City of Morro Bay and
Cayucos Sanitary District

OFFSHORE MONITORING AND REPORTING PROGRAM

RESIDUAL BIOSOLIDS CHEMICAL ANALYSIS RESULTS

SEPTEMBER 2015

Marine Research Specialists

3140 Telegraph Rd., Suite A
Ventura, California 93003

Report to

City of Morro Bay and
Cayucos Sanitary District

955 Shasta Avenue
Morro Bay, California 93442
(805) 772-6272

MONITORING AND REPORTING PROGRAM

ANNUAL BIOSOLIDS REPORT

CHEMICAL ANALYSIS RESULTS

September 2015

Prepared by

Douglas A. Coats

Marine Research Specialists

3140 Telegraph Rd., Suite A
Ventura, California 93003

Telephone: (805) 644-1180
Telefax: (805) 289-3935
E-mail: Marine@Rain.org

September 2015

marine research specialists

3140 Telegraph Rd., Suite A • Ventura, CA 93003 • 805-644-1180

Bruce Keogh
Wastewater Division Manager
City of Morro Bay
955 Shasta Avenue
Morro Bay, CA 93442

25 September 2015

Reference: Chemical Analysis Results for Biosolid Samples Collected in September 2015

Dear Mr. Keogh:

Enclosed are the results of chemical analyses conducted on a representative composite of biosolid samples collected from the drying beds on 9 September 2015. Also included in this report are pertinent QA/QC data, including chains of custody and analyses of method blanks and spikes. All analyses were conducted following the requirements[a] set forth in Order Number R3-2008-0065 of NPDES discharge Permit Number CA0047881.

Based on a comparison between measured chemical concentrations in the composite sample and applicable State and Federal regulations, the biosolids amassed in 2015 are not considered hazardous waste, and are deemed suitable for land application. A summary of the analytical results is presented in Table 1. As in prior years, only a few of the more than 150 compounds analyzed in the composite sample were detected at quantifiable concentrations, and all detected chemicals had concentrations well below the applicable standards. Bulk trace-metal concentrations measured in the September-2015 sample were comparable to concentrations measured in samples collected annually from 1999 through 2014.[b]

All trace-metal concentrations measured in the September-2015 sample were below Total Threshold Limit Concentrations (TTLC) that would designate them as hazardous under federal regulations.[c] Similarly, dry-weight concentrations for all the metals were well below the federally mandated limits, including the monthly limits for biosolids suitable for land application. One metal, copper, had a bulk wet-weight concentration that exceeded ten-times the Soluble Threshold Limit Concentration (STLC). As a result, the required waste extraction test (WET) was conducted on this compound. The test indicated that the soluble concentration of copper was five times lower than the applicable STLC limit that would designate the biosolids as hazardous within the State of California.

Copper occurs naturally in the mineralogy of ambient sediments in the central coast region. As a result, its presence in bulk biosolid samples is not unexpected because sediments enter the collection system through runoff. Copper also enters the collection system through internal corrosion of household plumbing systems, which probably accounts for its consistent detection at low concentrations within effluent samples. As with other metals, the bulk copper concentration determined in the September-2015 sample was comparable to concentrations measured in biosolids samples collected historically.

Other compounds listed in Table 1 further characterize the biosolids as required in the waste discharge requirements.

Please contact the undersigned if you have any questions regarding these results.

Sincerely,

Douglas A. Coats
Vice President
MARINE RESEARCH SPECIALISTS

Douglas A. Coats
Program Manager

Enclosure (Three Report Copies)

Table 1. Summary of Results for Biosolids Analyses

		Wet Weight				Dry Weight		
		Measured		Limit		Measured	Limit	
Constituent	**Units**	**Bulk [d]**	**WET [e]**	**STLC [f]**	**TTLC [g]**	**Bulk**	**Monthly [h]**	**Ceiling [i]**
Solids	%	79.2	— [j]	—	—	—	—	—
Total Dissolved Solids	ppm	—	4,600.	—	—	—	—	—
Cyanide	ppm	2.4	—	—	—	3.0	—	—
Antimony	ppm	≈2.1 [k]	—	15.	500.	≈2.6	—	—
Arsenic	ppm	≈2.1	—	5.	500.	≈2.6	41.	75.
Barium	ppm	380.	—	100.	10,000.	470.	—	—
Beryllium	ppm	ND [l]	—	0.75	75.	ND	—	—
Boron	ppm	33.	—	—	—	40.	—	—
Cadmium	ppm	3.2	—	1.	100.	3.9	39.	85.
Chromium (Total)	ppm	50.	—	560.	2,500.	61.	—	—
Chromium (Hexavalent)	ppm	5.	ND	5.	500.	6.4	—	—
Cobalt	ppm	≈4.9	—	80.	8,000.	≈6.0	1,500.	4,300.
Copper	ppm	490. [m]	5.1	25.	2,500.	600.	1,500.	4,300.
Lead	ppm	41.	—	5.	1,000.	51.	300.	840.
Mercury	ppm	0.94	—	0.2	20.	1.20	17.	57.
Molybdenum	ppm	33.	—	350.	3,500.	41.	—	—
Nickel	ppm	44.	—	20.	2,000.	54.	420.	420.
Selenium	ppm	9.9	—	1.	100.	12.	100.	100.
Silver	ppm	4.7	—	5.	500.	5.8	—	—
Thallium	ppm	ND	—	7.	700.	ND	—	—
Vanadium	ppm	23.	—	24.	2,400.	28.	—	—
Zinc	ppm	1,100.	—	250.	5,000.	1,400.	2,800.	7,500.
Hydrogen-Ion	pH	6.55	—	—	—	—	—	—
Phosphate	mg/kg	67,000.	—	—	—	84,000.	—	—
Ammonia	mg/kg	6,600.	—	—	—	8,300.	—	—
TKN	mg/kg	29,000.	—	—	—	36,000.	—	—
Organic Nitrogen [n]	mg/kg	22,400.	—	—	—	27,700.	—	—
Nitrate as NO_3	mg/kg	2,500.	—	—	—	3,200.	—	—
Oil & Grease	ppm	54,000.	—	—	—	68,000.	—	—

[a] Although Method EPA-8240 did not explicitly test for the presence of 2-chloroethyl vinyl ether (2-CEVE), a detectable concentration of this analyte would be reported as one of the Method's Tentatively Identified Compounds (TICs). As described in the Laboratory Report's *Case Narrative*, 2-CEVE was not detected in the September-2015 composite biosolids sample.

[b] Marine Research Specialists (MRS). 1999 through 2014. City of Morro Bay and Cayucos Sanitary District, Residual Biosolids Chemical Analysis Results. Prepared for the City of Morro Bay and Cayucos Sanitary District, Morro Bay, CA. http://www.morro-bay.ca.us/Archive.aspx?AMID=64

[c] U.S. Government Printing Office (USGPO). 1997b. Code of Federal Regulations. Environmental Protection. Standards for the use or disposal of Sewage Sludge, Land Application, Pollutant Limits. Chapter 40, Part 503, Subpart B. 1 July 1997 edition.

[d] The total wet-weight concentration (mg/kg) within a bulk biosolid sample consisting of the entire millable solid matrix rather than just the leachate.

[e] Waste Extraction Tests (WET) measure the soluble leachate (mg/L) or the extractable amount of a substance contained within a bulk sample of biosolids. A WET is indicated if the bulk wet-weight concentration of a contaminant in a biosolids sample exceeds ten times the STLC.

[f] Soluble Threshold Limit Concentrations (STLC) apply to the measured concentration in the liquid extract from a biosolid sample, as determined by a WET. Biosolids with leachate concentrations exceeding the STLC are classified as hazardous in the State of California as described in the California Code of Regulations (CCR), Title 22, Chapter 11: *Identification and Listing of Hazardous Waste*.

[g] Total Threshold Limit Concentrations (TTLC) apply to the total wet-weight concentration of a contaminant (mg/kg) within a bulk biosolid sample. Biosolids are designated as hazardous wastes in the State of California if measured bulk concentrations exceed the TTLC as described in the CCRs, *op. cit.*

[h] Federally mandated dry-weight limits imposed on biosolids suitable for application on agricultural land apply to monthly average concentrations as defined in Table 3 of the Code of Federal Regulations (CFRs). *Environmental Protection. Standards for the use or disposal of Sewage Sludge, Land Application, Pollutant Limits*. Chapter 40, Part 503, Subpart B [40 CFR §503.13(b)(1)].

[i] Federally mandated dry-weight ceiling concentrations above which biosolids are considered hazardous waste as defined in Table 1 of the CFRs, *op. cit.*

[j] "—" indicates that the measurement was not required or its limit was not specified.

[k] "≈" indicates the reported concentration was too low to be reliably quantified.

[l] "ND" indicates that the measurement was not detected in concentrations exceeding the method detection limit.

[m] The bulk concentration was greater than ten times the STLC and a WET was conducted.

[n] The amount of nitrogen as reported by TKN excluding ammonia

Date of Report: 09/25/2015

Doug Coats

Marine Research Specialists
3140 Telegraph Road, Suite A
Suite A
Ventura, CA 93003-3238

Client Project: [none]
BCL Project: Biosolids from MBWWTP
BCL Work Order: 1523062
Invoice ID: B214702

Enclosed are the results of analyses for samples received by the laboratory on 9/10/2015. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Tina Green
Client Services Manager

Authorized Signature

Table of Contents

Case Narratives

Case Narrative for Work Order 1523062

2- CEVE can only be reported as a TIC (Tentatively Identified Compound). 2 CEVE was not found as a TIC

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949.

Chain of Custody Form

Report To: Client: Marine Research Specialists	Project #:
Attn: Douglas A Coats	Project Name: MBCSD Biosolids 2015
Street Address: 3140 Telegraph Rd Ste A	Global ID #:
City, State, Zip: Ventura, CA 93003	Sampler(s): George Helms, Dave Lundy, Bruce Krogh
Phone: 805.218.3662	
Email Address: Marine@Rain.org	
Work Order# 15-23062	

Analysis Requested

Sample #	Description	Date Sampled	Time Sampled	Moisture, EPA 160.3 or BC	TDS, mod. STLC EPA 160.1	CAM 17 metals + Boron	TKN, EPA 351.2	Ammonia as N, EPA 350.1	Nitrate as NO3, EPA 300.0	Total Phosphate, EPA 365.4	Total Cyanide, EPA 9012	pH, EPA 9045 or 150.1	Sample Matrix: Soil	Sludge	Drinking Water	Ground water	Waste Water	Other	Notes
1	BC1 Composite Biosolids	9/9/2015	1130	X	X	X	X	X	X	X	X	X	X						

Comments:
Page 1 of 4

Please see attached PDF beginning on Page 3 for full explanations/details of individual analyses.

Are there any tests with holding times less than or equal to 48 hours? ☐ Yes ☒ No

CHK BY: MM

DISTRIBUTION: CLIENT ☐ FAX ☐ EDF ☐ SUB-OUT ☐

Billing ☒ Same as above

Client:
Address:
City: State Zip
Attn:
PO#:

EDF Required? ☐ Yes ☒ No

Send Copy to State of CA? ☐ Yes ☒ No

Sample Disposal ☐ Return to Client ☒ Disposal by lab ☐ Archive Months

Special Reporting ☒ QC ☐ EDF ☐ Raw Data

	1. Relinquished By	Date	Time	2. Relinquished By	Date	Time	3. Relinquished By	Date	Time
		10SEP15	1430		9-10-15	2045			
		9-10-15	1430		9-10-15	2045			

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949.

Chain of Custody Form

Report To: Client: Marine Research Specialists	Project #:
Attn: Douglas A Coats	Project Name: MBCSD Biosolids 2015
Street Address: 3140 Telegraph Rd Ste A	Global ID #:
City, State, Zip: Ventura, CA 93003	Sampler(s):
Phone: 805.218.3662	
Email Address: Marine@Rain.org	
Work Order# 15-23062	

Analysis Requested

Comments:
Page 2 of 4

Please see attached PDF beginning on Page 3 for full explanations/details of individual analyses.

Sample #	Description	Date Sampled	Time Sampled	Oil and Grease, EPA 1664	Semi-vol organics, EPA 8270	Pesticides/PCBs, EPA 8080	Volatile organics, EPA 8240	Total Hex Chrom, EPA 7196	Hex Chrom, mod. STLC 7196	WET tests*** on Cu	Sample Matrix: Soil	Sludge	Drinking Water	Ground water	Waste Water	Other	Are there any tests with holding times less than or equal to 48 hours?	Notes
1	BC1 Composite Biosolids	9/9/2015	1130	X	X	X	X	X	X	X		X						***STLC EPA 6010, but see Footnote c on Page 3!
	(continued from Page 1)																	

Sample Matrix: Soil, Sludge, Drinking Water, Ground water, Waste Water, Other

Are there any tests with holding times less than or equal to 48 hours? ☐ Yes ☒ No

Billing

☒ Same as above

Client:
Address:
City: State Zip
Attn:
PO#:

EDF Required?

☐ Yes ☒ No

Send Copy to State of CA?

☐ Yes ☒ No

Sample Disposal

☐ Return to Client ☒ Disposal by lab ☐ Archive Months

1. Relinquished By	Date	Time
	10/9/15	1430
2. Relinquished By	Date	Time
	9-10-15	2045
3. Relinquished By	Date	Time

1. Relinquished By	Date	Time
	9-10-15	1430
2. Relinquished By	Date	Time
	9.10.15	2045
3. Relinquished By	Date	Time

Special Reporting

☒ QC ☐ EDF ☐ Raw Data

15-23062

BC Laboratories, Inc. Chain of Custody Form (Addenda) Page 3 of 4

Analysis and Reporting for the Biosolids Sample from the Morro Bay Wastewater Treatment Plant to be collected on 9 September 2015[a]

Analysis[b]	Method
Level IIA QC	
Waste Extraction Tests on copper[c] **(CCR Title 22, Article 11)**	STLC (6010)
Moisture	EPA 160.3 or BC
Total Dissolved Solids (TDS)	Modified Waste Extraction Test (STLC) EPA 160.1
CAM-17 Metals and Boron[d]:	
Antimony (Sb)	6010
Arsenic (As)	6010
Barium (Ba)	6010
Beryllium (Be)	6010
Boron (B)	6010
Cadmium (Cd)	6010
Total Chromium (Cr)	6010
Cobalt (Co)	6010
Copper (Cu)	6010
Lead (Pb)	6010
Mercury (Hg)	7471
Molybdenum (Mo)	6010
Nickel (Ni)	6010
Selenium (Se)	6010
Silver (Ag)	6010
Thallium (Tl)	6010
Vanadium (Va)	6010
Zinc (Zn)	6010
Total Kjeldahl Nitrogen (TKN)[d]	EPA 351.2
Ammonia as N[d]	EPA 350.1
Nitrate as NO_3[d]	EPA 300.0 or 353.2
Total Phosphate[d]	EPA 365.4
Total Cyanide[d]	EPA 9012

[a] Please provide preliminary (pre-QC) results in BC LabNet as soon as they become available.

[b] Prior to analysis, homogenize the composite sample in the laboratory to ensure uniform distribution of multiple subsamples in sample container(s)

[c] Other metals may need to be WET tested depending on their bulk concentrations (e.g. lead, mercury). Questions regarding the need for additional WET tests based on the preliminary bulk-chemistry analysis of metals can be directed to Doug Coats 805.218.3662.

[d] Sample results to be reported on an '*as received*' and '*dry basis*.'

[e] Modified-extraction, using DI water to extract not citric acid

15-23062

BC Laboratories, Inc. Chain of Custody Form (Addenda) Page 3 of 4

Analysis[b]	Method
pH	EPA 9045 or 150.1
Oil and Grease	EPA 1664
Semi-volatile Organics	EPA 8270/625
Pesticides and PCBs	EPA 8080/608
Volatile Organics – Low Level; report all EPA priority pollutants not reported under other methods (including **acrolein, acrylonitrile, and 2-chloroethyl vinyl ether**)	EPA 8240/624
Hexavalent Chromium (Total) [d]	EPA 7196
Hexavalent Chromium [e]	Modified Waste Extraction Test (STLC) EPA 7196

Chain of Custody and Cooler Receipt Form for 1523062 Page 5 of 5

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 15-23062

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☒ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☒ Other ☐ (Specify)_____	Other ☐ (Specify)_____	

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☒ No ☐ All samples containers intact? Yes ☒ No ☐ Description(s) match COC? Yes ☒ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 0.97 Container: PE Thermometer ID: 208 Date/Time 9/10/15 2102

Temperature: (A) 1.2 °C / (C) 1.1 °C Analyst Init KMB

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR	A-F									
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:_____

Sample Numbering Completed By: KMB Date/Time: 9/10/15 2132

A = Actual / C = Corrected

Rev 20 07/24/2015

[S:\WPDoc\WordPerfect\LAB_DOCS\FORMS\SAMRECrev 20]

Marine Research Specialists
3140 Telegraph Road, Suite A
Suite A
Ventura, CA 93003-3238

Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1523062-01	**COC Number:**	---	**Receive Date:**	09/10/2015 20:45
	Project Number:	---	**Sampling Date:**	09/09/2015 11:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	BC1 Composite Biosolids	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Other

Marine Research Specialists
3140 Telegraph Road, Suite A
Suite A
Ventura, CA 93003-3238

Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Aldrin	ND	ND	mg/kg	0.068	0.0035	EPA-8080	ND	A10	1
alpha-BHC	ND	ND	mg/kg	0.068	0.019	EPA-8080	ND	A10	1
beta-BHC	ND	ND	mg/kg	0.068	0.052	EPA-8080	ND	A10	1
delta-BHC	ND	ND	mg/kg	0.068	0.010	EPA-8080	ND	A10	1
gamma-BHC (Lindane)	ND	ND	mg/kg	0.068	0.034	EPA-8080	ND	A10	1
Chlordane (Technical)	ND	ND	mg/kg	6.8	2.0	EPA-8080	ND	A10	1
4,4'-DDD	ND	ND	mg/kg	0.068	0.0086	EPA-8080	ND	A10	1
4,4'-DDE	ND	ND	mg/kg	0.068	0.0061	EPA-8080	ND	A10	1
4,4'-DDT	ND	ND	mg/kg	0.068	0.0042	EPA-8080	ND	A10	1
Dieldrin	ND	ND	mg/kg	0.068	0.0044	EPA-8080	ND	A10	1
Endosulfan I	ND	ND	mg/kg	0.068	0.012	EPA-8080	ND	A10	1
Endosulfan II	ND	ND	mg/kg	0.068	0.0090	EPA-8080	ND	A10	1
Endosulfan sulfate	ND	ND	mg/kg	0.068	0.018	EPA-8080	ND	A10	1
Endrin	ND	ND	mg/kg	0.068	0.0048	EPA-8080	ND	A10	1
Endrin aldehyde	ND	ND	mg/kg	0.068	0.0083	EPA-8080	ND	A10	1
Heptachlor	ND	ND	mg/kg	0.068	0.035	EPA-8080	ND	A10	1
Heptachlor epoxide	ND	ND	mg/kg	0.068	0.020	EPA-8080	ND	A10	1
Methoxychlor	ND	ND	mg/kg	0.068	0.018	EPA-8080	ND	A10	1
Toxaphene	ND	ND	mg/kg	6.8	1.0	EPA-8080	ND	A10	1
PCB-1016	ND	ND	mg/kg	1.4	0.37	EPA-8080	ND	A10	1
PCB-1221	ND	ND	mg/kg	1.4	0.52	EPA-8080	ND	A10	1
PCB-1232	ND	ND	mg/kg	1.4	0.33	EPA-8080	ND	A10	1
PCB-1242	ND	ND	mg/kg	1.4	0.55	EPA-8080	ND	A10	1
PCB-1248	ND	ND	mg/kg	1.4	0.35	EPA-8080	ND	A10	1
PCB-1254	ND	ND	mg/kg	1.4	0.44	EPA-8080	ND	A10	1
PCB-1260	ND	ND	mg/kg	1.4	0.22	EPA-8080	ND	A10	1
Total PCB's (Summation)	ND	ND	mg/kg	1.4	0.68	EPA-8080	ND	A10	1
TCMX (Surrogate)	65.6	65.6	%	20 - 130 (LCL - UCL)		EPA-8080		A10	1
Decachlorobiphenyl (Surrogate)	69.1	69.1	%	40 - 130 (LCL - UCL)		EPA-8080		A10	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8080	09/14/15	09/17/15 18:08	KEP	GC-17	136.36	BYI1730

Marine Research Specialists
3140 Telegraph Road, Suite A
Suite A
Ventura, CA 93003-3238

Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ND	mg/kg	0.025	0.0065	EPA-8240	ND	A01	1
Bromodichloromethane	ND	ND	mg/kg	0.025	0.0042	EPA-8240	ND	A01	1
Bromoform	ND	ND	mg/kg	0.025	0.0075	EPA-8240	ND	A01	1
Bromomethane	ND	ND	mg/kg	0.025	0.0080	EPA-8240	ND	A01	1
Carbon tetrachloride	ND	ND	mg/kg	0.025	0.0055	EPA-8240	ND	A01	1
Chlorobenzene	ND	ND	mg/kg	0.025	0.0065	EPA-8240	ND	A01	1
Chloroethane	ND	ND	mg/kg	0.025	0.0070	EPA-8240	ND	A01	1
Chloroform	ND	ND	mg/kg	0.025	0.0032	EPA-8240	ND	A01	1
Chloromethane	ND	ND	mg/kg	0.025	0.0070	EPA-8240	ND	A01	1
Dibromochloromethane	ND	ND	mg/kg	0.025	0.0050	EPA-8240	ND	A01	1
1,2-Dichlorobenzene	ND	ND	mg/kg	0.025	0.0040	EPA-8240	ND	A01	1
1,3-Dichlorobenzene	ND	ND	mg/kg	0.025	0.0070	EPA-8240	ND	A01	1
1,4-Dichlorobenzene	0.014	0.011	**mg/kg**	**0.025**	**0.0075**	**EPA-8240**	ND	**J,A01**	1
1,1-Dichloroethane	ND	ND	mg/kg	0.025	0.0070	EPA-8240	ND	A01	1
1,2-Dichloroethane	ND	ND	mg/kg	0.025	0.0042	EPA-8240	ND	A01	1
1,1-Dichloroethene	ND	ND	mg/kg	0.025	0.0060	EPA-8240	ND	A01	1
trans-1,2-Dichloroethene	ND	ND	mg/kg	0.025	0.0070	EPA-8240	ND	A01	1
1,2-Dichloropropane	ND	ND	mg/kg	0.025	0.0040	EPA-8240	ND	A01	1
cis-1,3-Dichloropropene	ND	ND	mg/kg	0.025	0.0055	EPA-8240	ND	A01	1
trans-1,3-Dichloropropene	ND	ND	mg/kg	0.025	0.0060	EPA-8240	ND	A01	1
Ethylbenzene	ND	ND	mg/kg	0.025	0.0075	EPA-8240	ND	A01	1
Methylene chloride	ND	ND	mg/kg	0.050	0.012	EPA-8240	ND	A01	1
Methyl t-butyl ether	ND	ND	mg/kg	0.025	0.0025	EPA-8240	ND	A01	1
1,1,2,2-Tetrachloroethane	ND	ND	mg/kg	0.025	0.0055	EPA-8240	ND	A01	1
Tetrachloroethene	ND	ND	mg/kg	0.025	0.0065	EPA-8240	ND	A01	1
Toluene	ND	ND	mg/kg	0.025	0.0060	EPA-8240	ND	A01	1
1,1,1-Trichloroethane	ND	ND	mg/kg	0.025	0.0055	EPA-8240	ND	A01	1
1,1,2-Trichloroethane	ND	ND	mg/kg	0.025	0.0038	EPA-8240	ND	A01	1
Trichloroethene	ND	ND	mg/kg	0.025	0.0055	EPA-8240	ND	A01	1
Trichlorofluoromethane	ND	ND	mg/kg	0.025	0.0055	EPA-8240	ND	A01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ND	mg/kg	0.025	0.0065	EPA-8240	ND	A01	1
Vinyl chloride	ND	ND	mg/kg	0.025	0.0080	EPA-8240	ND	A01	1

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Xylenes	ND	ND	mg/kg	0.050	0.017	EPA-8240	ND	A01	1
Acrolein	ND	ND	mg/kg	0.25	0.036	EPA-8240	ND	A01	1
Acrylonitrile	ND	ND	mg/kg	0.10	0.024	EPA-8240	ND	A01	1
1,2-Dichloroethane-d4 (Surrogate)	99.6	99.6	%	70 - 121 (LCL - UCL)		EPA-8240			1
Toluene-d8 (Surrogate)	92.9	92.9	%	81 - 117 (LCL - UCL)		EPA-8240			1
4-Bromofluorobenzene (Surrogate)	88.6	88.6	%	74 - 121 (LCL - UCL)		EPA-8240			1
TIC: 3,6-Dimethyloctane	0.088	0.070	**mg/kg**			**EPA-8240**		**A01**	1
TIC: Acetaldehyde	0.091	0.072	**mg/kg**			**EPA-8240**		**A01**	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8240	09/11/15	09/12/15 07:58	JMS	MS-V3	5	BYI0956

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthene	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
Acenaphthylene	ND	ND	mg/kg	27	5.1	EPA-8270C	ND	A10	1
Aldrin	ND	ND	mg/kg	27	6.5	EPA-8270C	ND	A10	1
Aniline	ND	ND	mg/kg	54	14	EPA-8270C	ND	A10	1
Anthracene	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
Benzidine	ND	ND	mg/kg	810	59	EPA-8270C	ND	A10	1
Benzo[a]anthracene	ND	ND	mg/kg	27	3.2	EPA-8270C	ND	A10	1
Benzo[b]fluoranthene	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
Benzo[k]fluoranthene	ND	ND	mg/kg	27	5.1	EPA-8270C	ND	A10	1
Benzo[a]pyrene	ND	ND	mg/kg	27	4.0	EPA-8270C	ND	A10	1
Benzo[g,h,i]perylene	ND	ND	mg/kg	27	15	EPA-8270C	ND	A10	1
Benzoic acid	ND	ND	mg/kg	140	18	EPA-8270C	ND	A10	1
Benzyl alcohol	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
Benzyl butyl phthalate	ND	ND	mg/kg	27	5.7	EPA-8270C	ND	A10	1
alpha-BHC	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
beta-BHC	ND	ND	mg/kg	27	5.7	EPA-8270C	ND	A10	1
delta-BHC	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
gamma-BHC (Lindane)	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
bis(2-Chloroethoxy)methane	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
bis(2-Chloroethyl) ether	ND	ND	mg/kg	27	4.3	EPA-8270C	ND	A10	1
bis(2-Chloroisopropyl)ether	ND	ND	mg/kg	27	5.7	EPA-8270C	ND	A10	1
bis(2-Ethylhexyl)phthalate	50	40	**mg/kg**	**54**	**12**	**EPA-8270C**	ND	**J,A10**	1
4-Bromophenyl phenyl ether	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
4-Chloroaniline	ND	ND	mg/kg	27	7.3	EPA-8270C	ND	A10	1
2-Chloronaphthalene	ND	ND	mg/kg	27	5.4	EPA-8270C	ND	A10	1
4-Chlorophenyl phenyl ether	ND	ND	mg/kg	27	4.0	EPA-8270C	ND	A10	1
Chrysene	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
4,4'-DDD	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
4,4'-DDE	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
4,4'-DDT	ND	ND	mg/kg	27	5.1	EPA-8270C	ND	A10	1
Dibenzo[a,h]anthracene	ND	ND	mg/kg	27	5.1	EPA-8270C	ND	A10	1
Dibenzofuran	ND	ND	mg/kg	27	5.4	EPA-8270C	ND	A10	1

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
1,2-Dichlorobenzene	ND	ND	mg/kg	27	5.4	EPA-8270C	ND	A10	1
1,3-Dichlorobenzene	ND	ND	mg/kg	27	5.7	EPA-8270C	ND	A10	1
1,4-Dichlorobenzene	ND	ND	mg/kg	27	5.1	EPA-8270C	ND	A10	1
3,3-Dichlorobenzidine	ND	ND	mg/kg	54	1.8	EPA-8270C	ND	A10	1
Dieldrin	ND	ND	mg/kg	27	8.4	EPA-8270C	ND	A10	1
Diethyl phthalate	ND	ND	mg/kg	27	5.1	EPA-8270C	ND	A10	1
Dimethyl phthalate	ND	ND	mg/kg	27	5.4	EPA-8270C	ND	A10	1
Di-n-butyl phthalate	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
2,4-Dinitrotoluene	ND	ND	mg/kg	27	5.9	EPA-8270C	ND	A10	1
2,6-Dinitrotoluene	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
Di-n-octyl phthalate	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
1,2-Diphenylhydrazine	ND	ND	mg/kg	27	5.1	EPA-8270C	ND	A10	1
Endosulfan I	ND	ND	mg/kg	54	5.4	EPA-8270C	ND	A10	1
Endosulfan II	ND	ND	mg/kg	54	5.7	EPA-8270C	ND	A10	1
Endosulfan sulfate	ND	ND	mg/kg	27	5.7	EPA-8270C	ND	A10	1
Endrin	ND	ND	mg/kg	54	6.8	EPA-8270C	ND	A10	1
Endrin aldehyde	ND	ND	mg/kg	140	5.9	EPA-8270C	ND	A10	1
Fluoranthene	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
Fluorene	ND	ND	mg/kg	27	5.1	EPA-8270C	ND	A10	1
Heptachlor	ND	ND	mg/kg	27	5.7	EPA-8270C	ND	A10	1
Heptachlor epoxide	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
Hexachlorobenzene	ND	ND	mg/kg	27	4.3	EPA-8270C	ND	A10	1
Hexachlorobutadiene	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
Hexachlorocyclopentadiene	ND	ND	mg/kg	27	5.1	EPA-8270C	ND	A10	1
Hexachloroethane	ND	ND	mg/kg	27	5.4	EPA-8270C	ND	A10	1
Indeno[1,2,3-cd]pyrene	ND	ND	mg/kg	27	19	EPA-8270C	ND	A10	1
Isophorone	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
2-Methylnaphthalene	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
Naphthalene	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
2-Naphthylamine	ND	ND	mg/kg	810	43	EPA-8270C	ND	A10	1
2-Nitroaniline	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
3-Nitroaniline	ND	ND	mg/kg	54	4.0	EPA-8270C	ND	A10	1

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
4-Nitroaniline	ND	ND	mg/kg	54	6.8	EPA-8270C	ND	A10	1
Nitrobenzene	ND	ND	mg/kg	27	4.0	EPA-8270C	ND	A10	1
N-Nitrosodimethylamine	ND	ND	mg/kg	27	10	EPA-8270C	ND	A10	1
N-Nitrosodi-N-propylamine	ND	ND	mg/kg	27	5.7	EPA-8270C	ND	A10	1
N-Nitrosodiphenylamine	ND	ND	mg/kg	27	5.7	EPA-8270C	ND	A10	1
Phenanthrene	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
Pyrene	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
1,2,4-Trichlorobenzene	ND	ND	mg/kg	27	4.9	EPA-8270C	ND	A10	1
4-Chloro-3-methylphenol	ND	ND	mg/kg	54	5.9	EPA-8270C	ND	A10	1
2-Chlorophenol	ND	ND	mg/kg	27	4.3	EPA-8270C	ND	A10	1
2,4-Dichlorophenol	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
2,4-Dimethylphenol	ND	ND	mg/kg	27	9.4	EPA-8270C	ND	A10	1
4,6-Dinitro-2-methylphenol	ND	ND	mg/kg	140	3.2	EPA-8270C	ND	A10	1
2,4-Dinitrophenol	ND	ND	mg/kg	140	2.1	EPA-8270C	ND	A10	1
2-Methylphenol	ND	ND	mg/kg	27	4.6	EPA-8270C	ND	A10	1
3- & 4-Methylphenol	ND	ND	mg/kg	54	8.9	EPA-8270C	ND	A10	1
2-Nitrophenol	ND	ND	mg/kg	27	4.3	EPA-8270C	ND	A10	1
4-Nitrophenol	ND	ND	mg/kg	54	4.9	EPA-8270C	ND	A10	1
Pentachlorophenol	ND	ND	mg/kg	54	3.5	EPA-8270C	ND	A10	1
Phenol	ND	ND	mg/kg	27	4.3	EPA-8270C	ND	A10	1
2,4,5-Trichlorophenol	ND	ND	mg/kg	54	4.9	EPA-8270C	ND	A10	1
2,4,6-Trichlorophenol	ND	ND	mg/kg	54	4.6	EPA-8270C	ND	A10	1
2-Fluorophenol (Surrogate)	62.0	62.0	%	20 - 130 (LCL - UCL)		EPA-8270C			1
Phenol-d5 (Surrogate)	58.0	58.0	%	30 - 130 (LCL - UCL)		EPA-8270C			1
Nitrobenzene-d5 (Surrogate)	63.2	63.2	%	30 - 130 (LCL - UCL)		EPA-8270C			1
2-Fluorobiphenyl (Surrogate)	66.7	66.7	%	30 - 140 (LCL - UCL)		EPA-8270C			1
2,4,6-Tribromophenol (Surrogate)	64.3	64.3	%	20 - 150 (LCL - UCL)		EPA-8270C			1
p-Terphenyl-d14 (Surrogate)	72.9	72.9	%	30 - 150 (LCL - UCL)		EPA-8270C			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8270C	09/14/15	09/17/15 19:29	VH1	MS-B2	270	BYI1457

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

EPA Method 1664

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	68000	54000	**mg/kg**	**2500**	**1200**	**EPA-1664A HEM**	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-1664A HEM	09/16/15	09/16/15 09:30	MAM	MAN-SV	50	BYI1560

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Chemical Analysis

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Moisture	0	20.8	**%**	**0.05**	**0.05**	**Calc**	ND		1
Total Cyanide	3.0	2.4	**mg/kg**	**0.50**	**0.26**	**EPA-9012**	ND		2
pH	6.55	6.55	**pH Units**	**0.05**	**0.05**	**EPA-9045D**		**pHdil**	3
pH Measurement Temperature	22.5	22.5	**C**	**0.1**	**0.1**	**EPA-9045D**			3
Nitrate as NO3	3200	2500	**mg/kg**	**22**	**6.0**	**EPA-300.0**	ND	**A07**	4
Total Kjeldahl Nitrogen	36000	29000	**mg/kg**	**4000**	**1600**	**EPA-351.2**	ND	**A07**	5
Ammonia as N	8300	6600	**mg/kg**	**500**	**250**	**EPA-350.1**	ND	**A07**	6
Total Phosphate	84000	67000	**mg/kg**	**3000**	**1200**	**EPA-365.4**	ND	**A07**	7
Solids	100	79.2	**%**	**0.05**	**0.05**	**SM-2540G**			8

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	Calc	09/11/15	09/18/15 10:01	AMM	Calc	1	BYI1046
2	EPA-9012	09/15/15	09/16/15 07:19	TDC	KONE-1	0.980	BYI1368
3	EPA-9045D	09/24/15	09/24/15 11:00	DIW	MANUAL	1	BYI2381
4	EPA-300.0	09/15/15	09/16/15 13:35	EMW	IC1	5	BYI1357
5	EPA-351.2	09/14/15	09/17/15 09:40	JMH	SC-1	100	BYI1224
6	EPA-350.1	09/15/15	09/16/15 12:13	JMH	SC-1	45.455	BYI1372
7	EPA-365.4	09/14/15	09/18/15 08:40	JMH	SC-1	100	BYI1225
8	SM-2540G	09/16/15	09/16/15 09:00	DIW	MANUAL	1	BYI1552

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Hexavalent Chromium		ND	mg/L	0.20	0.070	EPA-7196	ND		1
Total Dissolved Solids @ 180 C		4600	**mg/L**	**200**	**200**	**EPA-160.1**	ND		2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-7196	09/18/15	09/18/15 09:39	TDC	KONE-1	1	BYI1771
2	EPA-160.1	09/18/15	09/18/15 11:00	CAD	MANUAL	20	BYI1791

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

WET Test (STLC)

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Copper		5.1	**mg/L**	**0.10**	**0.012**	**EPA-6010B**	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	09/16/15	09/17/15 10:10	ARD	PE-OP3	1	BYI1612

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Total Concentrations (TTLC)

BCL Sample ID: 1523062-01 | **Client Sample Name:** BC1 Composite Biosolids, 9/9/2015 11:30:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Antimony	2.6	2.1	mg/kg	25	1.6	EPA-6010B	ND	J,A07	1
Arsenic	2.6	2.0	mg/kg	5.0	2.0	EPA-6010B	4.1	J,A07	1
Barium	470	370	**mg/kg**	**2.5**	**0.90**	**EPA-6010B**	ND	**A07**	1
Beryllium	ND	ND	mg/kg	2.5	0.24	EPA-6010B	ND	A07	1
Cadmium	3.9	3.1	**mg/kg**	**2.5**	**0.26**	**EPA-6010B**	ND	**A07**	1
Chromium	61	49	**mg/kg**	**2.5**	**0.25**	**EPA-6010B**	ND	**A07**	1
Total Hexavalent Chromium	6.4	5.0	**mg/kg**	**5.0**	**1.5**	**EPA-7199**	ND	**A07**	2
Cobalt	6.0	4.8	**mg/kg**	**12**	**0.49**	**EPA-6010B**	ND	**J,A07**	1
Copper	600	480	**mg/kg**	**5.0**	**0.25**	**EPA-6010B**	ND	**A07**	1
Lead	51	40	**mg/kg**	**12**	**1.4**	**EPA-6010B**	ND	**A07**	1
Mercury	1.2	0.94	**mg/kg**	**0.16**	**0.036**	**EPA-7471A**	ND		3
Molybdenum	41	32	**mg/kg**	**12**	**0.25**	**EPA-6010B**	0.44	**A07**	1
Nickel	54	43	**mg/kg**	**2.5**	**0.75**	**EPA-6010B**	ND	**A07**	1
Selenium	12	9.6	**mg/kg**	**5.0**	**4.9**	**EPA-6010B**	ND	**A07**	1
Silver	5.8	4.6	**mg/kg**	**2.5**	**0.34**	**EPA-6010B**	ND	**A07**	1
Thallium	ND	ND	mg/kg	25	3.2	EPA-6010B	ND	A07	1
Vanadium	28	22	**mg/kg**	**2.5**	**0.55**	**EPA-6010B**	ND	**A07**	1
Zinc	1400	1100	**mg/kg**	**12**	**0.44**	**EPA-6010B**	ND	**A07**	1
Boron	40	32	**mg/kg**	**25**	**2.5**	**EPA-6010B**	3.1	**A07**	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	09/16/15	09/18/15 10:55	ARD	PE-OP3	4.854	BYI1497
2	EPA-7199	09/21/15	09/22/15 12:05	OLH	IC-4	5	BYI1924
3	EPA-7471A	09/16/15	09/16/15 16:17	MEV	CETAC1	1.025	BYI1490

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI1730						
Aldrin	BYI1730-BLK1	ND	mg/kg	0.00050	0.000026	
alpha-BHC	BYI1730-BLK1	ND	mg/kg	0.00050	0.00014	
beta-BHC	BYI1730-BLK1	ND	mg/kg	0.00050	0.00038	
delta-BHC	BYI1730-BLK1	ND	mg/kg	0.00050	0.000076	
gamma-BHC (Lindane)	BYI1730-BLK1	ND	mg/kg	0.00050	0.00025	
Chlordane (Technical)	BYI1730-BLK1	ND	mg/kg	0.050	0.015	
4,4'-DDD	BYI1730-BLK1	ND	mg/kg	0.00050	0.000063	
4,4'-DDE	BYI1730-BLK1	ND	mg/kg	0.00050	0.000045	
4,4'-DDT	BYI1730-BLK1	ND	mg/kg	0.00050	0.000031	
Dieldrin	BYI1730-BLK1	ND	mg/kg	0.00050	0.000032	
Endosulfan I	BYI1730-BLK1	ND	mg/kg	0.00050	0.000086	
Endosulfan II	BYI1730-BLK1	ND	mg/kg	0.00050	0.000066	
Endosulfan sulfate	BYI1730-BLK1	ND	mg/kg	0.00050	0.00013	
Endrin	BYI1730-BLK1	ND	mg/kg	0.00050	0.000035	
Endrin aldehyde	BYI1730-BLK1	ND	mg/kg	0.00050	0.000061	
Heptachlor	BYI1730-BLK1	ND	mg/kg	0.00050	0.00026	
Heptachlor epoxide	BYI1730-BLK1	ND	mg/kg	0.00050	0.00015	
Methoxychlor	BYI1730-BLK1	ND	mg/kg	0.00050	0.00013	
Toxaphene	BYI1730-BLK1	ND	mg/kg	0.050	0.0074	
PCB-1016	BYI1730-BLK1	ND	mg/kg	0.010	0.0027	
PCB-1221	BYI1730-BLK1	ND	mg/kg	0.010	0.0038	
PCB-1232	BYI1730-BLK1	ND	mg/kg	0.010	0.0024	
PCB-1242	BYI1730-BLK1	ND	mg/kg	0.010	0.0040	
PCB-1248	BYI1730-BLK1	ND	mg/kg	0.010	0.0026	
PCB-1254	BYI1730-BLK1	ND	mg/kg	0.010	0.0032	
PCB-1260	BYI1730-BLK1	ND	mg/kg	0.010	0.0016	
Total PCB's (Summation)	BYI1730-BLK1	ND	mg/kg	0.010	0.0050	
TCMX (Surrogate)	**BYI1730-BLK1**	**80.0**	%	**20 - 130 (LCL - UCL)**		
Decachlorobiphenyl (Surrogate)	**BYI1730-BLK1**	**78.9**	%	**40 - 130 (LCL - UCL)**		

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYI1730										
Aldrin	BYI1730-BS1	LCS	0.0043662	0.0050676	mg/kg	86.2		70 - 130		
gamma-BHC (Lindane)	BYI1730-BS1	LCS	0.0049230	0.0050676	mg/kg	97.1		60 - 140		
4,4'-DDT	BYI1730-BS1	LCS	0.0049672	0.0050676	mg/kg	98.0		60 - 140		
Dieldrin	BYI1730-BS1	LCS	0.0042899	0.0050676	mg/kg	84.7		70 - 130		
Endrin	BYI1730-BS1	LCS	0.0042956	0.0050676	mg/kg	84.8		60 - 140		
Heptachlor	BYI1730-BS1	LCS	0.0047030	0.0050676	mg/kg	92.8		60 - 140		
TCMX (Surrogate)	BYI1730-BS1	LCS	0.0076338	0.010135	mg/kg	75.3		20 - 130		
Decachlorobiphenyl (Surrogate)	BYI1730-BS1	LCS	0.016964	0.020270	mg/kg	83.7		40 - 130		

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Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYI1730	Used client sample: N										
Aldrin	MS	1521506-32	ND	0.0049713	0.0049505	mg/kg		100		50 - 140	
	MSD	1521506-32	ND	0.0045631	0.0050847	mg/kg	8.6	89.7	30	50 - 140	
gamma-BHC (Lindane)	MS	1521506-32	ND	0.0051449	0.0049505	mg/kg		104		50 - 140	
	MSD	1521506-32	ND	0.0047247	0.0050847	mg/kg	8.5	92.9	30	50 - 140	
4,4'-DDT	MS	1521506-32	ND	0.0050657	0.0049505	mg/kg		102		50 - 140	
	MSD	1521506-32	ND	0.0049166	0.0050847	mg/kg	3.0	96.7	30	50 - 140	
Dieldrin	MS	1521506-32	ND	0.0048937	0.0049505	mg/kg		98.9		40 - 140	
	MSD	1521506-32	ND	0.0046627	0.0050847	mg/kg	4.8	91.7	30	40 - 140	
Endrin	MS	1521506-32	ND	0.0046627	0.0049505	mg/kg		94.2		50 - 150	
	MSD	1521506-32	ND	0.0044373	0.0050847	mg/kg	5.0	87.3	30	50 - 150	
Heptachlor	MS	1521506-32	ND	0.0050188	0.0049505	mg/kg		101		60 - 140	
	MSD	1521506-32	ND	0.0045759	0.0050847	mg/kg	9.2	90.0	30	60 - 140	
TCMX (Surrogate)	MS	1521506-32	ND	0.0081670	0.0099010	mg/kg		82.5		20 - 130	
	MSD	1521506-32	ND	0.0081224	0.010169	mg/kg	0.5	79.9		20 - 130	
Decachlorobiphenyl (Surrogate)	MS	1521506-32	ND	0.017086	0.019802	mg/kg		86.3		40 - 130	
	MSD	1521506-32	ND	0.017098	0.020339	mg/kg	0.1	84.1		40 - 130	

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Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI0956						
Benzene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0013	
Bromodichloromethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.00084	
Bromoform	BYI0956-BLK1	ND	mg/kg	0.0050	0.0015	
Bromomethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.0016	
Carbon tetrachloride	BYI0956-BLK1	ND	mg/kg	0.0050	0.0011	
Chlorobenzene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0013	
Chloroethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.0014	
Chloroform	BYI0956-BLK1	ND	mg/kg	0.0050	0.00063	
Chloromethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.0014	
Dibromochloromethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.00099	
1,2-Dichlorobenzene	BYI0956-BLK1	ND	mg/kg	0.0050	0.00081	
1,3-Dichlorobenzene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0014	
1,4-Dichlorobenzene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0015	
1,1-Dichloroethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.0014	
1,2-Dichloroethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.00085	
1,1-Dichloroethene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0012	
trans-1,2-Dichloroethene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0014	
1,2-Dichloropropane	BYI0956-BLK1	ND	mg/kg	0.0050	0.00081	
cis-1,3-Dichloropropene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0011	
trans-1,3-Dichloropropene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0012	
Ethylbenzene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0015	
Methylene chloride	BYI0956-BLK1	ND	mg/kg	0.010	0.0024	
Methyl t-butyl ether	BYI0956-BLK1	ND	mg/kg	0.0050	0.00050	
1,1,2,2-Tetrachloroethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.0011	
Tetrachloroethene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0013	
Toluene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0012	
1,1,1-Trichloroethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.0011	
1,1,2-Trichloroethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.00077	
Trichloroethene	BYI0956-BLK1	ND	mg/kg	0.0050	0.0011	
Trichlorofluoromethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.0011	
1,1,2-Trichloro-1,2,2-trifluoroethane	BYI0956-BLK1	ND	mg/kg	0.0050	0.0013	
Vinyl chloride	BYI0956-BLK1	ND	mg/kg	0.0050	0.0016	
Total Xylenes	BYI0956-BLK1	ND	mg/kg	0.010	0.0034	
Acrolein	BYI0956-BLK1	ND	mg/kg	0.050	0.0073	

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Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI0956						
Acrylonitrile	BYI0956-BLK1	ND	mg/kg	0.020	0.0047	
1,2-Dichloroethane-d4 (Surrogate)	**BYI0956-BLK1**	**92.1**	%	**70 - 121 (LCL - UCL)**		
Toluene-d8 (Surrogate)	**BYI0956-BLK1**	**108**	%	**81 - 117 (LCL - UCL)**		
4-Bromofluorobenzene (Surrogate)	**BYI0956-BLK1**	**102**	%	**74 - 121 (LCL - UCL)**		

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Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYI0956										
Benzene	BYI0956-BS1	LCS	0.14739	0.12500	mg/kg	118		70 - 130		
Bromodichloromethane	BYI0956-BS1	LCS	0.12457	0.12500	mg/kg	99.7		70 - 130		
Chlorobenzene	BYI0956-BS1	LCS	0.12604	0.12500	mg/kg	101		70 - 130		
Chloroethane	BYI0956-BS1	LCS	0.11254	0.12500	mg/kg	90.0		70 - 130		
1,4-Dichlorobenzene	BYI0956-BS1	LCS	0.12068	0.12500	mg/kg	96.5		70 - 130		
1,1-Dichloroethane	BYI0956-BS1	LCS	0.13639	0.12500	mg/kg	109		70 - 130		
1,1-Dichloroethene	BYI0956-BS1	LCS	0.12607	0.12500	mg/kg	101		70 - 130		
Toluene	BYI0956-BS1	LCS	0.12742	0.12500	mg/kg	102		70 - 130		
Trichloroethene	BYI0956-BS1	LCS	0.12554	0.12500	mg/kg	100		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BYI0956-BS1	LCS	0.046520	0.050000	mg/kg	93.0		70 - 121		
Toluene-d8 (Surrogate)	BYI0956-BS1	LCS	0.048770	0.050000	mg/kg	97.5		81 - 117		
4-Bromofluorobenzene (Surrogate)	BYI0956-BS1	LCS	0.047620	0.050000	mg/kg	95.2		74 - 121		

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Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYI0956	Used client sample: N										
Benzene	MS	1521506-37	ND	0.13878	0.12500	mg/kg		111		70 - 130	
	MSD	1521506-37	ND	0.14189	0.12500	mg/kg	2.2	114	20	70 - 130	
Bromodichloromethane	MS	1521506-37	ND	0.12444	0.12500	mg/kg		99.6		70 - 130	
	MSD	1521506-37	ND	0.12455	0.12500	mg/kg	0.1	99.6	20	70 - 130	
Chlorobenzene	MS	1521506-37	ND	0.12523	0.12500	mg/kg		100		70 - 130	
	MSD	1521506-37	ND	0.12419	0.12500	mg/kg	0.8	99.4	20	70 - 130	
Chloroethane	MS	1521506-37	ND	0.11486	0.12500	mg/kg		91.9		70 - 130	
	MSD	1521506-37	ND	0.11962	0.12500	mg/kg	4.1	95.7	20	70 - 130	
1,4-Dichlorobenzene	MS	1521506-37	ND	0.11993	0.12500	mg/kg		95.9		70 - 130	
	MSD	1521506-37	ND	0.11677	0.12500	mg/kg	2.7	93.4	20	70 - 130	
1,1-Dichloroethane	MS	1521506-37	ND	0.12456	0.12500	mg/kg		99.6		70 - 130	
	MSD	1521506-37	ND	0.12672	0.12500	mg/kg	1.7	101	20	70 - 130	
1,1-Dichloroethene	MS	1521506-37	ND	0.11527	0.12500	mg/kg		92.2		70 - 130	
	MSD	1521506-37	ND	0.11584	0.12500	mg/kg	0.5	92.7	20	70 - 130	
Toluene	MS	1521506-37	ND	0.13021	0.12500	mg/kg		104		70 - 130	
	MSD	1521506-37	ND	0.13231	0.12500	mg/kg	1.6	106	20	70 - 130	
Trichloroethene	MS	1521506-37	ND	0.12560	0.12500	mg/kg		100		70 - 130	
	MSD	1521506-37	ND	0.12624	0.12500	mg/kg	0.5	101	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1521506-37	ND	0.045080	0.050000	mg/kg		90.2		70 - 121	
	MSD	1521506-37	ND	0.041940	0.050000	mg/kg	7.2	83.9		70 - 121	
Toluene-d8 (Surrogate)	MS	1521506-37	ND	0.050630	0.050000	mg/kg		101		81 - 117	
	MSD	1521506-37	ND	0.050590	0.050000	mg/kg	0.1	101		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	1521506-37	ND	0.049770	0.050000	mg/kg		99.5		74 - 121	
	MSD	1521506-37	ND	0.047800	0.050000	mg/kg	4.0	95.6		74 - 121	

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Project: Biosolids from MBWWTP
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Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI1457						
Acenaphthene	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
Acenaphthylene	BYI1457-BLK1	ND	mg/kg	0.10	0.019	
Aldrin	BYI1457-BLK1	ND	mg/kg	0.10	0.024	
Aniline	BYI1457-BLK1	ND	mg/kg	0.20	0.053	
Anthracene	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
Benzidine	BYI1457-BLK1	ND	mg/kg	3.0	0.22	
Benzo[a]anthracene	BYI1457-BLK1	ND	mg/kg	0.10	0.012	
Benzo[b]fluoranthene	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
Benzo[k]fluoranthene	BYI1457-BLK1	ND	mg/kg	0.10	0.019	
Benzo[a]pyrene	BYI1457-BLK1	ND	mg/kg	0.10	0.015	
Benzo[g,h,i]perylene	BYI1457-BLK1	ND	mg/kg	0.10	0.056	
Benzoic acid	BYI1457-BLK1	ND	mg/kg	0.50	0.067	
Benzyl alcohol	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
Benzyl butyl phthalate	BYI1457-BLK1	ND	mg/kg	0.10	0.021	
alpha-BHC	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
beta-BHC	BYI1457-BLK1	ND	mg/kg	0.10	0.021	
delta-BHC	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
gamma-BHC (Lindane)	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
bis(2-Chloroethoxy)methane	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
bis(2-Chloroethyl) ether	BYI1457-BLK1	ND	mg/kg	0.10	0.016	
bis(2-Chloroisopropyl)ether	BYI1457-BLK1	ND	mg/kg	0.10	0.021	
bis(2-Ethylhexyl)phthalate	BYI1457-BLK1	ND	mg/kg	0.20	0.043	
4-Bromophenyl phenyl ether	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
4-Chloroaniline	BYI1457-BLK1	ND	mg/kg	0.10	0.027	
2-Chloronaphthalene	BYI1457-BLK1	ND	mg/kg	0.10	0.020	
4-Chlorophenyl phenyl ether	BYI1457-BLK1	ND	mg/kg	0.10	0.015	
Chrysene	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
4,4'-DDD	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
4,4'-DDE	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
4,4'-DDT	BYI1457-BLK1	ND	mg/kg	0.10	0.019	
Dibenzo[a,h]anthracene	BYI1457-BLK1	ND	mg/kg	0.10	0.019	
Dibenzofuran	BYI1457-BLK1	ND	mg/kg	0.10	0.020	
1,2-Dichlorobenzene	BYI1457-BLK1	ND	mg/kg	0.10	0.020	
1,3-Dichlorobenzene	BYI1457-BLK1	ND	mg/kg	0.10	0.021	

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Project: Biosolids from MBWWTP
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Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI1457						
1,4-Dichlorobenzene	BYI1457-BLK1	ND	mg/kg	0.10	0.019	
3,3-Dichlorobenzidine	BYI1457-BLK1	ND	mg/kg	0.20	0.0067	
Dieldrin	BYI1457-BLK1	ND	mg/kg	0.10	0.031	
Diethyl phthalate	BYI1457-BLK1	ND	mg/kg	0.10	0.019	
Dimethyl phthalate	BYI1457-BLK1	ND	mg/kg	0.10	0.020	
Di-n-butyl phthalate	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
2,4-Dinitrotoluene	BYI1457-BLK1	ND	mg/kg	0.10	0.022	
2,6-Dinitrotoluene	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
Di-n-octyl phthalate	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
1,2-Diphenylhydrazine	BYI1457-BLK1	ND	mg/kg	0.10	0.019	
Endosulfan I	BYI1457-BLK1	ND	mg/kg	0.20	0.020	
Endosulfan II	BYI1457-BLK1	ND	mg/kg	0.20	0.021	
Endosulfan sulfate	BYI1457-BLK1	ND	mg/kg	0.10	0.021	
Endrin	BYI1457-BLK1	ND	mg/kg	0.20	0.025	
Endrin aldehyde	BYI1457-BLK1	ND	mg/kg	0.50	0.022	
Fluoranthene	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
Fluorene	BYI1457-BLK1	ND	mg/kg	0.10	0.019	
Heptachlor	BYI1457-BLK1	ND	mg/kg	0.10	0.021	
Heptachlor epoxide	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
Hexachlorobenzene	BYI1457-BLK1	ND	mg/kg	0.10	0.016	
Hexachlorobutadiene	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
Hexachlorocyclopentadiene	BYI1457-BLK1	ND	mg/kg	0.10	0.019	
Hexachloroethane	BYI1457-BLK1	ND	mg/kg	0.10	0.020	
Indeno[1,2,3-cd]pyrene	BYI1457-BLK1	ND	mg/kg	0.10	0.072	
Isophorone	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
2-Methylnaphthalene	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
Naphthalene	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
2-Naphthylamine	BYI1457-BLK1	ND	mg/kg	3.0	0.16	
2-Nitroaniline	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
3-Nitroaniline	BYI1457-BLK1	ND	mg/kg	0.20	0.015	
4-Nitroaniline	BYI1457-BLK1	ND	mg/kg	0.20	0.025	
Nitrobenzene	BYI1457-BLK1	ND	mg/kg	0.10	0.015	
N-Nitrosodimethylamine	BYI1457-BLK1	ND	mg/kg	0.10	0.037	
N-Nitrosodi-N-propylamine	BYI1457-BLK1	ND	mg/kg	0.10	0.021	

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Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI1457						
N-Nitrosodiphenylamine	BYI1457-BLK1	ND	mg/kg	0.10	0.021	
Phenanthrene	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
Pyrene	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
1,2,4-Trichlorobenzene	BYI1457-BLK1	ND	mg/kg	0.10	0.018	
4-Chloro-3-methylphenol	BYI1457-BLK1	ND	mg/kg	0.20	0.022	
2-Chlorophenol	BYI1457-BLK1	ND	mg/kg	0.10	0.016	
2,4-Dichlorophenol	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
2,4-Dimethylphenol	BYI1457-BLK1	ND	mg/kg	0.10	0.035	
4,6-Dinitro-2-methylphenol	BYI1457-BLK1	ND	mg/kg	0.50	0.012	
2,4-Dinitrophenol	BYI1457-BLK1	ND	mg/kg	0.50	0.0077	
2-Methylphenol	BYI1457-BLK1	ND	mg/kg	0.10	0.017	
3- & 4-Methylphenol	BYI1457-BLK1	ND	mg/kg	0.20	0.033	
2-Nitrophenol	BYI1457-BLK1	ND	mg/kg	0.10	0.016	
4-Nitrophenol	BYI1457-BLK1	ND	mg/kg	0.20	0.018	
Pentachlorophenol	BYI1457-BLK1	ND	mg/kg	0.20	0.013	
Phenol	BYI1457-BLK1	ND	mg/kg	0.10	0.016	
2,4,5-Trichlorophenol	BYI1457-BLK1	ND	mg/kg	0.20	0.018	
2,4,6-Trichlorophenol	BYI1457-BLK1	ND	mg/kg	0.20	0.017	
2-Fluorophenol (Surrogate)	**BYI1457-BLK1**	**69.7**	%	**20 - 130 (LCL - UCL)**		
Phenol-d5 (Surrogate)	**BYI1457-BLK1**	**73.1**	%	**30 - 130 (LCL - UCL)**		
Nitrobenzene-d5 (Surrogate)	**BYI1457-BLK1**	**78.1**	%	**30 - 130 (LCL - UCL)**		
2-Fluorobiphenyl (Surrogate)	**BYI1457-BLK1**	**74.2**	%	**30 - 140 (LCL - UCL)**		
2,4,6-Tribromophenol (Surrogate)	**BYI1457-BLK1**	**75.7**	%	**20 - 150 (LCL - UCL)**		
p-Terphenyl-d14 (Surrogate)	**BYI1457-BLK1**	**82.7**	%	**30 - 150 (LCL - UCL)**		

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYI1457										
Acenaphthene	BYI1457-BS1	LCS	1.4829	1.6892	mg/kg	87.8		50 - 130		
1,4-Dichlorobenzene	BYI1457-BS1	LCS	1.3551	1.6892	mg/kg	80.2		50 - 130		
2,4-Dinitrotoluene	BYI1457-BS1	LCS	1.7611	1.6892	mg/kg	104		50 - 130		
Hexachlorobenzene	BYI1457-BS1	LCS	1.7335	1.6892	mg/kg	103		40 - 130		
Hexachlorobutadiene	BYI1457-BS1	LCS	1.1070	1.6892	mg/kg	65.5		50 - 130		
Hexachloroethane	BYI1457-BS1	LCS	1.3000	1.6892	mg/kg	77.0		50 - 130		
Nitrobenzene	BYI1457-BS1	LCS	1.2695	1.6892	mg/kg	75.2		50 - 130		
N-Nitrosodi-N-propylamine	BYI1457-BS1	LCS	1.5553	1.6892	mg/kg	92.1		40 - 120		
Pyrene	BYI1457-BS1	LCS	1.6703	1.6892	mg/kg	98.9		40 - 150		
1,2,4-Trichlorobenzene	BYI1457-BS1	LCS	1.2610	1.6892	mg/kg	74.7		50 - 120		
4-Chloro-3-methylphenol	BYI1457-BS1	LCS	1.4036	1.6892	mg/kg	83.1		50 - 130		
2-Chlorophenol	BYI1457-BS1	LCS	1.1755	1.6892	mg/kg	69.6		50 - 130		
2-Methylphenol	BYI1457-BS1	LCS	1.2554	1.6892	mg/kg	74.3		50 - 130		
3- & 4-Methylphenol	BYI1457-BS1	LCS	2.6295	3.3784	mg/kg	77.8		50 - 130		
4-Nitrophenol	BYI1457-BS1	LCS	1.4924	1.6892	mg/kg	88.3		30 - 130		
Pentachlorophenol	BYI1457-BS1	LCS	1.0185	1.6892	mg/kg	60.3		20 - 130		
Phenol	BYI1457-BS1	LCS	1.2004	1.6892	mg/kg	71.1		40 - 120		
2,4,6-Trichlorophenol	BYI1457-BS1	LCS	1.2921	1.6892	mg/kg	76.5		50 - 130		
2-Fluorophenol (Surrogate)	BYI1457-BS1	LCS	1.0424	1.6892	mg/kg	61.7		20 - 130		
Phenol-d5 (Surrogate)	BYI1457-BS1	LCS	1.0801	1.6892	mg/kg	63.9		30 - 130		
Nitrobenzene-d5 (Surrogate)	BYI1457-BS1	LCS	1.2869	1.6892	mg/kg	76.2		30 - 130		
2-Fluorobiphenyl (Surrogate)	BYI1457-BS1	LCS	1.2269	1.6892	mg/kg	72.6		30 - 140		
2,4,6-Tribromophenol (Surrogate)	BYI1457-BS1	LCS	1.1139	1.6892	mg/kg	65.9		20 - 150		
p-Terphenyl-d14 (Surrogate)	BYI1457-BS1	LCS	0.61706	0.84459	mg/kg	73.1		30 - 150		

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Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYI1457	Used client sample: N										
Acenaphthene	MS	1521506-18	ND	1.5537	1.6779	mg/kg		92.6		30 - 140	
	MSD	1521506-18	ND	1.5500	1.6949	mg/kg	0.2	91.5	30	30 - 140	
1,4-Dichlorobenzene	MS	1521506-18	ND	1.4271	1.6779	mg/kg		85.1		50 - 130	
	MSD	1521506-18	ND	1.4491	1.6949	mg/kg	1.5	85.5	30	50 - 130	
2,4-Dinitrotoluene	MS	1521506-18	ND	1.7167	1.6779	mg/kg		102		50 - 130	
	MSD	1521506-18	ND	1.7105	1.6949	mg/kg	0.4	101	30	50 - 130	
Hexachlorobenzene	MS	1521506-18	ND	1.8781	1.6779	mg/kg		112		50 - 130	
	MSD	1521506-18	ND	1.8746	1.6949	mg/kg	0.2	111	30	50 - 130	
Hexachlorobutadiene	MS	1521506-18	ND	1.1381	1.6779	mg/kg		67.8		50 - 130	
	MSD	1521506-18	ND	1.2067	1.6949	mg/kg	5.9	71.2	30	50 - 130	
Hexachloroethane	MS	1521506-18	ND	1.3781	1.6779	mg/kg		82.1		50 - 130	
	MSD	1521506-18	ND	1.3932	1.6949	mg/kg	1.1	82.2	30	50 - 130	
Nitrobenzene	MS	1521506-18	ND	1.2641	1.6779	mg/kg		75.3		30 - 120	
	MSD	1521506-18	ND	1.3268	1.6949	mg/kg	4.8	78.3	30	30 - 120	
N-Nitrosodi-N-propylamine	MS	1521506-18	ND	1.3820	1.6779	mg/kg		82.4		20 - 130	
	MSD	1521506-18	ND	1.4224	1.6949	mg/kg	2.9	83.9	30	20 - 130	
Pyrene	MS	1521506-18	ND	1.9483	1.6779	mg/kg		116		40 - 140	
	MSD	1521506-18	ND	1.8499	1.6949	mg/kg	5.2	109	30	40 - 140	
1,2,4-Trichlorobenzene	MS	1521506-18	ND	1.3340	1.6779	mg/kg		79.5		50 - 130	
	MSD	1521506-18	ND	1.3330	1.6949	mg/kg	0.1	78.6	30	50 - 130	
4-Chloro-3-methylphenol	MS	1521506-18	ND	1.4500	1.6779	mg/kg		86.4		50 - 130	
	MSD	1521506-18	ND	1.4386	1.6949	mg/kg	0.8	84.9	30	50 - 130	
2-Chlorophenol	MS	1521506-18	ND	1.2561	1.6779	mg/kg		74.9		50 - 130	
	MSD	1521506-18	ND	1.2031	1.6949	mg/kg	4.3	71.0	30	50 - 130	
2-Methylphenol	MS	1521506-18	ND	1.3765	1.6779	mg/kg		82.0		50 - 130	
	MSD	1521506-18	ND	1.2998	1.6949	mg/kg	5.7	76.7	30	50 - 130	
3- & 4-Methylphenol	MS	1521506-18	ND	2.7962	3.3557	mg/kg		83.3		50 - 130	
	MSD	1521506-18	ND	2.6236	3.3898	mg/kg	6.4	77.4	30	50 - 130	
4-Nitrophenol	MS	1521506-18	ND	1.6143	1.6779	mg/kg		96.2		30 - 140	
	MSD	1521506-18	ND	1.3274	1.6949	mg/kg	19.5	78.3	30	30 - 140	
Pentachlorophenol	MS	1521506-18	ND	1.1652	1.6779	mg/kg		69.4		30 - 130	
	MSD	1521506-18	ND	0.94928	1.6949	mg/kg	20.4	56.0	30	30 - 130	
Phenol	MS	1521506-18	ND	1.2296	1.6779	mg/kg		73.3		40 - 150	
	MSD	1521506-18	ND	1.2041	1.6949	mg/kg	2.1	71.0	30	40 - 150	
2,4,6-Trichlorophenol	MS	1521506-18	ND	1.3868	1.6779	mg/kg		82.7		50 - 130	
	MSD	1521506-18	ND	1.2663	1.6949	mg/kg	9.1	74.7	30	50 - 130	

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYI1457	Used client sample: N										
2-Fluorophenol (Surrogate)	MS	1521506-18	ND	1.1427	1.6779	mg/kg		68.1		20 - 130	
	MSD	1521506-18	ND	1.0798	1.6949	mg/kg	5.7	63.7		20 - 130	
Phenol-d5 (Surrogate)	MS	1521506-18	ND	1.1449	1.6779	mg/kg		68.2		30 - 130	
	MSD	1521506-18	ND	1.0907	1.6949	mg/kg	4.9	64.4		30 - 130	
Nitrobenzene-d5 (Surrogate)	MS	1521506-18	ND	1.1836	1.6779	mg/kg		70.5		30 - 130	
	MSD	1521506-18	ND	1.1627	1.6949	mg/kg	1.8	68.6		30 - 130	
2-Fluorobiphenyl (Surrogate)	MS	1521506-18	ND	1.2045	1.6779	mg/kg		71.8		30 - 140	
	MSD	1521506-18	ND	1.2413	1.6949	mg/kg	3.0	73.2		30 - 140	
2,4,6-Tribromophenol (Surrogate)	MS	1521506-18	ND	1.2915	1.6779	mg/kg		77.0		20 - 150	
	MSD	1521506-18	ND	1.1196	1.6949	mg/kg	14.3	66.1		20 - 150	
p-Terphenyl-d14 (Surrogate)	MS	1521506-18	ND	0.73643	0.83893	mg/kg		87.8		30 - 150	
	MSD	1521506-18	ND	0.64612	0.84746	mg/kg	13.1	76.2		30 - 150	

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Project Manager: Doug Coats

EPA Method 1664

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI1560						
Oil and Grease	BYI1560-BLK1	ND	mg/kg	50	25	

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Project Manager: Doug Coats

EPA Method 1664

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYI1560										
Oil and Grease	BYI1560-BS1	LCS	707.17	758.96	mg/kg	93.2		59 - 117		

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Project Manager: Doug Coats

EPA Method 1664

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYI1560	Used client sample: N										
Oil and Grease	DUP	1521506-11	ND	ND		mg/kg			30		
	MS	1521506-11	ND	745.54	754.46	mg/kg		98.8		56 - 111	
	MSD	1521506-11	ND	790.84	758.96	mg/kg	5.9	104	30	56 - 111	

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Project Manager: Doug Coats

Chemical Analysis

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI1046						
Moisture	BYI1046-BLK1	ND	%	0.05	0.05	
QC Batch ID: BYI1224						
Total Kjeldahl Nitrogen	BYI1224-BLK1	ND	mg/kg	40	16	
QC Batch ID: BYI1225						
Total Phosphate	BYI1225-BLK1	ND	mg/kg	30	12	
QC Batch ID: BYI1357						
Nitrate as NO3	BYI1357-BLK1	ND	mg/kg	4.4	1.2	
QC Batch ID: BYI1368						
Total Cyanide	BYI1368-BLK1	ND	mg/kg	0.50	0.26	
QC Batch ID: BYI1372						
Ammonia as N	BYI1372-BLK1	ND	mg/kg	10	5.0	

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Project Manager: Doug Coats

Chemical Analysis

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYI1224										
Total Kjeldahl Nitrogen	BYI1224-BS1	LCS	411.30	400.00	mg/kg	103		90 - 110		
QC Batch ID: BYI1225										
Total Phosphate	BYI1225-BS1	LCS	627.84	613.20	mg/kg	102		85 - 115		
QC Batch ID: BYI1357										
Nitrate as NO3	BYI1357-BS1	LCS	22.586	22.134	mg/kg	102		90 - 110		
QC Batch ID: BYI1368										
Total Cyanide	BYI1368-BS1	LCS	10.598	9.4340	mg/kg	112		80 - 120		
QC Batch ID: BYI1372										
Ammonia as N	BYI1372-BS1	LCS	105.97	98.039	mg/kg	108		80 - 120		
QC Batch ID: BYI2381										
pH	BYI2381-BS1	LCS	7.0000	7.0000	pH Units	100		95 - 105		

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Chemical Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYI1224	Used client sample: Y - Description: BC1 Composite Biosolids, 09/09/2015 11:30										
Total Kjeldahl Nitrogen	DUP	**1523062-01**	**28868**	**28868**		**mg/kg**	**0**		**20**		
	MS	**1523062-01**	**28868**	**26588**	**400.00**	**mg/kg**		**-570**		**90 - 110**	**A03**
	MSD	**1523062-01**	**28868**	**28422**	**400.00**	**mg/kg**	**6.7**	**-112**	**20**	**90 - 110**	**A03**
QC Batch ID: BYI1225	Used client sample: Y - Description: BC1 Composite Biosolids, 09/09/2015 11:30										
Total Phosphate	DUP	**1523062-01**	**66702**	**71725**		**mg/kg**	**7.3**		**20**		
	MS	**1523062-01**	**66702**	**69020**	**613.20**	**mg/kg**		**378**		**80 - 120**	**A03**
	MSD	**1523062-01**	**66702**	**63348**	**613.20**	**mg/kg**	**8.6**	**-547**	**20**	**80 - 120**	**A03**
QC Batch ID: BYI1357	Used client sample: N										
Nitrate as NO3	DUP	523066-01RE´	1014.0	1038.3		mg/kg	2.4		20		
	MS	523066-01RE´	1014.0	2075.0	1117.9	mg/kg		94.9		80 - 120	
	MSD	523066-01RE´	1014.0	2031.0	1117.9	mg/kg	2.1	91.0	20	80 - 120	
QC Batch ID: BYI1368	Used client sample: Y - Description: BC1 Composite Biosolids, 09/09/2015 11:30										
Total Cyanide	DUP	1523062-01	2.3765	2.0692		mg/kg	13.8		20		
	MS	1523062-01	2.3765	12.522	9.4340	mg/kg		108		80 - 120	
	MSD	1523062-01	2.3765	12.264	9.4340	mg/kg	2.1	105	20	80 - 120	
QC Batch ID: BYI1372	Used client sample: Y - Description: BC1 Composite Biosolids, 09/09/2015 11:30										
Ammonia as N	DUP	**1523062-01**	**6600.9**	**7059.4**		**mg/kg**	**6.7**		**20**		
	MS	**1523062-01**	**6600.9**	**6212.0**	**92.593**	**mg/kg**		**-420**		**80 - 120**	**A03**
	MSD	**1523062-01**	**6600.9**	**6665.9**	**90.909**	**mg/kg**	**7.0**	**71.5**	**20**	**80 - 120**	**A03**
QC Batch ID: BYI1552	Used client sample: N										
Solids	DUP	1522916-01	95.050	94.810		%	0.3		20		
QC Batch ID: BYI2381	Used client sample: N										
pH	DUP	1524247-01	8.6590	8.6760		pH Units	0.2		20		

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Project Manager: Doug Coats

Modified WET Test (STLC)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI1771						
Hexavalent Chromium	BYI1771-BLK1	ND	mg/L	0.20	0.070	
QC Batch ID: BYI1791						
Total Dissolved Solids @ 180 C	BYI1791-BLK1	ND	mg/L	6.7	6.7	

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Project Manager: Doug Coats

Modified WET Test (STLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYI1771										
Hexavalent Chromium	BYI1771-BS1	LCS	4.8371	5.0000	mg/L	96.7		85 - 115		
QC Batch ID: BYI1791										
Total Dissolved Solids @ 180 C	BYI1791-BS1	LCS	600.00	586.00	mg/L	102		90 - 110		

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Project: Biosolids from MBWWTP
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Project Manager: Doug Coats

Modified WET Test (STLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYI1771	Used client sample: Y - Description: BC1 Composite Biosolids, 09/09/2015 11:30										
Hexavalent Chromium	DUP	1523062-01	ND	ND		mg/L			20		
	MS	1523062-01	ND	4.6404	5.2632	mg/L		88.2		85 - 115	
	MSD	1523062-01	ND	4.6408	5.2632	mg/L	0.0	88.2	20	85 - 115	
QC Batch ID: BYI1791	Used client sample: Y - Description: BC1 Composite Biosolids, 09/09/2015 11:30										
Total Dissolved Solids @ 180 C	DUP	1523062-01	4580.0	4600.0		mg/L	0.4		20		

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Project Manager: Doug Coats

WET Test (STLC)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI1612						
Copper	BYI1612-BLK1	ND	mg/L	0.10	0.012	

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Project Manager: Doug Coats

WET Test (STLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYI1612										
Copper	BYI1612-BS1	LCS	17.729	20.000	mg/L	88.6		85 - 115		

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Reported: 09/25/2015 12:45
Project: Biosolids from MBWWTP
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Project Manager: Doug Coats

WET Test (STLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYI1612	Used client sample: N										
Copper	DUP	1522926-02	3.0125	3.6083		mg/L	18.0		20		
	MS	1522926-02	3.0125	25.670	20.408	mg/L		111		75 - 125	
	MSD	1522926-02	3.0125	23.214	20.408	mg/L	10.0	99.0	20	75 - 125	

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Total Concentrations (TTLC)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BYI1490						
Mercury	BYI1490-BLK1	ND	mg/kg	0.16	0.036	
QC Batch ID: BYI1497						
Antimony	BYI1497-BLK1	ND	mg/kg	5.0	0.33	
Arsenic	**BYI1497-BLK1**	**0.83921**	**mg/kg**	**1.0**	**0.40**	**J**
Barium	BYI1497-BLK1	ND	mg/kg	0.50	0.18	
Beryllium	BYI1497-BLK1	ND	mg/kg	0.50	0.047	
Cadmium	BYI1497-BLK1	ND	mg/kg	0.50	0.052	
Chromium	BYI1497-BLK1	ND	mg/kg	0.50	0.050	
Cobalt	BYI1497-BLK1	ND	mg/kg	2.5	0.098	
Copper	BYI1497-BLK1	ND	mg/kg	1.0	0.050	
Lead	BYI1497-BLK1	ND	mg/kg	2.5	0.28	
Molybdenum	**BYI1497-BLK1**	**0.091499**	**mg/kg**	**2.5**	**0.050**	**J**
Nickel	BYI1497-BLK1	ND	mg/kg	0.50	0.15	
Selenium	BYI1497-BLK1	ND	mg/kg	1.0	0.98	
Silver	BYI1497-BLK1	ND	mg/kg	0.50	0.067	
Thallium	BYI1497-BLK1	ND	mg/kg	5.0	0.64	
Vanadium	BYI1497-BLK1	ND	mg/kg	0.50	0.11	
Zinc	BYI1497-BLK1	ND	mg/kg	2.5	0.087	
Boron	**BYI1497-BLK1**	**0.63253**	**mg/kg**	**5.0**	**0.50**	**J**
QC Batch ID: BYI1924						
Total Hexavalent Chromium	BYI1924-BLK1	ND	mg/kg	1.0	0.30	

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Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BYI1490										
Mercury	BYI1490-BS1	LCS	0.81872	0.80000	mg/kg	102		80 - 120		
QC Batch ID: BYI1497										
Antimony	BYI1497-BS1	LCS	97.677	100.00	mg/kg	97.7		75 - 125		
Arsenic	BYI1497-BS1	LCS	10.185	10.000	mg/kg	102		75 - 125		
Barium	BYI1497-BS1	LCS	98.201	100.00	mg/kg	98.2		75 - 125		
Beryllium	BYI1497-BS1	LCS	9.1816	10.000	mg/kg	91.8		75 - 125		
Cadmium	BYI1497-BS1	LCS	9.7360	10.000	mg/kg	97.4		75 - 125		
Chromium	BYI1497-BS1	LCS	99.880	100.00	mg/kg	99.9		75 - 125		
Cobalt	BYI1497-BS1	LCS	96.951	100.00	mg/kg	97.0		75 - 125		
Copper	BYI1497-BS1	LCS	95.894	100.00	mg/kg	95.9		75 - 125		
Lead	BYI1497-BS1	LCS	102.50	100.00	mg/kg	102		75 - 125		
Molybdenum	BYI1497-BS1	LCS	99.703	100.00	mg/kg	99.7		75 - 125		
Nickel	BYI1497-BS1	LCS	95.540	100.00	mg/kg	95.5		75 - 125		
Selenium	BYI1497-BS1	LCS	9.5006	10.000	mg/kg	95.0		75 - 125		
Silver	BYI1497-BS1	LCS	9.3596	10.000	mg/kg	93.6		75 - 125		
Thallium	BYI1497-BS1	LCS	109.02	100.00	mg/kg	109		75 - 125		
Vanadium	BYI1497-BS1	LCS	104.24	100.00	mg/kg	104		75 - 125		
Zinc	BYI1497-BS1	LCS	96.864	100.00	mg/kg	96.9		75 - 125		
Boron	BYI1497-BS1	LCS	94.796	100.00	mg/kg	94.8		75 - 125		
QC Batch ID: BYI1924										
Total Hexavalent Chromium	BYI1924-BS1	LCS	42.190	40.000	mg/kg	105		80 - 120		

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Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYI1490	Used client sample: N										
Mercury	DUP	1522974-14	ND	ND		mg/kg			20		
	MS	1522974-14	ND	0.83444	0.79365	mg/kg		105		80 - 120	
	MSD	1522974-14	ND	0.82079	0.79365	mg/kg	1.6	103	20	80 - 120	
QC Batch ID: BYI1497	Used client sample: N										
Antimony	DUP	1522282-01	ND	ND		mg/kg			20		
	MS	1522282-01	ND	35.557	97.087	mg/kg		36.6		16 - 119	
	MSD	1522282-01	ND	34.769	97.087	mg/kg	2.2	35.8	20	16 - 119	
Arsenic	DUP	**1522282-01**	**59.091**	**60.669**		**mg/kg**	**2.6**		**20**		
	MS	**1522282-01**	**59.091**	**82.563**	**9.7087**	**mg/kg**		**242**		**75 - 125**	**Q03**
	MSD	**1522282-01**	**59.091**	**82.341**	**9.7087**	**mg/kg**	**0.3**	**239**	**20**	**75 - 125**	**Q03**
Barium	DUP	**1522282-01**	**157.18**	**167.83**		**mg/kg**	**6.6**		**20**		
	MS	**1522282-01**	**157.18**	**280.36**	**97.087**	**mg/kg**		**127**		**75 - 125**	**Q03**
	MSD	**1522282-01**	**157.18**	**261.97**	**97.087**	**mg/kg**	**6.8**	**108**	**20**	**75 - 125**	
Beryllium	DUP	1522282-01	0.26058	0.28624		mg/kg	9.4		20		J
	MS	1522282-01	0.26058	9.6601	9.7087	mg/kg		96.8		75 - 125	
	MSD	1522282-01	0.26058	9.4512	9.7087	mg/kg	2.2	94.7	20	75 - 125	
Cadmium	DUP	1522282-01	ND	ND		mg/kg			20		
	MS	1522282-01	ND	9.3276	9.7087	mg/kg		96.1		75 - 125	
	MSD	1522282-01	ND	8.9792	9.7087	mg/kg	3.8	92.5	20	75 - 125	
Chromium	DUP	**1522282-01**	**113.89**	**122.84**		**mg/kg**	**7.6**		**20**		
	MS	**1522282-01**	**113.89**	**238.54**	**97.087**	**mg/kg**		**128**		**75 - 125**	**Q03**
	MSD	**1522282-01**	**113.89**	**227.20**	**97.087**	**mg/kg**	**4.9**	**117**	**20**	**75 - 125**	
Cobalt	DUP	1522282-01	4.8707	5.2635		mg/kg	7.8		20		J
	MS	1522282-01	4.8707	103.75	97.087	mg/kg		102		75 - 125	
	MSD	1522282-01	4.8707	100.82	97.087	mg/kg	2.9	98.8	20	75 - 125	
Copper	DUP	**1522282-01**	**152.39**	**162.34**		**mg/kg**	**6.3**		**20**		
	MS	**1522282-01**	**152.39**	**227.25**	**97.087**	**mg/kg**		**77.1**		**75 - 125**	
	MSD	**1522282-01**	**152.39**	**1929.0**	**97.087**	**mg/kg**	**158**	**1830**	**20**	**75 - 125**	**Q02,Q03**
Lead	DUP	1522282-01	15.099	14.409		mg/kg	4.7		20		
	MS	1522282-01	15.099	113.91	97.087	mg/kg		102		75 - 125	
	MSD	1522282-01	15.099	115.84	97.087	mg/kg	1.7	104	20	75 - 125	
Molybdenum	DUP	**1522282-01**	**0.71128**	**0.51575**		**mg/kg**	**31.9**		**20**		**J,A02**
	MS	**1522282-01**	**0.71128**	**96.220**	**97.087**	**mg/kg**		**98.4**		**75 - 125**	
	MSD	**1522282-01**	**0.71128**	**93.975**	**97.087**	**mg/kg**	**2.4**	**96.1**	**20**	**75 - 125**	
Nickel	DUP	1522282-01	22.093	23.843		mg/kg	7.6		20		
	MS	1522282-01	22.093	119.43	97.087	mg/kg		100		75 - 125	
	MSD	1522282-01	22.093	120.19	97.087	mg/kg	0.6	101	20	75 - 125	

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Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BYI1497	Used client sample: N										
Selenium	DUP	**1522282-01**	**ND**	**ND**		**mg/kg**			**20**		
	MS	**1522282-01**	**ND**	**14.947**	**9.7087**	**mg/kg**		**154**		**75 - 125**	
	MSD	**1522282-01**	**ND**	**8.4347**	**9.7087**	**mg/kg**	**55.7**	**86.9**	**20**	**75 - 125**	**Q02,Q03**
Silver	DUP	1522282-01	ND	ND		mg/kg			20		
	MS	1522282-01	ND	9.6035	9.7087	mg/kg		98.9		75 - 125	
	MSD	1522282-01	ND	9.4984	9.7087	mg/kg	1.1	97.8	20	75 - 125	
Thallium	DUP	1522282-01	ND	ND		mg/kg			20		
	MS	1522282-01	ND	97.397	97.087	mg/kg		100		75 - 125	
	MSD	1522282-01	ND	98.010	97.087	mg/kg	0.6	101	20	75 - 125	
Vanadium	DUP	1522282-01	30.778	33.325		mg/kg	7.9		20		
	MS	1522282-01	30.778	128.89	97.087	mg/kg		101		75 - 125	
	MSD	1522282-01	30.778	128.63	97.087	mg/kg	0.2	101	20	75 - 125	
Zinc	DUP	**1522282-01**	**208.10**	**225.50**		**mg/kg**	**8.0**		**20**		
	MS	**1522282-01**	**208.10**	**336.75**	**97.087**	**mg/kg**		**133**		**75 - 125**	**Q03**
	MSD	**1522282-01**	**208.10**	**457.36**	**97.087**	**mg/kg**	**30.4**	**257**	**20**	**75 - 125**	**Q02,Q03**
Boron	DUP	**1522282-01**	**132.33**	**136.68**		**mg/kg**	**3.2**		**20**		
	MS	**1522282-01**	**132.33**	**259.84**	**97.087**	**mg/kg**		**131**		**75 - 125**	**Q03**
	MSD	**1522282-01**	**132.33**	**233.34**	**97.087**	**mg/kg**	**10.7**	**104**	**20**	**75 - 125**	
QC Batch ID: BYI1924	Used client sample: Y - Description: BC1 Composite Biosolids, 09/09/2015 11:30										
Total Hexavalent Chromium	DUP	1523062-01	5.0500	4.5100		mg/kg	11.3		20		J
	MS	1523062-01	5.0500	188.31	200.00	mg/kg		91.6		75 - 125	
	MSD	1523062-01	5.0500	184.49	200.00	mg/kg	2.0	89.7	20	75 - 125	

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Project Manager: Doug Coats

Notes And Definitions

J	Estimated Value (CLP Flag)
MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A01	Detection and quantitation limits are raised due to sample dilution.
A02	The difference between duplicate readings is less than the quantitation limit.
A03	The sample concentration is more than 4 times the spike level.
A07	Detection and quantitation limits were raised due to sample dilution caused by high analyte concentration or matrix interference.
A10	Detection and quantitation limits were raised due to matrix interference.
Q02	Matrix spike precision is not within the control limits.
Q03	Matrix spike recovery(s) is(are) not within the control limits.
pHdil	pH result reported on a 1:8 dilution of sample