



June 10, 2010

Project 0016030440.0000G

Paul Cho, P.G.
Site Cleanup IV Unit
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013

**Re: Selenium Management Evaluation Update
Defense Fuel Support Point Norwalk**

Dear Mr. Cho:

AMEC Geomatrix, Inc. (AMEC), has prepared this letter on behalf of SFPP, L.P. (SFPP), an operating partnership of Kinder Morgan Energy Partners, L.P. (KMEP), to provide an update on the implementation and evaluation of selected selenium management options proposed in the previously submitted memorandum titled, "Review of Potential Selenium Management Options" (Selenium Management Memo) dated April 1, 2010. The Selenium Management Memo identified several options to manage elevated selenium concentrations in the groundwater extracted by SFPP's groundwater remediation system located at the Defense Fuel Support Point (DFSP) Norwalk located at 15306 Norwalk Boulevard in Norwalk, California (the site) and recommended two options for initial implementation and evaluation. Option 1 consists of adjusting the pumping configuration by operating wells with lower selenium concentrations to maintain effluent selenium concentrations below the selenium discharge limits. Option 2a consists of blending groundwater extracted from wells in the South-Central and Southeastern areas of the site with low-selenium-content groundwater from selected wells of the West Side Barrier (WSB) system to achieve effluent selenium concentrations below the selenium discharge limits. The following sections present relevant project background, an update on the implementation and evaluation of Options 1 and 2a, and planned activities for ongoing selenium management.

BACKGROUND

SFPP currently operates remediation systems consisting of soil vapor extraction (SVE), total fluids extraction (TFE), groundwater extraction (GWE), and treatment of extracted soil vapor and groundwater to address two specific areas at and near the site: the south-central area and the southeastern area. SFPP also previously operated a GWE system for remediation of the western off-site area (or West Side Barrier area). Operation of the SVE and treatment system is conducted in accordance with Permit to Operate No. F13759 issued by the South Coast Air Quality Management District (SCAQMD). Operation of the TFE and GWE systems is conducted to:

1. contain and reduce the extent of light non-aqueous phase liquid (LNAPL or free product);

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2. provide hydraulic capture of dissolved chemicals of potential concern (COPCs); and
3. lower the LNAPL surface (where present) and groundwater table, thus exposing more hydrocarbon-impacted soil for SVE.

Free product and groundwater extracted by the TFE and GWE wells are conveyed to the groundwater treatment system that currently includes an oil/water separator and liquid-phase granular activated carbon (GAC). Free product, if any, from the oil/water separator is collected in a storage tank and recycled at an off-site location. Water from the oil/water separator is treated using GAC to remove volatile organic compounds (VOCs) prior to discharge to Coyote Creek under a National Pollutant Discharge Elimination System (NPDES) permit (NPDES No. CA0063509, CI No. 7497).

During 2009, the concentration of selenium in the treated water (effluent) exceeded the effluent limitations for selenium on two occasions. In January 2009, selenium was detected above its maximum daily effluent limitation (MDEL) of 8.2 micrograms per liter ($\mu\text{g/L}$) in the treatment system effluent. Prior to January 2009, selenium generally was not detected in the effluent or was detected at low concentrations. Other prior detections of selenium in the effluent were sporadic and did not limit the operation of the GWE and TFE wells. In response to the January 2009 selenium result, the TFE and GWE systems were temporarily shut down in February 2009 to further evaluate selenium concentrations in groundwater before resuming pumping in selected wells in March 2009 based on the results of the selenium evaluation. The selenium evaluation performed in February 2009 included sampling groundwater at the individual extraction wells, analyzing the samples for selenium, and selecting wells that could be operated to achieve continued groundwater extraction with an effluent selenium concentration below the selenium discharge limits. The adjustments made to the pumping configuration in February 2009 did not reduce the overall pumping capacity, maintained the effluent selenium concentration below the selenium discharge limits for several months thereafter, and was considered to be effective in managing selenium.

In November 2009, selenium was detected above its average monthly effluent limitation (AMEL) of 4.1 $\mu\text{g/L}$. In response, the TFE and GWE systems were temporarily shut down and another round of groundwater samples were collected from individual extraction wells to further evaluate selenium concentrations in groundwater. During the selenium evaluation period, SFPP also performed several well maintenance activities to improve the performance and increase the flow rates of extraction wells before resuming pumping in selected wells in February 2010. However, as discussed below, data collected during recent months indicate that selenium concentrations have fluctuated and steps previously taken to effectively manage selenium at the site may need to be modified.

In the Selenium Management Memo, AMEC identified several options for managing selenium based on reducing the effluent selenium concentration to below the AMEL prior to discharge to Coyote Creek and discharging to alternative discharge points. Based on the preliminary

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evaluation of the selenium management options, SFPP continued with the implementation of Option 1, adjusting pumping configurations, which until recently has been effective in managing selenium at the site, while evaluating other options. On June 4, 2010, SFPP began implementation of Option 2a, blending groundwater extracted from the South-Central and Southeastern areas with groundwater extracted from the WSB wells, after performing significant maintenance on selected WSB wells and reconfiguring the main groundwater treatment system to receive extracted groundwater from the WSB wells.

IMPLEMENTATION AND EVALUATION OF OPTION 1 – ADJUST PUMPING CONFIGURATION

While the selenium evaluation was being performed in December 2009 and January 2010, additional maintenance and upgrades were made to the groundwater extraction system as reported in AMEC's March 11, 2010 letter to the City of Norwalk. On February 4, 2010, TFE resumed in extraction wells MW-SF-12, MW-SF-13, and MW-SF-16 in the South-Central area and GMW-36 and GMW-O-15 in the Southeastern area. TFE resumed in extraction well MW-O-2 on February 26, 2010 and in extraction wells GMW-24, GMW-O-11, GMW-O-23 on March 19, 2010; these wells are located in the South-Central area. Based on the December 2009 selenium results, these nine wells had selenium concentrations below the AMEL of 4.1 µg/L and were selected for operation. On March 29, 2010, a pump was installed and TFE was started in GMW-O-18, located in the southeastern off-site area, at the request of the RWQCB in their letter dated February 26, 2010.

Effluent water samples collected on February 12, March 9, and April 20 contained selenium at concentrations of 3.35 µg/L, 2.97 µg/L, and 3.14 µg/L, respectively. These results are less than the AMEL and indicate that adjusting the pumping configuration to pump from low-selenium wells was effective in achieving compliance with the NPDES permit through April 2010. However, as discussed in the next section, a selenium concentration above the AMEL was detected in May 2010, requiring the implementation of Option 2a – blending using WSB wells. The pumping configuration of each effluent sample is summarized in Table 2.

IMPLEMENTATION AND EVALUATION OF OPTION 2A – BLENDING USING WSB WELLS

In the effluent sample collected on May 14, 2010, selenium was detected at 4.79 µg/L, above the AMEL of 4.1 µg/L; the wells operating were the same as on April 20, 2010. The RWQCB was contacted within 24 hours of receipt of the result, and an accelerated selenium monitoring program was approved. Accelerated monitoring is in progress and additional samples will be collected as necessary.

SFPP is implementing Option 2a to further reduce selenium concentrations in the effluent water by blending groundwater extracted from wells in the South-Central and Southeastern areas with low-selenium-content groundwater from selected wells of the WSB system. In late May 2010, a SFPP subcontractor repaired pumps, air lines, and water lines for two WSB wells, BW-3 and

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BW-6, that contained low concentrations of selenium during the December 2009 monitoring and follow-up monitoring in April 2010. Based on the December 2009 results, BW-4 had a selenium concentration higher than that for BW-3 and BW-6, but less than the AMEL and will be restarted at a later date if necessary based on observed selenium concentrations in extracted groundwater and effluent groundwater. The extracted groundwater from the WSB wells joins the combined extracted groundwater of the South-Central and Southeastern areas. Wells BW-3 and BW-6 have resumed groundwater extraction, and are expected to reduce effluent selenium concentrations.

Selenium concentrations and pumping rates for the pumping wells operating will be monitored during June 2010 in addition to monitoring the effluent water. The blending of water from BW-3 and BW-6, and potentially other WSB wells with low selenium concentrations is anticipated to reduce effluent selenium concentrations and potentially allow additional TFE wells from the South-Central and Southeastern areas to resume operation. We are currently evaluating the feasibility of Option 2a and plan to evaluate additional options as identified in the Selenium Management Memo.

PLANNED ACTIVITIES FOR ONGOING SELENIUM MANAGEMENT

Selenium concentrations in effluent water will be monitored to evaluate the efficacy of blending water from WSB wells BW-3 and BW-6 with groundwater extracted from the South-Central and Southeastern areas during June 2010. In addition, a new set of samples for selenium analysis will be collected from the individual extraction wells to provide information regarding the current distribution of selenium in groundwater. If necessary, the pumping configuration will be adjusted based on new information to maintain extraction from wells with low selenium and avoid pumping from wells with high selenium.

A capture zone analysis to evaluate the effectiveness of the adjusted pumping configuration is in progress. After completing the capture zone analysis and evaluation of Option 2a, the results of the evaluation will be used to evaluate other selenium management options identified in the Selenium Management Memo, with a target for implementation during the fourth quarter of 2010.

If you have any questions regarding this project, please contact either of the undersigned at 949-642-0245.

Sincerely yours,
AMEC Geomatrix, Inc.



Alex Padilla
Staff Engineer



Shiow-Whei Chou, PE
Senior Engineer



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Attachment: Table 1 – Selenium Monitoring Results
Table 2 – Remediation Well Operation and Effluent Selenium Results

cc: Congresswoman Grace Napolitano
Mr. Stephen Defibaugh, SFPP, L.P.
Ms. Mary Jane McIntosh, RAB Chairperson
Dr. Eugene Garcia, RAB
Mr. Bob Hoskins, RAB
Ms. Tracy Winkler, RAB
Mr. Ernie Garcia, City Manager, City of Norwalk
Ms. Adriana Figueroa, City of Norwalk
Mr. Norman Dupont, Richards Watson Gershon
Mr. Charles Emig, City of Cerritos
Lt. Col. Jon Ramer, DESC
Mr. Kola Olowu, DESC
Mr. Redwan Hassan, Parsons
Ms. Mary Lucas, Parsons
Mr. Tim Whyte, URS

**TABLE 1
SELENIUM MONITORING RESULTS**

SFPP, L.P.
Defense Fuel Support Point Norwalk
Norwalk, California

Remediation Area	Remediation Well ID	Installation Date	Top of Well Casing Elevation (ft msl)	Well Screen Interval (ft bgs)	Selenium Concentration (µg/L) in February 2009 ¹	Selenium Concentration (µg/L) in December 2009 ²	Selenium Concentration (µg/L) in February 2010 ³	Selenium Concentration (µg/L) in April 2010 ⁴
South-Central	GMW-9	7/8/1991	74.44	20 - 50	7.7	12.30	--	--
	GMW-22	8/2/1991	74.17	25 - 60	5.4	5.75	--	--
	GMW-24	8/5/1991	74.04	25 - 60	27.0	0.947 J	--	--
	GMW-25	1/10/1992	74.29	20 - 50	6.6	6.27	--	--
	GWR-3	1/10/1992	74.93	20 - 50	6.3	7.48	--	--
	MW-SF-2	6/18/1990	78.53	25 - 40	6.3	8.02	--	--
	MW-SF-3	6/18/1990	78.12	25 - 40	14.0	8.86	--	--
	MW-SF-6	9/19/1990	76.80	25 - 40	3.3 J	6.75	--	--
	MW-SF-11	6/19/2007	78.56	20 - 40	8.1	4.65	--	--
	MW-SF-12	6/18/2007	78.07	20 - 40	--	1.04	5.05	--
	MW-SF-13	6/19/2007	73.40	20 - 40	7.0	1.16	--	--
	MW-SF-14	6/21/2007	78.16	20 - 40	5.1	7.83	--	--
	MW-SF-15	6/21/2007	78.27	20 - 40	5.7	8.53 and 1.19 ⁵	--	--
	MW-SF-16	6/20/2007	78.21	20 - 40	4.6 J	3.31	--	--
	MW-O-1	1/22/1991	75.48	25 - 40	--	5.48	--	--
	MW-O-2	1/23/1991	71.90	25 - 40	<5.0	3.96	--	--
	GMW-O-11	5/20/1992	74.17	20 - 50	4.5 J	3.79	--	--
	GMW-O-20	6/15/1995	73.32	--	11.0	7.68	--	--
GMW-O-21	10/1/1997	71.43	26 - 46	3.8 J	4.54	--	3.80	
GMW-O-23	6/25/2007	73.63	20 - 40	9.4	<1.00	--	--	
Southeastern	GMW-O-15	4/19/1994	74.23	20 - 50	4.7 J	--	2.71	--
	GMW-36	4/11/1994	74.53	20 - 50	2.6 J	2.39	3.29	--
West Side Barrier	BW-2	5/20/1996	73.57	27 - 47	--	4.00	--	--
	BW-3	5/17/1996	74.16	31 - 50	--	<1.00	--	<1.00
	BW-4	5/20/1996	74.61	28 - 47	--	3.35	--	--
	BW-5	5/23/1996	73.59	27 - 46	--	4.56	--	--
	BW-6	5/22/1996	73.48	28 - 47	--	1.65	--	2.00
	BW-7	5/22/1996	74.65	27 - 46	--	5.77	--	--
	BW-8	5/21/1996	75.08	27 - 46	--	4.60	--	--
BW-9	5/21/1996	76.19	27 - 46	--	5.70	--	--	
Potable Water		--	--	--	--	1.73	--	--

Abbreviations

- = information not available or well not sampled
- < = selenium was not present at a concentration above the shown detection limit
- ft msl = feet above mean sea level based on the National Geodetic Vertical Datum of 1929.
- ft bgs = feet below ground surface
- J = concentration is estimated
- µg/L = micrograms per liter

Notes

1. Samples were collected by Envent Corporation on February 10, 17, and 24, 2009.
2. Samples were collected by Kinder Morgan and Blaine Tech Services between December 9 and December 15, 2009.
3. Samples were collected by Kinder Morgan on February 12, 2010.
4. Samples were collected by Kinder Morgan on April 28, 2010.
5. Two samples were collected from MW-SF-15 during December 2009. The first sample was collected on December 9 and the second sample was collected on December 31. The sample collected on December 31, 2009 was half water and half product and the laboratory was directed to analyze the water fraction.

**TABLE 2
REMEDIATION WELL OPERATION AND EFFLUENT SELENIUM RESULTS**

SFPP, L.P.
Defense Fuel Support Point Norwalk
Norwalk, California

Remediation Area	Remediation Well ID	2/12/2010	3/9/2010	4/20/2010	5/14/2010
South-Central	MW-SF-2	OFF	OFF	OFF	OFF
	MW-SF-3	OFF	OFF	OFF	OFF
	MW-SF-6	OFF	OFF	OFF	OFF
	MW-SF-11	OFF	OFF	OFF	OFF
	MW-SF-12	ON	ON	ON	ON
	MW-SF-13	ON	ON	ON	ON
	MW-SF-14	OFF	OFF	OFF	OFF
	MW-SF-15	OFF	OFF	OFF	OFF
	MW-SF-16	ON	ON	ON	ON
	GMW-9	OFF	OFF	OFF	OFF
	GMW-22	OFF	OFF	OFF	OFF
	GMW-24	OFF	OFF	OFF	OFF
	GMW-25	OFF	OFF	OFF	OFF
	GWR-3	OFF	OFF	OFF	OFF
	MW-O-1	OFF	OFF	OFF	OFF
	MW-O-2	OFF	ON	OFF ¹	OFF
	GMW-O-11	OFF	OFF	ON	ON
	GMW-O-20	OFF	OFF	OFF	OFF
GMW-O-21	OFF	OFF	OFF	OFF	
GMW-O-23	OFF	OFF	OFF	OFF	
Southeastern	GMW-O-15	ON	ON	ON	ON
	GMW-O-18	OFF	OFF	ON	ON
	GMW-36	ON	ON	OFF ²	OFF
	GMW-SF-9	OFF	OFF	OFF	OFF
	GMW-SF-10	OFF	OFF	OFF	OFF
West Side Barrier	BW-2	OFF	OFF	OFF	OFF
	BW-3	OFF	OFF	OFF	OFF
	BW-4	OFF	OFF	OFF	OFF
	BW-5	OFF	OFF	OFF	OFF
	BW-6	OFF	OFF	OFF	OFF
	BW-7	OFF	OFF	OFF	OFF
	BW-8	OFF	OFF	OFF	OFF
BW-9	OFF	OFF	OFF	OFF	
Effluent Selenium Concentration (µg/L)		3.35	2.97	3.14	4.79

Notes

1. The pump in MW-O-2 was not receiving air pressure. The air line was replaced and pumping resumed at MW-O-2 on May 14, 2010.
2. The pump from well GMW-36 was removed on April 16, 2010 to facilitate groundwater monitoring and would not fit properly back into the well. GMW-36 and GMW-O-15 are scheduled to be redeveloped on June 17, 2010.