

**West Point Wastewater Treatment Plant Damage  
Incident Monitoring Plan as part of  
King County's Marine Water Quality Monitoring Program  
March 2, 2017**

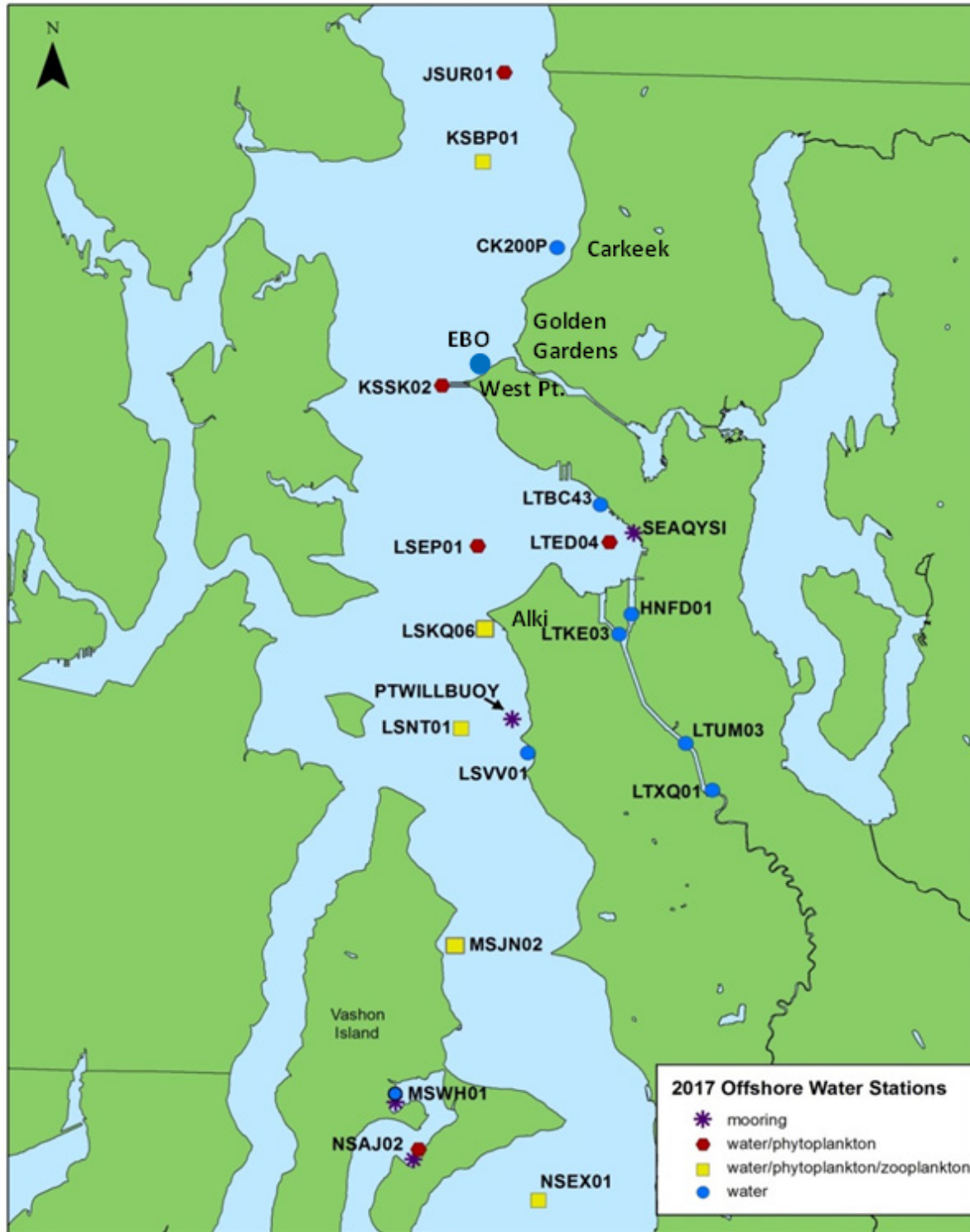
As part of a long-term water quality monitoring program, King County monitors Puget Sound water quality at 12 offshore and 20 beach locations (see maps below), including sites near the West Point Treatment Plant main outfall, to provide an understanding of water quality within the entire Puget Sound Central Basin. The County maintains a long-term data set, over 50 years at some locations, which provides insight into natural variation. This monitoring program and dataset forms the basis from which we can assess water quality conditions that may be affected by the West Point wastewater discharges during its period of reduced treatment.

At the offshore sampling stations, dissolved oxygen, temperature, salinity, density (calculated), chlorophyll (a measure of the amount of algae in the water), and light intensity and transmission are measured throughout the entire water column water from surface to bottom every two weeks. Additionally, nutrients, fecal indicator bacteria (both fecal coliforms and Enterococci), suspended solids, and chlorophyll are measured at multiple depths at each site, and phytoplankton (planktonic algae) composition and abundance are assessed at a subset of sites. The beach locations are monitored monthly for nutrients, fecal indicator bacteria (FIB), temperature and salinity. The most recent sampling of offshore and beach locations was conducted between February 21-22, approximately 5 days after the last use of the emergency bypass outfall.

During reduced West Point treatment, the sampling frequency at a subset of four existing monitoring stations will be increased to a weekly basis. In addition, a new site will be added at the emergency bypass outfall and also sampled on a weekly basis for at least the next couple of months. See the tables below for more details related to sampling. The frequency and variety of biological, chemical, and physical conditions that are measured as indicators of water quality and ecosystem function for the County's marine water quality monitoring are sufficient to evaluate the most relevant water quality conditions that have the potential to result in any acute adverse effects to Puget Sound aquatic organisms. All the sites, with the exception of the emergency bypass outfall site, have been routinely sampled for many years; therefore, this will allow an assessment of current conditions as well as a comparison to expected conditions.

The County's marine sediment quality monitoring programs include testing for physical characteristics, chemicals, benthic organisms, and toxicity bioassays (when necessary) at our wastewater treatment plant outfalls, and many of our nearshore and CSO treatment plant outfalls. Sampling results provide sufficient information to effectively evaluate the long-term effects of sediment discharges at the outfalls. Sediments at the West Point main outfall will be sampled this August for a variety of chemicals, physical structure, and benthic organisms. Results from previous sampling events will be compared to current sediment conditions once all the results are obtained. Sediment sampling is conducted once every five years as a requirement of the permit for West Point. The 2017 summer sampling will allow us to evaluate the effects of this event and compare to past sampling.

King County will conduct an assessment of water quality conditions every two weeks as the recent sampling results become available. Typically it takes 30-45 days to receive lab results. We will request expedited lab analysis for key parameters during this initial response to this incident. The County will compile results, analyze, as well as compare against past conditions and report findings.



Locations of offshore water quality sampling sites.



Locations of beach water quality sampling sites.

### Marine Offshore Monitoring Program Parameters & Sampling Frequency

Station	Location	Number of Depths Sampled	Bacteria		Laboratory analysis							Field sampling (CTD)						Field	Phyto		
			Enterococcus	Fecal Coliform	Ammonia Nitrogen	Nitrite + Nitrate Nitrogen	Total Nitrogen	Orthophosphorus	Silica	Chlorophyll-a	Phaeophytin	Total Suspended Solids	Fluorescence (chlorophyll)	Density	Dissolved Oxygen	Light Intensity (PAR)	Salinity	Sample Temperature	Transmissivity	Secchi Transparency	Abundance & biovolume
JSUR01	Brightwater outfall	7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
KSBP01	Pt. Jefferson	7	★	★	★	★	★	★	★	●	●	●	★	★	★	★	★	★	★	●	●
CK200P	Carkeek CSO outfall	5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
KSSK02	West Point TP outfall	5	★	★	★	★	★	★	★	●	●	●	★	★	★	★	★	★	●	●	●
LTBC43	Elliott West outfall	2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
LTED04	Elliott Bay	6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
LSEP01	South Plant outfall	7	★	★	★	★	★	★	★	●	●	●	★	★	★	★	★	★	●	●	●
LSKQ06	Alki CSO outfall	4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
LSNT01	off Fauntleroy	7	★	★	★	★	★	★	★	●	●	●	★	★	★	★	★	★	●	●	●
LSVV01	Fauntleroy	2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MSJN02	Vashon outfall	5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
NSEX01	East Passage	7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
EBO *	emergency bypass outfall	2	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	●	●	●

- Sampled biweekly as part of ongoing marine monitoring program
- ★ Sampled weekly

\* indicates new sampling location at West Point emergency bypass outfall  
 note: the two Quartermaster Harbor stations are not included

### Beach Waters Monitoring Program

Station	Location	Bacteria		Laboratory analysis					Field
		Enterococcus	Fecal Coliform	Ammonia Nitrogen	Nitrite + Nitrate Nitrogen	Total Nitrogen	Orthophosphorus	Salinity	Sample Temperature
JSVW04	Richmond Beach	●	●	●	●	●	●	●	●
ITCARKEEKP	Carkeek Park - North	●	●	●	●		●	●	●
KSHZ03	Carkeek Park - Piper's Creek Mouth	●	●	●	●	●	●	●	●
KTHA01	Carkeek Park - Piper's Creek Upstream	●	●	●	●		●		●
KSLU03	Golden Gardens	●	●	●	●		●	●	●
KSSN04	West Point - North	●	●	●	●		●	●	●
KSSN05	West Point - South	●	●	●	●		●	●	●
KSYV02	South Magnolia CSO	●	●	●	●		●	●	●
LTBD27	SAM Sculpture Park Beach	●	●	●	●		●	●	●
LSGY01	Seacrest Park	●	●	●	●		●	●	●
LSHV01	Alki Beach	●	●	●	●		●	●	●
LSKR01	Alki Beach - Alki Plant	●	●	●	●		●	●	●
LSKS01	Richey Viewpoint	●	●	●	●		●	●	●
LSVW01	Fauntleroy Cove	●	●	●	●	●	●	●	●
MTLD03	Normandy Park	●	●	●	●		●	●	●
MTUJ01	Des Moines Creek Park	●	●	●	●		●	●	●
NTFK01	Redondo Beach	●	●	●	●	●	●	●	●
NSJY01	Dumas Bay Park	●	●	●	●	●	●	●	●
MSJL01	Vashon Island - Gorsuch Road	●	●	●	●		●	●	●
MSSM05	Vashon Island - Tramp Harbor	●	●	●	●		●	●	●
MSXK01	Vashon Island - Burton Acres Park	●	●	●	●	●	●	●	●

Sites are sampled on a monthly basis

### Station Coordinates

Locator	Description	Stratum	Northing <sup>1</sup>	Easting <sup>1</sup>
JSVW04	Richmond Beach/Point Wells	Beach	286171	1257194
ITCARKEEKP	Carkeek Park	Beach	263756	1259915
KSHZ03	Piper's Creek Mouth	Beach	263736	1259784
KSLU03	Golden Gardens	Beach	256354	1253305
KSSN04	West Point North	Beach	245729	1246032
KSSN05	West Point South	Beach	245272	1245980
KSYV02	Magnolia CSO	Beach	234547	1254488
LTBD27	SAM Sculpture Park	Beach	228851	1264297
LSGY01	Seacrest Park	Beach	218711	1258776
LSHV01	Alki Beach	Beach	216852	1253532
LSKR01	Alki North	Beach	213666	1249416
LSKS01	Richey Viewpoint	Beach	212668	1250283
LSVW01	Fauntleroy Cove	Beach	194969	1254846
MTLD03	Normandy Park	Beach	165142	1263285
MTUJ01	Des Moines Creek Park	Beach	151129	1269533
NTFK01	Redondo Beach	Beach	131067	1270899
NSJY01	Dumas Bay Park	Beach	122831	1255835
MSJL01	Vashon - Gorsuch Creek	Beach	169666	1241897
MSSM05	Vashon - Tramp Harbor	Beach	154908	1243459
MSXK01	Vashon - Burton Acres Park	Beach	146481	1240772
JSUR01	Brightwater TP outfall	Offshore	287580	1250910
KSBP01	Jefferson Head	Offshore	275439	1248062
CK200P	Carkeek CSO TP Outfall	Offshore	263819	1257728
KSSK02	West Point TP Outfall	Offshore	245121	1242740
LTBC43	Elliott West CSO TP Outfall	Offshore	228985	1263430
LTED04	Elliott Bay	Offshore	223909	1264675
LSEP01	South TP Outfall	Offshore	223360	1247399
LSKQ06	Alki CSO TP Outfall	Offshore	212065	1248334
LSNT01	Fauntleroy/Vashon	Offshore	198653	1245194
LSVV01	Barton CSO Outfall	Offshore	195347	1253935
MSJN02	Vashon TP Outfall	Offshore	169328	1244585
NSEX01	East Passage	Offshore	134701	1255331
MSWH01	Quartermaster Harbor	Offshore	147976	1236667
NSAJ02	Quartermaster Harbor	Offshore	140223	1239011

<sup>1</sup>North American Datum 1983 (NAD83) - State Plane Coordinate System - Washington North 4601