeping with drier air, increased temperature, decreased infiltration and more focused vapor extraction to enhance 1,4-dioxane remediation in soils (DoD SERDP 2013a).

Where can I find more information about 1,4-dioxane?

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Contact Information

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United States Environmental Protection Agency

2018 Edition of the Drinking Water Standards and Health Advisories Tables

The 2012 Drinking Water Standards and Health Advisories (DWSHA) Tables were amended March 2018 to fix typographical errors and add health advisories published after 2012.

2018 Edition of the Drinking Water Standards and Health Advisories

EPA 822-F-18-001

Office of Water
U.S. Environmental Protection Agency
Washington, DC

March 2018

Chemicals	CASRN Number	Standards			Status HA Document	Health Advisories						Cancer Descriptor
						10-kg Child						
		Status Reg.	MCLG (mg/L)	MCL (mg/L)		One-day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/day)	DWEL (mg/L)	Life-time (mg/L)	mg/L at 10^{-4} Cancer Risk	
Diisopropylmethylphosphonate	1445-75-6	-	-	-	F '89	8	8	0.08	3	0.6	-	D
Dimethrin	70-38-2	-	-	-	F '88	10	10	0.3	10	2	-	D
Dimethyl methylphosphonate	756-79-6	-	-	-	F '92	2	2	0.2	7	0.1	0.7	C
Dimethyl phthalate	131-11-3	-	-	-	-	-	-	-	-	-	-	D
Dinitrobenzene (1,3-)	99-65-0	-	-	-	F '91	0.04	0.04	0.0001	0.005	0.001	-	D
Dinitrotoluene (2,4-)	121-14-2	-	-	-	F '08	1	1	0.002	0.1	-	0.005	L
Dinitrotoluene (2,6-)	606-20-2	-	-	-	F '08	0.4	0.04	0.001	0.04	-	0.005	L
Dinitrotoluene (2,6 & 2,4)[1]		-	-	-	F '92	-	-	-	-	-	0.005	B2
Dinoseb	88-85-7	F	0.007	0.007	F '88	0.3	0.3	0.001	0.035	0.007	-	D
Dioxane p-	123-91-1	-	-	-	F '87	4	0.4	**0.03**	1	0.2	**0.035**	**L**
Diphenamid	957-51-7	-	-	-	F '88	0.3	0.3	0.03	1	0.2	-	D
Diquat	85-00-7	F	0.02	0.02	-	-	-	***0.005***	0.02	-	-	***E***
Disulfoton	298-04-4	-	-	-	F '88	0.01	0.01	***0.0001***	0.0035	0.0007	-	***E***
Dithiane (1,4-)	505-29-3	-	-	-	F '92	0.4	0.4	0.01	0.4	0.08	-	D
Diuron	330-54-1	-	-	-	F '88	1	1	***0.003***	0.1	-	***0.2***	***L***
Endothall	145-73-3	F	0.1	0.1	F '88	0.8	0.8	***0.007***	0.25	0.05	-	***N***
Endrin	72-20-8	F	0.002	0.002	F '87	0.02	0.005	**0.0003**	0.01	0.002	-	I
Epichlorohydrin	106-89-8	F	zero	TT[2]	F '87	0.1	0.1	0.002	0.07	-	**0.3**	B2
Ethylbenzene	100-41-4	F	0.7	0.7	F '87	30	3	0.1	3	0.7	-	D
Ethylene dibromide (EDB)[3]	106-93-4	F	zero	0.00005	F '87	0.008	0.008	**0.009**	0.3	-	**0.002**	**L**
Ethylene glycol	107-21-1	-	-	-	F '87	20	6	**2**	70	14	-	D
Ethylene Thiourea (ETU)	96-45-7	-	-	-	F '88	0.3	0.3	***0.0002***	0.007	-	***0.06***	B2
Fenamiphos	22224-92-6	-	-	-	F '88	0.009	0.009	***0.0001***	0.0035	0.0007	-	***E***

[1] Technical grade.
[2] When epichlorohydrin is used in drinking water systems, the combination (or product) of dose and monomer level shall not exceed that equivalent to an epichlorohydrin-based polymer containing 0.01% monomer dosed at 20 mg/L.
[3] 1,2-dibromoethane.

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
LINDA CULPEPPER
Director

NORTH CAROLINA
Environmental Quality

November 14, 2019

CERTIFIED MAIL 7018 1830 0001 8037 0267
RETURN RECEIPT REQUESTED

Steven Drew, Water Resources Director
City of Greensboro
2602 S Elm-Eugene St
Greensboro, NC 27406-9787

Subject: **NOTICE OF VIOLATION (NOV-2019-PC-0728) & Intent to Assess CIVIL PENALTIES**
T.Z. Osborne WWTP
NPDES Permit NC0047384
Guilford County

Dear Mr. Drew:

The North Carolina Division of Water Resources has reviewed data submitted on your Discharge Monitoring Report (DMR) dated August 2019. The data indicates that on August 7, 2019, the City of Greensboro had a discharge of 1,4 Dioxane of 957.5 ug/L. This discharge represents a violation of North Carolina water quality standards as well as conditions of NPDES WW Permit No. NC0047384. The violations are enumerated below.

Violations of North Carolina Water Quality Standards

Based on the review of the provided DMR data, there was a violation of North Carolina regulation 15A NCAC 02B .0211(12), which states:

"Oils, deleterious substances, colored, or other wastes: only such amounts as shall not render the waters injurious to public health, secondary recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses."

Violations of NPDES Permit NC0047384 Conditions

Review of the discharge data for August 7, 2019 also indicates a violation of NPDES permit NC0047384 Part II Section E, condition (9)(a) and Part IV, Section C(2)(c) listed below.

Part II, Section E(9)(a), Noncompliance Notification

The Permittee shall report by telephone to either the central office or the appropriate regional office of the Division as soon as possible, but in no case more than 24 hours or on the next working day following the occurrence or first knowledge of the occurrence of any of the following:

a. Any occurrence at the water pollution control facility which results in the discharge of significant amounts of wastes which are abnormal in quantity or characteristic, such as the dumping of the contents of a sludge digester; the known passage of a slug of hazardous substance through the facility; or any other unusual circumstances.

Part IV, Section C(2)(c), Municipal Control of Pollutants from Industrial Users

The Permittee shall investigate the source of all discharges into the POTW, including slug loads and other unusual discharges, which have the potential to adversely impact the Permittee's Pretreatment Program and/or the operation of the POTW.

The Permittee shall report such discharges into the POTW to the Director or the appropriate Regional Office. Any information shall be provided orally within 24 hours from the time the Permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the discharge; the investigation into possible sources; the period of the discharge, including exact dates and times; if the discharge has not ceased, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance

This Notice of Violation/Intent to Issue Civil Penalty is being issued for the noted violations of North Carolina water quality standards (15A NCAC 2B .0100 and .0200) and the facility's NPDES Permit (NC0047384). Pursuant to G.S. 143-215.6A, a civil penalty of not more than twenty-five thousand dollars ($25,000.00) may be assessed against any person who:

(1) Violates any classification, standard, limitation, or management practice established pursuant to G.S. 143-214.1, 143-214.2, or 143-215, or

(2) Is required but fails to apply for or to secure a permit required by G.S. 143-215.1, or who violates or fails to act in accordance with the terms, conditions, or requirements of such permit or any other permit or certification issued pursuant to authority conferred by this Part, including pretreatment permits issued by local governments and laboratory certifications.

If you wish to provide additional information regarding the noted violations, request technical assistance, or discuss overall compliance please respond in writing within thirty 30 calendar days after receipt of this Notice. A review of your response will be considered along with any additional information provided when determining whether a civil penalty may be assessed.

Remedial actions should have already been taken to correct this problem and prevent further occurrences in the future. The Division of Water Resources may pursue enforcement action for this and any additional violations of State law.

If you should have any questions, please do not hesitate to contact me at 919-707-3615.

Sincerely,

John E. Hennessy

John Hennessy
Compliance and Expedited Permitting Supervisor

cc: Lon Snider, WSRO
Jenny Graznak, WSRO

Poyner Spruill LLP

H. Glenn Dunn
Partner
D: 919 783.2842
F: 919 783.1075
gdunn@poynerspruill.com

December 19, 2019

VIA EMAIL

John Hennessy
Compliance and Expedited Permitting Supervisor
N.C. Department of Environmental Quality
1650 Mail Service Center
Raleigh NC 27699-1650

RE: Notice of Violation (NOV-2019-PC-0728) & Intent to Assess Civil Penalties
T.Z Osborne WWTP
NPDES Permit NC0047384
Guilford County

Dear Mr. Hennessy:

I am writing this letter as legal counsel for the City of Greensboro to respond to the Notice of Violation sent to the City by the Division of Water Resources (the "Division") dated November 14, 2019 (the "NOV), a copy of which is attached to this response. The City is of the opinion that the three incidents described in the NOV do not constitute a violation of a water quality standard or of the City's NPDES permit (the "Permit"). Nevertheless, the City wants to state at the outset of this response that it does not want to take an adversarial approach in this matter, but rather wishes to work together on a mutually acceptable approach to continuing the City's ongoing efforts to reduce the 1,4 dioxane discharged to, and subsequently from, the T.Z. Osborne WWTP (the "WWTP").

The NOV alleges there was a violation of North Carolina regulation 15A NCAC 02B .0211(12), which states:

> "Oils, deleterious substances, colored, or other wastes. only such amounts as shall not render the waters injurious to public health, secondary recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses."

The City believes it cannot be liable for violation of the cited narrative water quality standard ("WQS") because the standard is not a Permit condition or requirement. The Division clearly contemplated whether to limit 1,4 dioxane when the Permit was issued in 2014, but chose not to include a limit, and instead included a "reopener" in case it wanted to add such a limit in the future. Importantly, the Division also did not include in the Permit the narrative standard that the NOV alleges the City has violated. Because neither a specific 1,4 dioxane limit or the narrative standard are included in the Permit, the City is "shielded" from a violation of the Permit and/or the standard.

This "permit shield" is not merely a legal technicality that the City is invoking, but is based on fundamental fairness and principles of due process. A numerical limit could have been included in the Permit, but there was not adequate information at the time the Permit was issued on which to base a reasonable scientifically based limit. Likewise, the narrative standard could have been included but was

not, presumably for the same reason. Consequently, the Permit provides the City no notice of what is required for compliance regarding 1,4 dioxane, and application of the narrative standard on which the violations are based, has in effect has been applied "after the fact".

The City believes neither of the additional two alleged violations of the Permit regarding reporting are valid because, as explained above, there is no numerical limit in the Permit, nor is the narrative standard that the City allegedly violated stated in the Permit. Consequently, 1,4 dioxane is unregulated by the Permit and there is no basis for requiring compliance with the Permit conditions which involve reporting and/or investigating unusual discharges of 1,4 dioxane from or to the WWTP. Since there is no limit or standard in the Permit, the City would not be on notice as to what incidents would trigger such reports and investigations.

Although the City disagrees with the alleged violations, it shares the Division's concerns regarding the effects of discharges of 1,4 dioxane into surface waters of the State. The City has for several years worked proactively to identify industries that discharge 1,4 dioxane to its WWTP and has worked with them to achieve significant reductions. The City has already indicated that it wants to work with the Division to develop a mutually acceptable settlement order establishing measures to be taken to further identify sources and reduce the 1,4 dioxane discharged to and from the WWTP and a schedule for implementing those measures. Such a settlement order should not only continue to reduce the T.Z. Osborne WWTP's 1,4 dioxane discharge, but may assist the Division in developing technically based, reasonable and achievable goals for 1,4 dioxane discharges.

Greensboro representatives look forward to meeting with you and other Division representatives to discuss this response and the possibility of resolving the alleged violations by means of a Special Order by Consent.

Very truly yours,

H. Glenn Dunn

NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION

COUNTY OF GUILFORD

IN THE MATTER OF NORTH CAROLINA NPDES PERMIT NC0047384 HELD BY CITY OF GREENSBORO	))))))	SPECIAL ORDER BY CONSENT EMC SOC WQ S19-010

Pursuant to the provisions of North Carolina General Statutes (G.S.) 143-215.2, this Special Order by Consent is entered into by the City of Greensboro, hereinafter referred to as the City, and the North Carolina Environmental Management Commission, an agency of the State of North Carolina created by G.S. 143B-282, and hereinafter referred to as the Commission.

1. The City and the Commission hereby stipulate the following:

    a. This Special Order by Consent (Special Order or SOC) addresses issues related to the discharge of elevated levels of 1,4-dioxane from the T.Z. Osborne WWTP to South Buffalo Creek. On November 14, 2019, the North Carolina Department of Environmental Quality (the Department) issued a Notice of Violation (NOV) to the City related to the elevated discharges of 1,4-dioxane.

    b. The City holds North Carolina NPDES permit NC0047384 for operation of an existing wastewater treatment works, and for making an outlet therefrom, for treated wastewater to South Buffalo Creek, Class WS-V, NSW waters of this State in the Cape Fear River Basin. NPDES Permit NC0047384 does not currently contain discharge limitations for 1,4-dioxane.

    c. In its November 2017 Technical Fact Sheet on 1,4-dioxane, the United States Environmental Protection Agency (EPA) describes this compound as "a synthetic industrial chemical that is completely miscible in water." Its primary historical use was as a stabilizer of chlorinated solvents. The EPA fact sheet states 1,4-dioxane is a by-product present in many goods, including paint strippers, dyes, greases, antifreeze and aircraft deicing fluids, and in some consumer and personal care products (deodorants, shampoos and cosmetics). EPA has classified 1,4-dioxane as a likely human carcinogen; however, to date no federal maximum contaminant level (MCL) has been established for 1,4-dioxane in drinking water.

    d. The EPA Fact Sheet states "the physical and chemical properties and behavior of 1,4-dioxane create challenges for its characterization and treatment. It is highly mobile and does not readily biodegrade in the environment." These properties, plus its widespread

presence in industrial and consumer products, cause the compound to be identifiable in reportable concentrations in groundwater, and within surface water downstream of industrialized and urbanized areas.

e. EPA has issued a health advisory for 1,4-dioxane recommending concentrations not exceed 35 µg/L in drinking water as protection of a 1 in 10,000 excess estimated lifetime cancer risk. EPA risk assessments indicate the drinking water concentration representing a 1 in 1,000,000 cancer risk level for 1,4-dioxane is 0.35 µg/L.

f. 1,4-dioxane can enter a publicly owned treatment works as a constituent of industrial and domestic wastewater. Most wastewater treatment plants are not currently designed for the removal of compounds such as 1,4-dioxane; therefore, it can pass through the treatment system and enter surface waters within the effluent discharge.

g. The EPA's Third Unregulated Contaminant Monitoring Rule (UCMR 3) required public water supply systems throughout the United States to monitor for the presence of contaminants, including 1,4-dioxane, during the years 2013-2015.

h. Results of UCMR 3 monitoring indicated the presence of 1,4-dioxane in North Carolina was most prevalent within the Cape Fear River Basin. The North Carolina Department of Environmental Quality (Department or DEQ) conducted follow up stream sampling studies to better determine the concentrations of 1,4-dioxane, and their potential sources within the basin. Results of the DEQ studies noted above indicated detectable concentrations of 1,4-dioxane downstream of the discharge from the City of Greensboro's T.Z. Osborne WWTP.

i. Beginning in 2015, the City of Greensboro voluntarily began a 1,4-dioxane source identification and reduction plan, which included monitoring of WWTP influent and effluent and the City's wastewater collection system. The City's efforts included meetings with industrial users to ask their assistance in identifying potential sources. Information from the industrial community and collection system monitoring revealed where to focus reduction efforts. By October 2015, the City's program had identified one of its Significant Industrial Users (SIU) as a quantifiable source of 1,4-dioxane to the WWTP. The SIU voluntarily agreed to conduct its own source reduction plan. Since the implementation of the plan, the discharge of 1,4-dioxane from the T.Z. Osborne wastewater treatment facility has been reduced by over 50% for the four-year period from February 2016 to the present.

j. On October 31, 2017, the Division of Water Resources (DWR), via administrative letter, required the City to begin monthly monitoring of the effluent from the T.Z. Osborne WWTP for 1,4-dioxane and to report the results of their analyses on monthly monitoring reports, beginning with the report for December 2017.

k. Results from T.Z. Osborne WWTP effluent monitoring have routinely indicated the presence of 1,4-dioxane. On August 7, 2019, an effluent concentration of 957.5 µg/L was reported. DEQ calculations predict that 1,4-dioxane concentrations of this

magnitude within the T.Z. Osborne WWTP effluent discharge may cause the instream concentration of 1,4-dioxane to exceed the 35 µg/L EPA health advisory level at a downstream drinking water supply raw water intake location.

l. The Department has instituted a special study of the T.Z. Osborne WWTP effluent, conducting its own monitoring of the discharge and sharing its data with the City.

m. Sampling of waters downstream of the T.Z. Osborne WWTP discharge has indicated instances when the EPA health advisory concentration of 35 µg/L for 1,4-dioxane has been exceeded. The sampling results indicate that Greensboro's discharge contributes to the exceedances but they do not establish that Greensboro's discharge is the sole source of the exceedances.

n. The purpose of this Special Order is to reduce the concentrations of 1,4-dioxane being discharged from the T.Z. Osborne WWTP. It is not intended to resolve, be applicable to, or encompass all other point and non-point sources that may be causing or contributing to elevated levels of 1,4-dioxane in the Cape Fear River Basin. The initial and primary goal of this Special Order is that the City's effluent discharge will not cause concentrations of 1,4-dioxane in downstream drinking water supplies to exceed the EPA health advisory concentration of 35 µg/L.

o. The discharge of elevated levels of 1,4-dioxane causes or contributes to pollution of the waters of this State named above, and the City is within the jurisdiction of the Commission as set forth in G.S. Chapter 143, Article 21.

p. The Commission and the City acknowledge that the activities enumerated in this Special Order are designed to reduce 1,4-dioxane concentrations within the Cape Fear River Basin, and that significant future reductions will require both technological advances and the cooperative institutional resolve of all affected parties. Acknowledging that the physical and chemical properties of 1,4-dioxane create challenges for its treatment and/or removal from municipal wastewater, and that large scale treatment technologies for the removal of 1,4-dioxane at municipal WWTPs do not currently exist, this Special Order recognizes that source reduction will be the primary and most effective means of reducing 1,4-dioxane concentrations in the T.Z. Osborne WWTP effluent and the Cape Fear River Basin.

q. Since this Special Order is by Consent, neither party will file a petition for a contested case or for judicial review concerning its terms.

2. The City of Greensboro, desiring to significantly reduce its contributions of 1,4-dioxane to the Cape Fear River Basin, hereby agrees to undertake the following activities in accordance with the indicated time schedule:

a. Increase T.Z. Osborne's WWTP 1,4-dioxane effluent Electronic Discharge Monitoring Report (eDMR) monitoring frequency for grab samples to weekly when the Department's Special Study ends.

b. Special Order Year One [to be achieved upon the execution date of this SOC and continued for the first 12 months]:

1) Provide the Department with a copy of the City's existing 1,4-dioxane monitoring plan, and implement the following:
   i. Resample, analyze, and report at previously identified junction locations, including North Buffalo Transfer Pump Station (1650 miles of sewer line as of January 10, 2020).
   ii. Determine trunkline and industrial contributions and investigate further as concentrations or loadings warrant.
   iii. Investigate and determine background levels of 1,4-dioxane that shall include the following: 1) industrial contributions, 2) domestic contributions, 3) commercial contributions, 4) all drinking water contributions, and 5) surface intake water contributions.
   iv. Meet with the Department's Winston-Salem Regional Office on a quarterly basis to present progress updates and provide a written meeting summary.
   v. As circumstances warrant, review and modify the existing 1,4-dioxane monitoring plan. Provide the Department a copy of proposed changes prior to their implementation.

2) Contact, interview, and survey indirect dischargers with identifiable, contributing, 1,4-dioxane concentrations of greater than 100 µg/l.

3) Require analyses of all potential (new) industrial flows to the collection system for the presence of 1,4-dioxane prior to the City's approval or acceptance of the wastewater. The City may require the same or similar analyses of new commercial flows at its discretion. The City shall also obtain a description of the character of any new discharge, its estimated volume, and its location within the collection system.

4) Continue collaboration and oversight regarding industrial dischargers of 1,4-dioxane to the WWTP.
   i. Identify Significant Industrial Users (SIUs) that are indirect sources of 1,4-dioxane.
   ii. Develop source reduction program.
   iii. Review adequacy of slug control plans and update if necessary.
   iv. Increase inspection of selected SIU sources to three (3) times per year [per 2(b)(2)].
   v. Submit summary of oversight activities in the Year One Report.

5) The City shall not exceed the Department's calculated effluent Year One daily maximum grab sample SOC compliance value of 45 µg/l ("Year One SOC Compliance value") to protect downstream drinking water intakes.

6) Develop and implement an ongoing 1,4-dioxane public education outreach plan with applicability toward individual, commercial and industrial users of City Water Resources Department services. Submit a summary of the plan in Year One Report and post on the City's Water Resources Department website.

7) Report all T.Z. Osborne WWTP effluent 1,4-dioxane sampling results monthly by email to the Department (in a format acceptable to DEQ) no later than the last calendar day of the month following the completed reporting period.

8) Report by telephone within 24 hours to the Division's Winston-Salem Regional Office (WSRO) after receiving any data (including any individual result from a grab, composite, or split sample if taken) indicating a T.Z. Osborne WWTP effluent 1,4-dioxane concentration greater than 45 µg/l. The City is also required to submit a written report on any finalized data regarding the exceedance, its cause, effects, and its duration to the WSRO within 5 business days by email of the City's first knowledge of the exceedance.

9) Modify SIU permits or develop other pretreatment program mechanisms as necessary.

10) In addition to any other reporting required by the Department, no later than forty-five (45) calendar days after the end of Year One, the City shall submit to the Department a written report on the Year One activities and post on the City's Water Resources Department website. The report may be submitted by hard copy or electronic means and must contain the following (at a minimum):
    i. Summary of the City's investigation results [outlined in 2(b)(1)].
    ii. Summary of any potential (new) industrial or commercial flows to the collection system [outlined in 2(b)(3)].
    iii. Any oversight activities [outlined in 2(b)(4) and 2(b)(9)].
    iv. Public education outreach plan [outlined in 2(b)(6)].
    v. A table of all monitoring results for 1,4-dioxane collected during the SOC Year One.
    vi. In the case of noncompliance with the Year One SOC compliance value, a statement of the reason(s) for noncompliance, remedial action(s) taken, and a statement on the extent to which subsequent dates or times for accomplishment of listed activities may be affected.
    vii. Based on Year One data and any follow-up monitoring activities, including IU inspections and oversight and City of Greensboro split sample data, determine the following and provide a summary to the Department:
        - Long-term achievable effectiveness of source reduction efforts and resulting T.Z. Osborne WWTP effluent reductions
        - Industrial contributions

- Domestic contributions
- Commercial contributions
- Surface and drinking water contributions

c. Special Order Year Two [to be achieved upon the first day of Year Two and continued for the second 12 months]:

1) Continue investigating industrial sources and engage with sources not defined as SIUs (concentrations above the yearly 1,4-dioxane SOC compliance value) to reduce or eliminate 1,4-dioxane discharges.

2) Meet with the Department's Winston-Salem Regional Office on a quarterly basis to present progress updates and provide a written meeting summary.

3) Report all T.Z. Osborne WWTP effluent 1,4-dioxane sampling results monthly by email to the Department (in a format acceptable to DEQ) no later than the last calendar day of the month following the completed reporting period.

4) The City shall not exceed the Department's calculated effluent Year Two daily maximum grab sample SOC compliance value of 33 µg/l ("Year Two SOC Compliance value") to protect of downstream drinking water intakes based on EPA's drinking water health advisory.

5) Report by telephone within 24 hours to the Department's Winston-Salem Regional Office (WSRO) after receiving any data (including any individual result from a grab, composite, or split sample if taken) indicating a T.Z. Osborne WWTP effluent 1,4-dioxane concentration greater than 33 µg/l. The City is also required to submit a written report on any finalized data regarding the exceedance, its cause, effects, and its duration to the WSRO within 5 business days by email of the City's first knowledge of the exceedance.

6) Modify SIU permits or develop other pretreatment program mechanisms as necessary.

7) Calculate a T.Z. Osborne WWTP effluent 1,4-dioxane mass balance using all data (industrial, domestic, commercial, drinking water, and collection system data) and submit to the Department in the Year Two Report.

8) In addition to any other reporting required by the Department, no later than forty-five (45) calendar days after the end of Year Two, the City shall submit to the Department a written report on the Year Two activities and post on the City's Water Resources Department website. The report may be submitted by hard copy or electronic means and must contain the following (at a minimum):
   i. Summary of the City's oversight activities [outlined in 2(c)(1) and 2(c)(5)].

ii. Public education outreach plan [outlined in 2(b)(6)].
iii. 1,4-dioxane mass balance [outlined in 2(c)(6)].
iv. A table of all monitoring results for 1,4-dioxane collected during the SOC Year Two.
v. In the case of noncompliance with the Year Two SOC compliance value, a statement of the reason(s) for noncompliance, remedial action(s) taken, and a statement on the extent to which subsequent dates or times for accomplishment of listed activities may be affected.

3. In case source reduction alone may not lead to the effluent SOC compliance value being achieved consistently, the following shall apply:

   a. If greater than or equal to 25% of eDMR data exceed the Year One SOC compliance value of 45 µg/L at the end of SOC Year One, the City shall address 1,4-dioxane in the T.Z. Osborne WWTP effluent by performing the following:

      1) Submit to the Division for approval within 45 calendar days of the end of SOC Year One a report that considers the items below:
         - Investigation of alternate/additional treatment processes for removal of 1,4-dioxane at major industrial sources.
         - Investigation of the technical and economic feasibility of treatment technologies for the removal of 1,4-dioxane at wastewater treatment plants.
         - Investigation of the technical and economic feasibility of treatment technologies for removal of 1,4-dioxane at drinking water treatment facilities.

      2) Following the investigations in 3(a)(1), submit to the Division within 180 calendar days of the end of SOC Year One a draft Best Management Practices/1,4-dioxane Minimization Plan, which will include an implementation schedule that must be approved by the Division before proceeding.

      3) Upon Division approval of Items 1 and 2 above, post both items on the City's Water Resources Department website.

4. The City of Greensboro, desiring to resolve the matters contributing to alleged water quality standard violations associated with its discharge of 1,4-dioxane from the T.Z. Osborne WWTP, hereby agrees to pay an upfront penalty in the amount of $5,000.00 as settlement of the alleged violations noted in the November 14, 2019 NOV correspondence as well as any and all other alleged violations related to 1,4-dioxane beginning December 1, 2017 through the execution date of this SOC.

   A certified check in the amount of $5,000 must be made payable to the Department of Environmental Quality and sent to the Director of the Division of Water Resources (DWR) at 1617 Mail Service Center, Raleigh North Carolina 27699-1617 not later than thirty (30)

calendar days following the date on which this Special Order is approved and executed by the Commission and received by the City.

a. Stipulated Penalties. The City agrees that unless excused under Paragraph 5, the City will pay the Director of DWR, by check payable to the North Carolina Department of Environmental Quality, stipulated penalties according to the following schedule for failure to meet the deadlines and requirements set out in Section 2.

Description	Stipulated Penalty
Failure to provide 24-hour notice to WSRO of elevated discharge levels specified in Sections 2(b)(8) and 2(c)(5) of this Special Order	$1,000 per event; $100/day thereafter
Failure to submit to WSRO complete Annual Reports in Sections 2(b)(10) and 2(c)(8) of this Special Order by specified date	$1,000 per event; $100/day thereafter
Failure to meet the grab sample effluent daily maximum SOC compliance value in SOC Year One or Year Two	Exceedance 1-5 per SOC year: $1,000 per event, per SOC year Exceedance 6-10 per SOC year: $2,000 per event, per SOC year Exceedance 11 and up per SOC year: $3,000 per event, per SOC year
Failure to achieve any other requirement of this Special Order	$1,000 per event

5. The City and the Commission agree that the stipulated penalties are not due if the City satisfies DWR that noncompliance was caused solely by:

   a) An act of God;

   b) An act of war;

   c) An intentional act or omission of a third party, but this defense shall not be available if the act or omission is that of an employee or agent of the defendant or if the act or omission occurs in connection with a contractual relationship with the permittee;

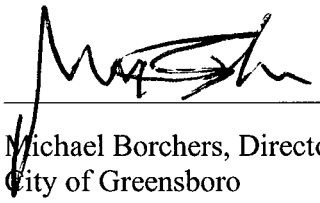
   d) An extraordinary event beyond the permittee's control. Contractor delays or failure to obtain funding will not be considered as events beyond the permittee's control; or

   e) Any combination of the above causes.

   Failure by the City to within thirty (30) calendar days of receipt of a written demand either to pay the penalties, or challenge them by a contested case petition pursuant to G.S. 150B-23, will be grounds for a collection action, which the Attorney General is hereby authorized to initiate. The only issue in such an action will be whether the thirty (30) calendar days has elapsed.

6. This Special Order by Consent and any terms and/or conditions contained herein, hereby supersede any and all previous Special Orders, Enforcement Compliance Schedule Letters, terms, conditions, and limits contained therein issued in connection with NPDES permit NC0047384.
7. Noncompliance with the terms of this Special Order by Consent is subject to enforcement action in addition to the above stipulated penalties, including injunctive relief pursuant to G.S. 143-215.6.C. Noncompliance with the terms of this Special Order will not be subject to civil penalties in addition to the above stipulated penalties.
8. This Special Order may be modified at the Commission's discretion, provided the Commission is satisfied that the City has made good faith efforts to complete the Compliance Schedule activities specified herein.
9. The permittee, upon complete execution but no earlier than May 1, 2021, of this Special Order by Consent, will be expected to comply with all schedule dates, terms, and conditions of this document.
10. This Special Order by Consent shall expire on April 30, 2023.

For City of Greensboro Water Resources Department:



Date February 5, 2024

Michael Borchers, Director of Water Resources
City of Greensboro

For the North Carolina Environmental Management Commission:

_____ Date _____

Chair of the Commission