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Echo Lake RSMP Effectiveness Study: Deliverable D2.3

Submitted to: Brandi Lubliner, WA State Dept. of Ecology, RSMP Coordinator

Submitted by: Carly Greyell, King County Water and Land Resources Division, Project Manager

Submitted on: August 18, 2016 (Revised)

This deliverable includes a description of sampling and analysis activities, a log of site visits from the field team (Table 2), and preliminary flow data (Table 3) from the 1st and 2nd quarters of 2016. Also included are preliminary analytical data from one storm event sampled last period (December 2015), and three storm events in 2016 (Tables 4 through 7). The attached Biological Monitoring Report from January-March outlines the toxicity test results for two storms.

Table 1 summarizes the samples collected and analyzed for this project during Q1/Q2 of 2016. All King County Environmental Laboratory (KCEL) analytical data are available, and samples for polychlorinated biphenyl (PCB) analysis were sent to the contract laboratory on 6/24/2016. Toxicity tests were conducted on samples from one bioretention planter box during two of the three storms (1/21/2016 and 3/9/2016).

Table 1. Sample Collection Summary for Q1/Q2 2016.

	ECHO-BP1-IN	ECHO-BP1-OUT	ECHO-BP2-IN	ECHO-BP2-OUT	ECHO-BP3-IN	ECHO-BP3-OUT	ECHO-FLT1-IN	ECHO-FLT1-OUT
Conventionals	3* + 1REP	3*	3*+ 1REP	3* + 1REP	2	2	2	2
Metals	3* + 1REP	3*	3*+ 1REP	3* + 1REP	2	2	2	2
PAHs	3* + 1REP	3*	3	3 + 1REP	2	2	2	2
PCBs	3*	3*	2	2 + 1REP	2	2	2	2
Dx	2* + 1REP	2*	2	2 + 1REP	1	1	1	1

* = an additional sample was collected and analyzed during Q3/4 2015.
1REP = one field replicate was collected and analyzed

Observations at the detention tank system (DTS) outlet revealed the flow control structure at this site generates pulsing flows during storm events. The flow meters purchased for this project were unable to correctly measure flow under these conditions. As a result, it was decided that the effort necessary to sufficiently evaluate flow at this site would be costly, while the information gained would be only moderately useful. Due to this issue, evaluating the effectiveness of the flow control structure has been dropped from the project goals. However, flow will still be monitored at the DTS inlet, which will provide additional information about the relative intensity of sampled storms, while requiring minimal maintenance effort. Water quality samples will still be collected during five storms, but will be time-weighted rather than flow-weighted. These challenges were discussed between the King County Project Manager (Carly Greyell), RSMP Coordinator (Brandi Lubliner),

and the RSMP Liaison (Fred Bergdolt). Email conversations between Carly Greyell and Brandi Lubliner document these decisions.

The stormwater treatment features north of 192nd Street are now on-line, and it was confirmed with the City of Shoreline and the construction project's design engineer that the proposed sampling methods should work at these sites. However, samples have not yet been collected due to spotty rainfall. Sampels were collected from the DTS during one storm; however, analytical data are not yet available.

Table 2. Site Visit Log (Q1/Q2 2016)

Date	Personnel	Changed battery	Changed desiccant	Zeroed total flow	Downloaded data	Notes
01/21/2016	CB, CG, SH, HF					Storm sampling at bioretention planter boxes (BPB) 1 (CB & CG) and 2 (SH & HF).
01/28/2016	CB	X	X	X	X	Changed battery and downloaded data at all three flow meters.
3/1/2016	CB, SH, CG, DH					Storm sampling at BPB 1, 2, 3 and Filterra 1.
3/9/2016	CB, SH, JP, CG					Storm sampling at BPB 1, 2, 3, & Filterra 1
3/23/2016	CB					Removed Bubbler flow meters from detention tank system (DTS) Inlet/Outlet. Cleaned out BPB inlets.
3/29/2016	CB, CG					Recon to look at BPB 4 and Filterra 2. Met with City of Shoreline construction crew.
6/15/2016	CB, DH	X	X	X		Batter change at area velocity meter (AVM) inlet only. Cleaned out BPB inlets.
6/23/2016	CB	X				AVM battery changed Installed auto samplers at DTS for overnight storm sampling
6/24/2016	CB				X	Picked up auto samplers from DTS. Downloaded AVM data.

CB = Christopher Barnes (KCEL)
HF = Houston Flores (KCEL)
DH = Dan Hutchens (KCEL)
SH = Stephanie Hess (KCEL)
JP = Jean Power (KCEL)
CG = Carly Greyell (King County, Project Manager)

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/12/2016 7:45	0
1/12/2016 8:00	0
1/12/2016 8:15	0
1/12/2016 8:30	0
1/12/2016 8:45	0
1/12/2016 9:00	0
1/12/2016 9:15	0
1/12/2016 9:30	0
1/12/2016 9:45	0
1/12/2016 10:00	0
1/12/2016 10:15	0.004
1/12/2016 10:30	0.006
1/12/2016 10:45	0
1/12/2016 11:00	0
1/12/2016 11:15	0
1/12/2016 11:30	0
1/12/2016 11:45	0
1/12/2016 12:00	0
1/12/2016 12:15	0
1/12/2016 12:30	0
1/12/2016 12:45	0
1/12/2016 13:00	0
1/12/2016 13:15	0
1/12/2016 13:30	0
1/12/2016 13:45	0.007
1/12/2016 14:00	0.024
1/12/2016 14:15	0.011
1/12/2016 14:30	0.002
1/12/2016 14:45	0
1/12/2016 15:00	0
1/12/2016 15:15	0
1/12/2016 15:30	0
1/12/2016 15:45	0
1/12/2016 16:00	0.008
1/12/2016 16:15	0.104
1/12/2016 16:30	0.242
1/12/2016 16:45	0.306
1/12/2016 17:00	0.205
1/12/2016 17:15	0.612
1/12/2016 17:30	1.372
1/12/2016 17:45	1.1
1/12/2016 18:00	2.071
1/12/2016 18:15	3.59
1/12/2016 18:30	4.797
1/12/2016 18:45	4.837
1/12/2016 19:00	4.149
1/12/2016 19:15	3.14
1/12/2016 19:30	2.46
1/12/2016 19:45	1.793
1/12/2016 20:00	1.256
1/12/2016 20:15	0.924
1/12/2016 20:30	0.747
1/12/2016 20:45	0.469

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/12/2016 21:00	0.293
1/12/2016 21:15	0.151
1/12/2016 21:30	0.181
1/12/2016 21:45	0.039
1/12/2016 22:00	0
1/12/2016 22:15	0.001
1/12/2016 22:30	0.003
1/12/2016 22:45	0
1/12/2016 23:00	0
1/12/2016 23:15	0
1/12/2016 23:30	0
1/12/2016 23:45	0
1/13/2016 0:00	0
1/13/2016 0:15	0
1/13/2016 0:30	0
1/13/2016 0:45	0
1/13/2016 1:00	0
1/13/2016 1:15	0
1/13/2016 1:30	0
1/13/2016 1:45	0
1/13/2016 2:00	0
1/13/2016 2:15	0
1/13/2016 2:30	0
1/13/2016 2:45	0
1/13/2016 3:00	0
1/13/2016 3:15	0
1/13/2016 3:30	0
1/13/2016 3:45	0
1/13/2016 4:00	0
1/13/2016 4:15	0
1/13/2016 4:30	0
1/13/2016 4:45	0
1/13/2016 5:00	0
1/13/2016 5:15	0
1/13/2016 5:30	0
1/13/2016 5:45	0
1/13/2016 6:00	0
1/13/2016 6:15	0.238
1/13/2016 6:30	1.752
1/13/2016 6:45	2.432
1/13/2016 7:00	2.016
1/13/2016 7:15	1.053
1/13/2016 7:30	0.66
1/13/2016 7:45	0.407
1/13/2016 8:00	0.519
1/13/2016 8:15	0.701
1/13/2016 8:30	0.832
1/13/2016 8:45	0.752
1/13/2016 9:00	0.139
1/13/2016 9:15	0.001
1/13/2016 9:30	0
1/13/2016 9:45	0
1/13/2016 10:00	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/13/2016 10:15	0.022
1/13/2016 10:30	0.047
1/13/2016 10:45	0
1/13/2016 11:00	0
1/13/2016 11:15	0
1/13/2016 11:30	0
1/13/2016 11:45	0
1/13/2016 12:00	0
1/13/2016 12:15	0
1/13/2016 12:30	0
1/13/2016 12:45	0
1/13/2016 13:00	0
1/13/2016 13:15	0
1/13/2016 13:30	0
1/13/2016 13:45	0
1/13/2016 14:00	0
1/13/2016 14:15	0
1/13/2016 14:30	0
1/13/2016 14:45	0
1/13/2016 15:00	0
1/13/2016 15:15	0
1/13/2016 15:30	0
1/13/2016 15:45	0
1/13/2016 16:00	0
1/13/2016 16:15	0
1/13/2016 16:30	0
1/13/2016 16:45	0
1/13/2016 17:00	0
1/13/2016 17:15	0
1/13/2016 17:30	0
1/13/2016 17:45	0
1/13/2016 18:00	0
1/13/2016 18:15	0
1/13/2016 18:30	0
1/13/2016 18:45	0
1/13/2016 19:00	0
1/13/2016 19:15	0
1/13/2016 19:30	0
1/13/2016 19:45	0
1/13/2016 20:00	0
1/13/2016 20:15	0
1/13/2016 20:30	0
1/13/2016 20:45	0
1/13/2016 21:00	0
1/13/2016 21:15	0
1/13/2016 21:30	0
1/13/2016 21:45	0
1/13/2016 22:00	0
1/13/2016 22:15	0
1/13/2016 22:30	0
1/13/2016 22:45	0
1/13/2016 23:00	0
1/13/2016 23:15	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/13/2016 23:30	0
1/13/2016 23:45	0
1/14/2016 0:00	0
1/14/2016 0:15	0
1/14/2016 0:30	0
1/14/2016 0:45	0
1/14/2016 1:00	0
1/14/2016 1:15	0
1/14/2016 1:30	0
1/14/2016 1:45	0
1/14/2016 2:00	0
1/14/2016 2:15	0
1/14/2016 2:30	0
1/14/2016 2:45	0
1/14/2016 3:00	0
1/14/2016 3:15	0
1/14/2016 3:30	0
1/14/2016 3:45	0
1/14/2016 4:00	0
1/14/2016 4:15	0
1/14/2016 4:30	0
1/14/2016 4:45	0
1/14/2016 5:00	0
1/14/2016 5:15	0
1/14/2016 5:30	0
1/14/2016 5:45	0
1/14/2016 6:00	0
1/14/2016 6:15	0
1/14/2016 6:30	0
1/14/2016 6:45	0
1/14/2016 7:00	0
1/14/2016 7:15	0
1/14/2016 7:30	0
1/14/2016 7:45	0
1/14/2016 8:00	0
1/14/2016 8:15	0
1/14/2016 8:30	0
1/14/2016 8:45	0
1/14/2016 9:00	0
1/14/2016 9:15	0
1/14/2016 9:30	0
1/14/2016 9:45	0
1/14/2016 10:00	0
1/14/2016 10:15	0
1/14/2016 10:30	0
1/14/2016 10:45	0
1/14/2016 11:00	0
1/14/2016 11:15	0
1/14/2016 11:30	0
1/14/2016 11:45	0
1/14/2016 12:00	0
1/14/2016 12:15	0
1/14/2016 12:30	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/14/2016 12:45	0
1/14/2016 13:00	0
1/14/2016 13:15	0
1/14/2016 13:30	0
1/14/2016 13:45	0
1/14/2016 14:00	0
1/14/2016 14:15	0
1/14/2016 14:30	0
1/14/2016 14:45	0
1/14/2016 15:00	0
1/14/2016 15:15	0
1/14/2016 15:30	0
1/14/2016 15:45	0
1/14/2016 16:00	0
1/14/2016 16:15	0
1/14/2016 16:30	0
1/14/2016 16:45	0
1/14/2016 17:00	0
1/14/2016 17:15	0
1/14/2016 17:30	0
1/14/2016 17:45	0
1/14/2016 18:00	0
1/14/2016 18:15	0
1/14/2016 18:30	0
1/14/2016 18:45	0
1/14/2016 19:00	0
1/14/2016 19:15	0
1/14/2016 19:30	0
1/14/2016 19:45	0
1/14/2016 20:00	0
1/14/2016 20:15	0
1/14/2016 20:30	0
1/14/2016 20:45	0
1/14/2016 21:00	0
1/14/2016 21:15	0
1/14/2016 21:30	0
1/14/2016 21:45	0
1/14/2016 22:00	0
1/14/2016 22:15	0
1/14/2016 22:30	0
1/14/2016 22:45	0
1/14/2016 23:00	0
1/14/2016 23:15	0
1/14/2016 23:30	0
1/14/2016 23:45	0
1/15/2016 0:00	0
1/15/2016 0:15	0
1/15/2016 0:30	0
1/15/2016 0:45	0
1/15/2016 1:00	0
1/15/2016 1:15	0
1/15/2016 1:30	0
1/15/2016 1:45	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/15/2016 2:00	0
1/15/2016 2:15	0
1/15/2016 2:30	0
1/15/2016 2:45	0
1/15/2016 3:00	0
1/15/2016 3:15	0
1/15/2016 3:30	0
1/15/2016 3:45	0
1/15/2016 4:00	0
1/15/2016 4:15	0
1/15/2016 4:30	0
1/15/2016 4:45	0
1/15/2016 5:00	0
1/15/2016 5:15	0
1/15/2016 5:30	0
1/15/2016 5:45	0
1/15/2016 6:00	0
1/15/2016 6:15	0
1/15/2016 6:30	0
1/15/2016 6:45	0
1/15/2016 7:00	0
1/15/2016 7:15	0
1/15/2016 7:30	0
1/15/2016 7:45	0
1/15/2016 8:00	0
1/15/2016 8:15	0
1/15/2016 8:30	0
1/15/2016 8:45	0
1/15/2016 9:00	0
1/15/2016 9:15	0
1/15/2016 9:30	0
1/15/2016 9:45	0
1/15/2016 10:00	0
1/15/2016 10:15	0
1/15/2016 10:30	0
1/15/2016 10:45	0
1/15/2016 11:00	0
1/15/2016 11:15	0
1/15/2016 11:30	0
1/15/2016 11:45	0
1/15/2016 12:00	0
1/15/2016 12:15	0
1/15/2016 12:30	0
1/15/2016 12:45	0
1/15/2016 13:00	0
1/15/2016 13:15	0
1/15/2016 13:30	0
1/15/2016 13:45	0
1/15/2016 14:00	0
1/15/2016 14:15	0
1/15/2016 14:30	0
1/15/2016 14:45	0
1/15/2016 15:00	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/15/2016 15:15	0
1/15/2016 15:30	0
1/15/2016 15:45	0
1/15/2016 16:00	0
1/15/2016 16:15	0
1/15/2016 16:30	0
1/15/2016 16:45	0
1/15/2016 17:00	0
1/15/2016 17:15	0
1/15/2016 17:30	0
1/15/2016 17:45	0
1/15/2016 18:00	0
1/15/2016 18:15	0
1/15/2016 18:30	0
1/15/2016 18:45	0
1/15/2016 19:00	0
1/15/2016 19:15	0
1/15/2016 19:30	0
1/15/2016 19:45	0
1/15/2016 20:00	0
1/15/2016 20:15	0
1/15/2016 20:30	0
1/15/2016 20:45	0
1/15/2016 21:00	0
1/15/2016 21:15	0
1/15/2016 21:30	0
1/15/2016 21:45	0
1/15/2016 22:00	0
1/15/2016 22:15	0
1/15/2016 22:30	0
1/15/2016 22:45	0
1/15/2016 23:00	0
1/15/2016 23:15	0
1/15/2016 23:30	0
1/15/2016 23:45	0
1/16/2016 0:00	0
1/16/2016 0:15	0
1/16/2016 0:30	0
1/16/2016 0:45	0
1/16/2016 1:00	0
1/16/2016 1:15	0
1/16/2016 1:30	0
1/16/2016 1:45	0
1/16/2016 2:00	0
1/16/2016 2:15	0
1/16/2016 2:30	0
1/16/2016 2:45	0
1/16/2016 3:00	0
1/16/2016 3:15	0
1/16/2016 3:30	0
1/16/2016 3:45	0
1/16/2016 4:00	0
1/16/2016 4:15	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/16/2016 4:30	0
1/16/2016 4:45	0
1/16/2016 5:00	0
1/16/2016 5:15	0
1/16/2016 5:30	0.029
1/16/2016 5:45	0.548
1/16/2016 6:00	1.493
1/16/2016 6:15	1.398
1/16/2016 6:30	2.005
1/16/2016 6:45	2.091
1/16/2016 7:00	2.415
1/16/2016 7:15	2.372
1/16/2016 7:30	2.451
1/16/2016 7:45	2.522
1/16/2016 8:00	1.872
1/16/2016 8:15	0.786
1/16/2016 8:30	0.212
1/16/2016 8:45	0.042
1/16/2016 9:00	0
1/16/2016 9:15	0
1/16/2016 9:30	0
1/16/2016 9:45	0
1/16/2016 10:00	0
1/16/2016 10:15	0
1/16/2016 10:30	0
1/16/2016 10:45	0
1/16/2016 11:00	0
1/16/2016 11:15	0
1/16/2016 11:30	0
1/16/2016 11:45	0
1/16/2016 12:00	0
1/16/2016 12:15	0
1/16/2016 12:30	0
1/16/2016 12:45	0
1/16/2016 13:00	0
1/16/2016 13:15	0
1/16/2016 13:30	0
1/16/2016 13:45	0
1/16/2016 14:00	0.03
1/16/2016 14:15	0.28
1/16/2016 14:30	0.352
1/16/2016 14:45	0.209
1/16/2016 15:00	0.618
1/16/2016 15:15	2.597
1/16/2016 15:30	4.66
1/16/2016 15:45	4.084
1/16/2016 16:00	1.009
1/16/2016 16:15	0
1/16/2016 16:30	0
1/16/2016 16:45	0
1/16/2016 17:00	0
1/16/2016 17:15	0
1/16/2016 17:30	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/16/2016 17:45	0
1/16/2016 18:00	0
1/16/2016 18:15	0
1/16/2016 18:30	0
1/16/2016 18:45	0
1/16/2016 19:00	0
1/16/2016 19:15	0
1/16/2016 19:30	0
1/16/2016 19:45	0
1/16/2016 20:00	0
1/16/2016 20:15	0
1/16/2016 20:30	0
1/16/2016 20:45	0
1/16/2016 21:00	0
1/16/2016 21:15	0
1/16/2016 21:30	0
1/16/2016 21:45	0
1/16/2016 22:00	0
1/16/2016 22:15	0
1/16/2016 22:30	0
1/16/2016 22:45	0
1/16/2016 23:00	0
1/16/2016 23:15	0
1/16/2016 23:30	0
1/16/2016 23:45	0
1/17/2016 0:00	0
1/17/2016 0:15	0
1/17/2016 0:30	0
1/17/2016 0:45	0
1/17/2016 1:00	0
1/17/2016 1:15	0
1/17/2016 1:30	0
1/17/2016 1:45	0
1/17/2016 2:00	0
1/17/2016 2:15	0
1/17/2016 2:30	0
1/17/2016 2:45	0
1/17/2016 3:00	0
1/17/2016 3:15	0
1/17/2016 3:30	0
1/17/2016 3:45	0
1/17/2016 4:00	0
1/17/2016 4:15	0
1/17/2016 4:30	0
1/17/2016 4:45	0
1/17/2016 5:00	0
1/17/2016 5:15	0
1/17/2016 5:30	0
1/17/2016 5:45	0
1/17/2016 6:00	0
1/17/2016 6:15	0
1/17/2016 6:30	0
1/17/2016 6:45	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/17/2016 7:00	0
1/17/2016 7:15	0.059
1/17/2016 7:30	0.571
1/17/2016 7:45	0.667
1/17/2016 8:00	0.705
1/17/2016 8:15	1.008
1/17/2016 8:30	0.845
1/17/2016 8:45	1.048
1/17/2016 9:00	2.093
1/17/2016 9:15	1.957
1/17/2016 9:30	1.091
1/17/2016 9:45	0.293
1/17/2016 10:00	0.032
1/17/2016 10:15	0.054
1/17/2016 10:30	0.1
1/17/2016 10:45	0.007
1/17/2016 11:00	0
1/17/2016 11:15	0
1/17/2016 11:30	0
1/17/2016 11:45	0
1/17/2016 12:00	0
1/17/2016 12:15	0
1/17/2016 12:30	0
1/17/2016 12:45	0
1/17/2016 13:00	0
1/17/2016 13:15	0
1/17/2016 13:30	0
1/17/2016 13:45	0
1/17/2016 14:00	0
1/17/2016 14:15	0
1/17/2016 14:30	0.358
1/17/2016 14:45	1.441
1/17/2016 15:00	0.51
1/17/2016 15:15	0.056
1/17/2016 15:30	0
1/17/2016 15:45	0
1/17/2016 16:00	0
1/17/2016 16:15	0
1/17/2016 16:30	0
1/17/2016 16:45	0
1/17/2016 17:00	0
1/17/2016 17:15	0
1/17/2016 17:30	0
1/17/2016 17:45	0
1/17/2016 18:00	0
1/17/2016 18:15	0.002
1/17/2016 18:30	0.136
1/17/2016 18:45	0.089
1/17/2016 19:00	0
1/17/2016 19:15	0
1/17/2016 19:30	0
1/17/2016 19:45	0
1/17/2016 20:00	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/17/2016 20:15	0
1/17/2016 20:30	0
1/17/2016 20:45	0
1/17/2016 21:00	0
1/17/2016 21:15	0
1/17/2016 21:30	0
1/17/2016 21:45	0
1/17/2016 22:00	0
1/17/2016 22:15	0
1/17/2016 22:30	0
1/17/2016 22:45	0
1/17/2016 23:00	0
1/17/2016 23:15	0.153
1/17/2016 23:30	0.106
1/17/2016 23:45	0.361
1/18/2016 0:00	3.161
1/18/2016 0:15	8.227
1/18/2016 0:30	5.453
1/18/2016 0:45	2.149
1/18/2016 1:00	0.645
1/18/2016 1:15	0.05
1/18/2016 1:30	0
1/18/2016 1:45	0
1/18/2016 2:00	0
1/18/2016 2:15	0
1/18/2016 2:30	0
1/18/2016 2:45	0
1/18/2016 3:00	0
1/18/2016 3:15	0
1/18/2016 3:30	0
1/18/2016 3:45	0
1/18/2016 4:00	0
1/18/2016 4:15	0
1/18/2016 4:30	0
1/18/2016 4:45	0
1/18/2016 5:00	0
1/18/2016 5:15	0
1/18/2016 5:30	0
1/18/2016 5:45	0
1/18/2016 6:00	0
1/18/2016 6:15	0
1/18/2016 6:30	0
1/18/2016 6:45	0
1/18/2016 7:00	0
1/18/2016 7:15	0
1/18/2016 7:30	0
1/18/2016 7:45	0
1/18/2016 8:00	0
1/18/2016 8:15	0
1/18/2016 8:30	0
1/18/2016 8:45	0
1/18/2016 9:00	0
1/18/2016 9:15	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
1/18/2016 9:30	0
1/18/2016 9:45	0
1/18/2016 10:00	0
1/18/2016 10:15	0
1/18/2016 10:30	0
1/18/2016 10:45	0
1/18/2016 11:00	0
1/18/2016 11:15	0
1/18/2016 11:30	0
1/18/2016 11:45	0
1/18/2016 12:00	0
1/18/2016 12:15	0
1/18/2016 12:30	0
1/18/2016 12:45	0
1/18/2016 13:00	0
1/18/2016 13:30	0
1/28/2016 9:00	0

Working through flow meter issues at outlet, as described previously. Did not restart flow monitoring until mid-June.

6/17/2016 13:15	0
6/17/2016 13:30	0
6/17/2016 13:45	0
6/17/2016 14:00	0
6/17/2016 14:15	0
6/17/2016 14:30	0
6/17/2016 14:45	0
6/17/2016 15:00	0
6/17/2016 15:15	0
6/17/2016 15:30	0
6/17/2016 15:45	0
6/17/2016 16:00	0
6/17/2016 16:15	0
6/17/2016 16:30	0
6/17/2016 16:45	0
6/17/2016 17:00	0
6/17/2016 17:15	0
6/17/2016 17:30	0
6/17/2016 17:45	0
6/17/2016 18:00	0
6/17/2016 18:15	0
6/17/2016 18:30	0
6/17/2016 18:45	0
6/17/2016 19:00	0
6/17/2016 19:15	0
6/17/2016 19:30	0
6/17/2016 19:45	0
6/17/2016 20:00	0
6/17/2016 20:15	0
6/17/2016 20:30	0
6/17/2016 20:45	0
6/17/2016 21:00	0
6/17/2016 21:15	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/17/2016 21:30	0
6/17/2016 21:45	0
6/17/2016 22:00	0
6/17/2016 22:15	0
6/17/2016 22:30	0
6/17/2016 22:45	0
6/17/2016 23:00	0.086
6/17/2016 23:15	0.458
6/17/2016 23:30	0.686
6/17/2016 23:45	0.836
6/18/2016 0:00	0.421
6/18/2016 0:15	0.357
6/18/2016 0:30	1.07
6/18/2016 0:45	2.253
6/18/2016 1:00	1.764
6/18/2016 1:15	0.642
6/18/2016 1:30	0.717
6/18/2016 1:45	0.959
6/18/2016 2:00	0.901
6/18/2016 2:15	1.147
6/18/2016 2:30	1.814
6/18/2016 2:45	3.075
6/18/2016 3:00	2.399
6/18/2016 3:15	1.269
6/18/2016 3:30	0.227
6/18/2016 3:45	0.076
6/18/2016 4:00	0.031
6/18/2016 4:15	0.008
6/18/2016 4:30	0
6/18/2016 4:45	0
6/18/2016 5:00	0
6/18/2016 5:15	0
6/18/2016 5:30	0
6/18/2016 5:45	0
6/18/2016 6:00	0
6/18/2016 6:15	0
6/18/2016 6:30	0
6/18/2016 6:45	0
6/18/2016 7:00	0
6/18/2016 7:15	0.018
6/18/2016 7:30	0.022
6/18/2016 7:45	0.001
6/18/2016 8:00	0
6/18/2016 8:15	0
6/18/2016 8:30	0
6/18/2016 8:45	0
6/18/2016 9:00	0
6/18/2016 9:15	0
6/18/2016 9:30	0
6/18/2016 9:45	0
6/18/2016 10:00	0
6/18/2016 10:15	0
6/18/2016 10:30	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/18/2016 10:45	0
6/18/2016 11:00	0
6/18/2016 11:15	0
6/18/2016 11:30	0
6/18/2016 11:45	0
6/18/2016 12:00	0
6/18/2016 12:15	0
6/18/2016 12:30	0
6/18/2016 12:45	0
6/18/2016 13:00	0
6/18/2016 13:15	0
6/18/2016 13:30	0
6/18/2016 13:45	0
6/18/2016 14:00	0
6/18/2016 14:15	0
6/18/2016 14:30	0
6/18/2016 14:45	2.399
6/18/2016 15:00	8.424
6/18/2016 15:15	12.458
6/18/2016 15:30	4.872
6/18/2016 15:45	2.123
6/18/2016 16:00	0.636
6/18/2016 16:15	0.014
6/18/2016 16:30	0
6/18/2016 16:45	0
6/18/2016 17:00	0
6/18/2016 17:15	0.814
6/18/2016 17:30	2.848
6/18/2016 17:45	2.638
6/18/2016 18:00	2.643
6/18/2016 18:15	0.649
6/18/2016 18:30	0.001
6/18/2016 18:45	0
6/18/2016 19:00	0
6/18/2016 19:15	0
6/18/2016 19:30	0
6/18/2016 19:45	0
6/18/2016 20:00	0
6/18/2016 20:15	0
6/18/2016 20:30	0
6/18/2016 20:45	0
6/18/2016 21:00	0
6/18/2016 21:15	0
6/18/2016 21:30	0
6/18/2016 21:45	0
6/18/2016 22:00	0
6/18/2016 22:15	0
6/18/2016 22:30	0
6/18/2016 22:45	0
6/18/2016 23:00	0
6/18/2016 23:15	0
6/18/2016 23:30	0
6/18/2016 23:45	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/19/2016 0:00	0
6/19/2016 0:15	0
6/19/2016 0:30	0
6/19/2016 0:45	0
6/19/2016 1:00	0
6/19/2016 1:15	0
6/19/2016 1:30	0
6/19/2016 1:45	0
6/19/2016 2:00	0
6/19/2016 2:15	0
6/19/2016 2:30	0
6/19/2016 2:45	0
6/19/2016 3:00	0
6/19/2016 3:15	0
6/19/2016 3:30	0
6/19/2016 3:45	0
6/19/2016 4:00	0
6/19/2016 4:15	0
6/19/2016 4:30	0
6/19/2016 4:45	0
6/19/2016 5:00	0
6/19/2016 5:15	0
6/19/2016 5:30	0
6/19/2016 5:45	0
6/19/2016 6:00	0
6/19/2016 6:15	0
6/19/2016 6:30	0
6/19/2016 6:45	0
6/19/2016 7:00	0
6/19/2016 7:15	0
6/19/2016 7:30	0
6/19/2016 7:45	0
6/19/2016 8:00	0
6/19/2016 8:15	0
6/19/2016 8:30	0
6/19/2016 8:45	0
6/19/2016 9:00	0
6/19/2016 9:15	0
6/19/2016 9:30	0
6/19/2016 9:45	0
6/19/2016 10:00	0
6/19/2016 10:15	0
6/19/2016 10:30	0
6/19/2016 10:45	0
6/19/2016 11:00	0
6/19/2016 11:15	0
6/19/2016 11:30	0
6/19/2016 11:45	0
6/19/2016 12:00	0
6/19/2016 12:15	0
6/19/2016 12:30	0
6/19/2016 12:45	0
6/19/2016 13:00	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/19/2016 13:15	0
6/19/2016 13:30	0
6/19/2016 13:45	0
6/19/2016 14:00	0
6/19/2016 14:15	0
6/19/2016 14:30	0
6/19/2016 14:45	0
6/19/2016 15:00	0
6/19/2016 15:15	0
6/19/2016 15:30	0
6/19/2016 15:45	0
6/19/2016 16:00	0
6/19/2016 16:15	0
6/19/2016 16:30	0
6/19/2016 16:45	0
6/19/2016 17:00	0
6/19/2016 17:15	0
6/19/2016 17:30	0
6/19/2016 17:45	0
6/19/2016 18:00	0
6/19/2016 18:15	0
6/19/2016 18:30	0
6/19/2016 18:45	0
6/19/2016 19:00	0
6/19/2016 19:15	0
6/19/2016 19:30	0
6/19/2016 19:45	0
6/19/2016 20:00	0
6/19/2016 20:15	0
6/19/2016 20:30	0
6/19/2016 20:45	0
6/19/2016 21:00	0
6/19/2016 21:15	0
6/19/2016 21:30	0
6/19/2016 21:45	0
6/19/2016 22:00	0
6/19/2016 22:15	0
6/19/2016 22:30	0
6/19/2016 22:45	0
6/19/2016 23:00	0
6/19/2016 23:15	0
6/19/2016 23:30	0
6/19/2016 23:45	0
6/20/2016 0:00	0
6/20/2016 0:15	0
6/20/2016 0:30	0
6/20/2016 0:45	0
6/20/2016 1:00	0
6/20/2016 1:15	0
6/20/2016 1:30	0
6/20/2016 1:45	0
6/20/2016 2:00	0
6/20/2016 2:15	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/20/2016 2:30	0
6/20/2016 2:45	0
6/20/2016 3:00	0
6/20/2016 3:15	0
6/20/2016 3:30	0
6/20/2016 3:45	0
6/20/2016 4:00	0
6/20/2016 4:15	0
6/20/2016 4:30	0
6/20/2016 4:45	0
6/20/2016 5:00	0
6/20/2016 5:15	0
6/20/2016 5:30	0
6/20/2016 5:45	0
6/20/2016 6:00	0
6/20/2016 6:15	0
6/20/2016 6:30	0
6/20/2016 6:45	0
6/20/2016 7:00	0
6/20/2016 7:15	0
6/20/2016 7:30	0
6/20/2016 7:45	0
6/20/2016 8:00	0
6/20/2016 8:15	0
6/20/2016 8:30	0
6/20/2016 8:45	0
6/20/2016 9:00	0
6/20/2016 9:15	0
6/20/2016 9:30	0
6/20/2016 9:45	0
6/20/2016 10:00	0
6/20/2016 10:15	0
6/20/2016 10:30	0
6/20/2016 10:45	0
6/20/2016 11:00	0
6/20/2016 11:15	0
6/20/2016 11:30	0
6/20/2016 11:45	0
6/20/2016 12:00	0
6/20/2016 12:15	0
6/20/2016 12:30	0
6/20/2016 12:45	0
6/20/2016 13:00	0
6/20/2016 13:15	0
6/20/2016 13:30	0
6/20/2016 13:45	0
6/20/2016 14:00	0
6/20/2016 14:15	0
6/20/2016 14:30	0
6/20/2016 14:45	0
6/20/2016 15:00	0
6/20/2016 15:15	0
6/20/2016 15:30	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/20/2016 15:45	0
6/20/2016 16:00	0
6/20/2016 16:15	0
6/20/2016 16:30	0
6/20/2016 16:45	0
6/20/2016 17:00	0
6/20/2016 17:15	0
6/20/2016 17:30	0
6/20/2016 17:45	0
6/20/2016 18:00	0
6/20/2016 18:15	0
6/20/2016 18:30	0
6/20/2016 18:45	0
6/20/2016 19:00	0
6/20/2016 19:15	0
6/20/2016 19:30	0
6/20/2016 19:45	0
6/20/2016 20:00	0
6/20/2016 20:15	0
6/20/2016 20:30	0
6/20/2016 20:45	0
6/20/2016 21:00	0
6/20/2016 21:15	0
6/20/2016 21:30	0
6/20/2016 21:45	0
6/20/2016 22:00	0
6/20/2016 22:15	0
6/20/2016 22:30	0
6/20/2016 22:45	0
6/20/2016 23:00	0
6/20/2016 23:15	0
6/20/2016 23:30	0
6/20/2016 23:45	1.734
6/21/2016 0:00	1.244
6/21/2016 0:15	0.076
6/21/2016 0:30	0
6/21/2016 0:45	0
6/21/2016 1:00	0
6/21/2016 1:15	0
6/21/2016 1:30	0
6/21/2016 1:45	0
6/21/2016 2:00	0
6/21/2016 2:15	0
6/21/2016 2:30	0
6/21/2016 2:45	0
6/21/2016 3:00	0
6/21/2016 3:15	0
6/21/2016 3:30	0
6/21/2016 3:45	0
6/21/2016 4:00	0
6/21/2016 4:15	0
6/21/2016 4:30	0
6/21/2016 4:45	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/21/2016 5:00	0
6/21/2016 5:15	0
6/21/2016 5:30	0
6/21/2016 5:45	0
6/21/2016 6:00	0
6/21/2016 6:15	0
6/21/2016 6:30	0
6/21/2016 6:45	0
6/21/2016 7:00	0
6/21/2016 7:15	0
6/21/2016 7:30	0
6/21/2016 7:45	0
6/21/2016 8:00	0
6/21/2016 8:15	0
6/21/2016 8:30	0
6/21/2016 8:45	0
6/21/2016 9:00	0
6/21/2016 9:15	0
6/21/2016 9:30	0
6/21/2016 9:45	0
6/21/2016 10:00	0
6/21/2016 10:15	0
6/21/2016 10:30	0
6/21/2016 10:45	0
6/21/2016 11:00	0
6/21/2016 11:15	0
6/21/2016 11:30	0
6/21/2016 11:45	0
6/21/2016 12:00	0
6/21/2016 12:15	0
6/21/2016 12:30	0
6/21/2016 12:45	0
6/21/2016 13:00	0
6/21/2016 13:15	0
6/21/2016 13:30	0
6/21/2016 13:45	0
6/21/2016 14:00	0
6/21/2016 14:15	0
6/21/2016 14:30	0
6/21/2016 14:45	0
6/21/2016 15:00	0
6/21/2016 15:15	0
6/21/2016 15:30	0
6/21/2016 15:45	0
6/21/2016 16:00	0
6/21/2016 16:15	0
6/21/2016 16:30	0
6/21/2016 16:45	0
6/21/2016 17:00	0
6/21/2016 17:15	0
6/21/2016 17:30	0
6/21/2016 17:45	0
6/21/2016 18:00	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/21/2016 18:15	0
6/21/2016 18:30	0
6/21/2016 18:45	0
6/21/2016 19:00	0
6/21/2016 19:15	0
6/21/2016 19:30	0
6/21/2016 19:45	0
6/21/2016 20:00	0
6/21/2016 20:15	0
6/21/2016 20:30	0
6/21/2016 20:45	0
6/21/2016 21:00	0
6/21/2016 21:15	0
6/21/2016 21:30	0
6/21/2016 21:45	0
6/21/2016 22:00	0
6/21/2016 22:15	0
6/21/2016 22:30	0
6/21/2016 22:45	0
6/21/2016 23:00	0
6/21/2016 23:15	0
6/21/2016 23:30	0
6/21/2016 23:45	0
6/22/2016 0:00	0
6/22/2016 0:15	0
6/22/2016 0:30	0
6/22/2016 0:45	0
6/22/2016 1:00	0
6/22/2016 1:15	0
6/22/2016 1:30	0
6/22/2016 1:45	0
6/22/2016 2:00	0
6/22/2016 2:15	0
6/22/2016 2:30	0
6/22/2016 2:45	0
6/22/2016 3:00	0
6/22/2016 3:15	0
6/22/2016 3:30	0
6/22/2016 3:45	0
6/22/2016 4:00	0
6/22/2016 4:15	0
6/22/2016 4:30	0
6/22/2016 4:45	0
6/22/2016 5:00	0
6/22/2016 5:15	0
6/22/2016 5:30	0
6/22/2016 5:45	0
6/22/2016 6:00	0
6/22/2016 6:15	0
6/22/2016 6:30	0
6/22/2016 6:45	0
6/22/2016 7:00	0
6/22/2016 7:15	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/22/2016 7:30	0
6/22/2016 7:45	0
6/22/2016 8:00	0
6/22/2016 8:15	0
6/22/2016 8:30	0
6/22/2016 8:45	0
6/22/2016 9:00	0
6/22/2016 9:15	0
6/22/2016 9:30	0
6/22/2016 9:45	0
6/22/2016 10:00	0
6/22/2016 10:15	0
6/22/2016 10:30	0
6/22/2016 10:45	0
6/22/2016 11:00	0
6/22/2016 11:15	0
6/22/2016 11:30	0
6/22/2016 11:45	0
6/22/2016 12:00	0
6/22/2016 12:15	0
6/22/2016 12:30	0
6/22/2016 12:45	0
6/22/2016 13:00	0
6/22/2016 13:15	0
6/22/2016 13:30	0
6/22/2016 13:45	0
6/22/2016 14:00	0
6/22/2016 14:15	0
6/22/2016 14:30	0
6/22/2016 14:45	0
6/22/2016 15:00	0
6/22/2016 15:15	0
6/22/2016 15:30	0
6/22/2016 15:45	0
6/22/2016 16:00	0
6/22/2016 16:15	0
6/22/2016 16:30	0
6/22/2016 16:45	0
6/22/2016 17:00	0
6/22/2016 17:15	0
6/22/2016 17:30	0
6/22/2016 17:45	0
6/22/2016 18:00	0
6/22/2016 18:15	0
6/22/2016 18:30	0
6/22/2016 18:45	0
6/22/2016 19:00	0
6/22/2016 19:15	0
6/22/2016 19:30	0
6/22/2016 19:45	0
6/22/2016 20:00	0
6/22/2016 20:15	0
6/22/2016 20:30	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/22/2016 20:45	0
6/22/2016 21:00	0
6/22/2016 21:15	0
6/22/2016 21:30	0
6/22/2016 21:45	0
6/22/2016 22:00	0
6/22/2016 22:15	0
6/22/2016 22:30	0
6/22/2016 22:45	0
6/22/2016 23:00	0
6/22/2016 23:15	0
6/22/2016 23:30	0
6/22/2016 23:45	0
6/23/2016 0:00	0
6/23/2016 0:15	0
6/23/2016 0:30	0
6/23/2016 0:45	0
6/23/2016 1:00	0
6/23/2016 1:15	0
6/23/2016 1:30	0
6/23/2016 1:45	0
6/23/2016 2:00	0
6/23/2016 2:15	0
6/23/2016 2:30	0
6/23/2016 2:45	0
6/23/2016 3:00	0
6/23/2016 3:15	0
6/23/2016 3:30	0
6/23/2016 3:45	0
6/23/2016 4:00	0
6/23/2016 4:15	0
6/23/2016 4:30	0
6/23/2016 4:45	0
6/23/2016 5:00	0
6/23/2016 5:15	0
6/23/2016 5:30	0
6/23/2016 5:45	0
6/23/2016 6:00	0
6/23/2016 6:15	0
6/23/2016 6:30	0
6/23/2016 6:45	0
6/23/2016 7:00	0
6/23/2016 7:15	0
6/23/2016 7:30	0
6/23/2016 7:45	0
6/23/2016 8:00	0
6/23/2016 8:15	0
6/23/2016 8:30	0
6/23/2016 8:45	0
6/23/2016 9:00	0
6/23/2016 9:15	0
6/23/2016 9:30	0
6/23/2016 9:45	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/23/2016 10:00	0
6/23/2016 10:15	0
6/23/2016 10:30	0
6/23/2016 10:45	0
6/23/2016 11:00	0
6/23/2016 11:15	0
6/23/2016 11:30	0
6/23/2016 11:45	0
6/23/2016 12:00	0
6/23/2016 12:15	0
6/23/2016 12:30	0
6/23/2016 12:45	0
6/23/2016 13:00	0
6/23/2016 13:15	0
6/23/2016 13:30	0
6/23/2016 13:45	0
6/23/2016 14:00	0
6/23/2016 14:15	0
6/23/2016 14:30	0
6/23/2016 14:45	0
6/23/2016 15:00	0
6/23/2016 15:15	0
6/23/2016 15:30	0
6/23/2016 15:45	0
6/23/2016 16:00	0
6/23/2016 16:15	0
6/23/2016 16:30	0
6/23/2016 16:45	0
6/23/2016 17:00	0
6/23/2016 17:15	0
6/23/2016 17:30	0
6/23/2016 17:45	0
6/23/2016 18:00	0
6/23/2016 18:15	0
6/23/2016 18:30	0
6/23/2016 18:45	0
6/23/2016 19:00	0
6/23/2016 19:15	0
6/23/2016 19:30	0
6/23/2016 19:45	0
6/23/2016 20:00	0
6/23/2016 20:15	0
6/23/2016 20:30	0
6/23/2016 20:45	0
6/23/2016 21:00	0
6/23/2016 21:15	0
6/23/2016 21:30	0
6/23/2016 21:45	0
6/23/2016 22:00	0
6/23/2016 22:15	0
6/23/2016 22:30	0
6/23/2016 22:45	0.006
6/23/2016 23:00	0

Table 3. Flow Data from Q1/Q2 2016

PRELIMINARY DATA	Flow Rate (cfs)
	Echo DTS-In
Date/Time	Area Velocity
6/23/2016 23:15	0.009
6/23/2016 23:30	0.025
6/23/2016 23:45	0.048
6/24/2016 0:00	0.01
6/24/2016 0:15	0
6/24/2016 0:30	0
6/24/2016 0:45	0
6/24/2016 1:00	0
6/24/2016 1:15	0
6/24/2016 1:30	0
6/24/2016 1:45	0
6/24/2016 2:00	0
6/24/2016 2:15	0
6/24/2016 2:30	0
6/24/2016 2:45	0
6/24/2016 3:00	0
6/24/2016 3:15	0
6/24/2016 3:30	0
6/24/2016 3:45	0
6/24/2016 4:00	0
6/24/2016 4:15	0
6/24/2016 4:30	0
6/24/2016 4:45	0
6/24/2016 5:00	0
6/24/2016 5:15	0
6/24/2016 5:30	0
6/24/2016 5:45	0
6/24/2016 6:00	0
6/24/2016 6:15	0
6/24/2016 6:30	0
6/24/2016 6:45	0
6/24/2016 7:00	0
6/24/2016 7:15	0
6/24/2016 7:30	0
6/24/2016 7:45	0

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 3. 12/8/2015 Samples

	Project:	421879-250					Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-BP1-IN					Locator:	ECHO-BP1-IN				Locator:	ECHO-BP1-OUT			
	Descrip:	RAIN GARDEN #1 - I					Descrip:	RAIN GARDEN #1 - I				Descrip:	RAIN GARDEN #1 - O			
	Sample:	L64379-1					Sample:	L64379-2				Sample:	L64379-3			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	12/8/15 13:43					ColDate:	12/8/15 10:48				ColDate:	12/8/15 14:01			
	TimeSpan:						TimeSpan:					TimeSpan:				
	TotalSolid:						TotalSolid:					TotalSolid:				
	ClientLoc:						ClientLoc:					ClientLoc:				
	SampDepth:						SampDepth:					SampDepth:				
	WET Weight Basis						**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	
CV KEROUEL & AMINOT 1997																
Ammonia Nitrogen						0.132		0.002	0.01	mg/L						
CV SM2540-D																
Total Suspended Solids						57.6		2	4	mg/L						
CV SM4500-N-C																
Total Nitrogen						0.701		0.05	0.1	mg/L						
CV SM4500-NO3-F																
Nitrite + Nitrate Nitrogen						0.0789		0.01	0.04	mg/L						
CV SM4500-P-B,F																
Total Phosphorus						0.0923		0.005	0.01	mg/L						
CV SM4500-P-F																
Orthophosphate Phosphorus						0.00456		0.0005	0.002	mg/L						
CV SM5310-B																
Dissolved Organic Carbon						2.73		0.5	1	mg/L						
Total Organic Carbon						11.5		0.5	1	mg/L						
ES KCEL SOP# 245																
Conductivity, Field						33		0.5	10	umhos/cm						
Dissolved Oxygen, Field						10.3		0.5	1	mg/L						
pH, Field						7.5				pH						
Sample Temperature, Field						11.3				deg C						
ES NONE																
Sample Information	WTPH-DX Grab at BP1-in				none	Aliquot 1 at 1048; Aliquot 2 at 1117; Aliquot 3 at 1317; Aliquot 4 at 1343				none	WTPH-DX Grab at BP1-Out				none	
Turbidity, Field						87		0.5	2	NTU						
MT EPA 200.8*SW846 6020A																
Cadmium, Dissolved, ICP-MS							<MDL	0.05	0.25	ug/L						
Cadmium, Total, ICP-MS						0.096	<RDL	0.05	0.25	ug/L						
Calcium, Total, ICP-MS						5620		50	50	ug/L						
Copper, Dissolved, ICP-MS						4.15		0.2	2	ug/L						
Copper, Total, ICP-MS						27.1		0.2	2	ug/L						
Lead, Dissolved, ICP-MS						0.11	<RDL	0.1	0.5	ug/L						
Lead, Total, ICP-MS						6.43		0.1	0.5	ug/L						
Magnesium, Total, ICP-MS						973		50	50	ug/L						
Zinc, Dissolved, ICP-MS						15		0.5	2.5	ug/L						
Zinc, Total, ICP-MS						89.9		0.5	2.5	ug/L						
MT EPA 200.8/SW846 6020A*SM2340B																
Hardness, Calc						18		0.331	0.331	mg CaCO3/L						
OR SW846 3520C*SW846 8270D SIM																
2-Methylnaphthalene						0.0074	<RDL	0.0047	0.0236	ug/L						
Acenaphthene							<MDL	0.0047	0.0236	ug/L						
Acenaphthylene							<MDL	0.0047	0.0236	ug/L						

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 4. 12/8/2015 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250							
	Locator:	ECHO-BP1-IN					Locator:	ECHO-BP1-IN					Locator:	ECHO-BP1-OUT							
	Descrip:	RAIN GARDEN #1 - I					Descrip:	RAIN GARDEN #1 - I					Descrip:	RAIN GARDEN #1 - O							
	Sample:	L64379-1					Sample:	L64379-2					Sample:	L64379-3							
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR							
	ColDate:	12/8/15 13:43					ColDate:	12/8/15 10:48					ColDate:	12/8/15 14:01							
	TimeSpan:						TimeSpan:						TimeSpan:								
	TotalSolid:						TotalSolid:						TotalSolid:								
	ClientLoc:						ClientLoc:						ClientLoc:								
	SampDepth:						SampDepth:						SampDepth:								
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**								
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**				
Anthracene								<MDL	0.0094	0.0472	ug/L										
Benzo(a)anthracene							0.025	<RDL	0.0094	0.0472	ug/L										
Benzo(a)pyrene							0.029	<RDL	0.0094	0.0472	ug/L										
Benzo(b,j,k)fluoranthene							0.0741		0.0094	0.0472	ug/L										
Benzo(g,h,i)perylene							0.031	<RDL	0.0094	0.0472	ug/L										
Chrysene							0.044	<RDL	0.0094	0.0472	ug/L										
Dibenzo(a,h)anthracene								<MDL	0.0094	0.0472	ug/L										
Fluoranthene							0.111		0.0094	0.0472	ug/L										
Fluorene								<MDL	0.0094	0.0472	ug/L										
Indeno(1,2,3-Cd)Pyrene							0.019	<RDL	0.0094	0.0472	ug/L										
Naphthalene							0.012	<RDL	0.0047	0.0236	ug/L										
Phenanthrene							0.0481		0.0094	0.0472	ug/L										
Pyrene							0.143		0.0094	0.0472	ug/L										
OR WDOE NWTPH-DX																					
Diesel Range (>C12-C24)		<MDL	0.189	0.189	mg/L									<MDL	0.189	0.189	mg/L				
Lube Oil Range (>C24)	0.918		0.189	0.189	mg/L									<MDL	0.189	0.189	mg/L				

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 4. 12/8/2015 Samples

	Project:	421879-250				Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-BP1-OUT				Locator:	ECHO-BP2-IN				Locator:	ECHO-BP2-OUT			
	Descrip:	RAIN GARDEN #1 - O				Descrip:	RAIN GARDEN #2 - I				Descrip:	RAIN GARDEN #2 - O			
	Sample:	L64379-4				Sample:	L64379-6				Sample:	L64379-8			
	Matrix:	LG STORM WTR				Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	12/8/15 11:06				ColDate:	12/8/15 11:57				ColDate:	12/8/15 12:21			
	TimeSpan:					TimeSpan:					TimeSpan:				
	TotalSolid:					TotalSolid:					TotalSolid:				
	ClientLoc:					ClientLoc:					ClientLoc:				
	SampDepth:					SampDepth:					SampDepth:				
	WET Weight Basis					**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997															
Ammonia Nitrogen	0.0085	<RDL	0.002	0.01	mg/L	0.305		0.02	0.1	mg/L	0.0038	<RDL	0.002	0.01	mg/L
CV SM2540-D															
Total Suspended Solids	5.1		0.5	1	mg/L	59.6		2	4	mg/L	1.3		0.5	1	mg/L
CV SM4500-N-C															
Total Nitrogen	0.367		0.05	0.1	mg/L	0.813		0.05	0.1	mg/L	0.794		0.05	0.1	mg/L
CV SM4500-NO3-F															
Nitrite + Nitrate Nitrogen	0.161		0.01	0.04	mg/L	0.0877		0.01	0.04	mg/L	0.396		0.01	0.04	mg/L
CV SM4500-P-B,F															
Total Phosphorus	0.132		0.005	0.01	mg/L	0.0837		0.005	0.01	mg/L	0.387		0.005	0.01	mg/L
CV SM4500-P-F															
Orthophosphate Phosphorus	0.107		0.0005	0.002	mg/L	0.0057	<RDL	0.005	0.02	mg/L	0.316		0.0025	0.01	mg/L
CV SM5310-B															
Dissolved Organic Carbon	2.86		0.5	1	mg/L	1.7		0.5	1	mg/L	4.8		0.5	1	mg/L
Total Organic Carbon	2.48		0.5	1	mg/L	6.76		0.5	1	mg/L	4.05		0.5	1	mg/L
ES KCEL SOP# 245															
Conductivity, Field	38		0.5	10	umhos/cm	38.1		0.5	10	umhos/cm	47.3		0.5	10	umhos/cm
Dissolved Oxygen, Field	10.4		0.5	1	mg/L	10.2		0.5	1	mg/L	10		0.5	1	mg/L
pH, Field	7.28				pH	7.42				pH	7.03				pH
Sample Temperature, Field	10.3				deg C	12.6				deg C	10				deg C
ES NONE															
Sample Information	Aliquot 1 at 1106; Aliquot 2 at 1127; Aliquot 3 at 1331; Aliquot 4 at 1401				none	Aliquot 1 at 1157; Aliquot 2 at 1230				none	Aliquot 1 at 1221; Aliquot 2 at 1243				none
Turbidity, Field	11.2		0.5	2	NTU	45.7		0.5	2	NTU	5.9		0.5	2	NTU
MT EPA 200.8*SW846 6020A															
Cadmium, Dissolved, ICP-MS		<MDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L
Cadmium, Total, ICP-MS	0.084	<RDL	0.05	0.25	ug/L	0.095	<RDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L
Calcium, Total, ICP-MS	5100		50	50	ug/L	5590		50	50	ug/L	6190		50	50	ug/L
Copper, Dissolved, ICP-MS	1.9	<RDL	0.2	2	ug/L	3.12		0.2	2	ug/L	3.08		0.2	2	ug/L
Copper, Total, ICP-MS	3.39		0.2	2	ug/L	25.6		0.2	2	ug/L	5.73		0.2	2	ug/L
Lead, Dissolved, ICP-MS		<MDL	0.1	0.5	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.1	0.5	ug/L
Lead, Total, ICP-MS	1.3		0.1	0.5	ug/L	5.04		0.1	0.5	ug/L	0.41	<RDL	0.1	0.5	ug/L
Magnesium, Total, ICP-MS	688		50	50	ug/L	1030		50	50	ug/L	1350		50	50	ug/L
Zinc, Dissolved, ICP-MS	4.2		0.5	2.5	ug/L	9.99		0.5	2.5	ug/L	2.67		0.5	2.5	ug/L
Zinc, Total, ICP-MS	10.3		0.5	2.5	ug/L	81.7		0.5	2.5	ug/L	5.91		0.5	2.5	ug/L
MT EPA 200.8/SW846 6020A*SM2340B															
Hardness, Calc	15.6		0.331	0.331	mg CaCO3/L	18.2		0.331	0.331	mg CaCO3/L	21		0.331	0.331	mg CaCO3/L
OR SW846 3520C*SW846 8270D SIM															
2-Methylnaphthalene		<MDL	0.0047	0.0236	ug/L	0.01	<RDL	0.0047	0.0236	ug/L		<MDL	0.0047	0.0236	ug/L
Acenaphthene		<MDL	0.0047	0.0236	ug/L		<MDL	0.0047	0.0236	ug/L		<MDL	0.0047	0.0236	ug/L
Acenaphthylene		<MDL	0.0047	0.0236	ug/L		<MDL	0.0047	0.0236	ug/L		<MDL	0.0047	0.0236	ug/L

PRELIMINARY DATA

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Table 4. 12/8/2015 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250			
	Locator:	ECHO-BP1-OUT					Locator:	ECHO-BP2-IN					Locator:	ECHO-BP2-OUT			
	Descrip:	RAIN GARDEN #1 - O					Descrip:	RAIN GARDEN #2 - I					Descrip:	RAIN GARDEN #2 - O			
	Sample:	L64379-4					Sample:	L64379-6					Sample:	L64379-8			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR			
	ColDate:	12/8/15 11:06					ColDate:	12/8/15 11:57					ColDate:	12/8/15 12:21			
	TimeSpan:						TimeSpan:						TimeSpan:				
	TotalSolid:						TotalSolid:						TotalSolid:				
	ClientLoc:						ClientLoc:						ClientLoc:				
	SampDepth:						SampDepth:						SampDepth:				
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	
Anthracene		<MDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Benzo(a)anthracene		<MDL	0.0094	0.0472	ug/L	0.025	<RDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Benzo(a)pyrene		<MDL	0.0094	0.0472	ug/L	0.025	<RDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Benzo(b,j,k)fluoranthene		<MDL	0.0094	0.0472	ug/L	0.0682		0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Benzo(g,h,i)perylene		<MDL	0.0094	0.0472	ug/L	0.026	<RDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Chrysene		<MDL	0.0094	0.0472	ug/L	0.04	<RDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Dibenzo(a,h)anthracene		<MDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Fluoranthene		<MDL	0.0094	0.0472	ug/L	0.107		0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Fluorene		<MDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Indeno(1,2,3-Cd)Pyrene		<MDL	0.0094	0.0472	ug/L	0.016	<RDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Naphthalene		<MDL	0.0047	0.0236	ug/L	0.015	<RDL	0.0047	0.0236	ug/L		<MDL	0.0047	0.0236	ug/L	
Phenanthrene		<MDL	0.0094	0.0472	ug/L	0.045	<RDL	0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
Pyrene		<MDL	0.0094	0.0472	ug/L	0.146		0.0094	0.0472	ug/L		<MDL	0.0094	0.0472	ug/L	
OR WDOE NWTPH-DX																
Diesel Range (>C12-C24)																
Lube Oil Range (>C24)																

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 5. 1/21/2016 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250							
	Locator:	ECHO-BP1-IN					Locator:	ECHO-BP1-IN					Locator:	ECHO-BP1-OUT							
	Descrip:	RAIN GARDEN #1 - I					Descrip:	RAIN GARDEN #1 - I					Descrip:	RAIN GARDEN #1 - O							
	Sample:	L64648-1					Sample:	L64648-2					Sample:	L64648-3							
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR							
	ColDate:	1/21/16 8:45					ColDate:	1/21/16 11:16					ColDate:	1/21/16 9:11							
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**								
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**				
CV KEROUEL & AMINOT 1997																					
Ammonia Nitrogen	0.0651		0.002	0.01	mg/L								0.0054	<RDL	0.002	0.01	mg/L				
CV SM2320-B																					
Total Alkalinity	7.93		1	5	mg CaCO3/L								10.3		1	5	mg CaCO3/L				
CV SM2540-D																					
Total Suspended Solids	45.4		1.3	2.6	mg/L								10.2		0.5	1	mg/L				
CV SM4500-N-C																					
Total Nitrogen	0.324		0.05	0.1	mg/L								0.302		0.05	0.1	mg/L				
CV SM4500-NO3-F																					
Nitrite + Nitrate Nitrogen	0.031	<RDL	0.01	0.04	mg/L								0.0885		0.01	0.04	mg/L				
CV SM4500-P-B,F																					
Total Phosphorus	0.07		0.005	0.01	mg/L								0.192		0.005	0.01	mg/L				
CV SM4500-P-F																					
Orthophosphate Phosphorus	0.0125		0.0005	0.002	mg/L								0.136		0.0025	0.01	mg/L				
ES KCEL SOP# 245																					
Conductivity, Field	15.8		0.5	10	umhos/cm								25.1		0.5	10	umhos/cm				
Dissolved Oxygen, Field	11.6		0.5	1	mg/L								11.2		0.5	1	mg/L				
pH, Field	7.44				pH								7.35				pH				
Sample Temperature, Field	7.5				deg C								7.2				deg C				
ES NONE																					
Field Personnel	CB, CG				none								CB, CG				none				
Sample Function																					
Turbidity, Field	35.9		0.5	2	NTU								12.3		0.5	2	NTU				
MC SM 9222D 20TH																					
Fecal Coliform	14	C			CFU/100ml								4				CFU/100ml				
MT EPA 200.8*SW846 6020A																					
Cadmium, Dissolved, ICP-MS		<MDL	0.05	0.25	ug/L								0.22	<RDL	0.05	0.25	ug/L				
Cadmium, Total, ICP-MS	0.057	<RDL	0.05	0.25	ug/L								0.05	<RDL	0.05	0.25	ug/L				
Calcium, Total, ICP-MS	3290		50	50	ug/L								2970		50	50	ug/L				
Copper, Dissolved, ICP-MS	2.16		0.2	2	ug/L								1.7	<RDL	0.2	2	ug/L				
Copper, Total, ICP-MS	16.7		0.2	2	ug/L								3.67		0.2	2	ug/L				
Lead, Dissolved, ICP-MS	0.11	<RDL	0.1	0.5	ug/L								0.21	<RDL	0.1	0.5	ug/L				
Lead, Total, ICP-MS	4.22		0.1	0.5	ug/L								2.03		0.1	0.5	ug/L				
Magnesium, Total, ICP-MS	735		50	50	ug/L								643		50	50	ug/L				
Zinc, Dissolved, ICP-MS	10.5		0.5	2.5	ug/L								3.63		0.5	2.5	ug/L				
Zinc, Total, ICP-MS	56.4		0.5	2.5	ug/L								10.6		0.5	2.5	ug/L				
MT EPA 200.8/SW846 6020A*SM2340B																					
Hardness, Calc	11.2		0.331	0.331	mg CaCO3/L								10.1		0.331	0.331	mg CaCO3/L				
OR SW846 3520C*SW846 8270D SIM																					
2-Methylnaphthalene	0.011	<RDL	0.0047	0.0236	ug/L									<MDL	0.0047	0.0236	ug/L				
Acenaphthene		<MDL	0.0047	0.0236	ug/L									<MDL	0.0047	0.0236	ug/L				
Acenaphthylene		<MDL	0.0047	0.0236	ug/L									<MDL	0.0047	0.0236	ug/L				
Anthracene		<MDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Benzo(a)anthracene	0.029	<RDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Benzo(a)pyrene	0.032	<RDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Benzo(b,j,k)fluoranthene	0.0933		0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 5. 1/21/2016 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250			
	Locator:	ECHO-BP1-IN					Locator:	ECHO-BP1-IN					Locator:	ECHO-BP1-OUT			
	Descrip:	RAIN GARDEN #1 - I					Descrip:	RAIN GARDEN #1 - I					Descrip:	RAIN GARDEN #1 - O			
	Sample:	L64648-1					Sample:	L64648-2					Sample:	L64648-3			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR			
	ColDate:	1/21/16 8:45					ColDate:	1/21/16 11:16					ColDate:	1/21/16 9:11			
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**
Benzo(g,h,i)perylene	0.024	<RDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L
Chrysene	0.0608		0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L
Dibenzo(a,h)anthracene		<MDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L
Fluoranthene	0.0956		0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L
Fluorene		<MDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L
Indeno(1,2,3-Cd)Pyrene	0.014	<RDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L
Naphthalene	0.014	<RDL	0.0047	0.0236	ug/L									<MDL	0.0047	0.0236	ug/L
Phenanthrene	0.0479		0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L
Pyrene	0.133		0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L
OR WDOE NWTPH-DX																	
Diesel Range (>C12-C24)								<MDL	0.189	0.189	mg/L						
Lube Oil Range (>C24)							0.631		0.189	0.189	mg/L						

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 5. 1/21/2016 Samples

	Project:	421879-250					Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-BP1-OUT					Locator:	ECHO-BP2-IN				Locator:	ECHO-BP2-IN			
	Descrip:	RAIN GARDEN #1 - O					Descrip:	RAIN GARDEN #2 - I				Descrip:	RAIN GARDEN #2 - I			
	Sample:	L64648-4					Sample:	L64648-5				Sample:	L64648-6			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	1/21/16 11:24					ColDate:	1/21/16 9:27				ColDate:	1/21/16 12:00			
	WET Weight Basis						**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997															
Ammonia Nitrogen						0.193		0.01	0.05	mg/L					
CV SM2320-B															
Total Alkalinity						9.06		1	5	mg CaCO3/L					
CV SM2540-D															
Total Suspended Solids						56.9		1.4	2.8	mg/L					
CV SM4500-N-C															
Total Nitrogen						0.484		0.05	0.1	mg/L					
CV SM4500-NO3-F															
Nitrite + Nitrate Nitrogen						0.0478		0.01	0.04	mg/L					
CV SM4500-P-B,F															
Total Phosphorus						0.0656		0.005	0.01	mg/L					
CV SM4500-P-F															
Orthophosphate Phosphorus						0.002	<RDL	0.0005	0.002	mg/L					
ES KCEL SOP# 245															
Conductivity, Field						23.3		0.5	10	umhos/cm					
Dissolved Oxygen, Field						11.4		0.5	1	mg/L					
pH, Field						7.6				pH					
Sample Temperature, Field						8				deg C					
ES NONE															
Field Personnel						SH, HF				none					
Sample Function															
Turbidity, Field						48.9		0.5	2	NTU					
MC SM 9222D 20TH															
Fecal Coliform						17	C			CFU/100ml					
MT EPA 200.8*SW846 6020A															
Cadmium, Dissolved, ICP-MS							<MDL	0.05	0.25	ug/L					
Cadmium, Total, ICP-MS						0.062	<RDL	0.05	0.25	ug/L					
Calcium, Total, ICP-MS						3670		50	50	ug/L					
Copper, Dissolved, ICP-MS						1.7	<RDL	0.2	2	ug/L					
Copper, Total, ICP-MS						16.8		0.2	2	ug/L					
Lead, Dissolved, ICP-MS						0.12	<RDL	0.1	0.5	ug/L					
Lead, Total, ICP-MS						4.61		0.1	0.5	ug/L					
Magnesium, Total, ICP-MS						835		50	50	ug/L					
Zinc, Dissolved, ICP-MS						11.8		0.5	2.5	ug/L					
Zinc, Total, ICP-MS						67.7		0.5	2.5	ug/L					
MT EPA 200.8/SW846 6020A*SM2340B															
Hardness, Calc						12.6		0.331	0.331	mg CaCO3/L					
OR SW846 3520C*SW846 8270D SIM															
2-Methylnaphthalene						0.018	<RDL	0.0047	0.0236	ug/L					
Acenaphthene							<MDL	0.0047	0.0236	ug/L					
Acenaphthylene						0.0064	<RDL	0.0047	0.0236	ug/L					
Anthracene							<MDL	0.0094	0.0472	ug/L					
Benzo(a)anthracene						0.034	<RDL	0.0094	0.0472	ug/L					
Benzo(a)pyrene						0.037	<RDL	0.0094	0.0472	ug/L					
Benzo(b,j,k)fluoranthene						0.111		0.0094	0.0472	ug/L					

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 5. 1/21/2016 Samples

	Project:	421879-250					Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-BP1-OUT					Locator:	ECHO-BP2-IN				Locator:	ECHO-BP2-IN			
	Descrip:	RAIN GARDEN #1 - O					Descrip:	RAIN GARDEN #2 - I				Descrip:	RAIN GARDEN #2 - I			
	Sample:	L64648-4					Sample:	L64648-5				Sample:	L64648-6			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	1/21/16 11:24					ColDate:	1/21/16 9:27				ColDate:	1/21/16 12:00			
	WET Weight Basis						**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
Benzo(g,h,i)perylene						0.025	<RDL	0.0094	0.0472	ug/L					
Chrysene						0.0687		0.0094	0.0472	ug/L					
Dibenzo(a,h)anthracene							<MDL	0.0094	0.0472	ug/L					
Fluoranthene						0.107		0.0094	0.0472	ug/L					
Fluorene							<MDL	0.0094	0.0472	ug/L					
Indeno(1,2,3-Cd)Pyrene						0.013	<RDL	0.0094	0.0472	ug/L					
Naphthalene						0.022	<RDL	0.0047	0.0236	ug/L					
Phenanthrene						0.0608		0.0094	0.0472	ug/L					
Pyrene						0.169		0.0094	0.0472	ug/L					
OR WDOE NWTPH-DX															
Diesel Range (>C12-C24)		<MDL	0.189	0.189	mg/L							<MDL	0.189	0.189	mg/L
Lube Oil Range (>C24)		<MDL	0.189	0.189	mg/L						0.862		0.189	0.189	mg/L

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 5. 1/21/2016 Samples

	Project: 421879-250					Project: 421879-250					Project: 421879-250				
	Locator: ECHO-BP2-OUT					Locator: ECHO-BP2-OUT					Locator: ECHO-BP1-IN				
	Descrip: RAIN GARDEN #2 - O					Descrip: RAIN GARDEN #2 - O					Descrip: RAIN GARDEN #1 - I				
	Sample: L64648-7					Sample: L64648-8					Sample: L64648-9				
	Matrix: LG STORM WTR					Matrix: LG STORM WTR					Matrix: LG STORM WTR				
	ColDate: 1/21/16 9:40					ColDate: 1/21/16 12:05					ColDate: 1/21/16 9:08				
	WET Weight Basis					**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997															
Ammonia Nitrogen	0.0034	<RDL	0.002	0.01	mg/L						0.0621		0.002	0.01	mg/L
CV SM2320-B															
Total Alkalinity	11.4		1	5	mg CaCO3/L						8.27		1	5	mg CaCO3/L
CV SM2540-D															
Total Suspended Solids	1.3		0.5	1	mg/L						38.8		1.6	3.1	mg/L
CV SM4500-N-C															
Total Nitrogen	0.313		0.05	0.1	mg/L						0.319		0.05	0.1	mg/L
CV SM4500-NO3-F															
Nitrite + Nitrate Nitrogen	0.115		0.01	0.04	mg/L						0.031	<RDL	0.01	0.04	mg/L
CV SM4500-P-B,F															
Total Phosphorus	0.374		0.005	0.01	mg/L						0.0662		0.005	0.01	mg/L
CV SM4500-P-F															
Orthophosphate Phosphorus	0.298		0.005	0.02	mg/L						0.0137		0.0005	0.002	mg/L
ES KCEL SOP# 245															
Conductivity, Field	29.2		0.5	10	umhos/cm										
Dissolved Oxygen, Field	11.3		0.5	1	mg/L										
pH, Field	7.47				pH										
Sample Temperature, Field	7.4				deg C										
ES NONE															
Field Personnel	SH, HF				none						CB, CG				none
Sample Function											FREP @ L64648-1				none
Turbidity, Field	5.6		0.5	2	NTU										
MC SM 9222D 20TH															
Fecal Coliform	290	C			CFU/100ml						21	C			CFU/100ml
MT EPA 200.8*SW846 6020A															
Cadmium, Dissolved, ICP-MS		<MDL	0.05	0.25	ug/L										
Cadmium, Total, ICP-MS		<MDL	0.05	0.25	ug/L						0.052	<RDL	0.05	0.25	ug/L
Calcium, Total, ICP-MS	2670		50	50	ug/L						3200		50	50	ug/L
Copper, Dissolved, ICP-MS	1.6	<RDL	0.2	2	ug/L										
Copper, Total, ICP-MS	2.24		0.2	2	ug/L						15.2		0.2	2	ug/L
Lead, Dissolved, ICP-MS		<MDL	0.1	0.5	ug/L										
Lead, Total, ICP-MS	0.22	<RDL	0.1	0.5	ug/L						3.68		0.1	0.5	ug/L
Magnesium, Total, ICP-MS	811		50	50	ug/L						668		50	50	ug/L
Zinc, Dissolved, ICP-MS	2.67		0.5	2.5	ug/L										
Zinc, Total, ICP-MS	3.33		0.5	2.5	ug/L						50.7		0.5	2.5	ug/L
MT EPA 200.8/SW846 6020A*SM2340B															
Hardness, Calc	10		0.331	0.331	mg CaCO3/L						10.7		0.331	0.331	mg CaCO3/L
OR SW846 3520C*SW846 8270D SIM															
2-Methylnaphthalene		<MDL	0.0047	0.0236	ug/L						0.01	<RDL	0.0047	0.0236	ug/L
Acenaphthene		<MDL	0.0047	0.0236	ug/L							<MDL	0.0047	0.0236	ug/L
Acenaphthylene		<MDL	0.0047	0.0236	ug/L							<MDL	0.0047	0.0236	ug/L
Anthracene		<MDL	0.0094	0.0472	ug/L							<MDL	0.0094	0.0472	ug/L
Benzo(a)anthracene		<MDL	0.0094	0.0472	ug/L						0.026	<RDL	0.0094	0.0472	ug/L
Benzo(a)pyrene		<MDL	0.0094	0.0472	ug/L						0.029	<RDL	0.0094	0.0472	ug/L
Benzo(b,j,k)fluoranthene		<MDL	0.0094	0.0472	ug/L						0.088		0.0094	0.0472	ug/L

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 5. 1/21/2016 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250			
	Locator:	ECHO-BP2-OUT					Locator:	ECHO-BP2-OUT					Locator:	ECHO-BP1-IN			
	Descrip:	RAIN GARDEN #2 - O					Descrip:	RAIN GARDEN #2 - O					Descrip:	RAIN GARDEN #1 - I			
	Sample:	L64648-7					Sample:	L64648-8					Sample:	L64648-9			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR			
	ColDate:	1/21/16 9:40					ColDate:	1/21/16 12:05					ColDate:	1/21/16 9:08			
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	
Benzo(g,h,i)perylene		<MDL	0.0094	0.0472	ug/L						0.019	<RDL	0.0094	0.0472	ug/L	
Chrysene		<MDL	0.0094	0.0472	ug/L						0.0532		0.0094	0.0472	ug/L	
Dibenzo(a,h)anthracene		<MDL	0.0094	0.0472	ug/L							<MDL	0.0094	0.0472	ug/L	
Fluoranthene		<MDL	0.0094	0.0472	ug/L						0.0874		0.0094	0.0472	ug/L	
Fluorene		<MDL	0.0094	0.0472	ug/L							<MDL	0.0094	0.0472	ug/L	
Indeno(1,2,3-Cd)Pyrene		<MDL	0.0094	0.0472	ug/L						0.011	<RDL	0.0094	0.0472	ug/L	
Naphthalene		<MDL	0.0047	0.0236	ug/L						0.013	<RDL	0.0047	0.0236	ug/L	
Phenanthrene		<MDL	0.0094	0.0472	ug/L						0.044	<RDL	0.0094	0.0472	ug/L	
Pyrene		<MDL	0.0094	0.0472	ug/L						0.127		0.0094	0.0472	ug/L	
OR WDOE NWTPH-DX																
Diesel Range (>C12-C24)							<MDL	0.189	0.189	mg/L						
Lube Oil Range (>C24)							<MDL	0.189	0.189	mg/L						

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 5. 1/21/2016 Samples

Project: 421879-250
Locator: ECHO-BP1-IN
Descrip: RAIN GARDEN #1 - I
Sample: L64648-10
Matrix: LG STORM WTR
ColDate: 1/21/16 11:18
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
CV KEROUEL & AMINOT 1997					
Ammonia Nitrogen					
CV SM2320-B					
Total Alkalinity					
CV SM2540-D					
Total Suspended Solids					
CV SM4500-N-C					
Total Nitrogen					
CV SM4500-NO3-F					
Nitrite + Nitrate Nitrogen					
CV SM4500-P-B,F					
Total Phosphorus					
CV SM4500-P-F					
Orthophosphate Phosphorus					
ES KCEL SOP# 245					
Conductivity, Field					
Dissolved Oxygen, Field					
pH, Field					
Sample Temperature, Field					
ES NONE					
Field Personnel					
Sample Function	FREP @ L64648-2				none
Turbidity, Field					
MC SM 9222D 20TH					
Fecal Coliform					
MT EPA 200.8*SW846 6020A					
Cadmium, Dissolved, ICP-MS					
Cadmium, Total, ICP-MS					
Calcium, Total, ICP-MS					
Copper, Dissolved, ICP-MS					
Copper, Total, ICP-MS					
Lead, Dissolved, ICP-MS					
Lead, Total, ICP-MS					
Magnesium, Total, ICP-MS					
Zinc, Dissolved, ICP-MS					
Zinc, Total, ICP-MS					
MT EPA 200.8/SW846 6020A*SM2340B					
Hardness, Calc					
OR SW846 3520C*SW846 8270D SIM					
2-Methylnaphthalene					
Acenaphthene					
Acenaphthylene					
Anthracene					
Benzo(a)anthracene					
Benzo(a)pyrene					
Benzo(b,j,k)fluoranthene					

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 5. 1/21/2016 Samples

Project: 421879-250
Locator: ECHO-BP1-IN
Descrip: RAIN GARDEN #1 - I
Sample: L64648-10
Matrix: LG STORM WTR
ColDate: 1/21/16 11:18
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
Benzo(g,h,i)perylene					
Chrysene					
Dibenzo(a,h)anthracene					
Fluoranthene					
Fluorene					
Indeno(1,2,3-Cd)Pyrene					
Naphthalene					
Phenanthrene					
Pyrene					
OR WDOE NWTPH-DX					
Diesel Range (>C12-C24)		<MDL	0.189	0.189	mg/L
Lube Oil Range (>C24)	0.618		0.189	0.189	mg/L

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 6. 3/1/2016 Samples

	Project:	421879-250				Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-BP1-IN				Locator:	ECHO-BP1-OUT				Locator:	ECHO-BP2-IN			
	Descrip:	RAIN GARDEN #1 - I				Descrip:	RAIN GARDEN #1 - O				Descrip:	RAIN GARDEN #2 - I			
	Sample:	L64921-1				Sample:	L64921-3				Sample:	L64921-5			
	Matrix:	LG STORM WTR				Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	3/1/16 10:25				ColDate:	3/1/16 10:40				ColDate:	3/1/16 11:20			
	TimeSpan:					TimeSpan:					TimeSpan:				
	TotalSolid:					TotalSolid:					TotalSolid:				
	ClientLoc:					ClientLoc:					ClientLoc:				
	SampDepth:					SampDepth:					SampDepth:				
	WET Weight Basis					**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997															
Ammonia Nitrogen	0.114		0.002	0.01	mg/L	0.0063	<RDL	0.002	0.01	mg/L	0.413		0.02	0.1	mg/L
CV SM2540-D															
Total Suspended Solids	94.5		2.5	5	mg/L	17.4		1	2	mg/L	40.3		1.7	3.3	mg/L
CV SM4500-N-C															
Total Nitrogen	0.868		0.05	0.1	mg/L	0.651		0.05	0.1	mg/L	0.965		0.05	0.1	mg/L
CV SM4500-NO3-F															
Nitrite + Nitrate Nitrogen	0.104		0.01	0.04	mg/L	0.272		0.01	0.04	mg/L	0.0882		0.01	0.04	mg/L
CV SM4500-P-B,F															
Total Phosphorus	0.113		0.005	0.01	mg/L	0.223		0.005	0.01	mg/L	0.0737		0.005	0.01	mg/L
CV SM4500-P-F															
Orthophosphate Phosphorus	0.00567		0.0005	0.002	mg/L	0.168		0.0025	0.01	mg/L	0.00973		0.0005	0.002	mg/L
ES KCEL SOP# 245															
Conductivity, Field	38.8		0.5	10	umhos/cm	36.9		0.5	10	umhos/cm	41.6		0.5	10	umhos/cm
Dissolved Oxygen, Field	11.1		0.5	1	mg/L	10.8		0.5	1	mg/L	11.2		0.5	1	mg/L
pH, Field	7.42				pH	6.86				pH	7.38				pH
Sample Temperature, Field	8.8				deg C	8.5				deg C	9.2				deg C
ES NONE															
Field Personnel	CB, SH, DH, CG				none	CB, SH, DH, CG				none	CB, SH, DH, CG				none
Turbidity, Field	88.5		0.5	2	NTU	21.6		0.5	2	NTU	37.4		0.5	2	NTU
MC SM 9222D 20TH															
Fecal Coliform	160	C,SH			CFU/100ml	80	C,SH			CFU/100ml	150	C,SH			CFU/100ml
MT EPA 200.8*SW846 6020A															
Cadmium, Dissolved, ICP-MS		<MDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L
Cadmium, Total, ICP-MS	0.13	<RDL	0.05	0.25	ug/L	0.082	<RDL	0.05	0.25	ug/L	0.064	<RDL	0.05	0.25	ug/L
Calcium, Total, ICP-MS	5270		50	50	ug/L	5120		50	50	ug/L	5920		50	50	ug/L
Copper, Dissolved, ICP-MS	4.55		0.2	2	ug/L	2.98		0.2	2	ug/L	5.85		0.2	2	ug/L
Copper, Total, ICP-MS	35.9		0.2	2	ug/L	5.49		0.2	2	ug/L	19		0.2	2	ug/L
Lead, Dissolved, ICP-MS	0.14	<RDL	0.1	0.5	ug/L	0.13	<RDL	0.1	0.5	ug/L	0.11	<RDL	0.1	0.5	ug/L
Lead, Total, ICP-MS	9.57		0.1	0.5	ug/L	4.3		0.1	0.5	ug/L	3.84		0.1	0.5	ug/L
Magnesium, Total, ICP-MS	1310		50	50	ug/L	963		50	50	ug/L	786		50	50	ug/L
Zinc, Dissolved, ICP-MS	14.7		0.5	2.5	ug/L	4.48		0.5	2.5	ug/L	14.1		0.5	2.5	ug/L
Zinc, Total, ICP-MS	146		0.5	2.5	ug/L	16.1		0.5	2.5	ug/L	70.8		0.5	2.5	ug/L
MT EPA 200.8/SW846 6020A*SM2340B															
Hardness, Calc	18.6		0.331	0.331	mg CaCO3/L	16.8		0.331	0.331	mg CaCO3/L	18		0.331	0.331	mg CaCO3/L
OR SW846 3520C*SW846 8270D SIM															
2-Methylnaphthalene		<MDL	0.024	0.118	ug/L		<MDL	0.0048	0.0238	ug/L					
Acenaphthene		<MDL	0.024	0.118	ug/L		<MDL	0.0048	0.0238	ug/L					
Acenaphthylene		<MDL	0.024	0.118	ug/L		<MDL	0.0048	0.0238	ug/L					
Anthracene		<MDL	0.047	0.236	ug/L		<MDL	0.0095	0.0476	ug/L					
Benzo(a)anthracene	0.064	<RDL	0.047	0.236	ug/L		<MDL	0.0095	0.0476	ug/L					
Benzo(a)pyrene	0.069	<RDL	0.047	0.236	ug/L		<MDL	0.0095	0.0476	ug/L					

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 6. 3/1/2016 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250			
	Locator:	ECHO-BP1-IN					Locator:	ECHO-BP1-OUT					Locator:	ECHO-BP2-IN			
	Descrip:	RAIN GARDEN #1 - I					Descrip:	RAIN GARDEN #1 - O					Descrip:	RAIN GARDEN #2 - I			
	Sample:	L64921-1					Sample:	L64921-3					Sample:	L64921-5			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR			
	ColDate:	3/1/16 10:25					ColDate:	3/1/16 10:40					ColDate:	3/1/16 11:20			
	TimeSpan:						TimeSpan:						TimeSpan:				
	TotalSolid:						TotalSolid:						TotalSolid:				
	ClientLoc:						ClientLoc:						ClientLoc:				
	SampDepth:						SampDepth:						SampDepth:				
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	
Benzo(b,j,k)fluoranthene	0.2	<RDL	0.047	0.236	ug/L	0.01	<RDL	0.0095	0.0476	ug/L						
Benzo(g,h,i)perylene	0.088	<RDL	0.047	0.236	ug/L		<MDL	0.0095	0.0476	ug/L						
Chrysene	0.16	<RDL	0.047	0.236	ug/L		<MDL	0.0095	0.0476	ug/L						
Dibenzo(a,h)anthracene		<MDL	0.047	0.236	ug/L		<MDL	0.0095	0.0476	ug/L						
Fluoranthene	0.22	<RDL	0.047	0.236	ug/L		<MDL	0.0095	0.0476	ug/L						
Fluorene		<MDL	0.047	0.236	ug/L		<MDL	0.0095	0.0476	ug/L						
Indeno(1,2,3-Cd)Pyrene	0.051	<RDL	0.047	0.236	ug/L		<MDL	0.0095	0.0476	ug/L						
Naphthalene	0.03	<RDL	0.024	0.118	ug/L	0.0052	<RDL	0.0048	0.0238	ug/L						
Phenanthrene	0.12	<RDL	0.047	0.236	ug/L		<MDL	0.0095	0.0476	ug/L						
Pyrene	0.342		0.047	0.236	ug/L	0.013	<RDL	0.0095	0.0476	ug/L						

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 6. 3/1/2016 Samples

	Project:	421879-250					Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-BP2-OUT					Locator:	ECHO-BP3-IN				Locator:	ECHO-BP3-OUT			
	Descrip:	RAIN GARDEN #2 - O					Descrip:	RAIN GARDEN #3 - I				Descrip:	RAIN GARDEN #3 - O			
	Sample:	L64921-7					Sample:	L64921-9				Sample:	L64921-11			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	3/1/16 11:35					ColDate:	3/1/16 10:53				ColDate:	3/1/16 11:05			
	TimeSpan:						TimeSpan:					TimeSpan:				
	TotalSolid:						TotalSolid:					TotalSolid:				
	ClientLoc:						ClientLoc:					ClientLoc:				
	SampDepth:						SampDepth:					SampDepth:				
	WET Weight Basis						**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997															
Ammonia Nitrogen	0.0079	<RDL	0.002	0.01	mg/L	0.0597		0.002	0.01	mg/L	0.0044	<RDL	0.002	0.01	mg/L
CV SM2540-D															
Total Suspended Solids	0.67	<RDL	0.6	1.1	mg/L	73.2		2	4	mg/L	1.7		0.5	1	mg/L
CV SM4500-N-C															
Total Nitrogen	0.855		0.05	0.1	mg/L	0.698		0.05	0.1	mg/L	0.697		0.05	0.1	mg/L
CV SM4500-NO3-F															
Nitrite + Nitrate Nitrogen	0.409		0.01	0.04	mg/L	0.0702		0.01	0.04	mg/L	0.309		0.01	0.04	mg/L
CV SM4500-P-B,F															
Total Phosphorus	0.428		0.005	0.01	mg/L	0.096		0.005	0.01	mg/L	0.356		0.005	0.01	mg/L
CV SM4500-P-F															
Orthophosphate Phosphorus	0.362		0.01	0.04	mg/L	0.00363		0.0005	0.002	mg/L	0.311		0.01	0.04	mg/L
ES KCEL SOP# 245															
Conductivity, Field	67.9		0.5	10	umhos/cm	25.5		0.5	10	umhos/cm	43.3		0.5	10	umhos/cm
Dissolved Oxygen, Field	11		0.5	1	mg/L	11.3		0.5	1	mg/L	9.9		0.5	1	mg/L
pH, Field	6.74				pH	7.4				pH	6.18				pH
Sample Temperature, Field	8.3				deg C	9.2				deg C	8.4				deg C
ES NONE															
Field Personnel	CB, SH, DH, CG				none	CB, SH, DH, CG				none	CB, SH, DH, CG				none
Turbidity, Field	4.8		0.5	2	NTU	75.2		0.5	2	NTU	6.1		0.5	2	NTU
MC SM 9222D 20TH															
Fecal Coliform	160	C,SH			CFU/100ml	250	C,SH			CFU/100ml	180	SH			CFU/100ml
MT EPA 200.8*SW846 6020A															
Cadmium, Dissolved, ICP-MS		<MDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L
Cadmium, Total, ICP-MS		<MDL	0.05	0.25	ug/L	0.1	<RDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L
Calcium, Total, ICP-MS	7200		50	50	ug/L	4330		50	50	ug/L	4860		50	50	ug/L
Copper, Dissolved, ICP-MS	3.58		0.2	2	ug/L	4.04		0.2	2	ug/L	4.71		0.2	2	ug/L
Copper, Total, ICP-MS	4.12		0.2	2	ug/L	29.7		0.2	2	ug/L	5.93		0.2	2	ug/L
Lead, Dissolved, ICP-MS		<MDL	0.1	0.5	ug/L	0.12	<RDL	0.1	0.5	ug/L	0.14	<RDL	0.1	0.5	ug/L
Lead, Total, ICP-MS	0.24	<RDL	0.1	0.5	ug/L	6.9		0.1	0.5	ug/L	0.42	<RDL	0.1	0.5	ug/L
Magnesium, Total, ICP-MS	1790		50	50	ug/L	995		50	50	ug/L	1050		50	50	ug/L
Zinc, Dissolved, ICP-MS	3.07		0.5	2.5	ug/L	11.9		0.5	2.5	ug/L	4.01		0.5	2.5	ug/L
Zinc, Total, ICP-MS	7.22		0.5	2.5	ug/L	112		0.5	2.5	ug/L	7.11		0.5	2.5	ug/L
MT EPA 200.8/SW846 6020A*SM2340B															
Hardness, Calc	25.3		0.331	0.331	mg CaCO3/L	14.9		0.331	0.331	mg CaCO3/L	16.5		0.331	0.331	mg CaCO3/L
OR SW846 3520C*SW846 8270D SIM															
2-Methylnaphthalene							<MDL	0.024	0.119	ug/L		<MDL	0.0048	0.0238	ug/L
Acenaphthene							<MDL	0.024	0.119	ug/L		<MDL	0.0048	0.0238	ug/L
Acenaphthylene							<MDL	0.024	0.119	ug/L		<MDL	0.0048	0.0238	ug/L
Anthracene							<MDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L
Benzo(a)anthracene						0.053	<RDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L
Benzo(a)pyrene						0.051	<RDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 6. 3/1/2016 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250									
	Locator:	ECHO-BP2-OUT					Locator:	ECHO-BP3-IN					Locator:	ECHO-BP3-OUT									
	Descrip:	RAIN GARDEN #2 - O					Descrip:	RAIN GARDEN #3 - I					Descrip:	RAIN GARDEN #3 - O									
	Sample:	L64921-7					Sample:	L64921-9					Sample:	L64921-11									
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR									
	ColDate:	3/1/16 11:35					ColDate:	3/1/16 10:53					ColDate:	3/1/16 11:05									
	TimeSpan:						TimeSpan:						TimeSpan:										
	TotalSolid:						TotalSolid:						TotalSolid:										
	ClientLoc:						ClientLoc:						ClientLoc:										
	SampDepth:						SampDepth:						SampDepth:										
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**										
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**						
Benzo(b,j,k)fluoranthene							0.15	<RDL	0.048	0.238	ug/L			<MDL	0.0095	0.0476	ug/L						
Benzo(g,h,i)perylene							0.064	<RDL	0.048	0.238	ug/L			<MDL	0.0095	0.0476	ug/L						
Chrysene							0.12	<RDL	0.048	0.238	ug/L			<MDL	0.0095	0.0476	ug/L						
Dibenzo(a,h)anthracene								<MDL	0.048	0.238	ug/L			<MDL	0.0095	0.0476	ug/L						
Fluoranthene							0.16	<RDL	0.048	0.238	ug/L			<MDL	0.0095	0.0476	ug/L						
Fluorene								<MDL	0.048	0.238	ug/L			<MDL	0.0095	0.0476	ug/L						
Indeno(1,2,3-Cd)Pyrene								<MDL	0.048	0.238	ug/L			<MDL	0.0095	0.0476	ug/L						
Naphthalene							0.025	<RDL	0.024	0.119	ug/L			<MDL	0.0048	0.0238	ug/L						
Phenanthrene							0.091	<RDL	0.048	0.238	ug/L			<MDL	0.0095	0.0476	ug/L						
Pyrene							0.245		0.048	0.238	ug/L			<MDL	0.0095	0.0476	ug/L						

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 6. 3/1/2016 Samples

	Project:	421879-250				Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-FLT1-IN				Locator:	ECHO-FLT1-OUT				Locator:	ECHO-BP2-IN			
	Descrip:	FILTERRA #1 - INLE				Descrip:	FILTERRA #1 - OUTL				Descrip:	RAIN GARDEN #2 - I			
	Sample:	L64921-13				Sample:	L64921-15				Sample:	L64921-17			
	Matrix:	LG STORM WTR				Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	3/1/16 11:38				ColDate:	3/1/16 11:42				ColDate:	3/1/16 11:20			
	TimeSpan:					TimeSpan:					TimeSpan:				
	TotalSolid:					TotalSolid:					TotalSolid:				
	ClientLoc:					ClientLoc:					ClientLoc:				
	SampDepth:					SampDepth:					SampDepth:				
	WET Weight Basis					**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997															
Ammonia Nitrogen	0.0146		0.002	0.01	mg/L		<MDL	0.002	0.01	mg/L	0.411		0.02	0.1	mg/L
CV SM2540-D															
Total Suspended Solids	66.8		2	4	mg/L	37.9		1.6	3.2	mg/L	40.7		1.7	3.3	mg/L
CV SM4500-N-C															
Total Nitrogen	0.76		0.05	0.1	mg/L	0.384		0.05	0.1	mg/L	0.892		0.05	0.1	mg/L
CV SM4500-NO3-F															
Nitrite + Nitrate Nitrogen	0.0676		0.01	0.04	mg/L	0.054		0.01	0.04	mg/L	0.0871		0.01	0.04	mg/L
CV SM4500-P-B,F															
Total Phosphorus	0.104		0.005	0.01	mg/L	0.0669		0.005	0.01	mg/L	0.0698		0.005	0.01	mg/L
CV SM4500-P-F															
Orthophosphate Phosphorus	0.00583		0.0005	0.002	mg/L	0.0088		0.0005	0.002	mg/L	0.00835		0.0005	0.002	mg/L
ES KCEL SOP# 245															
Conductivity, Field						57.7		0.5	10	umhos/cm					
Dissolved Oxygen, Field						10.3		0.5	1	mg/L					
pH, Field						7.16				pH					
Sample Temperature, Field						9.8				deg C					
ES NONE															
Field Personnel	CB, SH, DH, CG				none	CB, SH, DH, CG				none	CB, SH, DH, CG				none
Turbidity, Field						30.1		0.5	2	NTU					
MC SM 9222D 20TH															
Fecal Coliform	210	C,SH			CFU/100ml	5	C,SH			CFU/100ml	99	C,SH			CFU/100ml
MT EPA 200.8*SW846 6020A															
Cadmium, Dissolved, ICP-MS		<MDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L
Cadmium, Total, ICP-MS	0.11	<RDL	0.05	0.25	ug/L		<MDL	0.05	0.25	ug/L	0.066	<RDL	0.05	0.25	ug/L
Calcium, Total, ICP-MS	8100		50	50	ug/L	6090		50	50	ug/L	5930		50	50	ug/L
Copper, Dissolved, ICP-MS	5.32		0.2	2	ug/L	4.02		0.2	2	ug/L	4.93		0.2	2	ug/L
Copper, Total, ICP-MS	26.6		0.2	2	ug/L	10.3		0.2	2	ug/L	19.1		0.2	2	ug/L
Lead, Dissolved, ICP-MS	0.17	<RDL	0.1	0.5	ug/L		<MDL	0.1	0.5	ug/L	0.11	<RDL	0.1	0.5	ug/L
Lead, Total, ICP-MS	11.8		0.1	0.5	ug/L	3.49		0.1	0.5	ug/L	3.81		0.1	0.5	ug/L
Magnesium, Total, ICP-MS	1040		50	50	ug/L	731		50	50	ug/L	801		50	50	ug/L
Zinc, Dissolved, ICP-MS	6.95		0.5	2.5	ug/L	8.12		0.5	2.5	ug/L	14.3		0.5	2.5	ug/L
Zinc, Total, ICP-MS	106		0.5	2.5	ug/L	37.4		0.5	2.5	ug/L	70.9		0.5	2.5	ug/L
MT EPA 200.8/SW846 6020A*SM2340B															
Hardness, Calc	24.5		0.331	0.331	mg CaCO3/L	18.2		0.331	0.331	mg CaCO3/L	18.1		0.331	0.331	mg CaCO3/L
OR SW846 3520C*SW846 8270D SIM															
2-Methylnaphthalene		<MDL	0.024	0.119	ug/L		<MDL	0.0048	0.0238	ug/L					
Acenaphthene		<MDL	0.024	0.119	ug/L		<MDL	0.0048	0.0238	ug/L					
Acenaphthylene		<MDL	0.024	0.119	ug/L		<MDL	0.0048	0.0238	ug/L					
Anthracene		<MDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L					
Benzo(a)anthracene		<MDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L					
Benzo(a)pyrene		<MDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L					

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 6. 3/1/2016 Samples

	Project:	421879-250					Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-FLT1-IN					Locator:	ECHO-FLT1-OUT				Locator:	ECHO-BP2-IN			
	Descrip:	FILTERRA #1 - INLE					Descrip:	FILTERRA #1 - OUTL				Descrip:	RAIN GARDEN #2 - I			
	Sample:	L64921-13					Sample:	L64921-15				Sample:	L64921-17			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	3/1/16 11:38					ColDate:	3/1/16 11:42				ColDate:	3/1/16 11:20			
	TimeSpan:						TimeSpan:					TimeSpan:				
	TotalSolid:						TotalSolid:					TotalSolid:				
	ClientLoc:						ClientLoc:					ClientLoc:				
	SampDepth:						SampDepth:					SampDepth:				
	WET Weight Basis						**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	
Benzo(b,j,k)fluoranthene	0.074	<RDL	0.048	0.238	ug/L	0.024	<RDL	0.0095	0.0476	ug/L						
Benzo(g,h,i)perylene		<MDL	0.048	0.238	ug/L	0.01	<RDL	0.0095	0.0476	ug/L						
Chrysene		<MDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L						
Dibenzo(a,h)anthracene		<MDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L						
Fluoranthene	0.089	<RDL	0.048	0.238	ug/L	0.016	<RDL	0.0095	0.0476	ug/L						
Fluorene		<MDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L						
Indeno(1,2,3-Cd)Pyrene		<MDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L						
Naphthalene		<MDL	0.024	0.119	ug/L		<MDL	0.0048	0.0238	ug/L						
Phenanthrene	0.051	<RDL	0.048	0.238	ug/L		<MDL	0.0095	0.0476	ug/L						
Pyrene	0.13	<RDL	0.048	0.238	ug/L	0.023	<RDL	0.0095	0.0476	ug/L						

PRELIMINARY DATA

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Table 7. 3/9/2016 Samples

	Project: 421879-250 Locator: ECHO-BP1-IN Descrip: RAIN GARDEN #1 - I Sample: L64999-1 Matrix: LG STORM WTR ColDate: 3/9/16 14:40 **WET Weight Basis**					Project: 421879-250 Locator: ECHO-BP1-IN Descrip: RAIN GARDEN #1 - I Sample: L64999-2 Matrix: LG STORM WTR ColDate: 3/9/16 16:43 **WET Weight Basis**					Project: 421879-250 Locator: ECHO-BP1-OUT Descrip: RAIN GARDEN #1 - O Sample: L64999-3 Matrix: LG STORM WTR ColDate: 3/9/16 14:45 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997															
Ammonia Nitrogen	0.1		0.002	0.01	mg/L						0.0064	<RDL	0.002	0.01	mg/L
CV SM2320-B															
Total Alkalinity	10.8		1	5	mg CaCO3/L						15.3		1	5	mg CaCO3/L
CV SM2540-D															
Total Suspended Solids	56.4		2	4	mg/L						16.8		0.8	1.7	mg/L
CV SM4500-N-C															
Total Nitrogen	0.609		0.05	0.1	mg/L						0.503		0.05	0.1	mg/L
CV SM4500-NO3-F															
Nitrite + Nitrate Nitrogen	0.0717		0.01	0.04	mg/L						0.202		0.01	0.04	mg/L
CV SM4500-P-B,F															
Total Phosphorus	0.0736		0.005	0.01	mg/L						0.155		0.005	0.01	mg/L
CV SM4500-P-F															
Orthophosphate Phosphorus	0.00218		0.0005	0.002	mg/L						0.097		0.0025	0.01	mg/L
ES KCEL SOP# 245															
Conductivity, Field	27.1		0.5	10	umhos/cm						46		0.5	10	umhos/cm
Dissolved Oxygen, Field	11		0.5	1	mg/L						12		0.5	1	mg/L
pH, Field	7.02				pH						6.88				pH
Sample Temperature, Field	9.2				deg C						9.1				deg C
ES NONE															
Field Personnel	SH, JP, CB, CG				none						SH, JP, CB, CG				none
Sample Information	Composite aliquots taken at : 1440, 1510, 1540, 1611, 1642				none	WTPH-DX grab				none	Composite aliquots taken at : 1445, 1515, 1545, 1615, 1648				none
Turbidity, Field	64.2		0.5	2	NTU						29.6		0.5	2	NTU
MC SM 9222D 20TH															
Fecal Coliform	290	C,SH			CFU/100ml						50	C,SH			CFU/100ml
MT EPA 200.8*SW846 6020A															
Cadmium, Dissolved, ICP-MS		<MDL	0.05	0.25	ug/L							<MDL	0.05	0.25	ug/L
Cadmium, Total, ICP-MS	0.087	<RDL	0.05	0.25	ug/L						0.079	<RDL	0.05	0.25	ug/L
Calcium, Total, ICP-MS	4020		50	50	ug/L						4880		50	50	ug/L
Copper, Dissolved, ICP-MS	4.58		0.2	2	ug/L						2.26		0.2	2	ug/L
Copper, Total, ICP-MS	23.8		0.2	2	ug/L						4.28		0.2	2	ug/L
Lead, Dissolved, ICP-MS	0.13	<RDL	0.1	0.5	ug/L						0.11	<RDL	0.1	0.5	ug/L
Lead, Total, ICP-MS	5.92		0.1	0.5	ug/L						3.55		0.1	0.5	ug/L
Magnesium, Total, ICP-MS	856		50	50	ug/L						760		50	50	ug/L
Zinc, Dissolved, ICP-MS	13.3		0.5	2.5	ug/L						5.48		0.5	2.5	ug/L
Zinc, Total, ICP-MS	94		0.5	2.5	ug/L						15.3		0.5	2.5	ug/L
MT EPA 200.8/SW846 6020A*SM2340B															
Hardness, Calc	13.6		0.331	0.331	mg CaCO3/L						15.3		0.331	0.331	mg CaCO3/L
OR SW846 3520C*SW846 8270D SIM															
2-Methylnaphthalene	0.011	<RDL	0.0047	0.0236	ug/L							<MDL	0.0047	0.0236	ug/L
Acenaphthene		<MDL	0.0047	0.0236	ug/L							<MDL	0.0047	0.0236	ug/L
Acenaphthylene	0.005	<RDL	0.0047	0.0236	ug/L							<MDL	0.0047	0.0236	ug/L
Anthracene		<MDL	0.0094	0.0472	ug/L							<MDL	0.0094	0.0472	ug/L
Benzo(a)anthracene	0.031	<RDL	0.0094	0.0472	ug/L							<MDL	0.0094	0.0472	ug/L
Benzo(a)pyrene	0.037	<RDL	0.0094	0.0472	ug/L							<MDL	0.0094	0.0472	ug/L

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250							
	Locator:	ECHO-BP1-IN					Locator:	ECHO-BP1-IN					Locator:	ECHO-BP1-OUT							
	Descrip:	RAIN GARDEN #1 - I					Descrip:	RAIN GARDEN #1 - I					Descrip:	RAIN GARDEN #1 - O							
	Sample:	L64999-1					Sample:	L64999-2					Sample:	L64999-3							
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR							
	ColDate:	3/9/16 14:40					ColDate:	3/9/16 16:43					ColDate:	3/9/16 14:45							
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**								
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**				
Benzo(b,j,k)fluoranthene	0.111		0.0094	0.0472	ug/L								0.01	<RDL	0.0094	0.0472	ug/L				
Benzo(g,h,i)perylene	0.041	<RDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Chrysene	0.0771		0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Dibenzo(a,h)anthracene		<MDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Fluoranthene	0.124		0.0094	0.0472	ug/L								0.0099	<RDL	0.0094	0.0472	ug/L				
Fluorene		<MDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Indeno(1,2,3-Cd)Pyrene	0.023	<RDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Naphthalene	0.017	<RDL,B	0.0047	0.0236	ug/L									<MDL	0.0047	0.0236	ug/L				
Phenanthrene	0.062		0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Pyrene	0.193		0.0094	0.0472	ug/L								0.012	<RDL	0.0094	0.0472	ug/L				
OR WDOE NWTPH-DX																					
Diesel Range (>C12-C24)								<MDL	0.189	0.189	mg/L										
Lube Oil Range (>C24)							1.15		0.189	0.189	mg/L										

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project:	421879-250				Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-BP1-OUT				Locator:	ECHO-BP2-IN				Locator:	ECHO-BP2-IN			
	Descrip:	RAIN GARDEN #1 - O				Descrip:	RAIN GARDEN #2 - I				Descrip:	RAIN GARDEN #2 - I			
	Sample:	L64999-4				Sample:	L64999-5				Sample:	L64999-6			
	Matrix:	LG STORM WTR				Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	3/9/16 16:49				ColDate:	3/9/16 14:56				ColDate:	3/9/16 16:56			
	WET Weight Basis					**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997															
Ammonia Nitrogen						0.285		0.02	0.1	mg/L					
CV SM2320-B															
Total Alkalinity															
CV SM2540-D															
Total Suspended Solids						51.3		1.7	3.3	mg/L					
CV SM4500-N-C															
Total Nitrogen						0.773		0.05	0.1	mg/L					
CV SM4500-NO3-F															
Nitrite + Nitrate Nitrogen						0.0719		0.01	0.04	mg/L					
CV SM4500-P-B,F															
Total Phosphorus						0.0698		0.005	0.01	mg/L					
CV SM4500-P-F															
Orthophosphate Phosphorus						0.00403		0.0005	0.002	mg/L					
ES KCEL SOP# 245															
Conductivity, Field						30.6		0.5	10	umhos/cm					
Dissolved Oxygen, Field						11.2		0.5	1	mg/L					
pH, Field						7.39				pH					
Sample Temperature, Field						8.9				deg C					
ES NONE															
Field Personnel						SH, JP, CB, CG				none					
Sample Information	WTPH-DX grab				none	Composite aliquots taken at : 1456, 1525, 1555, 1625, 1655				none	WTPH-DX grab				none
Turbidity, Field						45.3		0.5	2	NTU					
MC SM 9222D 20TH															
Fecal Coliform						130	C,SH			CFU/100ml					
MT EPA 200.8*SW846 6020A															
Cadmium, Dissolved, ICP-MS							<MDL	0.05	0.25	ug/L					
Cadmium, Total, ICP-MS						0.061	<RDL	0.05	0.25	ug/L					
Calcium, Total, ICP-MS						4290		50	50	ug/L					
Copper, Dissolved, ICP-MS						4.13		0.2	2	ug/L					
Copper, Total, ICP-MS						18		0.2	2	ug/L					
Lead, Dissolved, ICP-MS							<MDL	0.1	0.5	ug/L					
Lead, Total, ICP-MS						4.45		0.1	0.5	ug/L					
Magnesium, Total, ICP-MS						777		50	50	ug/L					
Zinc, Dissolved, ICP-MS						9.98		0.5	2.5	ug/L					
Zinc, Total, ICP-MS						80		0.5	2.5	ug/L					
MT EPA 200.8/SW846 6020A*SM2340B															
Hardness, Calc						13.9		0.331	0.331	mg CaCO3/L					
OR SW846 3520C*SW846 8270D SIM															
2-Methylnaphthalene						0.012	<RDL	0.0047	0.0236	ug/L					
Acenaphthene							<MDL	0.0047	0.0236	ug/L					
Acenaphthylene						0.0068	<RDL	0.0047	0.0236	ug/L					
Anthracene							<MDL	0.0094	0.0472	ug/L					
Benzo(a)anthracene						0.024	<RDL	0.0094	0.0472	ug/L					
Benzo(a)pyrene						0.029	<RDL	0.0094	0.0472	ug/L					

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project:	421879-250					Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-BP1-OUT					Locator:	ECHO-BP2-IN				Locator:	ECHO-BP2-IN			
	Descrip:	RAIN GARDEN #1 - O					Descrip:	RAIN GARDEN #2 - I				Descrip:	RAIN GARDEN #2 - I			
	Sample:	L64999-4					Sample:	L64999-5				Sample:	L64999-6			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	3/9/16 16:49					ColDate:	3/9/16 14:56				ColDate:	3/9/16 16:56			
	WET Weight Basis						**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
Benzo(b,j,k)fluoranthene						0.0932		0.0094	0.0472	ug/L					
Benzo(g,h,i)perylene						0.03	<RDL	0.0094	0.0472	ug/L					
Chrysene						0.0686		0.0094	0.0472	ug/L					
Dibenzo(a,h)anthracene							<MDL	0.0094	0.0472	ug/L					
Fluoranthene						0.1		0.0094	0.0472	ug/L					
Fluorene							<MDL	0.0094	0.0472	ug/L					
Indeno(1,2,3-Cd)Pyrene						0.017	<RDL	0.0094	0.0472	ug/L					
Naphthalene						0.019	<RDL,B	0.0047	0.0236	ug/L					
Phenanthrene						0.052		0.0094	0.0472	ug/L					
Pyrene						0.164		0.0094	0.0472	ug/L					
OR WDOE NWTPH-DX															
Diesel Range (>C12-C24)		<MDL	0.189	0.189	mg/L							<MDL	0.189	0.189	mg/L
Lube Oil Range (>C24)		<MDL	0.189	0.189	mg/L						0.905		0.189	0.189	mg/L

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project: 421879-250 Locator: ECHO-BP2-OUT Descrip: RAIN GARDEN #2 - O Sample: L64999-7 Matrix: LG STORM WTR ColDate: 3/9/16 15:10 **WET Weight Basis**					Project: 421879-250 Locator: ECHO-BP2-OUT Descrip: RAIN GARDEN #2 - O Sample: L64999-8 Matrix: LG STORM WTR ColDate: 3/9/16 17:09 **WET Weight Basis**					Project: 421879-250 Locator: ECHO-BP3-IN Descrip: RAIN GARDEN #3 - I Sample: L64999-9 Matrix: LG STORM WTR ColDate: 3/9/16 14:00 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997															
Ammonia Nitrogen	0.0023	<RDL	0.002	0.01	mg/L						0.0537		0.002	0.01	mg/L
CV SM2320-B															
Total Alkalinity															
CV SM2540-D															
Total Suspended Solids	0.5	<RDL	0.5	1	mg/L						59.3		1.7	3.3	mg/L
CV SM4500-N-C															
Total Nitrogen	0.613		0.05	0.1	mg/L						0.636		0.05	0.1	mg/L
CV SM4500-NO3-F															
Nitrite + Nitrate Nitrogen	0.309		0.01	0.04	mg/L						0.092		0.01	0.04	mg/L
CV SM4500-P-B,F															
Total Phosphorus	0.414		0.005	0.01	mg/L						0.0788		0.005	0.01	mg/L
CV SM4500-P-F															
Orthophosphate Phosphorus	0.343		0.01	0.04	mg/L						0.00312		0.0005	0.002	mg/L
ES KCEL SOP# 245															
Conductivity, Field	56.4		0.5	10	umhos/cm						43.7		0.5	10	umhos/cm
Dissolved Oxygen, Field	10.8		0.5	1	mg/L						10.8		0.5	1	mg/L
pH, Field	6.68				pH						7.34				pH
Sample Temperature, Field	8.5				deg C						9.5				deg C
ES NONE															
Field Personnel	SH, JP, CB, CG				none						SH, JP, CB, CG				none
Sample Information	Composite aliquots taken at : 1510, 1530, 1600, 1630, 1700				none	WTPH-DX grab				none	Composite aliquots taken at : 1400, 1430, 1500, 1533, 1603				none
Turbidity, Field	6.7		0.5	2	NTU						92.1		0.5	2	NTU
MC SM 9222D 20TH															
Fecal Coliform	40	C,SH			CFU/100ml						170	C,SH			CFU/100ml
MT EPA 200.8*SW846 6020A															
Cadmium, Dissolved, ICP-MS		<MDL	0.05	0.25	ug/L							<MDL	0.05	0.25	ug/L
Cadmium, Total, ICP-MS		<MDL	0.05	0.25	ug/L						0.094	<RDL	0.05	0.25	ug/L
Calcium, Total, ICP-MS	4570		50	50	ug/L						4400		50	50	ug/L
Copper, Dissolved, ICP-MS	2.46		0.2	2	ug/L						5.66		0.2	2	ug/L
Copper, Total, ICP-MS	3.05		0.2	2	ug/L						24.8		0.2	2	ug/L
Lead, Dissolved, ICP-MS		<MDL	0.1	0.5	ug/L						0.15	<RDL	0.1	0.5	ug/L
Lead, Total, ICP-MS	0.21	<RDL	0.1	0.5	ug/L						5.81		0.1	0.5	ug/L
Magnesium, Total, ICP-MS	1170		50	50	ug/L						926		50	50	ug/L
Zinc, Dissolved, ICP-MS	1.8	<RDL	0.5	2.5	ug/L						11.6		0.5	2.5	ug/L
Zinc, Total, ICP-MS	3.94		0.5	2.5	ug/L						101		0.5	2.5	ug/L
MT EPA 200.8/SW846 6020A*SM2340B															
Hardness, Calc	16.2		0.331	0.331	mg CaCO3/L						14.8		0.331	0.331	mg CaCO3/L
OR SW846 3520C*SW846 8270D SIM															
2-Methylnaphthalene		<MDL	0.0047	0.0236	ug/L						0.013	<RDL	0.0047	0.0236	ug/L
Acenaphthene		<MDL	0.0047	0.0236	ug/L							<MDL	0.0047	0.0236	ug/L
Acenaphthylene		<MDL	0.0047	0.0236	ug/L						0.0087	<RDL	0.0047	0.0236	ug/L
Anthracene		<MDL	0.0094	0.0472	ug/L							<MDL	0.0094	0.0472	ug/L
Benzo(a)anthracene		<MDL	0.0094	0.0472	ug/L						0.03	<RDL	0.0094	0.0472	ug/L
Benzo(a)pyrene		<MDL	0.0094	0.0472	ug/L						0.038	<RDL	0.019	0.0943	ug/L

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250							
	Locator:	ECHO-BP2-OUT					Locator:	ECHO-BP2-OUT					Locator:	ECHO-BP3-IN							
	Descrip:	RAIN GARDEN #2 - O					Descrip:	RAIN GARDEN #2 - O					Descrip:	RAIN GARDEN #3 - I							
	Sample:	L64999-7					Sample:	L64999-8					Sample:	L64999-9							
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR							
	ColDate:	3/9/16 15:10					ColDate:	3/9/16 17:09					ColDate:	3/9/16 14:00							
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**								
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
Benzo(b,j,k)fluoranthene		<MDL	0.0094	0.0472	ug/L						0.131		0.019	0.0943	ug/L					
Benzo(g,h,i)perylene		<MDL	0.0094	0.0472	ug/L						0.035	<RDL	0.019	0.0943	ug/L					
Chrysene		<MDL	0.0094	0.0472	ug/L						0.0923		0.0094	0.0472	ug/L					
Dibenzo(a,h)anthracene		<MDL	0.0094	0.0472	ug/L							<MDL	0.019	0.0943	ug/L					
Fluoranthene		<MDL	0.0094	0.0472	ug/L						0.138		0.0094	0.0472	ug/L					
Fluorene		<MDL	0.0094	0.0472	ug/L							<MDL	0.0094	0.0472	ug/L					
Indeno(1,2,3-Cd)Pyrene		<MDL	0.0094	0.0472	ug/L						0.022	<RDL	0.019	0.0943	ug/L					
Naphthalene		<MDL	0.0047	0.0236	ug/L						0.02	<RDL,B	0.0047	0.0236	ug/L					
Phenanthrene		<MDL	0.0094	0.0472	ug/L						0.0704		0.0094	0.0472	ug/L					
Pyrene		<MDL	0.0094	0.0472	ug/L						0.247		0.0094	0.0472	ug/L					
OR WDOE NWTPH-DX																				
Diesel Range (>C12-C24)							<MDL	0.189	0.189	mg/L										
Lube Oil Range (>C24)							<MDL	0.189	0.189	mg/L										

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project:	421879-250					Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-BP3-IN					Locator:	ECHO-BP3-OUT				Locator:	ECHO-BP3-OUT			
	Descrip:	RAIN GARDEN #3 - I					Descrip:	RAIN GARDEN #3 - O				Descrip:	RAIN GARDEN #3 - O			
	Sample:	L64999-10					Sample:	L64999-11				Sample:	L64999-12			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	3/9/16 16:04					ColDate:	3/9/16 14:25				ColDate:	3/9/16 16:25			
	WET Weight Basis						**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997																
Ammonia Nitrogen							0.0034	<RDL	0.002	0.01	mg/L					
CV SM2320-B																
Total Alkalinity																
CV SM2540-D																
Total Suspended Solids							0.7	<RDL	0.5	1	mg/L					
CV SM4500-N-C																
Total Nitrogen							0.472		0.05	0.1	mg/L					
CV SM4500-NO3-F																
Nitrite + Nitrate Nitrogen							0.238		0.01	0.04	mg/L					
CV SM4500-P-B,F																
Total Phosphorus							0.183		0.005	0.01	mg/L					
CV SM4500-P-F																
Orthophosphate Phosphorus							0.137		0.01	0.04	mg/L					
ES KCEL SOP# 245																
Conductivity, Field							56.6		0.5	10	umhos/cm					
Dissolved Oxygen, Field							10.7		0.5	1	mg/L					
pH, Field							6.32				pH					
Sample Temperature, Field							9				deg C					
ES NONE																
Field Personnel							SH, JP, CB, CG				none					
Sample Information	WTPH-DX grab				none		Composite aliquots taken at : 1425, 1450, 1525, 1555, 1625				none	WTPH-DX grab				none
Turbidity, Field							9.2		0.5	2	NTU					
MC SM 9222D 20TH																
Fecal Coliform							44	C,SH			CFU/100ml					
MT EPA 200.8*SW846 6020A																
Cadmium, Dissolved, ICP-MS								<MDL	0.05	0.25	ug/L					
Cadmium, Total, ICP-MS								<MDL	0.05	0.25	ug/L					
Calcium, Total, ICP-MS							4460		50	50	ug/L					
Copper, Dissolved, ICP-MS							2.68		0.2	2	ug/L					
Copper, Total, ICP-MS							3.26		0.2	2	ug/L					
Lead, Dissolved, ICP-MS								<MDL	0.1	0.5	ug/L					
Lead, Total, ICP-MS							0.3	<RDL	0.1	0.5	ug/L					
Magnesium, Total, ICP-MS							941		50	50	ug/L					
Zinc, Dissolved, ICP-MS							2.3	<RDL	0.5	2.5	ug/L					
Zinc, Total, ICP-MS							4.56		0.5	2.5	ug/L					
MT EPA 200.8/SW846 6020A*SM2340B																
Hardness, Calc							15		0.331	0.331	mg CaCO3/L					
OR SW846 3520C*SW846 8270D SIM																
2-Methylnaphthalene								<MDL	0.0047	0.0236	ug/L					
Acenaphthene								<MDL	0.0047	0.0236	ug/L					
Acenaphthylene								<MDL	0.0047	0.0236	ug/L					
Anthracene								<MDL	0.0094	0.0472	ug/L					
Benzo(a)anthracene								<MDL	0.0094	0.0472	ug/L					
Benzo(a)pyrene								<MDL	0.0094	0.0472	ug/L					

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project:	421879-250					Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-BP3-IN					Locator:	ECHO-BP3-OUT				Locator:	ECHO-BP3-OUT			
	Descrip:	RAIN GARDEN #3 - I					Descrip:	RAIN GARDEN #3 - O				Descrip:	RAIN GARDEN #3 - O			
	Sample:	L64999-10					Sample:	L64999-11				Sample:	L64999-12			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	3/9/16 16:04					ColDate:	3/9/16 14:25				ColDate:	3/9/16 16:25			
	WET Weight Basis						**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	
Benzo(b,j,k)fluoranthene							<MDL	0.0094	0.0472	ug/L						
Benzo(g,h,i)perylene							<MDL	0.0094	0.0472	ug/L						
Chrysene							<MDL	0.0094	0.0472	ug/L						
Dibenzo(a,h)anthracene							<MDL	0.0094	0.0472	ug/L						
Fluoranthene							<MDL	0.0094	0.0472	ug/L						
Fluorene							<MDL	0.0094	0.0472	ug/L						
Indeno(1,2,3-Cd)Pyrene							<MDL	0.0094	0.0472	ug/L						
Naphthalene							<MDL	0.0047	0.0236	ug/L						
Phenanthrene							<MDL	0.0094	0.0472	ug/L						
Pyrene							<MDL	0.0094	0.0472	ug/L						
OR WDOE NWTPH-DX																
Diesel Range (>C12-C24)		<MDL	0.189	0.189	mg/L							<MDL	0.189	0.189	mg/L	
Lube Oil Range (>C24)	1.08		0.189	0.189	mg/L							<MDL	0.189	0.189	mg/L	

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project:	421879-250				Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-FLT1-IN				Locator:	ECHO-FLT1-IN				Locator:	ECHO-FLT1-OUT			
	Descrip:	FILTERRA #1 - INLE				Descrip:	FILTERRA #1 - INLE				Descrip:	FILTERRA #1 - OUTL			
	Sample:	L64999-13				Sample:	L64999-14				Sample:	L64999-15			
	Matrix:	LG STORM WTR				Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	3/9/16 14:20				ColDate:	3/9/16 16:26				ColDate:	3/9/16 14:33			
	WET Weight Basis					**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
CV KEROUEL & AMINOT 1997															
Ammonia Nitrogen	0.0158		0.002	0.01	mg/L						0.0021	<RDL	0.002	0.01	mg/L
CV SM2320-B															
Total Alkalinity															
CV SM2540-D															
Total Suspended Solids	54.3		0.8	1.7	mg/L						16.9		0.7	1.3	mg/L
CV SM4500-N-C															
Total Nitrogen	0.457		0.05	0.1	mg/L						0.211		0.05	0.1	mg/L
CV SM4500-NO3-F															
Nitrite + Nitrate Nitrogen	0.038	<RDL	0.01	0.04	mg/L						0.039	<RDL	0.01	0.04	mg/L
CV SM4500-P-B,F															
Total Phosphorus	0.068		0.005	0.01	mg/L						0.0453		0.005	0.01	mg/L
CV SM4500-P-F															
Orthophosphate Phosphorus	0.00324		0.0005	0.002	mg/L						0.0107		0.0005	0.002	mg/L
ES KCEL SOP# 245															
Conductivity, Field	28.4		0.5	10	umhos/cm						31.4		0.5	10	umhos/cm
Dissolved Oxygen, Field	11.1		0.5	1	mg/L						10.4		0.5	1	mg/L
pH, Field	7.76				pH						7.08				pH
Sample Temperature, Field	9.6				deg C						9.4				deg C
ES NONE															
Field Personnel	SH, JP, CB, CG				none						SH, JP, CB, CG				none
Sample Information	Composite aliquots taken at : 1420, 1455, 1525, 1555, 1625				none	WTPH-DX grab				none	Composite aliquots taken at : 1433, 1503, 1530, 1600, 1630				none
Turbidity, Field	43.8		0.5	2	NTU						37.7		0.5	2	NTU
MC SM 9222D 20TH															
Fecal Coliform	150	C,SH			CFU/100ml						120	C,SH			CFU/100ml
MT EPA 200.8*SW846 6020A															
Cadmium, Dissolved, ICP-MS		<MDL	0.05	0.25	ug/L							<MDL	0.05	0.25	ug/L
Cadmium, Total, ICP-MS	0.062	<RDL	0.05	0.25	ug/L							<MDL	0.05	0.25	ug/L
Calcium, Total, ICP-MS	4440		50	50	ug/L						3640		50	50	ug/L
Copper, Dissolved, ICP-MS	3.42		0.2	2	ug/L						3.82		0.2	2	ug/L
Copper, Total, ICP-MS	16.7		0.2	2	ug/L						7.6		0.2	2	ug/L
Lead, Dissolved, ICP-MS	0.1	<RDL	0.1	0.5	ug/L						0.13	<RDL	0.1	0.5	ug/L
Lead, Total, ICP-MS	5.54		0.1	0.5	ug/L						1.75		0.1	0.5	ug/L
Magnesium, Total, ICP-MS	677		50	50	ug/L						545		50	50	ug/L
Zinc, Dissolved, ICP-MS	7.08		0.5	2.5	ug/L						11.9		0.5	2.5	ug/L
Zinc, Total, ICP-MS	81		0.5	2.5	ug/L						26.4		0.5	2.5	ug/L
MT EPA 200.8/SW846 6020A*SM2340B															
Hardness, Calc	13.9		0.331	0.331	mg CaCO3/L						11.3		0.331	0.331	mg CaCO3/L
OR SW846 3520C*SW846 8270D SIM															
2-Methylnaphthalene	0.0096	<RDL	0.0047	0.0236	ug/L							<MDL	0.0047	0.0236	ug/L
Acenaphthene		<MDL	0.0047	0.0236	ug/L							<MDL	0.0047	0.0236	ug/L
Acenaphthylene	0.0054	<RDL	0.0047	0.0236	ug/L							<MDL	0.0047	0.0236	ug/L
Anthracene		<MDL	0.0094	0.0472	ug/L							<MDL	0.0094	0.0472	ug/L
Benzo(a)anthracene	0.028	<RDL	0.0094	0.0472	ug/L							<MDL	0.0094	0.0472	ug/L
Benzo(a)pyrene	0.034	<RDL	0.019	0.0943	ug/L							<MDL	0.0094	0.0472	ug/L

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250							
	Locator:	ECHO-FLT1-IN					Locator:	ECHO-FLT1-IN					Locator:	ECHO-FLT1-OUT							
	Descrip:	FILTERRA #1 - INLE					Descrip:	FILTERRA #1 - INLE					Descrip:	FILTERRA #1 - OUTL							
	Sample:	L64999-13					Sample:	L64999-14					Sample:	L64999-15							
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR							
	ColDate:	3/9/16 14:20					ColDate:	3/9/16 16:26					ColDate:	3/9/16 14:33							
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**								
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**				
Benzo(b,j,k)fluoranthene	0.107		0.019	0.0943	ug/L								0.01	<RDL	0.0094	0.0472	ug/L				
Benzo(g,h,i)perylene	0.031	<RDL	0.019	0.0943	ug/L								0.0098	<RDL	0.0094	0.0472	ug/L				
Chrysene	0.076		0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Dibenzo(a,h)anthracene		<MDL	0.019	0.0943	ug/L									<MDL	0.0094	0.0472	ug/L				
Fluoranthene	0.129		0.0094	0.0472	ug/L								0.0094	<RDL	0.0094	0.0472	ug/L				
Fluorene		<MDL	0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Indeno(1,2,3-Cd)Pyrene	0.021	<RDL	0.019	0.0943	ug/L									<MDL	0.0094	0.0472	ug/L				
Naphthalene	0.016	<RDL,B	0.0047	0.0236	ug/L									<MDL	0.0047	0.0236	ug/L				
Phenanthrene	0.0904		0.0094	0.0472	ug/L									<MDL	0.0094	0.0472	ug/L				
Pyrene	0.186		0.0094	0.0472	ug/L								0.013	<RDL	0.0094	0.0472	ug/L				
OR WDOE NWTPH-DX																					
Diesel Range (>C12-C24)								<MDL	0.189	0.189	mg/L										
Lube Oil Range (>C24)							0.973		0.189	0.189	mg/L										

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project:	421879-250					Project:	421879-250					Project:	421879-250					
	Locator:	ECHO-FLT1-OUT					Locator:	ECHO-BP2-OUT					Locator:	ECHO-BP2-OUT					
	Descrip:	FILTERRA #1 - OUTL					Descrip:	RAIN GARDEN #2 - O					Descrip:	RAIN GARDEN #2 - O					
	Sample:	L64999-16					Sample:	L64999-17					Sample:	L64999-18					
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					Matrix:	LG STORM WTR					
	ColDate:	3/9/16 16:31					ColDate:	3/9/16 15:15					ColDate:	3/9/16 17:10					
	WET Weight Basis						**WET Weight Basis**						**WET Weight Basis**						
Parameters		**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**		**Value**	**Qual**	**MDL**	**RDL**	**Units**		
CV KEROUEL & AMINOT 1997																			
Ammonia Nitrogen								<MDL	0.002	0.01	mg/L								
CV SM2320-B																			
Total Alkalinity																			
CV SM2540-D																			
Total Suspended Solids								<MDL	0.5	1	mg/L								
CV SM4500-N-C																			
Total Nitrogen							0.606		0.05	0.1	mg/L								
CV SM4500-NO3-F																			
Nitrite + Nitrate Nitrogen							0.31		0.01	0.04	mg/L								
CV SM4500-P-B,F																			
Total Phosphorus							0.411		0.005	0.01	mg/L								
CV SM4500-P-F																			
Orthophosphate Phosphorus							0.337		0.005	0.02	mg/L								
ES KCEL SOP# 245																			
Conductivity, Field																			
Dissolved Oxygen, Field																			
pH, Field																			
Sample Temperature, Field																			
ES NONE																			
Field Personnel							SH, JP, CB, CG				none								
Sample Information		WTPH-DX grab				none	Composite aliquots taken at : 1515, 1535, 1605, 1635, 1705				none		WTPH-DX grab				none		
Turbidity, Field																			
MC SM 9222D 20TH																			
Fecal Coliform							38	C,SH			CFU/100ml								
MT EPA 200.8*SW846 6020A																			
Cadmium, Dissolved, ICP-MS								<MDL	0.05	0.25	ug/L								
Cadmium, Total, ICP-MS								<MDL	0.05	0.25	ug/L								
Calcium, Total, ICP-MS							4530		50	50	ug/L								
Copper, Dissolved, ICP-MS							2.3		0.2	2	ug/L								
Copper, Total, ICP-MS							2.97		0.2	2	ug/L								
Lead, Dissolved, ICP-MS								<MDL	0.1	0.5	ug/L								
Lead, Total, ICP-MS							0.23	<RDL	0.1	0.5	ug/L								
Magnesium, Total, ICP-MS							1180		50	50	ug/L								
Zinc, Dissolved, ICP-MS							1.9	<RDL	0.5	2.5	ug/L								
Zinc, Total, ICP-MS							3.89		0.5	2.5	ug/L								
MT EPA 200.8/SW846 6020A*SM2340B																			
Hardness, Calc							16.2		0.331	0.331	mg CaCO3/L								
OR SW846 3520C*SW846 8270D SIM																			
2-Methylnaphthalene								<MDL	0.0047	0.0236	ug/L								
Acenaphthene								<MDL	0.0047	0.0236	ug/L								
Acenaphthylene								<MDL	0.0047	0.0236	ug/L								
Anthracene								<MDL	0.0094	0.0472	ug/L								
Benzo(a)anthracene								<MDL	0.0094	0.0472	ug/L								
Benzo(a)pyrene								<MDL	0.0094	0.0472	ug/L								

PRELIMINARY DATA

King County Environmental Lab Analytical Report

Table 7. 3/9/2016 Samples

	Project:	421879-250					Project:	421879-250				Project:	421879-250			
	Locator:	ECHO-FLT1-OUT					Locator:	ECHO-BP2-OUT				Locator:	ECHO-BP2-OUT			
	Descrip:	FILTERRA #1 - OUTL					Descrip:	RAIN GARDEN #2 - O				Descrip:	RAIN GARDEN #2 - O			
	Sample:	L64999-16					Sample:	L64999-17				Sample:	L64999-18			
	Matrix:	LG STORM WTR					Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	3/9/16 16:31					ColDate:	3/9/16 15:15				ColDate:	3/9/16 17:10			
	WET Weight Basis						**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	
Benzo(b,j,k)fluoranthene							<MDL	0.0094	0.0472	ug/L						
Benzo(g,h,i)perylene							<MDL	0.0094	0.0472	ug/L						
Chrysene							<MDL	0.0094	0.0472	ug/L						
Dibenzo(a,h)anthracene							<MDL	0.0094	0.0472	ug/L						
Fluoranthene							<MDL	0.0094	0.0472	ug/L						
Fluorene							<MDL	0.0094	0.0472	ug/L						
Indeno(1,2,3-Cd)Pyrene							<MDL	0.0094	0.0472	ug/L						
Naphthalene							<MDL	0.0047	0.0236	ug/L						
Phenanthrene							<MDL	0.0094	0.0472	ug/L						
Pyrene							<MDL	0.0094	0.0472	ug/L						
OR WDOE NWTPH-DX																
Diesel Range (>C12-C24)		<MDL	0.189	0.189	mg/L							<MDL	0.189	0.189	mg/L	
Lube Oil Range (>C24)	0.194		0.189	0.189	mg/L							<MDL	0.189	0.189	mg/L	

July 20, 2016

Preliminary Report

Carly Greyell
King County Department of Natural Resources & Parks
Water and Land Resources Division
Science and Technical Support Section
King Street Center, KSC-NR-0600
201 S. Jackson St., Suite 600
Seattle, WA 98104

Dear Carly:

A summary of 48-hour (*Daphnia*) and 7-day (*Ceriodaphnia*) tests conducted with storm water samples collected from Echo Lake rain garden sites on January 21, 2016 (Event 1) and March 9, 2016 (Event 2) is shown in the table below. The tests were initiated on January 26-27, February 4 and March 11, 2016. Detailed findings and method descriptions are in the "RESULTS" section of the attached report.

			Daphnia	*Ceriodaphnia*	
Event 1		Test #/ Date →	#7871/ 1-26-16	#7873/ 1-27-16	
Sample #↓	Station	Site	Mean % Surv	Mean Surv	Mean Reprod
Control	---	WW (*D.p.*); LWW (*C.d*)	100	90	34.2 (n = 9)
L64648-1	ECHO-BP1-IN	Rain Garden #1, Inlet	95	50*	23.8*
L64648-3	ECHO-BP1-OUT	Rain Garden #1, Outlet	95	80	30.6
w/Dilution		Test #/ Date→		#7883/ 2-4-16	
Control				100	33.4
L64648-1	ECHO-BP1-IN	Rain Garden #1, Inlet			
6.25%				100	30.2
12.5				100	34.3
25				100	35.3
50				100	31.1
100				100	27.7*
L64648-3	ECHO-BP1-OUT	Rain Garden #1, Outlet			
6.25				100	32.8
12.5				100	34.6
25				100	33.8
50				100	33.4
100				100	33.4
Event 2		Test #/ Date →	#7898/ 3-11-16	#7897/ 3-11-16	
Control	---	WW (*D.p.*); LWW (*C.d*)	100	100	17.4
L64999-1	ECHO-BP1-IN	Rain Garden #1, Inlet	85	100	19.2
L64999-3	ECHO-BP1-OUT	Rain Garden #1, Outlet	100	90	21.4

*Significantly different from the control ϕSignificantly different from the receiving water

If you would like additional information, please contact me at 477-7118 or Francis Sweeney at 477-7117.

Sincerely,

Julie Alaimo
King County Dept. of Natural Resources and Parks
Water and Land Resources Division
Environmental Laboratory Section
322 West Ewing St.
Seattle, WA 98119

BIOLOGICAL MONITORING REPORT FOR THE

Echo Lake Rain Garden Storm Water Tests
Events 1 and 2 (January-March, 2016)

Program #421879-250

Preliminary Report

KING COUNTY DEPARTMENT OF NATURAL RESOURCES AND PARKS
WATER AND LAND RESOURCES DIVISION
ENVIRONMENTAL LABORATORY SECTION
322 WEST EWING STREET
SEATTLE, WASHINGTON 98119

Test #/Date:	**7871 *Daphnia* Acute**	**1/26/2016**
	7873 *Ceriodaphnia* Chronic	**1/27/2016**
	7883 *Ceriodaphnia* Chronic	**2/4/2016**
	7897 *Ceriodaphnia* Chronic	**3/11/2016**
	7898 *Daphnia* acute	**3/11/2016**
Report Date:		**July 20, 2016**

METHODS

SAMPLES

Two storm water samples were collected at Echo Lake Rain Garden #1 Inlet and Outlet sites on January 21 (Event 1) and March 9 (Event 2), 2016. Approximately 3 to 7L of each sample was delivered to the King County Environmental Laboratory (KCEL) in 2.5 gallon glass screw-cap jars with minimal headspace and tested as received. The samples were stored in the dark at 4 ± 2°C and used to initiate the *Daphnia pulex* acute and the *Ceriodaphnia dubia* chronic toxicity tests, as well as for *C. dubia* test renewals.

Collection information and chemical characteristics of the test samples are listed in the table below.

	EVENT 1		EVENT 2	
Site:	Echo Lake Rain Garden #1, INLET	Echo Lake Rain Garden #1, OUTLET	Echo Lake Rain Garden #1, INLET	Echo Lake Rain Garden #1, OUTLET
Station:	ECHO-BP1-IN	ECHO-BP1-OUT	ECHO-BP1-IN	ECHO-BP1-OUT
KCEL Sample #:	L64648-1	L64648-3	L64999-1	L64999-3
Collect Date/Time	1-21-16/ 0845-1110h	1-21-16/ 0911-1122h	3-9-16/ 1440h	3-9-16/ 1445h
Rec'd Date/Time	1-21-16/ 1400h	1-21-16/ 1400h	3-10-16/ 0800h	3-10-16/ 0800h
Volume (L)	6.8	3.4	4.5	4.5
Temp (°C)	7.6/ 6.2	6.5	5.5	5.6
pH	7.22/ 7.18	7.14	7.26	7.10
D.O. (mg/L)	11.6/ 12.0	11.8	10.6	11.4
Tot. Alk (mg/L as $CaCO_3$)	7.93	10.3	10.8	15.3
Tot. Hard (mg/L as $CaCO_3$)	11.2	10.1	13.6	15.3
Cond (µmhos/cm)	21.2	27.0	28	41
Turbidity (NTU)				
Tot. Susp. Solids (mg/L)	45.4	10.2	56.4	16.8
Ortho-P (mg/L)	0.0125	0.136	0.00218	0.097
NO_2 + NO_3 (mg/L)	0.031 (<RDL)	0.0885	0.0717	0.202
Tot N (mg/L)	0.324	0.302	0.609	0.503
Tot P (mg/L)	0.07	0.192	0.0736	0.155
Tot NH_3 (mg/L)	0.0651	0.0054 (< RDL)	0.100	0.0064 (< RDL)

CONTROL WATER

The control water for tests with *Daphnia pulex* is fresh water obtained from a 95 ft. deep well located at the KCEL and filtered to 60 µm with Nitex screen before use. *D. pulex* are routinely maintained in static-renewal cultures of well water (WW) at 20 ± 1°C.

Water used for testing and culturing with *Ceriodaphnia* is fresh water obtained monthly from Lake Washington at a site midway between the I-90 and 520 bridges and filtered through 60 µm Nitex screen before use.

Metals by ICP are measured monthly (last analysis: 5-2016); metals by ICP/MS or CVAA and organic compounds are measured annually (last analyses: 02 & 03-2016). Hardness, alkalinity, conductivity and pH are measured at the beginning of each test.

Physical-chemical characteristics of the WW and LWW are listed in the following table:

Parameter	WW Values		LWW Values		Units
	10-16-15	1-18-16	1-21-16	2-29-16	
Temperature	NA	16.9	NA	NA	°C, adjusted as necessary
Conductivity	265	160	98.5	98.2	µmhos/cm
pH	7.96	7.90	7.70	7.71	
Total Hardness (calc.)	109	62	38	39	mg/L as $CaCO_3$
Total Alkalinity	80	54	36	37	mg/L as $CaCO_3$
Total Cd	< 2		< 2		µg/L
Total Cr	< 3		< 3		µg/L
Total Cu	< 4		< 4		µg/L
Total Ni	< 5		< 5		µg/L
Total Pb	< 20		< 20		µg/L
Total Zn	< 5		< 5		µg/L
Total Mercury	< 0.05		< 0.05		µg/L
Volatile Organics	*		+		
Organic Analysis (BNA'S): Bis(2-Ethylhexyl)Phthalate Di-N-Butyl Phthalate	** 7.1 < MDL		++ 0.56 < RDL < MDL		 µg/L µg/L
Pesticides & PCB's:	***		+++		

* 45 cmpds not detectable
** 68 cmpds not detectable
*** 28 cmpds not detected
\+ 45 cmpds not detectable
++ 68 cmpds not detectable
+++ 28 cmpds not detected

ACUTE TOXICITY TESTS

Water Flea - *Daphnia pulex* – 48-Hour Static Acute Test

Events 1 and 2

The *Daphnia* acute toxicity tests followed the methods of US EPA (2002a). Test animals were neonates (< 24-hours old) taken from an overnight brood board; parent animals were adults isolated from in-house mass cultures. Samples were tested as received at one undiluted (100%) concentration along with a WW-only control. Test chambers were 30-mL beakers containing 25 mL of test solution. Individual broods were blocked across treatments such that each replicate contained representatives of five separate broods, with four replicates per treatment. Test chambers were randomized at the start of the test. The test was incubated at 20.0 ± 1.0°C for 48 hours on a 16:8 hour light:dark cycle. Survival and water quality measurements were recorded every 24 hours. Temperature was measured daily by digital thermometer in replicate blanks at six positions of the test tray (4 outer corner + 2 center). In addition, incubator temperature was measured at 15-minute intervals using an Onset Tidbit data logger. Temperature, pH and dissolved oxygen (D.O.) values can be found on the attached photocopied pages from the laboratory notebook in the "Storm Water Tests" section of this report.

Test #	LIMS Sample #	Start Date/ Time	End Date/ Time	Sample Concentrations (%)	Daphnid Age	# Reps/ Trtmt	# Orgs/ Rep
7871 (Event 1)	L64648	1-26-16/ 1400h	1-28-16/ 1455h	0 (WW control), 100%	< 24 hr	4	5
7898 (Event 2)	L64999	3-11-16/ 1255h	3-13-16/ 1300h	0 (WW control), 100%	< 24 hr	4	5

CHRONIC TOXICITY TESTS

Water Flea - *Ceriodaphnia dubia* - 7-Day Chronic Static Renewal Test

Event 1 (No Dilutions)

The *Ceriodaphnia dubia* 7-day static renewal chronic toxicity tests were conducted as outlined in US EPA (2002b). Samples were tested as received at one undiluted (100%) concentration. Ten replicates containing one animal each were tested at each treatment, including the control. Test organisms were 3rd or 4th-brood neonates (< 24 hours old) taken from an in-house individual brood board of adults started from mass culture. Individual broods were blocked across treatments, and each replicate represented a different brood. The test was incubated at 25 ± 1.0°C for 7 days on a 16:8 h light:dark cycle. All test solutions were renewed daily. Reproduction, survival, temperature and water quality measurements were recorded every 24 hours. Temperature was measured daily in six test board temperature blanks (4 outer corner + 2 center) and at 15-minute intervals using an Onset "Tidbit" data logger placed in a beaker of water in the incubator. The pH and D.O. values measured during testing can be found on the attached photocopied pages from the laboratory notebook in the "Storm Water Tests" section of this report.

Test #	**LIMS Sample #**	**Start Date/ Time**	**End Date/ Time**	**Sample Concentrations (%)**	**Daphnid Age**	**# Reps/ Trtmt**	**# Orgs/ Rep**
7873	L64648-1, -3	1-27-16/ 1330h	2-3-16/ 1300h	0 (LWW control), 100%	< 24 hr	10	1

Event 1 (With Dilutions)

Due to toxicity observed in the Inlet sample in the first set of tests, a second chronic *C. dubia* test was initiated using the original samples diluted with LWW in a dilution series. Five concentrations of each sample were tested: 100, 50, 25, 12.5 and 6.25%, along with a 0% sample (LWW-only) control. Because an insufficient volume of the Outlet sample L64648-3 remained for conducting renewals, the test was run using 5 replicates of the this sample. The test was otherwise run as described above for the Event 1 test.

Test #	**LIMS Sample #**	**Start Date/ Time**	**End Date/ Time**	**Sample Concentrations (%)**	**Daphnid Age**	**# Reps/ Trtmt**	**# Orgs/ Rep**
7883	L64648-1	2-4-16/ 1450h	2-11-16/ 1443h	0 (LWW control), 6.25, 12.5, 25, 50, 100%	< 24 hr	10	1
"	L64648-3	"	"	"	"	5	"

Event 2 (No Dilutions)

The *C. dubia* chronic test with Event 2 storm water samples was conducted as described above for the Event 1 test, with no sample dilutions.

Test #	LIMS Sample #	Start Date/ Time	End Date/ Time	Sample Concentrations (%)	Daphnid Age	# Reps/ Trtmt	# Orgs/ Rep
7898	L64999-1, -3	3-11-16/ 1255h	3-13-16/ 1300h	0 (LWW control), 100%	< 24 hr	10	1

QUALITY CONTROL

Reference toxicant control results are summarized in the following table.

Test Organism:	*Daphnia*		*Ceriodaphnia*	
Test #:	7869	7905	7881	7904
Control Survival (%)	100	100	80	100
Criteria	≥ 90	≥ 90	≥ 80	≥ 80
Acceptable?	**Yes**	**Yes**	**Yes**	**Yes**
Survival LC50 (g/L)	2.79	3.17		
Lab Control Limits	2.44 - 4.36	2.43 – 4.36		
Acceptable?	**Yes**	**Yes**		
Control Reprod (# neos/adult)			33.8	36.8
Criteria			≥ 15	≥ 15
Acceptable?			**Yes**	**Yes**
PMSD for Reproduction (%)*			32.04	24.4
Criteria			13 – 47	13 - 47
Acceptable?			**Yes**	**Yes**
Reproduction IC25 (µg/L)			3.09	6.71
Lab Control Limits			0 – 5.29	0 – 6.07
Acceptable?			**Yes**	**No**

*Percent Minimum Significant Difference; determined by Dunnett's Multiple Comparison test (Steels Many-One Rank Test for unequal variance); ($\alpha = 0.05$)

NaCl was used as a reference toxicant in acute tests with *Daphnia*. Temperature, pH and dissolved oxygen measurements remained within acceptable limits throughout the reference toxicant tests for *Daphnia* (#7869 & #7905) (US EPA 2002a). Acute positive control tests met acceptability criteria regarding control survival, and the survival LC50 endpoints were within the control limits of the mean ± 2SD (US EPA, 2002a).

Cadmium nitrate was used as a reference toxicant in chronic toxicity tests with *Ceriodaphnia*. Temperature, pH and dissolved oxygen measurements remained within acceptable limits throughout the reference toxicant tests for *Ceriodaphnia* (#7881 & #7904) (US EPA 2002b). In addition, chronic tests met acceptability criteria regarding control survival and mean control reproduction. For test #7881, the reproduction IC25 fell within the control limits of mean ± 2SD (US EPA 2002b), whereas for #7904 it slightly exceeded the upper control limit. Because it met all other QC criteria, the test was retained. Reference toxicant tests with *Ceriodaphnia* were re-started in 2015 following a three-year hiatus. It is possible that a change in diet or culture health may have affected the response to the toxicant.

The precision tables located at the end of this report are constructed to monitor the sensitivity of the organisms to the reference toxicant and thereby provide an indication of their overall sensitivity to other compounds.

WATER QUALITY MONITORING

Methods and method numbers for water quality tests are listed in the following table:

Parameter	**Method**
Water Quality Tests	APHA (1992); US EPA (1991).
Temperature	Standard Mercury Thermometer (calibrated with a certified thermometer traceable to NBS records) and Onset, Tidbit (v2) UTBI-001 Temperature Logger (KCEL #436v1).
Dissolved Oxygen	YSI membrane electrode method (Method #4500-0 G; KCEL #434).
pH	Beckman 690 meter with automatic temperature compensation and Ross combination electrode (Method #4500-H; APHA 1992; KCEL #433).
Total Alkalinity	Potentiometric Method (Method #2320 B; KCEL #319v4).
Total Hardness	By calculation (Method #2340 B; KCEL #612v4).
Conductivity	Orion Model #122 Meter with 012210 conductivity cell (Method 2510B; KCEL #435).
Total Ammonia	Phenate Method (Standard Methods SM 4500 - NH_3-G; KCEL #330v4).
Unionized Ammonia	Calculated from total ammonia, pH and ionization constants (APHA Method #417 G).
Pesticides and PCB's	Continuous liquid extraction method (EPA Method #608; KCEL #733).
Organic Analysis	Continuous liquid extraction method for BNA's (EPA Method #625; KCEL #731).
Volatile Organics	Purge and trap method (EPA Method #624; KCEL #732).
Total Metals	ICP for Cd, Cr, Cu, Ni, Pb and Zn (EPA Method #200.7; KCEL #612v4); for Hg analysis (KCEL #604v5, 601v4, 605v0).

RESULTS

ACUTE TOXICITY TESTS

Water Flea - *Daphnia pulex* – 48-Hour Static Acute Test

Event 1 (No Dilutions): KCEL Test #7871

Survival results for the 48-hour *Daphnia* acute test with Event 1 storm water samples are listed in the table below.

Sample #	Station/ Site	% Sample	Percent Survival at 48 Hours: % Survival in each rep. (n=5 *Daphnia*/rep) Rep 1	Rep 2	Rep 3	Rep 4	Mean	# *Daphnia* Tested
----	Well Water Control	0	100	100	100	100	**100**	20
L64648-1	ECHO-BP1-IN Rain Garden #1 (Inlet)	100	80	100	100	100	**95**	20
L64648-3	ECHO-BP1-OUT Rain Garden #1 (Outlet)	100	100	80	100	100	**95**	20

Survival was 100 % in the well water-only control and 95% in both the Inlet and Outlet storm water samples. Survival in both the Inlet and Outlet samples was not significantly reduced from the control ($p > 0.05$; Wilcoxon Rank Sum Test).

The unionized ammonia level in 100% Inlet and Outlet sample reached a maximum of 0.007 and 0.005 mg N/L, respectively, during the 48-hour test.

Event 2 (KCEL Test #7898)

Results are listed in the table below of the 48-hour acute test with *Daphnia* using Event 2 storm water samples.

Sample #	Station/ Site	% Sample	% Survival at 48 Hours: % Survival in each rep. (n=5 *Daphnia*/rep) Rep 1	Rep 2	Rep 3	Rep 4	Mean	# *Daphnia* Tested
----	Well Water Control	0	100	100	100	100	**100**	20
L64999-1	ECHO-BP1-IN Rain Garden #1 (Inlet)	100	80	100	80	80	**85**[+]	20
L64999-3	ECHO-BP1-OUT Rain Garden #1 (Outlet)	100	100	100	100	100	**100**	20

[+]Different from control at ANOVA, but not significantly ($p > 0.05$; Wilcoxon Rank-Sum test)

Survival was 100% in the well water-only control and Outlet storm sample and 85% in the Inlet storm sample. Survival in the Inlet sample was decreased from the control and Outlet sample (at ANOVA) but not significantly ($p > 0.05$; Wilcoxon Rank-Sum test), whereas survival in the Outlet samples was not reduced from the control.

The unionized ammonia level in both the 100% Inlet and Outlet samples reached a maximum of 0.009 mg NH_3-N/L during the 48-hour test.

Water Flea - *Ceriodaphnia dubia* - 7-Day Chronic Static Renewal Test

Event 1 (KCEL Test #7873)

Reproduction and survival results over the 7-day chronic *Ceriodaphnia* test with Event 1 storm water samples are shown in the table below.

Sample #	Station	% Sample	Reproduction (Mean #Neonates/Adult in 7 Days) 1	2	3	4	5	6	7	8	9	10	Mean Reprod	Mean % Surv
---	LWW Control	0	28	12	49	48	51	30	16	5+	39	35	**34.2 (n = 9)**	90
L64648-1	ECHO-BP1-IN	100	23	34	21	14	38	8	34	19	24	23	**23.8***	50**
L64648-2	ECHO-BP1-OUT	100	5	45	46	42	24	41	4	41	28	30	**30.6**	80

+ Outlier; omitted from analysis
*Significantly different from control ($p < 0.05$; 1-tailed t-Test) **Significantly different from control ($p < 0.05$; Fisher's Exact Test)

As shown in the table above, survival was 90% in the LWW-only control, 50% in the Inlet storm sample and 80% in the Outlet storm sample. In the Inlet sample, survival was significantly reduced from the control ($p < 0.05$; Fishers Exact Test), but not significantly ($p > 0.05$; Fishers Exact Test) in the Outlet sample.

Similarly, reproduction in the Inlet storm sample was significantly ($p < 0.05$; homoscedastic 1-tailed t-Test) less than the control but not significantly reduced from the control in the Outlet sample ($p > 0.05$; homoscedastic 1-tailed t-Test). Reproduction in the Inlet and Outlet sample did not differ significantly ($p > 0.05$; Tukey-Kramer and homoscedastic 1-tailed t-Test).

The unionized ammonia level in 100% Inlet and Outlet samples reached a maximum of 0.009 and 0.007 mg NH_3-N/L, respectively, during the 7-day test.

Event 1, with Dilutions (KCEL Test #7883)

Results of the 7-day Ceriodaphnia chronic renewal test run using a dilution series of Event 1 storm water samples are listed in the table below.

Sample #	Station	% Sample	Reproduction (Mean #Neonates/Adult in 7 Days) 1	2	3	4	5	6	7	8	9	10	Mean Reprod	Mean % Surv
---	LWW Control	0	36	34	34	34	32	33	28	32	36	35	**33.4**	100
L64648-1	ECHO-BP1-IN	6.25	38	25	32	9	32	35	29	30	36	36	**30.2**	100
		12.5	39	37	32	36	35	32	32	34	32	34	**34.3**	100
		25	32	36	33	37	32	37	32	35	52	27	**35.3**	100
		50	37	31	29	32	31	33	25	29	31	33	**31.1**	100
		100	29	23	27	28	27	32	23	32	24	32	**27.7***	100
L64648-3	ECHO-BP1-OUT	6.25	31	39	28	35	31						**32.8**	100
		12.5	37	35	34	36	31						**34.6**	100
		25	33	34	31	35	36						**33.8**	100
		50	32	31	31	38	35						**33.4**	100
		100	33	33	33	34	34						**33.4**	100

*Significantly different from control ($p < 0.05$; 1-tailed t-Test)

Survival was 100% in the LWW-only control and all concentrations of both the Inlet and Outlet storm samples.

For the Inlet sample, reproduction was significantly reduced from the control at the 100% sample ($p < 0.05$; Steel Many-One Rank Test); it was also less than the control at 6.25% and the 50% sample concentrations but not significantly ($p > 0.05$; Steel

Many-One Rank Test). The NOEC was calculated to be 50% sample. Because reproduction was not reduced by more than 25% at any concentration, an IC25 could not be calculated.

For the Outlet sample, reproduction was not reduced from the control at any sample concentration; therefore, an IC25 could not be calculated.

Reproduction in the Outlet sample did not differ significantly from the Inlet sample ($p > 0.05$; heterogeneous 1-tailed t-Test).

The unionized ammonia level in 100% Inlet and Outlet samples reached a maximum of 0.010 and 0.006 mg NH_3-N/L, respectively, during the 7-day test.

Event 2 No Dilutions (KCEL Test #7897)

Average reproduction and survival results at the end of the 7-day *Ceriodaphnia* chronic renewal test with Event 2 storm water samples are listed in the table below.

Sample #	Station	% Sample	Reproduction (Mean #Neonates/Adult in 7 Days) 1	2	3	4	5	6	7	8	9	10	Mean Reprod	Mean % Surv
---	LWW Control	0	19	16	20	17	20	18	18	9	19	18	**17.4**	100
L64999-1	ECHO-BP1-IN	100	8	18	18	20	22	23	19	24	21	19	**19.2**	100
L64999-3	ECHO-BP1-OUT	100	24	21	18	21	20	22	22	23	22	21	**21.4**	90

Survival was 100% in the LWW-only control and the Inlet sample and 90% in the Outlet sample. Survival in the Outlet sample was not significantly reduced from the control ($p > 0.05$; Fisher Exact/ Bonferroni t-Test).

Reproduction in both the Inlet and Outlet samples was not reduced from the control.

The unionized ammonia level in 100% Inlet and Outlet sample reached a maximum of 0.016 and 0.013 mg NH_3-N/L, respectively, during the 7-day test.

QUALITY CONTROL

Storm water sample and control performance results are summarized in the following table:

Test Organism:	*Ceriodaphnia*			*Daphnia*	
Test #:	7873	7883	7897	7871	7898
Control Survival (%)	90	100	100	100	100
Criteria	≥ 80	≥ 80	≥ 80	≥ 90	≥ 90
Acceptable?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Control Reproduction (# neos/adult)	34.2	33.4	17.4		
Criteria	≥ 15	≥ 15	≥ 15		
Acceptable?	**Yes**	**Yes**	**Yes**		
PMSD for Reproduction (%)*	27.7 (IN) 34.9 (OUT)	15.3 (IN)	17.3 (IN)		
Criteria	13-47	13-47	13-47		
Acceptable?	**Yes**	**Yes**	**Yes**		

*Percent Minimum Significant Difference; determined by Dunnett's Multiple Comparison test ($\alpha = 0.05$)

As shown in the table above, both the acute and chronic effluent tests met acceptability criteria regarding control performance and test variability, including survival, reproduction and PMSD (US EPA, 2002a & 2002b).

Dissolved oxygen, pH, temperature and/or salinity remained within acceptable limits throughout both the acute and chronic tests (US EPA, 2002a & 2002b). Water quality data recorded during testing is shown on the photocopied pages from the laboratory notebook in the "Effluent Tests" section of this report.

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Storm Water Tests:

Bench Sheets, Calculations, and Statistics

Unionized Ammonia in 100% Storm Sample

Test #/ Type		pH (Max)	Sample Age	T* (^oC)	T (^oK)	pKa	Tot Amm (mg/L)	pKa – pH	$1 + 10^{(pKa-pH)}$	NH_3N (mg/L) **
7871/ Daphnia (ACUTE)	IN	7.76	0h	19.6	292.8	9.413	0.324	1.653	45.978	**0.007**
	OUT	7.58	48h	20.0	293.2	9.400	0.302	1.82	67.069	**0.005**
7898/ Daphnia (ACUTE)	IN	7.60	48h	19.7	292.9	9.410	0.609	1.810	65.565	**0.009**
	OUT	7.65	48h	19.7	292.9	9.410	0.503	1.760	58.544	**0.009**
7873/ C. dubia (CHRON)	IN	7.67	1d	25.3	298.5	9.235	0.324	1.565	37.728	**0.009**
	OUT	7.60	1d	25.3	298.5	9.235	0.302	1.635	44.152	**0.007**
7883/ C. dubia (CHRON)	IN	7.77	2d	24.2	297.4	9.269	0.324	1.499	32.550	**0.010**
	OUT	7.62	1d	23.6	296.8	9.287	0.302	1.667	47.452	**0.006**
7897/ C. dubia (CHRON)	IN	7.73	1d	23.6	296.8	9.287	0.609	1.557	37.058	**0.016**
	OUT	7.71	2d	23.9	297.1	9.278	0.503	1.568	37.983	**0.013**

***** Highest temperature measured in the temperature cups placed in the test tray

** Unionized ammonia calculation (APHA Method #417 G):

$$NH_3\text{-}N = \frac{\text{Total Ammonia}}{1 + 10^{(pKa - pH)}}$$

where $pKa = 0.09018 + (2729.69/T)$

and $T\ (^oK) = \text{Temp.}\ (^oC) + 273.2$