

Work Plan Addendum

Date 6 July 2010

To Bob Brock (USAED), Joe Malen (DPW),
Debra Caillouet (ADEC), Jacques Gusmano (EPA)

From Terry Heikkila, PE, PMP

Subject Draft Taku Gardens Groundwater Monitoring Work Plan Addendum

The objective of this Work Plan Addendum is to describe the upcoming groundwater sampling events at Taku Gardens during the summer and fall of 2010.

Previous Groundwater Investigations

A total of 90 monitoring wells (MW) have been installed at Taku Gardens since 2006:

- 2005 through 2006 – 13 MWs were installed during the Taku Gardens Preliminary Source Evaluation in areas of suspected contamination.
- 2007 – 63 MWs were installed during the initial remedial investigation effort to characterize groundwater across the site.
- 2008 – 5 MWs were installed to locate the edges of plumes of contaminated groundwater and 1 MW (MW-7) was decommissioned during field activities due to the presence of anomalies.
- 2009 – 6 MWs were installed to the east to delineate the 1,2,3-trichloropropane (TCP) plume and an additional 3 MWs were installed to the North to delineate the trichloroethene (TCE) plume.

A total of 33 MWs are sampled semi-annually for gasoline-range organics (GRO), diesel-range organics (DRO), residual-range organics (RRO), volatile organic compounds (VOC), semivolatile organic compounds (SVOC), polychlorinated biphenyls (PCB), Resource Conservation and Recovery Act (RCRA) metals, pesticides, herbicides, and explosives. The first sampling event for these wells took place in the spring of 2007. The rationale for the choice

of these wells (Figure 1) is presented in the *2008 Work Plan for Fall Remedial Investigation Activities* (CH2M Hill 2008).

A total of 9 additional wells (MW82 through MW90) were installed and added to the semi-annual sampling program during the 2009 investigations and were sampled for the first time in the fall of 2009 for DRO, VOCs, and low level VOCs. In addition to these analytes, the 6 wells installed in 2009 on the east side of the site to delineate the 1,2,3-trichloropropane (TCP) were also sampled for polycyclic aromatic hydrocarbons (PAHs).

Figure 1 presents the location of these wells and the location of the plumes as understood today. A full discussion of groundwater sample results is provided in the *Taku Gardens Risk Assessment* (2010).

Sampling Frequency and Analyte Selection

A total of 42 wells will be sampled during the spring and fall of 2010; this includes 33 wells that were sampled in 2008 and 2009 and the 9 new wells installed in 2009. The proposed analytes for each well are based on the COCs observed in previous investigations. Variations from the 2009 sampling events include the removal of Northwest test methods NW EPH and NW VPH. These methods were previously employed in order to quantify risk assessment calculations and are no longer needed. Additionally, the carbon levels associated with methods NW EPH and NW VPH will be covered by methods AK101 and AK102/103.

All wells and the methods to be tested for in each well are listed in Table 1.

Methodology

Groundwater sampling procedures will adhere to the *2010 Fort Wainwright Post Wide Work Plan* including the Field Sampling Plan and the Quality Assurance Project Plan (USAED 2010), as well as the Site Safety and Health Plan of the *Former Communications Drum and Debris Remedial Investigation* (USAED 2008).

References

USAED (U.S. Army Engineer District, Alaska). 2010. *2010 Fort Wainwright Post Wide Work Plan*. Fort Wainwright, Alaska.

USAED. 2008 (May). *Site Safety and Health Plan, Former Communications Site Drum and Debris Remedial Investigation*. Final. Prepared by Jacobs Engineering Group Inc.

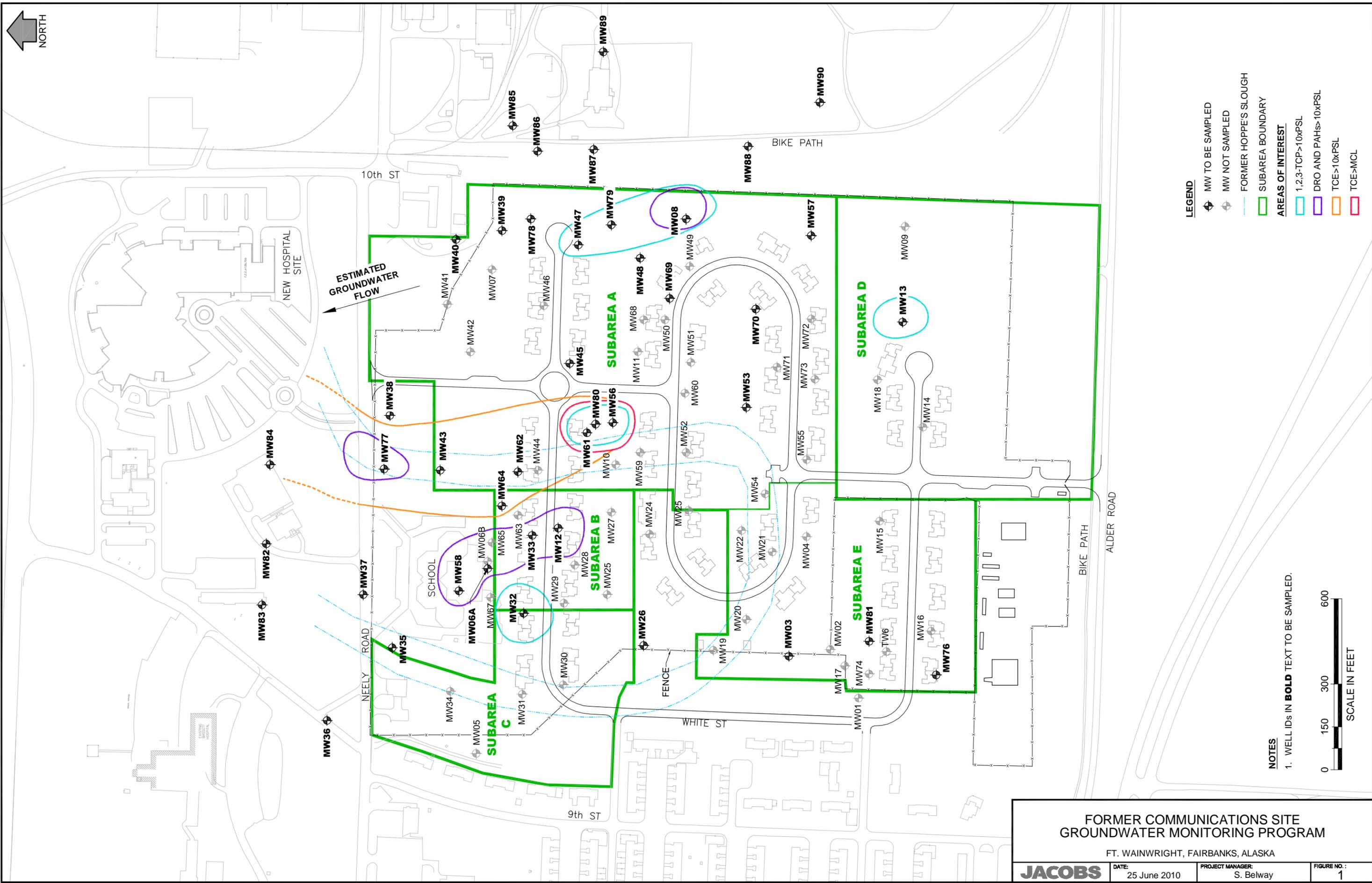
CH2MHill. September 2008. *Draft Work Plan for Fall 2008 Remedial Investigation Activities, Former Communications Site (Taku) Fort Wainwright, Alaska*.

USAED. 2010 (in progress). *Taku Gardens Risk Investigation*. Prepared by CH2M Hill.

Attachments

Figure 1: Groundwater Monitoring Program

Table 1: 2010 Groundwater Monitoring Sampling Plan



LEGEND

- MW TO BE SAMPLED
- MW NOT SAMPLED
- FORMER HOPPE'S SLOUGH
- SUBAREA BOUNDARY

AREAS OF INTEREST

- 1,2,3-TCP > 10xPSL
- DRO AND PAHs > 10xPSL
- TCE > 10xPSL
- TCE > MCL

NOTES

1. WELL IDS IN **BOLD** TEXT TO BE SAMPLED.



**FORMER COMMUNICATIONS SITE
GROUNDWATER MONITORING PROGRAM**

FT. WAINWRIGHT, FAIRBANKS, ALASKA

JACOBS	DATE: 25 June 2010	PROJECT MANAGER: S. Belway	FIGURE NO.: 1
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Table 1
2010 Groundwater Monitoring Sampling Plan

Location ID	Subarea	Sample ID	Field QA/QC	GRO AK101	DRO/RRO 102/103	Metals SW6010/SW6020/ SW7470	Pesticides SW8081A	PCB SW8082	Herbicides SW8151	VOC SW8260	Low-level VOC SW8260 SIM ^a	SVOC SW8270C	PAH SW8270 SIM	Explosives SW8321
MW08	A	10FWAMW08-GWS		X	X	X	X		X	X	X	X	X	X
MW39	A	10FWAMW39-GWS		X	X	X	X		X	X	X	X	X	X
MW39	A	10FWAMW39-GWBS	field dup	X	X	X	X		X	X	X	X	X	X
MW39	A	10FWAMW39-GWMSS	matrix spike	X	X	X	X		X	X	X	X	X	X
MW39	A	10FWAMW39-GWSDS	matrix spike dup	X	X	X	X		X	X	X	X	X	X
MW40	A	10FWAMW40-GWS		X	X	X	X		X	X	X	X	X	X
MW43	A	10FWAMW43-GWS		X	X	X	X		X	X	X	X	X	X
MW45	A	10FWAMW45-GWS		X	X	X	X		X	X	X	X	X	X
MW47	A	10FWAMW47-GWS		X	X	X	X		X	X	X	X	X	X
MW48	A	10FWAMW48-GWS		X	X	X	X		X	X	X	X	X	X
MW53	A	10FWAMW53-GWS		X	X	X	X		X	X	X	X	X	X
MW56	A	10FWAMW56-GWS		X	X	X	X		X	X	X	X	X	X
MW57	A	10FWAMW57-GWS		X	X	X	X		X	X	X	X	X	X
MW61	A	10FWAMW61-GWS		X	X	X	X		X	X	X	X	X	X
MW62	A	10FWAMW62-GWS		X	X	X	X		X	X	X	X	X	X
MW69	A	10FWAMW69-GWS		X	X	X	X		X	X	X	X	X	X
MW70	A	10FWAMW70-GWS		X	X	X	X		X	X	X	X	X	X
MW78	A	10FWAMW78-GWS		X	X	X	X		X	X	X	X	X	X
MW79	A	10FWAMW79-GWS		X	X	X	X		X	X	X	X	X	X

**Table 1
2010 Groundwater Monitoring Sampling Plan (Continued)**

Location ID	Subarea	Sample ID	Field QA/QC	GRO AK101	DRO/RRO 102/103	Metals SW6010/SW6020/ SW7470	Pesticides SW8081A	PCB SW8082	Herbicides SW8151	VOC SW8260	Low-level VOC SW8260 SIM ^a	SVOC SW8270C	PAH SW8270 SIM	Explosives SW8321
MW80	A	10FWAMW80-GWS		X	X	X	X		X	X	X	X	X	X
MW06A	B	10FWAMW06A-GWS		X	X	X	X		X	X	X	X	X	X
MW12	B	10FWAMW12-GWS		X	X	X	X		X	X	X	X	X	X
MW12	B	10FWAMW12-GWBS	field dup	X	X	X	X		X	X	X	X	X	X
MW26	B	10FWAMW26-GWS		X	X	X	X		X	X	X	X	X	X
MW33	B	10FWAMW33-GWS		X	X	X	X		X	X	X	X	X	X
MW35	B	10FWAMW35-GWS		X	X	X	X		X	X	X	X	X	X
MW36	B	10FWAMW36-GWS		X	X	X	X		X	X	X	X	X	X
MW37	B	10FWAMW37-GWS		X	X	X	X		X	X	X	X	X	X
MW38	B	10FWAMW38-GWS		X	X	X	X		X	X	X	X	X	X
MW58	B	10FWAMW58-GWS		X	X	X	X		X	X	X	X	X	X
MW64	B	10FWAMW64-GWS		X	X	X	X		X	X	X	X	X	X
MW64	B	10FWAMW64-GWBS	field dup	X	X	X	X		X	X	X	X	X	X
MW64	B	10FWAMW64-GWMSS	matrix spike	X	X	X	X		X	X	X	X	X	X
MW64	B	10FWAMW64-GWSDS	matrix spike dup	X	X	X	X		X	X	X	X	X	X
MW77	B	10FWAMW77-GWS		X	X	X	X		X	X	X	X	X	X
MW32	C	10FWAMW32-GWS		X	X	X	X		X	X	X	X	X	X
MW13	D	10FWAMW13-GWS		X	X	X	X	X	X	X	X	X	X	
MW03	E	10FWAMW03-GWS		X	X	X	X	X	X	X	X	X	X	
MW03	E	10FWAMW03-GWBS	field dup (PCB only)					X						

**Table 1
2010 Groundwater Monitoring Sampling Plan (Continued)**

Location ID	Subarea	Sample ID	Field QA/QC	GRO AK101	DRO/RRO 102/103	Metals SW6010/SW6020/SW7470	Pesticides SW8081A	PCB SW8082	Herbicides SW8151	VOC SW8260	Low-level VOC SW8260 SIM ^a	SVOC SW8270C	PAH SW8270 SIM	Explosives SW8321
MW03	E	10FWAMW03-GWMSS	matrix spike (PCB only)					X						
MW03	E	10FWAMW03-GWSDS	matrix spike dup (PCB only)					X						
MW76	E	10FWAMW76-GWS		X	X	X	X	X	X	X	X	X	X	
MW81	E	10FWAMW81-GWS		X	X	X	X	X	X	X	X	X	X	
MW82	T	10FWAMW82-GWS			X					X	X		X	
MW83	T	10FWAMW83-GWS			X					X	X		X	
MW84	T	10FWAMW84-GWS			X					X	X		X	
MW85	T	10FWAMW85-GWS			X					X	X		X	
MW85	T	10FWAMW85-GWBS	field dup		X					X	X		X	
MW85	T	10FWAMW85-GWMSS	matrix spike		X					X	X		X	
MW85	T	10FWAMW85-GWSDS	matrix spike dup		X					X	X		X	
MW86	T	10FWAMW86-GWS			X					X	X		X	
MW87	T	10FWAMW87-GWS			X					X	X		X	
MW88	T	10FWAMW88-GWS			X					X	X		X	
MW89	T	10FWAMW89-GWS			X					X	X		X	
MW90	T	10FWAMW90-GWS			X					X	X		X	

Notes:

GRO = gasoline-range organics

DRO = diesel-range organics

RRO = residual-range organics

The last letter in the Sample ID is S for the spring 2010 event, and will be changed to F for the 2010 fall sampling event