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United States District Court, D. Hawai'i.

HAWAI'I WILDLIFE FUND, a Hawaii non-profit corporation; Sierra Club-Maui Group, a non-profit corporation; Surfrider Foundation, a non-profit corporation; and West Maui Preservation Association, a Hawaii non-profit corporation, Plaintiffs,
v.
COUNTY OF MAUI, Defendant.

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Signed 07/15/2021

Attorneys and Law Firms

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ORDER GRANTING PLAINTIFFS' MOTION FOR SUMMARY JUDGMENT; ORDER DENYING DEFENDANT'S MOTION FOR SUMMARY JUDGMENT

Susan Oki Mollway, United States District Judge

I. INTRODUCTION.

***1** The dueling summary judgment motions before this court come with voluminous stacks of paper. Within those stacks there are, as one would expect, factual disputes. But some of the disputes pertain to matters that are immaterial to the present order, and some of the disputes concern matters that no one could establish, even in the most thorough of trials. Under those circumstances, a trial is not warranted.

This court, viewing all facts in the light most favorable to Defendant County of Maui and drawing all reasonable inferences in favor of the County, concludes that the County must obtain a permit under the Clean Water Act consistent with the analysis established by the Supreme Court. The court grants the summary judgment motion filed by Plaintiffs Hawaii Wildlife Fund, Sierra Club, Surfrider Foundation, and West Maui Preservation Association, and denies the summary judgment motion filed by the County.

Anyone who proposed to stand at the shoreline and empty directly into the ocean each day thousands of large drums filled with pollutants would be required to get a National Pollutant Discharge Elimination System ("NPDES") permit under the Clean Water Act. The central question in this case is whether the County is violating the Clean Water Act in having failed to obtain an NPDES permit while releasing pollutants, not by pouring them directly into the Pacific Ocean, but instead by introducing the pollutants into injection wells at the Lahaina Wastewater Reclamation Facility ("LWRF") half a mile from the ocean.

The parties in this lawsuit agree that millions of gallons of treated wastewater travel from those injection wells through groundwater, and that 100 percent of that wastewater finds its way into the ocean, although with certain components, like nitrogen, being reduced before the wastewater reaches the ocean. Monitors at a handful of small locations near the shoreline have detected less than 2 percent of the wastewater from two of the four wells. No scientific study conclusively establishes the path of the other 98 percent of the wastewater that the parties agree is reaching the ocean. But even if this court looks only at that less-than-2-percent, that is still tens of thousands of gallons of pollutant-containing wastewater entering the ocean every day. Millions of gallons enter the

ocean every year at just the handful of monitored points. While the court cannot point to the exact path of the rest of the wastewater or map every drop of that remaining 98 percent, it is likely that that remainder is entering the Pacific Ocean within a few miles at most of the LWRF. That less-than-2-percent is still an enormous amount of pollutant being put into the ocean in the functional equivalent of a direct discharge. An NPDES permit is required.

Accordingly, the court grants the motion for summary judgment filed by Plaintiffs, which seeks a determination that the County of Maui, which owns and operates the LWRF, has violated the Clean Water Act by failing to obtain an NPDES permit for its discharge of wastewater into the Pacific Ocean. The court denies the County of Maui's motion summary judgment, which argues that Plaintiffs lack admissible evidence of such a violation.

II. BACKGROUND.

***2** Since 2006, the County of Maui has owned and operated the LWRF, a wastewater treatment facility on the island of Maui, without an NPDES permit. *See* Defendant County of Maui's Answer to First Amended Complaint, ECF No. 41, PageID #s 451-52; ECF No. 137, PageID # 4542 (admitting in connection with a previous motion that the County does not have an NPDES permit for the LWRF). The LWRF is located approximately half a mile from the Pacific Ocean. *See* ECF No. 432-24, PageID # 10592; ECF No. 432-37 (picture showing LWRF location relative to ocean).

The County puts 3 to 5 million gallons of treated and disinfected wastewater per day into four injection wells at the LWRF. *See* ECF No. 41, PageID # 455; Consent Agreement, *In re County of Maui*, ECF No. 432-3, PageID #s 10377-78. The County began discharging wastewater into Wells 1 and 2 in May 1982. It began discharging wastewater into Wells 3 and 4 in 1985. It discharges wastewater into some or all of the wells on a daily basis. *See* First Amended Complaint ¶ 43, ECF No. 36, PageID # 374; Answer to First Amended Complaint ¶ 21, ECF No. 41, PageID # 455 (admitting same).

According to the Final Report of June 2013 Lahaina Groundwater Tracer Study, the LWRF serves the city of Lahaina, receiving about 4 million gallons of sewage every day from approximately 40,000 people, filtering and disinfecting it, and then releasing the treated wastewater into the injection wells. *See* ECF No. 432-24, PageID # 10595. The June 2013 Tracer Dye Study assumed that 2.5 million gallons of the total of 4 million gallons went into Wells 3 and 4 every day. [1] *See id.*, PageID # 10671. This assumption matches the evidence this court has regarding the period from 2011 to 2013. *See* ECF No. 440-28, PageID # 11213 (including Figure 1-5 with monthly averages for all four wells for the period from April 2011 through March 2013). According to daily usage logs, in January 2012, the LWRF put an average of 1.248 and 1.506 million gallons of wastewater into Wells 3 and 4, respectively, every day. *See* ECF No. 73-31, PageID # 2453. Similarly, for a period in November and December 2014, the LWRF put an average of 1.555 and 2.904 million gallons of wastewater into Wells 3 and 4, respectively, every day. *See* ECF No. 432-7.

In 2015, several years after this case was filed, the LWRF decreased its use of Wells 3 and 4 and increased its use of Wells 1 and 2. *See* ECF No. 432-7, PageID # 10422 (in 2015, Wells 3 and 4 averaged 983,000 and 400,000 gallons per day, respectively), PageID # 10429 (in 2016, Wells 3 and 4 averaged 636,000 and 91,000 gallons per day, respectively), PageID # 10436 (in 2017, Wells 3 and 4 averaged 651,000 and 111,000 gallons per day, respectively), PageID # 10443 (in 2018, Wells 3 and 4 averaged 468,000 and 145,000 gallons per day, respectively), PageID # 10450 (in 2019, Wells 3 and 4 averaged 519,000 and 155,000 gallons per day, respectively), PageID # 10457 (in 2020, Wells 3 and 4 averaged 89,000 and 118,000 gallons per day, respectively). The volume of wastewater placed into the particular wells has thus varied significantly over time. *See* Decl. of Richard Kraft, PG, CEG, Chg (CA) (the County's expert), ECF No. 440-3, PageID # 11093.

***3** Once placed in the wells, the wastewater travels approximately 200 feet underground into a shallow groundwater aquifer beneath the facility. *See* 1993 Injection Well Report, ECF No. 432-26, PageID # 10737; Consent Agreement, ECF No. 432-3, PageID # 10379. According to one of the County's experts who is a hydrologist and geologist, that aquifer is "a diverse assemblage of volcanic rock below the freshwater aquifer lens." The wastewater in the aquifer encounters saline and brackish water at depths of 88 to 258 feet. *See* Kraft Decl., ECF No. 440-3, PageID # 11080-81. A Lahaina Wastewater Reclamation Status Report dated July 2011 indicates that, from 0 to 30 feet below the surface, the

material is "Ewa silty clay loam." The status report also says that, from 30 to 75 feet below the surface, the material is limestone and that, for depths greater than 75 feet, the material is "fractured layers of Wailuku lava basalt." *See* ECF No. 432-25, PageID # 10724. The treated wastewater mixes with groundwater and then flows horizontally and vertically into the ocean through the porous aquifer. *Id.*, PageID # 11081-82; ECF No. 44027, PageID # 11212.

There is no dispute that the wastewater put into all four injection wells finds its way to the Pacific Ocean. *See* Final Environmental Impact Statement for Construction of Sewage Collection System and Waste Water Reclamation Plant, Lahaina, Maui, Hawaii, ECF No. 432-4, PageID #10397 (noting that the LWRF wastewater "will eventually reach the ocean"); ECF No. 137, PageID # 4542 (County admitting in connection with a previous motion that the "groundwater into which LWRF Injection Wells 1 and 2 discharge conveys wastewater to the Pacific Ocean");[2] of Jean E. Moran (the Plaintiffs' expert, a hydrologist and Decl. geochemist), ECF No. 432-22, PageID # 10578 ("In my opinion, 100% of wastewater injected into any of the LWRF wells will discharge into the adjacent Pacific Ocean."); Depo. of Richard Kraft (the County's hydrologist and geologist), ECF No. 432-9, PageID # 10475 (agreeing with the statement that "100 percent of wastewater injected into any of the LWRF wells will discharge in the adjacent [P]acific [O]cean"); Remote Deposition by Videoconf. of Ericson John List (the County's expert, a civil engineer), ECF No. 432-10, PageID # 10483 ("If you're on an island, everything you put into the ground that doesn't evaporate goes into the ocean. So if you're injecting wastewater into – treated wastewater into the aquifer, it's all going to end up in the ocean. There's no place else for it to go."); Expert Report of Ericson John List (the County's expert), ECF No. 432-31, PageID # 10829 ("All waters that infiltrate the soil on an island must ultimately find their way to the sea either in the form of stream flows or via SS and diffuse flow at the shoreline or within adjacent coastal waters.... The effluent[3] injected into the aquifer is no different in this respect; it must ultimately find its way to the sea."); Decl. of Adina Paytan (Plaintiffs' expert, an oceanographer), ECF No. 432-32, PageID # 10855 ("all of the treated wastewater (100%) that is injected into any of the four LWRF injection wells enters the Pacific Ocean").

The June 2013 Tracer Dye Study conducted jointly by the EPA, the Hawaii Department of Health, the U.S. Army Engineer Research and Development Center, and researchers at the University of Hawaii concluded that wastewater put into Wells 3 and 4 finds its way to the Pacific Ocean, emerging through "submarine springs" in the waters off Kahekili Beach about half a mile from the LWRF. ECF No. 432-24, PageID # 10594; *see also* Geosync Consultants Expert Report (prepared for the County), ECF No. 432-29, PageID # 10781 (stating that the distance from Well 4 to the nearshore beach is approximately 0.3 miles); ECF No. 440-45 (noting that it is 821 meters from the LWRF to the north seep group and 932 meters from the LWRF to the south seep group, with the north and south seep groups located in the nearshore ocean waters); Decl. of Adina Paytan, Ph.D. (Plaintiffs' expert), ECF No. 432-32, PageID # 10842 (indicating that wastewater travels 0.85 kilometers (0.5 miles) from Wells 3 and 4 to the Pacific Ocean and that wastewater from Wells 1 and 2 travels slightly farther, as those wells are located slightly farther away from the ocean than Wells 3 and 4).

***4** The court recognizes that wastewater may flow horizontally and vertically through the aquifer, not necessarily in a straight line from the LWRF to the ocean. Even so, Plaintiffs' expert says the distance does not exceed 1.5 miles. *See* Decl. of Jean E. Moran, Ph.D., ECF No. 432-22, PageID # 10566. Another of Plaintiffs' experts, Robert B. Whittier, says that, because of its "buoyancy, the warm, non-saline LWRF injectate rises from the brackish and saline zone into the freshwater zone near to the injection well, long before the injected effluent plume reaches the coast." *See* Decl. of Robert B. Whittier, ECF No. 444-1, PageID # 11406. Whittier opines that, as a result, the wastewater is discharged "to the coastal and submarine discharge zones" and not to "deeper layers of saline and brackish water" that may emerge offshore at depths of at least 30 to 50 feet. *Id.; see also Groundwater Availability in the Lahaina Dist., W. Maui, Haw.* Fig. 7, ECF No. 432-30, PageID # 10826 (showing where freshwater, brackish water, and saltwater are discharged into the ocean). The County's expert says the wastewater travels from the LWRF to the ocean through various paths with a minimum distance ranging from 0.3 to 1.3 miles. *See* Geosync Consultants Expert Report, ECF No. 432-29, PageID #s 10781, 10786.

The 2013 Tracer Dye Study involved placing Fluorescein tracer dye into Wells 3 and 4 on July 28, 2011. *See* ECF No. 432-24, PageID # 10606. According to that study, the

"treated wastewater discharges from the sea floor mixed with other marine and fresh waters predominantly as diffuse flow (>90%), but also through a patchwork of hundreds of very small (ca. 5 cm^2>) submarine springs."[4] *Id.*, PageID # 10594. These submarine springs were generally located in two areas--1) the north seep group, which was approximately 3 to 5 meters offshore and 3,180 square meters in area; and 2) the south seep group, which was approximately 25 meters offshore and 7,000 square meters in area. The researchers placed small monitors, called piezometers, at three to four locations in the north seep area and three to four locations in the south seep area and monitored them for tracer dye. *See id.*, PageID #s 10597, 10624-27; Decl. of Ericson John List (the County's expert, a civil engineer), ECF No. 440-1, PageID #s 11063-64. The monitors themselves only covered 0.327 square meters of the combined 10,180 square meters of the north and south seep groups. *See* List Decl., ECF No. 440-2, PageID # 11064.

The 2013 Tracer Dye Study noted that more than 90 percent of the discharge within the two seep groups occurred through diffuse flow. *See* ECF No. 432-24, PageID #s 10602, 10668. The County questions the accuracy of the 90 percent figure, arguing that we cannot know what percentage of the discharge within the two seep groups occurs through diffuse flow because no measurements have been taken. *See* List Decl., ECF No. 440-2, PageID # 11064 (stating that diffuse flow is not limited to the seep groups and may "occur anywhere along the west-Maui coast"). One of the County's experts says the treated wastewater does not only seep into the Pacific Ocean in the locations identified by the 2013 Tracer Dye Study, but also "flow[s] diffusely along the length of the west-Maui coast near Kahekili Beach, as well as farther offshore in deeper water," encountering different conditions on that journey. Kraft Decl., ECF No. 440-3, PageID #s 11083-84, 11089-90. List concurs that "[d]iffuse flow can occur anywhere along the west-Maui coast" and that it is not limited to the north and south seep groups. *See* Decl. of Ericson John List, Ph.D., ECF No. 440-2, PageID # 11064.

The 2013 Tracer Dye Study also indicated that the temperature of the water and the amount of sewage-derived nitrogen isotope (δ^{15} N) are higher in and to the immediate south of the seeps ("Seep Area") than in the water surrounding the rest of West Maui. *See* Figure ES-6, ECF No. 432-24, PageID # 10626; *See also* Paytan Decl., 432-32, PageID # 10857. For example, the temperature of the water in the Seep Area was 26.8 degrees Celsius (80.24 degrees Fahrenheit), and the temperature of other nearshore waters was 26.0 degrees Celsius (78.8 degrees Fahrenheit).

***5** Paytan, an oceanographer who is one of Plaintiffs' experts, says the groundwater coming from the submarine springs is warmer than the ambient seawater and that, in the usual case, discharged water is cooler than the seawater. *See* Paytan Decl., ECF No. 432-32, PageID # 10856. Robert B. Whittier, another expert for Plaintiffs, agrees: "The ocean is a large reservoir relative to the groundwater, so it takes a large amount of groundwater input to result in a change of sea surface temperature and algal δ^{15} N composition." ECF No. 444-1, PageID # 11414. Accordingly, even though there is a dispute about how much diffuse flow is occurring in the two seep areas, Plaintiffs argue that the discharge is large enough to increase the temperature of the water in the Seep Area by 0.8 degrees Celsius (1.44 degrees Fahrenheit).

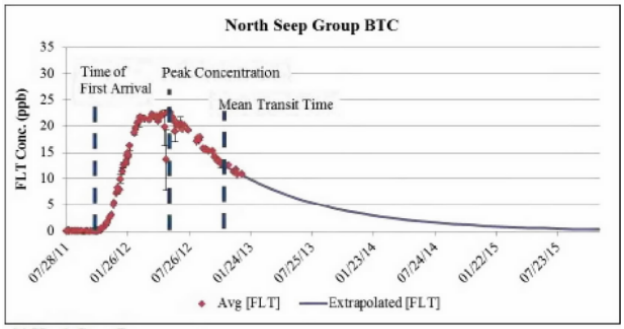
On the other hand, List, an engineer who is one of the County's experts, says that water samples at two seeps showed a range of 29.2 to 34.9 degrees Celsius (84.56 to 94.82 degrees Fahrenheit) during the week of September 10, 2011. He says that the average temperature of the wastewater was 27.5 degrees Celsius (81.5 degrees Fahrenheit). He opines that the increased temperature in the Seep Area is caused by geothermal forces, rather than the discharge of the LWRF wastewater. *See* Expert Report of Ericson John List, ECF No. 137-2, PageID #s 4599-4600.

The 2013 Tracer Dye Study also estimated that about 64 percent of wastewater from Wells 3 and 4 discharges in the nearshore water at the north and south seep group locations, although the County questions the 64 percent estimation. *See* ECF No. 432-24, PageID # 10594; ECF No. 422-1, PageID # 9789. It appears that one of the study's authors now thinks the number might be 54 percent. *See* ECF No. 422-1, PageID # 9795; *see also Observations of Nearshore Groundwater Discharge: Kahekili Beach Park Submarine Springs, Maui, Hawaii*, ECF No. 444-11, PageID # 11542 ("Dye tracer experiments and geochemical mixing models suggest that up to 96% (mean 62%) of the discharging vent water can be sourced back to the LWRF injectate ...."); 2013 Tracer Dye Study, Table ES-8, ECF No. 444-6, PageID # 11489 (stating that the range of the LWRF wastewater discharged in

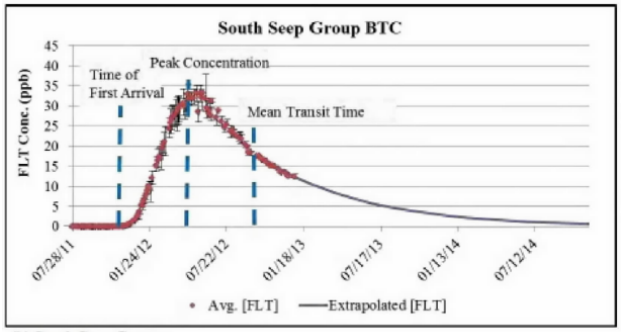
submarine springs is 53 percent to 96 percent, with an average of 62 percent).

Ericson John List, an expert retained by the County, notes the total amount of dye "recovered" at the two seep groups represented less than 2 percent of the total dye injected into the wells and that exactly what happened to the other 98 percent of the dye remains unknown. *See* ECF No. 440-2, PageID # 11065; Supplemental Expert Report of Ericson John List, ECF No. 440-20, PageID # 11178. While the 2013 Tracer Dye Study took measurements only at the piezometers, List concedes that the dyed wastewater also could have traveled as diffuse flow anywhere along the West Maui coast. *See* List Decl., ECF No. 440-2, PageID # 11064; *see also* Lahaina Groundwater Tracer Study, ECF No. 432-24, ECF No. 10601 ("there is significant groundwater discharge along the coastline north and south of the submarine springs"); Interim Lahaina Groundwater Tracer Study, ECF No. 440, PageID # 11220 ("groundwater discharge commonly occurs along this ~5-km stretch of coastline"). As one study put it, "a few submarine springs are prominent enough to be readily noticeable, but groundwater almost certainly discharges diffusely along the entire shore in addition and is simply masked readily by seawater mixing where it is not focused." *See* "A Multitracer Approach to Detecting Wastewater Plumes from Municipal Injection Wells in Nearshore Marine Waters at Kihei and Lahaina, Maui, Hawaii," ECF No. 432-28, PageID # 10768-69. The recovery at the seeps of about 2 percent of the dye put into the Wells 3 and 4 suggests that about 2 percent of the wastewater put into Wells 3 and 4 makes its way to those seeps.

***6** There is no dispute that the Fluorescein tracer dye was first detected at the north seep group 84 days after being put into Wells 3 and 4. Although the peak concentration of the dye was observed 9 to 10 months after it was placed in Wells 3 and 4, the average (mean) time for wastewater to go from Wells 3 and 4 to the north and south seep groups was 14 to 16 months. *See* ECF No. 432-24, PageID # 10592 ("Fluorescein tracer dye (FLT) added to LWRF injection Wells 3 and 4 arrived at coastal submarine spring sites with a time of first arrival of 84 days."), and # 10607 (stating, "The average time of travel occurred 487 and 435 days after the FLT addition at the NSG and SSG, respectively."); Decl. of Jean E. Moran (Plaintiffs' expert), ECF No. 432-22, PageID # 10559; Expert Report of Ericson John List (the County's expert), ECF No. 127-11, PageID # 3804 (stating that the average travel time is about 430 days). The 2013 Tracer Dye Study included the following table that illustrated detection times:



(a) North Seep Group



(b) South Seep Group

Figure ES-10: Submarine spring water FLT breakthrough curves for (a) the NSG and (b) the SSG.
The first arrival of dye occurred in late October, 2011 at the NSG and early November, 2011 at the SSG. Both BTCs appear have reached maximum concentrations by May, 2012 with the FLT concentration at the SSG being about 1.5 times that at the NSG. The maximum concentration at the NSG occurred in late May, 2012 after a three month plateau. The peak concentration at the SSG occurred in mid-May, 2012 with no plateau. Both BTCs exhibit a long trailing edge on their declining limbs. The limbs extending past January 2012 are synthetic projections.

ECF No. 432-24, PageID # 10630.

List, a County expert, says that 50 percent of the dye measured at the seeps entered the ocean within 300 days, that 70 percent of the dye entered the ocean within 400 days, and that 90 percent of the dye entered the ocean within 600 days. *See* Remote Depo. by Videoconf. of Ericson John List, ECF No. 432-10, PageID #s 10479-80; *see also* Supp. Expert Rep. of Ericson John List, ECF No. 432-14, PageID # 10516 (same); Decl. of Ericson John List, ECF No. 440-2, PageID # 11068 ("*of the 2% fraction of injectate* that was measured in the groundwater flow at the Kahekili spring groups, 50% had been in the aquifer for more than 300 days"). Thus, even if less than 2 percent of the tracer dye was measured by the piezometers at the seeps, 70 percent of the dye, according to the County's expert, entered the ocean within 400 days of being placed into Wells 3 and 4. *See, e.g.*, ECF No. 432-10, PageID # 10480 ("Q: And your further testimony with respect to the south seep group, again for measured tracer, is that 70

percent will have entered the ocean by 400 days; correct? A: You can infer that from what I said. What I said is 30 percent remained resident in the aquifer. So 30 percent is still resident; 70 percent has been released, yes. Q: And then finally, by 600 days, 90 percent of the injected tracer would have entered the ocean; right? A. Yes. You did your arithmetic correctly.").

Another expert for the County, Jeffrey Muir Thompson, Ph.D., states that the estimates that 0.6 percent to 1.6 percent of the wastewater entered the ocean refer to wastewater entering from the identified seep vents, without regard to wastewater that entered the ocean from the rest of the nearby seep group areas. *See* Remote Depo. by Videoconf. of Jeffrey Muir Thompson, Ph.D., ECF No. 444-12, PageID # 11548.

Another County expert, Craig Lekven, a civil engineer, notes that it takes much longer for the treated wastewater to reach the ocean via groundwater than it would take via a direct pipeline. He says dye put into the ocean via a pipe going straight from the LWRF to the ocean would reach the ocean in about 90 to 108 minutes, rather than first arriving at the sea in 84 days. *See* Decl. of Craig Lekven, ECF No. 440-6, PageID # 11120.

The 2013 Tracer Dye Study concluded that the presence of the dye "conclusively demonstrate[s] that a hydrogeologic connection exists between LWRF Injection Wells 3 and 4 and the nearby coastal waters of West Maui." ECF No. 432-24, PageID # 10594. This court previously characterized the 2013 Tracer Dye Study with respect to the Fluorescein tracer dye as "indisputably demonstrat[ing] the relatively rapid flow of significant quantities of pollutant from the LWRF to the ocean." 24 F. Supp. 3d at 1003.

On August 11, 2011, a different tracer dye, Sulpho-Rhodamine-B, was placed into Well 2, which is located slightly northeast of Wells 3 and 4. That dye was not detected as emerging at the study's monitors. *See* ECF No. 432-24, PageID # 10592; Decl. of Adina Paytan (Plaintiffs' expert), ECF No. 432-32, PageID # 10842 (describing the location of the wells); Decl. of Richard Kraft (the County's expert), ECF No. 440-3, PageID # 11083 (stating that "[i]njectate from Wells 1 and 2 has never been detected at the submarine springs offshore of Kahekili Beach, or anywhere else in the Pacific Ocean").

***7** The 2013 Tracer Dye Study recognized that wastewater from Well 2 might not be discharging in the nearshore waters and might be instead discharging in deeper water farther from the shore. *See id.*, PageID # 10689. Moran, a hydrologist and geochemist retained by Plaintiffs, opines that the lack of Sulpho-Rhodamine-B tracer dye detected from Well 2 does not mean that it fails to reach the ocean. Moran notes that detection of Sulpho-Rhodamine-B from Well 2 could have been affected by degradation of Sulpho-Rhodamine-B, which degrades more readily than Fluorescein tracer dye. Detection could also have been affected by the lesser amount of Sulpho-Rhodamine-B used and the likely deflection of wastewater from Well 2 by mounds of pressure created by wastewater from Wells 3 and 4 (which received more wastewater during the study). Decl. of Jean E. Moran, Ph.D. (Plaintiffs' expert), ECF No. 432-22, PageID # 10560; *see also* ECF No. 432-24, PageID # 10689 (concluding in the 2013 Tracer Dye Study that the lack of detection could have related to displacement by wastewater from Wells 3 and 4, discharge in areas that were not monitored, and/or decreases in the dye concentration or degradation of the dye below detectable limits over time as the wastewater traveled to the ocean).

In Moran's opinion, the time required for wastewater from Wells 1 and 2 to reach the nearshore ocean is similar to that from Wells 3 and 4. ECF No. 432-22, PageID # 10561. Moran noted that, during the 2013 Tracer Dye Study, Wells 3 and 4 received 80 percent of the effluent injected into the wells. Moran opines that, when Wells 1 and 2 receive the majority of the effluent, Wells 1 and 2 discharge at and near the North and South Seep Groups. *Id.*, PageID # 10566. Moran says that, because wastewater from each of the LWRF's four wells goes into the same aquifer, flow times from all of the wells are similar. *See* Decl. of Jean E. Moran, ECF No. 432-22, PageID # 10561; Supp. Decl. of Jean E. Moran, ECF No. 444-2, PageID #s 11417-18.

Another of Plaintiffs' experts, Adina Paytan, specializes in the relationship between submarine groundwater discharge and marine chemistry and has been studying that relationship in Hawaiian waters for 13 years. She says that she has been collaborating with the U.S. Geological Survey since 2014, studying the impacts of wastewater injected into the wells at the LWRF on the nearby reef. *See* Paytan Decl., ECF No. 432-32, PageID #s 10832-33. In 2019, she coauthored a peer-reviewed article, "Coral Skeleton δ^{15} N as a Tracer of

Historic Nutrient Loading to a Coral Reef in Maui, Hawaii." *See* ECF No. 432-34. Paytan studied δ^{15} N, a sewage-derived nitrogen isotope. *See* Paytan Decl., PageID # 10857. Her 2019 article examined coral skeletons cores corresponding to a 40-year period from the seeps identified by the 2013 Tracer Dye Study, determining that there was "a dramatic increase in coral δ^{15} N values after 1995, corresponding with the implementation of biological nutrient removal at the nearby Lahaina Wastewater Reclamation Facility." ECF No. 432-34, PageID #s 10898 and 10901; *see also* Paytan Decl., ECF No. 432-32, PageID #s 10834, 10900.

Paytan's study says that "[h]igh δ^{15} N values are known to be strongly indicative of denitrification and sewage effluent." ECF No. 432-34, PageID # 10898; *see also* Paytan Decl., ECF No. 432-32, PageID # 10834. Her study "confirm[ed] that corals living within the SGD seep area are impacted by sewage-effluent injected at the LWRF." ECF No. 432-34, PageID # 10903. Paytan explains:

> The links between fluctuations in the seepage chemistry to changes in wastewater management at the plant provide additional confirmation that pollutants entering the ocean off Kahekili Beach Park come from treated effluent discharged from the LWRF injection wells. As discussed above, the dramatic increase in coral δ^{15} N values corresponds to the denitrification upgrade at the LWRF. There were also significant changes in discharging water chemistry following the implementation of chlorination disinfection at the LWRF in 2011. Notably, the mean salinity of the vent water was about 2.5 times higher in 2013 (7.4 ± 3.7) than in 2010 (the addition of chlorine to treat LWRF effluent increases the salinity, which is the sum of the concentrations of dissolved salts like sodium chloride), and the mean dissolved organic nitrogen (DON) (and not other nutrients like silicon) was enriched about 9-fold during 2013 (due to lower microbial activity, less DON is utilized and mineralized by the microbial community, while the major source of silicon is from dissolution of the bedrock materials via water rock interactions) likely due to the impact of the chlorine on the microbial community in groundwater (Fackrell et al., 2016; Murray et al., 2019).

***8** ECF No. 432-32, PageID # 10860.

Paytan says that studies completed before the 2013 Tracer Dye Study "supported the prevailing scientific view that injected LWRF wastewater discharges into coastal waters near Kahekili Beach." *See* Paytan Decl., ECF No. 432-32, PageID # 10836. For example, Paytan notes that a 2009 study by Charles D. Hunt and Sarah N. Rosa concluded that there was an injection plume caused by wastewater discharge from LWRF. *See id.*; "A Multitracer Approach to Detecting Wastewater Plumes from Municipal Injection Wells in Nearshore Marine Waters at Kihei and Lahaina, Maui, Hawaii," ECF No. 432-28, PageID # 10774-75.

Another study prepared by the United States Geological Survey in conjunction with the Hawaii State Department of Health, Clean Water Branch, similarly concluded that "[t]reated wastewater presence was confirmed" in the nearshore waters near the LWRF "by multiple 'inherent' wastewater tracers, the most conclusive being pharmaceuticals, organic waste indicator compounds, and heavy δ^{15} N." ECF No. 432-28, PageID # 10776. That study noted that "tribromomethane, two musk fragrances, a fire retardant, and a plasticizer compound" were detected, further confirming the presence of treated wastewater at the submarine springs near LWRF. *Id.*

Ryan Fimmen, Ph.D., a County expert, says that the LWRF may not be the only source of these contaminants. Reclaimed water used for irrigation and landscaping near the ocean, along with surface runoff, may add chemicals to nearshore waters. Decl. of Ryan Fimmen, Ph.D., ECF No. 440-5, PageID # 11113. Lekven, an engineer retained by the

County, says that, between July 1996 and December 2020, 7,593,683,519 gallons of recycled water were provided to the Kaanapali Resort and Golf Club, Honua Kai Resort, Hyatt Regency, Hyatt Timeshare, and Maui Land and Pineapple Company. Lekven estimates that between 1.5 and 2.3 billion gallons of that recycled water percolated into the groundwater during that time frame. *See* Decl. of Craig Lekven, ECF No. 445-6, PageID # 11623-24; *see also* ECF No. 440-11 (aerial photograph with overlays showing the LWRF, Kaanapali Resort and Golf Club, Honua Kai Resort, Hyatt Regency, Hyatt Timeshare, and Maui Land and Pineapple Company).

Paytan, Plaintiffs' expert, also notes that dissolved oxygen levels at the seeps near LWRF are lower than in other ocean areas in West Maui. *See* Paytan Decl., ECF No. 432-32, PageID # 10858. She opines that effluent with dissolved organic matter consumes oxygen at the seeps, leading to elevated phosphorous levels there. *Id.*, PageID # 10859. The 2013 Tracer Dye Study noted other differences. When compared to surrounding waters, the seeps generally had a lower pH, lower salinity, and lower specific conductivity. *See* ECF No. 432-24, PageID # 10647.

While there is no dispute that wastewater from the LWRF ultimately finds its way to the Pacific Ocean, the County's expert, Kraft, says that, on its way to the ocean, the pollutants in the wastewater become less of a problem because of "attenuation mechanisms such as dispersion, mixing, dilution, and chemical transformation." *See* Kraft Decl., ECF No. 440-3, PageID #s 11079, 11082.

***9** Another of the County's experts, Ryan Fimmen, Ph.D., says that the wastewater combines with saline, brackish, and fresh groundwater, then goes through and interacts with porous volcanic rock, leading to "injectate that emerge[s] at the seeps [that is] significantly mixed, diluted, chemically altered, and geochemically transformed." Decl. of Ryan Fimmen, Ph.D., ECF No. 440-5, PageID # 11106. According to Fimmen, "Microbial processes such as denitrification ultimately result in the removal of an average of 86% of total nitrogen." Decl. of Ryan Fimmen, Ph.D., ECF No. 440-5, PageID # 11106; Paytan Expert Report, ECF No. 440-40, PageID # 11259 (stating that the average nitrogen removal was 86 percent, but the removal rate ranged from 30 percent to 90 percent).

It may be that some of the denitrification occurs at the plant, rather than as the wastewater travels through groundwater to the sea. *See* Paytan Decl., ECF No. 432-32, PageID # 10834. However, Lekven, the County's engineering expert, opines that treated wastewater taken by a pipe to the ocean would yield ocean outfall of nitrogen of about 190 pounds per day, contrasting with only 31 pounds per day actually released into the ocean. He says the difference "is a result of the denitrification process that occurs in the aquifer as the groundwater flows from the injection wells into the ocean." Lekven Decl., ECF No. 440-6, PageID # 11125. Lekven says this is a "significant natural treatment" before the treated wastewater reaches the ocean. *Id.*

III. SUMMARY JUDGMENT STANDARD.

This court set forth the summary judgment standard in its order of May 30, 2014. See 24 F. Supp. 3d 980, 992-93 (D. Haw. 2014. That standard is incorporated herein by reference.

IV. ANALYSIS.

The Clean Water Act was enacted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). Toward that end, the Clean Water Act prohibits the "discharge of any pollutant" unless certain provisions of the Clean Water Act are complied with. *See* 33 U.S.C. § 1311(a); *see also* 33 U.S.C. § 1362(12) ("The term 'discharge of a pollutant' and the term 'discharge of pollutants' each means (A) any addition of any pollutant to navigable waters from any point source, (B) any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.").

The Supreme Court has explained that "a person wishing to discharge *any* pollution into navigable waters [must] first obtain EPA's permission to do so." *Hawaii Wildlife Fund, et al. v. County of Maui*, 140 S. Ct. 1462, 1468 (2020). In other words, a person desiring to discharge any pollutant from a point source into the navigable waters of the United States must get an NPDES permit. *See* 33 U.S.C. §§ 1311(a) and 1342; *see also* *Comm. To Save Mokelumne River v. E. Bay Mun. Util. Dist.*, 13 F.3d 305, 309 (9th Cir. 1993) ("the

Act categorically prohibits any discharge of a pollutant from a point source without a permit").

The Clean Water Act defines "pollutant" broadly, including in its definition "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." 33 U.S.C. § 1362(6).

Under the Clean Water Act, "navigable waters" are "the waters of the United States, including the territorial seas." 33 U.S.C. § 1362(7).

The Clean Water Act covers pollutants reaching navigable waters from any point source. A "point source" is

> any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.

***10** 33 U.S.C. § 1362(14).

In 2012, Plaintiffs sued the County, seeking to compel it to apply for and comply with the terms of an NPDES permit, and to pay civil penalties for its earlier discharge without a permit.

On May 30, 2014, this court granted summary judgment to Plaintiffs, ruling that the County's failure to obtain an NPDES permit was a violation of the Clean Water Act. While recognizing that the LWRF was not discharging wastewater directly into the Pacific Ocean, this court ruled that an NPDES permit was necessary because a "discharge into the groundwater below the LWRF is functionally equivalent to a discharge into the ocean itself." 24 F. Supp. 3d 980, 994 (D. Haw. 2014). This court noted that the groundwater was the conduit by which the wastewater went from the LWRF wells to the sea, explaining, "If the point of emission is readily identified, and the transmission path to the ocean is clearly ascertainable, the discharge is functionally one into navigable water." 24 F. Supp. 3d at 998.

This court found "no genuine dispute that the discharge at the LWRF significantly affects the physical, chemical, and biological integrity of the ocean water." *Id.*, 24 F. Supp. 3d at 1003-04. While chemical and biological reactions occurred as the wastewater traveled from the LWRF to the ocean that resulted in lower levels of nitrogen and phosphorous, the court ruled that the change to the wastewater "d[id] not mean that the water at the seeps is not or does not contain a 'pollutant' within the meaning of the [Clean Water] Act." Indeed, at the time, the County had "explicitly disclaimed any such argument, conceding that 'pollutants' were released at the seeps." *Id.*, 24 F. Supp. 3d at 998.

On appeal, the Ninth Circuit affirmed the result but articulated a different approach, concluding that an NPDES permit was necessary because pollutants were "fairly traceable from the point source to a navigable water." 886 F.3d 737, 749 (2018).

The Supreme Court granted *certiorari*, and, on April 23, 2020, ruled that the Ninth Circuit's "fairly traceable" test was too broad. That test, the court said, allowed for liability when a pollutant was carried from a point source to navigable waters on a bird's feather, or when a pollutant took 100 years to go from a point source to navigable waters, or when a pollutant had gone 250 miles through groundwater on its way to navigable waters. *See* 140 S. Ct. 1462, 1470-71 (2020). However, the Supreme Court also rejected the County's argument that the Clean Water Act did not apply whenever a pollutant traveled through groundwater on its way from a point source to navigable waters. *See* 140 S. Ct. at 1473. This argument was too expansive, allowing for a "loophole" when someone discharging a pollutant merely moved a pipe back a few yards from navigable water, so that the resulting flow might not be a direct discharge into that water. *Id.* The Supreme Court held "that the statute requires a permit when

there is a direct discharge from a point source into navigable waters or when there is the functional equivalent of a direct discharge." *Id.*, 140 S. Ct. at 1476.

***11** The Supreme Court then provided guidance as to when there would be and when there might not be the "functional equivalent of a direct discharge," explaining that time and distance are important:

> Where a pipe ends a few feet from navigable waters and the pipe emits pollutants that travel those few feet through groundwater (or over the beach), the permitting requirement clearly applies. If the pipe ends 50 miles from navigable waters and the pipe emits pollutants that travel with groundwater, mix with ... other material, and end up in navigable waters only many years later, the permitting requirements likely do not apply.

140 S. Ct. at 1476.

To provide guidance with respect to factual situations between those extremes the Supreme Court stated:

> factors that may prove relevant (depending upon the circumstances of a particular case):
>
> (1) transit time, (2) distance traveled, (3) the nature of the material through which the pollutant travels, (4) the extent to which the pollutant is diluted or chemically changed as it travels, (5) the amount of pollutant entering the navigable waters relative to the amount of the pollutant that leaves the point source, (6) the manner by or area in which the pollutant enters the navigable waters, (7) the degree to which the pollution (at that point) has maintained its specific identity. Time and distance will be the most important factors in most cases, but not necessarily every case.

Id., 140 S. Ct. at 1476–77.

There is no dispute that the LWRF is a "point source," that the Pacific Ocean is a "navigable water," or that the wastewater discharged into the Pacific Ocean is a "pollutant." *See id.*, Kavanaugh, J., concurring, 140 S. Ct. at 1478 ("No one disputes that pollutants originated at Maui's wastewater facility (a point source), and no one disputes that the pollutants ended up in the Pacific Ocean (a navigable water)."). This case turns on whether the LWRF's placement of wastewater into injection wells from which the wastewater flows to the Pacific Ocean is the "functional equivalent of a direct discharge" from the LWRF into the Pacific Ocean. *Id.*

The present case falls between the two examples set forth by the Supreme Court. The LWRF's injection wells are neither located just a few feet from the ocean nor 50 miles from shore. *See id.* 140 S. Ct. at 1476. Instead, the wells are about half a mile from the ocean. Even if the wastewater is diverted off of a straight line to the sea, at least some of it appears to travel between half a mile and a mile and a half. Nor does the pollutant routinely take "many years" to reach the sea. Some of it reaches the sea in 84 days, and much of it within 400 days.

This court looks to the factors set forth by the Supreme Court in determining whether there has been the functional equivalent to a direct discharge, paying particular attention to the time and distance factors. *See id.*, 140 S. Ct. at 1476–77. Of course, this court recognizes that other factors might also be relevant.

A. Transit Time.

According to the 2013 Tracer Dye Study, dye placed into Wells 3 and 4 of the LWRF reached the north seep in the nearshore ocean waters in as little as 84 days, with peak concentration of the dye occurring 9 to 10 months after placement in the wells. Half of the dye measured at the seeps entered the ocean within 300 days. The average (mean) time it took for the wastewater to travel from the wells to the ocean was 14 to 16 months. With respect to transit time, this case falls between the seconds or minutes it might take pollutants to reach the ocean from a pipe ending a few yards from the ocean and the many years pollutants might take to travel through 50 miles of groundwater to the ocean. Even in the latter situation, the Supreme Court did not categorically rule

out the need for an NPDES permit, saying only that permitting requirements "likely do not apply." 140 S. Ct. at 1476.

***12** This court has previously characterized the 2013 Tracer Dye Study as "indisputably demonstrat[ing] the relatively rapid flow of significant quantities of pollutant from the LWRF to the ocean." 24 F. Supp. 3d at 1003. This court still believes that the transit time favors a determination that the County must get an NPDES permit.

The County's argues that 84 days is a lot longer than the 90 to 108 minutes that wastewater would take to travel the half-mile in a hypothetical pipe running in a straight line from the LWRF to the ocean. But this court does not view that hypothetical pipe as any kind of lodestar. It is instead just one of an immense number of examples one could imagine for transporting wastewater half a mile.

One could imagine dozens of tanker trunks like those used for transporting gasoline arriving at the LWRF and being filled in a continuous rotation with wastewater before driving to the shoreline, dumping their cargo into the ocean, and returning to the LWRF to be refilled. With such an example, the time to fill the tanks, drive to the ocean, empty the tanks, and repeatedly refill them might become a baseline. Alternatively, one could imagine creating an enormous concrete reservoir into which wastewater flowed, only to be emptied and transported to the ocean by trucks when the reservoir was filled, which could take weeks or months. It makes no sense to this court to use the single example selected by the County as some kind of absolute measuring point, especially when changing the dimensions of the hypothetical pipe could easily alter travel times.

Indeed, the Supreme Court knew that it was dealing with pollutants traveling through groundwater, not through a pipe. The very nature of groundwater means that the pollutants will not reach the ocean in a matter of minutes. Had the Court intended to say that anything taking more than 90 minutes or a day or a week or a month was exempt from the NPDES permitting requirement, it could easily have said that. Instead, the Court recognized examples at the extremes of a few seconds or minutes to many years. Because the Supreme Court knew it was dealing with movement through groundwater, it makes sense to assume that the Court expected the parties to be dealing with transport time measured in months. Notably, the Supreme Court set its extreme at "many years," not at "many months," and not even at one year or two years.

The County's 90-minute transit time refers to when wastewater first reached the ocean through a hypothetical pipe. *See* Lekven Decl., ECF No. 440-6, PageID # (indicating that dye from a hypothetical pipe would be expected to start emerging from that pipe after 90 minutes). If this court similarly looks at when the wastewater, traveling through groundwater, first reaches the seeps, the court has a time of 84 days. Peak concentrations of the dye take longer (9 to 10 months), and the average (mean) time is 14 to 16 months. Although the wastewater measured at the seeps accounts for a very small amount of the total amount of wastewater released by the LWRF, the parties have agreed that all of the wastewater discharged from the wells makes its way to the Pacific Ocean. Some of it may take longer than the wastewater observed at the seeps, but some of it may take shorter.

There is no dispute that much of it enters the ocean through diffuse flow rather than by flowing or dripping through seeps, which are holes in rocks. It is impossible to track each finger of water percolating through groundwater or sand or dirt. Indeed, if a party could not prevail without establishing the transit time for every trickle of liquid through groundwater, then no challenge involving groundwater could ever be successful. In fashioning a test, the Supreme Court was most assuredly not saying that groundwater cases were per se unwinnable. To the contrary, the Supreme Court must have thought that a groundwater case might require a permit. In complaining that Plaintiffs have not tracked all of the wastewater through groundwater, the County is setting up an insurmountable barrier that would nullify the application of the Clean Water Act's permit requirement in all groundwater cases.

***13** This court has clearly in mind the concept that any genuine issue of material fact should be left for trial rather than resolved on a summary judgment motion. But with respect to the time aspect of the Supreme Court test, trial could not shed more light on the subject. There will be no proof beyond what is already in the record about the time it takes for wastewater not observed at the seeps to reach the ocean. Instead, the court will be faced with the certainty that all of the wastewater discharged into groundwater from the wells eventually reaches the ocean, some of it by 84

days, some of it within 9 to 10 months, some of it within shorter or longer periods, much of it through diffuse flow that cannot be precisely measured. Even if this court doubles the longest time measured at the seeps and assumes that some of the wastewater took that doubled time to reach the ocean, this court is still far from the extreme of "many years." Considering that this case involves what the Supreme Court knew would be transport through the uneven course of groundwater, this court concludes that the time factor weighs in favor of requiring an NPDES permit.

B. Distance Traveled.

It is undisputed that the LWRF is located about one-half mile from the Pacific Ocean. The distance the wastewater flows from the LWRF to the ocean cannot be measured with precision. The wastewater may move vertically and horizontally through the aquifer, rather than in a straight path to the sea. Plaintiffs' expert says the distance the wastewater travels does not exceed 1.5 miles. *See* Decl. of Jean E. Moran, Ph.D., ECF No. 432-22, PageID # 10566. The County's expert, on the other hand, says the wastewater travels from the LWRF to the ocean a minimum distance ranging from 0.3 to 1.3 miles. *See* Geosync Consultants Expert Report, ECF No. 432-29, PageID #s 10781, 10786. Another of the County's experts opines that wastewater being discharged in to the ocean as diffuse flow may "occur anywhere along the west-Maui coast." List Decl., ECF No. 440-2, PageID # 11064. Plaintiffs and the County's experts are fairly close to each other in terms of the minimum distance the wastewater travels, but there is no consensus on the maximum distance it travels. While there is a question of fact as to the maximum distance the wastewater travels, the undisputed minimum distance range (0.3 to 1.3 miles) does not come close to the Supreme Court's reference to the 50-mile extreme. *See* 140 S. Ct. at 1476.

The County argues that because most of the wastewater is being discharged into the ocean as diffuse flow, this court cannot discern the exact distance that most of the wastewater is traveling. This court agrees that a precise measurement is impossible because, with diffuse flow, it is not even clear where the wastewater is entering the ocean. The 2013 Tracer Dye Study concluded that over 90 percent of the discharge within the two seep groups was occurring as diffuse flow. *See* ECF No. 432-24, PageID # 10602. While the County argues that the evidence does not demonstrate exactly where the diffuse flow occurs, it concedes that diffuse flow occurs north and south of Kahekili beach and deeper offshore. *See* ECF No. 439-1, PageID #s 11048-49. We therefore know a little about where that diffuse flow entered the sea. In any event, we can tell where the monitored seeps are located in the nearshore waters about a half a mile from the LWRF. *See* 2013 Tracer Dye Study, Figure 4-1 (Location and arrangement of monitoring points), ECF No. 432-24, PageID # 10699.

Additionally, Plaintiffs argue that the increase in nearshore water temperature and algal δ^{15} N concentration is indicative of diffuse flow near the monitored vents, although Defendants contend that other causes are at play. Viewing disputed facts in the light most favorable to the County while considering Plaintiffs' motion, this court, in examining the distance involved, disregards Plaintiffs' reasoning on the causes of higher temperatures and nitrogen isotope concentration. What the court does not disregard is the evidence that the wastewater travels a minimum distance of between 0.3 and 1.5 miles to the sea. Even if the average distance were double the high end of that minimum (i.e., three miles), this case would be far from the Supreme Court's 50-mile example. Indeed, if the average distance were triple that high end, that distance would still be less than a tenth of the 50-mile extreme.

***14** It is hard to see how trial would lead to a more precise figure. Certainly the parties have not suggested how a trial might yield better data. This court concludes that the available data indicates that, even with diffuse flow, the wastewater likely travels a relatively short distance through groundwater. Such a distance weighs in favor of requiring an NPDES permit.

C. The Nature of the Material Through Which the Pollutant Travels.

Once placed in the wells, the wastewater travels approximately 200 feet underground into a shallow groundwater aquifer beneath the facility. Kraft, a County expert, says this aquifer is "a diverse assemblage of volcanic rock below the freshwater aquifer lens." He says that the wastewater in the aquifer encounters saline and brackish water at depths of 88 to 258 feet.[5] *See* Kraft Decl., ECF No. 440-3, PageID # 11080-81. The treated wastewater mixes

with groundwater and then flows horizontally and vertically into the ocean through the porous aquifer. *See* Kraft Decl., ECF No. 440-3, PageID # 11081-82; ECF No. 44027, PageID # 11212. In short, unlike water flowing through a pipe, the wastewater is mixing with other waters and is flowing through rock and other substances. The nature-of-material factor appears to favor a determination that an NPDES permit is not necessary in this case, for reasons also discussed in connection with the next factor.

D. The Extent to Which the Pollutant Is Diluted or Chemically Changed as it Travels.

There is no dispute that wastewater that is put into the wells at the LWRF "undergoes attenuation mechanisms such as dispersion, mixing, dilution, and chemical transformation." *See* Kraft Decl., ECF No. 440-3, PageID #s 11079, 11082; Paytan Decl., ECF No. 432-32, PageID #s 10855-56 (recognizing that the wastewater undergoes "partial transformation along the flow-oath in the groundwater"). Wastewater combines with saline, brackish, and fresh groundwater. It then goes through and interacts with porous volcanic rock, leading to "injectate that emerge[s] at the seeps [that is] significantly mixed, diluted, chemically altered, and geochemically transformed." Decl. of Ryan Fimmen, Ph.D., ECF No. 440-5, PageID # 11106. "Microbial processes such as denitrification ultimately result in the removal of an average of 86% of total nitrogen." Decl. of Ryan Fimmen, Ph.D., ECF No. 440-5, PageID # 11106; Paytan Expert Report, ECF No. 440-40, PageID # 11259 (noting that average nitrogen removal was 86 percent, but with a range from 30 percent to 90 percent). It may be that some of the denitrification occurs at the plant. *See* Paytan Decl., ECF No. 432-32, PageID # 10834.

Lekven, the County's expert, opines that 31 pounds of nitrogen per day (over 11,000 pounds per year) are actually released into the ocean at the north and south seep groups, a significant reduction from what would be expected without the filtering mechanism. *See* Lekven Decl., ECF No. 440-6, PageID # 11125. Even if much of the pollutant has been diluted or otherwise removed, a significant amount of pollutant nevertheless enters the ocean. This court, however, draws all inferences in the County's favor in considering Plaintiff's motion for summary judgment and therefore views the significant reduction as indicating that this factor weighs in the County's favor (i.e., against requiring an NPDES permit).

E. The Amount of Pollutant Entering the Navigable Waters Relative to the Amount of the Pollutant That Leaves the Point Source.

***15** There is no dispute that 100 percent of the wastewater from the LWRF is discharged somewhere in the Pacific Ocean. The 2013 Tracer Dye Study measured only 2 percent or less of the wastewater discharged at the monitors at the seeps. But of course the rest of the wastewater does reach the ocean. Notwithstanding any dilution or chemical change in the wastewater as it travels through groundwater, no party has suggested that the wastewater thereby rids itself of all pollutants. That is, the resulting wastewater indisputably remains polluted, even if, as the County argues, it ends up being less polluted, and all of the wastewater goes into the ocean. This factor therefore weighs in favor of requiring an NPDES permit.

F. The Manner By or Area in Which the Pollutant Enters the Navigable Waters.

The County correctly notes that the precise manner by which all of the wastewater enters the ocean is unclear. The parties agree that some of the wastewater enters the ocean via identified seeps, with the remainder of the wastewater entering the water through other means, including diffuse flow. Similarly, the precise area in which the wastewater enters the ocean is not entirely discernible. Clearly, some of the wastewater enters at the seeps, and some of the wastewater likely enters the ocean near the seeps. Some of the wastewater may enter the ocean elsewhere, but, given the parties' experts' statements concerning the distance traveled by the wastewater, those other entry areas are likely reasonably close to the seeps. This factor may not add much to the other factors in the circumstances of this case, and this court gives no additional weight to this factor.

G. The Degree to Which the Pollution Maintains its Specific Identity.

As noted above, there is no dispute that the wastewater undergoes some changes as it flows from the LWRF to the ocean. The County asserts, for example, that 86 percent of the nitrogen is removed as the wastewater travels to the sea.

(As previously noted, some of the denitrification process may occur at the LWRF. *See* Paytan Decl., ECF No. 432-32, PageID # 10834.)

Studies have found "wastewater tracers" in the ocean--pharmaceuticals, organic waste indicator compounds, and heavy δ^{15} N, a sewage-derived nitrogen isotope. Tribromomethane, two musk fragrances, a fire retardant, and a plasticizer compound were detected, tending to show the presence of treated wastewater at the submarine springs near the LWRF. ECF No. 432-28, PageID # 10776; Figure ES-6, ECF No. 432-24, PageID # 10626; Paytan Decl., 432-32, PageID # 10857. Whether the LWRF is the sole source of those substances is unclear; reclaimed water used for irrigation and landscaping near the ocean and surface runoff may contribute chemicals that enter the nearshore waters. *See* Decl. of Ryan Fimmen, Ph.D., ECF No. 440-5, PageID # 11113. Interpreting the facts in the light most favorable to the County with respect to Plaintiffs' motion, this court assumes for purposes of deciding Plaintiffs' motion for summary judgment that the source of the "wastewater tracers" is irrigation using reclaimed water from the LWRF that was not discharged from the wells that are the point sources in this case.

But no party has ever contended that the wastewater that reaches the ocean from the wells is devoid of pollutants. The 2013 Tracer Dye Study, whatever challenges the County raises to parts of it, indisputably establishes that the wastewater from the wells can still be identified. Even if the wastewater that reaches the ocean from the wells contains lesser levels of pollutants than at the start of the wastewater's journey from the wells, that wastewater maintains its specific identity as polluted water emanating from the wells. This factor therefore weighs in favor of requiring an NPDES permit.

H. The Volume of Wastewater Reaching Navigable Waters.

***16** The seven factors discussed above and included in the Supreme Court's list are not necessarily the only factors relevant to a determination of whether the wastewater from the wells is the functional equivalent of a direct discharge into navigable waters. The Supreme Court identified those factors as circumstances "that may prove relevant (depending on the circumstances of a particular case)." Something not captured in those seven factors is the immensity of the wastewater volume. At most, one of those factors looks at "the amount of pollutant entering navigable waters relative to the amount of the pollutant that leaves the point source." If the wastewater as a whole is considered the pollutant, rather than each toxin or chemical contributing to that polluted status, then 100 percent of the pollutant reaches the sea. But just referring to 100 percent does not fully capture how much wastewater is traveling from the wells to the Pacific Ocean. As noted at the start of this order, more than a million gallons of wastewater is discharged from a single well every day, all of it going to the sea.

Even if this court restricted its consideration to the wastewater that emerges at the monitored seeps, the amount of wastewater is enormous. If those seeps account for less than 2 percent of the wastewater discharged from the LWRF's wells, that percentage on its own is mind-boggling. In 2015, an average of nearly a million gallons of wastewater was put into Well 3 every day, and about 400,000 gallons a day was put into Well 4 every day. ECF No. 432-7, PageID # 10422. If this court considers only 2 percent or less of that amount, then the court is dealing with 20,000 gallons or less a day from Well 3 and 8000 gallons or less a day from Well 4. If about 28,000 gallons a day reaches the seeps from those two wells, then over the course of a few months, 2 percent would amount to millions of gallons of wastewater just at the seeps. That raw volume is so high that it is difficult to imagine why it should be allowed to continue without an NPDES permit just because the other 98 percent of wastewater from the wells has not been precisely tracked.

An analogy unrelated to gallons of water may also prove helpful. This country has a population of over 300 million. *See* https://www.census.gov/popclock/ (indicating that the United States population was over 332,517,000 on July 13, 2021) (last visited July 13, 2021). If 2 percent of the population died from COVID-19, that would represent more than 6 million individuals. Just because 98 percent of the population survived would not mean that the federal government should leave entirely unregulated all matters relating to COVID-19. As it is, more than 600,000 people in this country have died from COVID-19. *See* https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/index.html ("As of July 7, a total of 603,958 COVID-19 deaths have been reported.") (last visited July 13, 2021). That is less than 1 percent of the population, but it is

still an enormous number that has understandably generated a concerted effort to address the problem. In short, raw numbers matter without regard to the percentage of the total.

The Clean Water Act requires an NPDES permit for the discharge of *any* pollutant to navigable waters from a point source. The permit requirement does not refer to some minimum amount. Still, in much the same way that the Supreme Court thought a percentage might be a factor, this court considers the absolute volume relevant here. That volume is so large that it weighs in favor of requiring an NPDES permit.

I. Impact on the Ecosystem.

The Clean Water Act was enacted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). Toward that end, the Clean Water Act prohibits the "discharge of any pollutant" unless certain provisions of the Clean Water Act are complied with. *See* 33 U.S.C. § 1311(a); *see also* 33 U.S.C. § 1362(12). In other words, the Clean Water Act was designed to prevent pollutants from harming navigable waters and their ecosystems or, at least, to limit that harm by limiting the amount of pollutant being discharged pursuant to a permit.

***17** This court has concerns with respect to whether the wastewater from the LWRF is harming the nearby ocean's ecosystem. This court previously found "no genuine dispute that the discharge at the LWRF significantly affects the physical, chemical, and biological integrity of the ocean water." *Id.*, 24 F. Supp. 3d at 1003-04. Plaintiffs' expert, Paytan, co-authored a study that "confirm[ed] that corals living withing the SGD seep area are impacted by sewage-effluent injected at the LWRF." ECF No. 432-34, PageID # 10903.

Although the nature of the damage to the environment might conceivably be a factor in an analysis of whether a discharge is the functional equivalent of a direct discharge, this court does not rely on that issue in the present motion.

There is an issue of fact as to whether and to what extent the wastewater from the wells is affecting the nearby ecosystem. *See* Decl. of Ryan Fimmen, Ph.D., ECF No. 440-5, PageID # 11113 (noting that possible causes of contaminants in the ocean may include reclaimed water used for irrigation and landscaping near the ocean, rather than wastewater from the wells). This court recognizes that resolving that dispute might best be left to a trial. However, that dispute is immaterial to the present order. While the court cannot here resolve the issue, this court presumes here that Plaintiffs could not establish by a preponderance of the evidence that the observed damage is traceable to the wastewater from the injection wells. This hypothetical factor is not weighed in either side's favor here.

J. Balancing of Factors.

It is undisputed that the LWRF has, at times, dumped 3 to 5 million gallons of treated wastewater into its four injection wells every day. It is also undisputed that the treated wastewater then mixes with groundwater and flows relatively quickly and a short distance to the Pacific Ocean through the porous aquifer. While the record does not show where 98 percent of the wastewater discharges into the ocean, it does show that tens of thousands of gallons of wastewater were detected at monitors in the nearshore ocean seeps on a daily basis. The difficulty of detecting and measuring what may be the diffuse discharge of much of the remaining wastewater that reaches the ocean does not nullify the Clean Water Act's NPDES permit requirements. It is likely that much of that remaining wastewater discharges near the monitored seeps in this case, but even if this court relies only on the evidence from the monitored seeps, the County was required to get an NPDES permit.

The undisputed evidence from the monitored seeps establishes that the LWRF is discharging a pollutant into the navigable waters of the United States on a massive scale. There is no dispute that, at times, tens of thousands of gallons of wastewater have been discharged from the monitored seeps on a daily basis.

The Supreme Court has provided guidance as to how to determine whether a discharge is the functional equivalent of a direct discharge. The time and distance factors, which are the most important factors, as well as the relative-amount-of-pollution-entering-the-water and the specific-identity factors weigh in favor of applying the NPDES permit requirements. On the other hand, the nature-of-material and dilution/chemical-change factors favor not requiring a permit. The manner-by-or-area-in-which-the-pollutant-enters-the-water factor is neutral. This court has

added to the mix its own raw-volume-of-pollutant factor, which weighs in favor of requiring a permit.

***18** Balancing these factors, this court grants Plaintiffs' motion for summary judgment and denies the County's motion for summary judgment, ruling that the County is and was required to have an NPDES permit. The court would reach this same conclusion even if it did not consider the raw-volume-of-pollutant factor.

V. CONCLUSION.

Based on the undisputed evidence that the County discharged tens of thousands of gallons of wastewater from the LWRF into the Pacific Ocean on a daily basis at a few monitored seep vents, and balancing the factors set forth by the Supreme Court, as well as the additional volume factor that this court added, this court concludes that the LWRF must have an NPDES permit. The discharge from the County's injection wells into the groundwater and ultimately into the ocean is the functional equivalent of a direct discharge such that it triggers the NPDES permit requirement. The court would reach this same conclusion even if it did not consider the raw-volume-of-pollutant factor. Summary judgment is therefore granted in favor of Plaintiffs and against the County.

This order does not address the remedies for the County's Clean Water Act violation. The parties earlier entered into a Settlement Agreement and Order re: Remedies. *See* ECF No. 256. No later than July 21, 2021, each side shall file a statement as to whether this or any other agreement regarding remedies is in effect or whether remedies for the County's violation of the Clean Water Act still need to be addressed. In the meantime, this case remains pending.

Given this ruling, the court directs the Clerk of court to vacate the trial date and all pretrial deadlines, leaving only the remedies memorandum deadline for the parties to comply with at this time.

IT IS SO ORDERED.

All Citations

Slip Copy, 2021 WL 3007168

Footnotes

1 On March 15, 2021, the County filed a motion seeking to exclude parts of the 2013 Tracer Dye Study as unreliable and seeking to exclude expert opinions relying on the challenged parts of the study under *Daubert v. Merrill Dow Pharmaceuticals*, 509 U.S. 579 (1993). *See* ECF No. 422. On April 7, 2021, this court denied that motion. *See* ECF No. 438. In ruling on the present motions, this court does not rely on any part of the study to which the County has identified a challenge. Instead, this court relies only on parts of the study to which no challenge has been raised. The County has never suggested that the study is entirely invalid. Indeed, in earlier proceedings before this court, the County raised no challenge to any part of the study.

2 In the County's Reply Statement of Facts, the County says that no study has established that wastewater from Wells 1 and 2 goes into the Pacific Ocean. *See* ECF No. 445, PageID # 11599. But even if there is no such study, the County has admitted that "groundwater into which LWRF Injection Wells 1 and 2 discharge conveys wastewater to the Pacific Ocean." ECF No. 137, PageID # 4542. This court holds the County to that admission.

3 The record sometimes refers to "injectate" or "effluent" that goes into the LWRF's injection wells or into the ocean. This court uses "wastewater" when referring to the treated sewage that the LWRF puts into its injection wells or when describing the discharge into the Pacific Ocean.

4 The 2013 Tracer Dye Study referred to diffuse flow or diffuse seepage when "vents could not be identified." ECF No. 432-24, PageID # 10602.

5 Schoolchildren in Hawaii have long been taught about the freshwater lenses that are the sources of Hawaii's drinking water. This senior judge can still recall learning in elementary school about such lenses and about the filtering of the water through volcanic rock.

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