

**From:** [Jen Mott](#)  
**To:** [THOMAS Wesley \\* DEQ](#)  
**Cc:** [Byrd, William](#); [Wyatt, Robert](#); [Patty Dost](#); [Kendra Skellenger](#); [tpdriscoll](#); [Crystal, Mike](#); [Joe Burke](#); [Kelly Beniga](#); [John Edwards](#); [Rob Ede](#); ["Kelly Titkemeier \(ktitkemeier@maulfoster.com\)"](#); ["Mary Benzinger \(mbenzinger@maulfoster.com\)"](#); ["Mike Murray"](#); ["Michael J. Crystal \(mjcrystal@sevenson.com\)"](#); [Ryan Barth](#); ["Ben Hung \(ben@coalitionenv.com\)"](#); [Dan Hafley - DEQ \(Dan.Hafley@deq.oregon.gov\)](#); [elizabeth.bingold](#); [Traci Parker \(traci.parker@siltronic.com\)](#)  
**Subject:** 3rd and 4th Quarter 2022 Residual Lab Data Package NW Natural Source Control Groundwater Treatment Facility  
**Date:** Tuesday, February 28, 2023 3:57:45 PM  
**Attachments:** [2023-2-28 - 1st and 2nd QTR 20221 Residual Cover Letter.pdf](#)  
[Table 1 - Jul-Dec 2022 Filter Cake Residuals.pdf](#)  
[Table 2 - Jul-Dec 2022 Bag Filter Residuals.pdf](#)  
[Table 3G-3L Jul-Dec Process Control Monthly Sampling Charted Lab Results.xlsx](#)

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Wes,

The 3<sup>rd</sup> and 4<sup>th</sup> *Quarter 2022 Residual Lab Data Package* for the NW Natural source control groundwater treatment facility is attached. Due to file size, the associated lab reports have been uploaded to the FTP site.

### Instructions to access the FTP:

To access the FTP site automatically using Windows Explorer please follow the steps below.

- From Windows XP desktop select Start -> Run or for Windows 7 select Start -> and click in the search box
- Copy/Paste the following line into the "Open" box for XP or the "Search" box for Windows 7 and hit "enter"

**REDACTED**

- You should now be logged into the site using Windows Explorer. You can use copy/paste to move files to or from the site

To access the FTP site manually using a FTP browser like [CoreFTP](#) or Windows Explorer please use the info below.

- Site URL: **REDACTED**
- Username: **REDACTED**
- Password: **REDACTED**

To access the FTP site via web browser please follow the steps below.

- Click on the following link: **REDACTED**
- Input the username and password that are listed in the above section
- Use the tools available directly to the site to download or upload

Please contact [Chip Byrd](#) with any questions.

Jen Mott  
Project Coordinator  
**Anchor QEA, LLC**  
[jmott@anchorqea.com](mailto:jmott@anchorqea.com)  
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February 28, 2023

Wesley Thomas  
Project Manager  
NW Region Cleanup & Site Assessment Section  
Oregon Department of Environmental Quality  
700 NE Multnomah St., Suite 600  
Portland, Oregon 97232  
Wesley.thomas@deq.state.or.us

RE: NW Natural Source Control Groundwater Treatment Facility Residual Lab Data Package, Third and Fourth Quarters 2022 – Soft Copy Lab Package Submittal

Dear Wesley:

Enclosed please find the NW Natural Source Control Groundwater Treatment Facility Residual Data Package for the third and fourth quarters of 2022. This residual data package includes filter cake, bag filter, and monthly process control data from Siltronic pre-treatment plant influent and effluent, NW Natural pre-treatment plant influent and effluent, Koppers Tank Basin effluent (KOP), Fill Water Bearing Zone (WBZ) Interceptor trench influent and effluent, and the main Groundwater Treatment plant influent, as requested by DEQ. At the end of May 2022, the Koppers Tank Basin Effluent was added to the treatment system.

Filter cake and bag filter data include total petroleum hydrocarbons (diesel-range, residual-range petroleum hydrocarbons [NWTPH-DX] and gasoline-range petroleum hydrocarbons [NWTPH-Gx]), volatile organic compounds (VOCs; halogenated and non-halogenated), total cyanide, SVOCs, metals, and percent dry weight. This data is reported and compared to 20x TCLP concentrations consistent with USEPA guidance.<sup>1</sup> The monthly process control data includes VOCs, cyanide, polyaromatic hydrocarbons (PAHs), copper, iron, and total suspended solids.

This semi-annual residual package is consistent with DEQ feedback received on April 25, 2016.

Sincerely,

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<sup>1</sup> A minor laboratory deviation from USEPA's TCLP guidance is notated with a qualifier on the attached bag filter report.



William Byrd  
Groundwater Treatment Plant Superintendent  
Sevenson Environment Services

Cc:

Robert Wyatt – NW Natural  
Patty Dost – Pearl Legal Group  
Ben Hung – Coalition Environmental  
Mike Crystal, Joseph Burke – SES  
Terry Driscoll – ADA  
Ryan Barth, John Edwards, Kendra Skellenger, Jen Mott – Anchor QEA  
Rob Ede – Hahn and Associates  
Dan Hafley -- ODEQ

Enclosures:

Table 1 – July 2022 through December 2022 Filter Cake Residual Charted Lab Results  
Table 2 – July 2022 through December 2022 Bag Filter Residual Charted Lab Results  
Table 3G, 3H, 3I, 3J, 3K, and 3L – Jan 2022 through June 2022 Monthly Process Control  
Charted Lab Results

FTP Site:

July 2022 through December 2022 Filter Cake Lab Results  
July 2022 through December 2022 Bag Filter Lab Results  
July 2022 through December 2022 Monthly Process Labs Results

Table 1 - Jul-Dec 2022 Filter Cake Residuals

Drop #		1952		1968		1984		2000		2014		2033	
Sample ID		FC-071922-1952		FC-082222-1968		FC-091922-1984		FC-101722-2000		FC-111422-2014		FC-122022-2033	
LAB ID		A2G0558-01		A2H0778-01		A2I0864-01		A2J0597-01		A2K0620-01		A3A0116-01	
	EPA TCLP Level (20 x) in ug/kg (Actual TCLP Level in µg/L)	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
Diesel (ug/kg dry)		19400000	F-13	8490000		674000	F-17	1350000	F-13	765000	F-13	4440000	F-13
Oil (ug/kg dry)		<3460000		<94200		344000	F-17	<78000		1770000	F-13	<239,000	
<b>Gasoline Range Organics (ug/kg dry)</b>													
		245000		107000		57300		52400		42300		108000	F-09
<b>VOC (ug/kg)</b>													
	Acetone	<8250	ICV-02	<8770	ICV-02	<2750		<3370		<2970		<5760	
	Acrylonitrile	<413		<877		<275		<337		<297		<576	
	Benzene	10,000 (500 µg/L)	128	<43.9		<27.5		<33.7		<29.7		<57.6	
	Bromobenzene	<103		<110		<68.9		<84.3		<74.2		<144	
	Bromochloromethane	<206		<219		<138		<169		<148		<288	
	Bromodichloromethane	<206		<219		<138		<169		<148		<288	
	Bromoform	<825		<439		<275		<337		<297		<576	
	Bromomethane	<4130		<4390		<2750		<3370		<2970		<5760	
	2-Butanone (MEK)	4,000,000 (200,000 µg/L)	<4130	ICV-02	<4390	<1380		<1690		<1480		<2880	
	n-Butylbenzene	<206		<219		<138		<169		<148		<288	
	sec-Butylbenzene	<206		<219		<138		<169		<148		<288	
	tert-Butylbenzene	<206		<219		<138		<169		<148		<288	
	Carbon disulfide	<2060		<2190		<2750		<1690		<1480		<2880	
	Carbon tetrachloride	10,000 (500 µg/L)	<206	<219		<138		<169		<148		<288	
	Chlorobenzene	2,000,000 (100,000 µg/L)	<103	<110		<68.9		<84.3		<74.2		<144	
	Chloroethane	<2060		<4390		<1380		<1690		<1480		<2880	
	Chloroform	120,000 (6,000 µg/L)	<206	<219		<138		<169		<148		<288	
	Chloromethane	<2060		<2190		<689		<843		<742		<2880	
	2-Chlorotoluene	<206		<219		<138		<169		<148		<288	
	4-Chlorotoluene	<206		<219		<138		<169		<148		<288	
	Dibromochloromethane	<413		<439		<275		<337		<297		<576	
	1,2-Dibromo-3-chloropropane	<2060		<1100		<1380		<843		<742		<1440	
	1,2-Dibromoethane (EDB)	<206		<219		<138		<169		<148		<288	
	Dibromomethane	<206		<219		<138		<169		<148		<288	
	1,2-Dichlorobenzene	<103		<110		<68.9		<84.3		<74.2		<144	
	1,3-Dichlorobenzene	<103		<110		<68.9		<84.3		<74.2		<144	
	1,4-Dichlorobenzene	150,000 (7,500 µg/L)	<103	<110		<68.9		<84.3		<74.2		<144	
	Dichlorodifluoromethane	<413		<439		<551	ICV-02	<337		<297		<576	
	1,1-Dichloroethane	<103		<110		<68.9		<84.3		<74.2		<144	
	1,2-Dichloroethane (EDC)	10,000 (500 µg/L)	<103	<110		<68.9		<84.3		<74.2		<144	
	1,1-Dichloroethene	14,000 (700 µg/L)	<103	<110		<68.9		<84.3		<74.2		<144	
	cis-1,2-Dichloroethene	<103		<110		<68.9		<84.3		<74.2		<144	
	trans-1,2-Dichloroethene	<103		<110		<68.9		<84.3		<74.2		<144	
	1,2-Dichloropropane	<103		<110		<68.9		<84.3		<74.2		<144	
	1,3-Dichloropropane	<206		<219		<138		<169		<148		<288	
	2,2-Dichloropropane	<413	Q-30	<219		<138		<169		<148		<288	
	1,1-Dichloropropene	<206		<219		<138		<169		<148		<288	

Table 1 - Jul-Dec 2022 Filter Cake Residuals

cis-1,3-Dichloropropene		<206		<219		<138		<169		<148		<288	
trans-1,3-Dichloropropene		<206		<219		<138		<169		<148		<288	
Ethylbenzene		569		175	J	<68.9		<84.3		<74.2		<144	
Hexachlorobutaldiene	10,000 (500 µg/L)	<413		<439		<275		<337		<297		<576	
2-Hexanone		<4130		<4390		<1380		<1690		<2970		<5760	
Isopropylbenzene		<206		<219		<138		<169		<148		<288	
4-Isopropyltoluene		<206		<219		<138		<169		<148		<288	
Methylene chloride		<2060		<2190		<1380		<1690		<1480		<2880	
4-Methyl-2-pentanone (MIBK)		<2060		<2190		<1380		<1690		<1480		<5760	
Methyl tert-butyl ether (MTBE)		<206		<219		<138		<169		<148		<288	
Naphthalene		23100		1340	J	<275		<337		<593		<576	
n-Propylbenzene		<103		<110		<68.9		<84.3		<74.2		<144	
Stryrene		<206		<219		<138		<169		<148		<288	
1,1,1,2-Tetrachloroethane		<103		<110		<68.9		<84.3		<74.2		<144	
1,1,2,2-Tetrachloroethane		<206		<219		<138		<169		<148		<288	
Tetrachloroethene (PCE)	14,000 (700 µg/L)	<103		<110		<68.9		<84.3		<74.2		<144	
Toluene		<206		<219		<138		<169		<148		<288	
1,2,3-Trichlorobenzene		<1030		<1100		<689		<843		<742		<1440	
1,2,4-Trichlorobenzene		<1030		<1100		<689		<843		<742		<1440	
1,1,1-Trichloroethane		<103		<110		<68.9		<84.3		<74.2		<144	
1,1,2-Trichloroethane		<103		<110		<68.9		<84.3		<74.2		<144	
Trichloroethene (TCE)	10,000 (500 µg/L)	<103		<110		<68.9		<84.3		<74.2		<144	
Trichlorofluoromethane		<413		<439		<275		<675		<297		<1150	Q-30
1,2,3-Trichloropropane		<206		<219		<138		<169		<148		<288	
1,2,4-Trimethylbenzene		1110		483		<138		<169		<148		<288	
1,3,5-Trimethylbenzene		380	J	<219		<138		<169		<148		<288	
Vinyl chloride	4,000 (200 µg/L)	<103		<110		<68.9		<84.3		<74.2		<144	
m,p-Xylene		342	J	237	J	<138		<169		<148		<288	
o-Xylene		309		158	J	<68.9		<84.3		<74.2		<144	
<b>TCLP Volatile Organic Compounds (ug/L)</b>													
Benzene	10,000 (500µg/L)	<6.25		<6.25		<6.25		<6.25		<6.25		<6.25	
2-Butanone (MEK)	4,000,000 (200,000 µg/L)	<250		<250		<250		<250		<250		<250	
Carbon tetrachloride	10,000 (500 µg/L)	<25.0		<25.0		<25.0		<25.0		<25.0		<25.0	
Chlorobenzene	2,000,000 (100,000 µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
Chloroform	120,000 (6,000 µg/L)	<25.0		<25.0		<25.0		<25.0		<25.0		<25.0	
1,4-Dichlorobenzene	150,000 (7,500 µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
1,1-Dichloroethene	14,000 (700 µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
1,2-Dichloroethane (EDC)	10,000 (500 µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
Tetrachloroethene (PCE)	14,000 (700 µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
Trichloroethene (TCE)	10,000 (500 µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
Vinyl chloride	4,000 (200 µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
<b>SVOC (ug/kg dry)</b>													
Acenaphthene		146000		48400	Q-42	4090	Q-42	3530		9680		43000	
Acenaphthylene		<12500	R-02	<5790	R-02	1100	J	<1240		2450	J	<6220	R-02
Anthracene		111000		54200	Q-42	9540		11300		21300		54000	
Benz(a)anthracene		61300		33300	Q-42	7560		8790		18100		35400	
Benzo(a)pyrene		69400		36100	Q-42	9440		10400		22300		42500	
Benzo(b)fluoranthene		55300		30100	Q-42	7550	Q-42	8190		17500		31900	

Table 1 - Jul-Dec 2022 Filter Cake Residuals

Benzo(k)fluoranthene		16800	M-05	10900	M-05, Q-42	3870	M-05	4560	M-05	7180	M-05	13700	M-05
Benzo(g,h,i)perylene		44200		23500	Q-42	5040		6610		13100		24200	
Chrysene		79100		44900	Q-42	9830		11600		23000		46200	
Dibenz(a,h)anthracene		4450		2290	J, Q-42	<912		<1240		1580	J	2390	J
Fluoranthene		274000		155000	Q-42	28300		35100		64100		171000	
Fluorene		93000		36800	Q-42	4000	Q-42	4020		8560		34500	
Indeno(1,2,3-cd)pyrene		37900		21100	Q-42	5560		6350		13000		22600	
1-Methlnaphthalene		52400		9460	Q-42	<1830		<2490		<2750		7280	J
2-Methlnaphthalene		59200		<2580		<1830		<2490		<2750		<4750	
Naphthalene		7360	Q-42	<2580		<1830		<2490		<2750		<4750	
Phenanthrene		540000		269000	Q-42	40400		43500		73500		276000	
Pyrene		326000		187000	Q-42	32200		39900		74200		200000	
Carbazole		4340	J, Q-37	<1930		<1370		<1870		<2060		<3560	
Dibenzofuran		11200		3350	Q-42	<912		<1240		<1370		3160	J
2-Chlorophenol		<8320		<6440		<4570		<6220		<6870		<11900	
4-Chloro-3-methylphenol		<16600		<12800		<9120		<12400		<13700		<23700	
2,4-Dichlorophenol		<8320		<6440		<4570		<6220		<6870		<11900	
2,4-Dimethylphenol		<8320		<6440		<4570		<6220		<6870		<11900	
2,4-Dinitrophenol		<41500		<32200		<22800		<31100		<34300		<59200	
4,6-Dinitro-2-methylphenol		<41500		<32200		<22800		<31100		<34300		<59200	
2-Methylphenol	4,000,000 (200,000µg/L)	<4150		<3220		<2280		<3110		<3430		<5920	
3+4-Methylphenol(s)		<4150		<3220		<2280		<3110		<3430		<5920	
2-Nitrophenol		<16600		<12800		<9120		<12400		<13700		<23700	
4-Nitrophenol		<33300		<12800		<9120		<12400		<13700		<23700	
Pentachlorophenol(PCP)	2,000,000 (100,000µg/L)	<16600		<12800		<9120		<12400		<13700		<23700	
Phenol		<3330		<2580		<1830		<2490		<2750		<4750	
2,3,4,6-Tetrachlorophenol		<8320		<6440		<4570		<6220		<6870		<11900	
2,3,5,6-Tetrachlorophenol		<8320		<6440		<4570		<6220		<6870		<11900	
2,4,5-Trichlorophenol	8,000,000 (400,000µg/L)	<8320		<6440		<4570		<6220		<6870		<11900	
Nitrobenzene	40,000 (2,000 µg/L)	<16600		<12800		<9120		<12400		<13700		<23700	
2,4,6-Trichlorophenol	40,000 (2,000 µg/L)	<8320		<6440		<4570		<6220		<6870		<11900	
Bis(2-ethylhexyl)phthalate		<25000		<19300		<13700		<18700		<20600		<35600	
Butyl benzyl phthalate		<16600		<12800		<9120		<12400		<13700		<23700	
Diethylphthalate		<16600		<12800		<9120		<12400		<13700		<23700	
Dimethylphthalate		<16600		<12800		<9120		<12400		<13700		<23700	
Di-n-butylphthalate		<16600		<12800		<9120		<12400		<13700		<23700	
Di-n-octyl phthalate		<16600		<12800		<9120		<12400		<13700		<23700	
N-Nitrosodimethylamine		<4150		<3220		<2280		<3110		<3430		<5920	
N-Nitroso-di-n-propylamine		<4150		<3220		<2280		<3110		<3430		<5920	
N-Nitrosodiphenylamine		<13100	R-02	<6760	R-02	<2280		<3110		<3430		<11900	
Bis(2-Chloroethoxy) methane		<4150		<3220		<2280		<3110		<3430		<5920	
Bis(2-Chloroethyl) ether		<4150		<3220		<2280		<3110		<3430		<5920	
2,2'-Oxybis(1-Chloropropane)		<4150		<3220		<2280		<3110		<3430		<5920	
Hexachlorobenzene	2,600 (130 µg/L)	<1660		<1280		<912		<1240		<1370		<2370	
Hexachlorobutadiene	10,000 (500 µg/L)	<4150		<3220		<2280		<3110		<3430		<5920	
Hexachlorocyclopentadiene		<8320		<6440		<4570		<6220		<6870		<11900	
Hexachloroethane	60,000 (3,000 µg/L)	<4150		<3220		<2280		<3110		<3430		<5920	
2-Chloronaphthalene		<1660		<1280		<912		<1240		<1370		<2370	
1,2,4-Trichlorobenzene		<4150		<3220		<2280		<3110		<3430		<5920	

Table 1 - Jul-Dec 2022 Filter Cake Residuals

4-Bromophenyl phenyl ether		<4150		<3220		<2280		<3110		<3430		<5920	
4-Chlorophenyl phenyl ether		<4150		<3220		<2280		<3110		<3430		<5920	
Aniline		<8320		<6440		<4570		<6220		<6870		<11900	
4-Chloroaniline		<4150		<3220		<2280		<3110		<3430		<5920	
2-Nitroaniline		<33300		<25800		<18300		<24900		<27500		<47500	
3-Nitroaniline		<33300		<25800		<18300		<24900		<27500		<47500	
4-Nitroaniline		<33300		<25800		<18300		<24900		<27500		<47500	
2,4-Dinitrotoluene	2,600 (130 µg/L)	<16600		<12800		<9120		<12400		<13700		<23700	
2,6-Dinitrotoluene		<16600		<12800		<9120		<12400		<13700		<23700	
Benzoic acid		<208000		<161000		<115000		<156000		<172000		<297000	
Benzyl alcohol		<8320		<6440		<4570		<6220		<6870		<11900	
Isophorone		<4150		<3220		<2280		<3110		<3430		<5920	
Azobenzene (1,2-DPH)		<4150		<3220		<2280		<3110		<3430		<5920	
Bis(2-Ethylhexyl)adipate		<41500		<32200		<22800		<31100		<34300		<59200	
3,3'-Dichlorobenzidine		<33300	Q-52	<25800	Q-52	<18300	Q-52	<24900	Q-52	<27500	Q-52	<47500	Q-52
1,2-Dinitrobenzene		<41500		<32200		<22800		<31100		<34300		<59200	
1,3-Dinitrobenzene		<41500		<32200		<22800		<31100		<34300		<59200	
1,4-Dinitrobenzene		<41500		<32200		<22800		<31100		<34300		<59200	
Pyridine	100,000 (5,000µg/L)	<8320		<6440		<4570		<6220		<6870		<11900	
1,2-Dichlorobenzene		<4150		<3220		<2280		<3110		<3430		<5920	
1,3-Dichlorobenzene		<4150		<3220		<2280		<3110		<3430		<5920	
1,4-Dichlorobenzene	150,000 (7,500µg/L)	<4150		<3220		<2280		<3110		<3430		<5920	
<b>Total Metals (ug/kg dry)</b>													
Arsenic	100,000 (5,000 µg/L)	8540		10100		7840		8820		8460		9630	
Barium	2,000,000 (100,000 µg/L)	179000		214000		209000		229000		192000		225000	
Cadmium	20,000 (1,000 µg/L)	<469		<510		<339		<411		<353		<637	
Chromium	100,000 (5,000 µg/L)	<2340		<2550		<1690		<2060		<1770		<3190	
Lead	100,000 (5,000 µg/L)	<469		<510		<339		<411		934		<637	
Mercury	4,000 (200 µg/L)	<187		<204		<136		<165		<141		<255	
Selenium	20,000 (1,000 µg/L)	<2340		<2550		<1690		<2060		<1770		<3190	
Silver	100,000 (5,000 µg/L)	<469		<510		<339		<411		<353		<637	
<b>TCLP Metals (ug/L)</b>													
Arsenic	100,000 (5,000 µg/L)	<100		<100		<100		<50.0		<50.0		<50.0	
Barium	2,000,000 (100,000 µg/L)	<5000		<5000		<5000		<2500		<2500		<2500	
Cadmium	20,000 (1,000 µg/L)	<100		<100		<100		<50.0		<50.0		<50.0	
Chromium	100,000 (5,000 µg/L)	<100		<100		<100		<50.0		<50.0		<50.0	
Lead	100,000 (5,000 µg/L)	<50.0		<50.0		<50.0		<25.0		<25.0		<25.0	
Mercury	4,000 (200 µg/L)	<7.00		<7.00		<7.00		<3.75		<3.75		<3.75	
Selenium	20,000 (1,000 µg/L)	<100		<100		<100		<50.0		<50.0		<50.0	
Silver	100,000 (5,000 µg/L)	<100		<100		<100		<50.0		<50.0		<50.0	
<b>Total Cyanide (ug/kg dry)</b>													
		5420		6380		5540	Q-42	6650	Q-42	3590		7320	H-05
<b>Percent Dry Weight</b>													
%Solids		22.6		20.3		29.1		25.5		28.3		16.3	

NOTES

F-09 = Results in the Gasoline Range are primarily due to overlap from a heavier fuel hydrocarbon product.

## Table 1 - Jul-Dec 2022 Filter Cake Residuals

F-13 = The chromatographic pattern does not resemble the fuel standard used for quantitation

F-17 = No fuel pattern detected. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.

H-05 = Sample received without adequate lead time to perform analysis within hold time.

ICV-02 = Estimated Result. Initial Calibration Verification (IVC) failed low.

J = Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.

M-05 = Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.

Q-30 = Recovery for Lab Control Spike (LCS) is below the lower control limit. Data may be biased low.

Q-37 = Sample is non-homogenous. Sample results are less than MRL and duplicate results have hits greater than the MRL. See Duplicate results.

Q-42 = Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits.

Q-52 = Due to erratic or low blank spike recoveries, results for this analyte are considered Estimated Values.

R-02 = The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.

Table 2 - Jul-Dec 2022 Bag Filter Residuals

Collection #		142		143		144		145		146		147	
Sample ID		BF-071922-142		BF-082322-143		BF-092022-144		BF-101822-145		BF-111622-146		BF-120222-147	
LAB ID		A2G0559-01		A2H0782-01		A2I0874-01		A2J0599-01		A2K0621-01		A3A0118-01	
	EPA TCLP Level (20 x) in ug/kg (Actual TCLP Level in µg/L)	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
Diesel (ug/kg)		22900000		7360000		5250000		2120000		5200000	Q-42	2,560,000	
Oil (ug/kg)		15900000		6220000		3860000		1420000		4220000	Q-42	2,060,000	
Gasoline Range Organics (ug/kg)		32600000		729000		9350000	F-13	201000		512000		941,000	
<b>VOC (µg/kg/dry)</b>													
Acetone		<542000	ICV-02	<18500	ICV-02	<59500		<9100		<23600	Q-30	<12000	
Acrylonitrile		<27100		<1850		<5950		<910		<2360		<1200	
Benzene	10,000 (500µg/L)	<2710		148	J	<595		<91.0		<118		514	
Bromobenzene		<6780		<232		<1490		<228		<295		<299	
Bromochloromethane		<13600		<464		<2980		<455		<590		<598	
Bromodichloromethane		52300		24800		58900		12000		5670		57800	
Bromoform		<27100		9130		20300	Q-54b	1270	J	<1180		21400	
Bromomethane		<271000		<9270		<59500		<9100		<11800		<12000	
2-Butanone (MEK)	4,000,000 (200,000 µg/L)	<271000	ICV-02	<9270		<29800		<4550		<11800		<5980	
n-Butylbenzene		<13600		<464		<5950		<455		<590		<598	
sec-Butylbenzene		<13600		<464		<2980		<455		<590		<598	
tert-Butylbenzene		<13600		<464		<2980		<455		<590		<598	
Carbon disulfide		<136000		<4640		<59500		<4550		<5900		<5980	
Carbon tetrachloride	10,000 (500µg/L)	<13600		<464		<2980		<455		<590		<598	
Chlorobenzene	2,000,000 (100,000µg/L)	<6780		<232		<1490		<228		<295		<299	
Chloroethane		<136000		<9270		<59500		<4550		<5900		<5980	
Chloroform	120,000 (6,000µg/L)	67200		41500		71100		37000		33500		59800	
Chloromethane		<67800		<4640		<14900		<2280		<2950		<5980	
2-Chlorotoluene		<13600		<464		<2980		<455		<590		<598	
4-Chlorotoluene		<13600		<464		<2980		<455		<590		<598	
Dibromochloromethane		28500	J	16200		40000	Q-54	3920		<1180		43700	
1,2-Dibromo-3-chloropropane		<67800		<2320		<14900		<2280		<2950		<2990	
1,2-Dibromoethane (EDB)		<13600		<464		<2980		<455		<590		<598	
Dibromomethane		<13600		<464		<2980		<455		<590		<598	
1,2-Dichlorobenzene		<6780		<232		<1490		<228		<295		<299	
1,3-Dichlorobenzene		<6780		<232		<1490		<228		<295		<299	
1,4-Dichlorobenzene	150,000 (7,500µg/L)	<6780		<232		<1490		<228		<295		<299	
Dichlorodifluoromethane		<27100		<927		<11900	ICV-02	<910		<2360	ICV-02	<1200	
1,1-Dichloroethane		<6780		<232		<1490		<228		<295		<299	
1,2-Dichloroethane (EDC)	10,000 (500µg/L)	<6780		<232		<1490		<228		<295		<299	
1,1-Dichloroethene	14,000 (700µg/L)	<6780		<232		<1490		<228		<295		<299	
cis-1,2-Dichloroethene		<6780		<232		<1490		<228		<295		<299	
trans-1,2-Dichloroethene		<6780		<232		<1490		<228		<295		<299	
1,2-Dichloropropane		<6780		<232		<1490		<228		<295		<299	
1,3-Dichloropropane		<13600		<464		<2980		<455		<590		<598	
2,2-Dichloropropane		<13600		<464		<2980		<455		<590		<598	
1,1-Dichloropropene		<13600		<464		<2980		<455		<590		<598	
cis-1,3-Dichloropropene		<13600		<464		<2980		<455		<590		<598	
trans-1,3-Dichloropropene		<13600		<464		<2980		<455		<590		<598	
Ethylbenzene		11900	J	1300		6370		<228		<295		921	

Table 2 - Jul-Dec 2022 Bag Filter Residuals

Hexachlorobutadiene	10,000 (500µg/L)	<27100		<927		<5950		<910		<1180		<1200	
2-Hexanone		<136000		<9270		<59500		<4550		<11800		<12000	
Isopropylbenzene		<13600		<464		<2980		<455		<590		<598	
4-Isopropyltoluene		<13600		<464		<2980		<455		<590		<598	
Methylene chloride		<136000		<4640		<29800		<4550		<5900		<5980	
4-Methyl-2-pentanone (MIBK)		<136000		<4640		<59500		<4550		<11800		<12000	
Methyl tert-butyl ether (MTBE)		<13600		<464		<2980		<455		<590		<598	
Naphthalene		<b>1170000</b>		<b>49100</b>		<b>20400</b>		<b>9800</b>		<b>61600</b>		<b>40,000</b>	
n-Propylbenzene		<6780		<232		<1490		<228		<295		<299	
Styrene		<13600		<b>464</b>	<b>J</b>	<2980		<455		<590		<598	
1,1,1,2-Tetrachloroethane		<6780		<232		<1490		<228		<295		<299	
1,1,2,2-Tetrachloroethane		<13600		<464		<5950		<455		<590		<598	
Tetrachloroethene (PCE)	14,000 (700µg/L)	<6780		<232		<1490		<228		<295		<299	
Toluene		<13600		<464		<2980		<455		<590		<598	
1,2,3-Trichlorobenzene		<67800		<2320		<14900		<2280		<2950		<2990	
1,2,4-Trichlorobenzene		<67800		<2320		<14900		<2280		<2950		<2990	
1,1,1-Trichloroethane		<6780		<232		<1490		<228		<295		<299	
1,1,2-Trichloroethane		<6780		<232		<1490		<228		<295		<299	
Trichloroethene (TCE)	10,000 (500µg/L)	<6780		<232		<1490		<228		<295		<299	
Trichlorofluoromethane		<27100		<927		<5950	EST	<1820		<2360	Q-52	<2390	Q-30
1,2,3-Trichloropropane		<13600		<464		<8930	R-02	<455		<590		<598	
1,2,4-Trimethylbenzene		<b>30600</b>		<b>1560</b>		<b>8690</b>		<455		<590		<b>1040</b>	<b>J</b>
1,3,5-Trimethylbenzene		<13600		<464		<2980		<455		<590		<598	
Vinyl chloride	4,000 (200µg/L)	<6780		<232		<2980		<228		<295		<299	
m,p-Xylene		<13600		<b>853</b>	<b>J</b>	<2980		<455		<590		<598	
o-Xylene		<b>6780</b>	<b>J</b>	<b>733</b>		<b>2500</b>	<b>J</b>	<228		<295		<b>538</b>	<b>J</b>

**TCLP Volatile Organic Compounds (µg/L)**

Benzene	10,000 (500µg/L)	<6.25		<6.25		<6.25		<6.25		<6.25		<6.25	
2-Butanone (MEK)	4,000,000 (200,000 µg/L)	<250		<250		<250		<250		<250		<250	
Carbon tetrachloride	10,000 (500µg/L)	<25.0		<25.0		<25.0		<25.0		<25.0		<25.0	
Chlorobenzene	2,000,000 (100,000µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
Chloroform	120,000 (6,000µg/L)	<b>71.0</b>		<b>74.0</b>		<b>73.0</b>		<b>92.0</b>		<b>85.0</b>		<b>198</b>	
1,4-Dichlorobenzene	150,000 (7,500µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
1,2-Dichloroethane (EDC)	10,000 (500µg/L)	<12.5		<12.5		12.5		<12.5		<12.5		<12.5	
1,1-Dichloroethene	14,000 (700µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
Tetrachloroethene (PCE)	14,000 (700µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
Trichloroethene (TCE)	10,000 (500µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	
Vinyl chloride	4,000 (200µg/L)	<12.5		<12.5		<12.5		<12.5		<12.5		<12.5	

**SVOC (µg/kg/dry)**

Acenaphthene		<3740		<2680		<327		<4040		<5210		<4900	
Acenaphthylene		<3740		<2680		<b>394</b>	<b>J</b>	<4040		<5210		<4900	
Anthracene		<7510		<5370		<b>339</b>	<b>J</b>	<4040		<5210		<4900	
Benz(a)anthracene		<3740		<5370		<b>523</b>	<b>J</b>	<8110		<10500		<4900	
Benzo(a)pyrene		<5620		<b>6870</b>	<b>J</b>	<b>611</b>	<b>J</b>	<6080		<b>9680</b>	<b>J</b>	<7370	
Benzo(b)fluoranthene		<b>22400</b>		<b>10900</b>		<b>1050</b>		<8110		<b>13600</b>	<b>J</b>	<b>8600</b>	<b>J</b>
Benzo(k)fluoranthene		<5620		<4020		<492		<6080		<b>7910</b>	<b>J</b>	<7370	
Benzo(g,h,i)perylene		<3740		<b>3850</b>	<b>J</b>	<b>334</b>	<b>J</b>	<4040		<5210		<4900	
Chrysene		<42200	R-02	<24100	R-02	<b>1440</b>		<8110		<23500	R-02	<4900	
Dibenz(a,h)anthracene		<3740		<2680		<327		<4040		<5210		<4900	
Fluoranthene		<b>212000</b>		<b>89900</b>		<b>1420</b>		<b>28500</b>		<b>81600</b>		<b>60800</b>	
Fluorene		<b>282000</b>		<b>140000</b>		<b>3340</b>		<b>40300</b>		<b>114000</b>		<b>86000</b>	
Indeno(1,2,3-cd)pyrene		<3740		<b>4050</b>	<b>J</b>	<b>415</b>	<b>J</b>	<4040		<5210		<4900	

Table 2 - Jul-Dec 2022 Bag Filter Residuals

1-Methlnaphthalene		10900	J	<5370		<657		<8110		16100	J	<9840	
2-Methlnaphthalene		10600	J	<5370		<657		<8110		12900	J	<9840	
Naphthalene		151000		32000		<657		10800	J	115000		18900	J
Phenanthrene		596000		189000		2160		57400		232000		135000	
Pyrene		<3740		6050		495	J	<4040		6390	J	<4900	
Carbazole		194000		93800		6110	Q-42	57300		144000		66000	
Dibenzofuran		46300		22000		746		6610	J	17100		13600	
2-Chlorophenol		<18800		<13400		<1640		<20300		<26100		<24600	
4-Chloro-3-methylphenol		<37400		<26800		<3270		<40400		<52100		<49000	
2,4-Dichlorophenol		<18800		<13400		<1640		<20300		<26100		<24600	
2,4-Dimethylphenol		<18800		<13400		<1640	Q-42	<20300		<26100		<24600	
2,4-Dinitrophenol		<93600		<67000		<8200		<101000		<131000		<123000	
4,6-Dinitro-2-methylphenol		<93600		<67000		<8200		<101000		<131000		<123000	
2-Methylphenol	4,000,000 (200,000µg/L)	<9360		<6700		<820		<10100		<13100		<12300	
3+4-Methylphenol(s)		<9360		<6700		<820		<10100		<13100		<12300	
2-Nitrophenol		<37400		<26800		<3270		<40400		<52100		<49000	
4-Nitrophenol		<75100		<26800		<3270		<40400		<52100		<49000	
Pentachlorophenol(PCP)	2,000,000 (100,000µg/L)	<37400		<26800		<3270		<40400		<52100		<49000	
Phenol		<7510		<5370		<657		<8110		<10500		<9840	
2,3,4,6-Tetrachlorophenol		<18800		<13400		<1640		<20300		<26100		<24600	
2,3,5,6-Tetrachlorophenol		<18800		<13400		<1640		<20300		<26100		<24600	
2,4,5-Trichlorophenol	8,000,000 (400,000µg/L)	<18800		<13400		<1640		<20300		<26100		<24600	
Nitrobenzene	40,000 (2,000 µg/L)	<37400		<26800		<3270		<40400		<52100		<49000	
2,4,6-Trichlorophenol	40,000 (2,000 µg/L)	<18800		<13400		<1640		<20300		<26100		<24600	
Bis(2-ethylhexyl)phthalate		<56200		<40200		<4920		<60800		<78400		<73700	
Butyl benzyl phtalate		<37400		<26800		<3270		<40400		<52100		<49000	
Diethylphthalate		<37400		<26800		<3270		<40400		<52100		<49000	
Dimethylphthalate		<37400		<26800		<3270		<40400		<52100		<49000	
Di-n-butylphthalate		<37400		<26800		<3270		<40400		<52100		<49000	
Di-n-octyl phthalate		<37400		<26800		<3270		<40400		<52100		<49000	
N-Nitrosodimethylamine		<9360		<6700		<820		<10100		<13100		<12300	
N-Nitroso-di-n-propylamine		<9360		<6700		<820		<10100		<13100		<12300	
N-Nitrosodiphenylamine		<9360		<6700		<820		<10100		<13100		<12300	
Bis(2-Chloroethoxy) methane		<9360		<6700		<820		<10100		<13100		<12300	
Bis(2-Chloroethyl) ether		<9360		<6700		<820		<10100		<13100		<12300	
2,2'-Oxybis(1-Chloropropane)		<9360		<6700		<820		<10100		<13100		<12300	
Hexachlorobenzene	2,600 (130 µg/L)	<3740		<2680		<327		<4040		<5210		<4900	
Hexachlorobutadiene	10,000 (500 µg/L)	<9360		<6700		<820		<10100		<13100		<12300	
Hexachlorocyclopentadiene		<18800		<13400		<1640		<20300		<26100		<24600	
Hexachloroethane	60,000 (3,000 µg/L)	<9360		<6700		<820		<10100		<13100		<12300	
2-Chloronaphthalene		<3740		<2680		<327		<4040		<5210		<4900	
1,2,4-Trichlorobenzene		<9360		<6700		<820		<10100		<13100		<12300	
4-Bromophenyl phenyl ether		<9360		<6700		<820		<10100		<13100		<12300	
4-Chlorophenyl phenyl ether		<9360		<6700		<820		<10100		<13100		<12300	
Aniline		<18800		<13400		<1640	Q-42	<20300		<26100		<24600	
4-Chloroaniline		<9360		<6700		<820	Q-42	<10100		<13100		<12300	
2-Nitroaniline		<75100		<53700		<6570		<81100		<105000		<98400	
3-Nitroaniline		<75100		<53700		<6570		<81100		<105000		<98400	
4-Nitroaniline		<75100		<53700		<6570		<81100		<105000		<98400	
2,4-Dinitrotoluene	2,600 (130 µg/L)	<37400		<26800		<3270		<40400		<52100		<49000	
2,6-Dinitrotoluene		<37400		<26800		<3270		<40400		<52100		<49000	
Benzoic acid		<470000		<336000		<41100		<507000		<655000		<615000	
Benzyl alcohol		<18800		<13400		<1640		<20300		<26100		<24600	
Isophorone		<18800		<15100	R-02	<2460	R-02	<20300		<45900	R-02	<27600	R-02

Table 2 - Jul-Dec 2022 Bag Filter Residuals

Azobenzene (1,2-DPH)		<9360		<6700		<820		<10100		<13100		<12300	
Bis(2-Ethylhexyl)adipate		<93600		<67000		<8200		<101000		<131000		<123000	
3,3'-Dichlorobenzidine		<75100		<53700	Q-52	<6570	Q-42, Q-52	<81100	Q-52	<105000	Q-52	<98400	Q-52
1,2-Dinitrobenzene		<93600		<67000		<8200		<101000		<131000		<123000	
1,3-Dinitrobenzene		<93600		<67000		<8200		<101000		<131000		<123000	
1,4-Dinitrobenzene		<93600		<67000		<8200		<101000		<131000		<123000	
Pyridine	100,000 (5,000µg/L)	<18800		<13400		<1640		<20300		<26100		<24600	
1,2-Dichlorobenzene		<9360		<6700		<820		<10100		<13100		<12300	
1,3-Dichlorobenzene		<9360		<6700		<820		<10100		<13100		<12300	
1,4-Dichlorobenzene	150,000 (7,500µg/L)	<9360		<6700		<820		<10100		<13100		<12300	
<b>Total Metals (ug/kg/dry)</b>													
Arsenic	100,000 (5,000µg/L)	<b>114000</b>		<b>93400</b>		<b>111000</b>		<b>116000</b>		<b>90600</b>		<b>205000</b>	
Barium	2,000,000 (100,000µg/L)	<b>190000</b>		<b>218000</b>		<b>245000</b>		<b>165000</b>		<b>257000</b>		<b>223000</b>	
Cadmium	20,000 (1,000µg/L)	<1010		<1040		<1360		<1080		<1320		<1220	
Chromium	100,000 (5,000µg/L)	<b>91500</b>		<b>563000</b>		<b>240000</b>		<b>244000</b>		<b>202000</b>		<b>69000</b>	
Lead	100,000 (5,000µg/L)	<b>7700</b>		<b>14800</b>		<b>174000</b>		<b>9990</b>		<b>17300</b>		<b>7350</b>	
Mercury	4,000 (200µg/L)	<404		<417		<544		<431		<528		<486	
Selenium	20,000 (1,000µg/L)	<5050		<5220		<6800		<5390		<6600		<6080	
Silver	100,000 (5,000µg/L)	<1010		<1040		<1360		<1080		<1320		<1220	
<b>TCLP Total Metals (µg/L)</b>													
Arsenic	100,000 (5,000µg/L)	<50.0		<50.0	TCLPa	<50.0		<50.0		<50.0		<50.0	
Barium	2,000,000 (100,000µg/L)	<2500		<2500	TCLPa	<2500		<2500		<2500		<2500	
Cadmium	20,000 (1,000µg/L)	<50.0		<50.0	TCLPa	<50.0		<50.0		<50.0		<50.0	
Chromium	100,000 (5,000µg/L)	<50.0		<b>53.7</b>	<b>J, TCLPa</b>	<50.0		<50.0		<50.0		<50.0	
Lead	100,000 (5,000µg/L)	<25.0		<25.0	TCLPa	<25.0		<25.0		<25.0		<25.0	
Mercury	4,000 (200µg/L)	<3.75		<3.75	TCLPa	<3.75		<3.75		<3.75		<3.75	
Selenium	20,000 (1,000µg/L)	<50.0		<50.0	TCLPa	<50.0		<50.0		<50.0		<50.0	
Silver	100,000 (5,000µg/L)	<50.0		<50.0	TCLPa	<50.0		<50.0		<50.0		<50.0	
<b>Total Cyanide (ug/kg)</b>													
		<b>22000</b>		<b>37800</b>	<b>Q-42</b>	<b>20200</b>		<b>16300</b>		<b>17000</b>		<b>26200</b>	<b>H-05</b>
<b>%Solids</b>													
		<b>9.97</b>		<b>9.82</b>		<b>8.01</b>		<b>9.64</b>		<b>7.50</b>		<b>7.92</b>	

**NOTES**

EST = Result reported as an Estimated Value. Result estimated. Fail initial calibration criteria.

F-13 = The chromatographic pattern does not resemble the fuel standard used for quantitation

ICV-02 = Estimated Result. Initial Calibration Verification (IVC) failed low.

J - Estimated Result. Result is detected below the lowest point of the calibration curve, but above the specified MDL.

Q-30 = Recovery for Lab Control Spike (LCS) is below the lower control limit. Data may be biased low.

Q-42 = Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits.

Q-52 = Due to erratic or low blank spike recoveries, results for this analyte are considered Estimated Values.

Q-54 = Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +14%. The results are reported as Estimated Values.

Q-54b = Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +6%. The results are reported as Estimated Values.

R-02 = The reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.

TCLPa = Limited sample volume. Leachate was prepared using less than the recommended amount of sample per EPA 1311 or 1312. To maintain consistency in leaching, the standard ratio of sample to leachate fluid was maintained.