

Appeals Processing Desk

Cc: ☒ Rev/ Rec - Cost Recovery

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POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON

KING COUNTY WASTEWATER TREATMENT)
DIVISION,)

Appellant,)

v.)

WASHINGTON DEPARTMENT OF)
ECOLOGY,)

Respondent.)

PCHB No.

NOTICE OF APPEAL

1. **Appellant:** King County Department of Natural Resources & Parks
King County Wastewater Treatment Division
King Street Center, KSC-NR-0500
Seattle, WA 98199

**Appellant's
Representatives:** Verna Bromley, WSBA No. 24703
Mark Stockdale, WSBA No. 17326
Senior Deputy Prosecuting Attorneys
King County Prosecuting Attorney's Office
500 Fourth Avenue, 9th Floor
Seattle, WA 98104

2. **Identification of the Parties:**

Appellant is the King County Department of Natural Resources and Parks, Wastewater Treatment Division ("King County").

Respondent is the State of Washington, Department of Ecology.

3. **Order/Decision Appealed From:**

King County appeals the Department of Ecology's Notice of Penalty, Docket No. 15326, a copy of which is attached as Exhibit A ("Notice of Penalty").

Note: King County is not appealing the Department of Ecology's Administrative Order, Docket No. 15325 (the "Administrative Order"). Specifically, King County is not

1 challenging the six corrective actions that are outlined in the Administrative Order, a copy of
2 which is attached hereto as Exhibit B. In fact, King County has already begun to implement
3 the corrective actions set forth in the Administrative Order.

4 **4. King County's appeal is based upon the following pertinent facts:**

- 5 A. King County owns and operates the West Point Wastewater Treatment Plant
6 (WPTP) and associated regional wastewater facilities. The Department of Ecology
7 regulates the facility under NPDES Permit No. WA0029181.
- 8 B. On February 9, 2017, following heavy rainfall, there was an unprecedented failure of
9 systems at the WPTP that led to the discharge of wastewater into Puget Sound. A
10 power disruption at the WPTP on February 9 initiated a chain of events that caused
11 internal flooding to the WPTP and catastrophic damage to the WPTP's electrical and
12 mechanical systems. The damage to the WPTP diminished the WPTP's ability to
13 treat and process wastewater to secondary levels required under WPTP's NPDES
14 Permit. As a result of the damage to the WPTP, discharge of untreated wastewater
15 occurred through an emergency bypass outfall (EBO) into Puget Sound. Due to the
16 extensive damage caused by the flooding, a smaller second bypass from the EBO
17 occurred on February 15/16, and the WPTP remained at reduced capacity for
18 approximately three months. King County undertook emergency and prolonged
19 repairs of the WPTP beginning on February 9, 2017. The primary and secondary
20 treatment operations were fully restored by April 27, 2017, and the ability to comply
21 with all NPDES effluent limitations was achieved by May 9, 2017. King County
22 continues to perform work to repair and improve operations of the WPTP to prevent
23 future violations.

King County expects to spend approximately thirty (30) to thirty-five (35) million
dollars to repair, restore and improve operations at the WPTP following the
February 9, 2017 flooding event and the subsequent damage to the WPTP. While
much of the estimated cost of repairs to the WPTP will be covered by King County's
catastrophic property insurance policies, King County will incur additional costs not
covered by King County's property insurance, including but not limited to costs for
employee training, capital plant improvements, the property insurance deductible,
water quality monitoring and other insurance and claims costs. The allocation of
costs between King County and their insurer is still in process. This amount is
expected to increase significantly as King County continues to assess additional
capital improvements necessary at the WPTP.

- 21 C. King County has already undertaken steps to implement the corrective actions
22 ordered by the Department of Ecology in the Administrative Order. King County
23 estimates that the cost to implement all of the corrective measures set forth in the
Administrative Order will be an additional \$1,350,000.

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5. The grounds for King County's appeal of Notice of Penalty No. 15326 are as follows:

In reviewing the penalty imposed by the Notice of Penalty, the Pollution Control Hearings Board (the Board), should consider the remedial actions already taken and planned by King County. See: Methow Valley Irrigation District v. State of Washington, Department of Ecology, 2010 WL 1045687 (Washington Pollution Control Hearings Board). King County asks the Board to review the penalty in light of the extraordinary costs incurred by King County to repair and restore WPTP operations following the catastrophic flooding on February 9, 2017, the cost of King County's remedial efforts to improve WPTP operations and the costs King County will incur to comply with the corrective actions set forth in the Administrative Order.

6. Relief Sought:

Appellant King County seeks the following relief: modification of the penalties assessed in light of the remedial actions taken by King County.

DATED this 11th day of October, 2017.

DANIEL T. SATTERBERG,
King County Prosecuting Attorney


By: 
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Exhibit A

**STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY**

IN THE MATTER OF PENALTY
ASSESSMENT AGAINST
King County Wastewater Treatment
Division

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NOTICE OF PENALTY
INCURRED AND DUE
PENALTY DOCKET NO. 15326

To: Mr. Mark Isaacson, Director
King County Wastewater Treatment Division
King Street Center, KSC-NR-0500
201 S. Jackson Street
Seattle, WA 98104

Notice of Penalty Docket No.	15326
Site Location	West Point Wastewater Treatment Plant 1400 Discovery Park Blvd Seattle, WA 98199
Penalty Amount	\$361,000.00
Due Date	Within 30 days after receiving this Notice of Penalty.

The Department of Ecology (Ecology) has assessed a penalty against King County Wastewater Treatment Division in the amount of \$361,000.00 for violating provisions of:

- Chapter 90.48 Revised Code of Washington (RCW).
- Chapters 173-220 and 173-221 Washington Administrative Code (WAC).
- National Discharge Elimination System NPDES Permit Nos. WA0029181.

Ecology has authority to issue this penalty under RCW 90.48.144 and is basing the penalties on the violations listed in this notice.

DETERMINATION OF VIOLATION(S)

Ecology's determination that a violation/violations has/have occurred is based on the violations listed below.

Violation description:

Background:

King County's Wastewater Treatment Division (WTD) owns and operates the West Point Wastewater Treatment Plant (WTP) and associated regional facilities. Ecology regulates the facility under NPDES Permit No. WA0029181 (Permit). The WTP, located in the City of Seattle, uses a high rate oxygen activated sludge process to provide secondary treatment for peak flows up to 300 million gallons per day (MGD). The plant's rated peak hydraulic capacity is 440 MGD.

The liquid treatment process includes screening, grit removal, primary clarification, biological treatment using high rate oxygenated activated sludge, secondary clarification, chlorine disinfection, and dechlorination. The disinfected effluent discharges to Puget Sound through a multi-port diffuser located about 3,600 feet offshore at a depth of about 240 feet. For flows above 300 MGD that bypass secondary treatment (aka "secondary

bypass”), these flows must receive floatables removal, primary clarification, and disinfection, and must at all times meet the effluent limits listed in the Permit. The WPTP includes an emergency outfall located approximately 550 feet offshore in Puget Sound north of the facility at a depth of approximately 33.5 feet. The design intent of the outfall is to provide a means to divert raw sewage from the influent control structure in emergency situations. The NPDES permit for the West Point plant does not list this outfall as an authorized discharge location. The WPTP includes on-site treatment of residual solids removed in the primary and secondary processes. Primary sludge and scum from the primary sedimentation basins blend with waste activated sludge from the secondary process prior to thickening with gravity belt thickeners. The thickened sludge is then anaerobically digested, and dewatered by centrifuges before being hauled off-site for beneficial use as Class B biosolids.

Findings of Fact:

Ecology received the initial notification of a discharge through the emergency bypass outfall and flooding incident at the WPTP at approximately 3:38 a.m. on February 9, 2017 (ERTS No. 670591). The supervising operator on duty, Charles Wenig, made the initial notification. Due to decreased plant capacity following the February 9th flooding, WPTP operators also initiated a partial bypass on February 15, 2017, that extended through February 16, 2017 (ERTS No. 670753). The “partial bypass” included flows out the emergency outfall and flows out the main outfall at the same time.

A power disruption at the WPTP in the early morning of February 9, 2017, during a period in which the plant was receiving high flows, initiated a chain of events that resulted in internal flooding of the WPTP and discharge of untreated combined sewage to Puget Sound for 18 hours. The power disruption caused a power loss to two effluent pumps and also to a hydraulic control unit that operates pressure-control valves for all four effluent pumps. The failure of the pressure-control valve system led to the failure of the two remaining operating pumps at that time. The supervising operator on duty attempted to manage incoming flows to the plant by adjusting raw sewage pumping rates and flows in the collection system while other operators on duty attempted to restart equipment. However, due to the effluent pumps not working at high tides and with plant flows at peak hydraulic capacity, the effluent wet well quickly rose to its high-high alarm level. This caused the effluent gates for the primary sedimentation basins to close, as designed, to protect downstream process and equipment.

With the primary effluent (PE) gates closed, water levels in the primary sedimentation basins began to rise. Approximately 10 minutes after the PE gates closed, the water level in the basins reached the overflow level and began to overtop the primary tank’s walls and flood the plant. Float switches located in the pre-aeration basins at the beginning of the primary treatment process should have triggered a high-high alarm that stops the raw sewage pumps (RSPs) prior to the basins overflowing. The float switches failed to operate, however, due to bent connecting rods that inhibited their movement. Despite a history of problems with the float switches that dates to 2000, the supervising operator relied on the switches to trigger the fail-safe interlock that would have shut down the RSP and direct flows to the emergency outfall designed to protect the plant from flooding.

Although a control screen in the plant’s “Ovation” control system (Ovation) provided status information on the water level in the primary basins, the supervising operator did not refer to the screen. In addition, the rapid scrolling of alarm status messages appearing on the main control screen inhibited the supervising operator’s ability to recognize

critical alarms about the primary basin level. At approximately 3:00 a.m., more than 30 minutes after flooding began, the supervising operator observed a camera in the raw sewage pump building that showed flooding in that area. At this point he immediately took steps to shut down the RSPs. This action allowed water level in the influent control structure (ICS) to rise to the control level that automatically opened the Emergency Bypass (EB) gate located at the ICS. At about 3:04 a.m. the EB gate opened and the primary basins fell below the overflow level by about 3:11 a.m. At 3:16 a.m. a separate emergency outfall gate located at the Flow Diversion Structure was opened to allow untreated combined sewage and stormwater to discharge to Puget Sound. Three operators in the field who first noticed water overflowing from the primary basins failed to report the situation to main control because they wanted to keep the radio lines clear for main control to communicate with the operators working to restart the effluent pumps.

The overflowing primary basins caused extensive flooding of below ground equipment galleries at the WPTP. The overflow flooded a mile of subterranean pipe and equipment galleries with stormwater, raw sewage, and sludge. It contaminated and damaged or destroyed millions of dollars of plant equipment including pumps, motors, electrical panels, wiring, transformers, lighting, switches, and motor control centers. The flood also contaminated the entire surface area of the mile of gallery tunnels along with two miles of pipe insulation and destroyed staff locker and shower facilities.

The flooding submerged boilers needed to heat the anaerobic digesters along with other equipment needed to process the residual solids from the plant. It caused power to mixers and gas recovery systems for the digesters to fail. This led to a buildup of foam and gas that lifted the digester lids and caused liquid to erupt from the digesters. The liquid that overflowed from the digesters went to an area that, according to plant design drawings, has a stormwater catch basin that discharges to Puget Sound at the Discovery Park South Beach. However, WPTP staff indicated that the manhole was blocked by a steel cover (March 7, 2017, email from Eugene Sugita) and Ecology does not have evidence that any of the digester contents left the plant site. WPTP staff had struggled to control foaming problems in the digesters for about one year prior to this incident.

The flooding had the following impacts to the treatment and support systems at the WPTP:

- Longitudinal flights that move primary waste sludge to the sludge hoppers in each primary sedimentation tank were damaged by the high flows when flooding was occurring.
- Pumps and motors used to remove grit from the pre-aeration basins, primary waste sludge from the primary sedimentation tanks and scum from the primary scum sump were submerged and damaged.
- Boilers used to heat the anaerobic digesters were submerged and rendered inoperable. As a result, the anaerobic digesters cooled and the biological activity in the digesters degraded.
- Pumps and motors used to move primary and secondary waste sludge through the solids treatment processes were submerged.
- The anaerobic digesters lost power to their mixing and gas recovery systems, but the sludge feed pumps to digester #1 continued to operate despite being submerged. The lack of mixing and gas recovery caused gas and foam to build up

to a point where they lifted the digester lids and allowed liquid to erupt from the digesters.

- All of the electrical components, including lights, power panels, equipment control panels, and sensors located in the flooded galleries were damaged by water exposure and would need to be replaced.
- All surfaces in the galleries were exposed to sewage and needed to be decontaminated by steam cleaning.
- Ventilation equipment necessary to exchange air and create habitable work spaces were damaged and would have to be repaired, decontaminated, and/or replaced before workers could enter without protective equipment.
- Pipe supports, equipment mounting pads, and other structures vulnerable to damage by the flood water would need to be inspected and repaired.

By 9:00 p.m. on February 9th WPTP staff were able to restore power to the effluent pumping system and return flow through half of the primary basins. Due to the extensive flood damage, the WPTP could not process residual solids produced in the primary and secondary treatment systems. Therefore, the initial restart consisted of screening of coarse solids, minimal primary sedimentation, disinfection, and dechlorination prior to discharge to Puget Sound through the plant's main outfall. The initial restart bypassed all flows around secondary treatment and limited the plant's capacity to 120 MGD (later raised to 230 MGD).

With the WPTP capacity significantly decreased, plant operators were compelled to initiate a partial discharge of untreated combined sewage through the emergency outfall on February 15, 2017, to prevent further flooding when flows exceeded 250 MGD during a storm event. This emergency discharge event lasted for less than seven hours during the morning of the 15th and for an additional 14 hours from the afternoon of the 15th through the morning of the 16th.

An estimated 186 million gallons (MG) of untreated combined sewage discharged through the emergency outfall during the 18-hour bypass on February 9th. In addition, WPTP staff estimated that 44 MG of untreated combined sewage discharged from the collection system on February 9th through CSO outfalls. The WPTP discharged an additional 58 MG of untreated combined sewage through the emergency outfall during the 21-hour period beginning February 15th and ending February 16th when operators partially reopened the emergency outfall gate to prevent additional flooding.

With plant systems necessary for management of residual solids from the primary and secondary processes offline, WPTP management decided to bypass all flow around the secondary treatment processes to protect the biological system during the plant restoration period. The secondary treatment bypass lasted 77 days with an estimated 7.9 billion gallons going through influent screening, limited primary treatment, and disinfection.

WPTP staff and contractors started the restoration and recovery process on February 9, 2017. Due to the extensive damage, the WPTP remained at diminished capacity for approximately three months. The restoration team restored operation of the pre-aeration and primary sedimentation basins on April 3, 2017, 53 days after the flooding. On March 27, 2017, WPTP staff restarted the secondary treatment system. To facilitate this restart while the digesters were still offline, plant management chose to discharge waste

activated sludge (WAS) from the secondary process to Puget Sound. The solids were disinfected and discharged through the main outfall.

All digesters were back online on April 24, 2017 (74 days) and the secondary treatment system was back online on April 27, 2017 (77 days). Plant operators ceased discharging WAS to Puget Sound, and the plant returned to normal operation on May 9, 2017 (89 days).

The reduced treatment efficiency at the WPTP following the February 9th flooding affected the plant's effluent quality for nearly three months. As discussed below, the plant exceeded effluent limits on CBODs, TSS, and total residual chlorine during the restoration period. The discharges from the emergency outfall on February 9th, 15th, and 16th, led to beach closures in King and Kitsap Counties from February 9, 2017, through February 21, 2017. The emergency discharges also resulted in shellfish harvesting restrictions in Kitsap County during the same period.

Monthly Discharge Monitoring Reports submitted by the County for the months of February 2017 through May 2017 indicate ten (10) effluent violations in February 2017, eleven (11) effluent violations in March 2017, twelve (12) effluent violations in April 2017, one (1) influent design capacity violation, and seven (7) influent missed monitoring violations. The effluent and influent limit violations and missed monitoring violations are summarized in Table 1.

Table 1. Effluent and Influent Limit Violations and Missed Monitoring Violations Summary WPTP February 2017 - May 2017

EFFLUENT

Violation Date or Month	Mon Pt	Statistical Base	Minimum Frequency	Parameter	Units	Value	Min Limit	Max Limit	Violation
APRIL									
4/23/2017	001	Single Sample	Continuous	Chlorine	ug/L	420	-	364	Numeric effluent violation
4/20/2017	001	Single Sample	Continuous	Chlorine	ug/L	630	-	364	Numeric effluent violation
4/20/2017	001	Average Monthly	1/Day	CBOD	Lbs/Day	55639	-	44800	Numeric effluent violation
4/20/2017	001	Average Monthly	1/Day	CBOD	mg/L	59.3	-	25	Numeric effluent violation
4/20/2017	001	Weekly Average	1/Day	CBOD	mg/L	69	-	40	Numeric effluent violation
4/20/2017	001	Average Monthly	Monthly	CBOD	Percent	59	85	-	Numeric effluent violation
4/20/2017	001	Average Monthly	Continuous	Chlorine	ug/L	148	-	139	Numeric effluent violation
4/20/2017	001	Average Monthly	1/Day	TSS	Lbs/Day	66902.3	-	53800	Numeric effluent violation
4/20/2017	001	Weekly Average	1/Day	TSS	Lbs/Day	92119	-	80700	Numeric effluent violation
4/20/2017	001	Weekly Average	1/Day	TSS	mg/L	88	-	45	Numeric effluent violation
4/20/2017	001	Average Monthly	1/Day	TSS	mg/L	70.4	-	30	Numeric effluent violation
4/20/2017	001	Average Monthly	Monthly	TSS	Percent	56	85	-	Numeric effluent violation
MARCH									
3/2017	001	Average Monthly	1/Day	CBOD	Lbs/Day	115085	-	44800	Numeric effluent violation
3/2017	001	Weekly Average	1/Day	CBOD	Lbs/Day	125500	-	71700	Numeric effluent violation
3/2017	001	Average Monthly	1/Day	CBOD	mg/L	109.548	-	25	Numeric effluent violation
3/2017	001	Weekly Average	1/Day	CBOD	mg/L	132	-	40	Numeric effluent violation
3/2017	001	Average Monthly	Monthly	CBOD	Percent	16	85	-	Numeric effluent violation
3/2017	001	Average Monthly	Continuous	Chlorine	ug/L	139.355	-	139	Numeric effluent violation
3/2017	001	Weekly Average	1/Day	TSS	Lbs/Day	145940	-	80700	Numeric effluent violation
3/2017	001	Average Monthly	1/Day	TSS	Lbs/Day	119599	-	53800	Numeric effluent violation
3/2017	001	Average Monthly	1/Day	TSS	mg/L	110.226	-	30	Numeric effluent violation
3/2017	001	Weekly Average	1/Day	TSS	mg/L	140	-	45	Numeric effluent violation
3/2017	001	Average Monthly	Monthly	TSS	Percent	46	85	-	Numeric effluent violation
FEBRUARY									
2/2017	001	Average Monthly	1/Day	CBOD	Lbs/Day	79663.7	-	44800	Numeric effluent violation
2/2017	001	Weekly Average	1/Day	CBOD	Lbs/Day	109171	-	71700	Numeric effluent violation

2/2017	001	Average Monthly	1/Day	CBOD	mg/L	70.1071	-	25	Numeric effluent violation
2/2017	001	Weekly Average	1/Day	CBOD	mg/L	109	-	40	Numeric effluent violation
2/2017	001	Average Monthly	Monthly	CBOD	Percent	48	85	-	Numeric effluent violation
2/2017	001	Average Monthly	1/Day	TSS	Lbs/Day	73840	-	53800	Numeric effluent violation
2/2017	001	Weekly Average	1/Day	TSS	Lbs/Day	87761	-	80700	Numeric effluent violation
2/2017	001	Weekly Average	1/Day	TSS	mg/L	87	-	45	Numeric effluent violation
2/2017	001	Average Monthly	1/Day	TSS	mg/L	61.3214	-	30	Numeric effluent violation
2/2017	001	Average Monthly	Monthly	TSS	Percent	71*	85	-	Numeric effluent violation

*The data reported for 2/9/17 for TSS and BOD influent is an average of the previous two days due to the sample collected not being

INFLUENT

2/10/2017	IN1	Single Sample	1/Day	CBOD	Lbs/Day	-	-	-	Analysis not Conducted
2/10/2017	IN1	Single Sample	1/Day	CBOD	mg/L	-	-	-	Analysis not Conducted
2/10/2017	IN1	Single Sample	1/Day	TSS	Lbs/Day	-	-	-	Analysis not Conducted
2/10/2017	IN1	Single Sample	1/Day	TSS	mg/L	-	-	-	Analysis not Conducted
2/2017	IN1	Average Monthly	1/Day	TSS	Lbs/Day	235878	-	218000	Exceedance of Design

5-day Biochemical Oxygen Demand (BOD); 5-day Carbonaceous Biochemical Oxygen Demand (CBOD); Chlorine; Total Residual (chlorine); Total Suspended Solids (TSS)
micrograms per liter (ug/L); milligrams per liter (mg/L); pounds per day (Lbs/Day)

Ecology's investigation drew the following conclusions:

1. The lack of adequate redundancy in the effluent pump station's hydraulic control unit that operates pressure-control valves led to a catastrophic chain of events on February 9, 2017. This led to flooding of the WTP that severely damaged equipment and shut down secondary treatment for 77 days. In addition, the lack of redundancy led to the following three episodes of discharge through the emergency outfall without treatment: The full incoming flow of combined sewerage was discharged for 18 hours on February 9, 2017, and partial diversions discharged untreated sewage for 21 hours on February 15, 2017, and February 16, 2017.
2. The operators on duty were not adequately prepared to manage the emergency situation. The WTP does not have adequately documented, formal training requirements for emergency situations and relies on each shift supervisor to organize informal "tabletop exercises" to discuss what could happen under different conditions. This led to operators taking inappropriate actions immediately following the power disruption, such as failing to verify the power status of the EPS hydraulic control unit and importantly, not notifying main control when they saw water flowing over the side of the primary basins.
3. The supervising operator relied too heavily on float switches in the pre-aeration basins that had a lengthy history of problems. Despite the known problems with the switches, he assumed that they would work as designed during the emergency and shut off the RSPs before the primary sedimentation basins overflowed. Although the Ovation system had a screen available to monitor the water level in the primary basins, he did not have this screen open and did not monitor the level.
4. The operators on duty did not have adequate systems in place to aid in decision making during emergency conditions. The newly installed Ovation control system did not have alarms properly prioritized and, as a result, critical alarms were obscured in a flood of status messages and non-critical alarms. The main control room also does not have annunciators or other alarm displays to alert the main control operators to the power failure in the effluent pump station or the rising level of the primary basins. The WTP also had an organizational culture in which the operators felt that they needed to avoid using the emergency outfall system. Although the operations and maintenance manual provides detailed information on critical tank levels and the consequences of equipment failures at high flows, the operators did not have concise guidelines from WTD management to aid them in deciding when it was acceptable to use the emergency discharge system. The County's independent assessment report noted that the operators did not feel comfortable making the decision to use the system.

Violations:

RCW 90.48.080 and S1

Discharges and Unpermitted Location (3 days: 2/9/17, 2/15/17, 2/16/17); Effluent Violations (33 violations Feb 2017 - Mar 2017)

RCW 90.48.080 states that, "It shall be unlawful for any person to throw, drain, run, or otherwise discharge into any of the waters of this state, or to cause, permit or suffer to be thrown, run, drained, allowed to seep or otherwise discharged into such waters any organic or inorganic matter that shall cause or tend to cause pollution of such waters..."

The discharges from the emergency outfall on February 9th, 15th, and 16th, led to beach closures in King and Kitsap Counties from February 9, 2017, through February 21, 2017. The emergency discharges also resulted in shellfish harvesting restrictions in Kitsap County during the same period. Ambient monitoring and sample results indicated significant fecal coliform results following the discharge dates. The discharge of untreated or improperly treated wastewater into Puget Sound is a violation of RCW 90.48.080.

National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit No. WA0029181 Special Condition No. S1, *Discharge limits*, states that "all discharges and activities authorized by this permit must comply with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a level in excess of, that identified and authorized by this permit violates the terms and conditions of this permit."

Special Condition S1.A, *Effluent limits for Outfall 001 - West Point wastewater treatment plant*, states that "Beginning on the effective date of this permit and lasting through the expiration date, the Permittee may discharge treated municipal wastewater at the permitted locations subject to compliance with the following limits"

As shown in Table 1, WPTP discharges between February 9, 2017, and April 30, 2017, resulted in 33 violations of Special Condition S1 effluent limits for outfall 001. Effluent limit violations included exceedances of monthly and weekly average limits for CBOD₅ and TSS, monthly minimum percent removal limits for CBOD₅ and TSS, and daily maximum and monthly average limits on total residual chlorine.

Special Condition S1 does not list the emergency bypass outfall as an authorized discharge location. Therefore the discharge of untreated combined sewage through the emergency bypass outfall on February 9, 2017; February 15, 2017; and February 16, 2017, violate this condition as discharges in an unpermitted location.

S2

Missed monitoring of influent (6 occasions on 2/9/2017 and 2/10/17); Non-representative sampling (1 day: 2/9/17); Improper temperature control (12 days: 2/10/17-2/21/17)

Special Condition S2.A, *Monitoring schedules*, states that, "the Permittee must monitor in accordance with the schedules in the following tables..." Table 2(1) of the permit requires daily monitoring of influent CBOD₅ and TSS, and weekly monitoring of influent BOD₅ at the WPTP. The WPTP missed monitoring for influent BOD₅ and influent TSS on February 9, 2017, and February 10, 2017, in violation of this condition. Although the WPTP reported influent values for BOD₅, CBOD₅, and TSS for February 9, 2017, on its February DMR, the plant's process control supervisor revealed in an email on July 25, 2017, that the values reported for that day were averaged values from the two

previous days. Samples collected on the 9th were not properly collected and were diluted with stormwater. Since the WPTP did not have a valid sample to analyze that day, the WPTP should have reported this as missed sampling.

Special Condition S2.B, *Sampling and Analytical Procedures*, states that "Samples and measurements taken to meet the requirements of this permit must represent the volume and nature of the monitored parameters. The Permittee must conduct representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions that may affect effluent quality."

Special Condition S2.B also states that "sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136 (or as applicable in 40 CFR subchapters N [Parts 400–471] or O [Parts 501–503]) unless otherwise specified in this permit."

WPTP staff collected grab samples for fecal coliform testing on February 9, 2017, at the Division Channel, which distributes flow from the raw sewage pumps to the primary treatment basins. The intent of this sampling was to assess the concentration of fecal coliform bacteria in the untreated combined sewage discharged through the emergency outfall. However this location was not in the active flow path during the emergency discharge. The raw sewage pumps that convey flow to this channel were offline during the discharge and all flow was being diverted through the emergency outfall gate located at the influent control structure, upstream of the pumps. Fecal coliform samples collected in the Division Channel on February 9, 2017 were therefore not representative of the discharged flow. WPTP staff collected samples from the same location on the 15th and 16th to assess fecal coliform levels in the discharges through the emergency outfall on those days. Although that location did not provide representative samples on the 9th, the location was representative for samples collected on the 15th and 16th since the raw sewage pumps remained online those days. The emergency discharge sampling also only analyzed fecal coliform levels. WPTP staff did not test for other parameters such as residual chlorine, even though they were dosing the discharge with chlorine.

The floodwater damaged the influent sampler located in the raw sewage building. To compensate, WPTP staff installed a temporary composite sampler at the Division Channel on February 9th. The temporary influent composite sampler was not properly temperature controlled with refrigeration or ice, as required by analytical procedures, between February 10, 2017, and February 21, 2017.

S5 (1st paragraph) and S5.D

Improper Operations and Maintenance, lack of redundancy, alarm criticality, and improper maintenance location (3 days: 2/9/17, 2/15/17, 2/16/17); Improper O & M leading to lack of secondary treatment (2/9/17 - 4/27/17 = 77 days)

Special Condition S5 (1st paragraph), *Operation and Maintenance*, states that "the Permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed to achieve compliance with the terms and conditions of this permit... This provision of the permit requires the Permittee to operate backup or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of this permit."

Special Condition S5.D., *Electrical power failure*, states that "The Permittee must ensure that adequate safeguards prevent the discharge of untreated wastes or wastes not treated in

accordance with the requirements of this permit during electrical power failure at the treatment plant and/or sewage lift stations. Adequate safeguards include, but are not limited to, alternate power sources, standby generator(s), or retention of inadequately treated wastes.” The permit condition and Ecology’s *Criteria for Sewage Works Design* (Ecology publication no. 98-37-WQ) cites EPA’s *Design Criteria for Mechanical, Electrical, and Fluid System and Component Reliability* (publication EPA 430-99-74-001) for the required level of component redundancy and reliability. The redundancy and reliability requirements apply to individual mechanical components (pumps, motors, mixers, treatment units, and auxiliary equipment) along with electrical systems, instrumentation, and alarm systems. Adequate safeguards related to this condition include:

- Pumping capacity sufficient to handle the peak flow with the largest unit out of operation;
- Sufficient power reliability to operate all vital components during peak wastewater flow conditions;
- Automatic power transfer [for power distribution within the facility] shall be provided in those cases when time delay required to manually transfer power could result in a failure to process peak influent flows or cause damage to equipment;
- The reliability of auxiliary equipment, such as the Pratt valve hydraulic control unit, are dependent on the function of each system and the system shall have backup capability in the number of vital components required to perform the system function;
- Alarms and annunciators shall be provided to monitor conditions which could result in damage to vital equipment or hazards to personnel; they shall be such that each announced condition is uniquely identified.

A power disruption on February 9, 2017, initiated a chain of events that led to the loss of equipment and facility function. The power disruption caused the immediate shutdown of one effluent pump and the two remaining effluent pumps did not have sufficient capacity to handle the peak flow condition. The power disruption also shut down the Pratt valve hydraulic control unit, an auxiliary system required to control the discharge pressure of all of the effluent pumps. The lack of appropriate redundancy and reliability in this auxiliary system caused the failure of the two remaining effluent pumps which were operating at that time. The lack of automatic power transfer capabilities for the effluent pump station equipment meant that the vital equipment in this area could not be restarted in time to prevent damage to equipment in other plant locations. Additional factors contributing to the discharge on February 9th include:

- The ineffective alarm prioritization and annunciation,
- The use of unreliable float switches for high-high alarm sensing in the pre-aeration basins,
- Lack of proper maintenance (specifically of the pre-aeration float switches), and
- Inefficient emergency response and training for emergency situations.

The lack of appropriate safeguards listed above led to flooding of the WPTP that damaged vital equipment necessary for proper plant operation. When the plant returned to limited operation late on February 9th, it did so with a significant reduction in hydraulic capacity and treatment capability. The plant could not operate according to its approved design; flow was limited to 230 MGD and staff bypassed secondary treatment. The plant remained at a state of reduced treatment for 77 days until April 27, 2017, when WPTP staff stopped bypassing secondary treatment. Had proper safeguards been in place, they

would have prevented or minimized the flooding that damaged equipment and forced the secondary bypass from February 9, 2017, to April 27, 2017.

G9

Discharging solids (4/4/17 - 4/22/17 and 4/26/17 - 5/9/17 = 31 days)

General Condition G9, *Removed substances*, states that "Collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must not be resuspended or reintroduced to the final effluent stream for discharge to state waters."

The County's preferred alternative for restarting the secondary treatment system included the discharge of waste active sludge (WAS) solids from the secondary process directly to the chlorine contact channel for disinfection and discharge to Puget Sound. This act resulted in the resuspension or reintroduction of removed solids to the final effluent. The discharge of WAS to Puget Sound started on April 4, 2017; was suspended on or about April 22, 2017; restarted on April 26, 2017; and ceased on May 9, 2017. In total, the WPTP discharge WAS in violation of General Condition G9 lasted for 31 days.

FAILURE TO COMPLY WITH THIS NOTICE OF PENALTY

Continued failure to correct the violations listed in this Notice of Penalty may result in additional, escalated penalties.

OPTIONS FOR RESPONDING TO A NOTICE OF PENALTY

Option 1: Pay the penalty within 30 days after receiving the Notice of Penalty.

Make your payment payable to the *Department of Ecology*. Please include the penalty docket number on your payment.

Mail payment to:

Department of Ecology
Cashiering Unit
PO Box 47611
Olympia, WA 98504-7611

Note: Ecology may take legal action to collect the penalty if you have not paid 30 days after receiving the Notice of Penalty, and have not appealed.

Option 2: Appeal to the PCHB and serve Ecology within 30 days after the date of receipt of the Notice of Penalty.

The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do both of the following within 30 days after the date of receipt of this Notice of Penalty:

- File your appeal and a copy of this Notice of Penalty with the Pollution Control Hearings Board (PCHB) during regular business hours.
- Serve a copy of your appeal and this Notice of Penalty on Ecology in paper form, by mail or in person. E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel Road SW STE 301 Tumwater, WA 98501	Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903

CONTACT INFORMATION

Please direct all questions about this Notice of Penalty to:

Amy Jankowiak
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

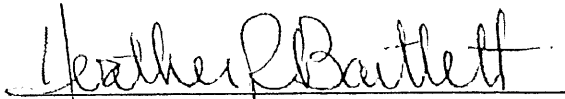
Phone: 425-649-1795

Email: amy.jankowiak@ecy.wa.gov

MORE INFORMATION

- Pollution Control Hearings Board: www.eho.wa.gov/Boards_PCHB.aspx
- Chapter 43.21B RCW - Environmental and Land Use Hearings Office – Pollution Control Hearings Board: <http://app.leg.wa.gov/RCW/default.aspx?cite=43.21B>
- Chapter 371-08 WAC – Practice and Procedure
<http://app.leg.wa.gov/WAC/default.aspx?cite=371-08>
- Chapter 34.05 RCW – Administrative Procedure Act
<http://app.leg.wa.gov/RCW/default.aspx?cite=34.05>
- Laws: www.ecy.wa.gov/laws-rules/ecyrcw.html
- Rules: www.ecy.wa.gov/laws-rules/ecywac.html

SIGNATURE



Heather R. Bartlett
Water Quality Program Manager
Washington State Department of Ecology

9/12/17
Date

Exhibit B

**STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY**

IN THE MATTER OF AN)	ADMINISTRATIVE ORDER
ADMINISTRATIVE ORDER)	DOCKET NO. 15325
AGAINST)	
King County Wastewater Treatment)	
Division)	

To: Mr. Mark Isaacson, Director
King County Wastewater Treatment Division
King Street Center, KSC-NR-0500
201 S. Jackson Street
Seattle, WA 98104

Order Docket No.	15325
Site Location	West Point Wastewater Treatment Plant 1400 Discovery Park Blvd Seattle, WA 98199

The Department of Ecology (Ecology) has issued this Administrative Order (Order) requiring King County Wastewater Treatment Division to comply with:

- Chapter 90.48 Revised Code of Washington (RCW).
- Chapters 173-220 and 173-221 Washington Administrative Code (WAC).
- National Discharge Elimination System NPDES Permit Nos. WA0029181.

Ecology has the authority to issue Administrative Orders under Chapter 90.48.120(2) RCW requiring compliance whenever it determines that a person has or is about to violate Chapter 90.48.

DETERMINATION OF VIOLATIONS AND ORDER TO COMPLY

Ecology's determination that a violation/violations has/have occurred is based on the violations listed below.

Violation(s) and associated corrective action(s):

Violation(s) description:

Background:

King County's Wastewater Treatment Division (WTD) owns and operates the West Point Wastewater Treatment Plant (WTP) and associated regional facilities. Ecology regulates the facility under NPDES Permit No. WA0029181 (Permit). The WTP, located in the City of Seattle, uses a high rate oxygen activated sludge process to provide secondary treatment for peak flows up to 300 million gallons per day (MGD). The plant's rated peak hydraulic capacity is 440 MGD.

Findings of Fact:

Ecology received the initial notification of a discharge through the emergency bypass outfall and flooding incident at the WTP at approximately 3:38 a.m. on February 9, 2017 (ERTS No. 670591). The supervising operator on duty, Charles Wenig, made the initial notification. Due to decreased plant capacity following the February 9th flooding, WTP operators also initiated a partial bypass on February 15, 2017, that extended

through February 16, 2017 (ERTS No. 670753). The “partial bypass” included flows out the emergency outfall and flows out the main outfall at the same time.

A power disruption at the WPTP in the early morning of February 9, 2017, during a period in which the plant was receiving high flows, initiated a chain of events that resulted in internal flooding of the WPTP and discharge of untreated combined sewage to Puget Sound for 18 hours. The power disruption caused a power loss to two effluent pumps and also to a hydraulic control unit that operates pressure-control valves for all four effluent pumps. The failure of the pressure-control valve system led to the failure of the two remaining operating pumps at that time. The supervising operator on duty attempted to manage incoming flows to the plant by adjusting raw sewage pumping rates and flows in the collection system while other operators on duty attempted to restart equipment. However, due to the effluent pumps not working at high tides and with plant flows at peak hydraulic capacity, the effluent wet well quickly rose to its high-high alarm level. This caused the effluent gates for the primary sedimentation basins to close, as designed, to protect downstream process and equipment.

With the primary effluent (PE) gates closed, water levels in the primary sedimentation basins began to rise. Approximately 10 minutes after the PE gates closed, the water level in the basins reached the overflow level and began to overtop the primary tank’s walls and flood the plant. Float switches located in the pre-aeration basins at the beginning of the primary treatment process should have triggered a high-high alarm that stops the raw sewage pumps (RSPs) prior to the basins overflowing. The float switches failed to operate, however, due to bent connecting rods that inhibited their movement. Despite a history of problems with the float switches that dates to 2000, the supervising operator relied on the switches to trigger the fail-safe interlock that would have shut down the RSP and direct flows to the emergency outfall designed to protect the plant from flooding.

Although a control screen in the plant’s “Ovation” control system (Ovation) provided status information on the water level in the primary basins, the supervising operator did not refer to the screen. In addition, the rapid scrolling of alarm status messages appearing on the main control screen inhibited the supervising operator’s ability to recognize critical alarms about the primary basin level. At approximately 3:00 a.m., more than 30 minutes after flooding began, the supervising operator observed a camera in the raw sewage pump building that showed flooding in that area. At this point he immediately took steps to shut down the RSPs. This action allowed water level in the influent control structure (ICS) to rise to the control level that automatically opened the Emergency Bypass (EB) gate located at the ICS. At about 3:04 a.m. the EB gate opened and the primary basins fell below the overflow level by about 3:11 a.m. At 3:16 a.m. a separate emergency outfall gate located at the Flow Diversion Structure was opened to allow untreated combined sewage and stormwater to discharge to Puget Sound. Three operators in the field who first noticed water overflowing from the primary basins failed to report the situation to main control because they wanted to keep the radio lines clear for main control to communicate with the operators working to restart the effluent pumps.

The overflowing primary basins caused extensive flooding of below ground equipment galleries at the WPTP. The overflow flooded a mile of subterranean pipe and equipment galleries with stormwater, raw sewage, and sludge. It contaminated and damaged or destroyed millions of dollars of plant equipment including pumps, motors, electrical panels, wiring, transformers, lighting, switches, and motor control centers. The flood also contaminated the entire surface area of the mile of gallery tunnels along with two miles of pipe insulation and destroyed staff locker and shower facilities.

The flooding submerged boilers needed to heat the anaerobic digesters along with other equipment needed to process the residual solids from the plant. It caused power to mixers and gas recovery systems for the digesters to fail. This led to a buildup of foam and gas that lifted the digester lids and caused liquid to erupt from the digesters. The liquid that overflowed from the digesters went to an area that, according to plant design drawings, has a stormwater catch basin that discharges to Puget Sound at the Discovery Park South Beach. However, WPTP staff indicated that the manhole was blocked by a steel cover (March 7, 2017, email from Eugene Sugita), and Ecology does not have evidence that any of the digester contents left the plant site. WPTP staff had struggled to control foaming problems in the digesters for about one year prior to this incident.

The flooding had the following impacts to the treatment and support systems at the WPTP:

- Longitudinal flights that move primary waste sludge to the sludge hoppers in each primary sedimentation tank were damaged by the high flows when flooding was occurring.
- Pumps and motors used to remove grit from the pre-aeration basins, primary waste sludge from the primary sedimentation tanks, and scum from the primary scum sump were submerged and damaged.
- Boilers used to heat the anaerobic digesters were submerged and rendered inoperable. As a result, the anaerobic digesters cooled and the biological activity in the digesters degraded.
- Pumps and motors used to move primary and secondary waste sludge through the solids treatment processes were submerged.
- The anaerobic digesters lost power to their mixing and gas recovery systems, but the sludge feed pumps to digester #1 continued to operate despite being submerged. The lack of mixing and gas recovery caused gas and foam to build up to a point where they lifted the digester lids and allowed liquid to erupt from the digesters.
- All of the electrical components, including lights, power panels, equipment control panels, and sensors located in the flooded galleries were damaged by water exposure and would need to be replaced.
- All surfaces in the galleries were exposed to sewage and needed to be decontaminated by steam cleaning.
- Ventilation equipment necessary to exchange air and create habitable work spaces were damaged and would have to be repaired, decontaminated, and/or replaced before workers could enter without protective equipment.
- Pipe supports, equipment mounting pads, and other structures vulnerable to damage by the flood water would need to be inspected and repaired.

By 9:00 p.m. on February 9th WPTP staff were able to restore power to the effluent pumping system and return flow through half of the primary basins. Due to the extensive flood damage, the WPTP could not process residual solids produced in the primary and secondary treatment systems. Therefore, the initial restart consisted of screening of coarse solids, minimal primary sedimentation, disinfection, and dechlorination prior to discharge to Puget Sound through the plant's main outfall. The initial restart bypassed all flows around secondary treatment and limited the plant's capacity to 120 MGD (later raised to 230 MGD).

With the WPTP capacity significantly decreased, plant operators were compelled to initiate a partial discharge of untreated combined sewage through the emergency outfall

on February 15, 2017, to prevent further flooding when flows exceeded 250 MGD during a storm event. This emergency discharge event lasted for less than seven hours during the morning of the 15th and for an additional 14 hours from the afternoon of the 15th through the morning of the 16th.

An estimated 186 million gallons (MG) of untreated combined sewage discharged through the emergency outfall during the 18-hour bypass on February 9th. In addition, WPTP staff estimated that 44 MG of untreated combined sewage discharged from the collection system on February 9th through CSO outfalls. The WPTP discharged an additional 58 MG of untreated combined sewage through the emergency outfall during the 21-hour period beginning February 15th and ending February 16th when operators partially reopened the emergency outfall gate to prevent additional flooding.

With plant systems necessary for management of residual solids from the primary and secondary processes offline, WPTP management decided to bypass all flow around the secondary treatment processes to protect the biological system during the plant restoration period. The secondary treatment bypass lasted 77 days with an estimated 7.9 billion gallons going through influent screening, limited primary treatment, and disinfection.

WPTP staff and contractors started the restoration and recovery process on February 9, 2017. Due to the extensive damage, the WPTP remained at diminished capacity for approximately three months. The restoration team restored operation of the pre-aeration and primary sedimentation basins on April 3, 2017, 53 days after the flooding. On March 27, 2017, WPTP staff restarted the secondary treatment system. To facilitate this restart while the digesters were still offline, plant management chose to discharge waste activated sludge (WAS) from the secondary process to Puget Sound. The solids were disinfected and discharged through the main outfall.

All digesters were back online on April 24, 2017 (74 days) and the secondary treatment system was back online on April 27, 2017 (77 days). Plant operators ceased discharging WAS to Puget Sound, and the plant returned to normal operation on May 9, 2017 (89 days).

The reduced treatment efficiency at the WPTP following the February 9th flooding affected the plant's effluent quality for nearly three months. As discussed below, the plant exceeded effluent limits on CBOD₅, TSS, and total residual chlorine during the restoration period. The discharges from the emergency outfall on February 9th, 15th, and 16th, led to beach closures in King and Kitsap Counties from February 9, 2017, through February 21, 2017. The emergency discharges also resulted in shellfish harvesting restrictions in Kitsap County during the same period.

Monthly Discharge Monitoring Reports submitted by the County for the months of February 2017 through May 2017 indicate ten (10) effluent violations in February 2017, eleven (11) effluent violations in March 2017, twelve (12) effluent violations in April 2017, one (1) influent design capacity violation, and seven (7) influent missed monitoring violations.

Ecology's investigation drew the following conclusions:

1. The lack of adequate redundancy in the effluent pump station's hydraulic control unit that operates pressure-control valves led to a catastrophic chain of events on February 9, 2017. This led to flooding of the WPTP that severely damaged equipment and shut down secondary treatment for 77 days. In addition, the lack of redundancy led to the following three episodes of discharge through the emergency outfall without treatment: The full incoming flow of combined sewerage was

discharged for 18 hours on February 9, 2017, and partial diversions discharged untreated sewage for 21 hours on February 15, 2017, and February 16, 2017.

2. The operators on duty were not adequately prepared to manage the emergency situation. The WPTP does not have adequately documented, formal training requirements for emergency situations, and relies on each shift supervisor to organize informal “tabletop exercises” to discuss what could happen under different conditions. This led to operators taking inappropriate actions immediately following the power disruption, such as failing to verify the power status of the EPS hydraulic control unit and importantly, not notifying main control when they saw water flowing over the side of the primary basins.
3. The supervising operator relied too heavily on float switches in the pre-aeration basins that had a lengthy history of problems. Despite the known problems with the switches, he assumed that they would work as designed during the emergency and shut off the RSPs before the primary sedimentation basins overflowed. Although the Ovation system had a screen available to monitor the water level in the primary basins, he did not have this screen open and did not monitor the level.
4. The operators on duty did not have adequate systems in place to aid in decision making during emergency conditions. The newly installed Ovation control system did not have alarms properly prioritized and, as a result, critical alarms were obscured in a flood of status messages and non-critical alarms. The main control room also does not have annunciators or other alarm displays to alert the main control operators to the power failure in the effluent pump station or the rising level of the primary basins. The WPTP also had an organizational culture in which the operators felt that they needed to avoid using the emergency outfall system. Although the operations and maintenance manual provides detailed information on critical tank levels and the consequences of equipment failures at high flows, the operators did not have concise guidelines from WTD management to aid them in deciding when it was acceptable to use the emergency discharge system. The County’s independent assessment report noted that the operators did not feel comfortable making the decision to use the system.

Violations:

RCW 90.48.080 and S1 Discharge in Unpermitted Location

(3 days: 2/9/17, 2/15/17, 2/16/17); Effluent Violations (33 violations Feb 2017 - Mar 2017)

RCW 90.48.080 states that, “It shall be unlawful for any person to throw, drain, run, or otherwise discharge into any of the waters of this state, or to cause, permit or suffer to be thrown, run, drained, allowed to seep or otherwise discharged into such waters any organic or inorganic matter that shall cause or tend to cause pollution of such waters...”.

The discharges from the emergency outfall on February 9th, 15th, and 16th, led to beach closures in King and Kitsap Counties from February 9, 2017, through February 21, 2017. The emergency discharges also resulted in shellfish harvesting restrictions in Kitsap County during the same period. Ambient monitoring and sample results indicated significant fecal coliform results following the discharge dates. The discharge of untreated or improperly treated wastewater into Puget Sound is a violation of RCW 90.48.080.

National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit No. WA0029181 Special Condition No. S1, *Discharge limits*, states that “all discharges and activities authorized by this permit must comply with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a level in excess of, that identified and authorized by this permit violates the terms and conditions of this permit.”

Special Condition S1.A, *Effluent limits for Outfall 001 - West Point wastewater treatment plant*, states that “Beginning on the effective date of this permit and lasting through the expiration date, the Permittee may discharge treated municipal wastewater at the permitted locations subject to compliance with the following limits”

As shown in Table 1, WTPP discharges between February 9, 2017, and April 30, 2017, resulted in 33 violations of Special Condition S1 effluent limits for outfall 001. Effluent limit violations included exceedances of monthly and weekly average limits for CBOD₅ and TSS, monthly minimum percent removal limits for CBOD₅ and TSS, and daily maximum and monthly average limits on total residual chlorine.

Special Condition S1 does not list the emergency bypass outfall as an authorized discharge location. Therefore the discharge of untreated combined sewage through the emergency bypass outfall on February 9, 2017; February 15, 2017; and February 16, 2017, violate this condition as discharges in an unpermitted location.

S2

Missed monitoring of influent (6 occasions on 2/9/2017 and 2/10/17); Non-representative sampling (1 day: 2/9/17); Improper temperature control (12 days: 2/10/17-2/21/17)

Special Condition S2.A, *Monitoring schedules*, states that, “the Permittee must monitor in accordance with the schedules in the following tables...” Table 2(1) of the permit requires daily monitoring of influent CBOD₅ and TSS, and weekly monitoring of influent BOD₅ at the WTPP. The WTPP missed monitoring for influent BOD₅ and influent TSS on February 9, 2017, and February 10, 2017, in violation of this condition. Although the WTPP reported influent values for BOD₅, CBOD₅, and TSS for February 9, 2017, on its February DMR, the plant’s process control supervisor revealed in an email on July 25, 2017, that the values reported for that day were averaged values from the two previous days. Samples collected on the 9th were not properly collected and were diluted with stormwater. Since the WTPP did not have a valid sample to analyze that day, the WTPP should have reported this as missed sampling.

Special Condition S2.B, *Sampling and Analytical Procedures*, states that “Samples and measurements taken to meet the requirements of this permit must represent the volume and nature of the monitored parameters. The Permittee must conduct representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions that may affect effluent quality.”

Special Condition S2.B also states that “sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136 (or as applicable in 40 CFR subchapters N [Parts 400–471] or O [Parts 501–503]) unless otherwise specified in this permit.”

WTPP staff collected grab samples for fecal coliform testing on February 9, 2017, at the Division Channel, which distributes flow from the raw sewage pumps to the primary

treatment basins. The intent of this sampling was to assess the concentration of fecal coliform bacteria in the untreated combined sewage discharged through the emergency outfall. However this location was not in the active flow path during the emergency discharge. The raw sewage pumps that convey flow to this channel were offline during the discharge and all flow was being diverted through the emergency outfall gate located at the influent control structure, upstream of the pumps. Fecal coliform samples collected in the Division Channel on February 9, 2017, were therefore not representative of the discharged flow. WPTP staff collected samples from the same location on the 15th and 16th to assess fecal coliform levels in the discharges through the emergency outfall on those days. Although that location did not provide representative samples on the 9th, the location was representative for samples collected on the 15th and 16th since the raw sewage pumps remained online those days. The emergency discharge sampling also only analyzed fecal coliform levels. WPTP staff did not test for other parameters such as residual chlorine, even though they were dosing the discharge with chlorine.

The floodwater damaged the influent sampler located in the raw sewage building. To compensate, WPTP staff installed a temporary composite sampler at the Division Channel on February 9th. The temporary influent composite sampler was not properly temperature controlled with refrigeration or ice, as required by analytical procedures, between February 10, 2017, and February 21, 2017.

S5 (1st paragraph) and S5.D

Improper Operations and Maintenance, lack of redundancy, alarm criticality, and improper maintenance location (3 days: 2/9/17, 2/15/17, 2/16/17); Improper O & M leading to lack of secondary treatment (2/9/17 - 4/27/17 = 77 days)

Special Condition S5 (1st paragraph), *Operation and Maintenance*, states that “the Permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed to achieve compliance with the terms and conditions of this permit... This provision of the permit requires the Permittee to operate backup or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of this permit.”

Special Condition S5.D., *Electrical power failure*, states that “The Permittee must ensure that adequate safeguards prevent the discharge of untreated wastes or wastes not treated in accordance with the requirements of this permit during electrical power failure at the treatment plant and/or sewage lift stations. Adequate safeguards include, but are not limited to, alternate power sources, standby generator(s), or retention of inadequately treated wastes.” The permit condition and Ecology’s *Criteria for Sewage Works Design* (Ecology publication no. 98-37-WQ) cites EPA’s *Design Criteria for Mechanical, Electrical, and Fluid System and Component Reliability* (publication EPA 430-99-74-001) for the required level of component redundancy and reliability. The redundancy and reliability requirements apply to individual mechanical components (pumps, motors, mixers, treatment units, and auxiliary equipment) along with electrical systems, instrumentation, and alarm systems. Adequate safeguards related to this condition include:

- Pumping capacity sufficient to handle the peak flow with the largest unit out of operation;
- Sufficient power reliability to operate all vital components during peak wastewater flow conditions;

- Automatic power transfer [for power distribution within the facility] shall be provided in those cases when time delay required to manually transfer power could result in a failure to process peak influent flows or cause damage to equipment;
- The reliability of auxiliary equipment, such as the Pratt valve hydraulic control unit, are dependent on the function of each system and the system shall have backup capability in the number of vital components required to perform the system function;
- Alarms and annunciators shall be provided to monitor conditions which could result in damage to vital equipment or hazards to personnel; they shall be such that each announced condition is uniquely identified.

A power disruption on February 9, 2017, initiated a chain of events that led to the loss of equipment and facility function. The power disruption caused the immediate shutdown of one effluent pump, and the two remaining effluent pumps did not have sufficient capacity to handle the peak flow condition. The power disruption also shut down the Pratt valve hydraulic control unit, an auxiliary system required to control the discharge pressure of all of the effluent pumps. The lack of appropriate redundancy and reliability in this auxiliary system caused the failure of the two remaining effluent pumps which were operating at that time. The lack of automatic power transfer capabilities for the effluent pump station equipment meant that the vital equipment in this area could not be restarted in time to prevent damage to equipment in other plant locations. Additional factors contributing to the discharge on February 9th include:

- The ineffective alarm prioritization and annunciation,
- The use of unreliable float switches for high-high alarm sensing in the pre-aeration basins,
- Lack of proper maintenance (specifically of the pre-aeration float switches), and
- Inefficient emergency response and training for emergency situations.

The lack of appropriate safeguards listed above led to flooding of the WPTP that damaged vital equipment necessary for proper plant operation. When the plant returned to limited operation late on February 9th, it did so with a significant reduction in hydraulic capacity and treatment capability. The plant could not operate according to its approved design; flow was limited to 230 MGD and staff bypassed secondary treatment. The plant remained at a state of reduced treatment for 77 days until April 27, 2017, when WPTP staff stopped bypassing secondary treatment. Had proper safeguards been in place, they would have prevented or minimized the flooding that damaged equipment and forced the secondary bypass from February 9, 2017, to April 27, 2017.

G9

Discharging solids (4/4/17 - 4/22/17 and 4/26/17 - 5/9/17 = 31 days)

General Condition G9, *Removed substances*, states that "Collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must not be resuspended or reintroduced to the final effluent stream for discharge to state waters."

The County's preferred alternative for restarting the secondary treatment system included the discharge of waste active sludge (WAS) solids from the secondary process directly to the chlorine contact channel for disinfection and discharge to Puget Sound. This act resulted in the resuspension or reintroduction of removed solids to the final effluent. The discharge of WAS to Puget Sound started on April 4, 2017, was suspended on or about

April 22, 2017; restarted on April 26, 2017; and ceased on May 9, 2017. In total, the WPTP discharge WAS in violation of General Condition G9 lasted for 31 days.

Corrective actions required:

For these reasons and in accordance with RCW 90.48.120(2) it is ordered that King County take the following actions. These actions are required at the location known as West Point Wastewater Treatment Plant located at 1400 Discovery Park Blvd, Seattle, WA 98199.

- Add redundancy to effluent pump discharge valve (Pratt valve) hydraulic control system by April 1, 2018.

Submit a letter detailing the actions taken to Ecology by May 1, 2018.

- Improve SCADA alarm prioritization and critical alarm visibility by February 1, 2018.

Submit a letter detailing the actions taken to Ecology by March 1, 2018.

- Conduct an integrated evaluation of plant constraints and redundancy by February 1, 2018. The evaluation must examine the reliability of critical treatment process components and validate the firm hydraulic capacity of the WPTP. It must also provide recommendations for capital and/or operational improvements at the WPTP.

Submit the completed evaluation to Ecology by March 1, 2018.

- Develop and implement an emergency operations training program by March 1, 2018. The training program must use a "Plant Hydraulic Simulator" as a tool for operators to rehearse responses to emergency scenarios during high flow conditions. The emergency operations training must also incorporate site-specific incident command protocols and emergency response SOPs that focus on life safety for workers and the public along with mitigation and recovery efforts related to an emergency response. The County should employ emergency operations strategies similar to those developed by the Federal Emergency Management Agency, the Process Safety Management System used by the petrochemical industry, or comparable protocols.

Submit a letter detailing the actions taken to Ecology by April 1, 2018.

- Review existing operator training programs and redevelop the programs, as necessary, by March 1, 2018. The operator training program must ensure all operators receive the same instructions on routine and emergency plant operations, including adherence to SOPs, understanding of critical hydraulic limitations, using effective communication protocols, and knowledge of key safeguards and interlocks installed to protect the plant from flooding. The training program must also establish common documentation for operator training that is filed in a secure, central location.

Submit a letter detailing the actions taken to Ecology by April 1, 2018.

- Develop and implement strategies for collecting representative samples of raw sewage at the Influent Control Structure by July 1, 2018. The sampling protocol must ensure that operators can safely collect samples of an emergency discharge through the Emergency Bypass Gate. The County must also include protocols for accurately determining the flow rate and total flow volume of an emergency discharge.

Submit a letter detailing the actions taken to Ecology by August 1, 2018.

FAILURE TO COMPLY WITH THIS ORDER

Failure to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order.

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do both of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel Road SW STE 301 Tumwater, WA 98501	Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903

CONTACT INFORMATION

Please direct all questions about this Order to:

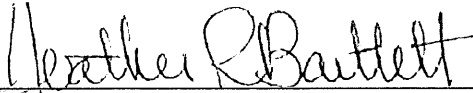
Amy Jankowiak
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452
Phone: 425-649-1795
Email: amy.jankowiak@ecy.wa.gov

MORE INFORMATION

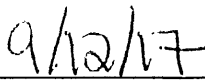
- Pollution Control Hearings Board Website: www.eco.wa.gov/Boards_PCHB.aspx
- Chapter 43.21B RCW - Environmental and Land Use Hearings Office – Pollution Control Hearings Board: <http://app.lcg.wa.gov/RCW/default.aspx?cite=43.21B>

- **Chapter 371-08 WAC – Practice And Procedure**
<http://app.leg.wa.gov/WAC/default.aspx?cite=371-08>
- **Chapter 34.05 RCW – Administrative Procedure Act**
<http://app.leg.wa.gov/RCW/default.aspx?cite=34.05>
- **Laws:** www.ecy.wa.gov/laws-rules/ecyrcw.html
- **Rules:** www.ecy.wa.gov/laws-rules/ecywac.html

SIGNATURE



Heather R. Bartlett
Water Quality Program Manager
Washington State Department of Ecology



Date

RECEIVED

OCT 13 2017

DEPARTMENT OF ECOLOGY
EXECUTIVE

POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON

KING COUNTY WASTEWATER TREATMENT)
DIVISION,)

Appellant,)

v.)

WASHINGTON DEPARTMENT OF)
ECOLOGY,)

Respondent.)

PCHB No.

CERTIFICATE OF SERVICE

I, Mary A. Livermore, certify that on October 11, 2017, I caused to be served via U.S.
First Class Mail, *King County's Notice of Appeal*; and a copy of this *Certificate of Service* to:

Department of Ecology
State of Washington
Appeals Processor
P.O. Box 47608
Olympia, WA 98504-7608

Courtesy Copy Mailed via U.S. First Class Mail to:

Amy Jankowiak
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

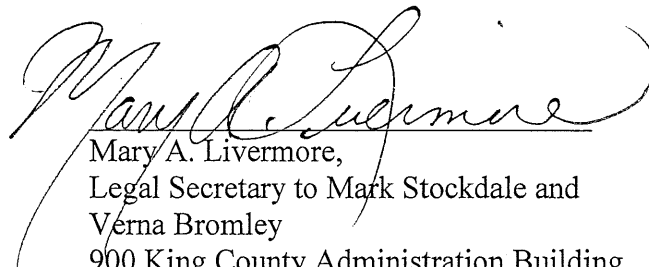
I declare under penalty of perjury under the laws of the State of Washington that the
foregoing is true and correct.

CERTIFICATE OF SERVICE -1-

COPY

DANIEL T. SATTERBERG,
King County Prosecuting Attorney, DNR Section
900 King County Administration Building
500 Fourth Avenue
Seattle, Washington 98104
(206) 296-0430

1 Dated this 11th day of October, 2017.

2
3 
4 Mary A. Livermore,
5 Legal Secretary to Mark Stockdale and
6 Verna Bromley
7 900 King County Administration Building
8 500 Fourth Avenue
9 Seattle, Washington, 98104
10 Telephone: 206 296 0430
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17

RECEIVED
OCT 13 2017
DEPARTMENT OF ECOLOGY
EXECUTIVE



First Class Mail

OFFICE OF THE PROSECUTING ATTORNEY
KING COUNTY, WASHINGTON
CIVIL DIVISION, DNR SECTION
900 King County Administration Building
500 Fourth Avenue
Seattle, Washington 98104

RECEIVED
OCT 13 2017

DEPARTMENT OF ECOLOGY
OFFICE OF DIRECTOR

Department of Ecology
State of Washington
Appeals Processor
P.O. Box 47608
Olympia, WA 98504-7608

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