

Declaration of Barry W. Sulkin

Qualifications

1. My name is Barry W. Sulkin. I am an expert in the field of environmental science and water quality and in all aspects of discharge permits under the federal Clean Water Act's National Pollutant Discharge Elimination System and related state programs. My resume is attached below as Exhibit 1.
2. I am an environmental consultant and am working on behalf of Surfrider Foundation in this matter.
3. I received my Bachelor of Arts in Environmental Science in 1975 from the University of Virginia where I received a du Pont Scholarship. During my undergraduate years, I worked as a Lab Technician and Research Assistant at the University of Virginia and Memphis State University conducting water and soil/sediment analyses and sampling.
4. Following graduation from college, in 1976 I joined the staff of what is now called the Tennessee Department of Environment and Conservation as a Water Quality Specialist. I worked in the Chattanooga, Knoxville, and Nashville field offices and the central office of the Division of Water Quality Control in positions that included field inspector, enforcement coordinator, assistant field office manager, and assistant manager of the Enforcement Section. My duties included compliance inspections of water systems and wastewater systems under the NPDES permit program, enforcement coordination for the water pollution and drinking water programs, as well as work with the drinking water, dam safety, underground storage tank, and solid/hazardous waste programs. I also conducted investigations regarding fish kills, spills, and general complaints, including problems of stream alteration and pollution, as well as scientific/research investigations regarding water quality.
5. In 1984 I was promoted to Special Projects Assistant to the Director, and in 1985 I became State-wide manager of the Enforcement and Compliance Section for the Division of Water Pollution Control. In this capacity I was responsible for investigating and preparing enforcement cases, supervising the inspection programs, participating in developing NPDES permits, monitoring permit compliance, and conducting field studies involving alterations and water quality of wetlands, rivers, streams, and lakes.
6. While in this position, I received a joint State of Tennessee and Vanderbilt scholarship and took an educational leave to obtain my Masters of Science in Environmental Engineering, which I received in 1987 from Vanderbilt University. My thesis was "Harpeth River Below Franklin, Dissolved Oxygen Study," which was a field and laboratory study and computer modeling of water quality and impacts of pollutants from an NPDES permitted facility. I returned to my position as manager of the Enforcement and Compliance Section in 1987, where I remained until 1990.

7. Since 1990, I have engaged in a private consulting practice primarily specializing in water quality problems and solutions, regulatory assistance, permits, stream surveys, and various environmental investigations mainly related to water.

8. I have reviewed and assessed the “Notice of Clean Water Branch Recommendations for Water Pollution Control Permit for Wailua Wastewater Treatment Plant NPDES Permit No. HI 0020257” (“Draft Permit”) and various related documents, including the application materials, Fact Sheet, sampling data available on EPA’s ECHO database, prior permits and fact sheets for the facility, and environmental review documents about planned work related to the facility.

9. This Declaration contains my expert opinions, which I hold to a reasonable degree of scientific certainty. My opinions are based on my application of professional judgment and expertise of sufficient facts or data, consisting specifically of a review of the regulations and documents related to the Draft Permit. These are facts and data typically and reasonably relied upon by experts in my field.

10. In my expert opinion, the Draft Permit fails to meet requirements of the Clean Water Act and state clean water permitting regulations. I have detailed the basis for my opinions below.

Enterococci

11. The Draft Permit sets Enterococci Limits at 745 CFU/100 mL Monthly Geomean and 7,150 CFU/100 mL Daily Maximum, which is an order of magnitude greater than Hawaii’s water quality standard: 35 CFU/100 mL Monthly Geomean and a Statistical Threshold Value of 130 CFU/100 mL. State regulations specify “The STV shall not be exceeded by more than ten per cent of samples taken within the same thirty-day interval in which the geometric mean is calculated.”

12. Enterococci are fecal indicator bacteria. Their presence in the environment may indicate that other disease-causing agents such as viruses, bacteria and protozoa may also be present. These pathogens can sicken swimmers and others who use lakes, oceans, rivers and streams for recreation or eat raw shellfish or fish. Other potential health effects can include diseases of the skin, eyes, ears and respiratory tract.

13. Hawaii’s water permitting rules allow the use of a zone of mixing or zone of initial dilution in limited circumstances. The rules define a zone of initial dilution as a subset of zones of mixing that are applied to toxic pollutants.

14. Enterococci are not toxic pollutants.

15. Therefore, Hawaii’s rules do not allow the use of a zone of initial dilution for Enterococci.

16. EPA Guidance instructs permit writers that where a zone of initial dilution or mixing zone is not permitted by the water quality standards or is not appropriate, the relevant water quality criterion must be attained at the point of discharge.

17. The Hawaii Enterococci recreational water quality criteria mirror EPA's 2012 recommended recreational water quality criteria. According to the Department of Health's rationale in adopting the marine recreational water quality criteria, the state adopted the criteria to "protect the public from exposure to harmful levels of pathogens as a result of human sewage contamination while participating in water activities such as swimming, wading, surfing, and other water contact activities."
18. Prior to 2014, Hawaii's marine recreation criteria prohibited enterococcus from exceeding a geometric mean of 35 CFU per 100 milliliters within 300 meters (about one thousand feet) of the shoreline, including natural public bathing or wading areas.
19. EPA must approve all changes in a state's water quality standards, and it will only approve those changes that improve water quality. For this reason, the history of Hawaii's water quality standards direct the Department of Health to prohibit mean enterococcus levels above 35 CFU per 100 mL or a single sample above 104 CFU per 100 mL within a thousand feet of the shoreline.
20. Because Outfall 1 for the Wailua WWTP is 670 feet from shore, the Department of Health cannot use a zone of initial dilution that would allow the mean Enterococci levels to exceed 35 CFU per 100 mL or a single sample above 104 CFU per 100 mL.
21. The Final Permit must require the Wailua WWTP to meet the recreational water quality criteria at the discharge point.
22. All NPDES permits must contain limits that protect the receiving waters and meet the water quality standards, including protecting the designated uses of the receiving waters.
23. The receiving waters for the Wailua WWTP are designated for primary contact recreation, including surfing, swimming, wading, snorkeling, and windsurfing.
24. The receiving waters for the Wailua WWTP are directly offshore from Lydgate Beach Park. The Kauai.com tourism site notes that the beach is lifeguarded and recommends that the beach is good for "kids, snorkeling... and swimming." Members of the Surfrider Foundation use the receiving waters for primary contact recreation, as do other members of the public.
25. Sewage treatment plant discharges with high levels of fecal indicator bacteria threaten and do not protect primary contact recreation designated uses.
26. While a zone of initial dilution may be appropriate for some toxic pollutants into some waterbodies, using a zone of initial dilution for fecal indicator bacteria for a primary contact recreation waterbody does not protect the designated use and therefore is not allowed.
27. The Draft Permit's Enterococci limits of 745 CFU/100 mL Monthly Geomean and 7,150 CFU/100 mL Daily Maximum are more than **20 times** greater than the monthly geomean in the recreational criteria and more than **50 times** greater than the criteria's daily maximum. This level

of Enterococci threatens public health and safety and removes protection of the primary recreation uses in this portion of the ocean.

28. The Draft Permit's Shoreline Monitoring requirement fails to protect the primary contact recreation designated use. By only requiring compliance with the recreational water quality criteria at the shoreline and not in the ocean itself, the Draft Permit is sacrificing the designated and actual uses of the ocean off Lydgate Beach Park by allowing it as a dumping ground for sewage pollution.

29. Wailua WWTP, which has twice in 2025 exceeded its daily maximum limits of 7,150 CFU/100 mL has obviously not received the best degree of treatment or control. For sewage treatment plants, disinfection using chlorine or UV treatment is considered "the best degree of treatment or control" and would lower Enterococci levels to below the recreational water quality criteria. Meeting bacteria limits through disinfection is a fundamental part of sewage treatment and routinely met by sewage treatment plants across the country. The fact that the Wailua WWTP is violating the 2019 Permit limits is evidence that the facility is not implementing best treatment control for sewage treatment plants.

30. The publicly available documents do not explain why the Wailua WWTP is sometimes unable to disinfect its partially treated sewage. The proposed upgrades to the outfall and the golf course discharge do not include any upgrades to the Wailua WWTP that would address the facility's inability to properly disinfect its waste. Such common improvements might include increased chlorination and dechlorination, and/or increased chlorine contact time. Before the Department of Health could issue the Wailua WWTP facility a permit using a zone of initial dilution or zone of mixing, it would need to show that it has identified the issues with the treatment works and addressed them.

31. The Department of Health concluded that "[n]o known information indicates that the discharge is causing or contributing to conditions that substantially endanger human health or safety." The lack of information of human impact does not mean that none has occurred. People might have become ill and not know the cause or to whom to report such. The lack of information does not mean nothing has happened.

32. According to data available on EPA's ECHO database, on March 19, 2025 and April 16, 2025, the value for Enterococci was greater than 8057 CFU/ 100mL. This level of Enterococci means the sewage effluent has not been disinfected and likely contains pathogens that substantially endanger human health or safety.

33. According to information available on the Clean Water Branch's Environmental Health Portal, there have also been multiple Brown Water Advisories at Lydgate Park in 2023 and 2024 beyond those seen island-wide on May 2, 2024, April 19, 2024, November 20, 2023, October 24, 2023, February 24, 2023, February 8, 2023. These advisories suggest that the Wailua WWTP discharges are contributing to conditions that substantially endanger human health or safety.

34. The Wailua WWTP has not shown that complying with the Enterococci limits would produce serious hardships without equal or greater benefits to the public. Disinfection is

relatively cheap and easy for sewage treatment plants. Therefore, the Department of Health’s assumption that it would be very costly for the Wailua WWTP to comply with the Enterococci limits is unfounded.

35. Neither the application nor the Fact Sheet contains a thorough review of known and available means of preventing, controlling, or abating Enterococci in the facility’s discharge.

36. To protect public health and the designated use of primary contact recreation in the receiving water, the final permit must include effluent limits at least as stringent as:

	Monthly Geomean	Daily Maximum	Units
Enterococci	35	130	CFU/100 mL

Turbidity

37. The ocean at Lydgate Park is included on Hawaii’s 303(d) list as impaired for Turbidity. This means that the receiving water is violating the water quality standards and therefore there is no assimilative capacity for turbidity.

38. The Fact Sheet’s conclusion that “there is assimilative capacity” for Turbidity is incorrect. A water that is impaired for a pollutant does not have assimilative capacity for that pollutant.

39. The Fact Sheet claims that Turbidity data are included in Appendix 2, but no turbidity data are included in Appendix 2. The Department of Health must rely on publicly available data when issuing a permit.

40. The Draft Permit sets the following Turbidity limits compared to the state water quality criteria:

Pollutant Conditions	Geometric mean not to exceed the given value	Not to exceed the given value more than ten per cent of the time	Not to exceed the given value more than two per cent of the time	Draft Permit
Turbidity (NTU) Wet Weather	0.5	1.25	2	410 annual geomean
Turbidity (NTU) Dry Weather	0.2	0.5	1	410 annual geomean

This is in conflict with federal regulations prohibiting permitting additional loads of a pollutant for which the receiving water has no available capacity.

41. There are a number of technologies that can be used to reduce turbidity in sewage treatment plant effluent, including chemical treatment, physical filtration, and advanced technologies. Without using these technologies, the discharges from Wailua WWTP have not received the best degree of treatment or control.

42. Neither the application nor the Fact Sheet contains a thorough review of known and available means of preventing, controlling, or abating Turbidity in the facility's discharge.

43. Because the receiving water is impaired and there is no assimilative capacity for Turbidity, the Permit must set the effluent limitations no greater than the water quality criteria at the end-of-pipe.

Nutrients

44. The Wailua WWTP has had a nutrient pollution issue for over a decade. The data from 2013-2018 show high levels of Ammonia Nitrogen and Nitrate + Nitrite Nitrogen. There were 29 exceedances of the 2013 Permit's Nitrate + Nitrite Nitrogen limit during the permit term.

45. A permitting authority can use a three-year compliance schedule to give the facility an opportunity to identify upgrades needed to meet the water quality standard. In 2013, the Wailua WWTP was under a ten-year compliance schedule to bring the facility into compliance with the Ammonia Nitrogen water quality standards and the daily maximum reported was 2,900 ug/L compared to a water quality standard daily maximum of 8.5 ug/L.

46. In 2015, the County of Kaua'i had a report prepared that set out various options for upgrades to allow the facility to meet the Ammonia Nitrogen water quality standards.

47. Instead of completing these upgrades, the Department of Health dropped all Ammonia Nitrogen limits from the 2019 Permit, thereby "solving" the Wailua WWTP's nutrients problem.

48. However, the ocean at Lydgate park is now listed as impaired for Ammonia Nitrogen. This shows that the Wailua WWTP discharges continue to harm water quality in the ocean at Lydgate Park and are causing or contributing to a violation of water quality standards. An impaired waterbody does not have assimilative capacity to accept more of the pollutant for which it is impaired. Therefore, the permit must contain a water quality based effluent limitation for Ammonia Nitrogen.

49. High Ammonia and nutrient levels can cause low levels of dissolved oxygen, which can harm aquatic life. The 2019 Permit requires the facility to test dissolved oxygen quarterly as part of its Offshore Water Quality Monitoring data. That data is not currently publicly available, and the Department of Health did not respond to requests for the data prior to the close of the

comment period. The Department of Health also refused requests to extend the comment period until after the data could be provided and reviewed.

50. The Department of Health’s justification for removing the nutrient limits in the 2019 permit does not stand up to scrutiny. The Offshore Water Quality Monitoring data showed violations of wet and dry weather nutrient standards.

Table F-10. Offshore Monitoring Stations Results

Parameter	Highest Annual Geometric Mean by Station					
	S1	S2	S3	S4	S5	S6-Control
Total Nitrogen (µg/L)	157	133	121	133	122	137
Ammonia Nitrogen (µg/L)	2.4	6.3	3.2	3.6	3.1	3.7
Nitrate + Nitrite Nitrogen (µg/L)	9.6	4.5	9.8	5.1	5.9	4.4

The monthly average water quality standard for Ammonia Nitrogen is 3.5 ug/L for wet weather and 2 ug/L for dry weather. Stations S2 and S4 exceeded the wet weather standard 6.3 ug/L and 3.6 ug/L respectively, and all stations exceeded the dry weather standard. The control station reported 3.7 ug/L, above the water quality standard, meaning there is no assimilative capacity in the receiving water for additional ammonia nitrogen.

Additionally, the water quality standard for Total Nitrogen is 150 ug/L in wet weather and 110 ug/L in dry weather. All six offshore monitoring stations exceeded the dry weather standard and station S1 exceeded the wet weather standard. The Nitrate + Nitrite Nitrogen monthly average water quality standard is 5 ug/L in wet weather and 3.5 ug/L in dry weather. Stations S1 and S3 exceeded the wet weather standard and all the stations exceeded the dry weather standard. The data were not differentiated between wet and dry weather.

51. Instead of relying on Offshore Monitoring Station Results, set forth in Table F-10, which showed violations of wet and dry weather water quality standards for Ammonia Nitrogen, Nitrate + Nitrite Nitrogen, and Total Nitrogen, the Department of Health relied on water quality monitoring data the County specifically gathered in support of its zone of mixing application. That data in the application showed compliance with the water quality standards.

Table F-8. ZOM Monitoring Data

Parameter	Units	Applicable Water Quality Standard	Maximum Reported Geometric Mean Concentration or Range ¹
Total Nitrogen	µg/L	150 ²	130
Ammonia Nitrogen	µg/L	3.5 ²	2.3
Nitrate + Nitrite	µg/L	5.0 ²	4.5
Total Phosphorus	µg/L	20 ²	14
Chlorophyll <u>a</u>	µg/L	0.30 ²	0.30
Turbidity	NTU	0.50 ²	0.35
pH	s.u.	³	8.05 - 8.22
Dissolved Oxygen	mg/L	⁴	86.6 – 106.2
Temperature	°C	⁵	24.59 - 34.58
Salinity	ppm	⁶	32.91 - 37.99

¹ Source: ZOM Application Supplemental Information submitted to DOH.

While the 2019 Permit zone of mixing application was not available for my review, the ZOM Monitoring Data are inconsistent with the Offshore Monitoring Results presented in the 2019 Fact Sheet. Further, the “Applicable Water Quality Standard” included in Table F-8 includes the wet weather standard and not the more protective dry weather standard. Best practice is to rely on regular monitoring and more assume the higher pollution amounts are correct instead of cherry-picking data an applicant supplies in support of its application to show that the pollution is not a problem.

52. The Draft Permit relies on a 2017 Dilution Study to conclude that the dilution of 820:1 was appropriate. This dilution rate is based on study conditions that do not reflect either typical or worst-case-scenario conditions at the discharge.

53. The 2017 Dilution Study is based on a flow rate lower than actual flows seen from the Wailua WWTP. Specifically, the 2017 Dilution Study is based on tests done nearly a decade ago, on May 25 and 26, 2016. According to the study, the “effluent flow rate averaged... 0.23 mgd... then abruptly increased to 0.45 mgd” for approximately 10 hours “when it abruptly dropped back to 0.23 mgd.” *Id.* This flow rate is not representative of actual recent flows through the Wailua WWTP outfall. ECHO data available from EPA’s website show much higher flows from 2022-2024 than the 2017 Dilution study reflects. The ECHO data report a maximum flow of 1.19 mgd for April 2024.

54. EPA guidance instructs that “with municipal ocean outfalls, an increase in flow causes a decrease in dilution...” Dilution Models for Effluent Discharges, Third Edition, June 1994 at 16. This means that the County would need to complete a new dilution study showing a flow of 1.19 mgd to produce data that reflects real-world critical conditions.

55. The 2017 Dilution Study was also done on a day with light winds. The 2017 Dilution Study reports that the winds were onshore at 1 to 3 meters per second, or 2.2 to 6.7 miles per

hour. Sources report that typical tradewinds blow from 5 -15 miles per hour. *Compare* 2017 Dilution Study at 18 to Kauai weather.com <https://www.kauai.com/kauai-weather>.

56. Best practices for dilution studies are to conduct the study under critical conditions. *See generally*, NPDES Permit Writer’s Manual, Chapter 6, September 2010. In this case, that would be at highest flow and strongest onshore winds. Because conditions during the 2017 Dilution Study were particularly favorable to show limited impact from the discharge--the flow was too low and the winds were too gentle – the 2017 Dilution Study does not support the conclusion that an 820:1 dilution in the zone of mixing is sufficient to protect water quality. If a zone of mixing is otherwise justified by the County having met its regulatory burden for a zone of mixing, then the Department of Health should require a new dilution study to support a zone of mixing that protects water quality for the Permit.

57. The 2019 Permit included table F-10, Offshore Monitoring Station Results, that summarized monitoring data from each offshore monitoring station. The current Fact Sheet omits this data from 2019-2024. Instead, Table A-1-6 represents that 224 zone of mixing samples collected between January 1, 2020 and December 31, 2024 were used to determine the reasonable potential for Ammonia Nitrogen to cause criteria violations, while 225 samples from the same period were used to determine the reasonable potential for Total Nitrogen and Total Phosphorus to cause criteria violations. There were no data included for Nitrate + Nitrite Nitrogen in the Fact Sheet.

58. The Department of Health’s reliance on zone of mixing station monitoring data not included or summarized with the application materials or draft permit and not publicly available through the ECHO database is problematic based on the facility’s inconsistent discharge schedule. Specifically, the Wailua WWTP only discharges approximately 180 days per year. The 2019 Permit required offshore water quality monitoring at the edge of the zone of mixing by grab sample once per quarter. The 2019 Permit--and the Draft Permit--do not require the samples to be taken when the Wailua WWTP is actually discharging. The Wailua WWTP could be taking samples to meet the Permit’s Offshore Water Quality Monitoring requirements on days when the facility is not discharging, leading to sampling results that merely reflect background water quality, not the effect of the discharge on the receiving water.

59. The Department of Health based its decision to remove Nitrate + Nitrite Nitrogen limits from the 2019 Permit on cherry-picked zone of mixing data the County submitted in support of its zone of mixing application, which the Department of Health characterized as “based on receiving water data submitted between 2014 and 2018, all ZOM stations appear to be in compliance” with the water quality standards. 2019 Fact Sheet at 29. This conclusion is directly contradicted by the Offshore Monitoring data provided in Table F-10, which show water quality violations.

60. The Department of Health removal of the Nitrate + Nitrite Nitrogen limits in 2019 violated antidegradation policies because there was no antidegradation analysis. The Department of Health relied on that erroneous removal of the Nitrate + Nitrite Nitrogen limits in 2019 in the Draft Permit. The Department of Health failed to perform a Reasonable Potential Analysis for Nitrate + Nitrite Nitrogen, as reflected in Table A-1-5, RPA Results, and Table A-1-6 Range of

Data Used in RPA and Monitoring Analysis. Fact Sheet at 54-55. Indeed, the Department of Health completely removed all monitoring requirements for Nitrate + Nitrite Nitrogen, as reflected in the Offshore Water Quality Monitoring requirements. Draft Permit at 17. The Department of Health's decision to remove Nitrate + Nitrite Nitrogen limits in 2019 and remove all monitoring requirements for Nitrate + Nitrite Nitrogen violates antidegradation requirements and is inconsistent with permit writing requirements.

61. The water quality standards for nutrients have different values for “wet” and “dry” conditions. The “dry” criteria are more stringent than the “wet” criteria, for all nutrients. The Department of Health failed to recognize this two-tiered criteria in developing the Draft Permit. Instead, the Department of Health only relied on the less stringent “wet” criteria in determining that there was no reasonable potential for the Wailua WWTP to violate water quality standards. *Compare* “Applicable WQS” in the Table A-1-5 RPA Results with the receiving water quality standards in HAR 11-54-6(b)(3). The Department of Health's failure to either use both “wet” and “dry” criteria as appropriate, or use the more protective “dry” criteria across the board means that the Draft Permit fails to protect water quality.

62. The receiving water, the Pacific Ocean at Lydgate Park, is listed as impaired on the 303(d) list for Ammonium (NH₄), also known as Ammonia Nitrogen in Hawaii's water quality standards. HAR 11-54-6(b)(3).

63. The 2019 Permit removed Ammonia Nitrogen limits based on an erroneous claim that there was not reasonable potential for the discharge to cause or contribute to a violation of water quality standards. Given the new 303(d) listing, the Wailua WWTP has, in fact, caused or contributed to the violation of the Ammonia Nitrogen water quality standard. The final Permit must include effluent limits for Ammonia Nitrogen in order to protect water quality. Also, the Permit cannot include a zone of mixing for Ammonia Nitrogen because there is no assimilative capacity since the receiving water is already overloaded by (impaired for) Ammonia Nitrogen.

64. For sewage treatment plants, there are multiple options to control nutrients in order to meet the water quality criteria. These include additional aeration basins and/or biotowers for nitrification and denitrification through biological and/or chemical nutrient removal. *See, e.g.* “Methods Used to Remove Nutrients in Wastewater Treatment,” <https://tigernix.com.au/blog/methods-remove-nutrients-wastewater-treatment>. The Wailua WWTP discharge is not using these available treatment options and therefore its discharges are not receiving the best degree of treatment or control.

65. Neither the Draft Permit nor the Fact Sheet show that the Department of Health undertook a thorough review of known and available means of preventing, controlling, or abating the nutrient discharge.

Monitoring

66. The Draft Permit includes monitoring requirements that fail to protect water quality. Information included in the DEA-AFONSI for Wailua WWTP and Effluent Disposal Improvements explains the nuances of the Wailua WWTP's discharges. *See* DEA-FONSI at 1-1.

During “non-rainy months (April to September), treated effluent is discharged from the WWTP through the existing ocean outfall from Tuesday morning to Thursday morning (about three days of flow per week).” *Id.* However, “during the rainy season (October through February), the... flows are routed predominantly through the ocean outfall.” *Id.* The Permit must modify the monitoring requirements as proposed in the Draft Permit in order to gather information to evaluate whether the effluent discharges are violating water quality standards.

67. The Shoreline Monitoring Requirements is problematic for two reasons. First, by requiring compliance with the Enterococci limits only at the shoreline, the Department of Health is allowing the discharges to violate the water quality standard within the water—by definition failing to protect the primary contact recreation designated use. The Permit must, if it includes a zone of initial dilution (which it cannot legally do), require compliance with the water quality standard at the edge of the zone of initial dilution, not at the shoreline.

68. The Shoreline Monitoring Requirements direct the County to test water quality five times per month. If these requirements were spaced evenly throughout the month, they would frequently fall on days when the facility is not discharging, particularly in the non-rainy months when it only discharges Tuesday morning through Thursday morning. To the extent that the Permit requires Shoreline Monitoring Requirements, the Permit must specify that the County must collect five samples per month and that the monitoring must be done on days when the facility is discharging.

69. The Offshore Water Quality Monitoring requires a grab sample to be tested once quarterly. Nowhere does the Draft Permit specify that the testing must be on a day when the Wailua WWTP is actually discharging. This means that the County can take its Offshore Water Quality Monitoring samples on a day when the facility is not actually discharging and merely report the background water quality, not the effect of the effluent discharge on water quality. The final permit must require that Offshore Water Quality Monitoring be done on a day when the Wailua WWTP is actually discharging.

70. The Shoreline Monitoring Requirements to demonstrate compliance with the Enterococci limits effectively create a “sacrifice zone” of the entire ocean from the outfall to the shoreline where Enterococci levels can exceed the recreational water quality criteria and still comply with the Permit. The Permit must modify the monitoring requirements to require compliance with the water quality criteria at the end-of-pipe. The Permit must also require that testing for Enterococci be done every day that the facility is discharging out of Outfall 01.

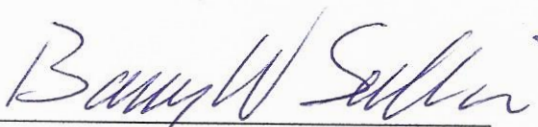
71. The Offshore Water Quality Monitoring Requirements must require that the ocean testing is only done on days when the Wailua WWTP is discharging greater than 0.3 mgd of effluent from Outfall 01.

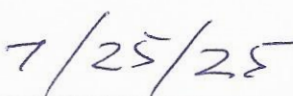
72. The Draft Permit only requires grab samples once a month to show compliance with the monthly geomean water quality criteria. In order to effectively measure a monthly geomean, a parameter must be sampled several times in a month. Hawaii’s regulations require each pollutant to be monitored “at intervals sufficiently frequent to yield data which reasonably characterized

the nature of the discharge of the monitored... pollutant.” HAR 11-55-28(d). The regulations direct that “variable effluent flows and pollutant levels shall be monitored at more frequent intervals than relatively constant effluent flows and pollutant levels.” Because the Wailua WWTP does not consistently discharge through Outfall 01, the Permit must include more frequent monitoring to ensure compliance with Permit limits and water quality criteria. In my opinion, the Permit should require the Offshore Water Quality Monitoring to test for pollutants at least twice per month. This is particularly important when the Wailua WWTP did not complete any Offshore Water Quality Monitoring from April to June 2022, claiming that “strong tradewinds which directly impact the survey site” led to unsafe conditions for the entire quarter. It appears that the Wailua WWTP conducted no Offshore Water Quality Monitoring between March 3, 2022 and September 28, 2022.

CONCLUSION

73. In my expert opinion, the Draft Permit fails to meet applicable regulatory and technical requirements. The Department of Health should modify the permit to require more stringent effluent limits that protect water quality and recreational uses.


Barry W. Sulkin


Date

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CURRICULUM VITA

EDUCATION

1987 M.S., **Vanderbilt University** - Nashville, Tennessee
Major: Environmental Engineering

Master's Thesis: "HARPETH RIVER BELOW FRANKLIN DISSOLVED OXYGEN STUDY"- Field and lab study, QUAL2E computer modeling of river hydrology, water quality, and impacts of a sewage treatment plant.

1975 B.A., **University of Virginia** - Charlottesville, Virginia
Major: Environmental Science

Additional undergraduate courses: math and engineering at University of Tennessee - Knoxville 1982-1984

HONORS

Conservationist of the Year, 2011, Wild South's Roosevelt-Ash Society, Ashville, NC, March 23, 2012

River Hero Award, River Network 2006

Lifetime Achievement Award, Tennessee Environmental Council, 1990

Water Conservationist of the Year, Tennessee Conservation League, 1989

State of Tennessee/Vanderbilt University

Environmental Engineering Graduate School Scholarship, 1985 - 1987

duPont Scholarship, University of Virginia, 1971 - 1975

Eagle Scout, 1967

PROFESSIONAL EXPERIENCE - CURRENT

Sept. 1990 - **Environmental Consultant**

Present Self-employed

Investigator, consultant, and scientist serving clients such as attorneys, environmental/citizen organizations, cities, individuals, businesses, media, and sub-contractor for other consultants/engineers. Activities include research projects, field studies, sampling, testing, site evaluations, stream/wetland determinations, permit negotiations, information and file research, photography, and expert witness presentations concerning water quality, NPDES, CAFO, TMDL, erosion, landfills, NEPA, FERC, NRC, and other environmental issues; also TN Director of Public Employees for Environmental Responsibility (PEER). Employed by EPA as special expert for Federal Advisory Committee for Detection and Quantitation and Uses in the Clean Water Act (June 2005- Dec 2007).

PROFESSIONAL EXPERIENCE - PREVIOUS

1987-June 1990
and 1985 **Manager**
Enforcement and Compliance Section
Division of Water Pollution Control
Tennessee Dept. of Health and Environment
Nashville, Tennessee

Responsibilities: Statewide manager of enforcement investigations and legal referrals for water pollution programs under the federal Clean Water Act and the Tennessee Water Quality Act; witness for hearings before the Water Quality Control Board, and local and state courts; data processing and analysis for wastewater permit discharges; field research projects regarding water quality problems, as well as field work involving various stream, river, lake, and wetland issues.

1989 **Instructor**
Graduate School of Engineering
University of Tennessee, Knoxville (Nashville campus)

Responsibilities: Assistant instructor for graduate course in environmental engineering- wastewater treatment.

Sept.-Nov.1986
and 1981 **Assistant Manager**
Regional Field Office
Division of Water Pollution Control
Tennessee Dept. of Health and Environment
Nashville, Tennessee

Responsibilities: Coordinated inspections, complaint investigations, field studies, and enforcement for wastewater programs in 41 county region.

Sept. 1985
- Aug. 1986 Education leave to attend graduate school

1984-1985 **Special Projects Assistant**
Director's Office - Elmo Lunn, Director
Division of Water Pollution Control
Tennessee Dept. of Health and Environment
Nashville, Tennessee

Responsibilities: Provided statewide coordination and technical assistance on deep well waste injection regulations, clear-cutting forestry problem investigations, animal waste problems, public relations and media presentations, state planning and policy, enforcement and field office coordination.

1982-1984 **Enforcement Coordinator**
Regional Field Office
Division of Water Pollution Control
Tennessee Dept. of Health and Environment
Knoxville, Tennessee

Responsibilities: Coordinated enforcement action in municipal and industrial drinking water and wastewater programs in 24 county region, including fish kills, spills, complaint investigations, and stream studies.

1981-1982 **Assistant Manager**
Enforcement Section
Division of Water Pollution Control
Tennessee Dept. of Health and Environment
Nashville, Tennessee

Responsibilities: Coordinated statewide investigations and legal actions for drinking water, wastewater, and safe dam programs.

1977-1981 **Water Quality Specialist**
Regional Field Office
Division of Water Pollution Control
Tennessee Department of Health and Environment
Nashville, Tennessee

Responsibilities: Inspected drinking water, and municipal and industrial wastewater systems for 41 county area; investigated spills, underground storage tanks, fish kills, and citizen complaints; conducted stream studies; coordinated enforcement program.

1976-1977 **Water Quality Specialist**
Regional Field Office
Division of Water Pollution Control
Tennessee Dept. of Health and Environment
Chattanooga, Tennessee

Responsibilities: Inspected public drinking water systems for nine county area; investigated spills and citizen complaints.

1975 **Research Assistant/Lab Technician**
Department of Environmental Science
University of Virginia
Charlottesville, Virginia

Responsibilities: Analyzed soil and sediment from Chesapeake Bay and marsh/wetland sites for Corps of Engineers dredge spoils study.

1974 **Research Assistant**
Department of Environmental Science
University of Virginia
Charlottesville, Virginia

Responsibilities: Weather research project data processing.

1974 **Research Assistant/Lab Technician**
Department of Civil Engineering
Water Quality Lab
Memphis State University
Memphis, Tennessee

Responsibilities: Field sampling and lab analyses of water for study of urbanization impacts of watershed streams.

PROFESSIONAL/CIVIC ORGANIZATIONS & CERTIFICATIONS (Past & Present)

Community Engagement Committee, Nashville Planning Department, 2013 to 2015

Beaman Park to Bells Bend Conservation Corridor community organization,
Board of Directors, 2012 to present

Certified Erosion Prevention and Sedimentation Control Professional (TN)

Davidson County Grand Jury, Oct. - Dec. 1998, Nashville, TN

Nashville and Davidson County - Floodplain Review Committee, Oct. - Dec. 1998

National Environmental Health Association
Registered Environmental Health Specialist, 1994

State of Tennessee - *Registered Professional Environmentalist, 1982*

American Society of Civil Engineers

Water Environment Federation

Tennessee Environmental Council, *Board of Directors & Advisory Board, 1994 to present*

International Erosion Control Association

Tennessee Scenic Rivers Association

American Water Resources Association

Alaska Clean Water Advocacy, *Advisory Board*

ADDITIONAL TRAINING

PFAS webinars by Eurofins laboratory professional development, “PFAS – State of the Union: A look at What is to Come in 2021”, February 2, 2021; “PFAS Basics”, February 9, 2021; “PFAS Sample Collection”, February 23, 2021

“Current Wetland Issues in Tennessee” seminar by TN Tech University with TN Dept of Environment and Conservation, US Army Corps of Engineers, & Center for the Management, Utilization, and Protection of Water Resources, Cookeville, TN, May 14 - 16, 2007

“Fundamentals of Erosion Prevention and Sediment Control” certification course by the University of Tennessee and the Tennessee Department of Environment and Conservation, August 26, 2004; Recertification October 9, 2007

ABASINS Training@ short course of EPA supported computer mapping and water quality modeling techniques, Utah State Univ., Logan UT, August 6 - 10, 2001

"Wetland Mitigation Techniques" Tennessee Tech. Univ., Cookeville, TN, April 26, 1999

"Pulp and Paper Cluster Rule and Clean Water Act Permits", Clean Water Network with EPA, Seattle, Washington, February 18-19, 1998

"Bioengineering Techniques for Streambank and Lakeshore Erosion Control", by Wendy Goldsmith, International Erosion Control Association, April 27, 1995

"Fundamentals of Hydrogeology, Karst Hydrogeology, and the Monitoring, Containment, and Treatment of Contaminated Ground Water", by Albert Ogden and Gerald Cox, January 6-7, 1994

"Ground Water Hydrogeology and Dye Tracing in Karst Terrains", James Quinlan, April 2, 1992

"NPDES Permit Writers Course" by the Environmental Protection Agency (EPA), April 1988

"Sediment Oxygen Demand Workshop", by EPA, U.S. Environmental Research Laboratory, Gulf Breeze, Florida, September, 1987

"Compliance Monitoring for NPDES Permits", by EPA, October, 1978

"Hazardous Materials Tactical Workshop", by Tennessee Civil Defense, April 1978

"Troubleshooting O & M Problems at Municipal Wastewater Treatment Facilities", by EPA, March, 1978

PRESENTATIONS/PUBLICATIONS

November 2015

“Evidence For Leaking Of Two Coal Ash Storage Ponds To Local Surface Water And Groundwater In Tennessee”, Harkness, Jennifer S.¹, Sulkin, Barry² and Vengosh, Avner¹,

(¹Division of Earth and Ocean Sciences, Nicholas School of the Environment, Duke University, Durham, NC; ²Environmental Consultant, Nashville, TN); Abstract & Presentation at 2015 Geological Society of America Annual Meeting in Baltimore, MD

October 2010 & January 2015

Water Quality Sampling & Testing for Litigation Uses, Western Carolina University, Environmental Chemistry Class, Cullowhee, NC

April 2014 & March 2015

Environmental Regulatory Programs in State and Federal Government, Middle Tennessee State University, Murfreesboro, TN

June 2013

NPDES Permits & Cases Presentation at International WaterKeeper Alliance annual meeting, Calloway Gardens, Pine Mountain, GA

October 2012

Appalachian Public Interest Environmental Law Conference, University of Tennessee College of Law, "*Transportation Planning for the 21st Century*" panel, Knoxville, TN

March 2012

Alabama Rivers Alliance – "*How Winning Is Possible*" Keynote address for annual conference awards, Fairhope, AL

May 2001 – May 2013

River Rally, annual national conference in: California, North Carolina, Washington, Virginia, Colorado, New Hampshire, Ohio, Maryland, Utah, South Carolina, Oregon; taught various seminars each year on: Clean Water Act, NPDES Permits, Anti-degradation, Stormwater, TMDLs, Enforcement, Wetlands & Mitigation; by River Network based in Portland, OR

July 2005

"The Clean Water Act Owner's Manual", second edition, contributing writer & editor, River Network, Portland, OR

December 2003

"Stream Flow and the Clean Water Act", Atlanta, GA, with River Network, Portland, OR

February 2003 & December 2004

"Clean Water Act - Train the Trainer", Denver, CO & Madison, WI, with River Network, Portland, OR

May 2002

"Tracking TMDLs", contributing writer & editor, National Wildlife Federation, Montpelier, VT & River Network, Portland, OR

February 2002

"A Protocol for Establishing Sediment TMDLs", contributing writer & editor, developed for the Georgia Conservancy & University of Georgia Institute of Ecology by the Sediment TMDL Technical Advisory Group, Athens, GA

March 2001

"The Ripple Effect - How to Make Waves in the Turbulent World of Watershed Cleanup Plans", contributing writer & editor, Clean Water Network, Washington, D.C.

October 1999 - April 2001

"Clean Water Act Workshop", presenter for three-day training conferences - Vermont, Georgia, Tennessee, Colorado, New Mexico, Ohio, and Alaska, with River Network, Portland, OR

October 2000

"TMDL Workshop", presenter for training in San Diego, CA, with River Network, Portland, OR

April 1999

"U.S. Environmental Laws & Regulations Compliance - Understanding Your Obligations Under the Clean Water Act", session on Clean Water Act for course sponsored by Government Institutes, Inc. of Rockville, MD, given in Nashville, TN

March 1999

"NPDES and State Water Quality Permits" and *"The TMDL Process"*, presentations at the Tenn. Clean Water Network conference; March 27, 1999, Bethany Hills Camp, Kingston Springs, TN

March 1999

"State of the Rivers: Tennessee" presentation at World Wildlife Fund *"State of the Rivers Conference"*, March 15, 1999, Chattanooga, TN, with co-author of Tenn. section of *"A Conservation Potential Assessment of the Mobile and Tennessee/Cumberland River Basins in Alabama, Georgia, and Tennessee"* by WWF

December 1998

"America's Animal Factories", contributing writer & editor, National Resources Defense Council, Washington, D.C.

December 1998

"The TMDL Process", presentation with NRDC attorney at national Sierra Club state leaders conference, Santa Fe, New Mexico, December 11, 1998

October 1998

"Clean Water Act Permits, Modeling, and TMDLs" presentation at national conference of clean water organizations & attorneys, by Clean Water Network/NRDC, Oct. 16, 1998, Washington, DC

May 1998

"Impacts of State Route 840 Upon the Human and Biophysical Environment" NEPA, ISTEA, and Public Participation in Transportation Projects, Dept. of Environmental Geography guest lecture, Austin Peay State University, May 1, 1998, Clarksville, TN

March 1998

"The State, EPA, Citizens - How the System Works" Tennessee Clean Water Conference, Opening Plenary Presentation, March 28, 1998, Nashville, TN

March 1998

"Total Maximum Daily Loads (TMDL) The Science, Process, & Controversy" American Water

Resources Association 1988 Tennessee Conference; paper presentation as part of panel with EPA representatives on TMDLs, March 3, 1998, Nashville, TN.

February 1997

International Erosion Control Association, on panel of speakers for session on practical applications of erosion controls at annual IECA national conference, Nashville, TN

October 1994

"*Stream Ecology, BMPs, and Compliance*", environmental impacts of road building, Sierra Club Southern Appalachian Highlands Ecosystem Taskforce, Transportation Workshop, Banner Elk, NC

June 1994

"*Fundamentals of Tennessee Environmental Law*", presentation on Water Pollution Control and Compliance Strategies, for course sponsored by Government Institutes, Inc. of Rockville, MD, given in Knoxville, TN

June 1994

University of Tennessee Law School, guest lecture on water pollution and the related state and federal laws, Knoxville, TN

October 1992

"*Storm Water Regulations for Saw Mills*" - Seminar sponsored by the Tennessee Association of Forestry and the Univ. of TN, Nashville.

August 1992

"*Storm Water Regulations for Industry*" - Seminars sponsored by the Tennessee Association of Business and the Univ. of TN, Chattanooga, Knoxville, Jackson, and Nashville.

July 1992

Storm Water in Tennessee - A Training Manual for Manufacturers, University of Tennessee Center for Industrial Services

April 1992

"*Dissolved Oxygen Study - Sewage Treatment Impacts and Assessments*", VA Water Pollution Control Assoc. 46th Annual Conference, Roanoke, VA

October 1990

"*The Tainted Waters of the Cumberland*"; Cumberland Journal, v.1, no. 1, pp. 16-20; Nashville, Tennessee.

November 1988

"*A Rapid Bioassessment of Richland Creek, Davidson County*", by M. Browning, B. Sulkin, T. Merritt, TN Div. of Water Pollution Control

June 1988

"*Assimilative Capacity of the Obed River at Crossville, Tennessee*"; U.S. Geological Survey 1st Annual Hydrology Symposium, Nashville, TN

March 1987 - 1994

Vanderbilt University Graduate School of Engineering and Law School; guest lectures on water quality topics and computer modeling of river waste assimilative capacity.

July 1983

Testimony on the pollution at the Oak Ridge nuclear weapons facilities before Congressional hearing chaired by Congressman Albert Gore.