



2017-2018 Annual Report

For
National Pollutant Discharge Elimination System (NPDES)
Municipal Separate Storm Sewer System (MS4)
Permit Compliance
Permit #101348

Prepared by:
Oak Lodge Water Services District, Surface Water Management Program

October 2018

Table 1: OLWS 2017-2018 Summary of BMP Implementation

Best Management Practice	MS4 Permit Schedule A Requirement	BMP Description	Performance Measure	Annual Report 2017-2018
Education and Outreach Privately Owned SWM Facility Education	4.d.iv	BMP Description: Privately owned SWM facilities require periodic inspection and maintenance to keep them working correctly. This effort focuses on outreach and education to those private landowners who own these types of facilities	(1) Number and Type of Education and Outreach efforts specific to privately owned facility inspection and maintenance.	Participation in the Stormdrain Cleaning Assistance Program (SCAP) with mailers sent to 400+ property owners who has/may have private storm drains on their property. Inspections completed, and letter mailed to 10% of privately owned SWM facility owners. Program overview to evaluate how OLWS can revise and strengthen outreach in this area.
Education and Outreach Erosion Control Contractor Training Opportunities	4.d.v	BMP Description: Provide notice to construction site operators concerning where education and training to meet erosion prevention and sediment control requirements can be obtained.	(2) Describe efforts to provide this notice	OLWS Development Review Specialist received certification in the Northwest Environment Training Center's "Certification in Erosion and Sediment Control Lead" (CESCL) in order to directly outreach and educate contractors on the water quality best practices in Erosion Control as well as providing information on training and certification opportunities.
Education and Outreach Effectiveness Evaluation	4.d.vi	BMP Description: Over the permit term, OLWS will provide information related to an effectiveness evaluation. This may be conducted in coordination with other local Phase 1 jurisdictions. The effectiveness evaluation information will focus on assessing changes in targeted behaviors and will allow for additional information that can be used in adaptive management of the OLWS education and outreach strategy.	(3) Report on activities annually. Measurable Goals: <ul style="list-style-type: none"> • Provide/compile information regarding a public education effectiveness evaluation over the permit term. 	This year Clackamas County MS4 co-permittees started planning for an updated effectiveness evaluation study during the upcoming permit cycle. The last study of effectiveness evaluation was conducted during the 2013-2014 permit year, when OLWS participated in a regional study about the effectiveness of various stormwater-related public outreach efforts within Oregon. The report was commissioned through Oregon Association of Clean Water Agencies. See Appendix B for a copy of the study.
Education and Outreach Employee Training	4.d.vii	BMP Description: A variety of training is provided to staff associated with surface water management. Training and advisory committee opportunities are made available through local agencies and groups involved with a broad range of water quality issues including stormwater (e.g., Oregon Association of Clean Water Agencies conferences). Such training is provided based on need and availability.	Track the number of employees receiving training in stormwater management annually. Measurable Goals: <ul style="list-style-type: none"> • Attend relevant stormwater management related training based on need and availability. 	OLWS completed a merger of the Water District and the Sewer District, and as part of that merger provided a training for all field staff with a comprehensive overview on the MS4 Stormwater Permit with a focus on sediment control. Specific Staff Trainings included: <ul style="list-style-type: none"> • Pollution Prevention Specialist received certification in the Northwest Environment Training Center's "Certification in Erosion and Sediment Control Lead" (CESCL). 2 days. • Oregon Water Education Foundation's Water Environment School at Clackamas Community College. 3 days.

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<p>Public Education and Outreach</p> <p>Topic: Facilitate Public Reporting of Illicit Discharges</p>	4.d.viii	<p>BMP Description: The District implements a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges and other types of improper disposal of materials into the MS4. After District staff have received a report which relates to one of these discharges, they investigate and, if appropriate, apply control measures. See BMP #3.</p>	<p>(1) Number illicit discharges reported. (2) Number of illicit discharges requiring action. (3) Number of educational events educating public about illicit discharges and procedures to report. (4) Number of publications educating public about illicit discharges and procedures to report.</p> <p>Measurable Goals:</p> <ul style="list-style-type: none"> Create a page for public complaints on the District’s website and track number of complaints for reporting. 	<p>Potential illicit discharges reported: 8 Actions taken: 4 Educational Events: 4 Educational Publications: 5</p> <p>Public submits complaints through the information email on the OLWS website or calls staff directly. Complaints are coded in Lucity, the district’s Computerized Maintenance Management System.</p>
<p>Public Involvement and Participation</p>	4.e	<p>BMP Description: Schedule A.4.e of the District’s MS4 NPDES permit requires OLWS to provide opportunity for public participation in the development, implementation, and modification of the Storm Water Management Plan (SWMP). Prior to submittal of various milestone reports, OLWS will provide the public with an opportunity to comment for a period of 2 weeks prior to submittal dates. Comments on the documents will be collected and considered.</p> <p>Additionally, OLWS has many opportunities for members of the community to participate in various sub committees that provide oversight and guidance to OLWS management related to MS4 implementation.</p>	<p>Measurable Goals:</p> <ul style="list-style-type: none"> Provide for public participation with the SWMP and pollutant load reduction benchmarks prior to the permit renewal application deadline. 	<p>SWM Annual Report Public Notice: completed, announced at North Clackamas Urban Watershed Council and to OLWS Board Members;</p> <p>SWM Annual Report and Permit on website: completed, documents uploaded for public to access;</p> <p>Website contains a variety MS4 related material and provides ongoing opportunities for the public to comment.</p> <p>The District is preparing to embark on a Stormwater Master Plan. During that process, Staff plan to meet with many public groups to gather the desires of the public to expand the services Oak Lodge Water Services District is providing. Staff is also researching setting up a website to gather publicly supported projects within our community.</p>
<p>Construction Site Runoff Control</p>	4.f.i - 4.f.iv	<p>BMP Description:</p> <p><i>OLWS Development Review</i></p> <p>The District reviews all development plans for new construction or redevelopment projects in the District’s service area through the building permit process. All reviews are conducted in accordance with the OLWS Surface Water Management Code (SWMC). These regulations require submittal of a surface water management plan that addresses post-construction pollutant and runoff control measures. The OLWS SWMC was updated during this reporting year, and new, more stringent requirements for surface water management have been adopted.</p>	<p>(2) Annual number of permitted, active construction projects (i.e., those projects disturbing 800 s.f. or more). (3) Annual number of site plan reviews and approved plans.</p> <p>Measurable Goals:</p> <ul style="list-style-type: none"> Review all applicable erosion and sediment control plans submitted as part of the building permit. 	<p>Number of development permits issued: 12 Acreage of development activity: 20 Acres Number of erosion control permits issued: 55 Number of erosion control inspections completed: 165 Number of enforcements (violations that needed enforcement action): 0 Identify any new industrial businesses in OLWS: 0 Variance Requests: 0</p>

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				Appeals: 0 Estimate of total new and replaced impervious surface area related to development projects: 13 acres
Pollution Prevention for Municipal Operations Street Sweeping	4.g	BMP Description: Major arterial curbed streets within the DTD service area (which includes OLWSD) are swept on a regular basis by DTD. The frequency varies depending on a variety of factors (for example, traffic volumes). For information on their street sweeping activities, refer to the DTD MS4 NPDES SWMP.	(1) Number of miles that were swept OLWSD (2) Mass or volume of material removed during sweeping For DTD roads, see tracking measures in the DTD MS4 NPDES SWMP.	Clackamas DTD Street Sweeping within OLWSD Boundary: (1) 268 Curb/ Shoulder Miles for 2017/2018 (2) 135 Cubic Yards debris removed for 2017/2018 (3) 4 basins cleaned 1.77 cu yds for 2017/2018 (4) The district has entered into an agreement with the Clackamas County DTD to have its WRF impervious surface's swept once a month. This BMP is a result of the Districts 1200Z Permit.
Operations & Maintenance for Public Streets	4.g	BMP Description: Operations and maintenance of public streets within the DTD service area (which includes OLWSD) is the responsibility of DTD. For information on their activities, refer to the DTD MS4 NPDES SWMP.	Measurable Goals: <ul style="list-style-type: none"> • DTD Roads: See DTD's MS4 NPDES SWMP. • Remove illegal solid waste dumps as they are discovered. • Collect sand applied for ice/snow events within 10 days of the end of the event. 	See Clackamas County/DTD's MS4 Annual Report
Control Infiltration and Cross Connections to the District's Stormwater System	4.g	BMP Description: The District prevents exfiltration of flows from municipal sanitary through the presence of a rigorous maintenance program involving routine cleaning and inspection of lines to ensure that there are very few leaks. Lines are inspected with a television camera on a periodic basis. Tree roots, which could cause leakage, are removed whenever identified. The District prohibits cross-connections in new/redevelopments through the development and building permit review and issuance process. This system, which features plan review in the office and field inspections by certified plumbing inspectors, ensures that fixtures that need to be plumbed into OLWSD's sanitary sewer system or a private septic system are actually plumbed into those systems, preventing hundreds of illicit discharges per year. The District is able to identify and control the exfiltration of flows from municipal sanitary sewers when it occurs by: <ul style="list-style-type: none"> • Performing dry-weather inspections at all major or priority outfalls on an annual basis to detect non-stormwater flows, and • Receiving and promptly responding to reports from citizens of unusual colors, odors and solids. 	(1) Number of cross-connections/ sanitary discharges identified. Measurable Goals: Eliminate any identified sanitary discharges to the storm system.	No Cross-connections were found during the permit year 2017/2018.

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Flood Management Projects and Water Quality	4.g	<p>BMP Description: There are two Components to this BMP. The first is to ensure that water quality is assessed and addressed when developing capital improvement projects (CIPs) for flooding. The second is to examine the existing system to determine whether water quality retrofits would be beneficial and feasible.</p> <p><u>CIPs:</u> The District develops 5 and 10 year Capital Improvement Plans to identify major projects necessary to address water quality concerns. One of the main goals and outcomes of the CIP is to prioritize what stormwater management actions and activities should be conducted in specific sub-basin areas, such as where to assist the operations and maintenance program in targeting specific activities in various locales. Another main goal of the CIP is to build projects to protect, restore, and enhance the health and function of a watershed.</p>	<p>(1) Number of retrofits constructed that address water quality treatment.</p> <p>(2) Number of flood management projects implemented or constructed and the percentage of those projects that include water quality Components.</p> <p>Measurable Goals: Ensure all planned stormwater CIPs include consideration of water quality.</p>	<p>(1) Last year, the District added Audubon Society’s Backyard Habitat program to its set of partners. This program educates and informs the public on yard maintenance options that limit the use of herbicides and pesticides on private property that can get into our streams and reduce water quality. It also provides one-on-one information to landowners about landscaping for water quality.</p> <p>(2) Oak Lodge Water Services continues to fund the North Clackamas Urban Watersheds Council (NCUWC) Streamside Stewards Program which enhances water quality and streamside health. Streamside Stewards worked with 70 properties covering 11,126.5 linear feet of streambank to enhance water quality, add tree canopy, and provide shade, water quality and riparian health for listed species. The Streamside Stewards and backyard Habitat Programs are complimentary in that Audubon works with landowners who are not located in riparian areas with limited herbicide use; NCUWC works with riparian landowners who often do not seek a heavily manicured landscape appearance, and often manages invasives where there are no or few practical alternatives to chemical treatment.</p> <p>(3) Through NCUWC, the District has continued to pursue opportunities for voluntary stormwater retrofit projects program. NCUWC and the district have worked to identify retrofit sites that can be addressed with voluntary stormwater retrofits on their property. Partnership conversations about this program have also been broadened to include DePave, The Wetlands Conservancy, Urban Greenspaces Institute, Long Tom Watershed Council, GeoEngineers, Alta Consulting, and the Willamette Partnership as to how to best design a program to work with private landowners in retrofits, stormwater education and other measures to address peak flows.</p> <p>(4) OLWS currently has one capital improvement projects in the construction phase. The Boardman Wetland project focuses on water quality improvements, public education and outreach and will also benefit water volume management on Jennings Road.</p>

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Maintenance of Conveyance System Components and Structural Controls	4.g	<p>BMP Description: The District maintains conveyance and treatment components of the storm water system that are located outside the right-of-way of publicly owned roads in maintenance agreement subdivisions or that are owned by the District. The conveyance components include, but are not limited to, culverts, storm sewer lines (8" or greater in diameter) and inlets. The stormwater treatment components of the system include, but are not limited to, vegetated aboveground stormwater detention facilities, sedimentation manholes, and various types of underground proprietary pollution control systems. Maintenance records are kept by both DTD and the District.</p> <p>The District and DTD are working on the development of an intergovernmental agreement to clarify and coordinate maintenance activities.</p>	<p>(1) Miles of ditches and storm lines maintained (2) Number and type of components inspected and/or cleaned, and (3) Mass or volume of material removed during cleaning</p>	<p>(1) <u>Ditch Cleaning: 344 ft – By Clackamas DTD</u> (2) <u>Storm Pipe Cleaned: 9498' by OLWSD</u> (3) <u>11 culverts @ 407ft Clackamas DTD</u> (4) <u>Mass Removed: 11 cubic yards of material (Ditch Cleaning By Clackamas DTD)</u></p>
Catchbasin Cleaning and Maintenance	4.g	<p>BMP Description: OLWSD cleans all District owned or District operated/maintained catch basins once every five years. Catch basin cleaning activities primarily occur during the dry weather season, but during the fall, certain catch basins may be cleaned more frequently if needed. Utility crews utilize a database to document inspection and maintenance activities for the annual reports. Repair or replacement of public catch basins is scheduled following inspection.</p>	<p>(1) Track the number of District owned or District operated/maintained catch basins cleaned per year. (2) Track the mass or volume of debris removed during cleaning activities.</p> <p>Measurable Goals:</p> <ul style="list-style-type: none"> Clean OLWSD District operated/maintained public catch basins on a 5-year rotational basis. <p>Schedule repair or replacement of catch basins based on inspection results.</p>	<p>During this reporting period, OLWS and Clackamas Co. continued a coordinated approach to storm system inspection and maintenance (see updated SWMP Zone Map).</p> <p>(1) Catch basin Inspections: 332 (2) Catch basins and Structures Cleaned: OLWSD:152 Structures Cleaned by CCDTD: 11 (3) Mass of Debris Removed: 11.5 Cubic Yards by OLWSD</p>
Private Surface Water Facility Maintenance Program	4.g	<p>BMP Description: This BMP includes maintenance agreements for stormwater quality and detention structures in residential areas. There are very few of these facilities in OLWSD.</p> <p>This infrastructure varies from subdivision to subdivision, but may include any of the following: catch basins, below-ground stormwater detention tanks, above-ground storm water detention and/or water quality ponds, below-ground vortex separators, and swales.</p>	<p>(1) Number of structures inspected and cleaned.</p>	<p>11 Ponds and 28 Private Facility assets inspections were completed in the 2017/2018 permit year.</p> <p>All Facilities that needed cleaning were done. These Facilities were under an agreement with the District for cleaning and inspection.</p> <p>In addition, a letter was sent to 10% of owners of single-family private facilities with OLWS SWM Facility Agreements that explains the requirement to clean and maintain facilities.</p>

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Hydromodification Assessment	5.a – 5.d	BMP Description: OLWSD anticipates partnering with adjacent co-permittees (CCSD#1, Clackamas County DTD) to develop a simplified tool for development engineers to easily size LID BMPs to address the duration of elevated flow levels in addition to addressing flow volumes and peaks. Use of the tool in designing LID BMPs is expected to ultimately address the long-term impacts of increased runoff from development. To address flow durations, a long-term continuous simulation of hydrology is required. As a result, designing and sizing BMPs becomes more complicated than traditional design practices focused on a single design event. In order to make the BMP design process easier for the development community, neighboring states have developed a sizing tool. Currently, there are no BMP design/sizing tools to address the impacts of Hydromodification that are applicable to local conditions such as rainfall patterns and critical channel forming flows. This tool will provide a simple, consistent and defensible methodology for designing/sizing LID throughout Clackamas County and the region to address Hydromodification impacts.	(1) Net impervious area treated by LID. (2) Number of applications submitted using tool. (3) Customer Feedback/ Community Relations. Measurable Goals: The primary goal is to develop, by June 30, 2013, a tool to assist development engineers with the design/sizing of stormwater management facilities in order to reduce target pollutants and stream degradation impacts (i.e., Hydromodification) associated with the development of impervious surfaces.	See Hydromodification Assessment submitted to DEQ on June 29, 2015.
Stormwater Retrofit Strategy	6.a – 6.c	BMP Description: Develop a stormwater quality retrofit strategy that applies to developed areas identified as impacting water quality.	(5) Submit plan to DEQ by July 1, 2015.	See Stormwater Retrofit Strategy and Plan submitted to DEQ on June 29, 2015. Implemented in stormwater code. NONE yet. Conversations with the North Clackamas Urban Watersheds Council about potential for partnering to create a voluntary stormwater retrofit program.

**OLWS Water Quality Sampling Data Results: Storm Sampling and Quarterly Stream Sampling
July 1, 2017 - June 30, 2018**

SW 8 – SE Naef Rd / SE Blanton St – South Boardman Creek, 60' north of intersection

MS4 Sample Type: WET WEATHER, 3 events per year

DATE	TSS (mg/L)	BOD (mg/L)	Fecal coliform (MPN)	pH	Temp (celsius)	E. Coli (col/100)	CL2 (mg/L)	TDS (MGL)	COD (mg/L)	O&G (mg/L)	Total Phosphate (mg/L)	TKN (mg/L)	FLOATING SOLIDS	O&G SHEEN	Luminescent DO (mg/L)	Conductivity (µS/cm)	Nitrate (mg/L)	Hardness (mg/L)	Calcium (µg/L)	Magnesium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Zinc (µg/L)	Dissolved Copper (µg/L)	Dissolved Lead (µg/L)	Dissolved Zinc (µg/L)	Ortho-Phosphorous (mg/L)	Ammonia Nitrogen (mg/L)
9/19/2017	8	2.85	N/A	7.62	18.1	1990	N/A	100	N/A	ND	0.12	N/A	NONE	ND	8.71	138.9	0.808	45.5	12.3	3.57	0.00622	0.000767	0.127	0.00478	ND	0.107	0.082	0.037
12/19/2017	46	4.11	N/A	7.11	10.8	125	N/A	71	N/A	ND	0.176	N/A	NONE	ND	10.5	83.5	0.519	26.7	7.22	2.1	0.00868	0.0025	1.24	0.00289	ND	0.925	0.025	0.058
3/13/2018	69	6.32	N/A	7.39	12.1	ND	N/A	81	N/A	ND	0.198	N/A	NONE	ND	9.8	62	0.448	30.3	8.33	2.32	0.0106	0.00329	5.42	0.00449	ND	4.54	0.041	0.121

SW 15 – 15000 SE Fair Oaks Ave – River Forest Creek – River Forest Lake influent

MS4 SAMPLE TYPE: Instream Sample, 4 times per year

DATE	TSS (mg/L)	BOD (mg/L)	Fecal coliform (MPN)	pH	Temp (celsius)	E. Coli (col/100)	CL2 (mg/L)	TDS (MGL)	COD (mg/L)	O&G (mg/L)	Total Phosphate (mg/L)	TKN (mg/L)	FLOATING SOLIDS	O&G SHEEN	Luminescent DO (mg/L)	Conductivity (µS/cm)	Nitrate (mg/L)	Hardness (mg/L)	Calcium (µg/L)	Magnesium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Zinc (µg/L)	Dissolved Copper (µg/L)	Dissolved Lead (µg/L)	Dissolved Zinc (µg/L)	Ortho-Phosphorous (mg/L)	Ammonia Nitrogen (mg/L)
9/28/2017	ND	ND	N/A	7.45	15.6	>2420	N/A	136	N/A	ND	NO	N/A	NO	ND	7.47	184.7	0.292	71	18.5	6.02	0.00171	0.000411	0.0112	0.00153	ND	0.00882	0.096	0.029
10/27/2017	5	ND	N/A	7.96	12.6	65.7	N/A	142	N/A	ND	NO	N/A	NO	ND	8.41	179.4	0.731	68.8	17.8	5.95	0.00128	0.000211	0.0126	0.00108	ND	0.0104	0.047	ND
3/2/2018	ND	ND	N/A	6.28	7.6	77	N/A	131	N/A	ND	NO	N/A	NO	ND	11.15	163.9	1.58	62.8	15.8	5.65	0.00171	0.000267	0.017	0.00103	ND	0.0145	0.027	ND
6/6/2018	5	ND	N/A	7.39	13.7	>2420	N/A	148	N/A	ND	NO	N/A	NO	ND	8.42	194.7	0.425	80.5	20.7	7.01	0.00113	0.00029	0.0113	ND	ND	ND	0.062	ND

SW 12 – 3131 SE Walta Vista Ct – Lower Boardman Creek – 48' CMP outfall

MS4 SAMPLE TYPE: Instream Sample, 4 times per year

DATE	TSS (mg/L)	BOD (mg/L)	Fecal coliform (MPN)	pH	Temp (celsius)	E. Coli (col/100)	CL2 (mg/L)	TDS (MGL)	COD (mg/L)	O&G (mg/L)	Total Phosphate (mg/L)	TKN (mg/L)	FLOATING SOLIDS	O&G SHEEN	Luminescent DO (mg/L)	Conductivity (µS/cm)	Nitrate (mg/L)	Hardness (mg/L)	Calcium (µg/L)	Magnesium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Zinc (µg/L)	Dissolved Copper (µg/L)	Dissolved Lead (µg/L)	Dissolved Zinc (µg/L)	Ortho-Phosphorous (mg/L)	Ammonia Nitrogen (mg/L)
9/28/2017	6	ND	N/A	7.38	15.4	1730	N/A	161	N/A	ND	0.218	N/A	NO	ND	7.35	212.5	1.06	80.4	20.8	6.85	0.00198	0.000556	0.029	0.00212	ND	0.017	0.113	0.038
10/27/2017	5	ND	N/A	7.11	13.1	548	N/A	146	N/A	ND	0.108	N/A	NO	ND	7.98	198.9	0.579	77.6	19.7	6.89	0.00159	ND	0.0188	0.00122	ND	0.017	0.055	0.04
3/2/2018	ND	ND	N/A	8.21	7.8	40	N/A	124	N/A	ND	ND	N/A	NO	ND	9.94	168	1.09	63.4	16.1	5.61	0.00158	0.000533	0.0225	0.00111	ND	0.0166	0.026	ND
6/6/2018	ND	ND	N/A	7.32	14.1	579	N/A	157	N/A	ND	0.122	N/A	NO	ND	8.14	214.9	0.866	88.3	22.3	7.92	ND	0.000285	0.00702	ND	ND	0.00485	0.061	0.032

SW 3 – Courtney Springs Creek on east side of SE McLoughlin Blvd, 350' north of SE Park Ave – outfall of 5' x 5' concrete box culvert

MS4 SAMPLE TYPE: Instream Sample, 4 times per year

DATE	TSS (mg/L)	BOD (mg/L)	Fecal coliform (MPN)	pH	Temp (celsius)	E. Coli (col/100)	CL2 (mg/L)	TDS (MGL)	COD (mg/L)	O&G (mg/L)	Total Phosphate (mg/L)	TKN (mg/L)	FLOATING SOLIDS	O&G SHEEN	Luminescent DO (mg/L)	Conductivity (µS/cm)	Nitrate (mg/L)	Hardness (mg/L)	Calcium (µg/L)	Magnesium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Zinc (µg/L)	Dissolved Copper (µg/L)	Dissolved Lead (µg/L)	Dissolved Zinc (µg/L)	Ortho-Phosphorous (mg/L)	Ammonia Nitrogen (mg/L)
9/28/2017	ND<5.00	ND	N/A	7.63	15.7	248	N/A	159	N/A	ND	0.12	N/A	NO	NO	9.24	209.9	1.06	80.4	21.2	6.67	0.00252	0.00149	0.0256	0.00117	ND	0.00823	0.061	0.035
10/27/2017	ND<5.00	ND	N/A	7.72	14.1	79.8	N/A	146	N/A	ND	ND	N/A	NO	NO	9.46	193.5	1.54	77.1	20.4	6.34	0.00149	ND	0.0132	0.00123	ND	0.01	0.038	ND
3/2/2018	5	ND	N/A	10.12	8.9	49	N/A	125	N/A	ND	ND	N/A	NO	NO	10.32	160.1	1.93	60.5	16.2	4.87	0.00208	0.00104	0.0231	0.00124	ND	0.0171	0.023	ND
6/6/2018	5	ND	N/A	9.19	14.7	140	N/A	163	N/A	ND	ND	N/A	NO	NO	9.16	204	1.05	85.7	22.5	7.16	0.00136	0.000598	0.00927	ND	ND	0.00512	0.045	ND

ND = non detect
NO = None Observed