



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Northwest Regional Office, 3190 - 160th Ave. S.E. • Bellevue, Washington 98008-5452 • (206) 649-7000

February 24, 2005

Ms. Kristie J. Hendrickson
Landau Associates
130 2nd Avenue South
Edmonds, WA 98020

Dear Kristy:

RE: Union Station Groundwater Monitoring, Union Station Purchaser Consent Decree (97-2-18936-5SEA)

Ecology approves the reduction in the list of analytes for groundwater monitoring to those listed in your letter of February 7, 2005 (attached). Ecology may request that analytes dropped from the list be re-added at any time.

The next groundwater monitoring round is to be conducted in 2009.

Should you have any questions, please contact me at 426-649-7200 or dsou461@ecy.wa.gov.

Sincerely,

A handwritten signature in cursive script that reads "David L. South".

David L. South
Senior Engineer
Toxics Cleanup Program

Attachment

February 7, 2005

RECEIVED

FEB 11 2005

DEPT OF ECOLOGY

Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue S.E.
Bellevue, WA 98008-5452

Attention: Mr. David L. South

**RE: UNION STATION GROUNDWATER MONITORING
UNION STATION PURCHASER CONSENT DECREE
(97-2-18936-5SEA)**

Dear David:

We received your letter approving a reduction in groundwater monitoring frequency at Union Station from annual to every 5 years. You did not approve the request to reduce the analytes for monitoring to only carcinogenic polycyclic aromatic hydrocarbons (cPAHs). We understand that you are concerned that other constituents are present in groundwater at the Union Station property and should continue to be included in the monitoring program.

The attached Table 1 lists the analyses currently included in the groundwater monitoring program. Attached Table 2 provides a summary of the constituents that have been detected at concentrations at or above the practical quantitation limit (PQL) in groundwater from property and off-property wells. Table 2 also includes the Consent Decree cleanup level, the number of detections during the past eight monitoring events, the minimum and maximum detected concentrations, and the upper 95 percent confidence limit on the mean (UCL). The constituents listed in Table 2 are slightly different from those listed in your January 24 e-mail because Table 2 includes only constituents detected at or above concentrations above the PQL. For constituents without cleanup levels, available water quality information is included in Table 2 to provide context for the detected concentrations.

Based on the data from the last eight sampling events, documented in the 2004 groundwater monitoring report [*Report, Groundwater Monitoring, Union Station, Seattle, Washington* (Landau Associates 2004)], we, on behalf of Union Station Associates, request that the constituents for analysis and analytical methods be revised to include only the following:

- PAHs [acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene), chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, pyrene] by U.S. Environmental Protection Agency (EPA) Method

SW-846 8270. If cPAHs are not detected, the samples will also be analyzed for cPAHs by EPA Method SW-846 8270 SIM to obtain lower reporting limits.

- Gasoline-range petroleum hydrocarbons by method NWTPH-G.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method SW-846 8020.
- Diesel-range and motor oil-range petroleum hydrocarbons by method NWTPH-Dx.
- Arsenic by Standard Methods method 200.8.
- Conventional parameters total dissolved solids, total suspended solids.
- Field parameters including pH, specific conductance, temperature.

The constituents proposed for continued monitoring include all constituents detected in property wells during the past eight sampling events except the following:

- Constituents that meet the Consent Decree cleanup levels
 - Selenium
 - 2,4-dimethylphenol.
- Constituents that do not have Consent Decree cleanup levels
 - 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene, detected in wells MW-101R, MW-105, and MW-107R at concentrations up to 57 µg/L. These constituents are components of gasoline and will be adequately addressed by continuing analysis for gasoline-range petroleum hydrocarbons.
 - Isopropylbenzene, detected in well MW-101R, at a concentration of 11 µg/L. This constituent is a component of gasoline and will be adequately addressed by continuing analysis for gasoline-range petroleum hydrocarbons.
 - Acetone, detected only once, in monitoring well MW-102R, at a concentration of 18 µg/L. Acetone is a common laboratory contaminant. There are no surface water cleanup levels established under WAC 173-340-730 but, for salt water, a LC50 of 1,900,000 µg/L is listed in EPA's *Superfund Chemical Data Matrix* (SCDM, EPA, updated 2004; <http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm>).
 - Carbazole, detected one or more times in wells MW-101R, MW-104, MW-105, and MW-107R at concentrations from 10 µg/L to 31 µg/L. There are no surface water cleanup levels established under WAC 173-340-730. No salt water information is included in EPA's *Superfund Chemical Data Matrix*, but a LC50 of 930 µg/L is listed for fresh water.
 - Dibenzofuran, detected at wells MW-101R and MW-105 at concentrations from 13 µg/L to 30 µg/L. There are no surface water cleanup levels established under WAC 173-340-730. For salt water a LC50 of 1,000 µg/L is listed in EPA's *Superfund Chemical Data Matrix*.
- Chromium, detected only once at a concentration above the PQL, in monitoring well MW-108R, at a concentration (54 µg/L) slightly above the Consent Decree cleanup level (50 µg/L).

Several other constituents (4-methylphenol, pyrene, and cyanide) detected at concentrations at or greater than the PQL, only in off-property well B-4 but not in property wells, are also not proposed for continued analysis.

I would be happy to discuss this request with you at your convenience.

LANDAU ASSOCIATES, INC. .



Kristy J. Hendrickson, P.E.
Principal

KJH/tam
Attachments

cc: Brad Marten, Marten Law Group
Kevin Daniels, Nitze-Stagen & Co., Inc.

* Analyzed five times during monitoring period as required under Consent Decree.

TABLE 2
SUMMARY OF DETECTED CONSTITUENTS

Well #	Analyte	Current Method	Proposed for Continued Sampling?	CAP Cleanup Level (a) (µg/L)	Number of Samples (b)	Number of Detects (>= PQL) (c)	UCL (d)	Minimum Uncensored Data	Maximum Uncensored Data	Mean of Uncensored Data (d)
MW-101R	Arsenic	200.8	Yes, 200.8	4	8	8	12	10	14	12
MW-102R	Arsenic	200.8		4	8	8	8	4	11	7
MW-105	Arsenic	200.8		4	8	8	8	12	19	15
MW-107R	Arsenic	200.8		4	8	7	9	3	8	7
MW-108R	Arsenic	200.8		4	8	6	9	4	9	6
B-4	Arsenic	200.8		4	8	2	---	4	7	---
B-6R	Arsenic	200.8		4	8	8	---	22	33	---
MW-108R	Chromium	200.8	No, only 1 detection (54 µg/L) in last 8 monitoring events. Detection slightly above CAP cleanup level (50 µg/L).	50	8	1	54	54	54	54
MW-108R	Selenium	200.8	No, detected only in well 108R; UCL (30 µg/L) < CAP cleanup level (70 µg/L).	71	8	4	30	20	30	25
B-4	Zinc	200.8	No, found in B-4 only	77	8	1	---	20	20	---
MW-101R	1,2,4-Trimethylbenzene	8260	No, associated with gasoline (e); monitor for gasoline.		8	8	37	25	40	32
MW-105	1,2,4-Trimethylbenzene	8260			8	8	25	12	30	19
MW-107R	1,2,4-Trimethylbenzene	8260			8	7	57	86	57	20
B-4	1,2,4-Trimethylbenzene	8260			8	2	---	11	12	---
MW-101R	1,3,5-Trimethylbenzene	8260	No, associated with gasoline (e); monitor for gasoline.		8	8	23	11	28	18
MW-105	1,3,5-Trimethylbenzene	8260			8	1	11	11	11	11
MW-107R	1,3,5-Trimethylbenzene	8260			8	1	17	17	17	17
MW-102R	Acetone	8260	No, only 1 detection in property wells in last 8 monitoring events; possible lab contaminant. No established cleanup level; salt water LC50 1,900,000 µg/L (f).		8	1	18	18	18	18
B-4	Acetone	8260			8	5	---	72	860	---
MW-101R	Benzene	8260		71	8	8	87	48	90	73
MW-105	Benzene	8260		71	8	8	346	220	390	312
MW-107R	Benzene	8260		71	8	1	5.7	5.7	5.7	6
B-4	Benzene	8260		71	8	8	---	120	150	---
MW-101R	Ethylbenzene	8260	Yes, BTEX	276	8	8	264	130	300	228
MW-105	Ethylbenzene	8260		276	8	8	73	49	82	63
MW-107R	Ethylbenzene	8260		276	8	8	81	21	110	48
B-4	Ethylbenzene	8260		276	8	8	---	110	230	---
MW-101R	Isopropylbenzene	8260	No, associated with gasoline; monitor for gasoline.		8	3	11	11	11	11
MW-101R	m,p-Xylene	8260	Yes, BTEX		8	8	75	38	92	59
MW-105	m,p-Xylene	8260			8	8	69	36	69	48
MW-107R	m,p-Xylene	8260			8	8	61	15	89	34
B-4	m,p-Xylene	8260			8	1	---	5.3	5.3	---
MW-101R	Naphthalene	8260	Yes, PAH by 8270	9880	8	8	7084	3700	7800	5850
MW-102R	Naphthalene	8260		9880	8	2	11	11	11	11
MW-104	Naphthalene	8260		9880	8	7	83	2.2	120	55
MW-105	Naphthalene	8260		9880	8	8	2,084	980	2300	1710
MW-107R	Naphthalene	8260		9880	8	8	3994	1200	4800	2813
MW-108R	Naphthalene	8260		9880	8	8	110	21	110	44
B-4	Naphthalene	8260		9880	8	8	---	1600	6200	---

TABLE 2
SUMMARY OF DETECTED CONSTITUENTS

Well #	Analyte	Current Method	Proposed for Continued Sampling?	CAP Cleanup Level (a) (µg/L)	Number of Samples (b)	Number of Detects (>= PQL) (c)	UCL (d)	Minimum Uncensored Data	Maximum Uncensored Data	Mean of Uncensored Data (d)
MW-101R	Naphthalene	8270	Yes, PAH by 8270	9880	8	8	4,123	1800	4900	3150
MW-102R	Naphthalene	8270		9880	8	2	22	12	22	17
MW-105	Naphthalene	8270		9880	8	8	919	410	1000	701
MW-107R	Naphthalene	8270		9880	8	8	2,200	990	2200	1461
MW-108R	Naphthalene	8270		9880	8	8	41	11	49	28
B-4	Naphthalene	8270		9880	7	7	---	710	3200	---
MW-101R	o-Xylene	8260	Yes, BTEX		8	8	39	17	39	27
MW-105	o-Xylene	8260			8	8	41	15	41	29
MW-107R	o-Xylene	8260			8	8	66	11	66	24
B-4	o-Xylene	8260			8	4	---	5.4	6	---
MW-101R	Toluene	8260	Yes, BTEX	485	8	6	11	6	14	9
MW-105	Toluene	8260		485	8	8	35	18	41	29
MW-107R	Toluene	8260		485	8	4	22	7.3	22	12
MW-105	2,4-Dimethylphenol	8270	No, only 1 detection in property wells, detected concentration (23 µg/L) < CAP cleanup level (553 µg/L)	553	8	6	23	10	32	20
MW-101R	2-Methylnaphthalene	8270	Yes, PAH by 8270		8	8	606	280	700	514
MW-105	2-Methylnaphthalene	8270			8	8	107	62	130	89
MW-107R	2-Methylnaphthalene	8270			8	8	171	66	220	138
B-4	2-Methylnaphthalene	8270			7	7	---	160	670	---
B-4	4-Methylphenol	8270	No, only detection in B-4		8	1	---	17	17	---
MW-101R	Acenaphthene	8270	Yes, PAH by 8270	225	8	8	350	240	350	300
MW-102R	Acenaphthene	8270		225	8	8	15	11	17	13
MW-104	Acenaphthene	8270		225	8	8	64	40	64	48
MW-105	Acenaphthene	8270		225	8	8	75	48	80	68
MW-107R	Acenaphthene	8270		225	8	8	64	225	76	54
B-4	Acenaphthene	8270		225	8	8	---	69	430	---
B-4	Acenaphthylene	8270	Yes, PAH by 8270		8	1	---	10	10	---
B-4	Anthracene	8270		25900	8	6	---	10	28	---
B-4	Benzo(a)anthracene	8270 / 8270-SIM	Yes, PAH by 8270 / 8270-SIM	1	8	7	---	1	17	---
B-4	Benzo(a)pyrene	8270-SIM	Yes, PAH by 8270 / 8270-SIM	1	8	6	---	1	17	---
B-4	Benzo(b)fluoranthene	8270 / 8270-SIM	Yes, PAH by 8270 / 8270-SIM	1	8	3	---	1.1	9.6	---
B-4	Benzo(k)fluoranthene	8270 / 8270-SIM	Yes, PAH by 8270 / 8270-SIM	1	8	5	---	1	13	---
MW-101R	Carbazole	8270	No, No established cleanup level, no salt water info available in (f), fresh water LC50 930 µg/L (f), UCLs 10-28		8	8	25	18	25	21
MW-104	Carbazole	8270			8	1	10	10	10	10
MW-105	Carbazole	8270			8	8	28	21	31	26
MW-107R	Carbazole	8270			8	4	14	10	14	12
B-4	Carbazole	8270			8	7	---	11	24	---
B-4	Chrysene	8270 / 8270-SIM	Yes, PAH by 8270 / 8270-SIM	1	8	6	---	1.3	16	---
B-4	Dibenz(a,h)anthracene	8270 / 8270-SIM	Yes, PAH by 8270 / 8270-SIM	1	8	1	---	2.1	2.1	---
MW-101R	Dibenzofuran	8270	No, no established cleanup level, salt water LC50 1,000 µg/L (f), UCLs 23, 30 µg/L		8	8	30	17	30	21
MW-105	Dibenzofuran	8270			8	8	23	13	23	20
B-4	Dibenzofuran	8270			8	7	---	10	25	---

TABLE 2
SUMMARY OF DETECTED CONSTITUENTS

Well #	Analyte	Current Method	Proposed for Continued Sampling?	CAP Cleanup Level (a) (µg/L)	Number of Samples (b)	Number of Defects (>= PQL) (c)	UCL (d)	Minimum Uncensored Data	Maximum Uncensored Data	Mean of Uncensored Data (d)
MW-105	Fluoranthene	8270	Yes, PAH by 8270	27.1	8	3	11	11	11	11
B-4	Fluoranthene	8270		27.1	8	4	---	11	42	---
MW-101R	Fluorene	8270	Yes, PAH by 8270	2422	8	8	78	58	83	73
MW-104	Fluorene	8270		2422	8	5	11	11	11	11
MW-105	Fluorene	8270		2422	8	8	35	20	35	29
MW-107R	Fluorene	8270		2422	8	8	21	10	27	16
B-4	Fluorene	8270		2422	8	8	---	18	150	---
B-4	Indeno(1,2,3-cd)pyrene	8270 / 8270-SIM	Yes, PAH by 8270 / 8270-SIM	1	8	2	---	3.6	6.8	---
MW-101R	Phenanthrene	8270	Yes, PAH by 8270		8	8	85	59	97	75
MW-102R	Phenanthrene	8270			8	6	NC	---	---	---
MW-105	Phenanthrene	8270			8	8	73	34	73	56
MW-107R	Phenanthrene	8270			8	5	15	12	18	14
B-4	Phenanthrene	8270			8	7	---	46	230	---
B-4	Pyrene	8270	No, found in B-4 only	777	8	6	---	11	46	---
MW-101R	Diesel-Range Petroleum Hydrocarbons	WTPH-Dx	Yes, WTPH-Dx		8	8	3754	2400	4200	3275
MW-102R	Diesel-Range Petroleum Hydrocarbons	WTPH-Dx			8	2	400	400	400	400
MW-104	Diesel-Range Petroleum Hydrocarbons	WTPH-Dx			8	4	560	460	560	493
MW-105	Diesel-Range Petroleum Hydrocarbons	WTPH-Dx			8	8	1600	760	1600	1333
MW-107R	Diesel-Range Petroleum Hydrocarbons	WTPH-Dx			8	8	1513	630	1900	1113
B-4	Diesel-Range Petroleum Hydrocarbons	WTPH-Dx			8	8	---	2600	15000	---
MW-101R	Gasoline-Range Petroleum Hydrocarbons	WTPH-G	Yes, WTPH-G		8	8	6067	4100	6300	5538
MW-105	Gasoline-Range Petroleum Hydrocarbons	WTPH-G			8	8	2488	1100	2700	1963
MW-107R	Gasoline-Range Petroleum Hydrocarbons	WTPH-G			8	8	2928	780	3900	1783
B-4	Gasoline-Range Petroleum Hydrocarbons	WTPH-G			8	8	---	1800	6500	---
B-4	Motor Oil-Range Petroleum Hydrocarbons	WTPH-Dx	Yes, WTPH-Dx		8	4	---	1200	6800	---
B-4	Total Cyanide	335.2	No, found in B-4 only	50	8	2	---	62	74	---

PQL - Practical Quantitation Limit

UCL = Upper Confidence Limit

-- = Not Applicable

(a) Cleanup levels are from Table 1 of the Cleanup Action Plan, unless otherwise indicated.

(b) The number of samples is equal to the number of samples analyzed.

(c) PQLs are from Table 1 of the Cleanup Action Plan, unless otherwise indicated.

(d) No UCL, mean, standard deviation, or median were calculated for data sets with 100% censored data. Also, no UCL was calculated for background wells B-4 and B-6/B-6R.

(e) Composition information for gasoline from *Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 2, Composition of Petroleum Mixtures*, Thomas L. Potter & Kathleen E. Simmons, May 1998.(f) Superfund Chemical Data Matrix, <http://www.epa.gov/superfund/sites/npl/hrres/tools/scdm.htm>, 1/28/04.