Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task B.16

B-HS7 PNRS Effluent Testing for FDOH Additives Rule

June 2014

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In association with:

AET

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TASK B.16

B-HS7 PNRS Effluent Testing for FDOH Additives Rule

Prepared for:

Florida Department of Health
Division of Disease Control and Health Protection
Bureau of Environmental Health
Onsite Sewage Programs
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FDOH Contract CORCL

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B-HS7 PNRS Effluent Testing for FDOH Additives Rule

Executive Summary

Effluent sampling and analyses were performed on the B-HS7 full-scale PNRS to evaluate the impact of lignocellulosic (a blended urban waste wood from Wood Resource Recovery, Ocala, FL) media on effluent quality. Testing was done according to Florida's Additive Rule for Septic System Products established by the Florida Department of Health (FDOH). The lignocellulosic media was used in biofilters that enhance nitrogen removal in onsite wastewater treatment systems. Lignocellulosic materials are intended as reactive media in anoxic denitrifying biofilters.

Additives testing was conducted by performing chemical analyses and acute toxicity bio-assays on effluent samples from the primary tank and the Stage 2 biofilter that was actively operating at the passive nitrogen reduction system at home site B-HS7 in Marion County, Florida. Volatile organic compound (VOC) analyses were conducted using E.P.A. Methods 8260 and 504.1, and acute toxicity testing was performed by ninety-six hour bioassay with Cyprinella leedsi (Bannerfin Shiner) according to the E.P.A. Whole Effluent Toxicity (WET) protocol.

The concentrations of VOCs in both effluents were below Method Detection Limits for the majority of chemicals. Two of the analytical results exceeded the Guidance Maximum Contaminant Level (GMCL) for VOCs established by the Florida Department of Health. The sole chemical exceeding its GMCL was Toluene (GMCL is 40 ug/L), which was found in both the primary tank effluent (43 ug/L) and Stage 2 biofilter effluent (63 ug/L).

The primary tank (septic tank effluent) exhibited toxicity by the WET protocol, with a Lethal Concentration 50 (LC50) of 19.8%. The Stage 2 biofilter effluent also exhibited toxicity by the WET protocol, as exhibited by Lethal Concentration 50 (LC50) of 26.6%. The Stage 2 effluent included contact with lignocellulosic test media.

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1.0 Background

1.1 Florida's Additive Rule for Septic System Products

Florida Department of Health has established specific testing and evaluation requirements for materials that are added to onsite wastewater systems in Florida (FDOH, 2013). Chapter 381.0065 (4) (m), Florida Statutes states: "No product sold in the state for use in onsite sewage treatment and disposal systems may contain any substance in concentrations or amounts that would interfere with or prevent the successful operation of such system, or that would cause discharges from such system to violate applicable water quality standards." The additives rule testing requirements generally include evaluation of volatile organic chemicals by U.S. E.P.A. Method 8260 and acute toxicity bioassay testing by the E.P.A. Whole Effluent Toxicity 96 hr. bioassay protocol (FDOH, 2013).

1.2 Media Evaluated

The B-HS7 system evaluated included one media in the treatment train that could be considered an additive: lignocellulosic material.

Lignocellulosic material is a structural component of woody plants and one of the most abundant biopolymers on earth. It is primarily composed of cellulose, hemicellulose and lignin. Cellulose is an organic compound with molecular formula (C6H10O5)n, a polysaccharide consisting of a linear chain of several hundred to over ten thousand β(1→4) linked D-glucose units. Hemicellulose is a polysaccharide related to cellulose that comprises ca. 20% of the biomass of most plants. Hemicellulose, in contrast to cellulose, is derived from several sugars in addition to glucose, especially xylose. Lignin is a complex chemical and an integral part of the secondary cell walls of woody plants (Lebo et al., 2001). Lignin is one of the most abundant organic polymers on Earth, exceeded only by cellulose, and constitutes from a quarter to a third of the dry mass of wood. As a biopolymer, lignin is unusual because of its heterogeneity and lack of a defined primary structure. Lignin is a cross-linked macromolecule composed of three types of substituted phenols (phenylpropanes) having guaiacyl, syringyl p-hydroxyphenyl and biphenyl nuclei, linked and polymerized through a variety of nonhydroxyl stable C-C and C-O-C bonds (Paul, and Clark, 1989). Its structure is based on the phenyl propanoid unit, which consists of an aromatic ring and 3-C side chain. Lignin fills the spaces in the cell wall between cellulose, hemicellulose, and pectin and is covalently linked to hemicellulose; it resembles a kind of phenol-formaldehyde resin that acts like glue to hold the lignocellulose matrix together. The most commonly noted lignin function is the support through strengthening of wood (xylem cells) in trees (Wardrop, 1969). Lignin is generally associated with reduced digestibility of the

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overall plant biomass, which helps defend against pathogens and pests. As part of natural cycling, lignin degradation is facilitated by microorganisms including fungi and bacteria although the details of biodegradation are not well understood. Organic products of lignin degradation can be further processed by bacteria.

Southern Yellow Pine (SYP) is a collective term that refers to a group of coniferous species which are classified as yellow pine (as opposed to white pine) and which are native to the Southern United States. Pines are a common feature of the Florida landscape. There are seven species of pines that are native to Florida and three other commonly planted non-native species (Amy and Flinchum, (2011). They grow very well in the acidic soil found in the region. The varieties principally include Longleaf (Pinus palustris), Loblolly (Pinus taeda), Shortleaf (Pinus echinata), and Slash (Pinus elliotti) pine (Forest Products Laboratory, 1936). There are generally no fundamental differences among southern pines for lumber production and Longleaf and Slash pines have historically been responsible for 60% of the world's turpentine supply.

The use of lignocellulosic material has been generally recognized as a viable approach to engineered denitrification (Schipper et al., 2010a; Collins et al., 2010). Successful application of lignocellulosic materials as electron donor in passive denitrification systems has been reported in many studies (Cameron and Schipper, 2010; Elgood et al., 2010; Moorman et al., 2010; Oakley et al. 2010; Schipper et al., 2010b; Woli et al., 2010). Several studies have successfully applied pine based lignocellulosics in denitrification biofilters (Cameron and Schipper, 2010; Elgood et al., 2010; Robertson, 2010; Schipper et al., 2010c).

1.3 Known and Expected Reactions

Lignocellulosic media is expected to degrade through hydrolytic reactions which may be enhanced by microbial processes, thereby releasing organic carbon which may undergo possible subsequent reactions to produce labile organic carbon compounds that can be used by heterotrophic denitrifying microorganisms.

2.0 Testing Methods

2.1 Source of Media

Lignocellulosic material was procured in November 2013 from a blended urban waste wood from Wood Resource Recovery, Ocala, FL. The material was a hardwood mulch

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from the internal sections of wood waste and did not include bark, small limbs, and leaf components. A Material Safety Data Sheet (MSDS) for lignocellulosic material is included in Appendix A.

2.2 Biofilter Configuration and Sample Collection

The nitrogen reducing onsite treatment system for the single family residence was installed in November 2013. Design and construction details were presented previously in the Task B.6 document. Figure 1 is a system schematic showing the system components and layout of the installation. The PNRS system consists of a 900 gallon two chamber concrete primary tank; 300 gallon concrete pump tank; low-pressure distribution network, and a lined Stage 1 and 2 drainfield.

The PNRS system had been operating for approximately thirty weeks when samples were collected for additives testing. A sample of septic tank effluent (STE) was collected for chemical analysis. Household wastewater enters the primary tank and exits as septic tank effluent through an effluent filter screen into the pump tank. The effluent was sampled approximately 1.5 feet below the surface of the pump tank which is referred to as primary effluent or STE. Samples are representative of the whole household wastewater and represent the influent to the remainder of the onsite nitrogen reduction system. The Stage 2 biofilter effluent was collected from a stainless drivepoint (DP07) located on the liner at the bottom of the lignocellulosic layer. This sample location is after passage through the sand within the Stage 1 biofilter and the underlying lignocellulosic material. It is the final effluent from the treatment system prior to being discharged into the soil around the perimeter of the liner.

Biofilter characteristics are listed in Table 1. Samples were collected into specific sample containers for chemical and bioassay analysis, immediately placed in coolers on ice, and transported to laboratories in Oldsmar and Sarasota, FL. As a part of the Passive Nitrogen Removal Study, a water quality monitoring event was conducted on June 19, 2014. The water quality data (Table 2) represent conditions at the time the bioassay samples were collected and can be used to provide insight into biofilter performance when the effluent samples were collected for the Additives Testing.

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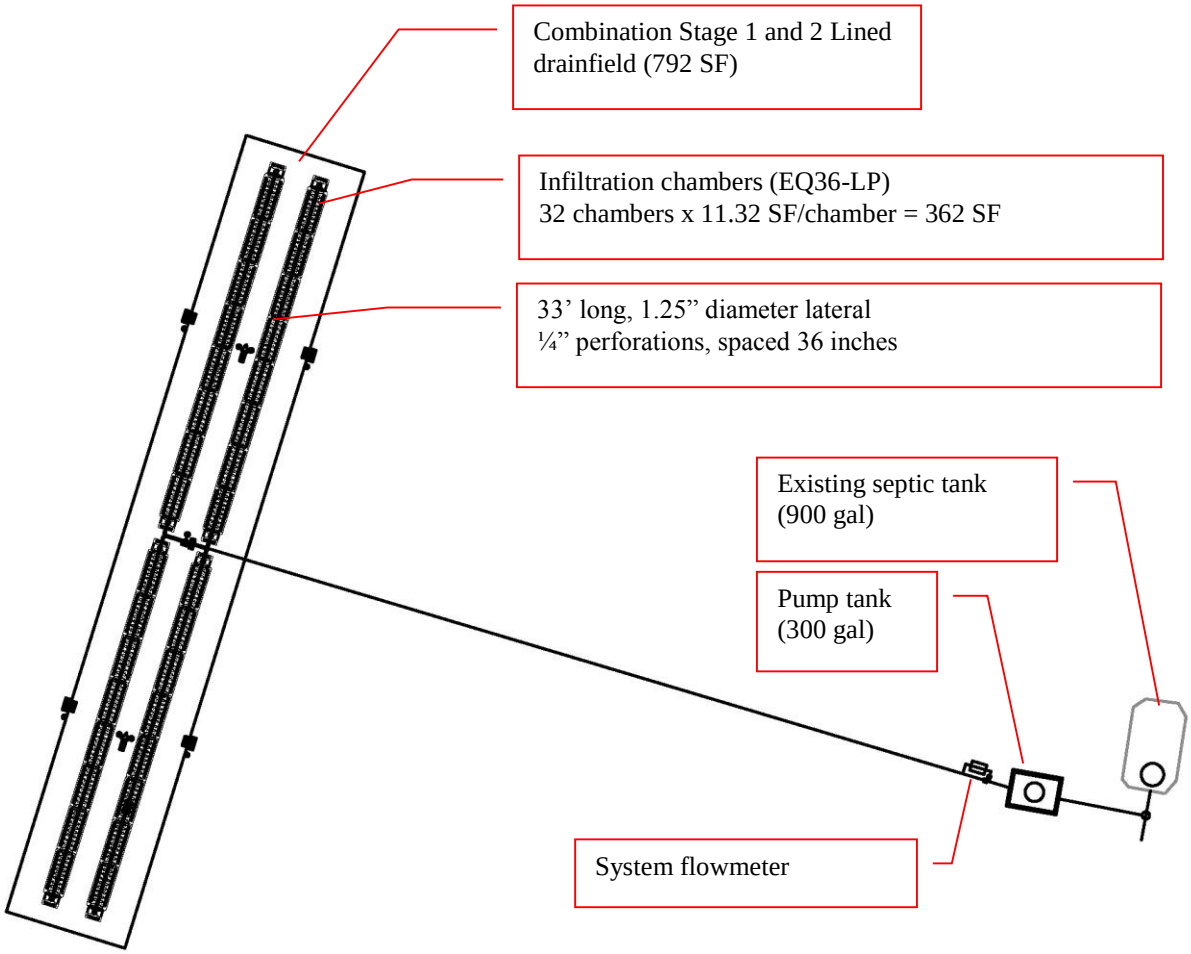

Figure 1
Plan View of B-HS7 System Layout

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Table 1
Passive Nitrogen Reduction System Components

	Influent	Tank Volume (gal)	Surface Area (ft^2)	Media	Media Saturated or Unsaturated
Primary Tank	Household wastewater	900		none	N/A
Pump Tank	Primary tank effluent	300	12	none	N/A
Lined Drainfield Area	Primary tank effluent		11' x 72' (792)	• 24" native sand • 12" lignocellulosic	• sand unsaturated • bottom 6" of lignocellulosic saturated

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Table 2
Biofilter Effluent Water Quality June 19, 2014

Parameter	Primary tank (STE)	Stage 2 Effluent (ST2-DP-07)
Temperature, ^{o}C	25.5	29.4
Dissolved oxygen, mg/L	0.01	0.88
Oxidation Reduction Potential, mV	-146.5	11.8
Specific conductance, umhos/cm	2046	1764
pH	7.34	6.27
Total alkalinity, mg/L as $CaCO_3$	250	240
Total suspended solids, mg/L	28	8
Volatile suspended solids, mg/L	22	9
Carbonaceous five day biochemical oxygen demand, mg/L	120	16
Chemical oxygen demand, mg/L	22	50
Total kjeldahl nitrogen, mg/L	360[1]	3.5
Ammonia nitrogen, mg/L[1]	6.9[1]	0.1
Nitrate nitrogen, mg/L	0.01	0.01
Nitrite nitrogen, mg/L	0.01	0.01
Orthophosphate phosphorus, mg/L	4.6	1.7
Fecal coliform, Ct/100 mL	20,000	1
e-coli, Ct/100 mL	680	2

[1]Ammonia N and TKN values are likely an analytical error and have been requested to be re-run by the laboratory.

2.3 Chemical Analyses

Chemical analyses were conducted by Southern Analytical Laboratories Inc., 110 Bayview Boulevard, Oldsmar, Florida. Southern Analytical Laboratory, Inc. is NELAP accredited through the Florida Department of Health. Florida's Additive Rule for Septic System Products specifies that E.P.A. Method 8260 be used to analyze for volatile organic chemicals.

The organic chemicals quantified by Method 8260 are listed in Table 3 along with Guidance Maximum Contaminant Levels (MCLs) established by FDOH and Method Detection Limits (MDLs). E.P.A. Method 504.1 was additionally employed to achieve lower MDLs for the two chemicals listed in Table 4. Analytical MDLs were less than the FDOH Guidance Maximum Contaminant Levels (MCLs) for all chemicals.

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Table 3
Guidance MCLs and Method Detection Limits for E.P.A. 8260 Parameters

#	Chemical Parameter (EPA 8260)	CAS #	FDOH VOC Guidance MCL, ug/L[1]	MDL, ug/L
1	1,1,1,2-Tetrachloroethane	630-20-6	1	0.5
2	1,1,1-Trichloroethane	71-55-6	200	0.5
3	1,1,2,2-Tetrachloroethane	79-34-5	0.2	0.18
4	1,1,2-Trichloroethane	79-00-5	5	0.5
5	1,1-Dichloroethane	75-34-3	700	0.5
6	1,1-Dichloroethene (Vinylidene Chloride)	75-35-4	7	0.5
7	1,1-Dichloropropene	563-58-6	1	0.5
8	1,2,3-Trichlorobenzene	87-61-6	70	0.5
9	1,2,3-Trichloropropane	96-18-4	42	0.36
10	1,2,4-Trichlorobenzene	120-82-1	70	0.5
11	1,2,4-Trimethylbenzene	95-63-6	10	0.5
12	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	0.3
13	1,2-Dibromoethane (EDB,Ethylene dibromide)	106-93-4	0.02	0.2
14	1,2-Dichlorobenzene (o-Dichlorobenzene)	95-50-1	600	0.5
15	1,2-Dichloroethane (Ethylene dichloride)	107-06-2	3	0.5
16	1,2-Dichloropropane	78-87-5	5	0.5
17	1,3,5-Trimethylbenzene	108-67-8	10	0.5
18	1,3-Dichlorobenzene (m-Dichlorobenzene)	541-73-1	10	0.5
19	1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	75	0.5
20	2,2-Dichloropropane	594-20-7	5	0.5
21	2-Butanone (Methyl ethyl ketone) (MEK)	78-93-3	4200	5
22	2-Chloroethyl Vinyl Ether	110-75-8	1	0.5
23	o-Chlorotoluene	95-49-8	140	0.5
24	Hexachlorobutadiene	87-68-3	0.5	0.5
25	p-Chlorotoluene	106-43-4	140	0.5
26	4-Isopropyltoluene (p-Cymene)	99-87-6	70	0.5
27	4-Methyl-2-pentanone (Methyl isobutyl ketone) [MIBK]	108-10-1	350	5
28	Acetone	67-64-1	700	5
29	Benzene	71-43-2	1	0.5
30	Bromobenzene	108-86-1		0.5
31	Bromochloromethane	74-97-5	91	0.5
32	Bromodichloromethane	75-27-4	0.6	0.27
33	Bromoform	75-25-2	4	0.5
34	Bromomethane (Methyl bromide)	74-83-9	9.8	0.5
35	Carbon disulfide	75-15-0	700	0.5
36	Carbon Tetrachloride (Tetrachloromethane)	56-23-5	3	0.5
37	Chlorobenzene	108-90-7	100	0.5
38	Chloroethane (Ethyl chloride)	75-00-3	12	0.5
39	Chloroform	67-66-3	70	0.5
40	Chloromethane (Methyl chloride)	74-87-3	2.7	0.62

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Table 3 (con't)
Guidance MCLs and Method Detection Limits for E.P.A. 8260 Parameters

#	Chemical Parameter (EPA 8260)	CAS #	FDOH VOC Guidance MCL, ug/L[1]	MDL, ug/L
41	cis-1,2-Dichloroethene	156-59-2	70	0.5
42	cis-1,3-Dichloropropene (DCP, Telone)	10061-02-5	1	0.25
43	Dibromochloromethane	124-48-1	0.4	0.26
44	Dibromomethane	74-95-3		0.5
45	Dichlorodifluoromethane (CFC 12)	75-71-8	1400	0.5
46	Ethylbenzene	100-41-4	30	0.5
47	Isopropylbenzene (Cumene)	98-82-8	0.8	0.5
48	m,p-Xylenes	1330-20-7	20	0.5
49	Methylene Chloride (Dichloromethane)	75-09-2	5	2.5
50	Methyl-tert-Butyl-Ether (MTBE)	1634-04-4	20	0.5
51	Naphthalene	91-20-3	14	0.5
52	n-Butyl Benzene	104-51-8	280	0.5
53	n-Propyl Benzene	103-65-1	280	0.5
54	o-Xylene	95-47-6	20	0.5
55	sec-Butylbenzene	135-98-8	280	0.5
56	Styrene (Vinyl benzene)	100-42-5	100	0.5
57	tert-Butylbenzene	98-06-6	280	0.5
58	Tetrachloroethene	127-18-4	3	0.5
59	Toluene	108-88-3	40	0.5
60	trans-1,2-Dichloroethene	156-60-5	100	0.5
61	trans-1,3-Dichloropropene	10061-01-5	0.4	0.25
62	Trichloroethene (TCE)	79-01-6	3	0.5
63	Trichlorofluoromethane (CFC 11)	75-69-4	2100	0.5
64	Vinyl chloride	75-01-4	1	0.5
65	Xylenes (Total)	1330-20-07	20	0.5
66	2-Hexanone	591-78-6		2.1
67	Acrylonitrile	107-13-1		1.3
68	Iodomethane	74-88-4		0.2
69	trans-1,4-Dichloro-2-butene	110-57-6		0.3
70	Vinyl acetate	108-05-4		0.4

[1]Provided by Sonia Cruz, FDOH

Table 4
Guidance MCLs and Method Detection Limits for E.P.A. 504.1 Parameters

#	Chemical Parameter (EPA 504.1)	CAS #	FDOH VOC Guidance MCL, ug/L[1]	MDL, ug/L
71	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	0.0048 - 0.0050
72	1,2-Dibromoethane (EDB,Ethylene dibromide)	106-93-4	0.02	0.0061 - 0.0063

[1]Provided by Sonia Cruz, FDOH

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2.4 Acute Toxicity Bioassays

Acute toxicity bioassays were conducted by Marinco Bioassay Laboratory, Inc., 4569 Samual Street, Sarasota, Florida. Marinco Bioassay Laboratory, Inc. is NELAP accredited through the Florida Department of Health. The bioassay tests followed standard protocols for whole effluent toxicity testing (U.S. Environmental Protection Agency, 2002b). Ten day old *Cyprinella leedsi* (Bannerfin Shiner) were the sensitive test organisms used in the bioassays (Figure 2).

Figure 2
Cyprinella leedsi

3.0 Results and Discussion

3.1 Chemical Analyses

The concentrations of VOCs in both effluents are shown in Table 5. VOCs were below Method Detection Limits for the majority of chemicals. A full laboratory report of VOC analytical results is included in Appendix D. Two of the analytical results exceeded the Guidance Maximum Contaminant Level (GMCL) for VOCs established by the Florida Department of Health. The sole chemical exceeding its GMCL was toluene (GMCL is 40 ug/L), which was found in both the primary tank effluent (43 ug/L) and Stage 2 biofilter effluent (63 ug/L). Toluene is commonly found in septic tank effluent (U.S. Environmental Protection Agency, 2002a; Sherman and Anderson, 1991; Greer and Boyle 1988, Tomson et al. 1984 and DeWalle et al. 1985). Toluene is usually found in household products like solvents and cleaners. The US EPA maximum contaminant level goal (MCLG) for toluene in drinking water is 1 mg/L or 1 ppm. Granular activated carbon in combination with packed tower aeration is effective in removing toluene to below 1 mg/L.

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Table 5
Effluent Analyte Concentrations and FDOH Guidance Levels

#	Chemical Parameter	CAS #	FDOH Guid-ance MCL, ug/L	Effluent Concentration[1,2] (ug/L)	
				Primary Tank (STE)	Stage 2 Effluent (DP07)
1	1,1,1,2-Tetrachloroethane	630-20-6	1	0.2	0.2
2	1,1,1-Trichloroethane	71-55-6	200	0.2	0.2
3	1,1,2,2-Tetrachloroethane	79-34-5	0.2	0.2	0.2
4	1,1,2-Trichloroethane	79-00-5	5	0.2	0.2
5	1,1-Dichloroethane	75-34-3	700	0.2	0.2
6	1,1-Dichloroethene (Vinylidene Chloride)	75-35-4	7	0.2	0.2
7	1,1-Dichloropropene	563-58-6	1	0.2	0.2
8	1,2,3-Trichlorobenzene	87-61-6	70	0.2	0.2
9	1,2,3-Trichloropropane	96-18-4	42	0.4	0.4
10	1,2,4-Trichlorobenzene	120-82-1	70	0.3	0.3
11	1,2,4-Trimethylbenzene	95-63-6	10	0.1	0.1
12	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	0.3	0.3
13	1,2-Dibromoethane (EDB,Ethylene dibromide)	106-93-4	0.02	0.2	0.2
14	1,2-Dichlorobenzene (o-Dichlorobenzene)	95-50-1	600	0.1	0.1
15	1,2-Dichloroethane (Ethylene dichloride)	107-06-2	3	0.1	0.1
16	1,2-Dichloropropane	78-87-5	5	0.2	0.2
17	1,3,5-Trimethylbenzene	108-67-8	10	0.1	0.1
18	1,3-Dichlorobenzene (m-Dichlorobenzene)	541-73-1	10	0.07	0.07
19	1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	75	0.2	0.2
20	2,2-Dichloropropane	594-20-7	5	0.3	0.3
21	2-Butanone (Methyl ethyl ketone) (MEK)	78-93-3	4200	2	3.6
22	2-Chloroethyl Vinyl Ether	110-75-8	1	0.5	0.5
23	o-Chlorotoluene	95-49-8	140	0.1	0.1
24	Hexachlorobutadiene	87-68-3	0.5	0.4	0.4
25	p-Chlorotoluene	106-43-4	140	0.1	0.1
26	4-Isopropyltoluene (p-Cymene)	99-87-6	70	0.3	1
27	4-Methyl-2-pentanone (Methyl isobutyl ketone) [MIBK]	108-10-1	350	2.6	2.6
28	Acetone	67-64-1	700	160	20
29	Benzene	71-43-2	1	0.1	0.1
30	Bromobenzene	108-86-1		0.2	0.2
31	Bromochloromethane	74-97-5	91	0.1	0.1
32	Bromodichloromethane	75-27-4	0.6	0.2	0.2
33	Bromoform	75-25-2	4	0.2	0.2
34	Bromomethane (Methyl bromide)	74-83-9	9.8	0.4	0.4
35	Carbon disulfide	75-15-0	700	0.4	0.2
36	Carbon Tetrachloride (Tetrachloromethane)	56-23-5	3	0.2	0.2
37	Chlorobenzene	108-90-7	100	0.1	0.1
38	Chloroethane (Ethyl chloride)	75-00-3	12	0.4	0.4
39	Chloroform	67-66-3	70	0.3	0.2
40	Chloromethane (Methyl chloride)	74-87-3	2.7	0.4	0.4
41	cis-1,2-Dichloroethene	156-59-2	70	0.09	0.09

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#	Chemical Parameter	CAS #	FDOH Guid-ance MCL, ug/L	Effluent Concentration[1,2] (ug/L)	
				Primary Tank (STE)	Stage 2 Effluent (DP07)
42	cis-1,3-Dichloropropene (DCP, Telone)	10061-02-5	1	0.2	0.2
43	Dibromochloromethane	124-48-1	0.4	0.1	0.1
44	Dibromomethane	74-95-3		0.2	0.2
45	Dichlorodifluoromethane (CFC 12)	75-71-8	1400	0.5	0.5
46	Ethylbenzene	100-41-4	30	0.08	0.08
47	Isopropylbenzene (Cumene)	98-82-8	0.8	0.1	0.1
48	m,p-Xylenes	1330-20-7	20	0.2	0.2
49	Methylene Chloride (Dichloromethane)	75-09-2	5	0.2	0.2
50	Methyl-tert-Butyl-Ether (MTBE)	1634-04-4	20	0.2	0.2
51	Naphthalene	91-20-3	14	0.2	0.2
52	n-Butyl Benzene	104-51-8	280	0.2	0.2
53	n-Propyl Benzene	103-65-1	280	0.1	0.1
54	o-Xylene	95-47-6	20	0.2	0.2
55	sec-Butylbenzene	135-98-8	280	0.2	0.2
56	Styrene (Vinyl benzene)	100-42-5	100	0.05	0.05
57	tert-Butylbenzene	98-06-6	280	0.1	0.1
58	Tetrachloroethene	127-18-4	3	0.1	0.1
59	Toluene	108-88-3	40	43	63
60	trans-1,2-Dichloroethene	156-60-5	100	0.2	0.2
61	trans-1,3-Dichloropropene	10061-01-5	0.4	0.1	0.1
62	Trichloroethene (TCE)	79-01-6	3	0.2	0.2
63	Trichlorofluoromethane (CFC 11)	75-69-4	2100	0.2	0.2
64	Vinyl chloride	75-01-4	1	0.3	0.3
65	Xylenes (Total)	1330-20-07	20	0.1	0.1
66	2-Hexanone	591-78-6		2.1	2.1
67	Acrylonitrile	107-13-1		1.3	1.3
68	Iodomethane	74-88-4		0.2	0.2
69	trans-1,4-Dichloro-2-butene	110-57-6		0.3	0.3
70	Vinyl acetate	108-05-4			
E.P.A. 504.1 Parameters					
71	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	0.0053	0.0055
72	1,2-Dibromoethane (EDB,Ethylene dibromide)	106-93-4	0.02	0.0053	0.0055

[1]Gray-shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
[2]Yellow-shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit, value used for statistical analysis.

3.2 Acute Toxicity Bioassays

Results of acute bioassay testing with *Cyprinella leedsi* are summarized in Table 6. A full laboratory report of acute bioassay testing is included in Appendix E. The primary tank (septic tank effluent) did exhibit toxicity by the WET protocol, with a Lethal Concentration 50 (LC50) of 19.8%. The Stage 2 biofilter effluent also exhibited toxicity by the WET protocol, with a Lethal Concentration 50 (LC50) of 26.6%.

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Table 6
Acute Bioassay Results with *Cyprinella leedsi*

Biofilter	Effluent LC 50
BHS7-STE	19.8%
BHS7-Stage 2-DP07	26.6%

Whole Effluent Toxicity Test Permit requirement of LC50 > 100%

4.0 Summary

Testing was conducted on the full-scale PNRS at site B-HS7 to evaluate the impact of lignocellulosic (a blended urban waste wood from Wood Resource Recovery, Ocala, FL) media on effluent quality. Testing was done according to *Florida's Additive Rule For Septic System Products* established by the Florida Department of Health (FDOH). This material was used as a treatment media for biofilters that enhance nitrogen removal in onsite wastewater treatment systems. Lignocellulosic materials are intended as reactive media in anoxic denitrifying biofilters. Additives testing was conducted by performing chemical analyses and acute toxicity bioassays on effluent samples from the primary tank and Stage 2 biofilter that was actively operating at the passive nitrogen reduction system at home site B-HS7 in Marion County, Florida.

Analysis of volatile organic compounds (VOCs) employed E.P.A. Methods 8260 and 504.1. The VOC concentrations were below Method Detection Limits for the majority of chemicals in both effluents. Two of the analytical results exceeded the Guidance Maximum Contaminant Level (GMCL) for VOCs established by the Florida Department of Health. The sole chemical exceeding its GMCL was toluene (GMCL is 40 ug/L), which was found in both the primary tank effluent (43 ug/L) and Stage 2 biofilter effluent (63 ug/L).

Acute toxicity testing was performed by ninety-six hour bioassays using *Cyprinella leedsi* (Bannerfin Shiner) according to the E.P.A. Whole Effluent Toxicity (WET) protocol. Both the primary tank and Stage 2 effluent exhibited toxicity by the WET protocol, as exhibited by Lethal Concentration 50 (LC50) of 19.8% and 26.6%, respectively. However, effluent from the stage 2 biofilter exhibited a slight reduction in toxicity compared to the primary effluent.

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Appendix A: Lignocellulosic Material Data Safety Sheet

PRELIMINARY

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MATERIAL SAFETY DATA SHEET

SECTION I: IDENTIFICATION OF PRODUCT

COMPANY:	**Diversity Technologies Corp.**	DATE:	Apr. 1, 2002
	8750 – 53rd Ave.	PHONE:	780-468-4064
	Edmonton, AB T6E 5G2	FAX:	780-469-1899

PRODUCT NAME: **SAWDUST**

PRODUCT USE: Oil well drilling fluid additive
CHEMICAL FAMILY: Wood by-product CAS #: None

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

WHMIS CLASSIFICATION: Not a controlled product under WHMIS.
WORKPLACE HAZARD: Not applicable.

TRANSPORTATION OF DANGEROUS GOODS (TDG)

PROPER SHIPPING NAME: Not regulated under TDG
TDG CLASSIFICATION: Not applicable
UN NUMBER (PIN): Not applicable
PACKING GROUP: Not applicable

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	CAS NUMBER	LD_{50} Oral-Rat	LC_{50} Inhal-Rat	ACGIH-TLV
Contains no WHMIS controlled ingredients					

SECTION III: HEALTH HAZARDS

ROUTE OF ENTRY: [ ] EYE CONTACT [ ] SKIN [ ] INHALATION [ ] INGESTION
EYE CONTACT: Mechanical irritant.
SKIN CONTACT: No effects expected. Abrasion may occur with prolonged contact.
INGESTION: No toxic effects expected.
INHALATION: Possible irritation of nasal passages, throat and bronchial passages. People with existing respiratory problems should avoid wood dust.
CARCINOGENICTY: Not applicable
TERATOGENICITY: Not applicable
REPRODUCTIVE TOXICITY: Not applicable
MUTAGENICTY: Not applicable

SYNERGISTIC PRODUCTS:	Not applicable

SECTION IV: FIRST AID MEASURES

SKIN CONTACT:	Wash with soap and water. If irritation develops, obtain medical attention.
EYE CONTACT:	Flush eye to remove debris. If irritation persists, obtain medical attention.
INGESTION:	If a large amount is ingested, consult a physician.
INHALATION:	Move patient from dusty environment. Apply oxygen or artificial respiration if required. If breathing difficulties or distress continues obtain medical attention.

SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR:	Yellow granular flake; woody odour
SPECIFIC GRAVITY:	Variable
BOILING POINT (C):	Not applicable
MELTING POINT (C):	Not applicable
SOLUBILITY IN WATER:	Insoluble pH: No data
PERCENT VOLATILE BY VOLUME:	Not applicable
EVAPORATION RATE:	Not applicable
VAPOUR PRESSURE (mmHg):	Not applicable
VAPOUR DENSITY (air = 1)	Not applicable
BULK DENSITY:	Not applicable

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	Not applicable
FLAMMABLE LIMITS:	LEL: 40 gm/m^3 UEL: Variable
EXTINGUISHING MEDIA:	Dry chemical, carbon dioxide, water spray or foam. Suggest water spray for large fires.
SPECIAL FIRE FIGHTING PRODCEDURES:	Self-contained breathing apparatus required for fire fighting personnel. Move containers from fire area, or cool with water spray, if possible.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Material will burn under fire conditions. Autoignition temperature = 400-500F.

SECTION VII: REACTIVITY DATA

STABILITY: STABLE [XX] UNSTABLE [ ]

INCOMPATIBILITY (CONDITIONS TO AVOID):	Incompatible with oxidizers. Avoid open flames and high temperatures.
CONDITIONS OF REACTIVITY:	Contact with strong oxidizers. May undergo autoignition at high temperatures.
HAZARDOUS DECOMPOSITION PRODUCTS:	Thermal decomposition will result in the following: Water, carbon dioxide, formaic acid, acetic acid, carbon monoxide, methane, wood coal and aldehydes.
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR [XX] MAY OCCUR [ ]

SECTION VIII: PREVENTATIVE MEASURES

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:	Suggest NIOSH approved dust mask. OEL = 5 mg/m^3 for non-allergenic wood dust.
VENTILATION:	General mechanical sufficient for normal conditions of use.
PROTECTIVE GLOVES:	Suggest PVC or rubber.
EYE PROTECTION:	Suggest goggles.
OTHER PROTECTIVE EQUIPMENT (Specify):	Long-sleeve shirt and coveralls. Ensure eye wash station and emergency shower available.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Eye and respiratory protection suggested when handling this material. Store in a cool dry area away from incompatibles and open flames.

STEPS TO BE TAKEN IN CASE THE MATERIAL IS SPILLED OR RELEASED

Wear suitable protective equipment. Eliminate ignition sources. Sweep up and collect uncontaminated material for repackaging. Sweep up and collect contaminated material in approved containers for disposal.

WASTE DISPOSAL METHOD

Dispose/incinerate in accordance with all federal, provincial and local regulations. It is the responsibility of the user to determine if material meets the criteria of hazardous waste at the time of disposal.

SECTION IX: PREPARATION

THE INFORMATION CONTAINED HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY EXPRESSED OR IMPLIED, IS MADE.

DATE ISSUED:	April 1, 2002	BY:	Product safety committee
SUPERSEDES:	March 29, 1999		

Diversity Technologies Corp. is the parent company of
Canamara-United Supply Ltd., Hollimex Products Ltd. and Canamara SDS

MATERIAL SAFETY DATA SHEET

WOOD DUST

Company Name, Address

TRADE NAME: Wood Dust
SYNONYMS: None
CAS. NO.: None
DESCRIPTION: Particles generated by any manual or mechanical cutting or abrasion process performed on wood.

PHYSICAL DATA

Boiling Point .....Not Applicable
Specific Gravity.....Variable
(Dependent on wood species and moisture content).
Vapor Density.....Not Applicable
% Volatiles by Volume.....Not Applicable
Melting Point.....Not Applicable
Vapor Pressure.....Not Applicable
Solubility in H_2O (% by wt.).....Insoluble
Evaporation Rate -
(Butyl Acetate=1).....Not Applicable
pH.....Not Applicable
Appearance & Odor.....Light to dark colored granular solid
Color and odor are dependent on the wood species and time since dust was generated.

FIRE & EXPLOSION DATA

Flash Point.....Not Applicable
Autoignition Temperature.....Variable
(typically 400-500°F)
Explosive Limits in Air.....40 grams/m^3 (LEL)
Extinguishing Media.....Water, CO_2, Sand
Special Fire Fighting
Procedures.....Wet down with water
Wet down wood dust to reduce likelihood of ignition or dispersion of dust into the air. Remove burned or wet dust to open area after fire is extinguished.
Unusual Fire &
Explosion Hazard.....Strong to severe explosion hazard
(if wood dust "cloud" contacts an ignition source)

HEALTH EFFECTS DATA

Exposure Limit.....ACGIH TLV(R):
TWA - 5.0 mg/m^3;
$STEL_{(15\ min.)}$ - 10 mg/m^3 (softwood)
TWA - 1.0 mg/m^3;
(certain hardwoods such as beech and oak)
OSHA PEL: TWA (see Footnote 1) -
(total dust) - 15.0 mg/m^3

(respirable factor) - 5.0 mg/m^3
Skin & Eye Contact.....Eye Irritation & Allergic Contact Dermatitis
(Wood dust can cause eye irritation. Various species of wood dust can elicit allergic contact dermatitis in sensitized individuals)
Ingestion.....Not Applicable
Skin Absorption.....Not known to occur
Inhalation.....May cause:
nasal dryness, irritation & obstruction. Coughing, wheezing, & sneezing: sinusitis & prolonged colds have also been reported.
Chronic Effects.....May cause:
Wood Dust, depending on species, may cause dermatitis on prolonged repetitive contact; may cause respiratory sensitization and/or irritation. IARC classifies wood dust as a carcinogen to humans (Group 1). This classification is based primarily on IARC's evaluation of increased risk in the occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with exposure to wood dust. IARC did not find sufficient evidence to associate cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon, or rectum with exposure to wood dust.

REACTIVITY DATA

Conditions Contributing
to Instability.....Stable
(under normal Conditions)
Incompatibility.....Avoid Contact with:

oxidizing agents, drying oils and flame. Product may ignite at temperatures in excess of 400° F.

Hazardous Decomposition Products.....Thermal-oxidative degradation of wood produces: irritating & toxic fumes and gases, including CO, aldehydes and organic acids.

Conditions Contributing to Polymerization.....Not Applicable

PRECAUTIONS AND SAFE HANDLING

Eye Contact.....Avoid

Skin Contact.....Avoid: Repeated or Prolonged Contact with Skin. Careful bathing and Clean clothes are indicated after exposure.

Inhalation.....Avoid: Prolonged or Repeated breathing of Wood Dust in Air.

Oxidizing agents and drying oils.....Avoid contact

Open flame.....Avoid

GENERALLY APPLICABLE CONTROL MEASURES

Ventilation.....Provide: adequate general and local exhaust ventilation to maintain healthful working conditions.

Safety Equipment.....Wear goggles or safety glasses. Other protective equipment such as gloves and approved dust respirators may be needed depending upon dust conditions.

EMERGENCY AND FIRST AID PROCEDURES

Eyes.....Flush with water to remove dust particles. If irritation persists, get medical attention.

Skin.....Get Medical advice If a rash or persistent irritation or dermatitis occur, get medical advice where applicable before returning to work where wood dust is present.

Inhalation.....Remove to fresh air. If persistent irritation, severe coughing, breathing difficulties occur, get medical advice before returning to work where wood dust is present.

Ingestion..... ..... Not Applicable

SPILL/LEAK CLEAN-UP PROCEDURES

Recovery or Disposal.....Clean-up: Sweep or vacuum spills for recovery or disposal; avoid creating dust conditions. Provide good ventilation where dust conditions may occur. Place recovered wood dust in a container for proper disposal.

FOOTNOTE

Footnote 1: In AFL-CIO v. OSHA 965 F. 2d 962 (11th Cir. 1992), the court overturned OSHA's 1989 Air Contaminants Rule, including the specific PELs for wood dust that OSHA had established at that time. The 1989 PELs were: TWA - 5.0 mg/m^3; STEL (15 MIN.) - 10.0 mg/m^3 (ALL SOFT AND HARD WOODS, EXCEPT WESTERN RED CEDAR); WESTERN RED CEDAR: TWA - 2.5 mg/m^3. Wood dust is now officially regulated as an organic dust under the Particulates Not Otherwise Regulated (PNOR) or Inert or Nuisance Dust categories at PELs noted under Health Effects Information section of this MSDS. However, a number of states have incorporated provisions of the 1989 standard in their state plans.

IMPORTANT

The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. There is no warranty of any kind, express or implied, concerning the accuracy or completeness of the information and data herein. The supplier of this form will not be liable for claims relating to any party's use of or reliance on information and data contained herein regardless of whether it is claimed that the information and data are inaccurate, incomplete or otherwise misleading.

Sawdust & Shavings

Material Safety Data Sheet

Product Name: Screened Sawdust, Screened Shavings

SECTION I--DIVISION AND LOCATION
Pioneer Sawdust
621 Fulton Street
Salt Lake City, Utah 84104
Telephone: (801) 972-4432

SECTION II--HAZARDOUS INGREDIENTS/IDENTITY INFORMATION
Ingredients in Product: Kiln Dried White Pine Wood
Chemical Name and Synonyms: Cellulosic Wood Fibre
Chemical Family: Cellulose
Molecular Formula: Complex

SECTION III--PHYSICAL/CHEMICAL CHARACTERISTICS
Boiling Point: N/A
Vapor Pressure: N/A
Vapor Density: N/A
Solubility in Water: Insoluble
Specific Gravity: (WATER = 1): <1
Melting Point: N/A
Evaporation Rate: N/A
Appearance: Yellowish particles of wood/sawdust
Odor: None to typical wood smell

SECTION IV--FIRE AND EXPLOSION DATA
Flash Point: N/A
Flammable Limits: Slight when exposed to flames
Extinguishing Media: Drychemical, Waterspray, Foam
Special Fire Fighting Procedures: None
Unusual Fire and Explosion Hazards: Avoid CO2 blast. Spontaneous heating possible. Avoid hot, humid storage. Do not disperse in air, as this could lend to dust explosion.

SECTION V--REACTIVITY DATA
Stability: Stable
Incompatibility (Material to Avoid): Strong oxidizing agents
Hazardous Decomposition or By-products: Unknown
Hazardous Polymerization: Will not occur

SECTION VI--HEALTH HAZARD DATA
Permissible Concentrations (AIR): Unknown
Effects of Overexposure: Allergies, dermatitis (skin irritation)
Toxicological Properties: Unknown

EMERGENCY FIRST AID PROCEDURES
Eyes: Flush with large amounts of water, consult an eye physician
Skin Contact: Wipe off excess, wash with soap and water
Inhalation: Remove from area
If Swallowed: Call physician immediately

TEL
(801) 972-4432
Toll Free: (800) 962-7632

FAX
(801) 975-7076

EMAIL
info@pioneersawdust.com

Salt Lake City, UT
Headquarters/Distribution Center
621 Fulton Street
Salt Lake City, UT 84104-4327
PO Box 27861
Salt Lake City, UT 84127-0861

San Leandro, CA
DMS Warehouse
1956 Williams Street
San Leandro, CA 94577

www.pioneersawdust.com

FOR OVER 100 YEARS WE HAVE RECYCLED WOOD WASTE TO PRODUCE QUALITY PRODUCTS
No trees are fallen to supply us with our sawdust. We recycle clean wood waste to produce our sawdust, shavings and sweeping compounds.

PIONEER SAWDUST®

SECTION VII--PRECAUTIONS FOR SAFE HANDLING AND USE
Procedures for Clean-up: Handle as normal solid waste. Scoop up and place in waste container, vacuum, or wet clean.
Waste Disposal Method: Waste material can be buried in an approved landfill or handled as inert waste in accordance with Federal, State, and Local Environmental Regulations

SECTION VIII--SPECIAL PROTECTION INFORMATION
Ventilation Type Required (Local, Mechanical, Special): Use adequate ventilation in volume to keep dust concentration below TLV (5mg/m3).
Respiratory Protection: NIOSH approved Dust to Mist Respirator
Eye Protection: Safety glasses or goggles
Other Protective Equipment: N/A

SECTION IX--SPECIAL PRECAUTIONS
Precautions to be Taken in Handling and Storing: Store dry at ambient temperature. Avoid moisture.
Other Precautions: None

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, express or implied, and we assume no responsibility for any loss, damage, or expense, direct or consequential, arising out of their use.

Preparer: Duncan H. Brockbank
Original Date: 12/04/85 (by Norman L. Brockbank)
Revision Date:
Supersedes:

Appendix B: EPA Methods 8260 and 504.1 Laboratory Report

PRELIMINARY

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SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

Hazen and Sawyer
10002 Princess Palm Ave, Suite 200
Tampa, FL 33619

July 25, 2014
Work Order: 1406423

Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-PUMP**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-01**						
Date/Time Collected		**06/19/14 12:05**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Volatile Organic Compounds								
Acetone	ug/L	160	EPA 8260b	4.0	2.0		06/30/14 23:23	1
Acrylonitrile	ug/L	1.3 U	EPA 8260b	4.0	1.3		06/30/14 23:23	1
Benzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Bromobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Bromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Bromoform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Bromomethane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/30/14 23:23	1
2-Butanone	ug/L	2.0 U	EPA 8260b	4.0	2.0		06/30/14 23:23	1
n-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
sec-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
t-Butylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Carbon disulfide	ug/L	0.4 I	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Chlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Chloroethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/30/14 23:23	1
Chloroform	ug/L	0.3 I	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Chloromethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/30/14 23:23	1
1,2-Dibromoethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
1,2-Dibromo-3-chloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/30/14 23:23	1
2-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
2-Chloroethylvinyl Ether	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/30/14 23:23	1
4-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Dibromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Dibromomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
1,3-Dichlorobenzene	ug/L	0.07 U	EPA 8260b	0.8	0.07		06/30/14 23:23	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/30/14 23:23	1
Dichlorodifluoromethane	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/30/14 23:23	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/30/14 23:23	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
2,2-Dichloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/30/14 23:23	1

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July 25, 2014
Work Order: 1406423

Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-PUMP**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-01**						
Date/Time Collected		**06/19/14 12:05**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
1,1-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Ethylbenzene	ug/L	0.08 U	EPA 8260b	0.8	0.08		06/30/14 23:23	1
Hexachlorobutadiene	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/30/14 23:23	1
2-Hexanone	ug/L	2.1 U	EPA 8260b	4.0	2.1		06/30/14 23:23	1
Iodomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Isopropylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
4-Isopropyltoluene	ug/L	0.3 I	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Methyl-t-butyl ether	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/30/14 23:23	1
Methylene Chloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260b	4.0	2.6		06/30/14 23:23	1
Naphthalene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
n-Propylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Styrene	ug/L	0.05 U	EPA 8260b	0.8	0.05		06/30/14 23:23	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Toluene	ug/L	43	EPA 8260b	0.8	0.09		06/30/14 23:23	1
1,2,3-Trichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
1,2,4-Trichlorobenzene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/30/14 23:23	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Trichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	0.6 U	EPA 8260b**	1.6	0.6		06/30/14 23:23	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/30/14 23:23	1
1,2,4-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
1,3,5-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Vinyl chloride	ug/L	0.3 U	EPA 8260b	1.6	0.3		06/30/14 23:23	1
Xylene-m,p	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/30/14 23:23	1
Xylene-o	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:23	1
Xylenes- Total	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:23	1
Total Trihalomethanes	ug/L	0.3 I	EPA 8260b	0.8	0.1		06/30/14 23:23	1
1,4-Dioxane	ug/L	0.0	EPA 8260b**				06/30/14 23:23	1

Surrogate for EPA 8260b *Dibromofluoromethane* *103 %* *Limits* *65-135*

Pesticide Analyses

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-PUMP**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-01**						
Date/Time Collected		**06/19/14 12:05**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
1,2-Dibromo-3-chloropropane	ug/L	0.0053 U	EPA 504.1	0.021	0.0053	06/23/14 12:00	06/24/14 04:43	1
1,2-Dibromoethane	ug/L	0.0053 U	EPA 504.1	0.021	0.0053	06/23/14 12:00	06/24/14 04:43	1
Surrogate for EPA 504.1	*2-Bromo-1-chloropropane*		*116 %*	*Limits*	*70-130*			
Inorganics								
Ammonia as N	mg/L	6.9	EPA 350.1	0.040	0.009	07/03/14 18:05	07/07/14 11:31	1
Carbonaceous BOD	mg/L	120	SM 5210B	2	2	06/20/14 12:24	06/25/14 08:26	1
Chemical Oxygen Demand	mg/L	22 I	EPA 410.4	25	10	06/26/14 11:13	06/26/14 16:48	1
Chloride	mg/L	350	EPA 300.0	2.0	0.50		07/08/14 14:24	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 17:16	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 17:16	1
Orthophosphate as P	mg/L	4.6	EPA 300.0	0.040	0.010		06/20/14 17:16	1
Phosphorous - Total as P	mg/L	5.8	SM 4500P-E	0.040	0.010	07/03/14 09:06	07/17/14 12:53	1
Total Alkalinity	mg/L	250	SM 2320B	8.0	2.0		06/27/14 11:49	1
Total Kjeldahl Nitrogen	mg/L	360	EPA 351.2	12	3.1	07/15/14 10:47	07/15/14 20:00	62.5
Total Suspended Solids	mg/L	28	SM 2540D	1	1	06/25/14 08:35	06/27/14 17:48	1
Volatile Suspended Solids	mg/L	22	EPA 160.4	1	1	06/23/14 14:54	06/27/14 09:21	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		06/20/14 17:16	1
Microbiology								
E. Coli	MPN/100 mL	680	SM 9223B	2.0	2.0	06/19/14 17:16	06/20/14 11:17	1
Fecal Coliforms	CFU/100 ml	20,000	SM 9222D	1	1	06/19/14 17:13	06/20/14 15:13	1

Sample Description		**NC-BHS7-ST1-SL-01**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-02**						
Date/Time Collected		**06/19/14 10:30**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.13	EPA 350.1	0.040	0.009	07/03/14 18:05	07/07/14 11:31	1
Chloride	mg/L	350	EPA 300.0	2.0	0.50		07/08/14 14:36	10
Nitrate+Nitrite (N)	mg/L	34 Q	EPA 353.2	3.8	0.95		07/25/14 15:07	95
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 17:27	1
Total Kjeldahl Nitrogen	mg/L	2.7	EPA 351.2	0.20	0.05	07/15/14 10:47	07/15/14 20:00	1
Nitrate+Nitrite (N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 17:27	1

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**NC-BHS7-ST1-SL-02**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-03**						
Date/Time Collected		**06/19/14 10:40**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.042	EPA 350.1	0.040	0.009	07/03/14 18:05	07/07/14 11:31	1
Chloride	mg/L	220	EPA 300.0	2.0	0.50		07/08/14 14:47	10
Nitrate (as N)	mg/L	15	EPA 300.0	0.04	0.01		06/20/14 17:38	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 17:38	1
Total Kjeldahl Nitrogen	mg/L	2.3	EPA 351.2	0.20	0.05	07/15/14 10:47	07/15/14 20:00	1
Nitrate+Nitrite (N)	mg/L	15	EPA 300.0	0.08	0.02		06/20/14 17:38	1
Sample Description		**SC-BHS7-ST1-SL-03**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-04**						
Date/Time Collected		**06/19/14 10:50**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.018 I	EPA 350.1	0.040	0.009	07/03/14 18:05	07/07/14 11:31	1
Chloride	mg/L	410	EPA 300.0	2.0	0.50		07/08/14 14:58	10
Nitrate+Nitrite (N)	mg/L	48 Q	EPA 353.2	3.8	0.95		07/25/14 15:09	95
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 17:49	1
Total Kjeldahl Nitrogen	mg/L	2.3	EPA 351.2	0.20	0.05	07/15/14 10:47	07/15/14 20:00	1
Nitrate+Nitrite (N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 17:49	1
Sample Description		**SC-BHS7-ST1-SL-04**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-06**						
Date/Time Collected		**06/19/14 11:00**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.028 I	EPA 350.1	0.040	0.009	07/03/14 18:05	07/07/14 11:31	1
Carbonaceous BOD	mg/L	2 U	SM 5210B	2	2	06/20/14 12:24	06/25/14 08:26	1
Chemical Oxygen Demand	mg/L	29	EPA 410.4	25	10	06/26/14 11:13	06/26/14 16:48	1
Chloride	mg/L	230 L	EPA 300.0	0.20	0.050		06/20/14 18:01	1
Nitrate+Nitrite (N)	mg/L	50 Q	EPA 353.2	3.8	0.95		07/25/14 15:11	95
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 18:01	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		06/20/14 18:01	1

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**SC-BHS7-ST1-SL-04**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-06**						
Date/Time Collected		**06/19/14 11:00**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Phosphorous - Total as P	mg/L	0.19	SM 4500P-E	0.040	0.010	07/03/14 09:06	07/17/14 12:53	1
Total Alkalinity	mg/L	17	SM 2320B	8.0	2.0		06/27/14 11:53	1
Total Kjeldahl Nitrogen	mg/L	2.2	EPA 351.2	0.20	0.05	07/15/14 10:47	07/15/14 20:00	1
Total Suspended Solids	mg/L	2	SM 2540D	1	1	06/24/14 11:04	06/26/14 11:03	1
Volatile Suspended Solids	mg/L	6	EPA 160.4	1	1	06/23/14 14:54	06/27/14 09:21	1
Nitrate+Nitrite (N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 18:01	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	06/19/14 17:16	06/20/14 11:17	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	06/19/14 17:13	06/20/14 15:13	1
Sample Description		**NC-BHS7-ST2-DP-03**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-07**						
Date/Time Collected		**06/19/14 08:59**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.12	EPA 350.1	0.040	0.009	07/03/14 18:05	07/07/14 11:31	1
Chloride	mg/L	340	EPA 300.0	2.0	0.50		07/08/14 15:10	10
Nitrate (as N)	mg/L	0.07	EPA 300.0	0.04	0.01		06/20/14 18:12	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 18:12	1
Total Kjeldahl Nitrogen	mg/L	4.1	EPA 351.2	0.20	0.05	07/15/14 10:47	07/15/14 20:00	1
Nitrate+Nitrite (N)	mg/L	0.07 I	EPA 300.0	0.08	0.02		06/20/14 18:12	1
Sample Description		**NC-BHS7-ST2-DP-03-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-08**						
Date/Time Collected		**06/19/14 09:02**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.080	EPA 350.1	0.040	0.009	07/03/14 18:05	07/07/14 11:31	1
Chloride	mg/L	330	EPA 300.0	2.0	0.50		07/08/14 15:21	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 18:23	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 18:23	1
Total Kjeldahl Nitrogen	mg/L	4.4	EPA 351.2	0.20	0.05	07/15/14 10:47	07/15/14 20:00	1

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**NC-BHS7-ST2-DP-03-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-08**						
Date/Time Collected		**06/19/14 09:02**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		06/20/14 18:23	1
Sample Description		**C-BHS7-ST2-DP-05**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-09**						
Date/Time Collected		**06/19/14 10:03**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.10	EPA 350.1	0.040	0.009	07/07/14 15:20	07/07/14 16:51	1
Chloride	mg/L	330	EPA 300.0	2.0	0.50		07/08/14 15:32	10
Nitrate (as N)	mg/L	0.02 I,J5	EPA 300.0	0.04	0.01		06/20/14 18:35	1
Nitrite (as N)	mg/L	0.01 U,J,J5,J	EPA 300.0	0.04	0.01		06/20/14 18:35	1
Total Kjeldahl Nitrogen	mg/L	3.5	EPA 351.2	0.20	0.05	07/15/14 10:47	07/15/14 20:00	1
Nitrate+Nitrite (N)	mg/L	0.02 I	EPA 300.0	0.08	0.02		06/20/14 18:35	1
Sample Description		**SE-BHS7-ST2-DP-06**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-10**						
Date/Time Collected		**06/19/14 10:19**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.11	EPA 350.1	0.040	0.009	07/07/14 15:20	07/07/14 16:51	1
Chloride	mg/L	390	EPA 300.0	2.0	0.50		07/08/14 15:43	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 19:20	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 19:20	1
Total Kjeldahl Nitrogen	mg/L	8.7	EPA 351.2	1.0	0.25	07/15/14 10:47	07/15/14 20:00	5
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		06/20/14 19:20	1
Sample Description		**SE-BHS7-ST2-DP-06-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-11**						
Date/Time Collected		**06/19/14 10:20**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**SE-BHS7-ST2-DP-06-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-11**						
Date/Time Collected		**06/19/14 10:20**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.073	EPA 350.1	0.040	0.009	07/07/14 15:20	07/07/14 16:51	1
Chloride	mg/L	370	EPA 300.0	2.0	0.50		07/08/14 20:58	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 19:31	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 19:31	1
Total Kjeldahl Nitrogen	mg/L	17	EPA 351.2	1.0	0.25	07/15/14 10:47	07/15/14 20:00	5
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		06/20/14 19:31	1
Sample Description		**SC-BHS7-ST2-DP-07**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-12**						
Date/Time Collected		**06/19/14 11:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Volatile Organic Compounds								
Acetone	ug/L	20	EPA 8260b	4.0	2.0		06/30/14 23:55	1
Acrylonitrile	ug/L	1.3 U	EPA 8260b	4.0	1.3		06/30/14 23:55	1
Benzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Bromobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
Bromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
Bromoform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
Bromomethane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/30/14 23:55	1
2-Butanone	ug/L	3.6 I	EPA 8260b	4.0	2.0		06/30/14 23:55	1
n-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
sec-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
t-Butylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Carbon disulfide	ug/L	0.2 I	EPA 8260b	0.8	0.2		06/30/14 23:55	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
Chlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Chloroethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/30/14 23:55	1
Chloroform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
Chloromethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/30/14 23:55	1
1,2-Dibromoethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
1,2-Dibromo-3-chloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/30/14 23:55	1
2-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
2-Chloroethylvinyl Ether	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/30/14 23:55	1

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**SC-BHS7-ST2-DP-07**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-12**						
Date/Time Collected		**06/19/14 11:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
4-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Dibromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Dibromomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
1,3-Dichlorobenzene	ug/L	0.07 U	EPA 8260b	0.8	0.07		06/30/14 23:55	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/30/14 23:55	1
Dichlorodifluoromethane	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/30/14 23:55	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/30/14 23:55	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
2,2-Dichloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/30/14 23:55	1
1,1-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Ethylbenzene	ug/L	0.08 U	EPA 8260b	0.8	0.08		06/30/14 23:55	1
Hexachlorobutadiene	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/30/14 23:55	1
2-Hexanone	ug/L	2.1 U	EPA 8260b	4.0	2.1		06/30/14 23:55	1
Iodomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
Isopropylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
4-Isopropyltoluene	ug/L	1.0	EPA 8260b	0.8	0.2		06/30/14 23:55	1
Methyl-t-butyl ether	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/30/14 23:55	1
Methylene Chloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260b	4.0	2.6		06/30/14 23:55	1
Naphthalene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
n-Propylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Styrene	ug/L	0.05 U	EPA 8260b	0.8	0.05		06/30/14 23:55	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Toluene	ug/L	63	EPA 8260b	0.8	0.09		06/30/14 23:55	1
1,2,3-Trichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
1,2,4-Trichlorobenzene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/30/14 23:55	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**SC-BHS7-ST2-DP-07**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-12**						
Date/Time Collected		**06/19/14 11:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Trichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	0.6 U	EPA 8260b**	1.6	0.6		06/30/14 23:55	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/30/14 23:55	1
1,2,4-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
1,3,5-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Vinyl chloride	ug/L	0.3 U	EPA 8260b	1.6	0.3		06/30/14 23:55	1
Xylene-m,p	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/30/14 23:55	1
Xylene-o	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/30/14 23:55	1
Xylenes- Total	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
Total Trihalomethanes	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/30/14 23:55	1
1,4-Dioxane	ug/L	0.0	EPA 8260b**				06/30/14 23:55	1
Surrogate for EPA 8260b	*Dibromofluoromethane*		*104 %*	*Limits*	*65-135*			
Pesticide Analyses								
1,2-Dibromo-3-chloropropane	ug/L	0.0054 U	EPA 504.1	0.022	0.0054	06/23/14 12:00	06/24/14 05:05	1
1,2-Dibromoethane	ug/L	0.0054 U	EPA 504.1	0.022	0.0054	06/23/14 12:00	06/24/14 05:05	1
Surrogate for EPA 504.1	*2-Bromo-1-chloropropane*		*113 %*	*Limits*	*70-130*			
Inorganics								
Ammonia as N	mg/L	0.10	EPA 350.1	0.040	0.009	07/07/14 15:20	07/07/14 16:51	1
Carbonaceous BOD	mg/L	16	SM 5210B	2	2	06/20/14 12:24	06/25/14 08:26	1
Chemical Oxygen Demand	mg/L	50	EPA 410.4	25	10	06/26/14 11:13	06/26/14 16:48	1
Chloride	mg/L	330	EPA 300.0	2.0	0.50		07/08/14 21:09	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 19:42	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 19:42	1
Orthophosphate as P	mg/L	1.7	EPA 300.0	0.040	0.010		06/20/14 19:42	1
Phosphorous - Total as P	mg/L	2.8	SM 4500P-E	0.040	0.010	07/03/14 09:06	07/17/14 12:53	1
Total Alkalinity	mg/L	240	SM 2320B	8.0	2.0		06/27/14 12:02	1
Total Kjeldahl Nitrogen	mg/L	3.5	EPA 351.2	0.20	0.05	07/15/14 10:47	07/15/14 20:00	1
Total Suspended Solids	mg/L	8	SM 2540D	1	1	06/25/14 08:35	06/27/14 17:48	1
Volatile Suspended Solids	mg/L	9	EPA 160.4	1	1	06/23/14 14:54	06/27/14 09:21	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		06/20/14 19:42	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	06/19/14 17:16	06/20/14 11:17	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	06/19/14 17:13	06/20/14 15:13	1

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**SW-BHS7-ST2-DP-08**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-13**						
Date/Time Collected		**06/19/14 11:00**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.064	EPA 350.1	0.040	0.009	07/07/14 15:20	07/07/14 16:51	1
Carbonaceous BOD	mg/L	19	SM 5210B	2	2	06/20/14 12:24	06/25/14 08:26	1
Chemical Oxygen Demand	mg/L	110	EPA 410.4	25	10	06/26/14 11:13	06/26/14 16:48	1
Chloride	mg/L	290	EPA 300.0	2.0	0.50		07/08/14 21:43	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 19:54	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 19:54	1
Orthophosphate as P	mg/L	0.83	EPA 300.0	0.040	0.010		06/20/14 19:54	1
Phosphorous - Total as P	mg/L	1.7	SM 4500P-E	0.040	0.010	07/03/14 09:06	07/17/14 12:53	1
Total Alkalinity	mg/L	220	SM 2320B	8.0	2.0		06/27/14 12:11	1
Total Kjeldahl Nitrogen	mg/L	2.8	EPA 351.2	0.20	0.05	07/15/14 10:47	07/15/14 20:00	1
Total Suspended Solids	mg/L	12	SM 2540D	1	1	06/25/14 08:35	06/27/14 17:48	1
Volatile Suspended Solids	mg/L	7	EPA 160.4	1	1	06/23/14 14:54	06/27/14 09:21	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		06/20/14 19:54	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	06/19/14 17:16	06/20/14 11:17	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	06/19/14 17:13	06/20/14 15:13	1

Sample Description		**SW-BHS7-ST2-DP-08-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-14**						
Date/Time Collected		**06/19/14 11:10**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.038 I	EPA 350.1	0.040	0.009	07/07/14 15:20	07/07/14 16:51	1
Carbonaceous BOD	mg/L	19	SM 5210B	2	2	06/20/14 12:24	06/25/14 08:26	1
Chemical Oxygen Demand	mg/L	120	EPA 410.4	25	10	06/26/14 11:13	06/26/14 16:48	1
Chloride	mg/L	300	EPA 300.0	2.0	0.50		07/08/14 21:54	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 20:05	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 20:05	1
Orthophosphate as P	mg/L	0.74	EPA 300.0	0.040	0.010		06/20/14 20:05	1
Phosphorous - Total as P	mg/L	1.8	SM 4500P-E	0.040	0.010	07/08/14 08:48	07/17/14 17:25	1
Total Alkalinity	mg/L	210	SM 2320B	8.0	2.0		06/27/14 12:20	1
Total Kjeldahl Nitrogen	mg/L	1.9	EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Total Suspended Solids	mg/L	15	SM 2540D	1	1	06/25/14 08:35	06/27/14 17:48	1
Volatile Suspended Solids	mg/L	38	EPA 160.4	1	1	06/23/14 14:54	06/27/14 09:21	1

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**SW-BHS7-ST2-DP-08-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-14**						
Date/Time Collected		**06/19/14 11:10**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		06/20/14 20:05	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	06/19/14 17:16	06/20/14 11:17	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	06/19/14 17:13	06/20/14 15:13	1
Sample Description		**N-BHS7-ST2-OB-01**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-15**						
Date/Time Collected		**06/19/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.073	EPA 350.1	0.040	0.009		07/11/14 13:23	1
Chloride	mg/L	340	EPA 300.0	2.0	0.50		07/08/14 22:05	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 20:16	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 20:16	1
Total Kjeldahl Nitrogen	mg/L	3.2	EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		06/20/14 20:16	1
Sample Description		**C-BHS7-ST2-OB-02**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-16**						
Date/Time Collected		**06/19/14 09:45**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.24	EPA 350.1	0.040	0.009		07/11/14 13:25	1
Chloride	mg/L	270	EPA 300.0	2.0	0.50		07/08/14 22:16	10
Nitrate (as N)	mg/L	0.04	EPA 300.0	0.04	0.01		06/20/14 20:27	1
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 20:27	1
Total Kjeldahl Nitrogen	mg/L	6.6	EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Nitrate+Nitrite (N)	mg/L	0.04 I	EPA 300.0	0.08	0.02		06/20/14 20:27	1

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**NE-BHS7-EFF-SL-06**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-18**						
Date/Time Collected		**06/19/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.054	EPA 350.1	0.040	0.009		07/11/14 13:27	1
Chloride	mg/L	95	EPA 300.0	2.0	0.50		07/08/14 22:28	10
Nitrate+Nitrite (N)	mg/L	35 Q	EPA 353.2	3.8	0.95		07/25/14 15:13	95
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 20:39	1
Total Kjeldahl Nitrogen	mg/L	1.6	EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Nitrate+Nitrite (N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 20:39	1
Sample Description		**NW-BHS7-EFF-SL-07**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-20**						
Date/Time Collected		**06/19/14 09:00**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.047	EPA 350.1	0.040	0.009		07/11/14 13:29	1
Chloride	mg/L	270	EPA 300.0	2.0	0.50		07/08/14 22:39	10
Nitrate+Nitrite (N)	mg/L	37 Q	EPA 353.2	3.8	0.95		07/25/14 15:16	95
Nitrite (as N)	mg/L	0.01 U,J	EPA 300.0	0.04	0.01		06/20/14 20:50	1
Total Kjeldahl Nitrogen	mg/L	2.2	EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Nitrate+Nitrite (N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 20:50	1
Sample Description		**NW-BHS7-EFF-DP-10**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-21**						
Date/Time Collected		**06/19/14 08:45**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.080	EPA 350.1	0.040	0.009		07/11/14 13:31	1
Chloride	mg/L	220	EPA 300.0	2.0	0.50		07/08/14 22:50	10
Nitrate (as N)	mg/L	11	EPA 300.0	0.04	0.01		06/20/14 21:01	1
Nitrite (as N)	mg/L	0.01 U,J,J5,J	EPA 300.0	0.04	0.01		06/20/14 21:01	1
Total Kjeldahl Nitrogen	mg/L	2.2	EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Nitrate+Nitrite (N)	mg/L	11	EPA 300.0	0.08	0.02		06/20/14 21:01	1

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Laboratory Report

Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**SE-BHS7-EFF-SL-08**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-22**						
Date/Time Collected		**06/19/14 09:33**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.034 I	EPA 350.1	0.040	0.009		07/11/14 13:33	1
Chloride	mg/L	360	EPA 300.0	2.0	0.50		07/08/14 23:01	10
Nitrate+Nitrite (N)	mg/L	44 Q	EPA 353.2	3.8	0.95		07/25/14 15:17	95
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 22:43	1
Total Kjeldahl Nitrogen	mg/L	2.0	EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Nitrate+Nitrite (N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 22:43	1
Sample Description		**SE-BHS7-EFF-DP-11**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-23**						
Date/Time Collected		**06/19/14 09:11**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.073	EPA 350.1	0.040	0.009		07/11/14 13:35	1
Chloride	mg/L	280	EPA 300.0	2.0	0.50		07/08/14 23:12	10
Nitrate (as N)	mg/L	16	EPA 300.0	0.04	0.01		06/20/14 22:54	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 22:54	1
Total Kjeldahl Nitrogen	mg/L	2.8	EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Nitrate+Nitrite (N)	mg/L	16	EPA 300.0	0.08	0.02		06/20/14 22:54	1
Sample Description		**SW-BHS7-EFF-SL-09**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-24**						
Date/Time Collected		**06/19/14 10:20**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.058	EPA 350.1	0.040	0.009		07/11/14 13:37	1
Chemical Oxygen Demand	mg/L	29	EPA 410.4	25	10	06/26/14 11:13	06/26/14 16:48	1
Chloride	mg/L	82	EPA 300.0	0.20	0.050		06/20/14 23:05	1
Nitrate+Nitrite (N)	mg/L	54 Q	EPA 353.2	3.8	0.95		07/25/14 15:18	95
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 23:05	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		06/20/14 23:05	1
Phosphorous - Total as P	mg/L	0.14	SM 4500P-E	0.040	0.010	07/08/14 08:48	07/17/14 17:25	1

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Project Name **B-HS7 SE#4**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**SW-BHS7-EFF-SL-09**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-24**						
Date/Time Collected		**06/19/14 10:20**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Total Alkalinity	mg/L	13	SM 2320B	8.0	2.0		06/27/14 12:30	1
Total Kjeldahl Nitrogen	mg/L	2.3	EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Total Suspended Solids	mg/L	1	SM 2540D	1	1	06/25/14 08:35	06/27/14 17:48	1
Volatile Suspended Solids	mg/L	3	EPA 160.4	1	1	06/23/14 14:54	06/27/14 09:21	1
Nitrate+Nitrite (N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 23:05	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	06/19/14 17:16	06/20/14 11:17	1
Sample Description		**SW-BHS7-EFF-DP-12**						
Matrix		**Wastewater**						
SAL Sample Number		**1406423-25**						
Date/Time Collected		**06/19/14 09:50**						
Collected by		**Josefin Hirst**						
Date/Time Received		**06/19/14 16:35**						
Inorganics								
Ammonia as N	mg/L	0.15	EPA 350.1	0.040	0.009		07/11/14 17:04	1
Carbonaceous BOD	mg/L	4	SM 5210B	2	2	06/20/14 12:24	06/25/14 08:26	1
Chemical Oxygen Demand	mg/L	56	EPA 410.4	25	10	06/26/14 11:13	06/26/14 16:48	1
Chloride	mg/L	360	EPA 300.0	2.0	0.50		07/08/14 23:35	10
Nitrate (as N)	mg/L	8.3	EPA 300.0	0.04	0.01		06/20/14 23:17	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		06/20/14 23:17	1
Orthophosphate as P	mg/L	0.44	EPA 300.0	0.040	0.010		06/20/14 23:17	1
Phosphorous - Total as P	mg/L	2.2	SM 4500P-E	0.80	0.20	07/08/14 08:48	07/17/14 17:25	20
Total Alkalinity	mg/L	120	SM 2320B	8.0	2.0		06/27/14 12:36	1
Total Kjeldahl Nitrogen	mg/L	2.5	EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Total Suspended Solids	mg/L	14	SM 2540D	1	1	06/25/14 08:35	06/27/14 17:48	1
Volatile Suspended Solids	mg/L	7	EPA 160.4	1	1	06/23/14 14:54	06/27/14 09:21	1
Nitrate+Nitrite (N)	mg/L	8.3	EPA 300.0	0.08	0.02		06/20/14 23:17	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	06/19/14 17:16	06/20/14 11:17	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	06/19/14 17:13	06/20/14 15:13	1

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Project Name **B-HS7 SE#4**

Parameters	Units	Results *		Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-EB**							
Matrix		**Reagent Water**							
SAL Sample Number		**1406423-26**							
Date/Time Collected		**06/19/14 11:40**							
Collected by		**Josefin Hirst**							
Date/Time Received		**06/19/14 16:35**							
Inorganics									
Ammonia as N	mg/L	0.039	I	EPA 350.1	0.040	0.009		07/11/14 13:50	1
Carbonaceous BOD	mg/L	2	U	SM 5210B	2	2	06/20/14 12:24	06/25/14 08:26	1
Chemical Oxygen Demand	mg/L	10	U	EPA 410.4	25	10	06/26/14 11:13	06/26/14 16:48	1
Chloride	mg/L	0.050	U	EPA 300.0	0.20	0.050		06/20/14 23:28	1
Nitrate (as N)	mg/L	0.01	U	EPA 300.0	0.04	0.01		06/20/14 23:28	1
Nitrite (as N)	mg/L	0.01	U	EPA 300.0	0.04	0.01		06/20/14 23:28	1
Orthophosphate as P	mg/L	0.010	U	EPA 300.0	0.040	0.010		06/20/14 23:28	1
Phosphorous - Total as P	mg/L	0.032	I	SM 4500P-E	0.040	0.010	07/08/14 08:48	07/17/14 17:25	1
Total Alkalinity	mg/L	2.3	I	SM 2320B	8.0	2.0		06/27/14 12:39	1
Total Kjeldahl Nitrogen	mg/L	0.22		EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Total Suspended Solids	mg/L	1	U	SM 2540D	1	1	06/25/14 08:35	06/27/14 17:48	1
Volatile Suspended Solids	mg/L	1	U	EPA 160.4	1	1	06/23/14 14:54	06/27/14 09:21	1
Nitrate+Nitrite (N)	mg/L	0.02	U	EPA 300.0	0.08	0.02		06/20/14 23:28	1
Microbiology									
E. Coli	MPN/100 mL	2.0	U	SM 9223B	2.0	2.0	06/19/14 17:16	06/20/14 11:17	1
Fecal Coliforms	CFU/100 ml	1	U	SM 9222D	1	1	06/19/14 17:13	06/20/14 15:13	1

Sample Description		**BHS7-RAIN**							
Matrix		**Wastewater**							
SAL Sample Number		**1406423-27**							
Date/Time Collected		**06/19/14 08:20**							
Collected by		**Josefin Hirst**							
Date/Time Received		**06/19/14 16:35**							
Inorganics									
Ammonia as N	mg/L	0.24	I	EPA 350.1	0.40	0.095		07/11/14 13:52	10
Chloride	mg/L	0.77		EPA 300.0	0.20	0.050		06/20/14 23:39	1
Nitrate (as N)	mg/L	0.10		EPA 300.0	0.04	0.01		06/20/14 23:39	1
Nitrite (as N)	mg/L	0.10		EPA 300.0	0.04	0.01		06/20/14 23:39	1
Total Kjeldahl Nitrogen	mg/L	0.84		EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Nitrate+Nitrite (N)	mg/L	0.20		EPA 300.0	0.08	0.02		06/20/14 23:39	1

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Project Name **B-HS7 SE#4**

Parameters	Units	Results *		Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-BKG**							
Matrix		**Wastewater**							
SAL Sample Number		**1406423-28**							
Date/Time Collected		**06/19/14 11:10**							
Collected by		**Josefin Hirst**							
Date/Time Received		**06/19/14 16:35**							
Inorganics									
Ammonia as N	mg/L	0.087		EPA 350.1	0.040	0.009		07/11/14 13:54	1
Chemical Oxygen Demand	mg/L	12	I	EPA 410.4	25	10	06/26/14 11:13	06/26/14 16:48	1
Chloride	mg/L	3.2		EPA 300.0	0.20	0.050		06/20/14 23:50	1
Nitrate (as N)	mg/L	4.5		EPA 300.0	0.04	0.01		06/20/14 23:50	1
Nitrite (as N)	mg/L	0.01	U	EPA 300.0	0.04	0.01		06/20/14 23:50	1
Orthophosphate as P	mg/L	0.010	U	EPA 300.0	0.040	0.010		06/20/14 23:50	1
Phosphorous - Total as P	mg/L	0.036	I	SM 4500P-E	0.040	0.010	07/08/14 08:48	07/17/14 17:25	1
Total Kjeldahl Nitrogen	mg/L	1.0		EPA 351.2	0.20	0.05	07/08/14 08:48	07/17/14 17:25	1
Total Suspended Solids	mg/L	1	U	SM 2540D	1	1	06/25/14 08:35	06/27/14 17:48	1
Volatile Suspended Solids	mg/L	16		EPA 160.4	1	1	06/23/14 14:54	06/27/14 09:21	1
Nitrate+Nitrite (N)	mg/L	4.5		EPA 300.0	0.08	0.02		06/20/14 23:50	1

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Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF43008 - VOC - Prep										
Blank (BF43008-BLK1)					Prepared & Analyzed: 06/30/14 15:29					
Acetone	2.0 U	4.0	2.0	ug/L						
Acrylonitrile	1.3 U	4.0	1.3	ug/L						
Benzene	0.1 U	0.8	0.1	ug/L						
Bromobenzene	0.2 U	0.8	0.2	ug/L						
Bromochloromethane	0.1 U	0.8	0.1	ug/L						
Bromodichloromethane	0.2 U	0.8	0.2	ug/L						
Bromoform	0.2 U	0.8	0.2	ug/L						
Bromomethane	0.4 U	0.8	0.4	ug/L						
2-Butanone	2.0 U	4.0	2.0	ug/L						
n-Butylbenzene	0.2 U	0.8	0.2	ug/L						
sec-Butylbenzene	0.2 U	0.8	0.2	ug/L						
t-Butylbenzene	0.1 U	0.8	0.1	ug/L						
Carbon disulfide	0.2 U	0.8	0.2	ug/L						
Carbon tetrachloride	0.2 U	0.8	0.2	ug/L						
Chlorobenzene	0.1 U	0.8	0.1	ug/L						
Chloroethane	0.4 U	1.6	0.4	ug/L						
Chloroform	0.2 U	0.8	0.2	ug/L						
Chloromethane	0.4 U	1.6	0.4	ug/L						
1,2-Dibromoethane	0.2 U	0.8	0.2	ug/L						
1,2-Dibromo-3-chloropropane	0.3 U	0.8	0.3	ug/L						
2-Chlorotoluene	0.1 U	0.8	0.1	ug/L						
2-Chloroethylvinyl Ether	0.5 U	1.6	0.5	ug/L						
4-Chlorotoluene	0.1 U	0.8	0.1	ug/L						
Dibromochloromethane	0.1 U	0.8	0.1	ug/L						
Dibromomethane	0.2 U	0.8	0.2	ug/L						
1,2-Dichlorobenzene	0.1 U	0.8	0.1	ug/L						
1,3-Dichlorobenzene	0.07 U	0.8	0.07	ug/L						
1,4-Dichlorobenzene	0.2 U	0.8	0.2	ug/L						
trans-1,4-Dichloro-2-butene	0.3 U	0.8	0.3	ug/L						
Dichlorodifluoromethane	0.5 U	1.6	0.5	ug/L						
1,1-Dichloroethane	0.2 U	0.8	0.2	ug/L						
1,2-Dichloroethane	0.1 U	0.8	0.1	ug/L						
1,1-Dichloroethene	0.2 U	0.8	0.2	ug/L						
cis-1,2-Dichloroethene	0.09 U	0.8	0.09	ug/L						
trans-1,2-Dichloroethene	0.2 U	0.8	0.2	ug/L						
1,2-Dichloropropane	0.2 U	0.8	0.2	ug/L						
2,2-Dichloropropane	0.3 U	0.8	0.3	ug/L						
1,1-Dichloropropene	0.2 U	0.8	0.2	ug/L						
cis-1,3-Dichloropropene	0.2 U	0.8	0.2	ug/L						
trans-1,3-Dichloropropene	0.1 U	0.8	0.1	ug/L						
Ethylbenzene	0.08 U	0.8	0.08	ug/L						
Hexachlorobutadiene	0.4 U	0.8	0.4	ug/L						
2-Hexanone	2.1 U	4.0	2.1	ug/L						
Iodomethane	0.2 U	0.8	0.2	ug/L						
Isopropylbenzene	0.1 U	0.8	0.1	ug/L						

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Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF43008 - VOC - Prep										
Blank (BF43008-BLK1)					Prepared & Analyzed: 06/30/14 15:29					
4-Isopropyltoluene	0.2 U	0.8	0.2	ug/L						
Methyl-t-butyl ether	0.2 U	1.6	0.2	ug/L						
Methylene Chloride	0.2 U	0.8	0.2	ug/L						
4-Methyl-2-pentanone	2.6 U	4.0	2.6	ug/L						
Naphthalene	0.2 U	0.8	0.2	ug/L						
n-Propylbenzene	0.1 U	0.8	0.1	ug/L						
Styrene	0.05 U	0.8	0.05	ug/L						
1,1,1,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L						
1,1,2,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L						
Tetrachloroethene	0.1 U	0.8	0.1	ug/L						
Toluene	0.09 U	0.8	0.09	ug/L						
1,2,3-Trichlorobenzene	0.2 U	0.8	0.2	ug/L						
1,2,4-Trichlorobenzene	0.3 U	0.8	0.3	ug/L						
1,1,1-Trichloroethane	0.2 U	0.8	0.2	ug/L						
1,1,2-Trichloroethane	0.2 U	0.8	0.2	ug/L						
Trichloroethene	0.2 U	0.8	0.2	ug/L						
Trichlorofluoromethane	0.2 U	0.8	0.2	ug/L						
1,1,2-Trichloro-1,2,2-trifluoroethane	0.6 U	1.6	0.6	ug/L						
1,2,3-Trichloropropane	0.4 U	0.8	0.4	ug/L						
1,2,4-Trimethylbenzene	0.1 U	0.8	0.1	ug/L						
1,3,5-Trimethylbenzene	0.1 U	0.8	0.1	ug/L						
Vinyl chloride	0.3 U	1.6	0.3	ug/L						
Xylene-m,p	0.2 U	1.6	0.2	ug/L						
Xylene-o	0.2 U	0.8	0.2	ug/L						
Xylenes- Total	0.1 U	0.8	0.1	ug/L						
Total Trihalomethanes	0.1 U	0.8	0.1	ug/L						
1,4-Dioxane	0.00			ug/L						
Surrogate: 4-Bromofluorobenzene	*20.5*			*ug/L*	*20*		*103*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*20.1*			*ug/L*	*20*		*100*	*65-135*		
Surrogate: Toluene-d8	*19.6*			*ug/L*	*20*		*98*	*65-135*		
Surrogate: Dibromofluoromethane	*21.2*			*ug/L*	*20*		*106*	*65-135*		

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Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF43008 - VOC - Prep										
LCS (BF43008-BS1)					Prepared & Analyzed: 06/30/14 16:02					
Acetone	121	4.0	2.0	ug/L	100		121	70-130		
Acrylonitrile	116	4.0	1.3	ug/L	100		116	70-130		
Benzene	22.2	0.8	0.1	ug/L	20		111	70-130		
Bromobenzene	20.3	0.8	0.2	ug/L	20		102	70-130		
Bromochloromethane	23.1	0.8	0.1	ug/L	20		116	70-130		
Bromodichloromethane	22.6	0.8	0.2	ug/L	20		113	70-130		
Bromoform	20.8	0.8	0.2	ug/L	20		104	70-130		
Bromomethane	41.0	0.8	0.4	ug/L	40		103	70-130		
2-Butanone	127	4.0	2.0	ug/L	100		127	70-130		
n-Butylbenzene	20.4	0.8	0.2	ug/L	20		102	70-130		
sec-Butylbenzene	20.4	0.8	0.2	ug/L	20		102	70-130		
t-Butylbenzene	20.3	0.8	0.1	ug/L	20		102	70-130		
Carbon disulfide	21.8	0.8	0.2	ug/L	20		109	70-130		
Carbon tetrachloride	23.1	0.8	0.2	ug/L	20		115	70-130		
Chlorobenzene	20.3	0.8	0.1	ug/L	20		102	70-130		
Chloroethane	43.6	1.6	0.4	ug/L	40		109	70-130		
Chloroform	22.2	0.8	0.2	ug/L	20		111	70-130		
Chloromethane	44.5	1.6	0.4	ug/L	40		111	70-130		
2-Chlorotoluene	20.2	0.8	0.1	ug/L	20		101	70-130		
4-Chlorotoluene	20.6	0.8	0.1	ug/L	20		103	70-130		
Dibromochloromethane	21.7	0.8	0.1	ug/L	20		109	70-130		
Dibromomethane	22.5	0.8	0.2	ug/L	20		113	70-130		
1,2-Dichlorobenzene	20.4	0.8	0.1	ug/L	20		102	70-130		
1,3-Dichlorobenzene	20.1	0.8	0.07	ug/L	20		100	70-130		
1,4-Dichlorobenzene	20.0	0.8	0.2	ug/L	20		100	70-130		
trans-1,4-Dichloro-2-butene	22.8	0.8	0.3	ug/L	20		114	70-130		
Dichlorodifluoromethane	49.9	1.6	0.5	ug/L	40		125	70-130		
1,1-Dichloroethane	22.8	0.8	0.2	ug/L	20		114	70-130		
1,2-Dichloroethane	23.1	0.8	0.1	ug/L	20		115	70-130		
1,1-Dichloroethene	21.9	0.8	0.2	ug/L	20		110	70-130		
cis-1,2-Dichloroethene	22.5	0.8	0.09	ug/L	20		112	70-130		
trans-1,2-Dichloroethene	22.6	0.8	0.2	ug/L	20		113	70-130		
1,2-Dichloropropane	21.8	0.8	0.2	ug/L	20		109	70-130		
2,2-Dichloropropane	24.4	0.8	0.3	ug/L	20		122	70-130		
1,1-Dichloropropene	22.9	0.8	0.2	ug/L	20		115	70-130		
cis-1,3-Dichloropropene	23.4	0.8	0.2	ug/L	20		117	70-130		
trans-1,3-Dichloropropene	22.7	0.8	0.1	ug/L	20		114	70-130		
Ethylbenzene	21.1	0.8	0.08	ug/L	20		105	70-130		
Hexachlorobutadiene	18.4	0.8	0.4	ug/L	20		92	70-130		
2-Hexanone	119	4.0	2.1	ug/L	100		119	70-130		
Iodomethane	24.9	0.8	0.2	ug/L	20		125	70-130		
Isopropylbenzene	21.4	0.8	0.1	ug/L	20		107	70-130		
4-Isopropyltoluene	20.3	0.8	0.2	ug/L	20		102	70-130		
Methyl-t-butyl ether	23.1	1.6	0.2	ug/L	20		116	70-130		
Methylene Chloride	22.7	0.8	0.2	ug/L	20		113	70-130		

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Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF43008 - VOC - Prep										
LCS (BF43008-BS1)					Prepared & Analyzed: 06/30/14 16:02					
4-Methyl-2-pentanone	116	4.0	2.6	ug/L	100		116	70-130		
Naphthalene	20.6	0.8	0.2	ug/L	20		103	70-130		
n-Propylbenzene	20.9	0.8	0.1	ug/L	20		104	70-130		
Styrene	21.8	0.8	0.05	ug/L	20		109	70-130		
1,1,1,2-Tetrachloroethane	21.0	0.8	0.2	ug/L	20		105	70-130		
1,1,2,2-Tetrachloroethane	20.9	0.8	0.2	ug/L	20		105	70-130		
Tetrachloroethene	20.8	0.8	0.1	ug/L	20		104	70-130		
Toluene	21.0	0.8	0.09	ug/L	20		105	70-130		
1,2,3-Trichlorobenzene	18.9	0.8	0.2	ug/L	20		94	70-130		
1,2,4-Trichlorobenzene	18.7	0.8	0.3	ug/L	20		94	70-130		
1,1,1-Trichloroethane	23.1	0.8	0.2	ug/L	20		115	70-130		
1,1,2-Trichloroethane	21.2	0.8	0.2	ug/L	20		106	70-130		
Trichloroethene	21.5	0.8	0.2	ug/L	20		107	70-130		
Trichlorofluoromethane	22.6	0.8	0.2	ug/L	20		113	70-130		
1,1,2-Trichloro-1,2,2-trifluoroethane	23.0	1.6	0.6	ug/L	20		115	70-130		
1,2,3-Trichloropropane	21.2	0.8	0.4	ug/L	20		106	70-130		
1,2,4-Trimethylbenzene	20.8	0.8	0.1	ug/L	20		104	70-130		
1,3,5-Trimethylbenzene	21.2	0.8	0.1	ug/L	20		106	70-130		
Vinyl chloride	45.1	1.6	0.3	ug/L	40		113	70-130		
Xylene-m,p	43.1	1.6	0.2	ug/L	40		108	70-130		
Xylene-o	21.2	0.8	0.2	ug/L	20		106	70-130		
Surrogate: 4-Bromofluorobenzene	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.6*			*ug/L*	*20*		*98*	*65-135*		
Surrogate: Toluene-d8	*19.6*			*ug/L*	*20*		*98*	*65-135*		
Surrogate: Dibromofluoromethane	*21.0*			*ug/L*	*20*		*105*	*65-135*		
Duplicate (BF43008-DUP1)		**Source: 1406553-01**			Prepared & Analyzed: 06/30/14 19:34					
Acetone	19.0	4.0	2.0	ug/L		ND				20
Acrylonitrile	1.3 U	4.0	1.3	ug/L		ND				20
Benzene	0.1 U	0.8	0.1	ug/L		ND				20
Bromobenzene	0.2 U	0.8	0.2	ug/L		ND				20
Bromochloromethane	0.1 U	0.8	0.1	ug/L		ND				20
Bromodichloromethane	0.2 U	0.8	0.2	ug/L		ND				20
Bromoform	0.2 U	0.8	0.2	ug/L		ND				20
Bromomethane	0.4 U	0.8	0.4	ug/L		ND				20
2-Butanone	2.0 U	4.0	2.0	ug/L		ND				20
n-Butylbenzene	0.2 U	0.8	0.2	ug/L		ND				20
sec-Butylbenzene	0.2 U	0.8	0.2	ug/L		ND				20
t-Butylbenzene	0.1 U	0.8	0.1	ug/L		ND				20
Carbon disulfide	0.2 U	0.8	0.2	ug/L		0.761				20
Carbon tetrachloride	0.2 U	0.8	0.2	ug/L		ND				20
Chlorobenzene	0.1 U	0.8	0.1	ug/L		ND				20
Chloroethane	0.4 U	1.6	0.4	ug/L		ND				20
Chloroform	0.2 U	0.8	0.2	ug/L		ND				20
Chloromethane	0.4 U	1.6	0.4	ug/L		ND				20

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Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF43008 - VOC - Prep										
Duplicate (BF43008-DUP1)		**Source: 1406553-01**			Prepared & Analyzed: 06/30/14 19:34					
1,2-Dibromoethane	0.2 U	0.8	0.2	ug/L		ND				200
1,2-Dibromo-3-chloropropane	0.3 U	0.8	0.3	ug/L		ND				200
2-Chlorotoluene	0.1 U	0.8	0.1	ug/L		ND				20
2-Chloroethylvinyl Ether	0.5 U	1.6	0.5	ug/L		ND				200
4-Chlorotoluene	0.1 U	0.8	0.1	ug/L		ND				20
Dibromochloromethane	0.1 U	0.8	0.1	ug/L		ND				20
Dibromomethane	0.2 U	0.8	0.2	ug/L		ND				20
1,2-Dichlorobenzene	0.1 U	0.8	0.1	ug/L		ND				20
1,3-Dichlorobenzene	0.07 U	0.8	0.07	ug/L		ND				20
1,4-Dichlorobenzene	0.2 U	0.8	0.2	ug/L		ND				20
trans-1,4-Dichloro-2-butene	0.3 U	0.8	0.3	ug/L		ND				20
Dichlorodifluoromethane	0.5 U	1.6	0.5	ug/L		ND				20
1,1-Dichloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,2-Dichloroethane	0.1 U	0.8	0.1	ug/L		ND				20
1,1-Dichloroethene	0.2 U	0.8	0.2	ug/L		ND				20
cis-1,2-Dichloroethene	0.09 U	0.8	0.09	ug/L		ND				20
trans-1,2-Dichloroethene	0.2 U	0.8	0.2	ug/L		ND				20
1,2-Dichloropropane	0.2 U	0.8	0.2	ug/L		ND				20
2,2-Dichloropropane	0.3 U	0.8	0.3	ug/L		ND				20
1,1-Dichloropropene	0.2 U	0.8	0.2	ug/L		ND				20
cis-1,3-Dichloropropene	0.2 U	0.8	0.2	ug/L		ND				20
trans-1,3-Dichloropropene	0.1 U	0.8	0.1	ug/L		ND				20
Ethylbenzene	0.08 U	0.8	0.08	ug/L		ND				20
Hexachlorobutadiene	0.4 U	0.8	0.4	ug/L		ND				20
2-Hexanone	2.1 U	4.0	2.1	ug/L		ND				20
Iodomethane	0.2 U	0.8	0.2	ug/L		ND				20
Isopropylbenzene	0.1 U	0.8	0.1	ug/L		ND				20
4-Isopropyltoluene	0.2 U	0.8	0.2	ug/L		ND				20
Methyl-t-butyl ether	0.2 U	1.6	0.2	ug/L		ND				20
Methylene Chloride	0.2 U	0.8	0.2	ug/L		ND				20
4-Methyl-2-pentanone	2.6 U	4.0	2.6	ug/L		ND				20
Naphthalene	0.2 U	0.8	0.2	ug/L		ND				20
n-Propylbenzene	0.1 U	0.8	0.1	ug/L		ND				20
Styrene	0.05 U	0.8	0.05	ug/L		ND				20
1,1,1,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,1,2,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L		ND				20
Tetrachloroethene	0.1 U	0.8	0.1	ug/L		ND				20
Toluene	0.09 U	0.8	0.09	ug/L		ND				20
1,2,3-Trichlorobenzene	0.2 U	0.8	0.2	ug/L		ND				20
1,2,4-Trichlorobenzene	0.3 U	0.8	0.3	ug/L		ND				20
1,1,1-Trichloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,1,2-Trichloroethane	0.2 U	0.8	0.2	ug/L		ND				20
Trichloroethene	0.2 U	0.8	0.2	ug/L		ND				20
Trichlorofluoromethane	0.2 U	0.8	0.2	ug/L		ND				20

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Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF43008 - VOC - Prep										
Duplicate (BF43008-DUP1)		**Source: 1406553-01**			Prepared & Analyzed: 06/30/14 19:34					
1,1,2-Trichloro-1,2,2-trifluoroethane	0.6 U	1.6	0.6	ug/L		ND				20
1,2,3-Trichloropropane	0.4 U	0.8	0.4	ug/L		ND				20
1,2,4-Trimethylbenzene	0.1 U	0.8	0.1	ug/L		ND				20
1,3,5-Trimethylbenzene	0.1 U	0.8	0.1	ug/L		ND				20
Vinyl chloride	0.3 U	1.6	0.3	ug/L		ND				20
Xylene-m,p	0.2 U	1.6	0.2	ug/L		ND				20
Xylene-o	0.2 U	0.8	0.2	ug/L		ND				20
Xylenes- Total	0.1 U	0.8	0.1	ug/L		ND				20
Total Trihalomethanes	0.1 U	0.8	0.1	ug/L		ND				200
1,4-Dioxane	0.00			ug/L		0.00				200
Surrogate: 4-Bromofluorobenzene	*19.8*			*ug/L*	*20*		*99*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*20.7*			*ug/L*	*20*		*103*	*65-135*		
Surrogate: Toluene-d8	*19.5*			*ug/L*	*20*		*97*	*65-135*		
Surrogate: Dibromofluoromethane	*20.8*			*ug/L*	*20*		*104*	*65-135*		
Matrix Spike (BF43008-MS1)		**Source: 1406528-01**			Prepared & Analyzed: 06/30/14 17:12					
Acetone	119	4.0	2.0	ug/L	100	ND	119	65-135		
Acrylonitrile	119	4.0	1.3	ug/L	100	ND	119	65-135		
Benzene	21.5	0.8	0.1	ug/L	20	ND	107	65-135		
Bromobenzene	19.0	0.8	0.2	ug/L	20	ND	95	65-135		
Bromochloromethane	22.3	0.8	0.1	ug/L	20	ND	111	65-135		
Bromodichloromethane	21.5	0.8	0.2	ug/L	20	ND	108	65-135		
Bromoform	20.2	0.8	0.2	ug/L	20	ND	101	65-135		
Bromomethane	38.1	0.8	0.4	ug/L	40	ND	95	65-135		
2-Butanone	129	4.0	2.0	ug/L	100	ND	129	65-135		
n-Butylbenzene	19.3	0.8	0.2	ug/L	20	ND	96	65-135		
sec-Butylbenzene	18.8	0.8	0.2	ug/L	20	ND	94	65-135		
t-Butylbenzene	18.8	0.8	0.1	ug/L	20	ND	94	65-135		
Carbon disulfide	19.3	0.8	0.2	ug/L	20	ND	96	65-135		
Carbon tetrachloride	21.9	0.8	0.2	ug/L	20	ND	109	65-135		
Chlorobenzene	20.3	0.8	0.1	ug/L	20	ND	102	65-135		
Chloroethane	32.7	1.6	0.4	ug/L	40	ND	82	65-135		
Chloroform	21.4	0.8	0.2	ug/L	20	ND	107	65-135		
Chloromethane	35.5	1.6	0.4	ug/L	40	ND	89	65-135		
2-Chlorotoluene	19.3	0.8	0.1	ug/L	20	ND	96	65-135		
4-Chlorotoluene	19.8	0.8	0.1	ug/L	20	ND	99	65-135		
Dibromochloromethane	20.9	0.8	0.1	ug/L	20	ND	105	65-135		
Dibromomethane	22.0	0.8	0.2	ug/L	20	ND	110	65-135		
1,2-Dichlorobenzene	19.3	0.8	0.1	ug/L	20	ND	96	65-135		
1,3-Dichlorobenzene	19.0	0.8	0.07	ug/L	20	ND	95	65-135		
1,4-Dichlorobenzene	21.3	0.8	0.2	ug/L	20	ND	106	65-135		
trans-1,4-Dichloro-2-butene	22.3	0.8	0.3	ug/L	20	ND	112	65-135		
Dichlorodifluoromethane	34.4	1.6	0.5	ug/L	40	ND	86	65-135		
1,1-Dichloroethane	22.0	0.8	0.2	ug/L	20	ND	110	65-135		
1,2-Dichloroethane	22.6	0.8	0.1	ug/L	20	ND	113	65-135		

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Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF43008 - VOC - Prep										
Matrix Spike (BF43008-MS1)		**Source: 1406528-01**			Prepared & Analyzed: 06/30/14 17:12					
1,1-Dichloroethene	20.0	0.8	0.2	ug/L	20	ND	100	65-135		
cis-1,2-Dichloroethene	22.0	0.8	0.09	ug/L	20	ND	110	65-135		
trans-1,2-Dichloroethene	21.3	0.8	0.2	ug/L	20	ND	107	65-135		
1,2-Dichloropropane	21.1	0.8	0.2	ug/L	20	ND	106	65-135		
2,2-Dichloropropane	24.1	0.8	0.3	ug/L	20	ND	121	65-135		
1,1-Dichloropropene	22.1	0.8	0.2	ug/L	20	ND	111	65-135		
cis-1,3-Dichloropropene	22.2	0.8	0.2	ug/L	20	ND	111	65-135		
trans-1,3-Dichloropropene	22.1	0.8	0.1	ug/L	20	ND	110	65-135		
Ethylbenzene	20.3	0.8	0.08	ug/L	20	ND	101	65-135		
Hexachlorobutadiene	17.2	0.8	0.4	ug/L	20	ND	86	65-135		
2-Hexanone	121	4.0	2.1	ug/L	100	ND	121	65-135		
Iodomethane	24.1	0.8	0.2	ug/L	20	ND	121	65-135		
Isopropylbenzene	20.4	0.8	0.1	ug/L	20	ND	102	65-135		
4-Isopropyltoluene	19.2	0.8	0.2	ug/L	20	ND	96	65-135		
Methyl-t-butyl ether	22.6	1.6	0.2	ug/L	20	ND	113	65-135		
Methylene Chloride	21.9	0.8	0.2	ug/L	20	ND	109	65-135		
4-Methyl-2-pentanone	110	4.0	2.6	ug/L	100	ND	110	65-135		
Naphthalene	20.9	0.8	0.2	ug/L	20	ND	104	65-135		
n-Propylbenzene	19.6	0.8	0.1	ug/L	20	ND	98	65-135		
Styrene	20.7	0.8	0.05	ug/L	20	ND	104	65-135		
1,1,1,2-Tetrachloroethane	20.1	0.8	0.2	ug/L	20	ND	101	65-135		
1,1,2,2-Tetrachloroethane	20.4	0.8	0.2	ug/L	20	ND	102	65-135		
Tetrachloroethene	18.9	0.8	0.1	ug/L	20	ND	95	65-135		
Toluene	19.9	0.8	0.09	ug/L	20	ND	100	65-135		
1,2,3-Trichlorobenzene	17.8	0.8	0.2	ug/L	20	ND	89	65-135		
1,2,4-Trichlorobenzene	18.0	0.8	0.3	ug/L	20	ND	90	65-135		
1,1,1-Trichloroethane	21.7	0.8	0.2	ug/L	20	ND	108	65-135		
1,1,2-Trichloroethane	20.3	0.8	0.2	ug/L	20	ND	101	65-135		
Trichloroethene	21.3	0.8	0.2	ug/L	20	ND	107	65-135		
1,1,2-Trichloro-1,2,2-trifluoroethane	19.8	1.6	0.6	ug/L	20	ND	99	65-135		
Trichlorofluoromethane	18.2	0.8	0.2	ug/L	20	ND	91	65-135		
1,2,3-Trichloropropane	20.2	0.8	0.4	ug/L	20	ND	101	65-135		
1,2,4-Trimethylbenzene	19.6	0.8	0.1	ug/L	20	ND	98	65-135		
1,3,5-Trimethylbenzene	19.5	0.8	0.1	ug/L	20	ND	98	65-135		
Vinyl chloride	36.3	1.6	0.3	ug/L	40	ND	91	65-135		
Xylene-m,p	40.6	1.6	0.2	ug/L	40	ND	102	65-135		
Xylene-o	20.3	0.8	0.2	ug/L	20	ND	101	65-135		
Surrogate: 4-Bromofluorobenzene	*20.0*			*ug/L*	*20*		*100*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*20.7*			*ug/L*	*20*		*103*	*65-135*		
Surrogate: Toluene-d8	*19.2*			*ug/L*	*20*		*96*	*65-135*		
Surrogate: Dibromofluoromethane	*20.7*			*ug/L*	*20*		*103*	*65-135*		

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Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF43008 - VOC - Prep										
Matrix Spike (BF43008-MS2)		**Source: 1406553-02**			Prepared & Analyzed: 06/30/14 17:12					
Acetone	119	4.0	2.0	ug/L	100	ND	119	65-135		
Acrylonitrile	119	4.0	1.3	ug/L	100	ND	119	65-135		
Benzene	21.5	0.8	0.1	ug/L	20	ND	107	65-135		
Bromobenzene	19.0	0.8	0.2	ug/L	20	ND	95	65-135		
Bromochloromethane	22.3	0.8	0.1	ug/L	20	ND	111	65-135		
Bromodichloromethane	21.5	0.8	0.2	ug/L	20	ND	108	65-135		
Bromoform	20.2	0.8	0.2	ug/L	20	ND	101	65-135		
Bromomethane	38.1	0.8	0.4	ug/L	40	ND	95	65-135		
2-Butanone	129	4.0	2.0	ug/L	100	ND	129	65-135		
n-Butylbenzene	19.3	0.8	0.2	ug/L	20	ND	96	65-135		
sec-Butylbenzene	18.8	0.8	0.2	ug/L	20	ND	94	65-135		
t-Butylbenzene	18.8	0.8	0.1	ug/L	20	ND	94	65-135		
Carbon disulfide	19.3	0.8	0.2	ug/L	20	0.472	94	65-135		
Carbon tetrachloride	21.9	0.8	0.2	ug/L	20	ND	109	65-135		
Chlorobenzene	20.3	0.8	0.1	ug/L	20	0.688	98	65-135		
Chloroethane	32.7	1.6	0.4	ug/L	40	ND	82	65-135		
Chloroform	21.4	0.8	0.2	ug/L	20	ND	107	65-135		
Chloromethane	35.5	1.6	0.4	ug/L	40	ND	89	65-135		
2-Chlorotoluene	19.3	0.8	0.1	ug/L	20	ND	96	65-135		
4-Chlorotoluene	19.8	0.8	0.1	ug/L	20	ND	99	65-135		
Dibromochloromethane	20.9	0.8	0.1	ug/L	20	ND	105	65-135		
Dibromomethane	22.0	0.8	0.2	ug/L	20	ND	110	65-135		
1,2-Dichlorobenzene	19.3	0.8	0.1	ug/L	20	ND	96	65-135		
1,3-Dichlorobenzene	19.0	0.8	0.07	ug/L	20	ND	95	65-135		
1,4-Dichlorobenzene	21.3	0.8	0.2	ug/L	20	2.10	96	65-135		
trans-1,4-Dichloro-2-butene	22.3	0.8	0.3	ug/L	20	ND	112	65-135		
Dichlorodifluoromethane	32.6	1.6	0.5	ug/L	40	ND	82	65-135		
1,1-Dichloroethane	22.0	0.8	0.2	ug/L	20	ND	110	65-135		
1,2-Dichloroethane	22.6	0.8	0.1	ug/L	20	ND	113	65-135		
1,1-Dichloroethene	20.0	0.8	0.2	ug/L	20	ND	100	65-135		
cis-1,2-Dichloroethene	22.0	0.8	0.09	ug/L	20	ND	110	65-135		
trans-1,2-Dichloroethene	21.3	0.8	0.2	ug/L	20	ND	107	65-135		
1,2-Dichloropropane	21.1	0.8	0.2	ug/L	20	ND	106	65-135		
2,2-Dichloropropane	24.1	0.8	0.3	ug/L	20	ND	121	65-135		
1,1-Dichloropropene	22.1	0.8	0.2	ug/L	20	ND	111	65-135		
cis-1,3-Dichloropropene	22.2	0.8	0.2	ug/L	20	ND	111	65-135		
trans-1,3-Dichloropropene	22.1	0.8	0.1	ug/L	20	ND	110	65-135		
Ethylbenzene	20.3	0.8	0.08	ug/L	20	ND	101	65-135		
Hexachlorobutadiene	17.2	0.8	0.4	ug/L	20	ND	86	65-135		
2-Hexanone	121	4.0	2.1	ug/L	100	ND	121	65-135		
Iodomethane	24.1	0.8	0.2	ug/L	20	ND	121	65-135		
Isopropylbenzene	20.4	0.8	0.1	ug/L	20	ND	102	65-135		
4-Isopropyltoluene	19.2	0.8	0.2	ug/L	20	ND	96	65-135		
Methyl-t-butyl ether	22.6	1.6	0.2	ug/L	20	ND	113	65-135		
Methylene Chloride	21.9	0.8	0.2	ug/L	20	ND	109	65-135		

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Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF43008 - VOC - Prep										
Matrix Spike (BF43008-MS2)		**Source: 1406553-02**			Prepared & Analyzed: 06/30/14 17:12					
4-Methyl-2-pentanone	110	4.0	2.6	ug/L	100	ND	110	65-135		
Naphthalene	20.9	0.8	0.2	ug/L	20	ND	104	65-135		
n-Propylbenzene	19.6	0.8	0.1	ug/L	20	ND	98	65-135		
Styrene	20.7	0.8	0.05	ug/L	20	ND	104	65-135		
1,1,1,2-Tetrachloroethane	20.1	0.8	0.2	ug/L	20	ND	101	65-135		
1,1,2,2-Tetrachloroethane	20.4	0.8	0.2	ug/L	20	ND	102	65-135		
Tetrachloroethene	18.9	0.8	0.1	ug/L	20	ND	95	65-135		
Toluene	19.9	0.8	0.09	ug/L	20	ND	100	65-135		
1,2,3-Trichlorobenzene	17.8	0.8	0.2	ug/L	20	ND	89	65-135		
1,2,4-Trichlorobenzene	18.0	0.8	0.3	ug/L	20	ND	90	65-135		
1,1,1-Trichloroethane	21.7	0.8	0.2	ug/L	20	ND	108	65-135		
1,1,2-Trichloroethane	20.3	0.8	0.2	ug/L	20	ND	101	65-135		
Trichloroethene	21.3	0.8	0.2	ug/L	20	ND	107	65-135		
Trichlorofluoromethane	18.2	0.8	0.2	ug/L	20	ND	91	65-135		
1,1,2-Trichloro-1,2,2-trifluoroethane	19.8	1.6	0.6	ug/L	20	ND	99	65-135		
1,2,3-Trichloropropane	20.2	0.8	0.4	ug/L	20	ND	101	65-135		
1,2,4-Trimethylbenzene	19.6	0.8	0.1	ug/L	20	ND	98	65-135		
1,3,5-Trimethylbenzene	19.5	0.8	0.1	ug/L	20	ND	98	65-135		
Vinyl chloride	36.3	1.6	0.3	ug/L	40	ND	91	65-135		
Xylene-m,p	40.6	1.6	0.2	ug/L	40	ND	102	65-135		
Xylene-o	20.3	0.8	0.2	ug/L	20	ND	101	65-135		
Surrogate: 4-Bromofluorobenzene	*20.0*			*ug/L*	*20*		*100*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*20.7*			*ug/L*	*20*		*103*	*65-135*		
Surrogate: Toluene-d8	*19.2*			*ug/L*	*20*		*96*	*65-135*		
Surrogate: Dibromofluoromethane	*20.7*			*ug/L*	*20*		*103*	*65-135*		

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Pesticide Analyses - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42319 - EPA 504 Micro extraction										
Blank (BF42319-BLK1)					Prepared & Analyzed: 06/23/14 19:24					
1,2-Dibromoethane	0.0050 U	0.020	0.0050	ug/L						
1,2-Dibromo-3-chloropropane	0.0050 U	0.020	0.0050	ug/L						
Surrogate: 2-Bromo-1-chloropropane	*0.106*			*ug/L*	*0.10*		*106*	*70-130*		
LCS (BF42319-BS1)					Prepared & Analyzed: 06/23/14 19:47					
1,2-Dibromo-3-chloropropane	0.0981	0.020	0.0050	ug/L	0.10		98	70-130		
1,2-Dibromoethane	0.0967	0.020	0.0050	ug/L	0.10		97	70-130		
Surrogate: 2-Bromo-1-chloropropane	*0.103*			*ug/L*	*0.10*		*103*	*70-130*		
LCS Dup (BF42319-BSD1)					Prepared & Analyzed: 06/23/14 20:10					
1,2-Dibromo-3-chloropropane	0.0981	0.020	0.0050	ug/L	0.10		98	70-130	0	20
1,2-Dibromoethane	0.0986	0.020	0.0050	ug/L	0.10		99	70-130	2	20
Surrogate: 2-Bromo-1-chloropropane	*0.112*			*ug/L*	*0.10*		*112*	*70-130*		
Matrix Spike (BF42319-MS1)		**Source: 1406144-01**			Prepared & Analyzed: 06/23/14 20:32					
1,2-Dibromoethane	0.0904	0.021	0.0053	ug/L	0.11	ND	86	65-135		
1,2-Dibromo-3-chloropropane	0.0971	0.021	0.0053	ug/L	0.11	ND	92	65-135		
Surrogate: 2-Bromo-1-chloropropane	*0.109*			*ug/L*	*0.11*		*104*	*70-130*		
Matrix Spike Dup (BF42319-MSD1)		**Source: 1406144-01**			Prepared & Analyzed: 06/23/14 20:55					
1,2-Dibromo-3-chloropropane	0.0930	0.022	0.0054	ug/L	0.11	ND	86	65-135	4	20
1,2-Dibromoethane	0.0944	0.022	0.0054	ug/L	0.11	ND	87	65-135	4	20
Surrogate: 2-Bromo-1-chloropropane	*0.104*			*ug/L*	*0.11*		*96*	*70-130*		

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42011 - BOD										
Blank (BF42011-BLK1)					Prepared: 06/20/14 Analyzed: 06/25/14 08:26					
Carbonaceous BOD	2 U	2	2	mg/L						
LCS (BF42011-BS1)					Prepared: 06/20/14 Analyzed: 06/25/14 08:26					
Carbonaceous BOD	177	2	2	mg/L	200		88	85-115		
LCS Dup (BF42011-BSD1)					Prepared: 06/20/14 Analyzed: 06/25/14 08:26					
Carbonaceous BOD	185	2	2	mg/L	200		92	85-115	4	200
Duplicate (BF42011-DUP1)		**Source: 1406433-01**			Prepared: 06/20/14 Analyzed: 06/25/14 08:26					
Carbonaceous BOD	130	2	2	mg/L		130			4	25
Batch BF42012 - Ion Chromatography 300.0 Prep										
Blank (BF42012-BLK1)					Prepared & Analyzed: 06/20/14 16:19					
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Chloride	0.050 U	0.20	0.050	mg/L						
Orthophosphate as P	0.010 U	0.040	0.010	mg/L						
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*0.873*			*mg/L*	*1.0*		*87*	*78-120*		
Surrogate: Dichloroacetate	*0.873*			*mg/L*	*1.0*		*87*	*78-120*		
Surrogate: Dichloroacetate	*0.873*			*mg/L*	*1.0*		*87*	*78-120*		
Surrogate: Dichloroacetate	*0.873*			*mg/L*	*1.0*		*87*	*78-120*		
LCS (BF42012-BS1)					Prepared & Analyzed: 06/20/14 16:30					
Orthophosphate as P	0.882	0.040	0.010	mg/L	0.90		98	85-115		
Chloride	2.94	0.20	0.050	mg/L	3.0		98	85-115		
Nitrite (as N)	1.41	0.04	0.01	mg/L	1.4		101	85-115		
Nitrate (as N)	1.58	0.04	0.01	mg/L	1.7		93	85-115		
Surrogate: Dichloroacetate	*1.01*			*mg/L*	*1.0*		*101*	*78-120*		
Surrogate: Dichloroacetate	*1.01*			*mg/L*	*1.0*		*101*	*78-120*		
Surrogate: Dichloroacetate	*1.01*			*mg/L*	*1.0*		*101*	*78-120*		
Surrogate: Dichloroacetate	*1.01*			*mg/L*	*1.0*		*101*	*78-120*		

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Analyte	Result		PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42012 - Ion Chromatography 300.0 Prep											
LCS Dup (BF42012-BSD1)						Prepared & Analyzed: 06/20/14 16:42					
Nitrite (as N)	1.42		0.04	0.01	mg/L	1.4		101	85-115	0.1	200
Orthophosphate as P	0.877		0.040	0.010	mg/L	0.90		97	85-115	0.6	200
Nitrate (as N)	1.58		0.04	0.01	mg/L	1.7		93	85-115	0	200
Chloride	2.93		0.20	0.050	mg/L	3.0		98	85-115	0.1	200
Surrogate: Dichloroacetate	*1.02*				*mg/L*	*1.0*		*102*	*78-120*		
Surrogate: Dichloroacetate	*1.02*				*mg/L*	*1.0*		*102*	*78-120*		
Surrogate: Dichloroacetate	*1.02*				*mg/L*	*1.0*		*102*	*78-120*		
Surrogate: Dichloroacetate	*1.02*				*mg/L*	*1.0*		*102*	*78-120*		
Matrix Spike (BF42012-MS1)			**Source: 1406423-09**			Prepared & Analyzed: 06/20/14 18:46					
Orthophosphate as P	2.34	J2,J6	0.040	0.010	mg/L	0.90	1.68	73	85-115		
Chloride	411	L	0.20	0.050	mg/L	3.0	330	NR	80-120		
Nitrite (as N)	0.194	J2,J6	0.04	0.01	mg/L	1.4	ND	14	85-115		
Nitrate (as N)	1.18	J2	0.04	0.01	mg/L	1.7	0.0240	68	85-115		
Surrogate: Dichloroacetate	*0.823*				*mg/L*	*1.0*		*82*	*78-120*		
Surrogate: Dichloroacetate	*0.823*				*mg/L*	*1.0*		*82*	*78-120*		
Surrogate: Dichloroacetate	*0.823*				*mg/L*	*1.0*		*82*	*78-120*		
Surrogate: Dichloroacetate	*0.823*				*mg/L*	*1.0*		*82*	*78-120*		
Matrix Spike (BF42012-MS2)			**Source: 1406423-21**			Prepared & Analyzed: 06/20/14 21:13					
Orthophosphate as P	0.567	J2,J6	0.040	0.010	mg/L	0.90	0.0400	59	85-115		
Nitrite (as N)	0.343	J2,J6	0.04	0.01	mg/L	1.4	ND	24	85-115		
Chloride	261	L	0.20	0.050	mg/L	3.0	222	NR	80-120		
Nitrate (as N)	13.2		0.04	0.01	mg/L	1.7	11.3	113	85-115		
Surrogate: Dichloroacetate	*0.844*				*mg/L*	*1.0*		*84*	*78-120*		
Surrogate: Dichloroacetate	*0.844*				*mg/L*	*1.0*		*84*	*78-120*		
Surrogate: Dichloroacetate	*0.844*				*mg/L*	*1.0*		*84*	*78-120*		
Surrogate: Dichloroacetate	*0.844*				*mg/L*	*1.0*		*84*	*78-120*		

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42013 - Ion Chromatography 300.0 Prep										
Blank (BF42013-BLK1)					Prepared & Analyzed: 06/20/14 22:09					
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Orthophosphate as P	0.010 U	0.040	0.010	mg/L						
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*0.867*			*mg/L*	*1.0*		*87*	*78-120*		
Surrogate: Dichloroacetate	*0.867*			*mg/L*	*1.0*		*87*	*78-120*		
Surrogate: Dichloroacetate	*0.867*			*mg/L*	*1.0*		*87*	*78-120*		
Surrogate: Dichloroacetate	*0.867*			*mg/L*	*1.0*		*87*	*78-120*		
LCS (BF42013-BS1)					Prepared & Analyzed: 06/20/14 22:20					
Orthophosphate as P	0.959	0.040	0.010	mg/L	0.90		107	85-115		
Nitrate (as N)	1.64	0.04	0.01	mg/L	1.7		97	85-115		
Chloride	2.95	0.20	0.050	mg/L	3.0		98	85-115		
Nitrite (as N)	1.42	0.04	0.01	mg/L	1.4		102	85-115		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*78-120*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*78-120*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*78-120*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*78-120*		
LCS Dup (BF42013-BSD1)					Prepared & Analyzed: 06/20/14 22:31					
Chloride	2.96	0.20	0.050	mg/L	3.0		99	85-115	0.2	200
Orthophosphate as P	0.953	0.040	0.010	mg/L	0.90		106	85-115	0.6	200
Nitrite (as N)	1.42	0.04	0.01	mg/L	1.4		102	85-115	0.07	200
Nitrate (as N)	1.64	0.04	0.01	mg/L	1.7		97	85-115	0.1	200
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*78-120*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*78-120*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*78-120*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*78-120*		

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42013 - Ion Chromatography 300.0 Prep										
Matrix Spike (BF42013-MS1)		**Source: 1406423-28**			Prepared & Analyzed: 06/21/14 00:02					
Nitrate (as N)	6.38	0.04	0.01	mg/L	1.7	4.53	109	85-115		
Orthophosphate as P	0.814	0.040	0.010	mg/L	0.90	ND	90	85-115		
Nitrite (as N)	1.34	0.04	0.01	mg/L	1.4	ND	95	85-115		
Chloride	6.12	0.20	0.050	mg/L	3.0	3.19	98	80-120		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Batch BF42326 - VSS Prep										
Blank (BF42326-BLK1)					Prepared: 06/23/14 Analyzed: 06/27/14 09:21					
Volatile Suspended Solids	1 U	1		mg/L						
Duplicate (BF42326-DUP1)		**Source: 1406423-06**			Prepared: 06/23/14 Analyzed: 06/27/14 09:21					
Volatile Suspended Solids	4.00 J3	1		mg/L		6.00			40	20
Batch BF42409 - TSS prep										
Blank (BF42409-BLK1)					Prepared: 06/24/14 Analyzed: 06/26/14 11:03					
Total Suspended Solids	1 U	1	1	mg/L						
LCS (BF42409-BS1)					Prepared: 06/24/14 Analyzed: 06/26/14 11:03					
Total Suspended Solids	51.0	1	1	mg/L	50		102	85-115		
Duplicate (BF42409-DUP1)		**Source: 1406396-01**			Prepared: 06/24/14 Analyzed: 06/26/14 11:03					
Total Suspended Solids	196	1	1	mg/L		200			2	30

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42502 - TSS prep										
Blank (BF42502-BLK1)					Prepared: 06/25/14 Analyzed: 06/27/14 17:48					
Total Suspended Solids	1 U	1	1	mg/L						
LCS (BF42502-BS1)					Prepared: 06/25/14 Analyzed: 06/27/14 17:48					
Total Suspended Solids	52.2	1	1	mg/L	5.0		NR	85-115		
Duplicate (BF42502-DUP1)		**Source: 1406433-01**			Prepared: 06/25/14 Analyzed: 06/27/14 17:48					
Total Suspended Solids	147	1	1	mg/L		149			1	30
Batch BF42613 - COD prep										
Blank (BF42613-BLK1)					Prepared & Analyzed: 06/26/14 16:48					
Chemical Oxygen Demand	10 U	25	10	mg/L						
LCS (BF42613-BS1)					Prepared & Analyzed: 06/26/14 16:48					
Chemical Oxygen Demand	52	25	10	mg/L	50		104	90-110		
Matrix Spike (BF42613-MS1)		**Source: 1406410-09**			Prepared & Analyzed: 06/26/14 16:48					
Chemical Oxygen Demand	72	25	10	mg/L	50	31	82	85-115		
Matrix Spike Dup (BF42613-MSD1)		**Source: 1406410-09**			Prepared & Analyzed: 06/26/14 16:48					
Chemical Oxygen Demand	75	25	10	mg/L	50	31	88	85-115	4	32
Batch BF42629 - alkalinity										
Blank (BF42629-BLK1)					Prepared & Analyzed: 06/27/14 09:37					
Total Alkalinity	2.0 U	8.0	2.0	mg/L						

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42629 - alkalinity										
LCS (BF42629-BS1)					Prepared & Analyzed: 06/27/14 09:44					
Total Alkalinity	120	8.0	2.0	mg/L	120		95	90-110		
Matrix Spike (BF42629-MS1)		**Source: 1406210-05**			Prepared & Analyzed: 06/27/14 10:19					
Total Alkalinity	130	8.0	2.0	mg/L	120	9.8	92	80-120		
Matrix Spike Dup (BF42629-MSD1)		**Source: 1406210-05**			Prepared & Analyzed: 06/27/14 10:25					
Total Alkalinity	130	8.0	2.0	mg/L	120	9.8	92	80-120	0	26
Batch BG40307 - Digestion for TP and TKN										
Blank (BG40307-BLK1)					Prepared & Analyzed: 07/15/14 20:00					
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						
Phosphorous - Total as P	0.0106 I	0.040	0.010	mg/L						
LCS (BG40307-BS1)					Prepared: 07/15/14 Analyzed: 07/17/14 12:53					
Phosphorous - Total as P	0.478 C	0.040	0.010	mg/L	1.3		38	90-110		
Total Kjeldahl Nitrogen	2.40	0.20	0.05	mg/L	2.5		95	90-110		
Matrix Spike (BG40307-MS1)		**Source: 1406423-01**			Prepared: 07/15/14 Analyzed: 07/17/14 12:53					
Phosphorous - Total as P	6.35 C	0.040	0.010	mg/L	1.3	5.78	45	90-110		
Total Kjeldahl Nitrogen	6.27 I,L1	12	3.1	mg/L	2.5	362	NR	90-110		
Matrix Spike (BG40307-MS2)		**Source: 1406547-20**			Prepared & Analyzed: 07/15/14 20:00					
Total Kjeldahl Nitrogen	1.35 J5	0.20	0.05	mg/L	2.5	0.0862	50	90-110		
Phosphorous - Total as P	0.463 C	0.040	0.010	mg/L	1.3	0.0602	32	90-110		
Matrix Spike Dup (BG40307-MSD1)		**Source: 1406423-01**			Prepared & Analyzed: 07/15/14 20:00					
Total Kjeldahl Nitrogen	1,120 L1	12	3.1	mg/L	2.5	362	NR	90-110	198	20
Phosphorous - Total as P	6.27 C	0.040	0.010	mg/L	1.3	5.78	39	90-110	1	25

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Work Order: 1406423

Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BG40307 - Digestion for TP and TKN										
Matrix Spike Dup (BG40307-MSD2)		**Source: 1406547-20**			Prepared & Analyzed: 07/15/14 20:00					
Total Kjeldahl Nitrogen	1.20 J5	0.20	0.05	mg/L	2.5	0.0862	44	90-110	12	20
Phosphorous - Total as P	0.445 C	0.040	0.010	mg/L	1.3	0.0602	30	90-110	4	25
Batch BG40318 - Nitrate 353.2 by seal										
Blank (BG40318-BLK1)					Prepared & Analyzed: 07/03/14 17:08					
Nitrate+Nitrite (N)	0.01 U	0.04	0.01	mg/L						
LCS (BG40318-BS1)					Prepared & Analyzed: 07/03/14 17:08					
Nitrate+Nitrite (N)	0.832	0.04	0.01	mg/L	0.80		104	90-110		
Matrix Spike (BG40318-MS1)		**Source: 1406338-03**			Prepared & Analyzed: 07/03/14 17:08					
Nitrate+Nitrite (N)	1.92 J2	0.04	0.01	mg/L	0.80	0.0200	237	90-110		
Matrix Spike (BG40318-MS2)		**Source: 1406418-07**			Prepared & Analyzed: 07/03/14 17:08					
Nitrate+Nitrite (N)	1.48	0.04	0.01	mg/L	0.80	0.622	107	90-110		
Matrix Spike Dup (BG40318-MSD1)		**Source: 1406338-03**			Prepared & Analyzed: 07/03/14 17:08					
Nitrate+Nitrite (N)	2.00 J2	0.04	0.01	mg/L	0.80	0.0200	248	90-110	4	20
Matrix Spike Dup (BG40318-MSD2)		**Source: 1406418-07**			Prepared & Analyzed: 07/03/14 17:08					
Nitrate+Nitrite (N)	1.47	0.04	0.01	mg/L	0.80	0.622	106	90-110	0.8	20
Batch BG40325 - Ammonia by SEAL										
Blank (BG40325-BLK1)					Prepared: 07/03/14 Analyzed: 07/07/14 11:31					
Ammonia as N	0.009 U	0.040	0.009	mg/L						

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BG40325 - Ammonia by SEAL										
LCS (BG40325-BS1)					Prepared: 07/03/14 Analyzed: 07/07/14 11:31					
Ammonia as N	0.51	0.040	0.009	mg/L	0.50		102	90-110		
Matrix Spike (BG40325-MS1)		**Source: 1406308-07**			Prepared: 07/03/14 Analyzed: 07/07/14 11:31					
Ammonia as N	0.38 J4	0.040	0.009	mg/L	0.50	0.032	70	90-110		
Matrix Spike (BG40325-MS2)		**Source: 1406397-02**			Prepared: 07/03/14 Analyzed: 07/07/14 11:31					
Ammonia as N	3.0	0.040	0.009	mg/L	0.50	2.4	108	90-110		
Matrix Spike Dup (BG40325-MSD1)		**Source: 1406308-07**			Prepared: 07/03/14 Analyzed: 07/07/14 11:31					
Ammonia as N	0.36 J4	0.040	0.009	mg/L	0.50	0.032	65	90-110	7	10
Matrix Spike Dup (BG40325-MSD2)		**Source: 1406397-02**			Prepared: 07/03/14 Analyzed: 07/07/14 11:31					
Ammonia as N	2.8	0.040	0.009	mg/L	0.50	2.4	63	90-110	8	10
Batch BG40720 - Ammonia by SEAL										
Blank (BG40720-BLK1)					Prepared & Analyzed: 07/07/14 16:51					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BG40720-BS1)					Prepared & Analyzed: 07/07/14 16:51					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50		99	90-110		
Matrix Spike (BG40720-MS1)		**Source: 1402815-02**			Prepared & Analyzed: 07/07/14 16:51					
Ammonia as N	1.0	0.040	0.009	mg/L	0.50	0.53	94	90-110		
Matrix Spike (BG40720-MS2)		**Source: 1405973-02**			Prepared & Analyzed: 07/07/14 16:51					
Ammonia as N	0.63	0.040	0.009	mg/L	0.50	0.095	106	90-110		

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BG40720 - Ammonia by SEAL										
Matrix Spike Dup (BG40720-MSD1)		**Source: 1402815-02**			Prepared & Analyzed: 07/07/14 16:51					
Ammonia as N	0.67	0.040	0.009	mg/L	0.50	0.53	28	90-110	40	10
Matrix Spike Dup (BG40720-MSD2)		**Source: 1405973-02**			Prepared & Analyzed: 07/07/14 16:51					
Ammonia as N	0.72	0.040	0.009	mg/L	0.50	0.095	126	90-110	15	10
Batch BG40804 - Digestion for TP and TKN										
Blank (BG40804-BLK1)					Prepared: 07/08/14 Analyzed: 07/22/14 17:06					
Phosphorous - Total as P	0.0225 I	0.040	0.010	mg/L						
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						
LCS (BG40804-BS1)					Prepared: 07/08/14 Analyzed: 07/22/14 17:06					
Phosphorous - Total as P	0.680 C	0.040	0.010	mg/L	1.3		54	90-110		
Total Kjeldahl Nitrogen	2.44	0.20	0.05	mg/L	2.5		96	90-110		
Matrix Spike (BG40804-MS1)		**Source: 1406423-22**			Prepared: 07/08/14 Analyzed: 07/22/14 17:06					
Phosphorous - Total as P	0.710 C	0.040	0.010	mg/L	0.50	0.0709	128	90-110		
Total Kjeldahl Nitrogen	3.08	0.20	0.05	mg/L	1.0	2.02	106	90-110		
Matrix Spike (BG40804-MS2)		**Source: 1406586-07**			Prepared: 07/08/14 Analyzed: 07/22/14 17:06					
Phosphorous - Total as P	0.700 C	0.040	0.010	mg/L	0.50	0.0900	122	90-110		
Total Kjeldahl Nitrogen	1.91	0.20	0.05	mg/L	1.0	0.904	101	90-110		
Matrix Spike Dup (BG40804-MSD1)		**Source: 1406423-22**			Prepared: 07/08/14 Analyzed: 07/22/14 17:06					
Phosphorous - Total as P	0.675 C	0.040	0.010	mg/L	0.50	0.0709	121	90-110	5	25
Total Kjeldahl Nitrogen	3.08	0.20	0.05	mg/L	1.0	2.02	106	90-110	0	20

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BG40804 - Digestion for TP and TKN										
Matrix Spike Dup (BG40804-MSD2)		**Source: 1406586-07**			Prepared: 07/08/14 Analyzed: 07/17/14 17:25					
Total Kjeldahl Nitrogen	1.75	0.20	0.05	mg/L	1.0	0.904	84	90-110	9	20
Phosphorous - Total as P	0.727 C	0.040	0.010	mg/L	0.50	0.0900	127	90-110	4	25
Batch BG40811 - Ion Chromatography 300.0 Prep										
Blank (BG40811-BLK1)					Prepared & Analyzed: 07/08/14 13:51					
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*0.829*			*mg/L*	*1.0*		*83*	*78-120*		
LCS (BG40811-BS1)					Prepared & Analyzed: 07/08/14 14:02					
Chloride	2.70	0.20	0.050	mg/L	3.0		90	85-115		
Surrogate: Dichloroacetate	*0.937*			*mg/L*	*1.0*		*94*	*78-120*		
LCS Dup (BG40811-BSD1)					Prepared & Analyzed: 07/08/14 14:13					
Chloride	2.72	0.20	0.050	mg/L	3.0		91	85-115	0.7	200
Surrogate: Dichloroacetate	*0.955*			*mg/L*	*1.0*		*96*	*78-120*		
Matrix Spike (BG40811-MS1)		**Source: 1406423-10**			Prepared & Analyzed: 07/08/14 15:54					
Chloride	421	2.0	0.50	mg/L	30	387	112	80-120		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Matrix Spike (BG40811-MS2)		**Source: 1406423-23**			Prepared & Analyzed: 07/08/14 23:24					
Chloride	310	2.0	0.50	mg/L	30	279	105	80-120		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*78-120*		
Batch BG40845 - Ammonia by SEAL										
Blank (BG40845-BLK1)					Prepared & Analyzed: 07/11/14 13:15					
Ammonia as N	0.009 U	0.040	0.009	mg/L						

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BG40845 - Ammonia by SEAL										
LCS (BG40845-BS1)					Prepared & Analyzed: 07/11/14 13:17					
Ammonia as N	0.52	0.040	0.009	mg/L	0.50		105	90-110		
Matrix Spike (BG40845-MS1)		**Source: 1406423-15**			Prepared & Analyzed: 07/11/14 16:59					
Ammonia as N	0.52	0.040	0.009	mg/L	0.50	0.073	90	90-110		
Matrix Spike (BG40845-MS2)		**Source: 1406423-28**			Prepared & Analyzed: 07/11/14 17:01					
Ammonia as N	0.67 J5	0.040	0.009	mg/L	0.50	0.087	117	90-110		
Matrix Spike Dup (BG40845-MSD1)		**Source: 1406423-15**			Prepared & Analyzed: 07/11/14 13:21					
Ammonia as N	0.51	0.040	0.009	mg/L	0.50	0.073	87	90-110	3	10
Matrix Spike Dup (BG40845-MSD2)		**Source: 1406423-28**			Prepared & Analyzed: 07/11/14 17:03					
Ammonia as N	0.63	0.040	0.009	mg/L	0.50	0.087	108	90-110	6	10

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Microbiology - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42001 - FC-MF										
Blank (BF42001-BLK1)					Prepared: 06/19/14 Analyzed: 06/20/14 15:13					
Fecal Coliforms	1 U	1	1	CFU/100 ml						
Duplicate (BF42001-DUP1)		**Source: 1406423-26**			Prepared: 06/19/14 Analyzed: 06/20/14 15:13					
Fecal Coliforms	1 U	1	1	CFU/100 ml		ND				200

SOUTHERN ANALYTICAL LABORATORIES, INC.
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July 25, 2014
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* Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below.

Q	Sample held beyond the accepted holding time.
L1	Off-scale high. Result exceeded method capacity.
L	Off-scale high. Result exceeded highest calibration standard.
J6	The sample matrix interfered with the ability to make any accurate determination.
J5	Matrix spike of this sample was outside typical range. All other QC criteria were acceptable.
J4	Quality control sample(s) associated with this sample did not meet established criteria.
J3	Quality control value for precision was outside control limits.
J2	Quality control value for accuracy was outside control limits.
J	Estimated value. Indicated concentration may not be accurate. See additional explanation below:
C	T.V. of Spike is 0.5 mg/L

Questions regarding this report should be directed to :

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Kathryn@southernanalyticallabs.com

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 1406423

Client Name: Hazen and Sawyer

Josefin Hirst

Project Name / Location: BHS7 SE#4

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	40mLV, $Na_2S_2O_3$ 504.1, 8260	125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	500mLP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP	125mLP, H_2SO_4 COD, TKN, NH_3, TP	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx, Cl	125mLP, Cool NOx, Cl		Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
01	BHS7-PUMP	6/19/14	12:05	WW		X	5	4	2	1					7.34	25.5	3046	0.01	12
02	NC-BHS7-ST1-SL-01		10:30	WW		X					1	1			5.29	27.3	1801	4.91	2
03	NC-BHS7-ST1-SL-02		10:40	WW		X					1	1			5.31	27.2	1156	4.46	2
04	SC-BHS7-ST1-SL-03		10:50	WW		X					1	1			5.05	29.0	2100	4.08	2
05	SP-BHS7-ST1-DP-01 Dry		—	WW		X					1		1		—	—	—	—	
06	SC-BHS7-ST1-SL-04		11:00	WW		X		4	2	1					5.29	28.3	1312	7.95	7
07	NC-BHS7-ST2-DP-03		8:59	WW		X					1	1			6.09	24.8	1782	1.09	2
08	NC-BHS7-ST2-DP-03-DUP		9:02	WW		X					1	1			6.08	24.8	1771	0.88	2
09	C-BHS7-ST2-DP-05		10:03	WW		X					1	1			6.14	25.8	1724	1.22	2
10	SE-BHS7-ST2-DP-06		10:19	WW		X					1	1			6.10	28.3	1906	1.02	2
11	SE-BHS7-ST2-DP-06-DUP		10:20	WW		X					1	1			6.11	25.7	1909	0.83	2
12	SC-BHS7-ST2-DP-07		11:25	WW		X	5	4	2	1					6.27	29.4	1764	0.88	12

	Date/Time	Received	Date/Time
Containers Prepared/ Relinquished:	08/15 06/10/14	Received:	12:00 06/11/14
Relinquished:	14:10 06/19/14	Received:	14:10 06/19/14
Relinquished:	16:35 06-19-14	Received:	1635 6-19-14
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y N N/A
Samples intact upon arrival?	Y N N/A
Received on ice? Temp_____	Y N N/A
Proper preservatives indicated?	Y N N/A
Rec'd within holding time?	Y N N/A
Volatiles rec'd w/out headspace?	Y N N/A
Proper containers used?	Y N N/A

Instructions / Remarks:

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 1406423

Client Name: Hazen and Sawyer

Josefin Hirst

Project Name / Location: BHS7 SE#4

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	40mLV, $Na_2S_2O_3$ 504.1, 8260	125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	500mLP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP	125mLP, H_2SO_4 COD, TKN, NH_3, TP	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx, Cl	125mLP, Cool NOx, Cl		Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
13	SW-BHS7-ST2-DP-08	6/19/14	11:00	WW		X		4	2	1					6.17	27.4	1556	0.79	7
14	SW-BHS7-ST2-DP-08-DUP		11:10	WW		X		4	2	1					6.16	27.5	1557	0.68	2
15	N-BHS7-ST2-OB-01		9:25	WW		X					1	1			6.09	29.3	1777	0.53	2
16	C-BHS7-ST2-OB-02		9:45	WW		X					1	1			6.15	25.8	1725	0.89	2
17	S-BHS7-ST2-OB-03 Dry		—	WW		X		4	2	1					—	—	—	—	
18	NE-BHS7-EFF-SL-06		8:35	WW		X					1	1			5.94	24.8	949	5.63	2
19	NE-BHS7-EFF-DP-09 Dry		—	WW		X					1	1			—	—	—	—	
20	NW-BHS7-EFF-SL-07		9:00	WW		X					1	1			5.33	25.2	968 1479	6.03	2
21	NW-BHS7-EFF-DP-10		8:45	WW		X					1		1	1147W	5.98	25.0	~~968~~	~~6.05~~	2 4.70
22	SE-BHS7-EFF-SL-08		9:35	WW		X					1	1			4.88	26.2	1576	5.45	2
23	SE-BHS7-EFF-DP-11		9:11	WW		X					1		1		5.80	25.7	1556	5.53	2
24	SW-BHS7-EFF-SL-09		10:20	WW		X		4	2	1					5.09	24.1	792	5.59	7

Containers Prepared/ Relinquished:	Date/Time:	Received:	Date/Time:
	0900 06/10/14		06/11/14 1000
Relinquished:	Date/Time: 06/19/14 14:10	Received:	Date/Time: 06/19/14 1420
Relinquished:	Date/Time: 16:35 06-19-14	Received:	Date/Time: 1635 6-19-14
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y	N	N/A
Samples intact upon arrival?	Y	N	N/A
Received on ice? Temp_____	Y	N	N/A
Proper preservatives indicated?	Y	N	N/A
Rec'd within holding time?	Y	N	N/A
Volatiles rec'd w/out headspace?	Y	N	N/A
Proper containers used?	Y	N	N/A

Instructions / Remarks:

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Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 1406423

Client Name: Hazen and Sawyer

Josefin Hirst

Project Name / Location: BHS7 SE#4

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	40mLV, $Na_2S_2O_3$ 504.1, 8260	125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	500mLP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP	125mLP, H_2SO_4 COD, TKN, NH_3, TP	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx, Cl	125mLP, Cool NOx, Cl		Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
25	SW-BHS7-EFF-DP-12	6/19/14	9:50	WW		X		4	2	1					5.90	26.5	175.1	4.32	5
26	BHS7-EB		11:40	R		X		4	2	1					4.62	30.4	2.2	7.36	7
27	BHS7-RAIN		8:20	WW		X					1	1			6.09	24.3	48.5	7.77	2
28	BHS7-BKG		11:10	WW		X		4	2	1					5.43	27.6	96.8	5.76	
29	Trip Blank			R		X	1												

Containers Prepared/ Relinquished:	Date/Time:	Received:	Date/Time:
	06/19/14		06/19/14 12:00
Relinquished:	Date/Time:	Received:	Date/Time:
	06/19/14 14:10		06/19/14 14:10
Relinquished:	Date/Time:	Received:	Date/Time:
	06-19-14 16:35		6-19-14 16:35
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y N N/A
Samples intact upon arrival?	Y N N/A
Received on ice? Temp_____	Y N N/A
Proper preservatives indicated?	Y N N/A
Rec'd within holding time?	Y N N/A
Volatiles rec'd w/out headspace?	Y N N/A
Proper containers used?	Y N N/A

Instructions / Remarks:

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Chain of Custody

Appendix C: Acute Toxicity Bioassay Report

PRELIMINARY

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MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

Whole Effluent Toxicity Testing Summary Page

Client name: Hazen & Sawyer BHS7-STE

MBL Project/Report # 140669

MBL Sample #	Species	Permit Requirements	Test Results	Passing or Failure
140669-1	*Cyprinella leedsi*	LC50 > / = 100%	LC50 = 19.8%	Failure
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Additional Testing Required: N/A

Comments:

QA/QC Officer/Reviewer: Signature [signature] Date: 6/27/2014

Effluent Toxicity Testing Report Form

All blanks on this form are to be filled in. Blanks that are not should be filled in with "N/A" or a line drawn through the blank. Please print.

ATTACHMENTS: Please attach the following items to this report form and indicate with an "X" in box.

1. All Chain-of-Custody Forms	X
2. Standard Reference Toxicant (SRT) Reports attached. 1 SRT Reports attached.	X
3. All Raw Data (Bench Sheets) Pertaining to the Tests (i.e., all physical, chemical and biological measurements)	X
4. All Result Calculations	X

Facility/ Industry/ Client Name and address: **Hazen & Sawyer, 10002 Princess Palm Ave., Registry One Bldg. Suite 200, Tampa, FL 33619**

NPDES Number: N/A

County: Hillsborough

Non-NPDES (1) N/A Yes

Project N/A

Dates Test(s) Conducted:

Start Date: 06/20/2014

End Date: 06/24/2014

Start Time: 1450 hrs.

Name,Address,& Phone Number of Consultant Company: **Marinco Bioassay Laboratory, Inc. (MBL)**
4569 Samuel Street Sarasota, Florida 34233
(941) 925-3594
Certification #E84191
Contact: Jason Weeks Laboratory Director

Name(s) of Person(s) Conducting Test(s):(Printed): **Dubravka Mihajlovic, Smiljana Kerkez, Marlena Beck, Sutanya Singivipulya, Predrag Mihajlovic, and Noel Young**

QA/QC Officer/Reviewer: Signature

Date: 6/27/2014

Laboratory Report #/ Project #: 140669

Sampler's Name: (Print) **Josefin Hirst and Harmon Harden**

Routine Test X Additional N/A For failed routine test dated: N/A

Samples

#	Date and Time Collected	Lab Sample #	Sample Type: Grab or Composite	Arrival Temp oC	Initial Residual Chlorine (mg/L)	Lab Dechlorination	Chemical Used
1	06/19/2014 1205 hrs.	140669-1	Grab	1	-------	------	-------
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Type of Refrigerant Used for Sample Transportation: X Wet Ice N/A Blue Ice N/A Other

Samples Aerated: Yes, to increase D.O. levels. Yes (Describe) N/A No

Sample Delivered By: N/A Bus N/A Hand X Common Carrier

Samples Filtered: N/A Yes (Describe) X No

Provide Description:

(1) If toxicity testing data are reported for any project other than permit compliance testing, mark "yes" and identify the reason that toxicity data are being submitted, e.g., Consent Order, ambient monitoring, mixing zone evaluation.

This Page Last Edited By: Marlena Beck on: 06/25/2014

Summary of Test Conditions

Type of Test (1)	Test Conc (%)	Age of Test Organism	Test Species Used (3)	Amount & Type Food	How Often Fed	Test Chamber Volume	Volume of Effluent Used	Type of Chamber	# of Organism/ Chamber	# of Replicates	Temp Range (Degrees Celsius)
D	0, 6.25, 12.5, 25, 50, 100	14 days	CL	0.04 mL1200 Artemia nauplii/0.1 mL per replicate	Once at renewal	1000 mL	250 mL	Beaker	10	2	25
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G. Other: N/A

Temperature Readings Were: N/A Single N/A Multiple X Continuous

Description of Control Water: Synthetic Moderately Hard (Reconstituted)

Photoperiod During Test: 16 Hrs. Light : 8 Hrs. Dark

Reference Toxicant Data (4)

Name of Toxicant	Dates of Test Begin and End	Species (3)	In-House or Commercially Obtained	LC50/IC25
NaCl	60/20/2014-06/24/2014	CL	In-House	3.11 g/L NaCl
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(1) Please fill the "Type of Test" Box with the Appropriate Letter:
- A. 48-Hr/Non-Renewal/Single Concentration (Screen)
- B. 48-Hr/Non-Renewal/Multi-Concentration (Definitive)
- C. 96-Hr/Renewed Every 48-Hrs/Single Concentration (Screen)
- D. 96-Hr/Renewed Every 48-Hrs/Multi-Concentration (Definitive)
- E. 7-Day Chronic/Single Concentration (Screen)/Renewed Daily
- F. 7-Day Chronic/Multi-Concentration (Definitive)/Renewed Daily
- G. Other - Describe in the "G" Box

(2) List all concentrations of effluent used (i.e., 0%, 6.25%, 12.5%, 25%, 50%, 100%)

(3) Write Appropriate Letters for the following species in this column:
- CD *Ceriodaphnia dubia*
- FM *Pimephales promelas* (fathead minnow)
- SS *Menidia beryllina* (inland silverside)
- MS *Americamysis bahia* (mysid shrimp)
- DP *Daphnia pulex*
- DM *Daphnia magna*
- CL *Cyprinella leedsi* (bannerfin shiner)
- Other - Please Describe _____

(4) Attach all reference toxicant raw data and control charts for each organism/reference toxicant used for the test.

QA/QC Officer/Reviewer: Signature

Date: 6/27/2014

ACUTE Test Results.
Test conducted in accordance with EPA-821-R-02-012.

Test Species	Test Concentration (%)	Sample # (3) & Sample I.D.	% Mortality 24 Hrs (4)	% Mortality 48 Hrs (4)	% Mortality 96 Hrs (4)	LC50 (5)
CL-Control	0	----------	-----	-----	0	------
CL	6.25, 12.5, 25, 50, 100	140669-1	-----	-----	-------	19.8%
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(1) List % control mortality in appropriate column (48 or 96 hr.) for organisms (use abbreviations shown on footnote 3, Page 2) that you list under the word "Control."
(2) List all concentrations of effluent used (i.e., 0%, 6.25%, 12.5%, 25%, 50%, 100%).
(3) Record number that corresponds with the number of the sample in the "Date and Time Collected" column in sample section on Page 1.
(4) List % Mortality for each organism and control if you are conducting a single concentration (Screen) test.

Species	LC50 (6)
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(5) If multi-concentration (Definitive) tests are conducted on grab or composite samples, record the calculated LC50 in this column for each sample. Enter "N/A" in all % Mortality columns and LC50 box at bottom of this table.
(6) If a single concentration (Screen) test is conducted and >50% mortality occurs in any one of the four grab or composites, record <100% in this box. If <=50% mortality occurs in all four grabs or composites, record >100% in this box. Draw a line through the LC50 column in above table.
F = Flagged data, see page 5.
* No statistical test was used in endpoint determination as the data either did not appropriately fit the requirements of any point estimate techniques presented in EPA/600/4-90/027F or these methods provided an unrealistic or unrealiable result as demonstrated herein.

QA/QC Officer/Reviewer: Signature [signature] Date: 6/27/2014

Specify if samples DO NOT meet NELAC standards:	
Standard violation	**Yes/No**
Improper container	No
36-hour holding time exceeded	No
Temperature above 6 degrees Celsius	No

Specify any deviations from, additions to, or exclusions from the test method or any non-standard conditions that may have affected the quality of the results, and include any data qualifiers.

All calculated statistical endpoints were calculated using ToxCalc version 5.0.21 - Tidepool Scientific Software.

The results contained in this report relate only to the items tested or to the samples as received by the laboratory. MBL certifies the results contained in this report meet NELAC standards.

This report shall not be reproduced except in full, without the written approval of MBL.

QA/QC Officer/Reviewer: Signature

Date: 6/27/2014

Acute Fish Test-96 Hr Survival

Start Date:	6/20/2014	Test ID:	140669CL	Sample ID:	140669-1
End Date:	6/24/2014	Lab ID:	MBL-Marinco Bioassay Lab.	Sample Type:	
Sample Date:		Protocol:	EPA Method #2000.0	Test Species:	CL-*Cyprinella leedsi*
Comments:	This analysis was performed by Marlena Beck at MBL.				

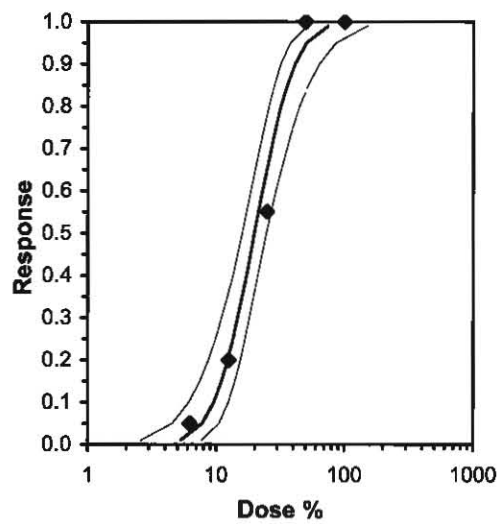
Conc-%	1	2
Control	1.0000	1.0000
6.25	1.0000	0.9000
12.5	0.8000	0.8000
25	0.5000	0.4000
50	0.0000	0.0000
100	0.0000	0.0000

			Transform: Untransformed					Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
Control	**1.0000**	1.0000	1.0000	1.0000	1.0000	0.000	2	0	20
6.25	**0.9500**	0.9500	0.9500	0.9000	1.0000	7.443	2	1	20
12.5	**0.8000**	0.8000	0.8000	0.8000	0.8000	0.000	2	4	20
25	**0.4500**	0.4500	0.4500	0.4000	0.5000	15.713	2	11	20
50	**0.0000**	0.0000	0.0000	0.0000	0.0000	0.000	2	20	20
100	**0.0000**	0.0000	0.0000	0.0000	0.0000	0.000	2	20	20

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	4.04606	0.68851	2.69658	5.39554	0	2.98504	7.81472	0.39	1.29758	0.24715	6
Intercept	-0.2501	0.91465	-2.0428	1.54261							
TSCR											

Point	Probits	%	95% Fiducial Limits	
EC01	2.674	5.2798	2.59019	7.70995
EC05	3.355	7.78129	4.56063	10.4807
EC10	3.718	9.56849	6.134	12.4089
EC15	3.964	11.0008	7.46531	13.9559
EC20	4.158	12.2906	8.70061	15.3676
EC25	4.326	13.517	9.89413	16.7391
EC40	4.747	17.1778	13.4542	21.1097
EC50	**5.000**	**19.8419**	**15.9411**	**24.6449**
EC60	5.253	22.9192	18.6393	29.1556
EC75	5.674	29.1264	23.5525	39.5681
EC80	5.842	32.0327	25.6684	44.9717
EC85	6.036	35.7884	28.2786	52.3878
EC90	6.282	41.1457	31.8182	63.7297
EC95	6.645	50.5959	37.688	85.6791
EC99	7.326	74.5675	51.2535	150.795



 ToxCalc v5.0 Reviewed by: PM

SURVIVAL BENCH SHEET

Project #: 140069 **Test Start:** 6/20/14 1450

Test Organism: Cyprinella leedsi **Test End:** 6/24/14 1425

Organism Age: 14 days **Brood #:** CL140606

Concentration %	Sample Number	Survival: Replicate A					Survival: Replicate B					A & B %
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	
100	140069-1	10	0	—	—	—	10	0	—	—	—	0
50		10	0	—	—	—	10	0	—	—	—	0
25		10	10	8	7	5	10	10	4	4	4	45
12.5		10	10	10	9	8	10	10	10	10	8	80
6.25		10	10	10	10	10	10	10	10	10	9	95
Control		10	10	10	10	10	10	10	10	10	10	100
Organisms Fed By: (Initials & Time)		—	—	SS 0820	—	—	—	—	SS 0820	—	—	—
0 Hours started/checked by: 24, 72, 96 Hours counted by: 48 Hours renewed/cleaned by:		SS/PM	MM	PM	SK	PM	SS/PM	MM	PM	SK	PM	PM

Comments or Corrections:

Reviewed by: MB

Date: 6/25/14

ACUTE TOXICITY TEST PHYSICAL AND CHEMICAL MEASUREMENTS

EPA Method # 200.0

Project #: 140669 **Test Start:** 6/20/14 1450

Test Organism: Cyprinella leedsi **Test End:** 6/24/14 1425

Effluent Concentration %	Sample Number	Dissolved Oxygen (mg/L) 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	pH 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	140669-1	7.9	0.8	—	—	—	7.7	7.9	—	—	—
50.0		8.1	3.6	—	—	—	7.8	7.8	—	—	—
25.0		8.2	6.3	50 / 8.1	50	5.3	7.8	7.8	7.5 / 7.9	7.6	7.7
12.5		8.1	7.0	58 / 8.1	58	5.5	7.8	7.8	7.7 / 7.9	7.5	7.5
6.25		8.1	7.2	68 / 8.1	60	6.7	7.8	7.8	7.6 / 7.9	7.5	7.6
Control		8.1	7.8	77 / 8.1	68	6.8	7.8	7.9	7.8 / 7.9	7.7	7.7
Measured by:		MJ	MJ	SLC / SLC	SLC	SLC	MJ	MJ	SLC / SLC	SLC	SLC

Effluent Concentration %	Sample Number	Temperature (Degrees Celsius) 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	Conductivity (mS/cm) 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	140669-1	25	25	—	—	—	1.944	1.874	—	—	—
50.0		25	25	—	—	—	1.122	1.108	—	—	—
25.0		25	25	25 / 25	25	25	0.699	—	0.700	—	0.730
12.5		25	25	25 / 25	25	25	0.522	—	0.520	—	0.536
6.25		25	25	25 / 25	25	25	0.416	—	0.415	—	0.432
Control		25	25	25 / 25	25	25	0.311	—	0.309	—	0.334
Measured by:		MJ	MJ	SLC / SLC	SLC	SLC	MJ	MJ	— / SLC	—	SLC

Comments or corrections:

Reviewed by: MB

Date: 6/25/14

SAMPLE/CONTROL WATER INFORMATION

Project #: 140669

Control Water and Sample Analysis

	Laboratory Number	Alkalinity (mg/L)	Date	Measured by	Hardness (mg/L)	Date	Measured by	Chlorine (mg/L)	Date	Measured by	Cond. (mS/cm)*	Date	Measured by
Initial Sample Analysis	140669-1	230	6/25/14	AM	122	6/25/14	AM	—			1.944	6/20/14	AM
Control Water – Initial	SHH140617	55	6/25/14	AM	80	6/25/14	AM	—			0.311	6/20/14	AM
Control Water – Renewal	SHH140619	53	6/25/14	AM	80	6/25/14	AM	—			0.309	6/20/14	SK

*Conductivity values indicated at a reference temperature of 25 degrees celsius. Values in this column for salt-control-water, SWyymmdd, are for salinity determined at the time of initial use in the test.

Sample Aeration

Sample #	Initial D.O (mg/L)	Aeration Duration (min.)	Aeration Rate (ml/min.)	Final D.O (mg/L)	Aerated by: Initials/Date/Time/Volume	Initial Sample pH	Measured by
140669-1	1.1	5	~500	7.9	AM 6/20/14 1493	7.3	AM
140669-1	3.8	5	~500	7.9	SK 6/22/14 1322	7.6	SK

Comments or corrections:

Reviewed by: MB

Date: 6/25/14

ACUTE TEST CONDITIONS

Project #: 140669 **Client:** Hazen & Sawyer

Test type: CL Acute (D) chg. **Test run in Environmental Chamber #:** 1

Species Code (1)	Receipt Date and Supplier of Organism (if commercially obtained)	Init.	Amount & Type of Food (2)	Init.	How Often Fed (3)	Init.	Test Chamber Vol. (mL)	Init.	Vol. of Effluent Used (mL)	Init.	Type of Chamber (4)	Init.
CL	—	MB	E	SS	R	SS	1000	MB	250	MB	B	MB

(1) CD *Ceriodaphnia dubia*
FM *Pimephales promelas* (fathead minnow)
SS *Menidia beryllina* (inland silverside)
MS *Americamysis bahia* (mysid shrimp)
DP *Daphnia pulex*
DM *Daphnia magna*
CL *Cyprinella leedsi* (bannerfin shiner)
Other - Please Describe _____

(2) Please fill the "Amount & Type of Food" Box with the appropriate letter:
'AA' 0.1 mL Selenastrum per replicate, 0.1 mL YCT per replicate
'A' 0.2 mL Selenastrum per replicate, 0.2 mL YCTper replicate
'B' 1.4 mL Selenastrum/200 mL of sample, 1.4 mL YCT/200 mL of sample
'C' 0.1 mL of 1200 Artemia nauplii/0.1 mL per replicate
'D' 0.085 mL of 1200 Artemia nauplii/0.1 mL per replicate
'E' 0.04 mL of 1200 Artemia nauplii/0.1 mL per replicate
'O' Other_____

(3) Please fill the "How Often Fed" box with the appropriate letter:
'R' Once, at least two hours before renewal
'F' Once, at least four hours before renewal
'D' Once daily
'T' Twice daily
'O' Other _____

(4) Please fill the "Type of Chamber" box with the appropriate letter:
'B' Plastic Beaker
'M' Plastic Medicine Cup
'P' Plastic Cup
'G' Glass Beaker
'C' Plastic Container

Photoperiod: [MB] 16 hours Light/8 hours dark
[—] Other _____

Test(s) conducted in accordance with EPA-821-R-02-012 **Randomization version:** 17

Method number 2000.0

Physical and Chemical Measurement Equipment

Equipment type	Test start	24 hours	48 hours	72 hours	96 hours
Thermometer (A)	E	E	E/E	E	E
DO Meter (B)	4	4	4/4	4	4
pH Meter (C)	7	7	7/7	7	7
Conductivity meter (D)	10	10	10/10	—	10
Freshwater cond. checked by	—	—	—/—	—	—
Used by (Initials)	M	M	SC/SC	SW	SC

(A)Thermometer number is the serial number or designated number on thermometer.
(B)DO Meters: "3" Orion 830
"4" Hach Sension 6
"5" Orion 830A
"6" Orion 820
(C)pH Meters "7" Hach Sension 2
"8" Orion 290A
"9" Orion 720
(D)Conductivity "10" Orion 160
"11" Orion 126
"O" Other _____

Comments or Corrections: _____

Reviewed by: MB

Date: 6/25/14

Marinco Bioassay Laboratory
4569 Samuel Street · Sarasota, FL 34233 · Phone: (941) 925-3594 · Fax: (941) 922-3874

Chain of Custody Record

Please use black ink only

Client: Hazen & Sawyer Permit #:

Samplers (Print Names): Josefin Hirst

Harmon Harden

Sample Containers

1 qt.	2 qt.	1 Gal.
	2	

Sample Cooler #: 1114

Tests Required

Acute: C. leedsi 96HR Definitive

Chronic:

Client Provided Information / **Lab Use Only**

TRC	Location	Sample ID#	Date of Sampling	Time of Sampling	Grab or Composite	Number of Bottles	Sample on Ice?	MBL Number (lab use only)	Arrival Temp.
	BHS7-DPD7	1	6/19/14	11:25	grab	1	yes		
	BHS7-STE	2	6/19/14	12:05	grab	1	yes	1401669-1	1°C

Sampling Kit Transfers

Relinquished By:		Received By:		Date	Time	Count
MBL:	[signature]	Carrier:	FedEx	6/16/14	1530	2
Carrier:	FedEx	Client:	[signature]	6/17/14	1230	2

Please refer to the back of this page for instructions and examples.

Sample Transfers

Relinquished By:		Received By:		Date	Time	Count
Person's Name: [signature]	Facility Name: Hazen and Sawyer	Person's Name: Scott McCullough	Facility Name: American Courier	6/20/14	8:40	2
Person's Name: Scott McCullough	Facility Name: American Courier	Person's Name: [signature]	Facility Name: DCK	6/20/14	0935	2
Person's Name:	Facility Name:	Person's Name:	Facility Name:			
Person's Name:	Facility Name:	Person's Name:	Facility Name:			
Person's Name:	Facility Name:	Person's Name:	Facility Name:			

Shipped via : American Courier Busbill/Airbill #: 2294661

INTERNAL CHAIN OF CUSTODY
MARINCO BIOASSAY LABORATORY, INC.

Acute Toxicity Test

Project # 140669

Sample expiration date/time 6/21/14 0005

Sample #(s)	140669-1	140669-1
Procedure	**Test Start**	**Test Renewal**
Sample(s) checked in by Initials/Date/Time	MB 6/20/14 0935	N/A
Sample(s) warmed by Initials/Date/Time	M 6/20/14 1345	SK 6/22/14 1325
Total Residual Chlorine measured by Initials/Date/Time	N/A	N/A
Sample(s) salted to test salinity using HW Marinemix by: Initials/Date/Time	N/A	N/A
Dilutions prepared by: Initials/Date/Time	M 6/20/14 1410	SK 6/22/14 1345
Test Start-test started by: Test renewal-test renewed by: Initials/Date/Time	SS 6/20/14 1450	PM 6/22/14 1405
Remaining sample(s) returned to refrigerator by: Initials/Date/Time	M 6/20/14 1420	N/A
Samples disposed of by & disposal method Initials/Date/Time	N/A	triple centrifuged water SK 6/22/14 1345

All samples are stored in the laboratory refrigerator from just above freezing to 6 degrees Celsius unless noted on this Internal chain of custody.

Comments:

Reviewed by: MB Date: 6/25/14

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

Whole Effluent Toxicity Testing Summary Page

Client name: Hazen & Sawyer BHS7-DP07

MBL Project/Report # 140668

MBL Sample #	Species	Permit Requirements	Test Results	Passing or Failure
140668-1	*Cyprinella leedsi*	LC50 > / = 100%	LC50 = 26.6%	Failure
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Additional Testing Required: N/A

Comments:

QA/QC Officer/Reviewer: Signature

Date: 6/27/2014

Effluent Toxicity Testing Report Form

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ATTACHMENTS: Please attach the following items to this report form and indicate with an "X" in box.

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2. Standard Reference Toxicant (SRT) Reports attached. 1 SRT Reports attached.	X
3. All Raw Data (Bench Sheets) Pertaining to the Tests (i.e., all physical, chemical and biological measurements)	X
4. All Result Calculations	X

Facility/ Industry/ Client Name and address: **Hazen & Sawyer, 10002 Princess Palm Ave., Registry One Bldg. Suite 200, Tampa, FL 33619**

NPDES Number: N/A

County: Hillsborough

Non-NPDES (1) N/A Yes

Project N/A

Dates Test(s) Conducted:

Start Date: 06/20/2014

End Date: 06/24/2014

Start Time: 1440 hrs.

Name,Address,& Phone Number of Consultant Company: **Marinco Bioassay Laboratory, Inc. (MBL)**
4569 Samuel Street Sarasota, Florida 34233
(941) 925-3594
Certification #E84191
Contact: Jason Weeks Laboratory Director

Name(s) of Person(s) Conducting Test(s):(Printed): **Dubravka Mihajlovic, Smiljana Kerkez, Marlena Beck, Sutanya Singivipulya, Predrag Mihajlovic, and Noel Young**

QA/QC Officer/Reviewer: Signature

Date: 6/27/2014

Laboratory Report #/ Project #: 140668

Sampler's Name: (Print) **Josefin Hirst and Harmon Harden**

Routine Test X Additional N/A For failed routine test dated: N/A

Samples

#	Date and Time Collected	Lab Sample #	Sample Type: Grab or Composite	Arrival Temp oC	Initial Residual Chlorine (mg/L)	Lab Dechlorination	Chemical Used
1	06/19/2014 1125 hrs.	140668-1	Grab	1	-------	------	-------
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Type of Refrigerant Used for Sample Transportation: X Wet Ice N/A Blue Ice N/A Other

Samples Aerated: Yes, to increase D.O. levels. Yes (Describe) N/A No

Sample Delivered By: N/A Bus N/A Hand X Common Carrier

Samples Filtered: N/A Yes (Describe) X No

Provide Description:

(1) If toxicity testing data are reported for any project other than permit compliance testing, mark "yes" and identify the reason that toxicity data are being submitted, e.g., Consent Order, ambient monitoring, mixing zone evaluation.

This Page Last Edited By: Marlena Beck on: 06/25/2014

Summary of Test Conditions

Type of Test (1)	Test Conc (%)	Age of Test Organism	Test Species Used (3)	Amount & Type Food	How Often Fed	Test Chamber Volume	Volume of Effluent Used	Type of Chamber	# of Organism/ Chamber	# of Replicates	Temp Range (Degrees Celsius)
D	0, 6.25, 12.5, 25, 50, 100	14 days	CL	0.04 mL1200 Artemia nauplii/0.1 mL per replicate	Once at renewal	1000 mL	250 mL	Beaker	10	2	25
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G. Other: N/A

Temperature Readings Were: N/A Single N/A Multiple X Continuous

Description of Control Water: Synthetic Moderately Hard (Reconstituted)

Photoperiod During Test: 16 Hrs. Light : 8 Hrs. Dark

Reference Toxicant Data (4)

Name of Toxicant	Dates of Test Begin and End	Species (3)	In-House or Commercially Obtained	LC50/IC25
NaCl	60/20/2014-06/24/2014	CL	In-House	3.11 g/L NaCl
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(1) Please fill the "Type of Test" Box with the Appropriate Letter:
- **A.** 48-Hr/Non-Renewal/Single Concentration (Screen)
- **B.** 48-Hr/Non-Renewal/Multi-Concentration (Definitive)
- **C.** 96-Hr/Renewed Every 48-Hrs/Single Concentration (Screen)
- **D.** 96-Hr/Renewed Every 48-Hrs/Multi-Concentration (Definitive)
- **E.** 7-Day Chronic/Single Concentration (Screen)/Renewed Daily
- **F.** 7-Day Chronic/Multi-Concentration (Definitive)/Renewed Daily
- **G.** Other - Describe in the "G" Box

(2) List all concentrations of effluent used (i.e., 0%, 6.25%, 12.5%, 25%, 50%, 100%)

(3) Write Appropriate Letters for the following species in this column:
- CD *Ceriodaphnia dubia*
- FM *Pimephales promelas* (fathead minnow)
- SS *Menidia beryllina* (inland silverside)
- MS *Americamysis bahia* (mysid shrimp)
- DP *Daphnia pulex*
- DM *Daphnia magna*
- CL *Cyprinella leedsi* (bannerfin shiner)
- Other - Please Describe _____

(4) Attach all reference toxicant raw data and control charts for each organism/reference toxicant used for the test.

QA/QC Officer/Reviewer: Signature [signature] Date: 6/27/2014

ACUTE Test Results.
Test conducted in accordance with EPA-821-R-02-012.

Test Species	Test Concentration (%)	Sample # (3) & Sample I.D.	% Mortality 24 Hrs (4)	% Mortality 48 Hrs (4)	% Mortality 96 Hrs (4)	LC50 (5)
CL-Control	0	----------	-----	-----	5	------
CL	6.25, 12.5, 25, 50, 100	140668-1	-----	-----	-------	26.6%
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(1) List % control mortality in appropriate column (48 or 96 hr.) for organisms (use abbreviations shown on footnote 3, Page 2) that you list under the word "Control."
(2) List all concentrations of effluent used (i.e., 0%, 6.25%, 12.5%, 25%, 50%, 100%).
(3) Record number that corresponds with the number of the sample in the "Date and Time Collected" column in sample section on Page 1.
(4) List % Mortality for each organism and control if you are conducting a single concentration (Screen) test.

Species	LC50 (6)
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(5) If multi-concentration (Definitive) tests are conducted on grab or composite samples, record the calculated LC50 in this column for each sample. Enter "N/A" in all % Mortality columns and LC50 box at bottom of this table.
(6) If a single concentration (Screen) test is conducted and >50% mortality occurs in any one of the four grab or composites, record <100% in this box. If <=50% mortality occurs in all four grabs or composites, record >100% in this box. Draw a line through the LC50 column in above table.
F = Flagged data, see page 5.
* No statistical test was used in endpoint determination as the data either did not appropriately fit the requirements of any point estimate techniques presented in EPA/600/4-90/027F or these methods provided an unrealistic or unrealiable result as demonstrated herein.

QA/QC Officer/Reviewer: Signature [signature] Date: 6/27/2014

Specify if samples DO NOT meet NELAC standards:	
Standard violation	**Yes/No**
Improper container	No
36-hour holding time exceeded	No
Temperature above 6 degrees Celsius	No

Specify any deviations from, additions to, or exclusions from the test method or any non-standard conditions that may have affected the quality of the results, and include any data qualifiers.

All calculated statistical endpoints were calculated using ToxCalc version 5.0.21 - Tidepool Scientific Software.
The results contained in this report relate only to the items tested or to the samples as received by the laboratory. MBL certifies the results contained in this report meet NELAC standards.
This report shall not be reproduced except in full, without the written approval of MBL.

QA/QC Officer/Reviewer: Signature

Date: 6/27/2014

Acute Fish Test-96 Hr Survival

Start Date:	6/20/2014	Test ID:	140668CL	Sample ID:	140668-1
End Date:	6/24/2014	Lab ID:	MBL-Marinco Bioassay Lab.	Sample Type:	
Sample Date:		Protocol:	EPA Method #2000.0	Test Species:	CL-*Cyprinella leedsi*
Comments:	This analysis was performed by Marlena Beck at MBL.				

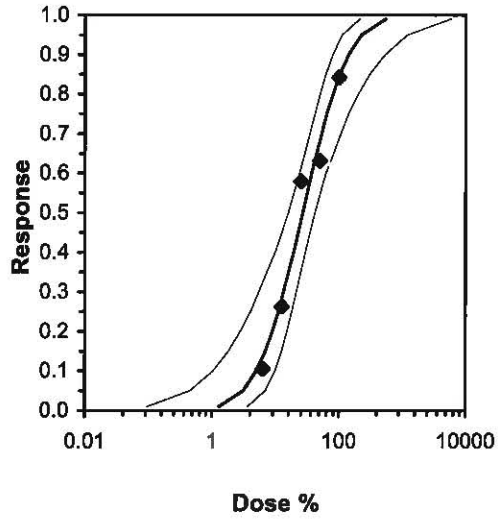
Conc-%	1	2
Control	0.9000	1.0000
6.25	0.9000	0.8000
12.5	0.8000	0.6000
25	0.3000	0.5000
50	0.4000	0.3000
100	0.2000	0.1000

			Transform: Untransformed					Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
Control	**0.9500**	1.0000	0.9500	0.9000	1.0000	7.443	2	1	20
6.25	**0.8500**	0.8947	0.8500	0.8000	0.9000	8.319	2	3	20
12.5	**0.7000**	0.7368	0.7000	0.6000	0.8000	20.203	2	6	20
25	**0.4000**	0.4211	0.4000	0.3000	0.5000	35.355	2	12	20
50	**0.3500**	0.3684	0.3500	0.3000	0.4000	20.203	2	13	20
100	**0.1500**	0.1579	0.1500	0.1000	0.2000	47.140	2	17	20

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	1.76549	0.40003	0.98144	2.54954	0.05	1.05814	7.81472	0.79	1.42415	0.56641	3
Intercept	2.48567	0.59843	1.31274	3.65861							
TSCR	0.04652	0.04666	-0.0449	0.13796							

Point	Probits	%	95% Fiducial Limits	
EC01	2.674	1.27783	0.09318	3.63651
EC05	3.355	3.108	0.45078	6.88217
EC10	3.718	4.99184	1.03638	9.7463
EC15	3.964	6.87225	1.80675	12.3981
EC20	4.158	8.86019	2.79489	15.0937
EC25	4.326	11.0181	4.04007	17.9728
EC40	4.747	19.0831	9.7885	29.1459
EC50	**5.000**	**26.5552**	**15.771**	**41.204**
EC60	5.253	36.9529	23.8078	62.1711
EC75	5.674	64.0014	41.2429	141.009
EC80	5.842	79.5894	49.7716	201.122
EC85	6.036	102.612	61.2301	307.881
EC90	6.282	141.266	78.545	532.26
EC95	6.645	226.891	112.031	1214.99
EC99	7.326	551.856	213.337	5841.54



SURVIVAL BENCH SHEET

Project #: 140608 **Test Start:** 6/20/14 1440

Test Organism: Cyprinella leedsi **Test End:** 6/24/14 1418

Organism Age: 14 days **Brood #:** CL140606

Concentration %	Sample Number	Survival: Replicate A					Survival: Replicate B					A & B %
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	
100	140608-1	10	10	10	7	2	10	10	9	6	1	15
50		10	10	10	7	4	10	10	9	8	3	35
25		10	10	9	8	3	10	10	10	10	5	40
12.5		10	10	10	8	8	10	10	10	10	6	70
6.25		10	10	10	10	9	10	10	10	10	8	85
Control		10	10	10	10	9	10	10	10	10	10	95
Organisms Fed By: (Initials & Time)		—	—	SS 0820	—	—	—	—	SS 0820	—	—	—
0 Hours started/checked by: 24, 72, 96 Hours counted by: 48 Hours renewed/cleaned by:		SS / PM	MM	PM	SK	PM	SS / PM	MM	PM	SK	PM	PM

Comments or Corrections:

Reviewed by: MB

Date: 6/25/14

ACUTE TOXICITY TEST PHYSICAL AND CHEMICAL MEASUREMENTS

EPA Method # 2000.0

Project #: 140668 **Test Start:** 6/20/14 1440

Test Organism: Cyprinella leedsi **Test End:** 6/24/14 1418

Effluent Concentration %	Sample Number	Dissolved Oxygen (mg/L) 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	pH 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	140668-1	8.3	7.0	6.9 / 7.7	6.1	6.0	7.3	8.2	8.4 / 8.8	8.0	8.2
50.0		8.3	7.3	7.1 / 7.9	6.3	6.0	7.4	8.1	8.3 / 8.2	7.9	7.9
25.0		8.2	7.3	6.8 / 8.0	6.6	6.3	7.5	8.1	7.8 / 7.3	7.9	7.9
12.5		8.2	7.6	6.3 / 8.0	6.0	6.3	7.7	7.9	7.7 / 7.5	7.6	7.8
6.25		8.1	7.6	7.0 / 8.1	6.0	6.2	7.7	7.9	7.7 / 7.9	7.6	7.6
Control		8.1	7.8	7.0 / 8.1	6.9	7.0	7.8	7.9	7.7 / 7.9	7.7	7.8
Measured by:		MM	MM	SLC / SLC	SLC	SLC	MM	MM	SLC / SLC	SLC	SLC

Effluent Concentration %	Sample Number	Temperature (Degrees Celsius) 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	Conductivity (mS/cm) 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	140668-1	25	25	25 / 25	25	25	1.741	—	— / 1.743	—	1868
50.0		25	25	25 / 25	25	25	1.034	—	— / 1.029	—	1.095
25.0		25	25	25 / 25	25	25	0.940	—	— / 0.660	—	0760
12.5		25	25	25 / 25	25	25	0.495	—	— / 0497	—	0543
6.25		25	25	25 / 25	25	25	0.400	—	— / 0.401	—	0440
Control		25	25	25 / 25	25	25	0.310	—	— / 0309	—	0340
Measured by:		MM	MM	SLC / SLC	SLC	SLC	MM	—	— / SLC	—	SLC

Comments or corrections:

Reviewed by: MB

Date: 6/25/14

SAMPLE/CONTROL WATER INFORMATION

Project #: 1406068

Control Water and Sample Analysis

	Laboratory Number	Alkalinity (mg/L)	Date	Measured by	Hardness (mg/L)	Date	Measured by	Chlorine (mg/L)	Date	Measured by	Cond. (mS/cm)*	Date	Measured by
Initial Sample Analysis	1406068-1	235	6/25/14	MM	240	6/25/14	MM	—			1.741	6/20/14	MM
Control Water – Initial	SMH140617	55	6/25/14	MM	80	6/25/14	MM	—			0.310	6/20/14	MM
Control Water – Renewal	SMH140619	53	6/25/14	MM	80	6/25/14	MM	—			0.309	6/20/14	MM

*Conductivity values indicated at a reference temperature of 25 degrees celsius. Values in this column for salt-control-water, SWyymmdd, are for salinity determined at the time of initial use in the test.

Sample Aeration

Sample #	Initial D.O (mg/L)	Aeration Duration (min.)	Aeration Rate (ml/min.)	Final D.O (mg/L)	Aerated by: Initials/Date/Time/Volume	Initial Sample pH	Measured by
1406068-1	1.0	8	~500	8.3	MM 6/20/14 1408	6.2	MM
1406068-1	7.7	N/A	N/A	N/A	SK 6/22/14 1325	6.2	SK

Comments or corrections:

Reviewed by: MB

Date: 6/25/14

ACUTE TEST CONDITIONS

Project #: 140668 **Client:** Hazen & Sawyer

Test type: CL Acute (D) def. **Test run in Environmental Chamber #:** 1

Species Code (1)	Receipt Date and Supplier of Organism (if commercially obtained)	Init.	Amount & Type of Food (2)	Init.	How Often Fed (3)	Init.	Test Chamber Vol. (mL)	Init.	Vol. of Effluent Used (mL)	Init.	Type of Chamber (4)	Init.
CL	—	MB	E	SS	R	SS	1000	MB	250	MB	B	MB

(1) CD *Ceriodaphnia dubia*
FM *Pimephales promelas* (fathead minnow)
SS *Menidia beryllina* (inland silverside)
MS *Americamysis bahia* (mysid shrimp)
DP *Daphnia pulex*
DM *Daphnia magna*
CL *Cyprinella leedsi* (bannerfin shiner)
Other - Please Describe _____

(2) Please fill the "Amount & Type of Food" Box with the appropriate letter:
'AA' 0.1 mL Selenastrum per replicate, 0.1 mL YCT per replicate
'A' 0.2 mL Selenastrum per replicate, 0.2 mL YCTper replicate
'B' 1.4 mL Selenastrum/200 mL of sample, 1.4 mL YCT/200 mL of sample
'C' 0.1 mL of 1200 Artemia nauplii/0.1 mL per replicate
'D' 0.085 mL of 1200 Artemia nauplii/0.1 mL per replicate
'E' 0.04 mL of 1200 Artemia nauplii/0.1 mL per replicate
O' Other_____

(3) Please fill the "How Often Fed" box with the appropriate letter:
'R' Once, at least two hours before renewal
'F' Once, at least four hours before renewal
'D' Once daily
'T' Twice daily
'O' Other _____

(4) Please fill the "Type of Chamber" box with the appropriate letter:
'B' Plastic Beaker
'M' Plastic Medicine Cup
'P' Plastic Cup
'G' Glass Beaker
'C' Plastic Container

Photoperiod: [MB] 16 hours Light/8 hours dark
[—] Other _____

Test(s) conducted in accordance with EPA-821-R-02-012 **Randomization version:** 17

Method number 2000.0

Physical and Chemical Measurement Equipment

Equipment type	Test start	24 hours	48 hours	72 hours	96 hours
Thermometer (A)	E	E	E/E	E	E
DO Meter (B)	4	4	4/4	4	4
pH Meter (C)	7	7	7/7	7	7
Conductivity meter (D)	10	—	—/10	—	10
Freshwater cond. checked by	—	—	—/—	—	—
Used by (Initials)	M	M	SK/SK	SK	SK

(A)Thermometer number is the serial number or designated number on thermometer.
(B)DO Meters: "3" Orion 830
"4" Hach Sension 6
"5" Orion 830A
"6" Orion 820
(C)pH Meters "7" Hach Sension 2
"8" Orion 290A
"9" Orion 720
(D)Conductivity "10" Orion 160
"11" Orion 126
"O" Other _____

Comments or Corrections: _____

Reviewed by: MB

Date: 6/25/14

Marinco Bioassay Laboratory
4569 Samuel Street · Sarasota, FL 34233 · Phone: (941) 925-3594 · Fax: (941) 922-3874

Chain of Custody Record

Please use black ink only

Client: Hazen & Sawyer Permit #:

Samplers (Print Names): Josefin Hirst

Harmon Harden

Sample Containers

1 qt.	2 qt.	1 Gal.
	2	

Sample Cooler #: 1114

Tests Required

Acute: C. leedsi 96HR Definitive

Chronic:

Client Provided Information / **Lab Use Only**

TRC	Location	Sample ID#	Date of Sampling	Time of Sampling	Grab or Composite	Number of Bottles	Sample on Ice?	MBL Number (lab use only)	Arrival Temp.
	BHS7-DP07	1 *	6/19/14	11:25	grab	1	yes	140668-1	1C
	BHS7-STE	2	6/19/14	12:05	grab	1	yes		
		* <5°C ice present MB 6/20/14							

Sampling Kit Transfers

Relinquished By:	Received By:	Date	Time	Count
MBL: [signature]	Carrier: FedEx	6/16/14	1530	2
Carrier: FedEx	Client: [signature]	6/17/14	1230	2

Please refer to the back of this page for instructions and examples.

Sample Transfers

Relinquished By:	Received By:	Date	Time	Count
Person's Name: [signature] Facility Name: Hazen and Sawyer	Person's Name: Scott McCullough Facility Name: American Courier	6/20/14	8:40	2
Person's Name: Scott McCullough Facility Name: American Courier	Person's Name: [signature] Facility Name: DCK	6/20/14	0935	2
Person's Name: Facility Name:	Person's Name: Facility Name:			
Person's Name: Facility Name:	Person's Name: Facility Name:			
Person's Name: Facility Name:	Person's Name: Facility Name:			

Shipped via: American Courier Busbill/Airbill #: 2296661

INTERNAL CHAIN OF CUSTODY
MARINCO BIOASSAY LABORATORY, INC.

Acute Toxicity Test

Project # 1406668

Sample expiration date/time 6/20/14 2325

Sample #(s)	1406668-1	1406668-1
Procedure	**Test Start**	**Test Renewal**
Sample(s) checked in by Initials/Date/Time	MB 6/20/14 0935	N/A
Sample(s) warmed by Initials/Date/Time	M 6/20/14 1345	SK 6/22/14 1325
Total Residual Chlorine measured by Initials/Date/Time	N/A	N/A
Sample(s) salted to test salinity using HW Marinemix by: Initials/Date/Time	N/A	N/A
Dilutions prepared by: Initials/Date/Time	M 6/20/14 1420	SK 6/22/14 1335
Test Start-test started by: Test renewal-test renewed by: Initials/Date/Time	SS 6/20/14 1440	PM 6/22/14 1355
Remaining sample(s) returned to refrigerator by: Initials/Date/Time	M 6/20/14 1420	N/A
Samples disposed of by & disposal method Initials/Date/Time	N/A	Sample centrifuged in test JC 6/22/14 1335

All samples are stored in the laboratory refrigerator from just above freezing to 6 degrees Celsius unless noted on this Internal chain of custody.

Comments:

Reviewed by: MB Date 6/25/14

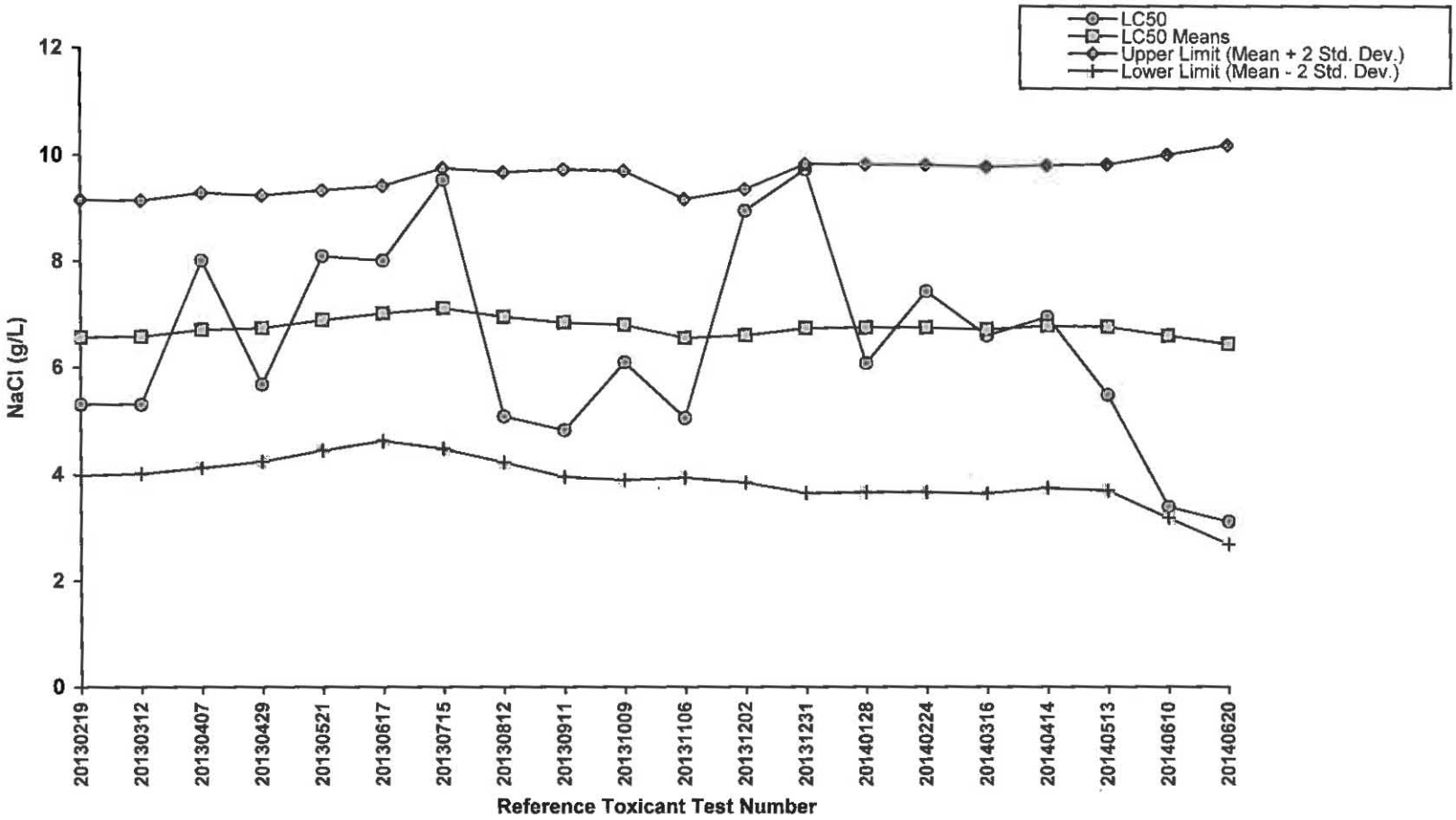
Cyprinella leedsi Acute Standard Reference Toxicant (SRT) Report.

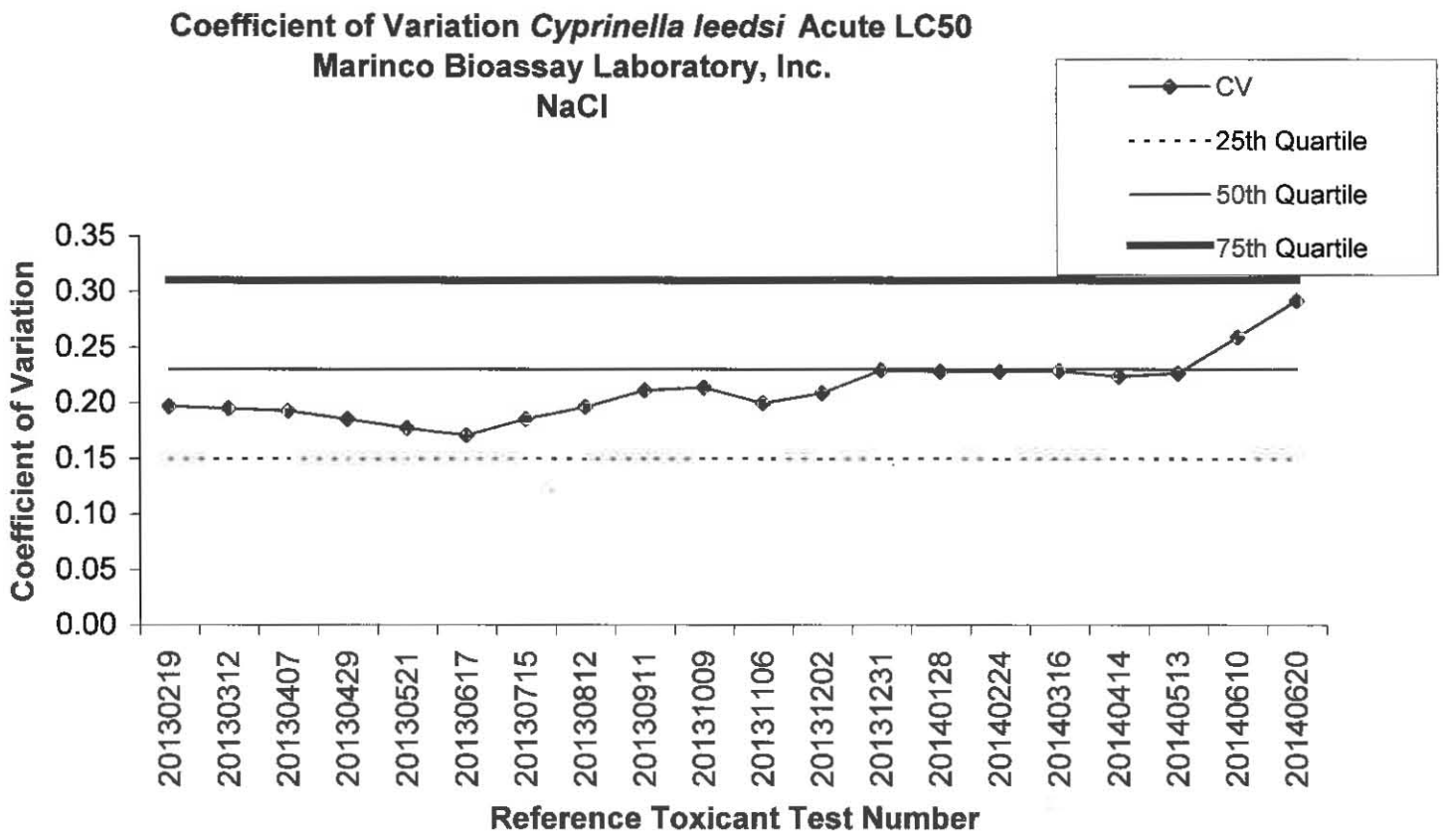
This quality control test was conducted by Marinco Bioassay Laboratory, Inc. personnel using Whole Effluent Toxicity (WET) Test method number 2000.0

SRT Test No. 1406300LHOSRT

Reviewed by: [illegible] Date: 6/25/14

STANDARD REFERENCE TOXICANT (SODIUM CHLORIDE) CONTROL CHART FOR *Cyprinella leedsi* 96-HOUR ACUTE TOXICITY TESTS CONDUCTED AT MARINCO BIOASSAY LABORATORY, INC.




Coefficient of Variation *Cyprinella leedsi* Acute LC50
Marinco Bioassay Laboratory, Inc.
NaCl
CV
25th Quartile
50th Quartile
75th Quartile
Coefficient of Variation
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
20130219
20130312
20130407
20130429
20130521
20130617
20130715
20130812
20130911
20131009
20131106
20131202
20131231
20140128
20140224
20140316
20140414
20140513
20140610
20140620
Reference Toxicant Test Number

Acute Fish Test-96 Hr Survival

Start Date:	6/20/2014	Test ID:	140620CLACSRT	Sample ID:	15.5 g/L NaCl
End Date:	6/24/2014	Lab ID:	MBL-Marinco Bioassay Lab.	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPA Method #2000.0	Test Species:	CL-*Cyprinella leedsi*

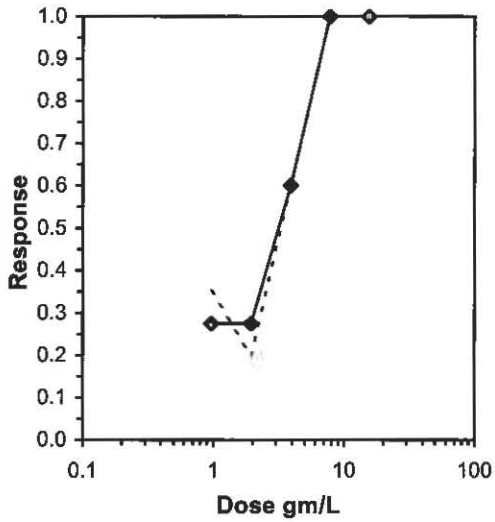
Comments: This analysis was performed by Marlena Beck at MBL.

Conc-gm/L	1	2
Control	1.0000	1.0000
0.969	0.6000	0.7000
1.94	0.7000	0.9000
3.88	0.5000	0.3000
7.75	0.0000	0.0000
15.5	0.0000	0.0000

			Transform: Untransformed					Number	Total
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
Control	**1.0000**	1.0000	1.0000	1.0000	1.0000	0.000	2	0	20
0.969	**0.6500**	0.6500	0.6500	0.6000	0.7000	10.879	2	7	20
1.94	**0.8000**	0.8000	0.8000	0.7000	0.9000	17.678	2	4	20
3.88	**0.4000**	0.4000	0.4000	0.3000	0.5000	35.355	2	12	20
7.75	**0.0000**	0.0000	0.0000	0.0000	0.0000	0.000	2	20	20
15.5	**0.0000**	0.0000	0.0000	0.0000	0.0000	0.000	2	20	20

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%			
5.0%			
10.0%			
20.0%			
Auto-27.5%	**3.1129**	**2.3062**	**4.2019**



SURVIVAL BENCH SHEET

Project #: 140620 CLACSRT **Test Start:** 6/20/14 1425

Test Organism: Cyprinella leedsi **Test End:** 6/24/14 1355

Organism Age: 14 days **Brood #:** CL140606

Concentration %	Sample Number	Survival: Replicate A					Survival: Replicate B					A & B %
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	
100	15.5g/L NaCl	10	0	—	—	—	10	0	—	—	—	0
50		10	6	0	—		10	5	0	—	—	0
25		10	10	8	8	5	10	10	7	6	3	40
12.5		10	10	9	8	7	10	10	10	10	9	80
6.25		10	10	9	9 ~~8~~ SS	6	10	10	10	10	7	65
Control		10	10	10	10	10	10	10	10	10	10	100
Organisms Fed By: (Initials & Time)		—	—	SS 0820	—	—	—	—	SS 0820	—	—	—
0 Hours started/checked by: 24, 72, 96 Hours counted by: 48 Hours renewed/cleaned by:		SS / M	SS	1455 SS	SS	SS	SS / M	SS	1455 SS	SS	SS	SS

Comments or Corrections:

Reviewed by: MB

Date: 6/25/14

ACUTE TOXICITY TEST PHYSICAL AND CHEMICAL MEASUREMENTS

EPA Method # 2000.0

Project #: 140620 CLACSRT **Test Start:** 6/20/14 1405

Test Organism: Cyprinella leedsi **Test End:** 6/24/14 1355

Effluent Concentration %	Sample Number	Dissolved Oxygen (mg/L) 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	pH 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	15.5g/L NaCl	7.7	7.0				7.6	7.7			
50.0		8.0	7.6	7.1			7.7	7.8	7.7		
25.0		8.1	7.7	7.0 / 8.1	7.0	6.7	7.7	7.8	7.7 / 7.8	7.6	7.5
12.5		8.1	7.8	7.0 / 8.1	6.9	7.0	7.8	7.8	7.7 / 7.9	7.6	7.6
6.25		8.1	7.7	7.0 / 8.1	6.9	7.1	7.8	7.8	7.7 / 7.9	7.6	7.6
Control		8.1	7.7	6.8 / 8.1	7.0	7.1	7.8	7.9	7.7 / 7.9	7.7	7.7
Measured by:		SS	SS	SS / SS	SS	SS	SS	SS	SS / SS	SS	SS

Effluent Concentration %	Sample Number	Temperature (Degrees Celsius) 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	Conductivity (mS/cm) 0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	15.5g/L NaCl	24	24				26.7	26.3			
50.0		24	24	24			13.76	–	14.00		
25.0		24	24	24 / 24	24	25	7.31	–	– / 7.42	–	7.94
12.5		24	24	24 / 24	24	25	3.98	–	– / 3.99	–	4.33
6.25		24	24	24 / 24	24	25	2.21	–	– / 2.15	–	2.31
Control		24	24	24 / 24	24	25	0.311	–	– / 0.309	–	0.320
Measured by:		SS	SS	SS / SS	SS	SS	SS	SS	SS / SS	–	SS

Comments or corrections:

Reviewed by: MB

Date: 6/25/14

SRT Tracking Sheet

Test ID: 140620 CLACSRT

Test LC50: 3.11g/L NaCl

Test Species: Cyprinella leedsi

Test NOEC: N/A

Test Dates : 6/20/14 to 6/24/14

Test IC25: N/A

SRT Solution Data

Test Concentration and Toxicant: 15.5g/L NaCl Lot# VL13L

Mass of Toxicant from Balance Log (g)	Measured by Init./Date	Volume Mixed (L)	Mixed by Init./Date	Cond. (mS/cm)	Measured by Init./Date	Balance Used to Measure Toxicant Init./date
15.50001	SS 6/20/14	1.0	SS 6/20/14	26.7	SS 6/20/14	Mettler SS 6/20/14
7.75005	SS 6/22/14	0.5	SS 6/22/14	26.7	SS 6/22/14	Mettler SS 6/22/14

Control and Dilution Waters

Laboratory Number	Alkalinity (mg/L)	Measured by Init./Date	Hardness (mg/L)	Measured by Init./Date	Cond. (mS/cm)	Measured by Init./Date
SMH140617	55	M 6/25/14	80	M 6/25/14	0.311	SS 6/20/14
SMH140619	53	M 6/25/14	80	M 6/25/14	0.309	SS 6/22/14

Comments or Corrections:

Reviewed by: MB

Date: 6/25/14

ACUTE TEST CONDITIONS

Project #: 140620 CLACSRT **Client:** —

Test type: CL 96 hr @ def **Test run in Environmental Chamber #:** 1

Species Code (1)	Receipt Date and Supplier of Organism (if commercially obtained)	Init.	Amount & Type of Food (2)	Init.	How Often Fed (3)	Init.	Test Chamber Vol. (mL)	Init.	Vol. of Effluent Used (mL)	Init.	Type of Chamber (4)	Init.
CL	N/A	SS	E	SS	R	S	1000	SS	250	SS	B	SS

(1) CD *Ceriodaphnia dubia*
FM *Pimephales promelas* (fathead minnow)
SS *Menidia beryllina* (inland silverside)
MS *Americamysis bahia* (mysid shrimp)
DP *Daphnia pulex*
DM *Daphnia magna*
CL *Cyprinella leedsi* (bannerfin shiner)
Other - Please Describe _____

(2) Please fill the "Amount & Type of Food" Box with the appropriate letter:
'AA' 0.1 mL Selenastrum per replicate, 0.1 mL YCT per replicate
'A' 0.2 mL Selenastrum per replicate, 0.2 mL YCTper replicate
'B' 1.4 mL Selenastrum/200 mL of sample, 1.4 mL YCT/200 mL of sample
'C' 0.1 mL of 1200 Artemia nauplii/0.1 mL per replicate
'D' 0.085 mL of 1200 Artemia nauplii/0.1 mL per replicate
'E' 0.04 mL of 1200 Artemia nauplii/0.1 mL per replicate
O' Other_____

(3) Please fill the "How Often Fed" box with the appropriate letter:
'R' Once, at least two hours before renewal
'F' Once, at least four hours before renewal
'D' Once daily
'T' Twice daily
'O' Other _____

(4) Please fill the "Type of Chamber" box with the appropriate letter:
'B' Plastic Beaker
'M' Plastic Medicine Cup
'P' Plastic Cup
'G' Glass Beaker
'C' Plastic Container

Photoperiod: [SS] 16 hours Light/8 hours dark
[—] Other _____

Test(s) conducted in accordance with EPA-821-R-02-012 **Randomization version:** 17

Method number 2000.0

Physical and Chemical Measurement Equipment

Equipment type	Test start	24 hours	48 hours	72 hours	96 hours
Thermometer (A)	E	E	E / E	E	E
DO Meter (B)	4	4	4 / 4	4	4
pH Meter (C)	7	7	7 / 7	7	7
Conductivity meter (D)	10	10	10 / 10	—	10
Freshwater cond. checked by	—	—	— / —	—	—
Used by (Initials)	SS	SS	SS / SS	SS	SS

(A)Thermometer number is the serial number or designated number on thermometer.
(B)DO Meters: "3" Orion 830
"4" Hach Sension 6
"5" Orion 830A
"6" Orion 820
(C)pH Meters "7" Hach Sension 2
"8" Orion 290A
"9" Orion 720
(D)Conductivity "10" Orion 160
"11" Orion 126
"O" Other _____

Comments or Corrections: _____

Reviewed by: MB

Date: 6/25/14