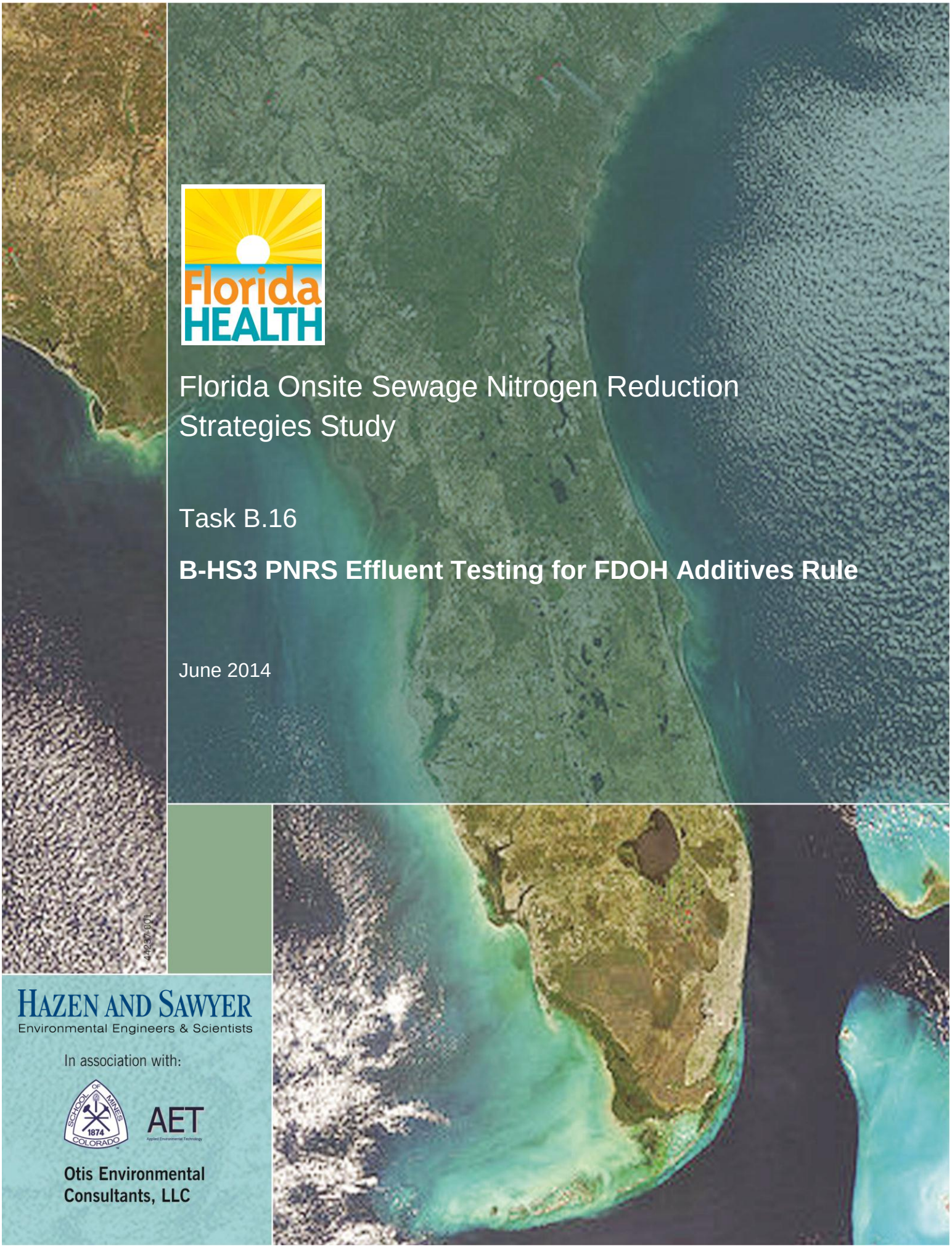

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task B.16

B-HS3 PNRS Effluent Testing for FDOH Additives Rule

June 2014

HAZEN AND SAWYER
Environmental Engineers & Scientists

In association with:

AET

Otis Environmental Consultants, LLC

Florida Onsite Sewage Nitrogen Reduction Strategies Study

TASK B.16

B-HS3 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

June 2014

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B-HS3 PNRS Effluent Testing for FDOH Additives Rule

Executive Summary

Effluent sampling and analyses were performed on the B-HS3 full-scale PNRS to evaluate the impact of elemental sulfur and lignocellulosic (a blended urban waste wood from Mother's Organics, Inc., Thonotosassa, 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). Each of these media were used in biofilters that enhance nitrogen removal in onsite wastewater treatment systems. Elemental sulfur and 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-HS3 in Seminole 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. None of the analytical results exceeded the Guidance Maximum Contaminant Level (GMCL) for VOCs established by the Florida Department of Health.

The primary tank (septic tank effluent) did exhibit toxicity by the WET protocol, with a Lethal Concentration 50 (LC50) of 18.6%. The Stage 2 biofilter effluent did not exhibit toxicity by the WET protocol, as exhibited by Lethal Concentration 50 (LC50) of greater than 100%. The Stage 2 biofilter effluent included contact with the following media: lignocellulosic and elemental sulfur.

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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-HS3 system evaluated included two media in the treatment train that could be considered additives: lignocellulosic material and elemental sulfur.

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 $(C_6H_{10}O_5)_n$, a polysaccharide consisting of a linear chain of several hundred to over ten thousand $\beta(1\rightarrow4)$ 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).

Elemental sulfur is a non-metallic element on the periodic chart, with an atomic number of 16 and atomic weight of 32.065. It is known as Brimstone in its natural state. It is insoluble in water, tasteless and odorless, and often occurs as a light yellow solid. Sulfur is distributed widely over the earth's surface and occurs in both combined and free states. A significant amount of the world's supply of sulfur for human uses formerly came from sulfur-bearing limestone deposits found in the Gulf Coast region of North America.

Currently, elemental sulfur is produced primarily through its recovery from the hydrogen sulfide (H2S) in "sour" natural gas and by refining of petroleum (Claus process).

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The rhombic structure is the most commonly found sulfur form and consists of eight sulfur atoms (S8) arranged in a puckered-ring structure. Rhombic elemental sulfur has a molecular weight of 256.50 Da, a specific gravity of 2.07 at 70°F. The rhombic structure is the stable crystalline form at one atmosphere pressure and temperature less than 95.4°C, while the monoclinic crystalline structure is thermodynamically dominant from 95.4°C up to the melt temperature of 118.9°C. Elemental sulfur is not readily wetted or dissolved by water.

Numerous studies have addressed the use of elemental sulfur for denitrification in laboratory and field studies in a variety of biofilter configurations (Aoi et al., (2005); Batchelor et al., 1978; Bisogni et al., 1977; Darbi et al., 2003b; Darbi et al., 2002; Darbi et al., 2003a; Flere and Zhang, 1998; Furumai et al., 1996; Hasegawa and Hanaki, 2001; Hwang et al., 2005; Kanter et al., 1998; Kim et al., 2004; Kim and Bae, 2000; Kim et al., 2003; Koenig and Liu, 2002; Koenig and Liu, 2004; Koenig et al., 2005; Kuai and Verstraete, 1999; Lampe and Zhang, 1996; Li et al., 2009; Moon et al., 2004; Moon et al., 2006; Moon et al., 2008; Nugroho et al., 2002; Oh et al., 2002; Oh et al., 2001; Park et al., 2002; Shan and Zhang, 1998; Sierra-Alvarez et al., 2007; Soares, 2002; Tanaka et al., 2007; Wang et al., 2005; Yamamoto-Ikemoto and Komori, 2003; Zeng and Zhang, 2005; Zhang, 2002; Zhang, 2004; Zhang and Lampe, 1999; Zhang and Shan, 1999). Recently, elemental sulfur was shown to be highly effective in supporting onsite wastewater denitrification in saturated anoxic biofilters (Smith, 2009).

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. Elemental sulfur is expected to undergo oxidative dissolution catalyzed by autotrophic microbial processes when external electron donors are present, including molecular oxygen, nitrate, and nitrite.

2.0 Testing Methods

2.1 Source of Media

Lignocellulosic material was procured in June, 2013 from an organic waste composting facility, Mother's Organics, Inc. Thonotosassa, FL. The material was a hardwood mulch 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. Pastille elemental sulfur was supplied by CoreAgri, Arroya Grande, CA.

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The ES99 material has a bulk density of 76 lbs/ft^3 and a minimum elemental sulfur content of 99.5%. The MSDS for ES99 pastille sulfur is included in Appendix B.

2.2 Biofilter Configuration and Sample Collection

The nitrogen reducing onsite treatment system for the single family residence was installed in June 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 1,500 gallon two chamber concrete primary tank; 600 gallon concrete STE dose tank; a two zone drip system, a Stage 1 lined drip zone and a treated effluent dispersal drip zone, and a 1,050 gallon concrete tank Stage 2 saturated media biofilter.

The PNRS system had been operating for approximately forty-six 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 STE dose tank. The effluent was sampled approximately 1.5 feet below the surface of the STE dose tank prior to the effluent filter 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 the Stage 2 biofilter sampled approximately 6 inches below the water surface. This sample location is after passage through the sand within the Stage 1 biofilter, the underlying lignocellulosic and sand mixture, and the sulfur media within the Stage 2 biofilter. It is the final effluent from the treatment system prior to being discharged to the treated effluent drip irrigation area.

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 May 29, 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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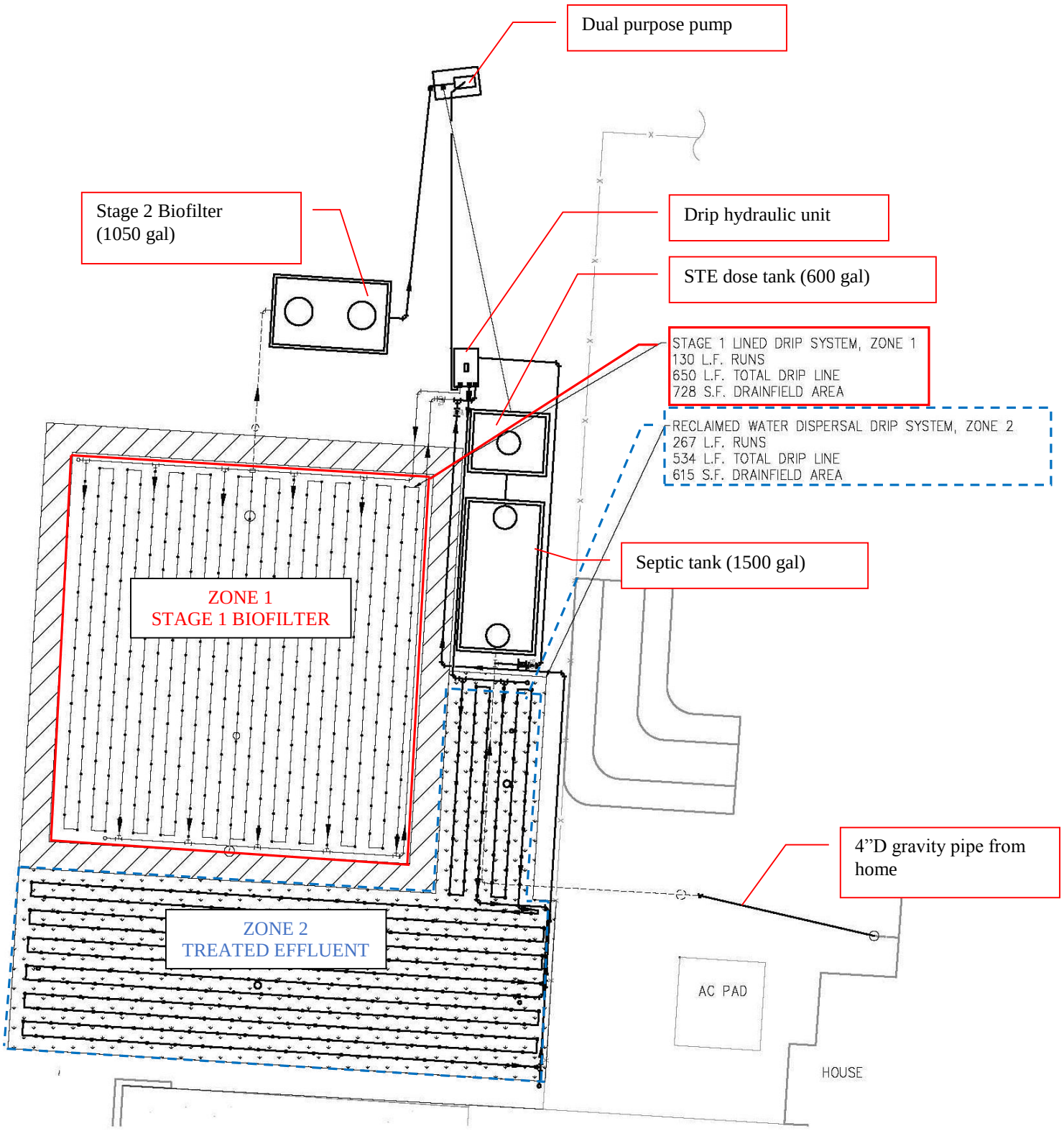

Figure 1
Plan View of B-HS3 System Layout

Table 1
Passive Nitrogen Reduction System Components

	Influ-ent	Tank Vol-ume (gal)	Surface Area (ft^2)	Media	Media Saturated or Unsaturated
Primary Tank	1,500		none	Primary Tank	N/A
STE Dose Tank	600		none	STE Dose Tank	N/A
Stage 1 Biofilter, lined drip area	N/A	728	-18" sand -9" lignocellulosic and sand mixture	Stage 1 Biofilter, lined drip area	Unsaturated
Stage 2 Biofilter, upflow	1,050	37	12" Elemental sulfur (90%) & oyster shell mix-ture (10%)	Stage 2 Biofilter, upflow	Saturated

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Table 2
Biofilter Effluent Water Quality May 29, 2014

Parameter	Primary tank (STE)	Stage 2 effluent
Temperature, °C	25.7	25.3
Dissolved oxygen, mg/L	0.10	0.32
Oxidation Reduction Potential, mV	-268.5	-219.1
Specific conductance, umhos/cm	1174	936
pH	7.4	6.8
Total alkalinity, mg/L as $CaCO_3$	440	310
Total suspended solids, mg/L	15	4
Volatile suspended solids, mg/L	14	2
Carbonaceous five day biochemical oxygen demand, mg/L	51	15
Chemical oxygen demand, mg/L	120	50
Total nitrogen, mg/L	50	1.3
Total kjeldahl nitrogen, mg/L	50	1.3
Organic nitrogen, mg/L	46	0.9
Ammonia nitrogen, mg/L[1]	3.9[1]	0.4
Nitrate nitrogen, mg/L	0.01	0.01
Nitrite nitrogen, mg/L	0.01	0.01
Sulfate, mg/L	24	82
Sulfide, mg/L	7.7	9.7
Hydrogen sulfide, unionized, mg/L	2.6	6.3
Total phosphorus, mg/L	6.8	0.15
Orthophosphate phosphorus, mg/L	3.9	0.01
Fecal coliform, Ct/100 mL	20,000	1
e-coli, Ct/100 mL	9,100	2

[1]Ammonia N value is likely an analytical error and has been requested to be re-run by the laboratory. This may also affect the organic nitrogen concentration, which is calculated.

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

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(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.

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, 2002). 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 C. The reported VOC analytical results reported for both effluents show that none exceeded the Guidance Maximum Contaminant Level (GMCL) for VOCs established by the Florida Department of Health.

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Table 5
Effluent Analyte Concentrations and FDOH Guidance Levels

#	Chemical Parameter	CAS #	FDOH Guidance MCL, ug/L	Effluent Concentration (ug/L) [1,2]		
				Primary Tank (STE)	Stage 2 Effluent	Stage 2 Effluent (duplicate)
1	1,1,1,2-Tetrachloroethane	630-20-6	1	0.2	0.2	0.2
2	1,1,1-Trichloroethane	71-55-6	200	0.2	0.2	0.2
3	1,1,2,2-Tetrachloroethane	79-34-5	0.2	0.2	0.2	0.2
4	1,1,2-Trichloroethane	79-00-5	5	0.2	0.2	0.2
5	1,1-Dichloroethane	75-34-3	700	0.2	0.2	0.2
6	1,1-Dichloroethene (Vinylidene Chloride)	75-35-4	7	0.2	0.2	0.2
7	1,1-Dichloropropene	563-58-6	1	0.2	0.2	0.2
8	1,2,3-Trichlorobenzene	87-61-6	70	0.2	0.2	0.2
9	1,2,3-Trichloropropane	96-18-4	42	0.4	0.4	0.4
10	1,2,4-Trichlorobenzene	120-82-1	70	0.3	0.3	0.3
11	1,2,4-Trimethylbenzene	95-63-6	10	0.1	0.1	0.1
12	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	0.3	0.3	0.3
13	1,2-Dibromoethane (EDB,Ethylene dibromide)	106-93-4	0.02	0.2	0.2	0.2
14	1,2-Dichlorobenzene (o-Dichlorobenzene)	95-50-1	600	0.1	0.1	0.1
15	1,2-Dichloroethane (Ethylene dichloride)	107-06-2	3	0.1	0.1	0.1
16	1,2-Dichloropropane	78-87-5	5	0.2	0.2	0.2
17	1,3,5-Trimethylbenzene	108-67-8	10	0.1	0.1	0.1
18	1,3-Dichlorobenzene (m-Dichlorobenzene)	541-73-1	10	0.07	0.07	0.07
19	1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	75	0.2	0.2	0.2
20	2,2-Dichloropropane	594-20-7	5	0.3	0.3	0.3
21	2-Butanone (Methyl ethyl ketone) (MEK)	78-93-3	4200	5.2	2	2
22	2-Chloroethyl Vinyl Ether	110-75-8	1	0.5	0.5	0.5
23	o-Chlorotoluene	95-49-8	140	0.1	0.1	0.1
24	Hexachlorobutadiene	87-68-3	0.5	0.4	0.4	0.4
25	p-Chlorotoluene	106-43-4	140	0.1	0.1	0.1
26	4-Isopropyltoluene (p-Cymene)	99-87-6	70	0.2	0.2	0.2
27	4-Methyl-2-pentanone (Methyl isobutyl ketone) [MIBK]	108-10-1	350	2.6	2.6	2.6
28	Acetone	67-64-1	700	57	2	2
29	Benzene	71-43-2	1	0.1	0.1	0.1
30	Bromobenzene	108-86-1		0.2	0.2	0.2
31	Bromochloromethane	74-97-5	91	0.1	0.1	0.1
32	Bromodichloromethane	75-27-4	0.6	0.2	0.2	0.2
33	Bromoform	75-25-2	4	0.2	0.2	0.2
34	Bromomethane (Methyl bromide)	74-83-9	9.8	0.4	0.4	0.4
35	Carbon disulfide	75-15-0	700	0.6	0.7	0.6
36	Carbon Tetrachloride (Tetrachloromethane)	56-23-5	3	0.2	0.2	0.2
37	Chlorobenzene	108-90-7	100	0.1	0.1	0.1

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#	Chemical Parameter	CAS #	FDOH Guid-ance MCL, ug/L	Effluent Concentration (ug/L) [1,2]		
				Pri-mary Tank (STE)	Stage 2 Efflu-ent	Stage 2 Efflu-ent (dupli-cate)
38	Chloroethane (Ethyl chloride)	75-00-3	12	0.4	0.4	0.4
39	Chloroform	67-66-3	70	0.2	0.2	0.2
40	Chloromethane (Methyl chloride)	74-87-3	2.7	0.4	0.4	0.4
41	cis-1,2-Dichloroethene	156-59-2	70	0.09	0.09	0.09
42	cis-1,3-Dichloropropene (DCP, Telone)	10061-02-5	1	0.2	0.2	0.2
43	Dibromochloromethane	124-48-1	0.4	0.1	0.1	0.1
44	Dibromomethane	74-95-3		0.2	0.2	0.2
45	Dichlorodifluoromethane (CFC 12)	75-71-8	1400	0.5	0.5	0.5
46	Ethylbenzene	100-41-4	30	0.08	0.08	0.08
47	Isopropylbenzene (Cumene)	98-82-8	0.8	0.1	0.1	0.1
48	m,p-Xylenes	1330-20-7	20	0.2	0.2	0.2
49	Methylene Chloride (Dichloromethane)	75-09-2	5	0.6	0.2	0.2
50	Methyl-tert-Butyl-Ether (MTBE)	1634-04-4	20	0.2	0.2	0.2
51	Naphthalene	91-20-3	14	0.2	0.2	0.2
52	n-Butyl Benzene	104-51-8	280	0.2	0.2	0.2
53	n-Propyl Benzene	103-65-1	280	0.1	0.1	0.1
54	o-Xylene	95-47-6	20	0.2	0.2	0.2
55	sec-Butylbenzene	135-98-8	280	0.2	0.2	0.2
56	Styrene (Vinyl benzene)	100-42-5	100	0.05	0.05	0.05
57	tert-Butylbenzene	98-06-6	280	0.1	0.1	0.1
58	Tetrachloroethene	127-18-4	3	0.1	0.1	0.1
59	Toluene	108-88-3	40	5.3	0.09	0.09
60	trans-1,2-Dichloroethene	156-60-5	100	0.2	0.2	0.2
61	trans-1,3-Dichloropropene	10061-01-5	0.4	0.1	0.1	0.1
62	Trichloroethene (TCE)	79-01-6	3	0.2	0.2	0.2
63	Trichlorofluoromethane (CFC 11)	75-69-4	2100	0.2	0.2	0.2
64	Vinyl chloride	75-01-4	1	0.3	0.3	0.3
65	Xylenes (Total)	1330-20-07	20	0.1	0.1	0.1
66	2-Hexanone	591-78-6		2.1	2.1	2.1
67	Acrylonitrile	107-13-1		1.3	1.3	1.3
68	Iodomethane	74-88-4		0.2	0.2	0.2
69	trans-1,4-Dichloro-2-butene	110-57-6		0.3	0.3	0.3
70	Vinyl acetate	108-05-4		0.4	0.4	0.4
71	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	0.0056	0.0055	0.0051
72	1,2-Dibromoethane (EDB,Ethylene dibromide)	106-93-4	0.02	0.0056	0.0055	0.0051

[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 D. The primary tank (septic tank effluent) did exhibit toxicity by the WET protocol, with a Lethal Concentration 50 (LC50) of 18.6%. The Stage 2 biofilter effluent did not exhibit toxicity by the WET protocol, as exhibited by Lethal Concentration 50 (LC50) of greater than 100%.

Table 6
Acute Bioassay Results with *Cyprinella leedsi*

Biofilter	Effluent LC 50
BHS3-STE	18.6%
BHS3-ST2	>100%
BHS3-ST2-Duplicate	>100%

Whole Effluent Toxicity Test Permit requirement of LC50 > 100%

4.0 Summary

Testing was conducted on the full-scale PNRS at site B-HS3 to evaluate the impact of elemental sulfur and lignocellulosic (a blended urban waste wood from Mother's Organics, Inc., Thonotosassa, 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). Each material is a media for biofilters that enhance nitrogen removal in onsite wastewater treatment systems. Elemental sulfur and lignocellulosic materials are intended as 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 as a passive nitrogen reduction system at home site B-HS3 in Seminole 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. None of the analytical results exceeded the Guidance Maximum Contaminant Level (GMCL) for VOCs established by the Florida Department of Health.

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. The primary tank (septic tank effluent) did exhibit toxicity by the WET protocol, with a Lethal

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Concentration 50 (LC50) of 18.6%. The treatment by the PNRS system appeared to eliminate the toxicity of the primary effluent, as the Stage 2 biofilter effluent did not exhibit toxicity by the WET protocol, as exhibited by Lethal Concentration 50 (LC50) of greater than 100%.

5.0 References

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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: Elemental Sulfur Material Data Safety Sheet

PRELIMINARY

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MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT AND COMPANY INFORMATION

Trade Name (as labeled): CoreSulphur ES99

Common Name: Elemental Sulfur 99.5%

Manufactured By: CoreSulphur, Inc.
PO Box 1027
Arroyo Grande, CA 93421

Business Phone: (805) 202-4371

Emergency Phone: INFOTRAC – (800) 535-5053

Date of Preparation: December, 2009
Updated September, 2011

SECTION 2. COMPOSITION AND INFORMATION ON INGREDIENTS

		Exposure Limits In Air	
Chemical Name	**CAS #**	**ACGIH TVL (ppm)**	**OSHA PEL (ppm)**
Sulfur	7704-34-9	NA	NA
NE = Not Established		NA = Not Available	

SECTION 3. EMERGENCY/HAZARDS OVERVIEW

Emergency Overview: Bright yellow colored, free flowing pastille with a possible slight sulfur odor. Dust may cause mild irritation. Sulfur trioxide fumes at temperatures above 1067 °F. Not D.O.T. regulated.

Symptoms Of Over Exposure:

Eyes: Sulfur dust may cause severe irritation with prolonged exposure.
Skin: Prolonged or repeated exposure to sulfur dust may cause skin irritation.
Inhalation: Sulfur dust may cause breathing difficulties and irritation of mucous membranes.
Ingestion: Solid sulfur can be digested in fairly large amounts without injury.
Injection: Not possible.

SECTION 4. FIRST-AID MEASURES

If Inhaled:	Remove to fresh air. If breathing becomes difficult, contact a medical physician. Give artificial respiration if victim is not breathing and obtain immediate medical attention.
If Ingested:	Seek Medical Attention. Do not induce vomiting unless directed to do so by a medical professional. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. If vomiting occurs, keep head lower than hips to prevent introduction of fluid into the lungs.

In Case Of Skin Contact:	Wash thoroughly with soap and water. Remove contaminated clothing and wash before reuse. Seek medical attention if skin becomes irritated.
In Case Of Eye Contact:	Flush immediately with water for at least 15 minutes, lifting the upper and lower eyelids occasionally. Call a physician if eye irritation persists.
Victims of chemical exposure and all rescuers must be taken for medical attention. Take a copy of label and MSDS to physician or health professional with victim.	

SECTION 5. FIRE-FIGHTING MEASURES

Flash Point: Pure liquid sulfur, 370 °F.
Impure liquid sulfur, 428 °F.

LEL Flammable Limits: 35 gm/m^3.

UEL Flammable Limits: 1400 gm/m^3.

Auto Ignition Temperature: Dust Clouds, 374 °F.

Extinguishing Media: Use any standard agent suitable for surrounding structural fire or for other chemicals that may be involved. Fine water sprays and/or dry chemical agent. CO_2, dry chemicals, or sand.

Fire Extinguishing Media to Avoid: Hoses and extinguishers with pressure streams should be avoided where solid sulfur is dusty or where it may create a further hazard by raising more dust clouds.

Unusual Fire And Explosion Hazards: Sulfur trioxide fumes at temperatures above 1067 °F. Dust suspended in air is readily ignited by flame, static electricity, or friction spark. Every reasonable step must be taken to minimize dust formation. Dust tight casings should be equipped with explosion relief vents. Sparkless electrical equipment is recommended. Handling equiqment must be grounded or bonded to avoid static electricity. Keep away from sources of flame or sparks. Detailed recommendations in Manufacturing Chemists Association SD-74 and National Safety Council 612 Bulletins covering “Sulfur” should be followed when handling GreenSun ES 99.5%.

Special Firefighting Procedures: Wear positive pressure, self-contained breathing apparatus (SCBA) and goggles. Avoid exposure to smoke or fumes.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill And Leak Response: Pick up dry spills by scooping, shoveling, or vacuuming and place into containers for reuse or disposal. The minimum personal protective equipment should include rubber gloves, rubber apron, and chemical goggles. Gas masks or SCBA gear may be required. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Keep material out of sewers, storm drains, and surface waters. Comply with all applicable government regulations on spill reporting, handling, and waste disposal. For landfill disposal, mix with limestone 3 times the weight of sulfur.

SECTION 7. STORAGE AND HANDLING

Storage Practices: Store in a cool (above 40 °F), dry, well-ventilated area away from incompatible materials. Solid becomes corrosive to metals when stored wet. Product will physically break down when exposed to moisture.

Handling Practices: Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Wash with soap and water after handling.

Work/Hygiene Practices: Avoid getting chemicals ON YOU or IN YOU. Wash hands with soap and water after handling chemicals. Do not eat or drink around or while handling chemicals. Keep out of reach of children.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Ventilation/Engineering Controls: Use of local exhaust is recommended at product transfer points and where dusty conditions exist.

Respiratory Protection: For normal product handling, use any NIOSH approved air-purifying dust respirator. For extremely dusty conditions, a full facepiece purifying particulate respirator is recommended.

Eye Protection: Chemical dust/splash goggles or full-face shield to prevent eye contact. As a general rule, contact lenses should not be worn when working with chemicals because they contribute to the severity of an eye injury.

Hand Protection: Wear cotton or canvas protective glove to prevent contact. Rubber gloves may be used if product may become wet or moist.

Body Protection: Use body protection appropriate for task. Chemical-resistant coveralls and rubber aprons are generally acceptable.

Other Protective Measures: An eyewash and safety shower should be nearby and ready for use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Bright yellow colored pastille.	**Boiling Point:**	832 °F.
Odor:	May have slight sulfur odor.	**Crystallization Point:**	NA.
pH:	Neutral when dry.	**Freezing Point:**	246 °F.
Water Solubility:	Insoluble	**Vapor Pressure:**	Solid, less than 0.0001 mm. hg at 68 °F
Density:	76 lbs/ft^3.	**Vapor Density (air = 1):**	>1.
Specific Gravity (H_2O = 1):	Solid, 2.07 gm/ml	NA = Not Available.	

SECTION 10. STABILITY AND REACTIVITY

Stability: Stable.

Conditions To Avoid: Fire and dust explosions.

Incompatibility: Alkaline materials, or mixtures with chlorates, nitrates, or other oxidizing agents.

Hazardous Polymerization: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicity Data: NA.

Acute Effects:

Eyes: Mild irritant. May cause redness, tearing and/or burning.
Skin: Mild irritant, especially with prolonged exposure or when in contact with moisture.
Ingestion: Nausea and upset stomach
Inhalation: Moderate irritation of nose and throat from dust. May cause dry coughing, wheezing, chest tightness, and burning of mucous membranes.

Chronic Effects: None known.

SECTION 12. ECOLOGICAL INFORMATION

Environmental Stability: Sulfur, is stable in the environment. Its transport in the environment depends upon the exact compound, the pH, the soil type, and the salinity. All work practices should be aimed at eliminating environmental contamination.

SECTION 13. DISPOSAL CONSIDERATIONS

Do not contaminate lakes, streams, ponds, estuaries, oceans, or other waters by discharge of waste effluents or equipment rinsate. Dispose of waste effluents according to federal, state, and local regulations. For landfill disposal, mix with limestone 3 times the weight of sulfur.

SECTION 14. TRANSPORTATION INFORMATION

This product is not regulated per CFR 49 (Special Provisions 172.102 pt 30

SECTION 15. REGULATORY INFORMATION

SARA Reporting Requirements: This material does not contain toxic chemicals subject to reporting requirements of Section 313, Title III of the Superfund Amendments and Reauthorization Act of 1986.

California Proposition 65: WARNING. This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

SECTION 16. OTHER INFORMATION

The information and recommendations herein are taken from data contained in independent, industry recognized references including NIOSH, OSHA, ANSI, and NFPA. This information is, as of date listed above, true and accurate to the best of CoreSulphur, Inc. knowledge. It is intended for use by persons possessing technical knowledge and at their own discretion and risk. Since actual use is beyond our control, no guarantee, express or implied, and no liability is assumed by CoreSulphur, Inc. in conjunction with the use of this information. Actual conditions of use and handling may require consideration of information other than, or in addition to, that which is provided herein.

Appendix C: 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 18, 2014
Work Order: 1405265

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS3-STE**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-01**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Volatile Organic Compounds								
Acetone	ug/L	57	EPA 8260b	4.0	2.0		06/12/14 16:41	1
Acetone	ug/L	57	EPA 8260	4.0	2.0		06/12/14 16:41	1
Acrylonitrile	ug/L	1.3 U	EPA 8260b	4.0	1.3		06/12/14 16:41	1
Acrylonitrile	ug/L	1.3 U	EPA 8260	4.0	1.3		06/12/14 16:41	1
Benzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Benzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Bromobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Bromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Bromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Bromoform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Bromoform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Bromomethane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 16:41	1
Bromomethane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 16:41	1
2-Butanone	ug/L	5.2	EPA 8260b	4.0	2.0		06/12/14 16:41	1
2-Butanone	ug/L	5.2	EPA 8260	4.0	2.0		06/12/14 16:41	1
n-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
sec-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
t-Butylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Carbon disulfide	ug/L	0.6 I	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Carbon disulfide	ug/L	0.6 I	EPA 8260	0.8	0.2		06/12/14 16:41	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Chlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Chlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Chloroethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 16:41	1
Chloroethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 16:41	1
Chloroform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Chloroform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Chloromethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 16:41	1
Chloromethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 16:41	1
1,2-Dibromoethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,2-Dibromo-3-chloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 16:41	1
2-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
2-Chloroethylvinyl Ether	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 16:41	1
4-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1

Florida Certification Number: E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q.A. Manager

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

July 18, 2014
Work Order: 1405265

Laboratory Report

Project Name		BHS3 SE#9						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-STE**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-01**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Dibromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Dibromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Dibromomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Dibromomethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
1,3-Dichlorobenzene	ug/L	0.07 U	EPA 8260b	0.8	0.07		06/12/14 16:41	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 16:41	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260	0.8	0.3		06/12/14 16:41	1
Dichlorodifluoromethane	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 16:41	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/12/14 16:41	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260	0.8	0.09		06/12/14 16:41	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
2,2-Dichloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 16:41	1
1,1-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Ethylbenzene	ug/L	0.08 U	EPA 8260b	0.8	0.08		06/12/14 16:41	1
Ethylbenzene	ug/L	0.08 U	EPA 8260	0.8	0.08		06/12/14 16:41	1
Hexachlorobutadiene	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 16:41	1
2-Hexanone	ug/L	2.1 U	EPA 8260	4.0	2.1		06/12/14 16:41	1
2-Hexanone	ug/L	2.1 U	EPA 8260b	4.0	2.1		06/12/14 16:41	1
Iodomethane	ug/L	0.2 U,J5	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Iodomethane	ug/L	0.2 U,J5	EPA 8260	0.8	0.2		06/12/14 16:41	1
Isopropylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1

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

July 18, 2014
Work Order: 1405265

Laboratory Report

Project Name		**BHS3 SE#9**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-STE**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-01**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
4-Isopropyltoluene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Methyl-t-butyl ether	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 16:41	1
Methylene Chloride	ug/L	0.6 I	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Methylene Chloride	ug/L	0.6 I	EPA 8260	0.8	0.2		06/12/14 16:41	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260b	4.0	2.6		06/12/14 16:41	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260	4.0	2.6		06/12/14 16:41	1
Naphthalene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
n-Propylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Styrene	ug/L	0.05 U	EPA 8260	0.8	0.05		06/12/14 16:41	1
Styrene	ug/L	0.05 U	EPA 8260b	0.8	0.05		06/12/14 16:41	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Toluene	ug/L	5.3	EPA 8260b	0.8	0.09		06/12/14 16:41	1
Toluene	ug/L	5.3	EPA 8260	0.8	0.09		06/12/14 16:41	1
1,2,3-Trichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,2,4-Trichlorobenzene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 16:41	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Trichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Trichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 16:41	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 16:41	1
1,2,4-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
1,3,5-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Vinyl acetate	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 16:41	1
Vinyl chloride	ug/L	0.3 U	EPA 8260	1.6	0.3		06/12/14 16:41	1
Vinyl chloride	ug/L	0.3 U	EPA 8260b	1.6	0.3		06/12/14 16:41	1
Xylene-m,p	ug/L	0.2 U	EPA 8260	1.6	0.2		06/12/14 16:41	1
Xylene-m,p	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 16:41	1
Xylene-o	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1

SOUTHERN ANALYTICAL LABORATORIES, INC.
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Tampa, FL 33619

July 18, 2014
Work Order: 1405265

Laboratory Report

Project Name			**BHS3 SE#9**					
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-STE**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-01**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Xylene-o	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Xylenes- Total	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Xylenes- Total	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Surrogate for EPA 8260	*Dibromofluoromethane*		*103 %*	*Limits*	*65-135*			
Pesticide Analyses								
1,2-Dibromo-3-chloropropane	ug/L	0.0056 U	EPA 504.1	0.022	0.0056	05/30/14 11:37	05/30/14 19:41	1
1,2-Dibromoethane	ug/L	0.0056 U	EPA 504.1	0.022	0.0056	05/30/14 11:37	05/30/14 19:41	1
Surrogate for EPA 504.1	*2-Bromo-1-chloropropane*		*109 %*	*Limits*	*70-130*			
Inorganics								
Hydrogen Sulfide (Unionized)	mg/L	2.6	SM 4550SF	0.04	0.01	06/03/14 17:02	06/03/14 17:05	1
Ammonia as N	mg/L	3.9 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	51	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	120	EPA 410.4	25	10	06/09/14 12:07	06/09/14 17:00	1
Chloride	mg/L	49	EPA 300.0	2.0	0.50		06/13/14 22:22	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	3.9	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	6.8	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	24	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Sulfide	mg/L	7.7	SM 4500SF	0.40	0.10		06/03/14 16:28	1
Total Alkalinity	mg/L	440	SM 2320B	8.0	2.0		05/30/14 11:19	1
Total Kjeldahl Nitrogen	mg/L	50	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	15	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	14	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Microbiology								
E. Coli	MPN/100 mL	9,100	SM 9223B	2.0	2.0	05/29/14 16:39	05/30/14 10:50	1
Fecal Coliforms	CFU/100 ml	20,000	SM 9222D	1	1	05/29/14 16:33	05/30/14 14:50	1
Sample Description		**BHS3-STE-FILTERED**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-02**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganic, Dissolved								

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Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS3-STE-FILTERED**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-02**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Ammonia as N	mg/L	49	EPA 350.1	0.040	0.009		06/25/14 17:46	1
Carbonaceous BOD	mg/L	11	SM 5210B	2	2	05/29/14 12:05	06/03/14 09:47	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Total Kjeldahl Nitrogen	mg/L	61 Q	EPA 351.2	0.20	0.050	06/23/14 15:10	06/27/14 15:45	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Lab filtration for diss. analytes							05/29/14 12:05	
Sample Description		**BHS3-LY01**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-03**						
Date/Time Collected		**05/29/14 09:10**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganics								
Ammonia as N	mg/L	0.061 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Chemical Oxygen Demand	mg/L	33	EPA 410.4	25	10	06/09/14 12:07	06/09/14 17:00	1
Chloride	mg/L	44 L	EPA 300.0	0.20	0.050		05/30/14 08:39	1
Nitrate (as N)	mg/L	18	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	0.20	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	43	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Total Alkalinity	mg/L	79	SM 2320B	8.0	2.0		05/30/14 11:25	1
Total Kjeldahl Nitrogen	mg/L	1.9	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	1 U	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	1 U	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	18	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**BHS3-LY02**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-04**						
Date/Time Collected		**05/29/14 09:20**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganics								

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Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS3-LY02**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-04**						
Date/Time Collected		**05/29/14 09:20**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Ammonia as N	mg/L	0.20 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	10	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	49	EPA 410.4	25	10	06/09/14 12:07	06/09/14 17:00	1
Chloride	mg/L	43	EPA 300.0	2.0	0.50		06/13/14 22:34	10
Nitrate (as N)	mg/L	8.8	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.40	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	1.4	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	39	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Total Alkalinity	mg/L	180	SM 2320B	8.0	2.0		05/30/14 11:33	1
Total Kjeldahl Nitrogen	mg/L	2.2	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	1	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	1 U	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	8.8	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**BHS3-LINER**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-05**						
Date/Time Collected		**05/29/14 09:10**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganics								
Ammonia as N	mg/L	0.11 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	4	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	60	EPA 410.4	25	10	06/09/14 12:07	06/09/14 17:00	1
Chloride	mg/L	36	EPA 300.0	2.0	0.50		06/13/14 22:45	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	2.9	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	6.7	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Total Alkalinity	mg/L	360	SM 2320B	8.0	2.0		05/30/14 11:50	1
Total Kjeldahl Nitrogen	mg/L	1.5	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	125	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	45	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Microbiology								

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Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS3-LINER**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-05**						
Date/Time Collected		**05/29/14 09:10**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	05/29/14 16:39	05/30/14 10:50	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	05/29/14 16:33	05/30/14 14:50	1
Sample Description		**BHS3-LINER-FILTERED**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-06**						
Date/Time Collected		**05/29/14 09:00**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganic, Dissolved								
Ammonia as N	mg/L	0.099	EPA 350.1	0.040	0.009		06/25/14 17:46	1
Carbonaceous BOD	mg/L	3	SM 5210B	2	2	05/29/14 12:05	06/03/14 09:47	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U,J5,J6	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Total Kjeldahl Nitrogen	mg/L	1.4	EPA 351.2	0.20	0.050	06/23/14 15:10	06/25/14 12:09	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Lab filtration for diss. analytes							05/29/14 12:05	
Sample Description		**BHS3-SULFUR-6**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-07**						
Date/Time Collected		**05/29/14 09:10**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganics								
Hydrogen Sulfide (Unionized)	mg/L	23	SM 4550SF	0.04	0.01	06/03/14 17:02	06/03/14 17:05	1
Ammonia as N	mg/L	1.7 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Sulfate	mg/L	21	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Sulfide	mg/L	30	SM 4500SF	0.40	0.10		06/03/14 16:28	1
Total Kjeldahl Nitrogen	mg/L	3.7	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1

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Laboratory Report

Project Name		BHS3 SE#9						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-ST2**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-08**						
Date/Time Collected		**05/29/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Volatile Organic Compounds								
Acetone	ug/L	2.0 I	EPA 8260b	4.0	2.0		06/12/14 17:13	1
Acetone	ug/L	2.0 I	EPA 8260	4.0	2.0		06/12/14 17:13	1
Acrylonitrile	ug/L	1.3 U	EPA 8260b	4.0	1.3		06/12/14 17:13	1
Acrylonitrile	ug/L	1.3 U	EPA 8260	4.0	1.3		06/12/14 17:13	1
Benzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Benzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Bromobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Bromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Bromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Bromoform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Bromoform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Bromomethane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 17:13	1
Bromomethane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:13	1
2-Butanone	ug/L	2.0 U	EPA 8260b	4.0	2.0		06/12/14 17:13	1
2-Butanone	ug/L	2.0 U	EPA 8260	4.0	2.0		06/12/14 17:13	1
n-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
sec-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
t-Butylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Carbon disulfide	ug/L	0.7 I	EPA 8260	0.8	0.2		06/12/14 17:13	1
Carbon disulfide	ug/L	0.7 I	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Chlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Chlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Chloroethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:13	1
Chloroethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 17:13	1
Chloroform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Chloroform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Chloromethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:13	1
Chloromethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 17:13	1
1,2-Dibromoethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2-Dibromo-3-chloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:13	1
2-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
2-Chloroethylvinyl Ether	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 17:13	1
4-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1

Hazen and Sawyer
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July 18, 2014
Work Order: 1405265

Laboratory Report

Project Name		**BHS3 SE#9**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-ST2**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-08**						
Date/Time Collected		**05/29/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Dibromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Dibromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Dibromomethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Dibromomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
1,3-Dichlorobenzene	ug/L	0.07 U	EPA 8260b	0.8	0.07		06/12/14 17:13	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260	0.8	0.3		06/12/14 17:13	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:13	1
Dichlorodifluoromethane	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 17:13	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260	0.8	0.09		06/12/14 17:13	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/12/14 17:13	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
2,2-Dichloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:13	1
1,1-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Ethylbenzene	ug/L	0.08 U	EPA 8260	0.8	0.08		06/12/14 17:13	1
Ethylbenzene	ug/L	0.08 U	EPA 8260b	0.8	0.08		06/12/14 17:13	1
Hexachlorobutadiene	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:13	1
2-Hexanone	ug/L	2.1 U	EPA 8260	4.0	2.1		06/12/14 17:13	1
2-Hexanone	ug/L	2.1 U	EPA 8260b	4.0	2.1		06/12/14 17:13	1
Iodomethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Iodomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Isopropylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1

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Laboratory Report

Project Name		**BHS3 SE#9**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-ST2**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-08**						
Date/Time Collected		**05/29/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
4-Isopropyltoluene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Methyl-t-butyl ether	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 17:13	1
Methylene Chloride	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Methylene Chloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260b	4.0	2.6		06/12/14 17:13	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260	4.0	2.6		06/12/14 17:13	1
Naphthalene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
n-Propylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Styrene	ug/L	0.05 U	EPA 8260	0.8	0.05		06/12/14 17:13	1
Styrene	ug/L	0.05 U	EPA 8260b	0.8	0.05		06/12/14 17:13	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Toluene	ug/L	0.09 U	EPA 8260	0.8	0.09		06/12/14 17:13	1
Toluene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/12/14 17:13	1
1,2,3-Trichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2,4-Trichlorobenzene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:13	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Trichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Trichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 17:13	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:13	1
1,2,4-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
1,3,5-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Vinyl acetate	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:13	1
Vinyl chloride	ug/L	0.3 U	EPA 8260	1.6	0.3		06/12/14 17:13	1
Vinyl chloride	ug/L	0.3 U	EPA 8260b	1.6	0.3		06/12/14 17:13	1
Xylene-m,p	ug/L	0.2 U	EPA 8260	1.6	0.2		06/12/14 17:13	1
Xylene-m,p	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 17:13	1
Xylene-o	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1

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Laboratory Report

Project Name		**BHS3 SE#9**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-ST2**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-08**						
Date/Time Collected		**05/29/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Xylene-o	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Xylenes- Total	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Xylenes- Total	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Surrogate for EPA 8260b	*Dibromofluoromethane*	*101 %*	*Limits*		*65-135*			
Pesticide Analyses								
1,2-Dibromo-3-chloropropane	ug/L	0.0055 U	EPA 504.1	0.022	0.0055	05/30/14 11:37	05/30/14 20:03	1
1,2-Dibromoethane	ug/L	0.0055 U	EPA 504.1	0.022	0.0055	05/30/14 11:37	05/30/14 20:03	1
Surrogate for EPA 504.1	*2-Bromo-1-chloropropane*	*102 %*	*Limits*		*70-130*			
Inorganics								
Hydrogen Sulfide (Unionized)	mg/L	6.3	SM 4550SF	0.04	0.01	06/03/14 17:02	06/03/14 17:05	1
Ammonia as N	mg/L	0.40 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	15	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	50	EPA 410.4	25	10	06/09/14 12:07	06/09/14 17:00	1
Chloride	mg/L	33	EPA 300.0	2.0	0.50		06/14/14 00:26	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	0.15	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	82	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Sulfide	mg/L	9.7	SM 4500SF	0.40	0.10		06/03/14 16:28	1
Total Alkalinity	mg/L	310	SM 2320B	8.0	2.0		05/30/14 12:01	1
Total Kjeldahl Nitrogen	mg/L	1.3	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	4	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	2	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U,Q	SM 9223B	2.0	2.0	05/29/14 16:39	05/30/14 10:50	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	05/29/14 16:33	05/30/14 14:50	1
Sample Description		**BHS3-ST2-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-09**						
Date/Time Collected		**05/29/14 08:40**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Volatile Organic Compounds								

Hazen and Sawyer
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Laboratory Report

Project Name		**BHS3 SE#9**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-ST2-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-09**						
Date/Time Collected		**05/29/14 08:40**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Acetone	ug/L	2.0 U	EPA 8260	4.0	2.0		06/12/14 17:45	1
Acetone	ug/L	2.0 U	EPA 8260b	4.0	2.0		06/12/14 17:45	1
Acrylonitrile	ug/L	1.3 U	EPA 8260b	4.0	1.3		06/12/14 17:45	1
Acrylonitrile	ug/L	1.3 U	EPA 8260	4.0	1.3		06/12/14 17:45	1
Benzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Benzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Bromobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Bromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Bromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Bromoform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Bromoform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Bromomethane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 17:45	1
Bromomethane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:45	1
2-Butanone	ug/L	2.0 U	EPA 8260	4.0	2.0		06/12/14 17:45	1
2-Butanone	ug/L	2.0 U	EPA 8260b	4.0	2.0		06/12/14 17:45	1
n-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
sec-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
t-Butylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Carbon disulfide	ug/L	0.6 I	EPA 8260	0.8	0.2		06/12/14 17:45	1
Carbon disulfide	ug/L	0.6 I	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Chlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Chlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Chloroethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:45	1
Chloroethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 17:45	1
Chloroform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Chloroform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Chloromethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:45	1
Chloromethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 17:45	1
1,2-Dibromoethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,2-Dibromo-3-chloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:45	1
2-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
2-Chloroethylvinyl Ether	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 17:45	1
4-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Dibromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1

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Laboratory Report

Project Name		**BHS3 SE#9**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-ST2-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-09**						
Date/Time Collected		**05/29/14 08:40**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Dibromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Dibromomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Dibromomethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
1,3-Dichlorobenzene	ug/L	0.07 U	EPA 8260b	0.8	0.07		06/12/14 17:45	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260	0.8	0.3		06/12/14 17:45	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:45	1
Dichlorodifluoromethane	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 17:45	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260	0.8	0.09		06/12/14 17:45	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/12/14 17:45	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
2,2-Dichloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:45	1
1,1-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Ethylbenzene	ug/L	0.08 U	EPA 8260	0.8	0.08		06/12/14 17:45	1
Ethylbenzene	ug/L	0.08 U	EPA 8260b	0.8	0.08		06/12/14 17:45	1
Hexachlorobutadiene	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:45	1
2-Hexanone	ug/L	2.1 U	EPA 8260	4.0	2.1		06/12/14 17:45	1
2-Hexanone	ug/L	2.1 U	EPA 8260b	4.0	2.1		06/12/14 17:45	1
Iodomethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Iodomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Isopropylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
4-Isopropyltoluene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1

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July 18, 2014
Work Order: 1405265

Laboratory Report

Project Name		BHS3 SE#9						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-ST2-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-09**						
Date/Time Collected		**05/29/14 08:40**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Methyl-t-butyl ether	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 17:45	1
Methylene Chloride	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Methylene Chloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260	4.0	2.6		06/12/14 17:45	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260b	4.0	2.6		06/12/14 17:45	1
Naphthalene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
n-Propylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Styrene	ug/L	0.05 U	EPA 8260	0.8	0.05		06/12/14 17:45	1
Styrene	ug/L	0.05 U	EPA 8260b	0.8	0.05		06/12/14 17:45	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Toluene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/12/14 17:45	1
Toluene	ug/L	0.09 U	EPA 8260	0.8	0.09		06/12/14 17:45	1
1,2,3-Trichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,2,4-Trichlorobenzene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:45	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Trichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Trichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 17:45	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:45	1
1,2,4-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
1,3,5-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Vinyl acetate	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:45	1
Vinyl chloride	ug/L	0.3 U	EPA 8260	1.6	0.3		06/12/14 17:45	1
Vinyl chloride	ug/L	0.3 U	EPA 8260b	1.6	0.3		06/12/14 17:45	1
Xylene-m,p	ug/L	0.2 U	EPA 8260	1.6	0.2		06/12/14 17:45	1
Xylene-m,p	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 17:45	1
Xylene-o	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Xylene-o	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1

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July 18, 2014
Work Order: 1405265

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS3-ST2-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-09**						
Date/Time Collected		**05/29/14 08:40**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Xylenes- Total	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Xylenes- Total	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Surrogate for EPA 8260	*Dibromofluoromethane*	*103 %*	*Limits*		*65-135*			
Pesticide Analyses								
1,2-Dibromo-3-chloropropane	ug/L	0.0051 U	EPA 504.1	0.021	0.0051	06/04/14 09:24	06/04/14 20:37	1
1,2-Dibromoethane	ug/L	0.0051 U	EPA 504.1	0.021	0.0051	06/04/14 09:24	06/04/14 20:37	1
Surrogate for EPA 504.1	*2-Bromo-1-chloropropane*	*101 %*	*Limits*		*70-130*			
Inorganics								
Hydrogen Sulfide (Unionized)	mg/L	6.7	SM 4550SF	0.04	0.01	06/03/14 17:02	06/03/14 17:05	1
Ammonia as N	mg/L	0.46 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	17	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	16 I	EPA 410.4	25	10	06/11/14 17:07	06/23/14 17:44	1
Chloride	mg/L	34	EPA 300.0	2.0	0.50		06/13/14 08:31	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	0.14	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	99	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Sulfide	mg/L	10	SM 4500SF	0.40	0.10		06/03/14 16:28	1
Total Alkalinity	mg/L	260	SM 2320B	8.0	2.0		06/06/14 11:12	1
Total Kjeldahl Nitrogen	mg/L	1.1	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	4	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	4	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	05/29/14 16:39	05/30/14 10:50	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	05/29/14 16:33	05/30/14 14:50	1
Sample Description		**BHS3-ST2-FILTERED**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-10**						
Date/Time Collected		**05/29/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganics								
Sulfate	mg/L	84	EPA 300.0	0.60	0.20		05/30/14 08:39	1

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Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q.A. Manager

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July 18, 2014
Work Order: 1405265

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS3-ST2-FILTERED**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-10**						
Date/Time Collected		**05/29/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganic, Dissolved								
Ammonia as N	mg/L	0.41	EPA 350.1	0.040	0.009		06/25/14 17:46	1
Carbonaceous BOD	mg/L	10	SM 5210B	2	2	05/29/14 12:05	06/03/14 09:47	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Total Kjeldahl Nitrogen	mg/L	4.8	EPA 351.2	0.20	0.050	06/23/14 15:10	06/25/14 12:09	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Lab filtration for diss. analytes							05/29/14 12:05	
Sample Description		**BHS3-LY03**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-11**						
Date/Time Collected		**05/29/14 09:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganics								
Ammonia as N	mg/L	0.25 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Chemical Oxygen Demand	mg/L	18 I	EPA 410.4	25	10	06/11/14 17:07	06/23/14 17:44	1
Chloride	mg/L	35	EPA 300.0	2.0	0.50		06/14/14 00:37	10
Nitrate (as N)	mg/L	16	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	0.089	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	110	EPA 300.0	6.0	2.0		06/14/14 00:37	10
Total Kjeldahl Nitrogen	mg/L	2.0	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	16	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**BHS3-LY04**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-12**						
Date/Time Collected		**05/29/14 09:30**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganics								
Ammonia as N	mg/L	0.10 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Chemical Oxygen Demand	mg/L	18 I	EPA 410.4	25	10	06/11/14 17:07	06/23/14 17:44	1

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July 18, 2014
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Laboratory Report

Project Name		**BHS3 SE#9**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS3-LY04**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-12**						
Date/Time Collected		**05/29/14 09:30**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Chloride	mg/L	34	EPA 300.0	2.0	0.50		06/14/14 00:49	10
Nitrate (as N)	mg/L	4.8	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	0.010 U	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	94	EPA 300.0	6.0	2.0		06/14/14 00:49	10
Total Alkalinity	mg/L	210	SM 2320B	8.0	2.0		05/30/14 12:09	1
Total Kjeldahl Nitrogen	mg/L	1.3	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	4.8	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**PZ-A-6**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-16**						
Date/Time Collected		**05/28/14 09:22**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
Inorganics								
Ammonia as N	mg/L	0.12 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Sulfate	mg/L	86	EPA 300.0	6.0	2.0		06/14/14 01:00	10
Total Kjeldahl Nitrogen	mg/L	0.56	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/29/14 11:43	1
Sample Description		**PZ-A7-8**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-17**						
Date/Time Collected		**05/28/14 09:40**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
Inorganics								
Ammonia as N	mg/L	0.31 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.34	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Sulfate	mg/L	84	EPA 300.0	0.60	0.20		05/29/14 11:43	1
Total Kjeldahl Nitrogen	mg/L	0.89	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1

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July 18, 2014
Work Order: 1405265

Laboratory Report

Project Name		**BHS3 SE#9**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**PZ-A7-8**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-17**						
Date/Time Collected		**05/28/14 09:40**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
Nitrate+Nitrite (N)	mg/L	0.34	EPA 300.0	0.08	0.02		05/29/14 11:43	1
Sample Description		**PZ-B8-5**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-18**						
Date/Time Collected		**05/28/14 09:13**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
Inorganics								
Ammonia as N	mg/L	0.28 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Sulfate	mg/L	75	EPA 300.0	0.60	0.20		05/29/14 11:43	1
Total Kjeldahl Nitrogen	mg/L	1.0	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/29/14 11:43	1
Sample Description		**PZ-B8-7**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-19**						
Date/Time Collected		**05/28/14 09:27**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
Inorganics								
Ammonia as N	mg/L	0.15 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Sulfate	mg/L	4.0	EPA 300.0	0.60	0.20		05/29/14 11:43	1
Total Kjeldahl Nitrogen	mg/L	0.75	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/29/14 11:43	1
Sample Description		**PZ-C10-6**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-20**						
Date/Time Collected		**05/28/14 08:58**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						

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 18, 2014
Work Order: 1405265

Laboratory Report

Project Name		**BHS3 SE#9**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**PZ-C10-6**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-20**						
Date/Time Collected		**05/28/14 08:58**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
Inorganics								
Ammonia as N	mg/L	0.19 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Sulfate	mg/L	23	EPA 300.0	0.60	0.20		05/29/14 11:43	1
Total Kjeldahl Nitrogen	mg/L	3.7	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/29/14 11:43	1
Sample Description		**EB**						
Matrix		**Reagent Water**						
SAL Sample Number		**1405265-21**						
Date/Time Collected		**05/29/14 09:55**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Inorganics								
Hydrogen Sulfide (Unionized)	mg/L	0.01 U	SM 4550SF	0.04	0.01	06/03/14 17:02	06/03/14 17:05	1
Ammonia as N	mg/L	0.030 I,Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	2 U	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	10 U	EPA 410.4	25	10	06/11/14 17:07	06/23/14 17:44	1
Chloride	mg/L	0.050 U	EPA 300.0	0.20	0.050		05/29/14 11:43	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/29/14 11:43	1
Phosphorous - Total as P	mg/L	0.010 U	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	0.20 U	EPA 300.0	0.60	0.20		05/29/14 11:43	1
Sulfide	mg/L	0.10 U	SM 4500SF	0.40	0.10		06/03/14 16:28	1
Total Alkalinity	mg/L	2.0 U	SM 2320B	8.0	2.0		05/30/14 12:12	1
Total Kjeldahl Nitrogen	mg/L	0.05 U	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	1 U	SM 2540D	1	1	05/29/14 14:13	06/04/14 09:54	1
Volatile Suspended Solids	mg/L	1 U	EPA 160.4	1	1	05/29/14 14:13	06/04/14 09:57	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/29/14 11:43	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	05/29/14 16:39	05/30/14 10:50	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	05/29/14 16:33	05/30/14 14:50	1

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July 18, 2014
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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 BF41217 - VOC - Prep										
Blank (BF41217-BLK1)					Prepared & Analyzed: 06/12/14 13:35					
Acetone	2.0 U	4.0	2.0	ug/L						
Acetone	2.0 U	4.0	2.0	ug/L						
Acrylonitrile	1.3 U	4.0	1.3	ug/L						
Acrylonitrile	1.3 U	4.0	1.3	ug/L						
Benzene	0.1 U	0.8	0.1	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						
Bromochloromethane	0.1 U	0.8	0.1	ug/L						
Bromodichloromethane	0.2 U	0.8	0.2	ug/L						
Bromodichloromethane	0.2 U	0.8	0.2	ug/L						
Bromoform	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						
Bromomethane	0.4 U	0.8	0.4	ug/L						
2-Butanone	2.0 U	4.0	2.0	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 disulfide	0.2 U	0.8	0.2	ug/L						
Carbon tetrachloride	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						
Chlorobenzene	0.1 U	0.8	0.1	ug/L						
Chloroethane	0.4 U	1.6	0.4	ug/L						
Chloroethane	0.4 U	1.6	0.4	ug/L						
Chloroform	0.2 U	0.8	0.2	ug/L						
Chloroform	0.2 U	0.8	0.2	ug/L						
Chloromethane	0.4 U	1.6	0.4	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						
Dibromochloromethane	0.1 U	0.8	0.1	ug/L						
Dibromomethane	0.2 U	0.8	0.2	ug/L						
Dibromomethane	0.2 U	0.8	0.2	ug/L						
1,2-Dichlorobenzene	0.1 U	0.8	0.1	ug/L						
1,2-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						

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Blank (BF41217-BLK1)					Prepared & Analyzed: 06/12/14 13:35					
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						
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						
1,1-Dichloroethane	0.2 U	0.8	0.2	ug/L						
1,2-Dichloroethane	0.1 U	0.8	0.1	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						
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						
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						
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						
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						
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						
trans-1,3-Dichloropropene	0.1 U	0.8	0.1	ug/L						
Ethylbenzene	0.08 U	0.8	0.08	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						
2-Hexanone	2.1 U	4.0	2.1	ug/L						
Iodomethane	0.2 U	0.8	0.2	ug/L						
Iodomethane	0.2 U	0.8	0.2	ug/L						
Isopropylbenzene	0.1 U	0.8	0.1	ug/L						
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						
Methylene Chloride	0.2 U	0.8	0.2	ug/L						
4-Methyl-2-pentanone	2.6 U	4.0	2.6	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						
Styrene	0.05 U	0.8	0.05	ug/L						
1,1,1,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L						
1,1,1,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L						
1,1,2,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L						
1,1,2,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L						
Tetrachloroethene	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 BF41217 - VOC - Prep										
Blank (BF41217-BLK1)					Prepared & Analyzed: 06/12/14 13:35					
Tetrachloroethene	0.1 U	0.8	0.1	ug/L						
Toluene	0.09 U	0.8	0.09	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						
1,1,1-Trichloroethane	0.2 U	0.8	0.2	ug/L						
1,1,2-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						
Trichloroethene	0.2 U	0.8	0.2	ug/L						
Trichlorofluoromethane	0.2 U	0.8	0.2	ug/L						
Trichlorofluoromethane	0.2 U	0.8	0.2	ug/L						
1,2,3-Trichloropropane	0.4 U	0.8	0.4	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 acetate	0.4 U	1.6	0.4	ug/L						
Vinyl chloride	0.3 U	1.6	0.3	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-m,p	0.2 U	1.6	0.2	ug/L						
Xylene-o	0.2 U	0.8	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						
Xylenes- Total	0.1 U	0.8	0.1	ug/L						
Surrogate: 4-Bromofluorobenzene	*20.8*			*ug/L*	*20*		*104*	*65-135*		
Surrogate: 4-Bromofluorobenzene	*20.8*			*ug/L*	*20*		*104*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Toluene-d8	*20.3*			*ug/L*	*20*		*101*	*65-135*		
Surrogate: Toluene-d8	*20.3*			*ug/L*	*20*		*101*	*65-135*		
Surrogate: Dibromofluoromethane	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Dibromofluoromethane	*20.4*			*ug/L*	*20*		*102*	*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 BF41217 - VOC - Prep										
LCS (BF41217-BS1)					Prepared & Analyzed: 06/12/14 14:07					
Acetone	96.8	4.0	2.0	ug/L	100		97	70-130		
Acetone	96.8	4.0	2.0	ug/L	100		97	70-130		
Acrylonitrile	99.5	4.0	1.3	ug/L	100		100	70-130		
Acrylonitrile	99.5	4.0	1.3	ug/L	100		100	70-130		
Benzene	20.4	0.8	0.1	ug/L	20		102	37-151		
Benzene	20.4	0.8	0.1	ug/L	20		102	70-130		
Bromobenzene	20.1	0.8	0.2	ug/L	20		101	70-130		
Bromochloromethane	21.1	0.8	0.1	ug/L	20		106	70-130		
Bromochloromethane	21.1	0.8	0.1	ug/L	20		106	70-130		
Bromodichloromethane	20.7	0.8	0.2	ug/L	20		104	70-130		
Bromodichloromethane	20.7	0.8	0.2	ug/L	20		104	35-155		
Bromoform	19.6	0.8	0.2	ug/L	20		98	70-130		
Bromoform	19.6	0.8	0.2	ug/L	20		98	45-169		
Bromomethane	34.1	0.8	0.4	ug/L	40		85	70-130		
Bromomethane	34.1	0.8	0.4	ug/L	40		85	0-242		
2-Butanone	99.3	4.0	2.0	ug/L	100		99	70-130		
2-Butanone	99.3	4.0	2.0	ug/L	100		99	70-130		
n-Butylbenzene	21.2	0.8	0.2	ug/L	20		106	70-130		
sec-Butylbenzene	20.3	0.8	0.2	ug/L	20		102	70-130		
t-Butylbenzene	20.2	0.8	0.1	ug/L	20		101	70-130		
Carbon disulfide	20.6	0.8	0.2	ug/L	20		103	70-130		
Carbon disulfide	20.6	0.8	0.2	ug/L	20		103	70-130		
Carbon tetrachloride	20.9	0.8	0.2	ug/L	20		105	70-130		
Carbon tetrachloride	20.9	0.8	0.2	ug/L	20		105	70-140		
Chlorobenzene	20.8	0.8	0.1	ug/L	20		104	70-130		
Chlorobenzene	20.8	0.8	0.1	ug/L	20		104	37-160		
Chloroethane	46.5	1.6	0.4	ug/L	40		116	70-130		
Chloroethane	46.5	1.6	0.4	ug/L	40		116	14-230		
Chloroform	20.8	0.8	0.2	ug/L	20		104	70-130		
Chloroform	20.8	0.8	0.2	ug/L	20		104	51-138		
Chloromethane	41.8	1.6	0.4	ug/L	40		104	70-130		
Chloromethane	41.8	1.6	0.4	ug/L	40		104	1-273		
2-Chlorotoluene	20.7	0.8	0.1	ug/L	20		104	70-130		
4-Chlorotoluene	21.1	0.8	0.1	ug/L	20		105	70-130		
Dibromochloromethane	21.8	0.8	0.1	ug/L	20		109	70-130		
Dibromochloromethane	21.8	0.8	0.1	ug/L	20		109	53-149		
Dibromomethane	20.5	0.8	0.2	ug/L	20		102	70-130		
Dibromomethane	20.5	0.8	0.2	ug/L	20		102	70-130		
1,2-Dichlorobenzene	20.3	0.8	0.1	ug/L	20		101	70-130		
1,2-Dichlorobenzene	20.3	0.8	0.1	ug/L	20		101	18-190		
1,3-Dichlorobenzene	20.1	0.8	0.07	ug/L	20		101	70-130		
1,4-Dichlorobenzene	20.4	0.8	0.2	ug/L	20		102	70-130		
1,4-Dichlorobenzene	20.4	0.8	0.2	ug/L	20		102	18-190		
trans-1,4-Dichloro-2-butene	19.2	0.8	0.3	ug/L	20		96	70-130		
trans-1,4-Dichloro-2-butene	19.2	0.8	0.3	ug/L	20		96	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 BF41217 - VOC - Prep										
LCS (BF41217-BS1)					Prepared & Analyzed: 06/12/14 14:07					
Dichlorodifluoromethane	47.6	1.6	0.5	ug/L	40		119	70-130		
1,1-Dichloroethane	20.7	0.8	0.2	ug/L	20		103	70-130		
1,1-Dichloroethane	20.7	0.8	0.2	ug/L	20		103	59-155		
1,2-Dichloroethane	21.0	0.8	0.1	ug/L	20		105	70-130		
1,2-Dichloroethane	21.0	0.8	0.1	ug/L	20		105	49-155		
1,1-Dichloroethene	21.1	0.8	0.2	ug/L	20		106	70-130		
1,1-Dichloroethene	21.1	0.8	0.2	ug/L	20		106	1-234		
cis-1,2-Dichloroethene	20.9	0.8	0.09	ug/L	20		105	70-130		
cis-1,2-Dichloroethene	20.9	0.8	0.09	ug/L	20		105	70-130		
trans-1,2-Dichloroethene	20.7	0.8	0.2	ug/L	20		104	70-130		
trans-1,2-Dichloroethene	20.7	0.8	0.2	ug/L	20		104	54-156		
1,2-Dichloropropane	20.9	0.8	0.2	ug/L	20		104	1-210		
1,2-Dichloropropane	20.9	0.8	0.2	ug/L	20		104	70-130		
2,2-Dichloropropane	21.9	0.8	0.3	ug/L	20		109	70-130		
1,1-Dichloropropene	21.3	0.8	0.2	ug/L	20		107	70-130		
cis-1,3-Dichloropropene	21.3	0.8	0.2	ug/L	20		107	70-130		
cis-1,3-Dichloropropene	21.3	0.8	0.2	ug/L	20		107	1-227		
trans-1,3-Dichloropropene	22.0	0.8	0.1	ug/L	20		110	17-183		
trans-1,3-Dichloropropene	22.0	0.8	0.1	ug/L	20		110	70-130		
Ethylbenzene	21.6	0.8	0.08	ug/L	20		108	70-130		
Ethylbenzene	21.6	0.8	0.08	ug/L	20		108	37-162		
Hexachlorobutadiene	19.6	0.8	0.4	ug/L	20		98	70-130		
2-Hexanone	102	4.0	2.1	ug/L	100		102	70-130		
2-Hexanone	102	4.0	2.1	ug/L	100		102	70-130		
Iodomethane	16.9	0.8	0.2	ug/L	20		84	70-130		
Iodomethane	16.9	0.8	0.2	ug/L	20		84	70-130		
Isopropylbenzene	21.5	0.8	0.1	ug/L	20		107	70-130		
4-Isopropyltoluene	20.9	0.8	0.2	ug/L	20		105	70-130		
Methyl-t-butyl ether	20.8	1.6	0.2	ug/L	20		104	70-130		
Methylene Chloride	20.7	0.8	0.2	ug/L	20		104	70-130		
Methylene Chloride	20.7	0.8	0.2	ug/L	20		104	1-221		
4-Methyl-2-pentanone	97.4	4.0	2.6	ug/L	100		97	70-130		
4-Methyl-2-pentanone	97.4	4.0	2.6	ug/L	100		97	70-130		
Naphthalene	19.6	0.8	0.2	ug/L	20		98	70-130		
n-Propylbenzene	21.0	0.8	0.1	ug/L	20		105	70-130		
Styrene	21.9	0.8	0.05	ug/L	20		110	70-130		
Styrene	21.9	0.8	0.05	ug/L	20		110	70-130		
1,1,1,2-Tetrachloroethane	21.0	0.8	0.2	ug/L	20		105	70-130		
1,1,1,2-Tetrachloroethane	21.0	0.8	0.2	ug/L	20		105	70-130		
1,1,2,2-Tetrachloroethane	19.6	0.8	0.2	ug/L	20		98	70-130		
1,1,2,2-Tetrachloroethane	19.6	0.8	0.2	ug/L	20		98	46-157		
Tetrachloroethene	21.0	0.8	0.1	ug/L	20		105	70-130		
Tetrachloroethene	21.0	0.8	0.1	ug/L	20		105	64-148		
Toluene	21.3	0.8	0.09	ug/L	20		107	70-130		
Toluene	21.3	0.8	0.09	ug/L	20		107	47-150		

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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 BF41217 - VOC - Prep										
LCS (BF41217-BS1)					Prepared & Analyzed: 06/12/14 14:07					
1,2,3-Trichlorobenzene	19.2	0.8	0.2	ug/L	20		96	70-130		
1,2,4-Trichlorobenzene	18.8	0.8	0.3	ug/L	20		94	70-130		
1,1,1-Trichloroethane	21.1	0.8	0.2	ug/L	20		106	70-130		
1,1,1-Trichloroethane	21.1	0.8	0.2	ug/L	20		106	52-162		
1,1,2-Trichloroethane	21.0	0.8	0.2	ug/L	20		105	70-130		
1,1,2-Trichloroethane	21.0	0.8	0.2	ug/L	20		105	52-150		
Trichloroethene	20.6	0.8	0.2	ug/L	20		103	70-130		
Trichloroethene	20.6	0.8	0.2	ug/L	20		103	71-157		
Trichlorofluoromethane	21.7	0.8	0.2	ug/L	20		109	70-130		
Trichlorofluoromethane	21.7	0.8	0.2	ug/L	20		109	17-181		
1,2,3-Trichloropropane	19.7	0.8	0.4	ug/L	20		98	70-130		
1,2,3-Trichloropropane	19.7	0.8	0.4	ug/L	20		98	70-130		
1,2,4-Trimethylbenzene	20.9	0.8	0.1	ug/L	20		105	70-130		
1,3,5-Trimethylbenzene	21.1	0.8	0.1	ug/L	20		105	70-130		
Vinyl acetate	43.6	1.6	0.4	ug/L	40		109	70-130		
Vinyl chloride	40.6	1.6	0.3	ug/L	40		102	1-251		
Vinyl chloride	40.6	1.6	0.3	ug/L	40		102	70-130		
Xylene-m,p	43.1	1.6	0.2	ug/L	40		108	70-130		
Xylene-m,p	43.1	1.6	0.2	ug/L	40		108	70-130		
Xylene-o	21.3	0.8	0.2	ug/L	20		106	70-130		
Xylene-o	21.3	0.8	0.2	ug/L	20		106	70-130		
Surrogate: 4-Bromofluorobenzene	*19.8*			*ug/L*	*20*		*99*	*65-135*		
Surrogate: 4-Bromofluorobenzene	*19.8*			*ug/L*	*20*		*99*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.1*			*ug/L*	*20*		*96*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.1*			*ug/L*	*20*		*96*	*65-135*		
Surrogate: Toluene-d8	*20.1*			*ug/L*	*20*		*101*	*65-135*		
Surrogate: Toluene-d8	*20.1*			*ug/L*	*20*		*101*	*65-135*		
Surrogate: Dibromofluoromethane	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Dibromofluoromethane	*20.4*			*ug/L*	*20*		*102*	*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 BF41217 - VOC - Prep										
Duplicate (BF41217-DUP1)		**Source: 1405266-16**			Prepared & Analyzed: 06/12/14 19:54					
Acetone	59.3 J3	4.0	2.0	ug/L		104			55	20
Acetone	59.3 J3	4.0	2.0	ug/L		104			55	20
Acrylonitrile	1.3 U	4.0	1.3	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
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
Bromochloromethane	0.1 U	0.8	0.1	ug/L		ND				20
Bromodichloromethane	0.2 U	0.8	0.2	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
Bromoform	0.2 U	0.8	0.2	ug/L		ND				20
Bromomethane	0.4 U	0.8	0.4	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		2.18				20
2-Butanone	2.0 U	4.0	2.0	ug/L		2.18				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	0.526 I	0.8	0.2	ug/L		0.470			11	20
Carbon disulfide	0.526 I	0.8	0.2	ug/L		0.470			11	20
Carbon tetrachloride	0.2 U	0.8	0.2	ug/L		ND				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
Chlorobenzene	0.1 U	0.8	0.1	ug/L		ND				20
Chloroethane	0.4 U	1.6	0.4	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
Chloroform	0.2 U	0.8	0.2	ug/L		ND				20
Chloromethane	0.4 U	1.6	0.4	ug/L		ND				20
Chloromethane	0.4 U	1.6	0.4	ug/L		ND				20
1,2-Dibromoethane	0.2 U	0.8	0.2	ug/L		ND				200
2-Chlorotoluene	0.1 U	0.8	0.1	ug/L		ND				20
1,2-Dibromo-3-chloropropane	0.3 U	0.8	0.3	ug/L		ND				200
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
Dibromochloromethane	0.1 U	0.8	0.1	ug/L		ND				20
Dibromomethane	0.2 U	0.8	0.2	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
1,2-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

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Duplicate (BF41217-DUP1)		**Source: 1405266-16**			Prepared & Analyzed: 06/12/14 19:54					
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
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
1,1-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
1,2-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
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
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
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
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
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
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
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
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
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	0.267 I	0.8	0.2	ug/L		0.261			2	20
Methyl-t-butyl ether	0.2 U	1.6	0.2	ug/L		ND				20
Methylene Chloride	0.603 I	0.8	0.2	ug/L		ND				20
Methylene Chloride	0.603 I	0.8	0.2	ug/L		ND				20
4-Methyl-2-pentanone	2.6 U	4.0	2.6	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
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
1,1,1,2-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
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

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Duplicate (BF41217-DUP1)		**Source: 1405266-16**			Prepared & Analyzed: 06/12/14 19:54					
Tetrachloroethene	0.1 U	0.8	0.1	ug/L		ND				20
Toluene	0.557 I	0.8	0.09	ug/L		0.468			17	20
Toluene	0.557 I	0.8	0.09	ug/L		0.468			17	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
1,1,1-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
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
Trichloroethene	0.2 U	0.8	0.2	ug/L		ND				20
Trichlorofluoromethane	0.2 U	0.8	0.2	ug/L		ND				20
Trichlorofluoromethane	0.2 U	0.8	0.2	ug/L		ND				20
1,2,3-Trichloropropane	0.4 U	0.8	0.4	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 acetate	0.4 U	1.6	0.4	ug/L		ND				20
Vinyl chloride	0.3 U	1.6	0.3	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-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
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
Xylenes- Total	0.1 U	0.8	0.1	ug/L		ND				20
Surrogate: 4-Bromofluorobenzene	*20.5*			*ug/L*	*20*		*103*	*65-135*		
Surrogate: 4-Bromofluorobenzene	*20.5*			*ug/L*	*20*		*103*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.9*			*ug/L*	*20*		*99*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.9*			*ug/L*	*20*		*99*	*65-135*		
Surrogate: Toluene-d8	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Toluene-d8	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Dibromofluoromethane	*20.3*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Dibromofluoromethane	*20.3*			*ug/L*	*20*		*102*	*65-135*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Matrix Spike (BF41217-MS1)		**Source: 1405265-01**			Prepared & Analyzed: 06/12/14 15:36					
Acetone	187	4.0	2.0	ug/L	100	56.9	130	65-135		
Acetone	187	4.0	2.0	ug/L	100	56.9	130	65-135		
Acrylonitrile	96.8	4.0	1.3	ug/L	100	ND	97	65-135		
Acrylonitrile	96.8	4.0	1.3	ug/L	100	ND	97	60-140		
Benzene	20.1	0.8	0.1	ug/L	20	ND	100	37-151		
Benzene	20.1	0.8	0.1	ug/L	20	ND	100	65-135		
Bromobenzene	21.1	0.8	0.2	ug/L	20	ND	105	65-135		
Bromochloromethane	21.3	0.8	0.1	ug/L	20	ND	106	65-135		
Bromochloromethane	21.3	0.8	0.1	ug/L	20	ND	106	65-135		
Bromodichloromethane	20.3	0.8	0.2	ug/L	20	ND	102	35-155		
Bromodichloromethane	20.3	0.8	0.2	ug/L	20	ND	102	65-135		
Bromoform	19.5	0.8	0.2	ug/L	20	ND	97	45-169		
Bromoform	19.5	0.8	0.2	ug/L	20	ND	97	65-135		
Bromomethane	25.0	0.8	0.4	ug/L	40	ND	62	1-242		
Bromomethane	26.1	0.8	0.4	ug/L	40	ND	65	65-135		
2-Butanone	113	4.0	2.0	ug/L	100	5.20	108	65-135		
2-Butanone	113	4.0	2.0	ug/L	100	5.20	108	65-135		
n-Butylbenzene	20.8	0.8	0.2	ug/L	20	ND	104	65-135		
sec-Butylbenzene	20.3	0.8	0.2	ug/L	20	ND	101	65-135		
t-Butylbenzene	19.7	0.8	0.1	ug/L	20	ND	98	65-135		
Carbon disulfide	20.5	0.8	0.2	ug/L	20	0.588	100	65-135		
Carbon disulfide	20.5	0.8	0.2	ug/L	20	0.588	100	65-135		
Carbon tetrachloride	20.8	0.8	0.2	ug/L	20	ND	104	70-140		
Carbon tetrachloride	20.8	0.8	0.2	ug/L	20	ND	104	65-135		
Chlorobenzene	21.3	0.8	0.1	ug/L	20	ND	107	37-160		
Chlorobenzene	21.3	0.8	0.1	ug/L	20	ND	107	65-135		
Chloroethane	41.0	1.6	0.4	ug/L	40	ND	102	14-230		
Chloroethane	41.0	1.6	0.4	ug/L	40	ND	102	65-135		
Chloroform	21.0	0.8	0.2	ug/L	20	ND	105	51-138		
Chloroform	21.0	0.8	0.2	ug/L	20	ND	105	65-135		
Chloromethane	36.4	1.6	0.4	ug/L	40	ND	91	0-273		
Chloromethane	36.4	1.6	0.4	ug/L	40	ND	91	65-135		
2-Chlorotoluene	21.2	0.8	0.1	ug/L	20	ND	106	65-135		
4-Chlorotoluene	21.6	0.8	0.1	ug/L	20	ND	108	65-135		
Dibromochloromethane	21.2	0.8	0.1	ug/L	20	ND	106	53-149		
Dibromochloromethane	21.2	0.8	0.1	ug/L	20	ND	106	65-135		
Dibromomethane	20.2	0.8	0.2	ug/L	20	ND	101	65-135		
Dibromomethane	20.2	0.8	0.2	ug/L	20	ND	101	65-135		
1,2-Dichlorobenzene	20.6	0.8	0.1	ug/L	20	ND	103	65-135		
1,2-Dichlorobenzene	20.6	0.8	0.1	ug/L	20	ND	103	18-190		
1,3-Dichlorobenzene	20.9	0.8	0.07	ug/L	20	ND	104	65-135		
1,4-Dichlorobenzene	21.0	0.8	0.2	ug/L	20	ND	105	65-135		
1,4-Dichlorobenzene	21.0	0.8	0.2	ug/L	20	ND	105	18-190		
trans-1,4-Dichloro-2-butene	18.4	0.8	0.3	ug/L	20	ND	92	65-135		
trans-1,4-Dichloro-2-butene	18.4	0.8	0.3	ug/L	20	ND	92	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 BF41217 - VOC - Prep										
Matrix Spike (BF41217-MS1)		**Source: 1405265-01**			Prepared & Analyzed: 06/12/14 15:36					
Dichlorodifluoromethane	36.1	1.6	0.5	ug/L	40	ND	90	65-135		
1,1-Dichloroethane	20.3	0.8	0.2	ug/L	20	ND	102	65-135		
1,1-Dichloroethane	20.3	0.8	0.2	ug/L	20	ND	102	59-155		
1,2-Dichloroethane	20.9	0.8	0.1	ug/L	20	ND	104	65-135		
1,2-Dichloroethane	20.9	0.8	0.1	ug/L	20	ND	104	49-155		
1,1-Dichloroethene	20.0	0.8	0.2	ug/L	20	ND	100	65-135		
1,1-Dichloroethene	20.0	0.8	0.2	ug/L	20	ND	100	1-234		
cis-1,2-Dichloroethene	21.1	0.8	0.09	ug/L	20	ND	105	65-135		
cis-1,2-Dichloroethene	21.1	0.8	0.09	ug/L	20	ND	105	65-135		
trans-1,2-Dichloroethene	20.5	0.8	0.2	ug/L	20	ND	102	65-135		
trans-1,2-Dichloroethene	20.5	0.8	0.2	ug/L	20	ND	102	54-156		
1,2-Dichloropropane	20.8	0.8	0.2	ug/L	20	ND	104	0-210		
1,2-Dichloropropane	20.8	0.8	0.2	ug/L	20	ND	104	65-135		
2,2-Dichloropropane	22.9	0.8	0.3	ug/L	20	ND	114	65-135		
1,1-Dichloropropene	21.3	0.8	0.2	ug/L	20	ND	107	65-135		
cis-1,3-Dichloropropene	20.0	0.8	0.2	ug/L	20	ND	100	1-227		
cis-1,3-Dichloropropene	20.0	0.8	0.2	ug/L	20	ND	100	65-135		
trans-1,3-Dichloropropene	21.4	0.8	0.1	ug/L	20	ND	107	65-135		
trans-1,3-Dichloropropene	21.4	0.8	0.1	ug/L	20	ND	107	17-183		
Ethylbenzene	21.0	0.8	0.08	ug/L	20	ND	105	37-162		
Ethylbenzene	21.0	0.8	0.08	ug/L	20	ND	105	65-135		
Hexachlorobutadiene	22.4	0.8	0.4	ug/L	20	ND	112	65-135		
2-Hexanone	109	4.0	2.1	ug/L	100	ND	109	65-135		
2-Hexanone	109	4.0	2.1	ug/L	100	ND	109	65-135		
Iodomethane	30.5 J2	0.8	0.2	ug/L	20	ND	152	65-135		
Iodomethane	30.5 J2	0.8	0.2	ug/L	20	ND	152	65-135		
Isopropylbenzene	20.9	0.8	0.1	ug/L	20	ND	104	65-135		
4-Isopropyltoluene	21.1	0.8	0.2	ug/L	20	ND	105	65-135		
Methyl-t-butyl ether	19.8	1.6	0.2	ug/L	20	ND	99	65-135		
Methylene Chloride	21.4	0.8	0.2	ug/L	20	0.570	104	1-221		
Methylene Chloride	21.4	0.8	0.2	ug/L	20	0.570	104	65-135		
4-Methyl-2-pentanone	101	4.0	2.6	ug/L	100	ND	101	65-135		
4-Methyl-2-pentanone	101	4.0	2.6	ug/L	100	ND	101	65-135		
Naphthalene	19.4	0.8	0.2	ug/L	20	ND	97	65-135		
n-Propylbenzene	20.7	0.8	0.1	ug/L	20	ND	104	65-135		
Styrene	21.6	0.8	0.05	ug/L	20	ND	108	65-135		
Styrene	21.6	0.8	0.05	ug/L	20	ND	108	65-135		
1,1,1,2-Tetrachloroethane	20.5	0.8	0.2	ug/L	20	ND	102	65-135		
1,1,1,2-Tetrachloroethane	20.5	0.8	0.2	ug/L	20	ND	102	65-135		
1,1,2,2-Tetrachloroethane	19.1	0.8	0.2	ug/L	20	ND	95	65-135		
1,1,2,2-Tetrachloroethane	19.1	0.8	0.2	ug/L	20	ND	95	46-157		
Tetrachloroethene	21.0	0.8	0.1	ug/L	20	ND	105	64-148		
Tetrachloroethene	21.0	0.8	0.1	ug/L	20	ND	105	65-135		
Toluene	26.0	0.8	0.09	ug/L	20	5.26	104	47-150		
Toluene	26.0	0.8	0.09	ug/L	20	5.26	104	65-135		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Matrix Spike (BF41217-MS1)		**Source: 1405265-01**			Prepared & Analyzed: 06/12/14 15:36					
1,2,3-Trichlorobenzene	19.3	0.8	0.2	ug/L	20	ND	97	65-135		
1,2,4-Trichlorobenzene	19.6	0.8	0.3	ug/L	20	ND	98	65-135		
1,1,1-Trichloroethane	21.1	0.8	0.2	ug/L	20	ND	106	65-135		
1,1,1-Trichloroethane	21.1	0.8	0.2	ug/L	20	ND	106	52-162		
1,1,2-Trichloroethane	20.2	0.8	0.2	ug/L	20	ND	101	65-135		
1,1,2-Trichloroethane	20.2	0.8	0.2	ug/L	20	ND	101	52-150		
Trichloroethene	20.7	0.8	0.2	ug/L	20	ND	104	71-157		
Trichloroethene	20.7	0.8	0.2	ug/L	20	ND	104	65-135		
Trichlorofluoromethane	21.1	0.8	0.2	ug/L	20	ND	105	17-181		
Trichlorofluoromethane	21.1	0.8	0.2	ug/L	20	ND	105	65-135		
1,2,3-Trichloropropane	19.5	0.8	0.4	ug/L	20	ND	98	65-135		
1,2,3-Trichloropropane	19.5	0.8	0.4	ug/L	20	ND	98	65-135		
1,2,4-Trimethylbenzene	20.4	0.8	0.1	ug/L	20	ND	102	65-135		
1,3,5-Trimethylbenzene	20.7	0.8	0.1	ug/L	20	ND	104	65-135		
Vinyl acetate	42.0	1.6	0.4	ug/L	40	ND	105	65-135		
Vinyl chloride	40.8	1.6	0.3	ug/L	40	ND	102	1-251		
Vinyl chloride	40.8	1.6	0.3	ug/L	40	ND	102	65-135		
Xylene-m,p	42.2	1.6	0.2	ug/L	40	ND	106	60-140		
Xylene-m,p	42.2	1.6	0.2	ug/L	40	ND	106	65-135		
Xylene-o	20.9	0.8	0.2	ug/L	20	ND	104	60-140		
Xylene-o	20.9	0.8	0.2	ug/L	20	ND	104	65-135		
Surrogate: 4-Bromofluorobenzene	*19.5*			*ug/L*	*20*		*97*	*65-135*		
Surrogate: 4-Bromofluorobenzene	*19.5*			*ug/L*	*20*		*97*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.9*			*ug/L*	*20*		*100*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.9*			*ug/L*	*20*		*100*	*65-135*		
Surrogate: Toluene-d8	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Toluene-d8	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Dibromofluoromethane	*20.0*			*ug/L*	*20*		*100*	*65-135*		
Surrogate: Dibromofluoromethane	*20.0*			*ug/L*	*20*		*100*	*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 BE43011 - EPA 504 Micro extraction										
Blank (BE43011-BLK1)					Prepared & Analyzed: 05/30/14 17:52					
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	*0.103*			*ug/L*	*0.10*		*103*	*70-130*		
LCS (BE43011-BS1)					Prepared & Analyzed: 05/30/14 18:14					
1,2-Dibromo-3-chloropropane	0.112	0.020	0.0050	ug/L	0.10		112	70-130		
1,2-Dibromoethane	0.106	0.020	0.0050	ug/L	0.10		106	70-130		
Surrogate: 2-Bromo-1-chloropropane	*0.0958*			*ug/L*	*0.10*		*96*	*70-130*		
LCS Dup (BE43011-BSD1)					Prepared & Analyzed: 05/30/14 18:35					
1,2-Dibromo-3-chloropropane	0.108	0.020	0.0050	ug/L	0.10		108	70-130	4	20
1,2-Dibromoethane	0.0972	0.020	0.0050	ug/L	0.10		97	70-130	9	20
Surrogate: 2-Bromo-1-chloropropane	*0.0992*			*ug/L*	*0.10*		*99*	*70-130*		
Matrix Spike (BE43011-MS1)		**Source: 1405536-04**			Prepared & Analyzed: 05/30/14 18:57					
1,2-Dibromoethane	0.0986	0.022	0.0056	ug/L	0.11	ND	88	65-135		
1,2-Dibromo-3-chloropropane	0.128	0.022	0.0056	ug/L	0.11	ND	115	65-135		
Surrogate: 2-Bromo-1-chloropropane	*0.110*			*ug/L*	*0.11*		*98*	*70-130*		
Matrix Spike Dup (BE43011-MSD1)		**Source: 1405536-04**			Prepared & Analyzed: 05/30/14 19:19					
1,2-Dibromo-3-chloropropane	0.124	0.021	0.0054	ug/L	0.11	ND	116	65-135	3	20
1,2-Dibromoethane	0.0908	0.021	0.0054	ug/L	0.11	ND	85	65-135	8	20
Surrogate: 2-Bromo-1-chloropropane	*0.106*			*ug/L*	*0.11*		*99*	*70-130*		
Batch BF40406 - EPA 504 Micro extraction										
Blank (BF40406-BLK1)					Prepared & Analyzed: 06/04/14 18:48					
1,2-Dibromo-3-chloropropane	0.0050 U	0.020	0.0050	ug/L						
1,2-Dibromoethane	0.0050 U	0.020	0.0050	ug/L						
Surrogate: 2-Bromo-1-chloropropane	*0.105*			*ug/L*	*0.10*		*105*	*70-130*		

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Pesticide Analyses - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF40406 - EPA 504 Micro extraction										
LCS (BF40406-BS1)					Prepared & Analyzed: 06/04/14 19:10					
1,2-Dibromo-3-chloropropane	0.107	0.020	0.0050	ug/L	0.10		107	70-130		
1,2-Dibromoethane	0.109	0.020	0.0050	ug/L	0.10		109	70-130		
Surrogate: 2-Bromo-1-chloropropane	*0.104*			*ug/L*	*0.10*		*104*	*70-130*		
LCS Dup (BF40406-BSD1)					Prepared & Analyzed: 06/04/14 19:32					
1,2-Dibromo-3-chloropropane	0.110	0.020	0.0050	ug/L	0.10		110	70-130	3	20
1,2-Dibromoethane	0.103	0.020	0.0050	ug/L	0.10		103	70-130	6	20
Surrogate: 2-Bromo-1-chloropropane	*0.105*			*ug/L*	*0.10*		*105*	*70-130*		
Matrix Spike (BF40406-MS1)		**Source: 1405567-01**			Prepared & Analyzed: 06/04/14 19:53					
1,2-Dibromoethane	0.0977	0.021	0.0054	ug/L	0.11	ND	91	65-135		
1,2-Dibromo-3-chloropropane	0.116	0.021	0.0054	ug/L	0.11	ND	108	65-135		
Surrogate: 2-Bromo-1-chloropropane	*0.108*			*ug/L*	*0.11*		*101*	*70-130*		
Matrix Spike Dup (BF40406-MSD1)		**Source: 1405567-01**			Prepared & Analyzed: 06/04/14 20:15					
1,2-Dibromo-3-chloropropane	0.114	0.020	0.0051	ug/L	0.10	ND	112	65-135	2	20
1,2-Dibromoethane	0.111	0.020	0.0051	ug/L	0.10	ND	109	65-135	13	20
Surrogate: 2-Bromo-1-chloropropane	*0.111*			*ug/L*	*0.10*		*109*	*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 BE42912 - Ion Chromatography 300.0 Prep										
Blank (BE42912-BLK1)					Prepared & Analyzed: 05/29/14 11:43					
Nitrate (as N)	0.01 U	0.04	0.01	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						
Chloride	0.050 U	0.20	0.050	mg/L						
Sulfate	0.20 U	0.60	0.20	mg/L						
Surrogate: Dichloroacetate	*0.951*			*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.951*			*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.951*			*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.951*			*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.951*			*mg/L*	*1.0*		*95*	*78-120*		
LCS (BE42912-BS1)					Prepared & Analyzed: 05/29/14 11:43					
Orthophosphate as P	0.936	0.040	0.010	mg/L	0.90		104	85-115		
Chloride	2.94	0.20	0.050	mg/L	3.0		98	85-115		
Nitrate (as N)	1.64	0.04	0.01	mg/L	1.7		97	85-115		
Sulfate	9.05	0.60	0.20	mg/L	9.0		101	85-115		
Nitrite (as N)	1.42	0.04	0.01	mg/L	1.4		101	85-115		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
LCS Dup (BE42912-BSD1)					Prepared & Analyzed: 05/29/14 11:43					
Sulfate	9.06	0.60	0.20	mg/L	9.0		101	85-115	0.1	200
Nitrate (as N)	1.64	0.04	0.01	mg/L	1.7		97	85-115	0	200
Nitrite (as N)	1.42	0.04	0.01	mg/L	1.4		101	85-115	0.2	200
Orthophosphate as P	0.926	0.040	0.010	mg/L	0.90		103	85-115	1	200
Chloride	2.96	0.20	0.050	mg/L	3.0		99	85-115	0.5	200
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		

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Analyte	Result		PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE42912 - Ion Chromatography 300.0 Prep											
Matrix Spike (BE42912-MS1)			**Source: 1405267-02**			Prepared & Analyzed: 05/29/14 11:43					
Sulfate	21.5	J2,J6	0.60	0.20	mg/L	9.0	9.61	132	85-115		
Chloride	86.7	L	0.20	0.050	mg/L	3.0	84.2	81	80-120		
Nitrate (as N)	0.359	J2,J6	0.04	0.01	mg/L	1.7	ND	21	85-115		
Nitrite (as N)	2.86	J2,J6	0.04	0.01	mg/L	1.4	ND	204	85-115		
Orthophosphate as P	6.19		0.040	0.010	mg/L	0.90	5.16	115	85-115		
Surrogate: Dichloroacetate	*0.932*				*mg/L*	*1.0*		*93*	*78-120*		
Surrogate: Dichloroacetate	*0.932*				*mg/L*	*1.0*		*93*	*78-120*		
Surrogate: Dichloroacetate	*0.932*				*mg/L*	*1.0*		*93*	*78-120*		
Surrogate: Dichloroacetate	*0.932*				*mg/L*	*1.0*		*93*	*78-120*		
Surrogate: Dichloroacetate	*0.932*				*mg/L*	*1.0*		*93*	*78-120*		
Matrix Spike (BE42912-MS2)			**Source: 1405267-12**			Prepared & Analyzed: 05/29/14 11:43					
Sulfate	137	L	0.60	0.20	mg/L	9.0	105	357	85-115		
Chloride	84.8	L	0.20	0.050	mg/L	3.0	82.1	90	80-120		
Nitrite (as N)	2.22	J2,J6	0.04	0.01	mg/L	1.4	ND	159	85-115		
Nitrate (as N)	1.66		0.04	0.01	mg/L	1.7	ND	98	85-115		
Orthophosphate as P	1.43		0.040	0.010	mg/L	0.90	0.450	108	85-115		
Surrogate: Dichloroacetate	*0.949*				*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.949*				*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.949*				*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.949*				*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.949*				*mg/L*	*1.0*		*95*	*78-120*		
Batch BE42927 - TSS prep											
Blank (BE42927-BLK1)						Prepared: 05/29/14 Analyzed: 06/04/14 09:54					
Total Suspended Solids	1	U	1	1	mg/L						
Volatile Suspended Solids	1	U	1		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 BE42927 - TSS prep										
LCS (BE42927-BS1)					Prepared: 05/29/14 Analyzed: 06/04/14 09:54					
Total Suspended Solids	50.5	1	1	mg/L	50		101	85-115		
Duplicate (BE42927-DUP1)		**Source: 1405267-01**			Prepared: 05/29/14 Analyzed: 06/04/14 09:57					
Volatile Suspended Solids	30.8	1		mg/L		30.8			0	20
Total Suspended Solids	34.0	1	1	mg/L		34.0			0	30
Batch BE43003 - Ion Chromatography 300.0 Prep										
Blank (BE43003-BLK1)					Prepared & Analyzed: 05/30/14 08:39					
Sulfate	0.20 U	0.60	0.20	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						
Chloride	0.050 U	0.20	0.050	mg/L						
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
LCS (BE43003-BS1)					Prepared & Analyzed: 05/30/14 08:39					
Chloride	3.00	0.20	0.050	mg/L	3.0		100	85-115		
Orthophosphate as P	0.915	0.040	0.010	mg/L	0.90		102	85-115		
Nitrate (as N)	1.68	0.04	0.01	mg/L	1.7		99	85-115		
Sulfate	9.20	0.60	0.20	mg/L	9.0		102	85-115		
Nitrite (as N)	1.46	0.04	0.01	mg/L	1.4		105	85-115		
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*		
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE43003 - Ion Chromatography 300.0 Prep										
LCS Dup (BE43003-BSD1)					Prepared & Analyzed: 05/30/14 08:39					
Nitrate (as N)	1.75	0.04	0.01	mg/L	1.7		103	85-115	4	200
Nitrite (as N)	1.47	0.04	0.01	mg/L	1.4		105	85-115	0.1	200
Sulfate	9.40	0.60	0.20	mg/L	9.0		104	85-115	2	200
Orthophosphate as P	0.876	0.040	0.010	mg/L	0.90		97	85-115	4	200
Chloride	3.02	0.20	0.050	mg/L	3.0		101	85-115	1	200
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		
Matrix Spike (BE43003-MS1)		**Source: 1405265-06**			Prepared & Analyzed: 05/30/14 08:39					
Nitrite (as N)	2.02 J2,J6	0.04	0.01	mg/L	1.4	ND	144	85-115		
Orthophosphate as P	0.010 U,J2,J6	0.040	0.010	mg/L	0.90	ND		85-115		
Sulfate	18.8	0.60	0.20	mg/L	9.0	9.15	108	85-115		
Nitrate (as N)	1.64	0.04	0.01	mg/L	1.7	ND	96	85-115		
Chloride	43.8 L	0.20	0.050	mg/L	3.0	39.0	162	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*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Matrix Spike (BE43003-MS2)		**Source: 1405266-01**			Prepared & Analyzed: 05/30/14 08:39					
Nitrite (as N)	2.69 J2,J6	0.04	0.01	mg/L	1.4	ND	192	85-115		
Orthophosphate as P	7.66	0.040	0.010	mg/L	0.90	6.83	91	85-115		
Sulfate	10.3	0.60	0.20	mg/L	9.0	1.17	101	85-115		
Nitrate (as N)	1.61	0.04	0.01	mg/L	1.7	0.0240	93	85-115		
Chloride	67.1 L	0.20	0.050	mg/L	3.0	74.0	NR	80-120		
Surrogate: Dichloroacetate	*0.987*			*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.987*			*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.987*			*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.987*			*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.987*			*mg/L*	*1.0*		*99*	*78-120*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE43005 - Ion Chromatography 300.0 Prep										
Blank (BE43005-BLK1)					Prepared & Analyzed: 05/30/14 08:39					
Chloride	0.050 U	0.20	0.050	mg/L						
Sulfate	0.20 U	0.60	0.20	mg/L						
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Orthophosphate as P	0.010 U	0.040	0.010	mg/L						
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*0.917*			*mg/L*	*1.0*		*92*	*90-115*		
Surrogate: Dichloroacetate	*0.917*			*mg/L*	*1.0*		*92*	*90-115*		
Surrogate: Dichloroacetate	*0.917*			*mg/L*	*1.0*		*92*	*90-115*		
Surrogate: Dichloroacetate	*0.917*			*mg/L*	*1.0*		*92*	*90-115*		
Surrogate: Dichloroacetate	*0.917*			*mg/L*	*1.0*		*92*	*90-115*		
LCS (BE43005-BS1)					Prepared & Analyzed: 05/30/14 08:39					
Nitrate (as N)	1.68	0.04	0.01	mg/L	1.7		99	85-115		
Chloride	2.95	0.20	0.050	mg/L	3.0		98	85-115		
Orthophosphate as P	0.936	0.040	0.010	mg/L	0.90		104	85-115		
Nitrite (as N)	1.46	0.04	0.01	mg/L	1.4		104	85-115		
Sulfate	9.13	0.60	0.20	mg/L	9.0		101	85-115		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
LCS Dup (BE43005-BSD1)					Prepared & Analyzed: 05/30/14 08:39					
Nitrate (as N)	1.71	0.04	0.01	mg/L	1.7		101	85-115	2	200
Nitrite (as N)	1.49	0.04	0.01	mg/L	1.4		106	85-115	2	200
Chloride	3.00	0.20	0.050	mg/L	3.0		100	85-115	2	200
Sulfate	9.46	0.60	0.20	mg/L	9.0		105	85-115	4	200
Orthophosphate as P	0.910	0.040	0.010	mg/L	0.90		101	85-115	3	200
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE43005 - Ion Chromatography 300.0 Prep										
Matrix Spike (BE43005-MS1)		**Source: 1405185-02**			Prepared & Analyzed: 05/30/14 08:39					
Nitrite (as N)	14.8	0.40	0.10	mg/L	14		105	85-115		
Nitrate (as N)	15.8	0.40	0.10	mg/L	17	0.315	91	85-115		
Chloride	109	2.0	0.50	mg/L	30	76.0	109	80-120		
Orthophosphate as P	9.07	0.40	0.10	mg/L	9.0		101	85-115		
Sulfate	100	6.0	2.0	mg/L	90	13.0	97	85-115		
Surrogate: Dichloroacetate	*1.11*			*mg/L*	*1.0*		*111*	*90-115*		
Surrogate: Dichloroacetate	*1.11*			*mg/L*	*1.0*		*111*	*90-115*		
Surrogate: Dichloroacetate	*1.11*			*mg/L*	*1.0*		*111*	*90-115*		
Surrogate: Dichloroacetate	*1.11*			*mg/L*	*1.0*		*111*	*90-115*		
Surrogate: Dichloroacetate	*1.11*			*mg/L*	*1.0*		*111*	*90-115*		
Matrix Spike (BE43005-MS2)		**Source: 1405265-09**			Prepared & Analyzed: 05/30/14 08:39					
Chloride	42.4 L	0.20	0.050	mg/L	3.0	ND	NR	80-120		
Nitrite (as N)	1.48	0.04	0.01	mg/L	1.4	ND	105	85-115		
Sulfate	90.0 L	0.60	0.20	mg/L	9.0	98.8	NR	85-115		
Orthophosphate as P	0.828	0.040	0.010	mg/L	0.90	ND	92	85-115		
Nitrate (as N)	1.72	0.04	0.01	mg/L	1.7	ND	101	85-115		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Batch BE43007 - alkalinity										
Blank (BE43007-BLK1)					Prepared & Analyzed: 05/30/14 11:00					
Total Alkalinity	2.0 U	8.0	2.0	mg/L						

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE43007 - alkalinity										
LCS (BE43007-BS1)					Prepared & Analyzed: 05/30/14 11:05					
Total Alkalinity	130	8.0	2.0	mg/L	120		102	90-110		
Matrix Spike (BE43007-MS1)		**Source: 1405298-01**			Prepared & Analyzed: 05/30/14 14:07					
Total Alkalinity	220	8.0	2.0	mg/L	120	100	94	80-120		
Matrix Spike Dup (BE43007-MSD1)		**Source: 1405298-01**			Prepared & Analyzed: 05/30/14 14:15					
Total Alkalinity	220	8.0	2.0	mg/L	120	100	94	80-120	0.2	26
Batch BE43013 - BOD										
Blank (BE43013-BLK1)					Prepared: 05/30/14 Analyzed: 06/04/14 09:34					
Carbonaceous BOD	2 U	2	2	mg/L						
LCS (BE43013-BS1)					Prepared: 05/30/14 Analyzed: 06/04/14 09:34					
Carbonaceous BOD	219	2	2	mg/L	200		109	85-115		
LCS Dup (BE43013-BSD1)					Prepared: 05/30/14 Analyzed: 06/04/14 09:34					
Carbonaceous BOD	222	2	2	mg/L	200		111	85-115	1	200
Duplicate (BE43013-DUP1)		**Source: 1405265-08**			Prepared: 05/30/14 Analyzed: 06/04/14 09:34					
Carbonaceous BOD	16	2	2	mg/L		15			6	25
Batch BF40331 - Sulfide prep										
Blank (BF40331-BLK1)					Prepared & Analyzed: 06/03/14 16:28					
Sulfide	0.10 U	0.40	0.10	mg/L						

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF40331 - Sulfide prep										
Blank (BF40331-BLK2)					Prepared & Analyzed: 06/03/14 16:28					
Sulfide	0.10 U	0.40	0.10	mg/L						
LCS (BF40331-BS1)					Prepared & Analyzed: 06/03/14 16:28					
Sulfide	4.95	0.40	0.10	mg/L	5.0		99	85-115		
LCS (BF40331-BS2)					Prepared & Analyzed: 06/03/14 16:28					
Sulfide	4.75	0.40	0.10	mg/L	5.0		95	85-115		
Matrix Spike (BF40331-MS1)		**Source: 1405266-15**			Prepared & Analyzed: 06/03/14 16:28					
Sulfide	4.75	0.40	0.10	mg/L	5.0	ND	95	85-115		
Matrix Spike (BF40331-MS2)		**Source: 1405631-05**			Prepared & Analyzed: 06/03/14 16:28					
Sulfide	5.54	0.40	0.10	mg/L	5.0	0.590	99	85-115		
Matrix Spike Dup (BF40331-MSD1)		**Source: 1405266-15**			Prepared & Analyzed: 06/03/14 16:28					
Sulfide	4.75	0.40	0.10	mg/L	5.0	ND	95	85-115	0	14
Matrix Spike Dup (BF40331-MSD2)		**Source: 1405631-05**			Prepared & Analyzed: 06/03/14 16:28					
Sulfide	5.74	0.40	0.10	mg/L	5.0	0.590	103	85-115	4	14
Batch BF40413 - TSS prep										
Blank (BF40413-BLK1)					Prepared: 06/04/14 Analyzed: 06/10/14 11:04					
Total Suspended Solids	1 U	1	1	mg/L						
Volatile Suspended Solids	1 U	1		mg/L						
LCS (BF40413-BS1)					Prepared: 06/04/14 Analyzed: 06/10/14 11:04					
Total Suspended Solids	47.0	1	1	mg/L	50		94	85-115		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF40413 - TSS prep										
Duplicate (BF40413-DUP1)		**Source: 1405265-01**			Prepared: 06/04/14 Analyzed: 06/10/14 11:04					
Total Suspended Solids	15.5	1	1	mg/L		15.0			3	30
Volatile Suspended Solids	13.0	1		mg/L		14.5			11	20
Batch BF40601 - alkalinity										
Blank (BF40601-BLK1)					Prepared & Analyzed: 06/06/14 10:58					
Total Alkalinity	2.0 U	8.0	2.0	mg/L						
LCS (BF40601-BS1)					Prepared & Analyzed: 06/06/14 11:03					
Total Alkalinity	120	8.0	2.0	mg/L	120		96	90-110		
Matrix Spike (BF40601-MS1)		**Source: 1405631-05**			Prepared & Analyzed: 06/06/14 13:44					
Total Alkalinity	130	8.0	2.0	mg/L	120	8.7	95	80-120		
Matrix Spike Dup (BF40601-MSD1)		**Source: 1405631-05**			Prepared & Analyzed: 06/06/14 13:50					
Total Alkalinity	130	8.0	2.0	mg/L	120	8.7	94	80-120	1	26
Batch BF40913 - COD prep										
Blank (BF40913-BLK1)					Prepared & Analyzed: 06/09/14 17:00					
Chemical Oxygen Demand	10 U	25	10	mg/L						
LCS (BF40913-BS1)					Prepared & Analyzed: 06/09/14 17:00					
Chemical Oxygen Demand	49	25	10	mg/L	50		98	90-110		
Matrix Spike (BF40913-MS1)		**Source: 1405265-01**			Prepared & Analyzed: 06/09/14 17:00					
Chemical Oxygen Demand	170	25	10	mg/L	50	120	92	85-115		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF40913 - COD prep										
Matrix Spike Dup (BF40913-MSD1)		**Source: 1405265-01**			Prepared & Analyzed: 06/09/14 17:00					
Chemical Oxygen Demand	170	25	10	mg/L	50	120	92	85-115	0	32
Batch BF41109 - Digestion for TP and TKN										
Blank (BF41109-BLK1)					Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Phosphorous - Total as P	0.010 U	0.040	0.010	mg/L						
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						
LCS (BF41109-BS1)					Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Total Kjeldahl Nitrogen	1.09	0.20	0.05	mg/L	1.0		109	90-110		
Phosphorous - Total as P	0.495	0.040	0.010	mg/L	0.50		99	90-110		
Matrix Spike (BF41109-MS1)		**Source: 1405265-01**			Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Phosphorous - Total as P	6.66 L2	0.040	0.010	mg/L	1.0	6.81	NR	90-110		
Total Kjeldahl Nitrogen	56.6 L2	0.20	0.05	mg/L	2.0	50.3	313	90-110		
Matrix Spike (BF41109-MS2)		**Source: 1405265-17**			Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Phosphorous - Total as P	1.83	0.040	0.010	mg/L	1.0	0.908	92	90-110		
Total Kjeldahl Nitrogen	2.98	0.20	0.05	mg/L	2.0	0.888	104	90-110		
Matrix Spike Dup (BF41109-MSD1)		**Source: 1405265-01**			Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Phosphorous - Total as P	6.41 L2	0.040	0.010	mg/L	1.0	6.81	NR	90-110	4	25
Total Kjeldahl Nitrogen	55.2 L2	0.20	0.05	mg/L	2.0	50.3	243	90-110	2	20
Matrix Spike Dup (BF41109-MSD2)		**Source: 1405265-17**			Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Phosphorous - Total as P	1.79	0.040	0.010	mg/L	1.0	0.908	88	90-110	2	25
Total Kjeldahl Nitrogen	3.02	0.20	0.05	mg/L	2.0	0.888	107	90-110	2	20

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41141 - COD prep										
Blank (BF41141-BLK1)					Prepared: 06/11/14 Analyzed: 06/23/14 17:44					
Chemical Oxygen Demand	10 U	25	10	mg/L						
LCS (BF41141-BS1)					Prepared: 06/11/14 Analyzed: 06/23/14 17:44					
Chemical Oxygen Demand	45	25	10	mg/L	50		90	90-110		
Matrix Spike (BF41141-MS1)		**Source: 1405265-09**			Prepared: 06/11/14 Analyzed: 06/23/14 17:44					
Chemical Oxygen Demand	70	25	10	mg/L	50	16	108	85-115		
Matrix Spike Dup (BF41141-MSD1)		**Source: 1405265-09**			Prepared: 06/11/14 Analyzed: 06/23/14 17:44					
Chemical Oxygen Demand	72	25	10	mg/L	50	16	112	85-115	3	32
Batch BF41215 - Ion Chromatography 300.0 Prep										
Blank (BF41215-BLK1)					Prepared & Analyzed: 06/13/14 04:01					
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*0.889*			*mg/L*	*1.0*		*89*	*78-120*		
LCS (BF41215-BS1)					Prepared & Analyzed: 06/13/14 04:12					
Chloride	2.92	0.20	0.050	mg/L	3.0		97	85-115		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*78-120*		
LCS Dup (BF41215-BSD1)					Prepared & Analyzed: 06/13/14 04:23					
Chloride	2.89	0.20	0.050	mg/L	3.0		96	85-115	0.9	200
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*78-120*		
Matrix Spike (BF41215-MS1)		**Source: 1405683-10**			Prepared & Analyzed: 06/13/14 06:27					
Chloride	140	2.0	0.50	mg/L	30	110	100	80-120		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41215 - Ion Chromatography 300.0 Prep										
Matrix Spike (BF41215-MS2)		**Source: 1405683-12**			Prepared & Analyzed: 06/13/14 07:24					
Chloride	124	2.0	0.50	mg/L	30	93.5	101	80-120		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Batch BF41310 - Ion Chromatography 300.0 Prep										
Blank (BF41310-BLK1)					Prepared & Analyzed: 06/13/14 18:14					
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Sulfate	0.20 U	0.60	0.20	mg/L						
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*0.880*			*mg/L*	*1.0*		*88*	*78-120*		
Surrogate: Dichloroacetate	*0.880*			*mg/L*	*1.0*		*88*	*78-120*		
Surrogate: Dichloroacetate	*0.880*			*mg/L*	*1.0*		*88*	*78-120*		
Surrogate: Dichloroacetate	*0.880*			*mg/L*	*1.0*		*88*	*78-120*		
LCS (BF41310-BS1)					Prepared & Analyzed: 06/13/14 18:25					
Nitrite (as N)	1.40	0.04	0.01	mg/L	1.4		100	85-115		
Chloride	2.93	0.20	0.050	mg/L	3.0		98	85-115		
Sulfate	8.55	0.60	0.20	mg/L	9.0		95	85-115		
Nitrate (as N)	1.50	0.04	0.01	mg/L	1.7		89	85-115		
Surrogate: Dichloroacetate	*0.912*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.912*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.912*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.912*			*mg/L*	*1.0*		*91*	*78-120*		
LCS Dup (BF41310-BSD1)					Prepared & Analyzed: 06/13/14 18:37					
Sulfate	8.65	0.60	0.20	mg/L	9.0		96	85-115	1	200
Chloride	2.97	0.20	0.050	mg/L	3.0		99	85-115	1	200
Nitrate (as N)	1.59	0.04	0.01	mg/L	1.7		93	85-115	5	200
Nitrite (as N)	1.42	0.04	0.01	mg/L	1.4		102	85-115	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*		

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Tampa, FL 33619

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41310 - Ion Chromatography 300.0 Prep										
Matrix Spike (BF41310-MS1)		**Source: 1406175-02**			Prepared & Analyzed: 06/13/14 20:41					
Sulfate	125 L	0.60	0.20	mg/L	9.0	116	93	85-115		
Nitrate (as N)	1.63	0.04	0.01	mg/L	1.7	0.0590	92	85-115		
Chloride	276 L	0.20	0.050	mg/L	3.0	266	354	80-120		
Nitrite (as N)	0.0940 J2,J6	0.04	0.01	mg/L	1.4	ND	7	85-115		
Surrogate: Dichloroacetate	*0.863*			*mg/L*	*1.0*		*86*	*78-120*		
Surrogate: Dichloroacetate	*0.863*			*mg/L*	*1.0*		*86*	*78-120*		
Surrogate: Dichloroacetate	*0.863*			*mg/L*	*1.0*		*86*	*78-120*		
Surrogate: Dichloroacetate	*0.863*			*mg/L*	*1.0*		*86*	*78-120*		
Matrix Spike (BF41310-MS2)		**Source: 1405265-05**			Prepared & Analyzed: 06/13/14 22:56					
Nitrate (as N)	14.9	0.40	0.10	mg/L	17	ND	88	85-115		
Sulfate	85.1	6.0	2.0	mg/L	90	6.74	87	85-115		
Chloride	63.8	2.0	0.50	mg/L	30	35.8	94	80-120		
Nitrite (as N)	13.2	0.40	0.10	mg/L	14	ND	94	85-115		
Surrogate: Dichloroacetate	*0.980*			*mg/L*	*1.0*		*98*	*78-120*		
Surrogate: Dichloroacetate	*0.980*			*mg/L*	*1.0*		*98*	*78-120*		
Surrogate: Dichloroacetate	*0.980*			*mg/L*	*1.0*		*98*	*78-120*		
Surrogate: Dichloroacetate	*0.980*			*mg/L*	*1.0*		*98*	*78-120*		
Batch BF41311 - Ion Chromatography 300.0 Prep										
Blank (BF41311-BLK1)					Prepared & Analyzed: 06/13/14 23:52					
Sulfate	0.20 U	0.60	0.20	mg/L						
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*0.852*			*mg/L*	*1.0*		*85*	*78-120*		
Surrogate: Dichloroacetate	*0.852*			*mg/L*	*1.0*		*85*	*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 BF41311 - Ion Chromatography 300.0 Prep										
LCS (BF41311-BS1)					Prepared & Analyzed: 06/14/14 00:04					
Sulfate	8.74	0.60	0.20	mg/L	9.0		97	85-115		
Chloride	2.97	0.20	0.050	mg/L	3.0		99	85-115		
Surrogate: Dichloroacetate	*0.986*			*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.986*			*mg/L*	*1.0*		*99*	*78-120*		
LCS Dup (BF41311-BSD1)					Prepared & Analyzed: 06/14/14 00:15					
Chloride	2.97	0.20	0.050	mg/L	3.0		99	85-115	0.1	200
Sulfate	8.76	0.60	0.20	mg/L	9.0		97	85-115	0.2	200
Surrogate: Dichloroacetate	*0.988*			*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.988*			*mg/L*	*1.0*		*99*	*78-120*		
Matrix Spike (BF41311-MS1)		**Source: 1405267-12**			Prepared & Analyzed: 06/14/14 01:34					
Chloride	103 +U	2.0	0.50	mg/L	30	82.1	69	80-120		
Sulfate	201	6.0	2.0	mg/L	90	105	107	85-115		
Surrogate: Dichloroacetate	*0.908*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.908*			*mg/L*	*1.0*		*91*	*78-120*		
Matrix Spike (BF41311-MS2)		**Source: 1405849-05**			Prepared & Analyzed: 06/14/14 03:04					
Sulfate	1,430	60	20	mg/L	900	520	101	85-115		
Chloride	451 +U	20	5.0	mg/L	300	230	74	80-120		
Surrogate: Dichloroacetate	*0.883*			*mg/L*	*1.0*		*88*	*78-120*		
Surrogate: Dichloroacetate	*0.883*			*mg/L*	*1.0*		*88*	*78-120*		
Batch BF42005 - Ammonia by SEAL										
Blank (BF42005-BLK1)					Prepared: 06/20/14 Analyzed: 07/02/14 14:57					
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 BF42005 - Ammonia by SEAL										
LCS (BF42005-BS1)					Prepared: 06/20/14 Analyzed: 07/02/14 14:57					
Ammonia as N	0.51	0.040	0.009	mg/L	0.50		102	90-110		
Matrix Spike (BF42005-MS1)		**Source: 1402817-10**			Prepared: 06/20/14 Analyzed: 07/02/14 14:57					
Ammonia as N	0.44	0.040	0.009	mg/L	0.50	0.064	75	90-110		
Matrix Spike (BF42005-MS2)		**Source: 1405265-21**			Prepared: 06/20/14 Analyzed: 07/02/14 14:57					
Ammonia as N	2.8 L1	0.040	0.009	mg/L	0.50	0.030	547	90-110		
Matrix Spike Dup (BF42005-MSD1)		**Source: 1402817-10**			Prepared: 06/20/14 Analyzed: 07/02/14 14:57					
Ammonia as N	0.45	0.040	0.009	mg/L	0.50	0.064	78	90-110	3	10
Matrix Spike Dup (BF42005-MSD2)		**Source: 1405265-21**			Prepared: 06/20/14 Analyzed: 07/02/14 17:57					
Ammonia as N	2.7 L1	0.040	0.009	mg/L	0.50	0.030	524	90-110	4	10

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Inorganic, Dissolved - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE42907 - BOD Dissolved										
Blank (BE42907-BLK1)					Prepared: 05/29/14 Analyzed: 06/03/14 09:47					
Carbonaceous BOD	2 U	2	2	mg/L						
LCS (BE42907-BS1)					Prepared: 05/29/14 Analyzed: 06/03/14 09:47					
Carbonaceous BOD	205	2	2	mg/L	200		103	85-115		
LCS Dup (BE42907-BSD1)					Prepared: 05/29/14 Analyzed: 06/03/14 09:47					
Carbonaceous BOD	210	2	2	mg/L	200		105	85-115	2	200
Duplicate (BE42907-DUP1)		**Source: 1405267-14**			Prepared: 05/29/14 Analyzed: 06/03/14 09:47					
Carbonaceous BOD	10	2	2	mg/L		10			5	25
Batch BE43003 - Ion Chromatography 300.0 Prep										
Blank (BE43003-BLK1)					Prepared & Analyzed: 05/30/14 08:39					
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
LCS (BE43003-BS1)					Prepared & Analyzed: 05/30/14 08:39					
Nitrate (as N)	1.68	0.04	0.01	mg/L	1.7		99	85-115		
Nitrite (as N)	1.46	0.04	0.01	mg/L	1.4		105	85-115		
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		
LCS Dup (BE43003-BSD1)					Prepared & Analyzed: 05/30/14 08:39					
Nitrite (as N)	1.47	0.04	0.01	mg/L	1.4		105	85-115	0.1	200
Nitrate (as N)	1.75	0.04	0.01	mg/L	1.7		103	85-115	4	200
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		

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Inorganic, Dissolved - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE43003 - Ion Chromatography 300.0 Prep										
Matrix Spike (BE43003-MS1)		**Source: 1405265-06**			Prepared & Analyzed: 05/30/14 08:39					
Nitrite (as N)	2.02 J2,J6	0.04	0.01	mg/L	1.4	ND	144	85-115		
Nitrate (as N)	1.64	0.04	0.01	mg/L	1.7	ND	96	85-115		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Matrix Spike (BE43003-MS2)		**Source: 1405266-01**			Prepared & Analyzed: 05/30/14 08:39					
Nitrite (as N)	2.69 J2,J6	0.04	0.01	mg/L	1.4	ND	192	85-115		
Nitrate (as N)	1.61	0.04	0.01	mg/L	1.7	0.0240	93	85-115		
Surrogate: Dichloroacetate	*0.987*			*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.987*			*mg/L*	*1.0*		*99*	*78-120*		
Batch BF42328 - Digestion for TP and TKN										
Blank (BF42328-BLK1)					Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	0.050 U	0.20	0.050	mg/L						
LCS (BF42328-BS1)					Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	1.28	0.20	0.050	mg/L	1.3		96	90-110		
Matrix Spike (BF42328-MS1)		**Source: 1405265-10**			Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	2.51 J2	0.20	0.050	mg/L	1.3	4.75	NR	90-110		
Matrix Spike (BF42328-MS2)		**Source: 1405267-14**			Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	2.52	0.20	0.050	mg/L	1.3	1.11	106	90-110		
Matrix Spike Dup (BF42328-MSD1)		**Source: 1405265-10**			Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	2.88 J2	0.20	0.050	mg/L	1.3	4.75	NR	90-110	14	20

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Inorganic, Dissolved - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42328 - Digestion for TP and TKN										
Matrix Spike Dup (BF42328-MSD2)		**Source: 1405267-14**			Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	2.35	0.20	0.050	mg/L	1.3	1.11	93	90-110	7	20
Batch BF43031 - Ammonia Dissolved by Seal										
Blank (BF43031-BLK1)					Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BF43031-BS1)					Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50		101	90-110		
Matrix Spike (BF43031-MS1)		**Source: 1405265-02**			Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	93	0.040	0.009	mg/L	50	49	88	90-110		
Matrix Spike (BF43031-MS2)		**Source: 1405267-14**			Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	1.1	0.040	0.009	mg/L	0.50	0.61	88	90-110		
Matrix Spike Dup (BF43031-MSD1)		**Source: 1405265-02**			Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	94	0.040	0.009	mg/L	50	49	90	90-110	0.9	10
Matrix Spike Dup (BF43031-MSD2)		**Source: 1405267-14**			Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	1.1	0.040	0.009	mg/L	0.50	0.61	95	90-110	3	10

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Microbiology - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE42938 - FC-MF										
Blank (BE42938-BLK1)					Prepared: 05/29/14 Analyzed: 05/30/14 14:50					
Fecal Coliforms	1 U	1	1	CFU/100 ml						
Duplicate (BE42938-DUP1)		**Source: 1405266-15**			Prepared: 05/29/14 Analyzed: 05/30/14 14:50					
Fecal Coliforms	1 U	1	1	CFU/100 ml		ND				200
Duplicate (BE42938-DUP2)		**Source: 1405265-21**			Prepared: 05/29/14 Analyzed: 05/30/14 14:50					
Fecal Coliforms	1 U	1	1	CFU/100 ml		ND				200

SOUTHERN ANALYTICAL LABORATORIES, INC.
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July 18, 2014
Work Order: 1405265

* 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.
L2	Analyte level in sample invalidated Matrix Spike.
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.
J3	Quality control value for precision was outside control limits.
J2	Quality control value for accuracy was outside control limits.
+U	Matrix spike dilution results were under the reccommended range for the method.

Questions regarding this report should be directed to :

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Telephone (813) 855-1844 FAX (813) 855-2218
Kathryn@southernanalyticallabs.com

SOUTHERN ANALYTICAL LABORATORIES, INC.
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SAL Project No. 1405265

Client Name	Contact / Phone:
Hazan and Sawyer	Josefin Hirst 813-630-4498
Project Name / Location: BHS3 SE#9	
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	125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	500mLP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP, SO_4	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, NaOH, Zn Acetate H_2S	500mLP, Cool Lab Filtered (CBOD, TKN, NH_3, NOx)	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx, SO_4	500mLP, Cool Lab Filtered (CBOD, TKN, NH_3, NOx, SO_4)	pH	Temperature	Conductivity	DO
01	BHS3-STE	5/29/14	9:25	WW		X	4	2	1	1					7.36	25.3	1174	0.10
02	BHS3-STE-FILTERED		9:25	WW		X					1				7.36	25.3	1174	0.10
03	BHS3-LY01		9:10	WW		X		2	1						7.13	25.4	534	7.51
04	BHS3-LY02		9:20	WW		X		2	1						6.18	25.9	753	1.48
05	BHS3-LINER		9:10	WW		X	4	2	1						6.43	25.3	925	0.42
06	BHS3-LINER-FILTERED		9:00	WW		X					1				L	L	L	L
07	BHS3-SULFUR-6		9:10	WW		X				1		1	1		6.54	25.0	991	0.25
08	BHS3-ST2		8:35	WW		X	4	2	1	1					6.77	25.3	936	0.325
09	BHS3-ST2-DUP		8:40	WW		X	4	2	1	1					↓	↓	↓	↓
10	BHS3-ST2-FILTERED		8:35	WW		X								1	↓	↓	↓	↓
11	BHS3-LY03		9:35	WW		X		2	1	1					6.57	26.3	75.7	5.73
12	BHS3-LY04		9:30	WW		X		2	1	1					6.62	26.7	818	4.63

	Date/Time:	Received:	Date/Time:
Containers Prepared/ Relinquished: A Wright	1500 05-22-14		
Relinquished:	Date/Time: 5/23/14	Received:	Date/Time: 5/23/14 1200
Relinquished:	Date/Time: 5/29/14	Received: L Mudmench	Date/Time: 5/29/14 1575
Relinquished:	Date/Time:	Received:	Date/Time:
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

1405265

Chain of Custody.xls
Rev.Date 11/13/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.
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SAL Project No. 1405265

Client Name	Contact / Phone:
Hazan and Sawyer	Josefin Hirst 813-630-4498
Project Name / Location: BHS3 SP#9	
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

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	500mLP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP, SO_4	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, NaOH, Zn Acetate H_2S	500mLP, Cool Lab Filtered (CBOD, TKN, NH_3, NOx)	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool Total Alkalinity, NOx, Cl, SO_4	500mLP, Cool Lab Filtered (CBOD, TKN, NH_3, NOx, SO_4)	pH	Temperature	Conductivity	DO
							PARAMETER / CONTAINER DESCRIPTION											
13	BHS3-PZ07			WW		X	4	2	1	1								
14	BHS3-PZ08			WW		X	4	2	1	1								
15	BHS3-PZ09			WW		X	4	2	1	1								
16	PZ-A-6	5/28/14	9:22	WW		X						1	1		6.04	25.4	682	3.66
17	PZ-A7-8	"	9:40	WW		X						1	1		6.17	23.8	784	0.22
18	PZ-B8-5	"	9:13	WW		X						1	1		5.92	23.1	586	0.69
19	PZ-B8-7	"	9:27	WW		X						1	1		5.84	22.6	292	0.32
20	PZ-C10-6	5/28/14	0858	WW		X						1	1		6.30	23.8	689	0.56
21	EB			R		X	4	2	1	1								

Containers Prepared/ Relinquished:	Date/Time: 1500 05-22-14	Received:	Date/Time: 5/23/14 12:00
Relinquished:	Date/Time: 1435 5/28/14	Received: K Mudmeck	Date/Time: 5/28/14 1435
Relinquished:	Date/Time:	Received:	Date/Time:
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. 1405265

Client Name	Contact / Phone:
Hazan and Sawyer	Josefin Hirst 813-630-4498
Project Name / Location: BHS3 SE#9	
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	125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	500mLP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP, SO_4	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, NaOH, Zn Acetate H_2S	500mLP, Cool Lab Filtered (CBOD, TKN, NH_3, NOx)	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool Total Alkalinity, NOx, Cl, SO_4	500mLP, Cool Lab Filtered (CBOD, TKN, NH_3, NOx, SO_4)	pH	Temperature	Conductivity	DO
13	BHS3-PZ07			WW		X	4	2	1	1								
14	BHS3-PZ08			WW		X	4	2	1	1								
15	BHS3-PZ09			WW		X	4	2	1	1								
16	PZ-A-6			WW		X						1	1					
17	PZ-A7-8			WW		X						1	1					
18	PZ-B8-5			WW		X						1	1					
19	PZ-B8-7			WW		X						1	1					
20	PZ-C10-6			WW		X						1	1					
21	EB	5/29/14	9:55	R		X	4	2	1	1					6.94	29.8	2.	7.28

Containers Prepared/ Relinquished:	Date/Time:	Received:	Date/Time:
			5/23/14 12:00
Relinquished:	Date/Time: 5/29/14 1515	Received:	Date/Time: 5/29/14 1515
Relinquished:	Date/Time:	Received:	Date/Time:
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

1405265

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

Chain of Custody

Appendix D: Acute Toxicity Bioassay Report

PRELIMINARY

o:\44237-001\Wpdocs\Report\Draft

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

Whole Effluent Toxicity Testing Summary Page

Client name: Hazen & Sawyer BHS3-STE

MBL Project/Report # 140627

MBL Sample #	Species	Permit Requirements	Test Results	Passing or Failure
140627-1	*Cyprinella leedsi*	LC50 > / = 100%	LC50 = 18.6%	Failure
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Additional Testing Required: N/A

Comments:
A sample was originially received for testing on 05/30/2014, the initial test invalidated due to significant mortality in the controls and was retested. The originial benchsheets can be found at the end of this report.

QA/QC Officer/Reviewer: Signature

Date: 6/25/2014

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

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**

Dates Test(s) Conducted:

Start Date: 06/10/2014

End Date: 06/14/2014

Start Time: 1615 hrs.

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

QA/QC Officer/Reviewer: Signature

Date: 6/25/2014

Laboratory Report #/ Project #: 140627

Sampler's Name: (Print): Josefin Hirst

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	06/09/2014 1040 hrs.	140627-1	Grab	1	-------	------	-------
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Type of Refrigerant Used for Sample Transportation: X Wet Ice; N/A Blue Ice; N/A Other

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

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

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: 06/19/2014

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	11 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	06/10/2014-06/14/2014	CL	In-House	3.39 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: 6/25/2014

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	140627-1	-----	-----	-------	18.6%
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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

Date: 6/25/2014

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: 6/25/2014

Acute Fish Test-96 Hr Survival

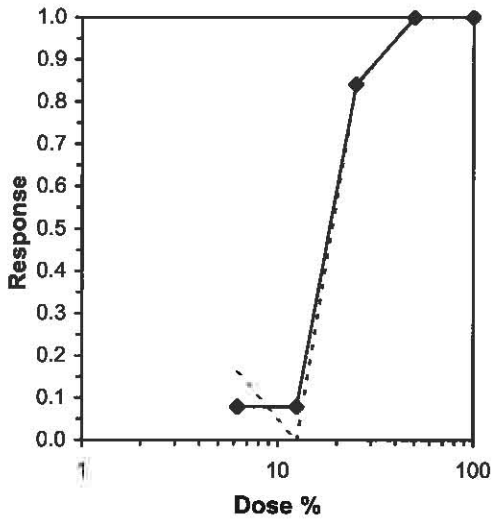
Start Date:	6/10/2014	Test ID:	140627CL	Sample ID:	140627-1
End Date:	6/14/2014	Lab ID:	MBL-Marinco Bioassay Lab.	Sample Type:	
Sample Date:		Protocol:	EPA Method #2000.0	Test Species:	CL-*Cyprinella leedsi*
Comments:	This analysis was performed by Marlena Beck at MBL.				

Conc-%	1	2
Control	1.0000	0.9000
6.25	0.7000	0.9000
12.5	0.9000	1.0000
25	0.2000	0.1000
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	**0.9500**	1.0000	0.9500	0.9000	1.0000	7.443	2	1	20
6.25	**0.8000**	0.8421	0.8000	0.7000	0.9000	17.678	2	4	20
12.5	**0.9500**	1.0000	0.9500	0.9000	1.0000	7.443	2	1	20
25	**0.1500**	0.1579	0.1500	0.1000	0.2000	47.140	2	17	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

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%			
5.0%			
10.0%	18.457	16.315	20.880
20.0%	18.323	16.657	20.156
Auto-7.9%	**18.561**	**16.339**	**21.085**



SURVIVAL BENCH SHEET

Project #: 140607 **Test Start:** 6/10/14 1615

Test Organism: Cyprinella leedsi **Test End:** 6/14/14 1555

Organism Age: 11 days **Brood #:** CL 140530

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	140607-1	10	0	—	—	—	10	0	—	—	—	0
50		10	0	—	—	—	10	0	—	—	—	0
25		10	3	3	3	2	10	3	3	3	1	15
12.5		10	10	9	9	9	10	10	10	10	10	95
6.25		10	10	9	9	7	10	10	9	9	9	80
Control		10	10	10	10	10	10	10	10	10	9	95
Organisms Fed By: (Initials & Time)		—	—	AB 0800	—	—	—	—	AB 0800	—	—	—
0 Hours started/checked by: 24, 72, 96 Hours counted by: 48 Hours renewed/cleaned by:		PM/SS	AB	SK	SK	SS	PM/SS	AB	SK	SK	SS	SS

Comments or Corrections: _____

Reviewed by: MB

Date: 6/19/14

ACUTE TOXICITY TEST PHYSICAL AND CHEMICAL MEASUREMENTS

EPA Method # 2000.0

Project #: 140627 **Test Start:** 6/10/14 1615

Test Organism: Cyprinella leedsi **Test End:** 6/14/14 1555

Effluent Concentration %	Sample Number	Dissolved Oxygen (mg/L)					pH				
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	140627-1	7.2	8.0	—	—	—	8.1	8.5	—	—	—
50.0		7.7	8.0	—	—	—	8.1	8.3	—	—	—
25.0		8.0	8.0	8.0/8.0	6.6	7.9	8.0	8.1	8.1/7.8	7.8	8.3
12.5		8.1	8.1	8.3/8.1	7.6	7.9	7.9	8.0	7.9/7.8	7.9	8.0
6.25		8.1	7.9	8.0/8.1	7.8	7.9	7.8	7.8	7.8/7.7	7.8	8.0
Control		8.1	8.0	8.0/8.1	7.8	7.9	7.7	7.7	7.8/7.7	7.8	8.0
Measured by:		PM	AB	SIC/SIC	SIC	[illegible]	PM	AB	SIC/SIC	SIC	[illegible]

Effluent Concentration %	Sample Number	Temperature (Degrees Celsius)					Conductivity (µs/cm)				
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	140627-1	25	25	—	—	—	1.093	0.981	—	—	—
50.0		25	25	—	—	—	0.703	0.613	—	—	—
25.0		25	25	25/25	25	25	0.504	—	0503	—	0.493
12.5		25	25	25/25	25	25	0.414	—	0.414	—	0.415
6.25		25	25	25/25	25	25	0.364	—	0364	—	0.374
Control		25	25	25/25	25	25	0.314	—	0313	—	0.333
Measured by:		PM	AB	SIC/SIC	SK	[illegible]	PM	AB	SIC	—	[illegible]

Comments or corrections: _____

Reviewed by: MB

Date: 6/19/14

SAMPLE/CONTROL WATER INFORMATION

Project #: 140627

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		140627-1	389	6/12/14	AB	236	6/12/14	AB	—			1.093	6/10/14	PM
Control Water	Initial	SMH 140605	55	6/12/14	AB	80	6/12/14	AB	—			0.314	6/10/14	PM
	Renewal	SMH140607	55	6/12/14	AB	84	6/12/14	AB	—			0.313	6/12/14	JC

*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
140627-1	0.8	12	~500	7.2	PM 6/10/14 1442	7.3	PM
140627-1	7.8	N/A	N/A	N/A	SC 6/12/14 1445	7.5	JC

Comments or corrections: _____

Reviewed by: MB

Date: 6/19/14

ACUTE TEST CONDITIONS

Project #: 140627 **Client:** Hazen + Sawyer

Test type: CL 96 hr e def **Test run in Environmental Chamber #:** 2

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	AB	R	AB	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: 18

Method number ~~CL~~ SS6/10 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
Freshwater cond. checked by	—	—	—/—	—	—
Used by (Initials)	PM	AB	SK/SK	SK	PM

(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: 10/19/14

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): Joseph Hirst

Sample Containers

1 qt.	2 qt.	1 Gal.
	4	

Sample Cooler #: 7132

Tests Required

Acute: 96HR Cyprinella leedsi
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.
	BHS3-ST1	1	6/09/14	10:40	grab	1	yes	140657-1	1°C
	BHS4-ST2	2	6/09/14	11:15	grab	1	yes		
	BHS2-ST1	3	6/10/14	09:20	grab	1	yes		
	BHS2-ST2	4	6/10/14	08:50	grab	1	yes		

Sampling Kit Transfers

Relinquished By:	Received By:	Date	Time	Count
MBL:	Carrier: FedEx	6/5/2014	1530	4
Carrier: FedEx	Client: Joseph Hirst	6/6/2014	1430	4

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

Sample Transfers

Relinquished By:	Received By:	Date	Time	Count
Person's Name: Joseph Hirst Facility Name: Hazen and Sawyer	Person's Name: Scott McCullough Facility Name: American Courier	6/10/14	10:00	4
Person's Name: Scott McCullough Facility Name: American Courier	Person's Name: [illegible] Facility Name: MBL	6/10/14	1050	4
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 Express Busbill/Airbill #: 2244

INTERNAL CHAIN OF CUSTODY
MARINCO BIOASSAY LABORATORY, INC.

Acute Toxicity Test

Project # 140627

Sample expiration date/time 6/10/14 2240

Sample #(s)	140627-1	140627-1
Procedure	Test Start	Test Renewal
Sample(s) checked in by Initials/Date/Time	MB 6/10/14 1050	N/A
Sample(s) warmed by Initials/Date/Time	PM 6/10/14 1440	SK 6/12/14 1445
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	PM 6/10/14 1520	SK 6/12/14 1500
Test Start-test started by: Test renewal-test renewed by: Initials/Date/Time	PM 6/10/14 1615	SK 6/12/14 1538
Remaining sample(s) returned to refrigerator by: Initials/Date/Time	PM 6/10/14 1610	N/A
Samples disposed of by & disposal method Initials/Date/Time	N/A	Sample consumed noted SK 6/12/14 1500

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: 6/19/14

SURVIVAL BENCH SHEET

Project #: 140574 **Test Start:** 5/30/14 1550

Test Organism: Cyprinella leedsi **Test End:** 6/3/14 (renewal)

Organism Age: 9 days **Brood #:** CL140521

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	140574-1	10	0	—	—	—	10	0	—	—	—	
50		10	0	—	—	—	10	0	—	—	—	
25		10	8	8			10	6	4			
12.5		10	9	9			10	8	8			
6.25		10	10	10			10	10	9			
Control		10	10	10			10	8	7			
Organisms Fed By: (Initials & Time)		—	—	SS 0810			—	—	SS 0810			
0 Hours started/checked by: 24, 72, 96 Hours counted by: 48 Hours renewed/cleaned by:		my/SS	my	SS			my/SS	my	SS			

Comments or Corrections: _____

Reviewed by: MB

Date: 6/19/14

ACUTE TOXICITY TEST PHYSICAL AND CHEMICAL MEASUREMENTS

EPA Method # 2000.0

Project #: 140574 **Test Start:** 5/30/14 1550

Test Organism: Cyprinella leedsi **Test End:** 6/~~3~~1/14 mov/19

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	140574-1	7.5 ①	8.0				7.9	8.6			
50.0		8.0	7.7				7.9	8.4			
25.0		8.1	8.1	7.6/8.1			7.9	8.3	8.2/7.9		
12.5		8.2	7.9	7.3/8.2			7.9	8.2	7.9/7.9		
6.25		8.2	8.0	7.6/8.1			7.8	8.1	7.9/7.9		
Control		8.2	7.7	7.8/8.1			7.8	7.9	7.9/7.9		
Measured by:		SS	my	PM/SS			SS	my	PM/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	140574-1	24	25				1.149	0.982			
50.0		24	25				0.731	0.681			
25.0		24	25	25/25			0.509	–	–/0.530		
12.5		24	25	25/25			0.408	–	–/0.426		
6.25		24	25	25/25			0.353	–	–/0.375		
Control		24	25	25/25			0.299	–	–/0.324		
Measured by:		SS	my	PM/SS			SS	my	–/SS		

Comments or corrections: ① D.O. were dropped from initial chem at loading more than 1mg/L therefore aeration~~s~~ started on all concentrations, all replicates at ~100 bubbles/min at 1615 on 5/30/14. SS

Reviewed by: MB

Date: 6/19/14

SAMPLE/CONTROL WATER INFORMATION

Project #: 140574

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	Filter-ed by
Initial Sample Analysis	140574-1	384	6/4/14	AB	224	6/4/14	AB				1.149	5/30/14	SS
Control Water – Initial	SMH140528	52	6/4/14	AB	80	6/4/14	AB				0.299	5/30/14	SS
Control Water – Renewal	SMH140530	55	6/4/14	AB	80	6/4/14	AB				0.324	6/1/14	SS

*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
140574-1	1.0	6.0	~500	7.5	SS 5/30/14 1400 (1.0L)	7.6	SS
140574-1	7.4	N/A	N/A	N/A	SS 6/1/14 1430	7.7	SS

Comments or corrections: _____

Reviewed by: MB

Date: 6/19/14

ACUTE TEST CONDITIONS

Project #: 140574 **Client:** Hazen + Sawyer W #5130

Test type: CL 96 hr @ def **Test run in Environmental Chamber #:** 2

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	SS	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:** 18

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		
DO Meter (B)	4	4	4/4		
pH Meter (C)	7	7	7/7		
Conductivity meter (D)	10	10	—/10		
Freshwater cond. checked by	—	—	—/—	—	—
Used by (Initials)	SS	MY	PM/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: 6/19/14

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 _____

Sean Schmidt _____

Sample Containers

1 qt.	2 qt.	1 Gal.
	4	

Sample Cooler #: 1

Tests Required

Acute: 96HR Cyprinella leedsi
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.
	BHS3-ST2	1	5/29/14	8:50	Grab	1	yes		
	BHS3-ST2-D	2	5/29/14	8:55	Grab	1	yes		
	BHS3-STE	3	5/29/14	9:38	Grab	1	yes	140574-1	1°C
	BHS4-ST2	4	5/29/14	10:45	Grab	1	yes		

Sampling Kit Transfers

Relinquished By:	Received By:	Date	Time	Count
MBL: [signature]	Carrier: FedEx	5/23/14	1530	4
Carrier: FedEx	Client: [signature]	5/27/14	1200	4

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

Sample Transfers

Relinquished By:	Received By:	Date	Time	Count
Person's Name: Josefin Hirst Facility Name: Hazen	Person's Name: Scott McCullough Facility Name: American Marine	5/29/14	8:52	4
Person's Name: Scott McCullough Facility Name: American Courier	Person's Name: [signature] Facility Name: MBL	5/30/14	1010	4
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 Grp Busbill/Airbill #: 229112

INTERNAL CHAIN OF CUSTODY
MARINCO BIOASSAY LABORATORY, INC.

Acute Toxicity Test

Project # 140574

Sample expiration date/time 5/30/14 2138

Sample #(s)	140574-1	140574-1
Procedure	**Test Start**	**Test Renewal**
Sample(s) checked in by Initials/Date/Time	MB 5/30/14 1010	N/A
Sample(s) warmed by Initials/Date/Time	SS 5/30/14 1320	SS 6/1/14 1430
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	my 5/30/14 1430	SS 6/1/14
Test Start-test started by: Test renewal-test renewed by: Initials/Date/Time	my 5/30/14 1550	
Remaining sample(s) returned to refrigerator by: Initials/Date/Time	my 5/30/14 1505	N/A
Samples disposed of by & disposal method Initials/Date/Time	N/A	Sample consumed in test SS 6/1/14

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: 6/19/14

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

Whole Effluent Toxicity Testing Summary Page

Client name: Hazen & Sawyer BHS3-ST2

MBL Project/Report # 140572

MBL Sample #	Species	Permit Requirements	Test Results	Passing or Failure
140572-1	*Cyprinella leedsi*	LC50 > / = 100%	LC50 > 100%	Passing
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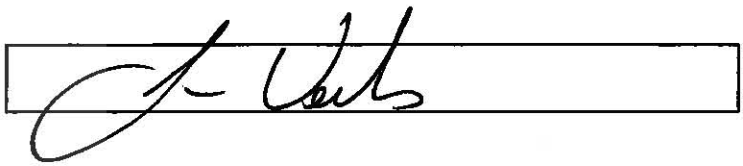
Additional Testing Required: N/A

Comments:

QA/QC Officer/Reviewer: Signature 

Date: 6/12/2014

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**

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**

Dates Test(s) Conducted: Start Date: **05/30/2014** End Date: **06/03/2014** Start Time: **1525 hrs.**

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

QA/QC Officer/Reviewer: Signature Date: **6/12/2014**

Laboratory Report #/ Project #: **140572** Sampler's Name: (Print) **Josefin Hirst and Sean Schmidt**

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	05/29/2014 0850 hrs.	140572-1	Grab	1	-------	------	-------
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Type of Refrigerant Used for Sample Transportation: **X** Wet Ice **N/A** Blue Ice **N/A** Other

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

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

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: 06/11/2014

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	10 days	CL	0.04 mL1200 Artemia nauplii/0.1 mL per replicate	Once at renewal	1000 mL	250 mL	Beaker	10	2	24-25
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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	05/13/2014-05/17/2014	CL	In-House	5.48 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: 6/12/2014

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	140572-1	-----	-----	-------	> 100% *
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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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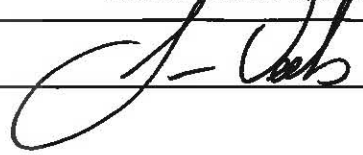
(5) If multi-concentration (Definitive) tests are conducted on grab or composite samples, record the calculated LC50 in this column for each sample. Enter "N/A" in all % Mortality columns and LC50 box at bottom of this table.
(6) If a single concentration (Screen) test is conducted and >50% mortality 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



Date: 6/12/2014

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: 6/12/2014

SURVIVAL BENCH SHEET

Project #: 140572 **Test Start:** 5/30/14 1525

Test Organism: Cyprinella leedsi **Test End:** 6/3/14 1500

Organism Age: 10 days **Brood #:** CL140520

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	140572-1	10	10	10	10	10	10	10	10	10	10	100
50		10	9	8	8	8	10	10	10	10	10	90
25		10	10	10	10	10	10	9	9	9	9	95
12.5		10	10	10	10	10	10	10	10	10	10	100
6.25		10	9	9	9	9	10	10	10	10	10	95
Control		10	10	10	10	10	10	9	9	9	9	95
Organisms Fed By: (Initials & Time)		—	—	SS 0810	—	—	—	—	SS 0810	—	—	—
0 Hours started/checked by: 24, 72, 96 Hours counted by: 48 Hours renewed/cleaned by:		MM/MB	MM	SS	MM	MB	MM/MB	MM	SS	MM	MB	MB

Comments or Corrections: _____

Reviewed by: MB

Date: 6/4/14

ACUTE TOXICITY TEST PHYSICAL AND CHEMICAL MEASUREMENTS

EPA Method # 2000.0

Project #: 140572 **Test Start:** 5/30/14 1525

Test Organism: Cyprinella leedsi **Test End:** 6/3/14 1500

Effluent Concentration %	Sample Number	Dissolved Oxygen (mg/L)					pH				
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	ss130 140572-1	8.2	6.9	6.7/7.7	6.5	6.4	8.1	8.3	8.5/7.5	8.4	8.4
50.0		8.2	7.2	6.1/8.2	6.4	6.3	8.1	8.2	8.2/7.8	8.1	8.2
25.0		8.2	7.4	6.1/8.2	6.6	5.2	8.0	8.0	7.9/7.8	7.9	7.9
12.5		8.3	7.6	6.6/8.1	6.8	5.3	8.0	7.9	7.9/7.9	7.8	7.8
6.25		8.2	7.6	6.9/8.1	6.8	5.5	7.8	7.8	7.9/7.9	7.7	7.7
Control		8.1	7.5	7.1/8.1	6.8	6.5	7.8	7.8	7.8/7.9	7.7	7.7
Measured by:		SS	MM	PM/SS	SC	SC	SS	MM	PM/SS	SV	SC

Effluent Concentration %	Sample Number	Temperature (Degrees Celsius)					Conductivity (mS/cm)				
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	140572-1	24	25	25/25	25	25	0.902	—	—/0.908	—	0950
50.0		24	25	25/25	25	25	0.605	—	—/0.612	—	0649
25.0		24	25	25/25	25	25	0.456	—	—/0.470	—	0501
12.5		24	25	25/25	25	25	0.380	—	—/0.390	—	0421
6.25		24	25	25/25	25	25	0.340	—	—/0.350	—	0367
Control		24	25	25/25	25	25	0.299	—	—/325	—	0341
Measured by:		SS	MM	PM/SS	SC	SC	SS	—	—/SS	—	SC

Comments or corrections: _____

Reviewed by: NB

Date: 6/4/14

SAMPLE/CONTROL WATER INFORMATION

Project #: 140572

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		140572-1	262	6/4/14	AB	360	6/4/14	AB				0.902	5/20/14	SS
Control Water	Initial	SM140528	52	6/4/14	AB	80	6/4/14	AB				0.299	5/30/14	SS
	Renewal	SM140530	55	6/4/14	AB	80	6/4/14	AB				0.325	6/1/14	SS

*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
140572-1	0.5	6.0	~500	8.2	SS 5/20/14 1345 (1.0L)	7.0	SS
140572-1	7.7	N/A	N/A	N/A	SS 6/1/14 1355	7.5	SS

Comments or corrections:

Reviewed by: MB

Date: 6/4/14

ACUTE TEST CONDITIONS

Project #: 140572 **Client:** Hazen + Sawyer.

Test type: CL 96 hr @ def **Test run in Environmental Chamber #:** 2

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	SS	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:** 18

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)	SS	MY	PM/SS	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: 6/24/14

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 _____

Sean Schmidt _____

Sample Containers

1 qt.	2 qt.	1 Gal.
	4	

Sample Cooler #: 1

Tests Required

Acute: 96HR Cyprinella leedsi
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.
	BHS3-ST2	1	5/29/14	8:50	Grab	1	yes	H0572-1	1°C
	BHS3-ST2-D	2	5/29/14	8:55	Grab	1	yes		
	BHS3-STE	3	5/29/14	9:38	Grab	1	yes		
	BHS4-ST2	4	5/29/14	10:45	Grab	1	yes		

Sampling Kit Transfers

Relinquished By:	Received By:	Date	Time	Count
MBL: [signature]	Carrier: FedEx	5/23/14	1530	4
Carrier: FedEx	Client: [signature]	5/27/14	1200	4

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

Sample Transfers

Relinquished By:	Received By:	Date	Time	Count
Person's Name: Josefin Hirst Facility Name: Hazen	Person's Name: Scott McCullough Facility Name: American Marine	5/29/14	8:52	4
Person's Name: Scott McCullough Facility Name: American Marine	Person's Name: [signature] Facility Name: MBL	5/30/14	1010	4
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 Carrier Exp Busbill/Airbill #: 229112

INTERNAL CHAIN OF CUSTODY
MARINCO BIOASSAY LABORATORY, INC.

Acute Toxicity Test

Project # 140572

Sample expiration date/time 5/30/14 2050

Sample #(s)	140572-1	140572-1
Procedure	Test Start	Test Renewal
Sample(s) checked in by Initials/Date/Time	MB 5/30/14 1010	N/A
Sample(s) warmed by Initials/Date/Time	SS 5/30/14 1320	SS 6/1/14 1350
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	MM 5/30/14 1410	SS 6/1/14 1415
Test Start-test started by: Test renewal-test renewed by: Initials/Date/Time	MM 5/30/14 1525	SS 6/1/14 1428
Remaining sample(s) returned to refrigerator by: Initials/Date/Time	MM 5/30/14 1505	N/A
Samples disposed of by & disposal method Initials/Date/Time	N/A	Sample consumed in test SS 6/1/14 1415

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 6/4/14

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

Whole Effluent Toxicity Testing Summary Page

Client name: Hazen & Sawyer BHS3-ST2-D

MBL Project/Report # 140573

MBL Sample #	Species	Permit Requirements	Test Results	Passing or Failure
140573-1	*Cyprinella leedsi*	LC50 > / = 100%	LC50 > 100%	Passing
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Additional Testing Required: N/A

Comments:

QA/QC Officer/Reviewer: Signature

Date: 6/12/2014

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:

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**

Start Date: 05/30/2014

End Date: 06/03/2014

Start Time: 1540 hrs.

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

QA/QC Officer/Reviewer: Signature

Date: 6/12/2014

Laboratory Report #/ Project #: 140573

Sampler's Name: (Print) **Josefin Hirst and Sean Schmidt**

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	05/29/2014 0855 hrs.	140573-1	Grab	1	-------	------	-------
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Type of Refrigerant Used for Sample Transportation: X Wet Ice; N/A Blue Ice; N/A Other

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

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

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: 06/11/2014

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	10 days	CL	0.04 mL1200 Artemia nauplii/0.1 mL per replicate	Once at renewal	1000 mL	250 mL	Beaker	10	2	24-25
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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	05/13/2014-05/17/2014	CL	In-House	5.48 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: 6/12/2014

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	140573-1	-----	-----	-------	> 100% *
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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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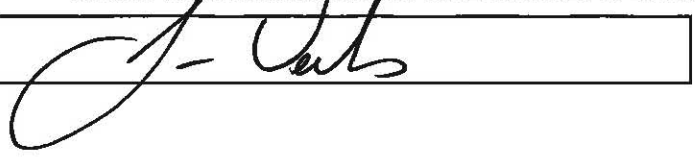
(5) If multi-concentration (Definitive) tests are conducted on grab or composite samples, record the calculated LC50 in this column for each sample. Enter "N/A" in all % Mortality columns and LC50 box at bottom of this table.
(6) If a single concentration (Screen) test is conducted and >50% mortality 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 

Date: 6/12/2014

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: 6/12/2014

SURVIVAL BENCH SHEET

Project #: 140573 **Test Start:** 5/30/14 1540

Test Organism: Cyprinella leedsi **Test End:** 6/3/14 1520

Organism Age: 10 days **Brood #:** CL140520

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	140573-1	10	10	10	10	10	10	9	9	9	9	95
50		10	10	10	10	10	10	9	9	9	9	95
25		10	10	10	10	10	10	10	9	9	9	95
12.5		10	9	9	9	9	10	9	9	9	8	85
6.25		10	10	10	10	10	10	10	10	10	10	100
Control		10	10	10	10	10	10	10	10	10	10	100
Organisms Fed By: (Initials & Time)		—	—	SS 0810	—	—	—	—	SS 0810	—	—	
0 Hours started/checked by: 24, 72, 96 Hours counted by: 48 Hours renewed/cleaned by:		MM/MB	MM	SS	MM	MB	MM/MB	MM	SS	MM	MB	MB

Comments or Corrections: _____

Reviewed by: MB

Date: 6/4/14

ACUTE TOXICITY TEST PHYSICAL AND CHEMICAL MEASUREMENTS

EPA Method # 2000.0

Project #: 140573 **Test Start:** 6/30/14 1540

Test Organism: Cyprinella leedsi **Test End:** 6/3/14 1510

Effluent Concentration %	Sample Number	Dissolved Oxygen (mg/L)					pH				
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	140573-1	7.9	7.0	6.4/7.2	5.6	6.0	8.1	8.2	8.5/7.3	8.3	8.4
50.0		8.1	7.5	5.3/8.2	6.0	6.2	8.2	8.2	8.1/7.6	8.0	8.1
25.0		8.2	7.5	5.8/8.2	6.5	6.5	8.2	8.0	7.9/7.8	7.9	7.9
12.5		8.3	7.5	6.0/8.1	6.6	6.5	7.9	7.9	7.8/7.9	7.7	7.8
6.25		8.3	7.5	6.9/8.1	6.7	6.5	7.9	7.8	7.8/7.9	7.8	7.7
Control		8.2	7.5	7.2/8.1	6.7	6.6	7.9	7.8	7.8/7.9	7.7	7.7
Measured by:		SS	MM	PM/SS	SK	SK	SS	MM	PM/SS	SK	SK

Effluent Concentration %	Sample Number	Temperature (Degrees Celsius)					Conductivity (mS/cm)				
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	140573-1	24	25	25/25	25	25	0.913	—	—/0.915		0943
50.0		24	25	25/25	25	25	0.607	—	—/0.612	—	0.657
25.0		24	25	25/25	25	25	0.452	—	—/0.475	—	0.499
12.5		24	25	25/25	25	25	0.381	—	—/0.399	—	0.423
6.25		24	25	25/25	25	25	0.341	—	—/0.360	—	0388
Control		24	25	25/25	25	25	0.300	—	—/0.324	—	0340
Measured by:		SS	MM	PM/SS	SK	SK	SS	—	—/SS	—	SK

Comments or corrections: _____

Reviewed by: MB

Date: 6/4/14

SAMPLE/CONTROL WATER INFORMATION

Project #: 140573

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		140573-1	266	6/4/14	AB	356	6/4/14	AB				0.913	5/30/14	SS
Control Water	Initial	SMH140528	52	6/4/14	AB	80	6/4/14	AB				0.300	5/30/14	SS
	Renewal	SMH140530 SS01	55	6/4/14	AB	80	6/4/14	AB				0.324	6/1/14	SS

*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
140573-1	0.9	6.0	~500	7.9	SS 5/30/14 1345 (1.0L)	7.0	SS
140573-1	7.2	N/A	N/A	N/A	SS 6/1/14 1356	7.3	SS

Comments or corrections:

Reviewed by: MB

Date: 6/4/14

ACUTE TEST CONDITIONS

Project #: 140573 **Client:** Hazen + Sawyer

Test type: CL 96 hr @ def **Test run in Environmental Chamber #:** 2

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	SS	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:** 18

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)	SS	my	PM/SS	SIC	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: 6/4/14

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 _____

Sean Schmidt _____

Sample Containers

1 qt.	2 qt.	1 Gal.
	4	

Sample Cooler #: 1

Tests Required

Acute: 96HR Cyprinella leedsi
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.
	BHS3-ST2	1	5/29/14	8:50	Grab	1	yes		
	BHS3-ST2-D	2	5/29/14	8:55	Grab	1	yes	H05734	1°C
	BHS3-STE	3	5/29/14	9:38	Grab	1	yes		
	BHS4-ST2	4	5/29/14	10:45	Grab	1	yes		

Sampling Kit Transfers

Relinquished By:	Received By:	Date	Time	Count
MBL: [signature]	Carrier: FedEx	5/23/14	1530	4
Carrier: FedEx	Client: [signature]	5/27/14	1200	4

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

Sample Transfers

Relinquished By:	Received By:	Date	Time	Count
Person's Name: Josefin Hirst Facility Name: Hazen	Person's Name: Scott McCullough Facility Name: American Couriers	5/29/14	8:52	4
Person's Name: Scott McCullough Facility Name: American Couriers	Person's Name: [signature] Facility Name: MBL	5/30/14	1010	4
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 Grp Busbill/Airbill #: 229112

INTERNAL CHAIN OF CUSTODY
MARINCO BIOASSAY LABORATORY, INC.

Acute Toxicity Test

Project # 140573

Sample expiration date/time 5/30/14 2055

Sample #(s)	140573-1	140573-1
Procedure	**Test Start**	**Test Renewal**
Sample(s) checked in by Initials/Date/Time	MB 5/30/14 1010	N/A
Sample(s) warmed by Initials/Date/Time	SS 5/30/14 1320	SS 6/1/14 1350
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	my 5/30/14 1415	SS 6/1/14 1435
Test Start-test started by: Test renewal-test renewed by: Initials/Date/Time	my 5/30/14 1540	SS 6/1/14 1445
Remaining sample(s) returned to refrigerator by: Initials/Date/Time	my 5/30/14 1505	N/A
Samples disposed of by & disposal method Initials/Date/Time	N/A	Sample consumed in test SS 6/1/14 1435

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: 6/4/14

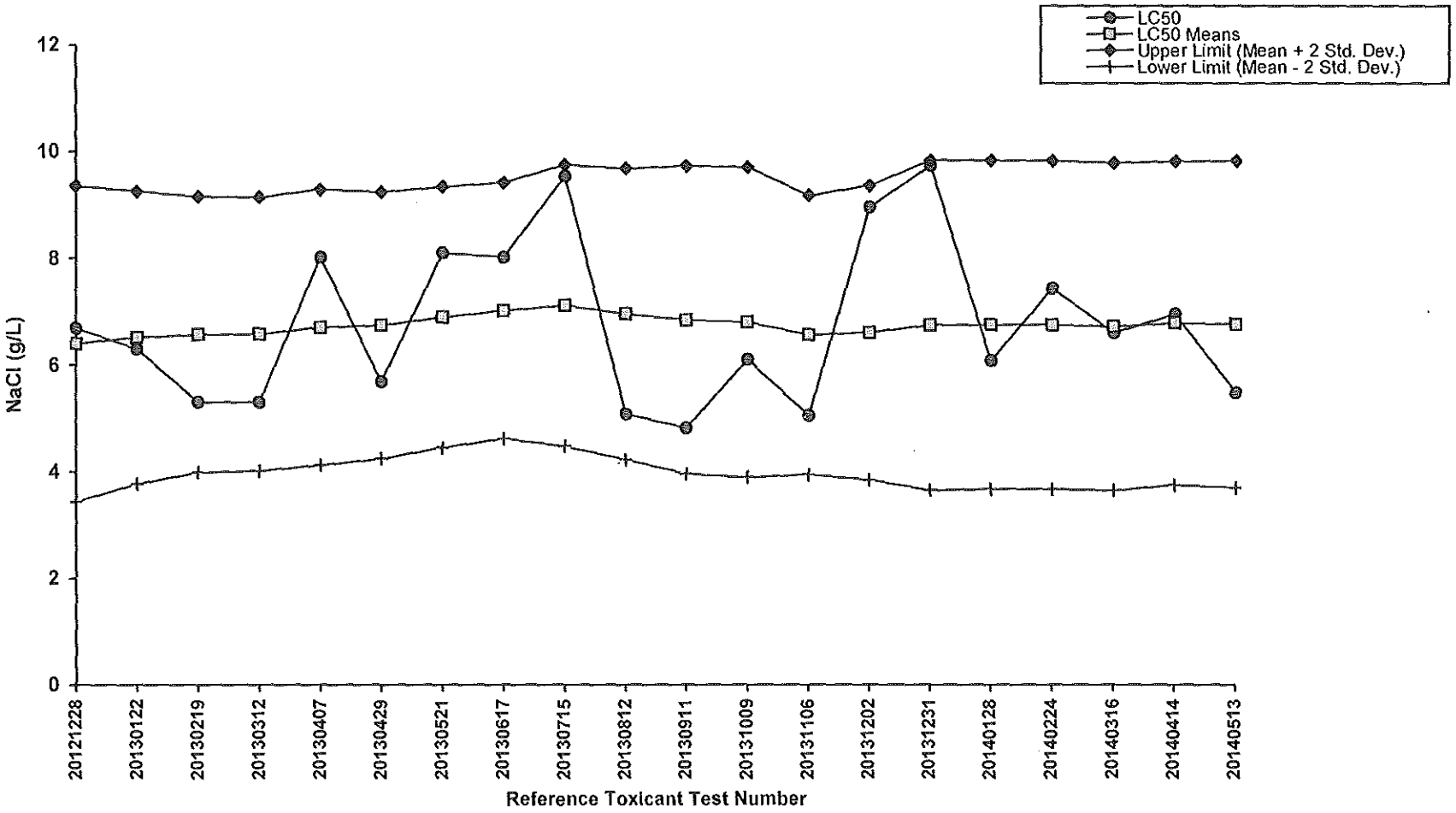
Cyprinella leedsi Acute Standard Reference Toxicant (SRT) Report.

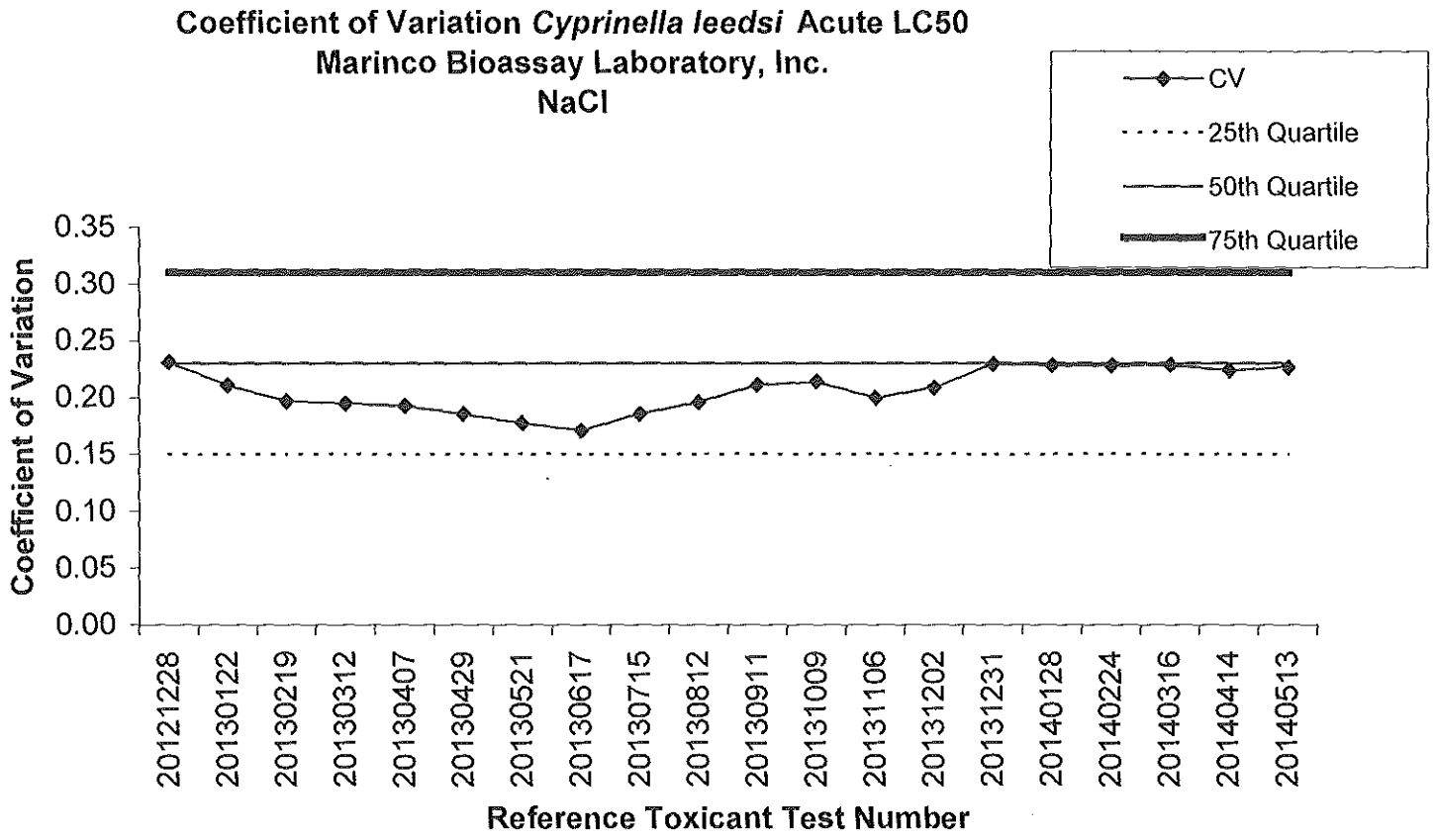
This quality control test was conducted by Marinco Bioassay Laboratory, Inc. personnel using Whole Effluent Toxicity (WET) Test method number 2000.0

SRT Test No. 140513CLACSRT

Reviewed by: [signature] Date: 5/22/14

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
20121228
20130122
20130219
20130312
20130407
20130429
20130521
20130617
20130715
20130812
20130911
20131009
20131106
20131202
20131231
20140128
20140224
20140316
20140414
20140513
Reference Toxicant Test Number

Acute Fish Test-96 Hr Survival

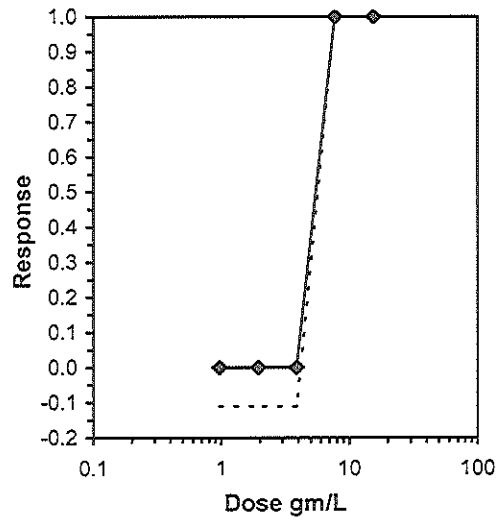
Start Date:	5/13/2014	Test ID:	140513CLACSRT	Sample ID:	15.5 g/L NaCl
End Date:	5/17/2014	Lab ID:	MBL-Marinco Bioassay Lab.	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPA Method #2000.0	Test Species:	CL-*Cyprinella leedsi*
Comments:	This analysis was performed by Marlena Beck at MBL.				

Conc-gm/L	1	2
Control	0.9000	0.9000
0.969	1.0000	1.0000
1.94	1.0000	1.0000
3.88	1.0000	1.0000
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	**0.9000**	1.0000	0.9000	0.9000	0.9000	0.000	2	2	20
0.969	**1.0000**	1.1111	1.0000	1.0000	1.0000	0.000	2	0	20
1.94	**1.0000**	1.1111	1.0000	1.0000	1.0000	0.000	2	0	20
3.88	**1.0000**	1.1111	1.0000	1.0000	1.0000	0.000	2	0	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

Graphical Method

Trim Level	EC50
0.0%	5.4836
	5.4836



SURVIVAL BENCH SHEET

Project #: 140513CLACSRT **Test Start:** 5/13/14 1245

Test Organism: Cyprinella leedsi **Test End:** 5/17/14 1240

Organism Age: ~~13~~ 4 days mj 5/13 **Brood #:** CL140429

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	1	1	0	10	10	1	1	0	0
25		10	10	10	10	10	10	10	10	10	10	100
12.5		10	10	10	10	10	10	10	10	10	10	100
6.25		10	10	10	10	10	10	10	10	10	10	100
Control		10	9	9	9	9	10	9	9	9	9	90
Organisms Fed By: (Initials & Time)		—	—	0810 mj	—	—	—	—	0810 mj	—	—	—
0 Hours started/checked by: 24, 72, 96 Hours counted by: 48 Hours renewed/cleaned by:		mj / JP	mj	1405 mj	mj	mj	mj / JP	mj	1405 mj	mj	mj	mj

Comments or Corrections:

Reviewed by: MB

Date: 5/22/14

ACUTE TOXICITY TEST PHYSICAL AND CHEMICAL MEASUREMENTS

EPA Method # 2000.0

Project #: 140513CLACSRT **Test Start:** 5/13/14 1245

Test Organism: Cyprinella leedsi **Test End:** 5/17/14 1210

Effluent Concentration %	Sample Number	Dissolved Oxygen (mg/L)					pH				
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	15.5 g/L NaCl	7.8	6.3	—	—	—	7.6	7.5	—	—	—
50.0		7.8	7.0	6.9 / 8.0	7.2	7.2	7.7	7.6	7.4 / 7.5	7.8	7.7
25.0		8.0	7.4	7.0 / 8.1	6.7	6.8	7.7	7.8	7.5 / 7.6	7.6	7.5
12.5		8.0	7.4	6.9 / 8.2	6.6	6.8	7.8	7.8	7.5 / 7.6	7.6	7.6
6.25		8.1	7.4	7.0 / 8.2	7.0	7.1	7.8	7.8	7.5 / 7.7	7.7	7.7
Control		8.0	7.3	7.2 / 8.1	7.0	7.1	7.9	7.8	7.6 / 7.8	7.8	7.7
Measured by:		my	my	my / my	my	my	my	my	my / my	my	my

Effluent Concentration %	Sample Number	Temperature (Degrees Celsius)					Conductivity (mS/cm)				
		0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours
100	15.5 g/L NaCl	25	25	—	—	—	26.8	26.4	—	—	—
50.0		25	25	25 / 25	25	25	14.28	—	— / 14.20	—	14.93
25.0		25	25	25 / 25	25	25	7.39	—	— / 7.37	—	7.82
12.5		25	25	25 / 25	25	25	3.99	—	— / 4.00	—	4.22
6.25		25	25	25 / 25	25	25	2.21	—	— / 2.22	—	2.35
Control		25	25	25 / 25	25	25	0.323	—	— / 0.322	—	0.348
Measured by:		my	my	my / my	my	my	my	my	— / my	—	my

Comments or corrections: _____

Reviewed by: MB

Date: 5/22/14

SRT Tracking Sheet

Test ID: 140513CLACSRT **Test LC50:** 5.48 g/L NaCl

Test Species: Cyprinella leedsi **Test NOEC:** N/A

Test Dates : 5/13/14 to 5/17/14 **Test IC25:** N/A

SRT Solution Data

Test Concentration and Toxicant: 15.5 g/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
15.52003	my 5/13/14	1.0	my 5/13/14	26.8	my 5/13/14	Precisa my 5/13/14
7.74993	my 5/15/14	0.5	my 5/15/14	26.9	my 5/15/14	Mettler my 5/15/14

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
SMH140511A	55	ABS/13/14	80	ABS/13/14	0.323	my 5/13/14

Comments or Corrections:

Reviewed by:

Date: 5/22/14

ACUTE TEST CONDITIONS

Project #: 140513CLACSRT **Client:** —

Test type: CL 96 hr @ def. **Test run in Environmental Chamber #:** 2

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	—	my	E	my	R	my	1000	my	250	my	B	my

(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: [my] 16 hours Light/8 hours dark
[—] Other —

Test(s) conducted in accordance with EPA-821-R-02-012 **Randomization version:** 18

Method number 2000.0

Physical and Chemical Measurement Equipment

Equipment type	Test start	24 hours	48 hours	72 hours	96 hours
Thermometer (A)	D	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	N/A	10
Freshwater cond. checked by	—	—	—/—	—	—
Used by (Initials)	my	my	my/my	my	my

(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: 5/22/14