HYPERGOL MAINTENANCE FACILITY
HAZARDOUS WASTE SOUTH STAGING AREAS, SWMU 070
CORRECTIVE MEASURES IMPLEMENTATION
ANNUAL REPORT, YEAR 10
KENNEDY SPACE CENTER, FLORIDA

Prepared for:

National Aeronautics and Space Administration
Kennedy Space Center, Florida

January 2016
Revision 0

Prepared by:

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FOR THE
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This report was prepared in accordance with sound professional practices. The figures, tables, and text have been reviewed and certified by a Professional Engineer registered in the State of Florida.

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PREFACE

This document presents the Corrective Measures Implementation (CMI) Year 10 Annual Report for implementation of corrective measures at the Hypergol Maintenance Facility (HMF) Hazardous Waste South Staging Areas at Kennedy Space Center, Florida. The work is being performed by Tetra Tech, Inc., for the National Aeronautics and Space Administration (NASA) under Indefinite Delivery Indefinite Quantity (IDIQ) NNK12CA15B, Task Order (TO) 07. Mr. Harry Plaza, P.E., of NASA's Environmental Assurance Branch is the Remediation Project Manager for John F. Kennedy Space Center. The Tetra Tech Program Manager is Mr. Mark Speranza, P.E., and the Tetra Tech Project Manager is Robert Simcik, P.E.

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ACRONYMS AND ABBREVIATIONS

AGWMR	Annual Groundwater Monitoring Report
bls	below land surface
CM	Corrective Measures
CMI	Corrective Measures Implementation
CMO	Corrective Measures Objective
DPT	direct-push technology
FDEP	Florida Department of Environmental Protection
GCTL	Groundwater Cleanup Target Level
HMF	Hypergol Maintenance Facility
IDIQ	Indefinite Delivery Indefinite Quantity
KSC	Kennedy Space Center
KSCRT	Kennedy Space Center Remediation Team
MNA	monitored natural attenuation
MNA-DV	Monitored Natural Attenuation Default Value
NASA	National Aeronautics and Space Administration
NFA	no further action
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
SCTL	Soil Cleanup Target Level
TCFM	trichlorofluoromethane
TO	Task Order
µg/L	microgram per liter
VC	vinyl chloride
VOC	volatile organic compound

SECTION 1

INTRODUCTION

1.1 OVERVIEW

This Corrective Measures Implementation (CMI) Year 10 Annual Groundwater Monitoring Report (AGWMR) for the Hypergol Maintenance Facility (HMF) Hazardous Waste South Staging Areas was prepared by Tetra Tech, Inc., for the National Aeronautics and Space Administration (NASA) under Indefinite Delivery Indefinite Quantity (IDIQ) NNK12CA15B, Task Order (TO) 07. This CMI Report has been prepared as part of the Resource Conservation and Recovery Act (RCRA) corrective action program being implemented at Kennedy Space Center (KSC).

1.2 PURPOSE

The purpose of this CMI Year 10 AGWMR is to present the actions taken and results obtained during the tenth year of implementation of Corrective Measures (CM) at HMF. Groundwater monitoring activities detailed in this Year 10 report were conducted in accordance with the CMI Work Plan (Tetra Tech, 2005a) and CMI Site-Specific Safety and Health Plan (Tetra Tech, 2005b) and include quarterly performance monitoring events in December 2014 and March, June, and September 2015. The air sparging system was not operational during this monitoring period.

The results of the first 6 months of CMI (including air sparging system installation) and the first 6 months of system operation were presented in the CMI Construction Completion and Semi-Annual HMF Hazardous Waste South Staging Areas Report (Tetra Tech, 2006a), and the results of the second 6 months of the first year of CMI were presented in the CMI Annual Report (Tetra Tech, 2006b). The results for the second year of CMI were presented in the System Expansion Construction Completion and Second Annual Report (Tetra Tech, 2007a and 2007b), and results of the third through ninth years of CMI were presented in the Years 3 through 9 Annual Reports (Tetra Tech, 2008; 2009; 2010; 2011; 2013; 2014; and 2015).

1.3 CORRECTIVE MEASURES OBJECTIVE

The objective of the CM at HMF is to reduce concentrations of contaminants of concern (trichlorofluoromethane [TCFM], vinyl chloride [VC], and aluminum) in groundwater at the site to less than the Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Levels (GCTLs) for TCFM and VC or to the upper range of the KSC background values for aluminum (see Table 1-1). Air sparging was recommended and approved for remediation of the TCFM plume, which is defined as areas with concentrations of TCFM in excess of the GCTL (2,100 micrograms per liter [µg/L]) and Monitored Natural Attenuation (MNA) Default Value (MNA-DV) (21,000 µg/L). MNA was selected as the presumptive remedy for monitoring aluminum and VC exceedances of applicable Corrective Measures Objectives (CMOs) (see Table 1-1). Based on reductions in concentrations to less than CMOs, no further action (NFA) was approved for VC and aluminum in October 2010 and September 2006, respectively.

1.4 SYSTEM OVERVIEW

Air sparging system operation began in September 2005, and after 1 month of operation, TCFM concentrations had been reduced by 87.2 percent (approximately 173 pounds of TCFM removed). Free product was observed during the fourth month of system operation. Because TCFM concentrations in monitoring well HMF-MW5I had not decreased to less than the MNA-DV and appeared to be stagnant, additional investigation in this area was recommended. An additional direct-push technology (DPT) investigation was conducted in October 2006 to determine whether residual soil contamination existed in the area of HMF-MW5I, to refine the understanding of lithologic conditions in the area, and to attempt to delineate the extent of TCFM groundwater contamination in the area. Results of the DPT investigation indicated that TCFM in groundwater was contained within the existing system treatment area, and no free product was observed. Maximum residual TCFM concentrations were located between wells HMF-MW5I and NLP-IW4I. TCFM concentrations in soil were less than the FDEP residential Soil Cleanup Target Level (SCTL), but maximum concentrations, detected near HMF-MW5I at 36 to 40 feet below land surface (bls), exceeded the SCTL based on leachability to groundwater. Based on the delineation efforts during the DPT investigation, it was decided that additional shallow air

sparging wells would be installed in the area around HMF-MW5I above a low-permeability lithologic layer that was thought to possibly be impacting the effectiveness of the original sparging wells in this area.

The first system expansion was completed in March 2007 and included installation of six additional sparging wells to address contamination in the HMF-MW5I area. From March 2008 to August 2010, the system was operated as needed when rebounding occurred to attempt to reduce TCFM concentrations to less than the GCTL. The system expansion efforts were very successful. TCFM concentrations in all monitoring wells have been less than the MNA-DV since March 2010. A significant system failure occurred in August 2010, air sparging operations ceased, and the rental system was removed from the site; however, all system wells and the piping network remained in place for future use if needed. In March 2011, TCFM concentrations in all wells were less than the GCTL for the first time without the system operating to reduce concentrations, although concentrations rebounded in June 2011, and the TCFM concentration in NLP-IW41 again exceeded the GCTL. In October 2011, the KSC Remediation Team (KSCRT) reached consensus to expand the system to address residual contamination in the area of NLP-IW4I (Meeting Minute 1110-M05, Decision 1110-D24; see Appendix A). System expansion activities were completed in 2012, and the modified system with new sparging wells in the NLP-IW4I area operated from October 2012 to March 2013. TCFM concentrations during the December 2012 and March 2013 quarterly events were less than the GCTL in all wells sampled, and based on these results, the system was not restarted after it was shut down on March 25, 2013, for the March sampling event. Because TCFM concentrations increased to greater than the GCTL at NLP-IW4I during the September and December 2013 events, KSCRT consensus was reached at the February 2014 meeting to restart the system with modified operating parameters and operate it for 5 months to evaluate potential rebound (Meeting Minute 1402-M12, Decision 1402-D43). The modified system began operations on February 19, 2014, operated for approximately 5 months until July 1, 2014, and has remained off since that time. Based on rebounding TCFM concentrations at HMF-MW5I (exceeding the GCTL in July and September 2014) and at NLP-IW4I (exceeding the GCTL in

September 2014), consensus was reached at the November 2014 KSCRT Meeting to conduct an additional year of quarterly monitoring (Meeting Minute 1411-M6, Decision 1411-D17). It was decided that if concentrations continued to exceed the GCTL, a long-term monitoring plan for continued sampling would be developed, and if concentrations decreased to less than the GCTL, the required sampling period for a no further action (NFA) proposal would be determined.

1.5 CMI ANNUAL REPORT ORGANIZATION

Section 1: Introduction – This section provides a brief overview of the report and discusses the purpose and objective of the report.

Section 2: Groundwater Monitoring – This section presents the results of the groundwater sampling events conducted during the reporting period and compares these results to previous sampling results.

Section 3: Observations and Recommendations – This section presents observations regarding the current status of the CMI and provides recommendations regarding the CMI.

Section 4: References – This section provides a listing of the references cited in or applicable to this report.

Table 1-1. Site-Specific Cleanup Levels for the HMF

Contaminant of Concern	GCTL (µg/L)	MNA-DV (µg/L)	CMO (µg/L)
Trichlorofluoromethane	2,100	21,000	2,100
Vinyl chloride	1	100	1
Aluminum	200	2,000	1,300(1)

GCTL – Groundwater Cleanup Target Level (Table 1, Chapter 62-777, Florida Administrative Code).
MNA-DV – Monitored Natural Attenuation Default Value.
CMO – Corrective Measures Objective.
µg/L – Micrograms per liter.
1 CMO represents the upper range of the Kennedy Space Center background values for aluminum.

SECTION 2

GROUNDWATER MONITORING

This section presents the results of Year 10 groundwater sampling.

2.1 GROUNDWATER SAMPLING

Groundwater sampling was conducted in accordance with the Project-Specific Sampling and Analysis Plan (SAP) submitted with the CMI Work Plan (Tetra Tech, 2005a). The SAP initially identified that groundwater from eight wells would be collected and analyzed for volatile organic compounds (VOCs) by SW-846 Method 8260B. Two additional wells (HMF-MW8I and HMF-MW9I) were installed and included in the original monthly monitoring well program. One well (NLP-IW2I) was not functioning; therefore, it was not sampled until it was replaced on January 23, 2007, prior to the seventeenth monthly groundwater sampling event. Three wells (M71410-IW1S, M71411-IW1I, and NLP-IW1D) were to be sampled in conjunction with the MNA semi-annual and annual sampling program; however, because aluminum and VC analyses are no longer required, monitoring wells M71410-IW1S and M71411-IW1I were eliminated from the sampling program. Based on consensus reached during the KSCRT Meeting on October 27, 2010, Year 6 groundwater monitoring included quarterly sampling of three source area wells (NLP-IW1I, NLP-IW4I, and HMF-MW5I) and the shallow well (NLP-IW1S) in December 2010 and March and June 2011 and sampling of these four wells and four perimeter wells (HMF-MW-6I through HMF-MW-9I) and the deep well (NLP-IW1D) during the September 2011 annual event. During the seventh year of groundwater monitoring, quarterly sampling was conducted in December 2011, March 2012, June 2012 (which also served as the baseline sampling event prior to startup of the modified air sparging system), and December 2012. In November 2012 after 1 month of operation of the modified system, NLP-IW4I only was sampled. Quarterly events included sampling of four wells, three source area wells (NLP-IW1I, NLP-IW4I, and HMF-MW5I) and the shallow well (NLP-IW1S). During Year 8, quarterly events in March, June, and December 2013 included sampling of four wells, three source area wells (NLP-IW1I, NLP-IW4I,

and HMF-MW5I) and the shallow well (NLP-IW1S), and the September 2013 annual event included sampling of the three source area wells (NLP-IW1I, NLP-IW4I, and HMF-MW5I), shallow well NLP-IW1S, four perimeter wells (HMF-MW-6I through HMF-MW-9I), and deep well NLP-IW1D. During Year 9, a pre-startup sampling event was conducted in February prior to the start of modified system operations (only NLP-IW4I was sampled), and subsequent quarterly events were conducted in March, July, and September 2014. During Year 10, quarterly sampling events were conducted in December 2014 and March, June, and September 2015.

Year 10 groundwater samples were collected in accordance with the SAP and analyzed for TCFM by Accutest Laboratories in Orlando, Florida, according to the subcontract specifications. The TCFM results are summarized by event in Table 2-1 and by monitoring well in Table 2-2. Figure 2-1 provides a summary of TCFM results for Years 8 through 10 events, including all events since shutdown of the system in March 2013 and since the latest period of operation, February 2014 to July 2014. Figure 2-2 provides a graph of the analytical TCFM results from the source wells for the monitoring program beginning with the original baseline sampling event (September 2005), Figure 2-3 provides a summary of the TCFM results from this reporting period, and Figure 2-4 provides a graph of these results for the wells monitored quarterly. Copies of field logbook entries for Year 10 activities are provided in Appendix B, and copies of groundwater chain-of-custody forms, sample log sheets, and laboratory analytical data for the Year 10 events are provided in Appendix C.

2.1.1 ONE HUNDRED-ELEVENTH MONTH GROUNDWATER SAMPLING RESULTS.

The groundwater sampling event for the 111th month of the monitoring program was conducted on December 23, 2014, and included sampling of three source area wells, NLP-IW1I, NLP-IW4I, and HMF-MW5I, and shallow well NLP-IW1S. The air sparging system had been off line for 5 months before the December 2014 event. All TCFM concentrations during this event were less than the GCTL. As shown in Table 2-1, the TCFM concentration at source well NLP-IW4I decreased in December 2014 to 75.1 µg/L, less than the GCTL, from 3,370 µg/L during the previous event in September 2014. The concentration at HMF-MW5I also decreased

to less than the GCTL, from 2,130 µg/L during the previous event to 506 µg/L in December 2014. The TCFM concentration at NLP-IW1S decreased from 132 µg/L in September 2014 to 54.9 µg/L in December 2014, and TCFM was not detected at NLP-IW1I in December 2014. As a result of the significant decreases in concentrations at NLP-IW4I and HMF-MW5I, the overall source area average TCFM concentration for this round was 194 µg/L, significantly less than during the 108th month event (1,834 µg/L), as shown in Table 2-1.

2.1.2 ONE HUNDRED-FOURTEENTH MONTH GROUNDWATER SAMPLING RESULTS.

The groundwater sampling event for the 114th month of the monitoring program was conducted on March 31, 2015, and included the same four wells as were sampled the 111th month event. The TCFM concentration at NLP-IW4I was greater than the GCTL during this event; TCFM concentrations at the other three wells sampled were less than the GCTL. As shown in Table 2-1, the concentration of TCFM at source well NLP-IW4I increased from 75.1 µg/L during the December 2014 event to 3,910 µg/L in March 2015. March 2015 concentrations at NLP-IW1S, NLP-IW1I, and HMF-MW5I were generally consistent with December 2014 levels. As a result of the significant increase in concentrations at NLP-IW4I, the overall source area average TCFM concentration for this round was 1,467 µg/L, a significant increase from the average during the 111th month event (194 µg/L), as shown in Table 2-1.

2.1.3 ONE HUNDRED-SEVENTEENTH MONTH GROUNDWATER SAMPLING RESULTS.

The groundwater sampling event for the 117th month of the monitoring program was conducted on June 25, 2015, and included the same four wells as for the 111th and 114th month events. Similar to March 2015 results, the TCFM concentration at NLP-IW41 exceeded the GCTL, and concentrations at the other wells sampled were less than the GCTL. The TCFM concentration increased at NLP-IW4I from 3,910 µg/L in March 2015 to 4,670 µg/L in June 2015. Compared to the previous round, TCFM concentrations decreased slightly at HMF-MW5I, from 489 to 337 µg/L in June 2015, and at NLP-IW1I, from 2.3 to 0.86 µg/L, and increased slightly at NLP-IW1S, from 81.4 to 117 µg/L. As a result of the increase in TCFM

concentrations at NLP-IW4I, the overall source area average TCFM concentration increased to 1,669 µg/L in June 2015 from 1,467 µg/L during the previous event.

2.1.4 ONE HUNDRED-TWENTIETH MONTH GROUNDWATER SAMPLING

RESULTS. Nine monitoring wells were sampled during the 120th month annual groundwater sampling event on September 23, 2015, including the four wells sampled during the three previous events, deep well NLP-IW1D, and perimeter wells HMF-MW-6I, HMF-MW-7I, HMF-MW-8I, and HMF-MW-9I. TCFM was detected at source area wells NLP-IW1I, NLP-IW-4I, and HMF-MW5I only, and only the concentration at NLP-IW4I exceeded the GCTL. At NLP-IW4I, the concentration of TCFM increased from 4,670 µg/L during the June 2015 event to 5,410 µg/L in September 2015. TCFM concentrations increased at HMF-MW5I, from 337 to 568 µg/L, and decreased at NLP-IW1S, from 117 to 52 µg/L, and NLP-IW1I, from 0.86 µg/L to less than the detection limit. At HMF-MW6I, HMF-MW8I, and HMF-MW9I, TCFM concentrations decreased to less than detection limits from the September 2014 to September 2015 events; TCFM was not detected at HMF-MW7I during the September 2014 or 2015 event. At deep well NLP-IW1D, the TCFM concentration decreased from 10.3 µg/L in September 2014 to 3.1 µg/L in September 2015. The overall source area average TCFM concentration increased this round to 1,993 µg/L as a result of the increased concentration at NLP-IW4I.

2.2 GROUNDWATER SAMPLING SUMMARY

The existing groundwater monitoring well network at the site consists of source area wells (subjected to direct treatment during system operation), perimeter monitoring wells, and one deep well to evaluate potential vertical migration. During the tenth year of groundwater monitoring, the three source area wells (NLP-IW1I, NLP-IW4I, and HMF-MW5I) and the shallow well (NLP-IW1S) were sampled during the December 2014 and March and June 2015 quarterly events, and these four wells in addition to four perimeter wells (HMF-MW6I through HMF-MW9I) and deep well (NLP-IW1D) were sampled during the September 2015 annual event. The air sparging system was turned off in July 2014 and has not been restarted. TCFM concentrations decreased to less than the GCTL in all wells during the December 2014 event, but

during subsequent events, concentrations at NLP-IW4I exceeded the GCTL of 2,100 µg/L. At HMF-MW5I, concentrations ranged from 337 to 568 µg/L during the tenth year of monitoring, and at the third source area well, NLP-IW1I, TCFM was detected during two of the four events at concentrations less than 2.5 µg/L. Concentrations of TCFM at the shallow well fluctuated from 52 to 117 µg/L during the tenth year of monitoring. TCFM was not detected at any of the four perimeter wells sampled during the September 2015 annual event. TCFM was detected in the deep well during the September 2015 event but at a concentration (3.1 µg/L) significantly less than the GCTL.

On October 29, 2015, groundwater elevations were measured in intermediate zone monitoring wells to determine the current groundwater flow conditions and to ensure that a monitoring point downgradient of the source area was present. Groundwater elevations are shown in Table 2-3, and a potentiometric surface map is shown as Figure 2-5. Groundwater elevations are not presented for perimeter intermediate wells HMF-MW8I and HMF-MW9I because no top of well casing elevation survey data exist for these wells. Groundwater flow in the intermediate zone was determined to be to the south/southeast, which is generally consistent with previous groundwater flow directions identified at this site.

Table 2-1. Groundwater TCFM Data Summary by Sampling Event

Monitoring Well	*Baseline Prior to System Startup (Sept-05)*	First Month (Oct-05)	Second Month (Nov-05)	Third Month (Dec-05)	Fourth Month (Jan-06) (1)	Fifth Month (Feb-06)	Sixth Month (Mar-06)	Seventh Month (Apr-06)	Eighth Month (May-06)
HMF-MW5I	***49,200***	**36,200**	**2,660**	**60,600**	**71,700**	**51,000**	**51,900**	**8,240**	**25,800**
HMF-MW6I	*2*	41.7	3.4	15.1	17.5	9.8	5	2.3	0.7
HMF-MW7I	*0.5*	6.3	37.1	10.7	11.4	20.5	17.3	28	2.3
HMF-MW8I	*NS*	NS	NS	NS	0.56	9.2	5	4.7	4.7
HMF-MW9I	*NS*	NS	NS	NS	4.7	0.69	3.2	5.3	10.5
NLP-IW2I	***3,080***	**3,710**	NS	NS	NS	NS	NS	NS	NS
NLP-IW1I	***400,000***	**48,400**	**3,660**	**9,190**	**184,000**	**34,600**	1,520	**3,950**	**2,320**
NLP-IW1S	*0.5*	721	57	9.3	15.8	37	36.2	25.2	8.8
NLP-IW4I	***396,000***	**23,500**	**21,200**	**54,700**	**49,700**	**9,230**	**27,200**	**34,800**	**2,380**
NLP-IW3I	*ND at 200 U*	0.50 U	24.5	10.6	0.54	0.5	0.5	1.8	1

Source wells are: NLP-IW1I, NLP-IW4I, HMF-MW5I

Source well average concentration (µg/L)	281,733	36,033	9,173	41,497	101,800	31,610	26,873	15,663	10,167
Source area remaining soluble mass (lbs)	198.43	25.38	6.46	29.23	71.70	22.26	18.93	11.03	7.16
Source area removal from baseline (%)	NA	87.21	96.74	85.27	63.87	88.78	90.46	94.44	96.39

Table 2-1. Groundwater TCFM Data Summary by Sampling Event (continued)

Monitoring Well	Ninth Month (June-06)	Tenth Month (July-06)	Eleventh Month (Aug-06)	Twelfth Month (Sept-06)	Thirteenth Month (Oct-06)	Fourteenth Month (Nov-06)	Fifteenth Month (Dec-06)	Sixteenth Month (Jan-07)	Seventeenth Month (Feb-07)
HMF-MW5I	**87,900**	**75,700**	**42,800**	**34,800**	**18,600**	**89,500**	**51,500**	**81,200**	**78,100**
HMF-MW6I	0.5	0.5	0.5	2.7	2.7	2.7	1.6	0.5	0.5
HMF-MW7I	2	51.2	0.5	2.3	2.3	2.3	0.5	0.5	0.5
HMF-MW8I	0.5	0.5	0.5	0.5	0.5	0.73	0.84	4.4	0.5
HMF-MW9I	31.5	40.6	1.6	0.5	94.3	0.78	3.8	0.51	0.5
NLP-IW2I	NS	NS	NS	NS	NS	NS	NS	NS	0.5
NLP-IW1I	**4,180**	**15,700**	**9,380**	**8,790**	**3,930**	**14,900**	**4,260**	**14,800**	**12,400**
NLP-IW1S	3.4	14	384	701	**2,280**	**4,000**	2,010	**8,780**	**15,300**
NLP-IW4I	**17,000**	**40,600**	**6,370**	**48,900**	**25,700**	**21,400**	**12,500**	**45,800**	**65,300**
NLP-IW3I	0.5	14.9	0.5	0.87 I	11.2	19.8	0.5	0.5	0.5
Source wells are: NLP-IW1I, NLP-IW4I, HMF-MW5I									
Source well average concentration (µg/L)	36,360	44,000	19,517	30,830	16,077	41,933	22,753	47,267	51,933
Source area remaining soluble mass (lbs)	25.61	30.99	13.75	21.71	11.32	29.53	16.03	33.29	36.58
Source area removal from baseline (%)	87.09	84.38	93.07	89.06	94.29	85.12	91.92	83.22	81.57

Table 2-1. Groundwater TCFM Data Summary by Sampling Event (continued)

Monitoring Well	Eighteenth Month (Mar-07)	Nineteenth Month (Apr-07)	Twentieth Month (May-07)	Twenty-First Month (June-07)	Twenty-Second Month (July-07)	Twenty-Third Month (Aug-07)	Twenty-Fourth Month (Sept-07)	Twenty-Sixth Month (Nov-07)	Twenty-Eighth Month (Jan-08)
HMF-MW5I	**40,900**	**15,000**	**6,310**	**4,290**	**2,420**	826	**2,900**	698	547
HMF-MW6I	0.5	4	5.8	0.5	69.7	2.1	2.6	2.2	2.1
HMF-MW7I	40.3	2.6	2.9	0.5	7.1	4.2	6.1	4.8	4.3
HMF-MW8I	5.3	2.5	5.5	0.68	68.5	0.51	0.43 U	0.43 U	0.81
HMF-MW9I	3.8	2	5	0.92	117	1.7	1.9 I	3.2	1.2
NLP-IW2I	16 U	4.2	14.1	0.8 I	0.43 U	21.5	22.4	0.43 U	23.6
NLP-IW1I	**11,200 L**	**7,590**	447	**8,090**	**13,100**	**5,330**	**2,970**	**4,550**	1,140
NLP-IW1S	**7,430**	**7,540**	**3,890**	**3,830**	**9,640**	**4,320**	**2,870**	463	217
NLP-IW4I	**36,200**	**8,180**	583	**19,500**	**67,000**	**13,000**	**24,000**	**4,590**	**2,580**
NLP-IW3I	0.5	14.7	0.5	0.5	**13,600**	0.43	57.10	0.43 U	0.43 U
Source wells are: NLP-IW1I, NLP-IW4I, HMF-MW5I									
Source well average concentration (µg/L)	38,550	10,257	2,447	10,627	27,507	6,385	9,957	3,279	1,422
Source area remaining soluble mass (lbs)	27.15	7.22	1.72	7.48	19.37	4.50	7.01	2.31	1.00
Source area removal from baseline (%)	86.32	96.36	99.13	96.23	90.24	97.73	96.47	98.84	99.50

Table 2-1. Groundwater TCFM Data Summary by Sampling Event (continued)

Monitoring Well	Thirtieth Month (Mar-08)	Thirty-Second Month (May-08)	Thirty-Fourth Month (July-08)	Thirty-Sixth Month (Sept-08)	Thirty-Eighth Month (Nov-08)	Fortieth Month (Jan-09)	Forty-Second Month (Mar-09)	Forty-Fourth Month (May-09)	Forty-Fifth Month (July-09)
HMF-MW5I	469	519	69.6	35.1	328	178	290	309	82.2
HMF-MW6I	5.2	NS	NS	4.5	NS	NS	1.4 I	NS	NS
HMF-MW7I	7.5	NS	NS	11.4	NS	NS	12.8	NS	NS
HMF-MW8I	1.3	NS	NS	5.1	NS	NS	6	NS	NS
HMF-MW9I	3.1	NS	NS	5.2	NS	NS	0.05 U	NS	NS
NLP-IW2I	35.6	NS	NS	73.7	NS	NS	10	NS	NS
NLP-IW1I	**3,950**	**6,590**	312	25.1	1.5	68.4	2.5	1.6 I	88.6
NLP-IW1S	197	146	178	127	1,770	289	**2,280**	178	594
NLP-IW4I	**5,220**	**9,330**	953	437	183	90.5	**4,470**	**5,610**	352
NLP-IW3I	0.43 U	NS	NS	0.50 U	NS	NS	3.2	NS	NS
Source wells are: NLP-IW1I, NLP-IW4I, HMF-MW5I									
Source well average concentration (µg/L)	3,213	5,480	445	166	171	112	1,588	2,960	174
Source area remaining soluble mass (lbs)	2.26	3.86	0.31	0.12	0.12	0.08	1.12	2.08	0.12
Source area removal from baseline (%)	98.86	98.06	99.84	99.94	99.94	99.96	99.44	98.95	99.94

Table 2-1. Groundwater TCFM Data Summary by Sampling Event (continued)

Monitoring Well	Forty-Sixth Month (July-09)	Forty-Eighth Month (Sept-09)	Forty-Ninth Month (Oct-09)	Fiftieth Month (Nov-09)	Fifty-First Month (Dec-09)	Fifty-Second Month (Jan-10)	Fifty-Third Month (Feb-10)	Fifty-Fourth Month (Mar-10)	Fifty-Sixth Month (May-10)
HMF-MW5I	194	315	155	142	46.2	71.6	101	51.1	61.4
HMF-MW6I	NS	1.0 I	NS	NS	NS	NS	NS	0.4 U	NS
HMF-MW7I	NS	10.5	NS	NS	NS	NS	NS	1.1 I	NS
HMF-MW8I	NS	0.50 U	NS	NS	NS	NS	NS	0.4 U	NS
HMF-MW9I	NS	0.55	NS	NS	NS	NS	NS	0.4 U	NS
NLP-IW2I	NS	32.2	NS	NS	NS	NS	NS	0.4 U	NS
NLP-IW1I	464	2.7	59	**17,000**	755	38.3	65	5.8	2.0 U
NLP-IW1S	1,750	**4,020**	**8,280**	511	695	122	90.2	41.1	54.1
NLP-IW4I	918	**22,800**	**21,900**	**7,240**	**6,840**	90.7	529	107	507
NLP-IW3I	NS	15.9	NS	NS	NS	NS	NS	0.4 U	NS
Source wells are: NLP-IW1I, NLP-IW4I, HMF-MW5I									
Source well average concentration (µg/L)	525	7,706	7,371	8,127	2,547	67	232	55	284
Source area remaining soluble mass (lbs)	0.37	5.43	5.19	5.72	1.79	0.05	0.16	0.04	0.20
Source area removal from baseline (%)	99.81	97.26	97.38	97.12	99.10	99.98	99.92	99.98	99.90

Table 2-1. Groundwater TCFM Data Summary by Sampling Event (continued)

Monitoring Well	Fifty-Eighth Month (July-10)	Fifty-Ninth Month (Aug-10)	Sixtieth Month (Sept-10)	Sixty-Third Month (Dec-10)	Sixty-Sixth Month (Mar-11)	Sixty-Ninth Month (Jun-11)	Seventy-Second Month (Sept-11)	Seventy-Fifth Month (Dec-11)	Seventy-Eighth Month (Mar-12)
HMF-MW5I	3.8	334	89.4	104	197	125	118	4.9	4.5
HMF-MW6I	NS	NS	2.6	NS	NS	NS	0.50 U	NS	NS
HMF-MW7I	NS	NS	7.1	NS	NS	NS	6.5	NS	NS
HMF-MW8I	NS	NS	0.40 U	NS	NS	NS	0.50 U	NS	NS
HMF-MW9I	NS	NS	7.2	NS	NS	NS	0.50 U	NS	NS
NLP-IW2I	NS	NS	67.3	NS	NS	NS	NS	NS	NS
NLP-IW1I	0.44 I	1.9 I	36.5	0.8 I	0.50 U	5.7	0.85 I	0.50 U	0.50 U
NLP-IW1S	43.6	57.4	94.3	296	1,010 E	1,480	753	502	1,200
NLP-IW4I	**3,350**	**3,100**	**3,670**	**2,750**	1,190	**2,940**	**7,210**	**9,660**	723
NLP-IW3I	NS	NS	35.7	NS	NS	NS	NS	NS	NS
Source wells are: NLP-IW1I, NLP-IW4I, HMF-MW5I									
Source well average concentration (µg/L)	1,677	1,717	1,265	952	462	1,024	2,443	3,222	243
Source area remaining soluble mass (lbs)	1.18	1.21	0.89	0.67	0.33	0.72	1.72	2.27	0.17
Source area removal from baseline (%)	99.40	99.39	99.55	99.66	99.84	99.64	99.13	98.86	99.91

Table 2-1. Groundwater TCFM Data Summary by Sampling Event (continued)

Monitoring Well	Eighty-First Month (June-12)	Eighty-Sixth Month (Nov-12)	Eighty-Seventh Month (Dec-12)	Ninetieth Month (Mar-13)	Ninety-Third Month (Jun-13)	Ninety-Sixth Month (Sept-13)	Ninety-Ninth Month (Dec-13)	101st Month (Pre-Startup Baseline) (Feb-14)	102nd Month (Mar-14)
HMF-MW5I	0.5 U	NS	3.4	16.5	58.6	49.7	30.3	NS	286
HMF-MW6I	NS	NS	NS	NS	NS	0.50 U	NS	NS	NS
HMF-MW7I	NS	NS	NS	NS	NS	0.50 U	NS	NS	NS
HMF-MW8I	NS	NS	NS	NS	NS	0.50 U	NS	NS	NS
HMF-MW9I	NS	NS	NS	NS	NS	0.50 U	NS	NS	NS
NLP-IW2I	NS	NS	NS	NS	NS	NS	NS	NS	NS
NLP-IW1I	0.50 U	NS	50	4.5	3.2	0.50 U	0.50 U	NS	0.79 I
NLP-IW1S	10.7	NS	12.1	95.2	123	51.4	83.9	NS	192
NLP-IW4I	**9,250**	166	76.4	272	1,480	**6,730**	**10,300**	**14,600**	26
NLP-IW3I	NS	NS	NS	NS	NS	NS	NS	NS	NS
Source wells are: NLP-IW1I, NLP-IW4I, HMF-MW5I									
Source well average concentration (µg/L)	3,084	NA	43	98	514	2,260	3,444	NA	104
Source area remaining soluble mass (lbs)	2.17	NA	0.03	0.07	0.36	1.59	2.43	NA	0.07
Source area removal from baseline (%)	98.91	NA	99.98	99.97	99.82	99.20	98.78	NA	99.96

Table 2-1. Groundwater TCFM Data Summary by Sampling Event (continued)

Monitoring Well	106th Month (Jul-14)	108th Month (Sept-14)	111th Month (Dec-14)	114th Month (Mar-2015)	117th Month (Jun-15)	120th Month (Sept-15)
HMF-MW5I	**2,650**	**2,130**	506	489	337	568
HMF-MW6I	NS	14.1	NS	NS	NS	0.5 U
HMF-MW7I	NS	0.5 U	NS	NS	NS	0.5 U
HMF-MW8I	NS	0.93 I	NS	NS	NS	0.5 U
HMF-MW9I	NS	45.4	NS	NS	NS	0.5 U
NLP-IW2I	NS	NS	NS	NS	NS	NS
NLP-IW1I	51.2	1.1 I	0.5 U	2.3	0.86 I	0.5 U
NLP-IW1S	117	132	54.9	81.4	117	52
NLP-IW4I	123	**3,370**	75.1	**3,910**	**4,670**	**5,410**
NLP-IW3I	NS	NS	NS	NS	NS	NS
Source wells are: NLP-IW1I, NLP-IW4I, HMF-MW5I						
Source well average concentration (µg/L)	941	1,834	194	1,467	1,669	1,993
Source area remaining soluble mass (lbs)	0.66	1.29	0.14	1.03	1.18	1.40
Source area removal from baseline (%)	99.67	99.35	99.93	99.48	99.41	99.29

Bolded results indicate TCFM greater than GCTL of 2,100 µg/L.
Shaded area indicates TCFM greater than the MNA-DV of 21,000 µg/L.
NS - Well not sampled or not installed at time of sampling effort.
U - Not detected at associated detection limit.
I - Reported value is between method detection limit and practical quantitation limit.

1 Additional sampling results from January 2006:
Free Product TCFM Results:
Water above product: HMF-GW-PROD-IW1I = 814,000 230 µg/L
Product: HMF-PRODUCT-IW1I = 813,000,000 µg/L
Supplemental sampling based on free product identification.
M7-1411-IW1D: TCFM = 1.7 I µg/L
NLP-IW1D: TCFM = 0.5 U µg/L

Deep well NLP-IW1D TCFM Results:
Sept-06 Annual: 9.2 µg/L
Mar-07 Semi-annual: 82.5 µg/L
Sept-07 Annual: 6.8 µg/L
Mar-08 Semi-annual: 29.8 µg/L
Sept-08 Annual: 167 µg/L
Mar-09 Semi-annual: 0.50 U µg/L
Sept-09 Annual: 0.50 U µg/L
Mar-10 Semi-annual: 0.40 U µg/L
Sept-10 Annual: 0.40 U µg/L
Sept-11 Annual: 0.50 U µg/L
Sept-13 Annual: 0.50 U µg/L
Sept-14 Annual: 10.3 µg/L
Sept-15 Annual: 3.1 µg/L

February 2014 Sparging Well Results:
HMF-ASW-34: 79.8 µg/L
HMF-ASW-38: 20.8 µg/L
HMF-ASW39: 4,160 µg/L

Table 2-2. Groundwater Data Summary by Monitoring Well

MONITORING WELL	SAMPLE ID	SAMPLE DATE	TCFM RESULT (µg/L)
NLP-IW1S	HMF-NLP-IW0001S-013.5-20050908	09-08-2005	0.5 U
	HMF-NLP-IW0001S-013.0-20051026	10-26-2005	721
	HMF-NLP-IW0001S-013.0-20051201	12-01-2005	57
	HMF-NLP-IW0001-013.5-122805	12-28-2005	9.3
	HMF-NLP-MW0001-013-20060125	01-25-2006	15.8
	HMF-NLP-MW0001-013.0-20060227	02-27-2006	37
	HMF-NLP-MW0001-013.0-20060328	03-28-2006	36.2
	HMF-NLP-MW0001-013.0-20060424	04-25-2006	25.2
	HMF-NLP-MW0001-013.0-20060525	05-25-2006	8.8
	HMF-NLP-MW0001-013.0-20060621	06-21-2006	3.4
	HMF-NLP-MW0001-013.0-20060726	07-26-2006	14
	HMF-NLP-MW0001-013.0-20060901	09-01-2006	384
	HMF-NLP-MW0001-013.0-20060928	09-28-2006	701
	HMF-NLP-MW0001-013.0-20061025	10-25-2006	**2,280**
	HMF-NLP-MW0001-013.0-20061129	11-29-2006	**4,000**
	HMF-NLP-MW0001-013.0-20061228	12-28-2006	2,010
	HMF-NLP-MW0001-013.0-20070131	01-31-2007	**8,780**
	HMF-NLP-MW0001-013.0-20070227	02-27-2007	**15,300**
	HMF-NLP-MW0001-013.0-20070329	03-29-2007	**7,430**
	HMF-NLP-MW0001-013.0-20070430	04-30-2007	**7,540**
	HMF-NLP-MW0001-013.0-20070531	05-31-2007	**3,890**
	HMF-NLP-MW0001-013.0-20070628	06-28-2007	**3,830**
	HMF-NLP-MW0001-013.0-20070731	07-31-2007	**9,640**
	HMF-NLP-MW0001-013.0-20070828	08-28-2007	**4,320**
	HMF-NLP-MW0001-013.0-20070926	09-26-2007	**2,870**
	HMF-NLP-MW0001-013.0-20071128	11-28-2007	463
	HMF-NLP-MW0001-013.0-20080131	01-31-2008	217
	HMF-NLP-MW0001-013.0-20080327	03-27-2008	197
	HMF-NLP-MW0001-013.0-20080528	05-28-2008	146
	HMF-NLP-MW0001-013.0-20080729	07-29-2008	178
	HMF-NLP-MW0001-013.0-20080925	09-25-2008	127
	HMF-NLP-MW0001-013.0-20081124	11-24-2008	1,770
	HMF-NLP-MW0001-013.0-20090130	01-30-2009	289
	HMF-NLP-MW0001-013.0-20090401	04-01-2009	**2,280**
	HMF-NLP-MW0001-013.0-20090526	05-26-2009	150
	HMF-NLP-MW0001-013.0-20090701	07-01-2009	594
	HMF-NLP-MW0001-013.0-20090729	07-29-2009	1,750
	HMF-NLP-MW0001-013.0-20090925	09-25-2009	**4,020**
	HMF-NLP-MW0001-013.0-20091027	10-27-2009	**8,280**
	HMF-NLP-MW0001-008.5-20091124	11-24-2009	511
	HMF-NLP-MW0001-008.5-20091229	12-29-2009	695
	HMF-NLP-MW0001-008.5-20100128	01-28-2010	122
	HMF-NLP-MW0001-008.5-20100224	02-24-2010	90.2
	HMF-NLP-MW0001-008.5-20100331	03-31-2010	41.1
	HMF-NLP-MW0001-008.5-20100527	05-27-2010	54.1
	HMF-NLP-MW0001-008.5-20100727	07-27-2010	43.6
	HMF-NLP-MW0001-008.5-20100831	08-31-2010	57.4
	HMF-NLP-MW0001-008.5-20100922	09-23-2010	94.3
	HMF-NLP-MW0001-008.5-20101229	12-29-2010	296

Table 2-2. Groundwater Data Summary by Monitoring Well (continued)

MONITORING WELL	SAMPLE ID	SAMPLE DATE	TCFM RESULT (µg/L)
NLP-IW1S (continued)	HMF-NLP-MW0001-008.5-20110324	03-24-2011	1,010 E
	HMF-NLP-MW0001-008.5-20110622	06-22-2011	1,480
	HMF-NLP-MW0001-008.5-20110915	09-15-2011	753
	HMF-NLP-MW0001-008.5-20111216	12-16-2011	502
	HMF-NLP-MW0001-008.5-20120329	03-29-2012	1,200
	HMF-NLP-MW0001-008.5-20120621	06-21-2012	10.7
	HMF-NLP-MW0001-008.5-2012	12-27-2012	12.1
	HMF-NLP-MW0001-008.5-20130327	03-27-2013	95.2
	HMF-NLP-MW0001-008.5-20130627	06-27-2013	123
	HMF-NLP-MW0001-008.5-20130926	09-26-2013	51.4
	HMF-NLP-MW0001-008.5-20131219	12-19-2013	83.9
	HMF-NLP-MW0001-008.5-20140327	03-27-2014	192
	HMF-NLP-MW0001-008.5-20140710	07-10-2014	117
	HMF-NLP-MW0001-008.5-20140923	09-23-2014	132
	HMF-NLP-MW0001-008.5-20141223	12-23-2014	54.9
	HMF-NLP-MW0001-008.5-20150331	03-31-2015	81.4
	HMF-NLP-MW0001-008.5-20150625	06-25-2015	117
	HMF-NLP-MW0001-008.5-20150923	09-23-2015	52
NLP-IW1I	HMF-NLP-IW0001I-040.0-20050908	09-08-2005	**400,000**
	HMF-NLP-IW0001I-042.0-20051026	10-26-2005	**48,400**
	HMF-NLP-IW0001I-040.0-20051201	12-01-2005	**3,660**
	HMF-NLP-IW0001-040.0-122805	12-28-2005	**9,190**
	HMF-NLP-MW0001-040-20060126	01-26-2006	**184,000**
	HMF-NLP-MW0001-042.0-20060227	02-27-2006	**34,600**
	HMF-NLP-MW0001-042.0-20060328	03-28-2006	1520
	HMF-NLP-MW0001-042.0-20060424	04-24-2006	**3,950**
	HMF-NLP-MW0001-042.0-20060525	05-25-2006	**2,320**
	HMF-NLP-MW0001-042.0-20060621	06-21-2006	**4,180**
	HMF-NLP-MW0001-042.0-20060726	07-26-2006	**15,700**
	HMF-NLP-MW0001-042.0-20060901	09-01-2006	**9,380**
	HMF-NLP-MW0001-042.0-20060928	09-28-2006	**8,790**
	HMF-NLP-MW0001-042.0-20061025	10-25-2006	**3,930**
	HMF-NLP-MW0001-042.0-20061129	11-29-2006	**14,900**
	HMF-NLP-MW0001-042.0-20061228	12-28-2006	**4,260**
	HMF-NLP-MW0001-042.0-20070131	01-31-2007	**14,800**
	HMF-NLP-MW0001-042.0-20070227	02-27-2007	**12,400**
	HMF-NLP-MW0001-042.0-20070329	03-29-2007	**11,200 L**
	HMF-NLP-MW0001-042.0-20070430	04-30-2007	**7,590**
	HMF-NLP-MW0001-042.0-20070531	05-31-2007	447
	HMF-NLP-MW0001-042.0-20070628	06-28-2007	**8,090**
	HMF-NLP-MW0001-042.0-20070731	07-31-2007	7
	HMF-NLP-MW0001-042.0-20070828	08-28-2007	**5,330**
	HMF-NLP-MW0001-042.0-20070926	09-26-2007	**2,970**
	HMF-NLP-MW0001-042.0-20071128	11-28-2007	**4,550**
	HMF-NLP-MW0001-042.0-20080131	01-31-2008	1,140
	HMF-NLP-MW0001-042.0-20080327	03-27-2008	**3,950**
	HMF-NLP-MW0001-042.0-20080528	05-28-2008	**6,590**
	HMF-NLP-MW0001-042.0-20080729	07-29-2008	312

Table 2-2. Groundwater Data Summary by Monitoring Well (continued)

MONITORING WELL	SAMPLE ID	SAMPLE DATE	TCFM RESULT (µg/L)
NLP-IW1I (continued)	HMF-NLP-MW0001-042.0-20080925	09-25-2008	25.1
	HMF-NLP-MW0001-042.0-20081124	11-24-2008	1.5
	HMF-NLP-MW0001-042.0-20090130	01-30-2009	68.4
	HMF-NLP-MW0001-042.0-20090401	04-01-2009	2.5
	HMF-NLP-MW0001-042.0-20090526	05-26-2009	1.6 I
	HMF-NLP-MW0001-042.0-20090701	07-01-2009	88.6
	HMF-NLP-MW0001-042.0-20090729	07-29-2009	464
	HMF-NLP-MW0001-042.0-20090925	09-25-2009	2.7
	HMF-NLP-MW0001-042.0-20091027	10-27-2009	59
	HMF-NLP-MW0001-037.5-20091124	11-24-2009	**17,000**
	HMF-NLP-MW0001-037.5-20091229	12-29-2009	755
	HMF-NLP-MW0001-037.5-20100128	01-28-2010	38.3
	HMF-NLP-MW0001-037.5-20100224	02-24-2010	65
	HMF-NLP-MW0001-037.5-20100331	03-31-2010	5.8
	HMF-NLP-MW0001-037.5-20100527	05-27-2010	2.0 U
	HMF-NLP-MW0001-037.5-20100727	07-27-2010	0.44 I
	HMF-NLP-MW0001-037.5-20100831	08-31-2010	1.9 I
	HMF-NLP-MW0001-037.5-20100922	09-23-2010	36.5
	HMF-NLP-MW0001-037.5-20101229	12-29-2010	0.8 I
	HMF-NLP-MW0001-037.5-20110324	03-24-2011	0.5 U
	HMF-NLP-MW0001-037.5-20110622	06-22-2011	5.7
	HMF-NLP-MW0001-037.5-20110915	09-15-2011	0.85 I
	HMF-NLP-MW0001-037.5-20111216	12-16-2011	0.5 U
	HMF-NLP-MW0001-037.5-20120329	03-29-2012	0.5 U
	HMF-NLP-MW0001-037.5-20120621	06-21-2012	0.5 U
	HMF-NLP-MW0001-037.5-2012	12-27-2012	50
	HMF-NLP-MW0001-037.5-20130327	03-27-2013	4.5
	HMF-NLP-MW0001-037.5-20130627	06-27-2013	3.2
	HMF-NLP-MW0001-037.5-20130926	09-26-2013	0.5 U
	HMF-NLP-MW0001-037.5-20131219	12-19-2013	0.5 U
	HMF-NLP-MW0001-037.5-20140327	03-27-2014	0.79 I
	HMF-NLP-MW0001-037.5-20140710	07-10-2014	51.2
	HMF-NLP-MW0001-037.5-20140923	09-23-2014	1.1 I
	HMF-NLP-MW0001-037.5-20141223	12-23-2014	0.5 U
	HMF-NLP-MW0001-037.5-20150331	03-31-2015	2.3
	HMF-NLP-MW0001-037.5-20150625	06-25-2015	0.86 I
	HMF-NLP-MW0001-037.5-20150923	09-23-2015	0.5 U
NLP-IW1D	HMF-NLP-MW0001-053-20050908	09-08-2005	12.8
	HMF-NLP-MW0001-053-20060328	03-28-2006	0.5 U
	HMF-NLP-MW0001-053-20060928	09-28-2006	9.2
	HMF-NLP-MW0001-053-20070329	03-29-2007	82.5
	HMF-NLP-MW0001-053-20070926	09-26-2007	6.8
	HMF-NLP-MW0001-053-20080327	03-27-2008	29.8
	HMF-NLP-MW0001-053-20080925	09-25-2008	167
	HMF-NLP-MW0001-053-20090401	04-01-2009	0.5 U
	HMF-NLP-MW0001-053-20090925	09-25-2009	0.5 U
	HMF-NLP-MW0001-053-20100331	03-31-2010	0.4 U

Table 3-2. Groundwater Data Summary by Monitoring Well (continued)

MONITORING WELL	SAMPLE ID	SAMPLE DATE	TCFM RESULT (µg/L)
NLP-IW1D (continued)	HMF-NLP-MW0001-053-20100922	09-23-2010	0.4 U
	HMF-NLP-MW0001-050.5-20110915	09-15-2011	0.5 U
	HMF-NLP-MW0001-050.5-20130926	09-26-2013	0.5 U
	HMF-NLP-MW0001-050.5-20140922	09-22-2014	10.3
	HMF-NLP-MW0001-050.5-20150923	09-23-2015	3.1
NLP-IW2I	HMF-NLP-IW0002I-042.0-20050909	09-09-2005	**3,080**
	HMF-NLP-IW0002I-042.0-20051026	10-26-2005	**3,710**
	HMF-NLP-IW0002I-042.5-20070227	02-27-2007	0.5 U
	HMF-NLP-IW0002I-042.5-20070329	03-29-2007	16 U
	HMF-NLP-IW0002I-042.5-20070430	04-30-2007	4.2
	HMF-NLP-IW0002I-042.5-20070531	05-31-2007	14.1
	HMF-NLP-IW0002I-042.5-20070628	06-28-2007	0.8 I
	HMF-NLP-IW0002I-042.5-20070731	07-31-2007	0.43 U
	HMF-NLP-IW0002I-042.5-20070828	08-28-2007	21.5
	HMF-NLP-IW0002I-042.5-20070926	09-26-2007	22.4
	HMF-NLP-IW0002I-042.5-20071128	11-28-2007	0.43 U
	HMF-NLP-IW0002I-042.5-20080131	01-31-2008	23.6
	HMF-NLP-IW0002I-042.5-20080327	03-27-2008	35.6
	HMF-NLP-IW0002I-042.5-20080925	09-25-2008	73.7
	HMF-NLP-IW0002I-042.5-20090401	04-01-2009	10
	HMF-NLP-IW0002I-042.5-20090925	09-25-2009	32.2
	HMF-NLP-IW0002I-042.5-20100331	03-31-2010	0.4 U
	HMF-NLP-IW0002I-042.5-20100922	09-23-2010	67.3
NLP-IW3I	HMF-NLP-IW0003I-040.5-20050909	09-09-2005	200 U
	HMF-NLP-IW0003I-040.0-20051027	10-27-2005	0.5 U
	HMF-NLP-IW0003I-040.0-20051201	12-01-2005	24.5
	HMF-NLP-IW0003-040.0-122805	12-28-2008	10.6
	HMF-NLP-MW0003-045-20060126	01-26-2006	0.54 I
	HMF-NLP-MW0003-030.0-20060228	02-28-2006	0.5 U
	HMF-NLP-MW0003-040.0-20060328	03-28-2006	2 U
	HMF-NLP-MW0003-040.0-20060424	04-24-2006	1.8
	HMF-NLP-MW0003-040.0-20060525	05-25-2006	1
	HMF-NLP-MW0003-040.0-20060424	04-24-2006	1.8
	HMF-NLP-MW0003-040.0-20060621	06-21-2006	0.5
	HMF-NLP-MW0003-040.0-20060726	07-26-2006	14.9
	HMF-NLP-MW0003-040.0-20060901	09-01-2006	0.5
	HMF-NLP-MW0003-040.0-20060928	09-28-2006	0.87 I
	HMF-NLP-MW0003-040.0-20061025	10-25-2006	11.2
	HMF-NLP-MW0003-040.0-20061129	11-29-2006	19.8
	HMF-NLP-MW0003-040.0-20061228	12-28-2006	0.5 U
	HMF-NLP-MW0003-040.0-20070131	01-31-2007	0.5 U
	HMF-NLP-MW0003-040.0-20070227	02-27-2007	0.5 U
	HMF-NLP-MW0003-040.0-20070329	03-29-2007	0.5 U
	HMF-NLP-MW0003-040.0-20070430	04-30-2007	14.7
	HMF-NLP-MW0003-040.0-20070531	05-31-2007	0.5 U
	HMF-NLP-MW0003-040.0-20070628	06-28-2007	0.5 U
	HMF-NLP-MW0003-040.0-20070731	07-31-2007	**13,600**
	HMF-NLP-MW0003-040.0-20070828	08-28-2007	0.43 U

Table 2-2. Groundwater Data Summary by Monitoring Well (continued)

MONITORING WELL	SAMPLE ID	SAMPLE DATE	TCFM RESULT (µg/L)
NLP-IW3I (continued)	HMF-NLP-MW0003-040.0-20070926	09-26-2007	57.1
	HMF-NLP-MW0003-040.0-20071128	11-28-2007	0.43 U
	HMF-NLP-MW0003-040.0-20080131	01-31-2008	0.43 U
	HMF-NLP-MW0003-040.0-20080327	03-27-2008	0.43 U
	HMF-NLP-MW0003-040.0-20080925	09-25-2008	0.5 U
	HMF-NLP-MW0003-040.0-20090401	04-01-2009	3.2
	HMF-NLP-MW0003-040.0-20090925	09-25-2009	15.9
	HMF-NLP-MW0003-040.0-20100331	03-31-2010	0.4 U
	HMF-NLP-MW0003-040.0-20100922	09-23-2010	35.7
NLP-IW4I	HMF-NLP-IW0004I-040.0-20050908	09-08-2005	**396,000**
	HMF-NLP-IW0004I-040.0-20051026	10-26-2005	**23,500**
	HMF-NLP-IW0004I-040.0-20051201	12-01-2005	**21,200**
	HMF-NLP-IW0004-040.0-122805	12-28-2005	**54,700**
	HMF-NLP-MW0004-040-20060126	01-26-2006	**49,700**
	HMF-NLP-MW0004-040.0-20060228	02-28-2006	**9,230**
	HMF-NLP-MW0004-040.0-20060328	03-28-2006	**27,200**
	HMF-NLP-MW0004-040.0-20060424	04-24-2006	**34,800**
	HMF-NLP-MW0004-040.0-20060525	05-25-2006	**2,380**
	HMF-NLP-MW0004-040.0-20060621	06-21-2006	**17,000**
	HMF-NLP-MW0004-040.0-20060726	07-26-2006	**40,600**
	HMF-NLP-MW0004-040.0-20060901	09-01-2006	**6,370**
	HMF-NLP-MW0004-040.0-20060928	09-28-2006	**48,900**
	HMF-NLP-MW0004-040.0-20061025	10-25-2006	**25,700**
	HMF-NLP-MW0004-040.0-20061129	11-29-2006	**21,400**
	HMF-NLP-MW0004-040.0-20061228	12-28-2006	**12,500**
	HMF-NLP-MW0004-040.0-20070131	01-31-2007	**45,800**
	HMF-NLP-MW0004-040.0-20070227	02-27-2007	**65,300**
	HMF-NLP-MW0004-040.0-20070329	03-29-2007	**36,200**
	HMF-NLP-MW0004-040.0-20070430	04-30-2007	**8,180**
	HMF-NLP-MW0004-040.0-20070531	05-31-2007	583
	HMF-NLP-MW0004-040.0-20070628	06-28-2007	**19,500**
	HMF-NLP-MW0004-040.0-20070731	07-31-2007	**67,000**
	HMF-NLP-MW0004-040.0-20070828	08-28-2007	**13,000**
	HMF-NLP-MW0004-040.0-20070926	09-26-2007	**24,000**
	HMF-NLP-MW0004-040.0-20071128	11-28-2007	**4,590**
	HMF-NLP-MW0004-040.0-20080131	01-31-2008	**2,580**
	HMF-NLP-MW0004-040.0-20080327	03-27-2008	**5,220**
	HMF-NLP-MW0004-040.0-20080528	05-28-2008	**9,330**
	HMF-NLP-MW0004-040.0-20080729	07-29-2008	953
	HMF-NLP-MW0004-040.0-20080925	09-25-2008	437
	HMF-NLP-MW0004-040.2-20081124	11-24-2008	183
	HMF-NLP-MW0004-040.0-20080130	01-30-2009	90.5
	HMF-NLP-MW0004-040.0-20090401	04-01-2009	**4,470**
	HMF-NLP-MW0004-040.0-20090526	05-26-2009	**5,610**
	HMF-NLP-MW0004-040.0-20090701	07-01-2009	352
	HMF-NLP-MW0004-040.0-20090729	07-29-2009	918
	HMF-NLP-MW0004-040.0-20090924	09-25-2009	**22,800**
	HMF-NLP-MW0004-037.5-20091124	11-24-2009	**7,240**
	HMF-NLP-MW0004-040.0-20091027	10-27-2009	**21,900**

Table 2-2. Groundwater Data Summary by Monitoring Well (continued)

MONITORING WELL	SAMPLE ID	SAMPLE DATE	TCFM RESULT (µg/L)
NLP-IW4I (continued)	HMF-NLP-MW0004-037.5-20091229	12-29-2009	**6,840**
	HMF-NLP-MW0004-037.5-20100128	01-28-2010	90.7
	HMF-NLP-MW0004-037.5-20100224	02-24-2010	529
	HMF-NLP-MW0004-037.5-20100331	03-31-2010	107
	HMF-NLP-MW0004-037.5-20100527	05-27-2010	507
	HMF-NLP-MW0004-037.5-20100727	07-27-2010	**3,350**
	HMF-NLP-MW0004-037.5-20100831	08-31-2010	**3,100**
	HMF-NLP-MW0004-037.5-20100922	09-23-2010	**3,670**
	HMF-NLP-MW0004-037.5-20101229	12-29-2010	**2,750**
	HMF-NLP-MW0004-037.5-20110324	03-24-2011	1,190
	HMF-NLP-MW0004-037.5-20110622	06-22-2011	**2,940**
	HMF-NLP-MW0004-037.5-20110915	09-15-2011	**7,210**
	HMF-NLP-MW0004-037.5-20111216	12-16-2011	**9,660**
	HMF-NLP-MW0004-037.5-20120329	03-29-2012	723
	HMF-NLP-MW0004-037.5-20120621	06-21-2012	**9,250**
	HMF-NLP-MW0004-037.5-20121120	11-20-2012	166
	HMF-NLP-MW0004-037.5-2012	12-27-2012	76.4
	HMF-NLP-MW0004-037.5-20130327	03-27-2013	272
	HMF-NLP-MW0004-037.5-20130627	06-27-2013	1,480
	HMF-NLP-MW0004-037.5-20130926	09-26-2013	**6,730**
	HMF-NLP-MW0004-037.5-20131219	12-19-2013	**10,300**
	HMF-NLP-MW0004-037.5-20131219	02-13-2014	**14,600**
	HMF-NLP-MW0004-037.5-20140327	03-27-2014	26
	HMF-NLP-MW0004-037.5-20140710	07-10-2014	123
	HMF-NLP-MW0004-037.5-20140923	09-23-2014	**3,370**
	HMF-NLP-MW0004-037.5-20141223	12-23-2014	75.1
	HMF-NLP-MW0004-037.5-20150331	03-31-2015	**3,910**
	HMF-NLP-MW0004-037.5-20150626	06-25-2015	**4,670**
	HMF-NLP-MW0004-037.5-20150923	09-23-2015	**5,410**
HMF-MW5I	HMF-MW0005I-040.0-20050908	09-08-2005	**49,200**
	HMF-MW0005I-040.0-20051026	10-26-2005	**36,200**
	HMF-MW0005I-040.0-20051201	12-01-2005	**2,660**
	HMF-MW0005-040.0-122805	12-28-2005	**60,600**
	HMF-MW0005-040-20060125	01-25-2006	**71,700**
	HMF-MW0005-040.0-20060227	02-27-2006	**51,000**
	HMF-MW0005-040.0-20060328	03-28-2006	**51,900**
	HMF-MW0005-040.0-20060424	04-25-2006	**8,240**
	HMF-MW0005-040.0-20060525	05-25-2006	**25,800**
	HMF-MW0005-040.0-20060621	06-21-2006	**87,900**
	HMF-MW0005-040.0-20060726	07-26-2006	**75,700**
	HMF-MW0005-040.0-20060901	09-01-2006	**42,800**
	HMF-MW0005-040.0-20060928	09-28-2006	**34,800**
	HMF-MW0005-040.0-20061025	10-25-2006	**18,600**
	HMF-MW0005-040.0-20061129	11-29-2006	**89,500**
	HMF-MW0005-040.0-20061228	12-28-2006	**51,500**
	HMF-MW0005-040.0-20070131	01-31-2007	**81,200**
	HMF-MW0005-040.0-20070227	02-27-2007	**78,100**
	HMF-MW0005-040.0-20070329	03-29-2007	**40,900**

Table 2-2. Groundwater Data Summary by Monitoring Well (continued)

MONITORING WELL	SAMPLE ID	SAMPLE DATE	TCFM RESULT (µg/L)
HMF-MW5I (continued)	HMF-MW0005-040.0-20070430	04-30-2007	**15,000**
	HMF-MW0005-040.0-20070531	05-31-2007	**6,310**
	HMF-MW0005-040.0-20070628	06-28-2007	**4,290**
	HMF-MW0005-040.0-20070731	07-31-2007	**2,420**
	HMF-MW0005-040.0-20070828	08-28-2007	826
	HMF-MW0005-040.0-20070926	09-26-2007	**2,900**
	HMF-MW0005-040.0-20071128	11-28-2007	698
	HMF-MW0005-040.0-20080131	01-31-2008	547
	HMF-MW0005-040.0-20080327	03-27-2008	469
	HMF-MW0005-040.0-20080528	05-28-2008	519
	HMF-MW0005-040.0-20080729	07-29-2008	69.6
	HMF-MW0005-040.0-20080925	09-25-2008	35.1
	HMF-MW0005-040.0-20081124	11-24-2008	328
	HMF-MW0005-040.0-20080130	01-30-2009	178
	HMF-MW0005-040.0-20090401	04-01-2009	290
	HMF-MW0005-040.0-20090526	05-26-2009	309
	HMF-MW0005-040.0-20090701	07-01-2009	82.2
	HMF-MW0005-040.0-20090729	07-29-2009	194
	HMF-MW0005-040.0-20090924	09-25-2009	315
	HMF-MW0005-040.0-20091027	10-27-2009	155
	HMF-MW0005-037.5-20091124	11-24-2009	142
	HMF-MW0005-037.5-20091229	12-29-2009	46.2
	HMF-MW0005-037.5-20100128	01-28-2010	71.6
	HMF-MW0005-037.5-20100224	02-24-2010	101
	HMF-MW0005-037.5-20100331	03-31-2010	51.1
	HMF-MW0005-037.5-20100527	05-27-2010	61.4
	HMF-MW0005-037.5-20100727	07-27-2010	3.8
	HMF-MW0005-037.5-20100831	08-31-2010	334
	HMF-MW0005-037.5-20100922	09-23-2010	89.4
	HMF-MW0005-037.5-20101229	12-29-2010	104
	HMF-MW0005-037.5-20110324	03-24-2011	197
	HMF-MW0005-037.5-20110622	06-22-2011	125
	HMF-MW0005-037.5-20110915	09-15-2011	118
	HMF-MW0005-037.5-20111216	12-16-2011	4.9
	HMF-MW0005-037.5-20120329	03-29-2012	4.5
	HMF-MW0005-037.5-20120621	06-21-2012	0.5 U
	HMF-MW0005-037.5-20121227	12-27-2012	3.4
	HMF-MW0005-037.5-20130327	03-27-2013	16.5
	HMF-MW0005-037.5-20130627	06-27-2013	58.6
	HMF-MW0005-037.5-20130926	09-26-2013	49.7
	HMF-MW0005-037.5-20131219	12-19-2013	30.3
	HMF-MW0005-037.5-20140327	03-27-2014	286
	HMF-MW0005-037.5-20140710	07-10-2014	**2,650**
	HMF-MW0005-037.5-20140923	09-23-2014	**2,130**
	HMF-MW0005-037.5-20141223	12-23-2014	506
	HMF-MW0005-037.5-20150331	03-31-2015	489
	HMF-MW0005-037.5-20150625	06-25-2015	337
	HMF-MW0005-037.5-20150923	09-23-2015	568
HMF-MW6I	HMF-MW0006I-040.0-20050907	09-07-2005	2 U

Table 2-2. Groundwater Data Summary by Monitoring Well (continued)

MONITORING WELL	SAMPLE ID	SAMPLE DATE	TCFM RESULT (µg/L)
HMF-MW6I (conti nued)	HMF-MW0006I-040.0-20051026	10-26-2005	41.7
	HMF-MW0006I-040.0-20051201	12-01-2005	3.4
	HMF-MW0006-040.0-122805	12-28-2005	15.1
	HMF-MW0006-040-20060125	01-25-2006	17.5
	HMF-MW0006-040.0-20060227	02-27-2006	9.8
	HMF-MW0006-040.0-20060328	03-28-2006	5
	HMF-MW0006-040.0-20060424	04-24-2006	2.3
	HMF-MW0006-040.0-20060525	05-25-2006	0.7
	HMF-MW0006-040.0-20060621	06-21-2006	0.5 U
	HMF-MW0006-040.0-20060726	07-26-2006	0.5 U
	HMF-MW0006-040.0-20060901	09-01-2006	0.5 U
	HMF-MW0006-040.0-20060928	09-28-2006	2.7
	HMF-MW0006-040.0-20061025	10-25-2006	2.7 U
	HMF-MW0006-040.0-20061129	11-29-2006	2.7 U
	HMF-MW0006-040.0-20061228	12-28-2006	1.6 I
	HMF-MW0006-040.0-20070131	01-31-2007	0.5 U
	HMF-MW0006-040.0-20070226	02-27-2007	0.5 U
	HMF-MW0006-040.0-20070329	03-29-2007	0.5 U
	HMF-MW0006-040.0-20070430	04-30-2007	4
	HMF-MW0006-040.0-20070531	05-31-2007	5.8
	HMF-MW0006-040.0-20070628	06-28-2007	0.5 U
	HMF-MW0006-040.0-20070731	07-31-2007	69.7
	HMF-MW0006-040.0-20070828	08-28-2007	2.1
	HMF-MW0006-040.0-20070926	09-26-2007	2.6
	HMF-MW0006-040.0-20071128	11-28-2007	2.2
	HMF-MW0006-040.0-20080131	01-31-2008	2.1
	HMF-MW0006-040.0-20080327	03-27-2008	5.2
	HMF-MW0006-040.0-20080925	09-25-2008	4.5
	HMF-MW0006-040.0-20090401	04-01-2009	1.4 I
	HMF-MW0006-040.0-20090924	09-25-2009	1.0 I
	HMF-MW0006-040.0-20100331	03-31-2010	0.4 U
	HMF-MW0006-040.0-20100922	09-23-2010	2.6
	HMF-MW0006-037.5-20110915	09-15-2011	0.5 U
	HMF-MW0006-037.5-20130926	09-26-2013	0.5 U
	HMF-MW0006-037.5-20140923	09-23-2014	14.1
	HMF-MW0006-037.5-20150923	09-23-2015	0.5 U
HMF-MW7I	HMF-MW00071-040.0-20050909	09-09-2005	0.5 U
	HMF-MW00071-040.0-20051026	10-26-2005	6.3
	HMF-MW00071-040.0-20051201	12-01-2005	37.1
	HMF-MW0007-040.0-122805	12-28-2005	10.7
	HMF-MW0007-040-20060125	01-25-2006	11.4
	HMF-MW0007-040.0-20060227	02-27-2006	20.5
	HMF-MW0007-040.0-20060328	03-28-2006	17.3
	HMF-MW0007-040.0-20060424	04-24-2006	28
	HMF-MW0007-040.0-20060525	05-25-2006	2.3
	HMF-MW0007-040.0-20060621	06-21-2006	2
	HMF-MW0007-040.0-20060726	07-26-2006	51.2
	HMF-MW0007-040.0-20060901	09-01-2006	0.5

Table 2-2. Groundwater Data Summary by Monitoring Well (continued)

MONITORING WELL	SAMPLE ID	SAMPLE DATE	TCFM RESULT (µg/L)
HMF-MW7I (continued)	HMF-MW0007-040.0-20060928	09-28-2006	2.3
	HMF-MW0007-040.0-20061025	10-25-2006	2.3 U
	HMF-MW0007-040.0-20061129	11-29-2006	2.3 U
	HMF-MW0007-040.0-20061228	12-28-2006	0.5 U
	HMF-MW0007-040.0-20070131	01-31-2007	0.5 U
	HMF-MW0007-040.0-20070226	02-27-2007	0.5 U
	HMF-MW0007-040.0-20070329	03-29-2007	40.3
	HMF-MW0007-040.0-20070430	04-30-2007	2.6
	HMF-MW0007-040.0-20070531	05-31-2007	2.9
	HMF-MW0007-040.0-20070628	06-28-2007	0.5 U
	HMF-MW0007-040.0-20070731	07-31-2007	**13,100**
	HMF-MW0007-040.0-20070828	08-28-2007	4.2
	HMF-MW0007-040.0-20070926	09-26-2007	6.1
	HMF-MW0007-040.0-20071128	11-28-2007	4.8
	HMF-MW0007-040.0-20080131	01-31-2008	4.3
	HMF-MW0007-040.0-20080327	03-27-2008	7.5
	HMF-MW0007-040.0-20080327	03-27-2008	7.5
	HMF-MW0007-040.0-20080925	09-25-2008	11.4
	HMF-MW0007-040.0-20090401	04-01-2009	12.8
	HMF-MW0007-040.0-20090924	09-25-2009	10.5
	HMF-MW0007-040.0-20100331	03-31-2010	1.1 I
	HMF-MW0007-040.0-20100922	09-23-2010	7.1
	HMF-MW0007-037.5-20110915	09-15-2011	6.5
	HMF-MW0007-037.5-20130926	09-26-2013	0.5 U
	HMF-MW0007-037.5-20140923	09-23-2014	0.5 U
	HMF-MW0007-037.5-20150923	09-23-2015	0.5 U
HMF-MW8I	HMF-MW0008-039-20060126	01-26-2006	0.56 I
	HMF-MW0008-040.0-20060227	02-27-2006	9.2
	HMF-MW0008-040.0-20060326	03-26-2006	5 U
	HMF-MW0008-040.0-20060424	04-24-2006	4.7
	HMF-MW0008-040.0-20060525	05-25-2006	4.7
	HMF-MW0008-040.0-20060621	06-21-2006	0.5 U
	HMF-MW0008-040.0-20060726	07-26-2006	0.5 U
	HMF-MW0008-040.0-20060901	09-01-2006	0.5 U
	HMF-MW0008-040.0-20060928	09-28-2006	0.5 U
	HMF-MW0008-040.0-20061025	10-25-2006	0.5 U
	HMF-MW0008-040.0-20061129	11-29-2006	0.73 I
	HMF-MW0008-040.0-20061228	12-28-2006	0.84 I
	HMF-MW0008-040.0-20070131	01-31-2007	4.4
	HMF-MW0008-040.0-20070226	02-27-2007	0.5 U
	HMF-MW0008-040.0-20070329	03-29-2007	5.3
	HMF-MW0008-040.0-20070430	04-30-2007	2.5
	HMF-MW0008-040.0-20070531	05-31-2007	5.5
	HMF-MW0008-040.0-20070628	06-28-2007	0.68
	HMF-MW0008-040.0-20070731	07-31-2007	68.5
	HMF-MW0008-040.0-20070828	08-28-2007	0.51 U
	HMF-MW0008-040.0-20070926	09-26-2007	0.43 U
	HMF-MW0008-040.0-20071128	11-28-2007	0.43 U
	HMF-MW0008-040.0-20080131	01-31-2008	0.81 I

Table 2-2. Groundwater Data Summary by Monitoring Well (continued)

MONITORING WELL	SAMPLE ID	SAMPLE DATE	TCFM RESULT (µg/L)
HMF-MW8I (continued)	HMF-MW0008-040.0-20080327	03-27-2008	1.3 I
	HMF-MW0008-040.0-20080925	09-25-2008	5.1
	HMF-MW0008-040.0-20090401	04-01-2009	6
	HMF-MW0008-040.0-20090924	09-25-2009	0.5 U
	HMF-MW0008-040.0-20100331	03-31-2010	0.4 U
	HMF-MW0008-040.0-20100922	09-23-2010	0.4 U
	HMF-MW0008-037.5-20110915	09-15-2011	0.5 U
	HMF-MW0008-037.5-20130926	09-26-2013	0.5 U
	HMF-MW0008-037.5-20140923	09-23-2014	0.93 I
	HMF-MW0008-037.5-20150923	09-23-2015	0.5 U
HMF-MW9I	HMF-MW0009-040.0-20060126	01-26-2006	4.7
	HMF-MW0009-040.0-20060227	02-27-2006	0.69 I
	HMF-MW0009-040.0-20060328	03-28-2006	3.2
	HMF-MW0009-040.0-20060424	04-24-2006	5.3
	HMF-MW0009-040.0-20060525	05-25-2006	10.5
	HMF-MW0009-040.0-20060621	06-21-2006	31.5
	HMF-MW0009-040.0-20060726	07-26-2006	40.6
	HMF-MW0009-040.0-20060901	09-01-2006	1.6 I
	HMF-MW0009-040.0-20060928	09-28-2006	0.5 U
	HMF-MW0009-040.0-20061025	10-25-2006	94.3
	HMF-MW0009-040.0-20061129	11-29-2006	0.78
	HMF-MW0009-040.0-20061228	12-28-2006	3.8
	HMF-MW0009-040.0-20070131	01-31-2007	0.51 I
	HMF-MW0009-040.0-20070227	02-27-2007	0.5 U
	HMF-MW0009-040.0-20070329	03-29-2007	3.8
	HMF-MW0009-040.0-20070430	04-30-2007	2
	HMF-MW0009-040.0-20070531	05-31-2007	5
	HMF-MW0009-040.0-20070628	06-28-2007	0.92
	HMF-MW0009-040.0-20070731	07-31-2007	117
	HMF-MW0009-040.0-20070828	08-28-2007	1.7 I
	HMF-MW0009-040.0-20070926	09-26-2007	1.9 I
	HMF-MW0009-040.0-20070927	11-28-2007	3.2
	HMF-MW0009-040.0-20070928	01-31-2008	1.2 I
	HMF-MW0009-040.0-20080327	03-27-2008	3.1
	HMF-MW0009-040.0-20080925	09-25-2008	5.2
	HMF-MW0009-040.0-20090401	04-01-2009	0.5 U
	HMF-MW0009-040.0-20090924	09-25-2009	0.55 I
	HMF-MW0009-040.0-20100331	03-31-2010	0.4 U
	HMF-MW0009-040.0-20100922	09-23-2010	7.2
	HMF-MW0009-037.5-20110915	09-15-2011	0.5 U
	HMF-MW0009-037.5-20130926	09-26-2013	0.5 U
	HMF-MW0009-037.5-20140923	09-23-2014	45.4
	HMF-MW0009-037.5-20150923	09-23-2015	0.5 U

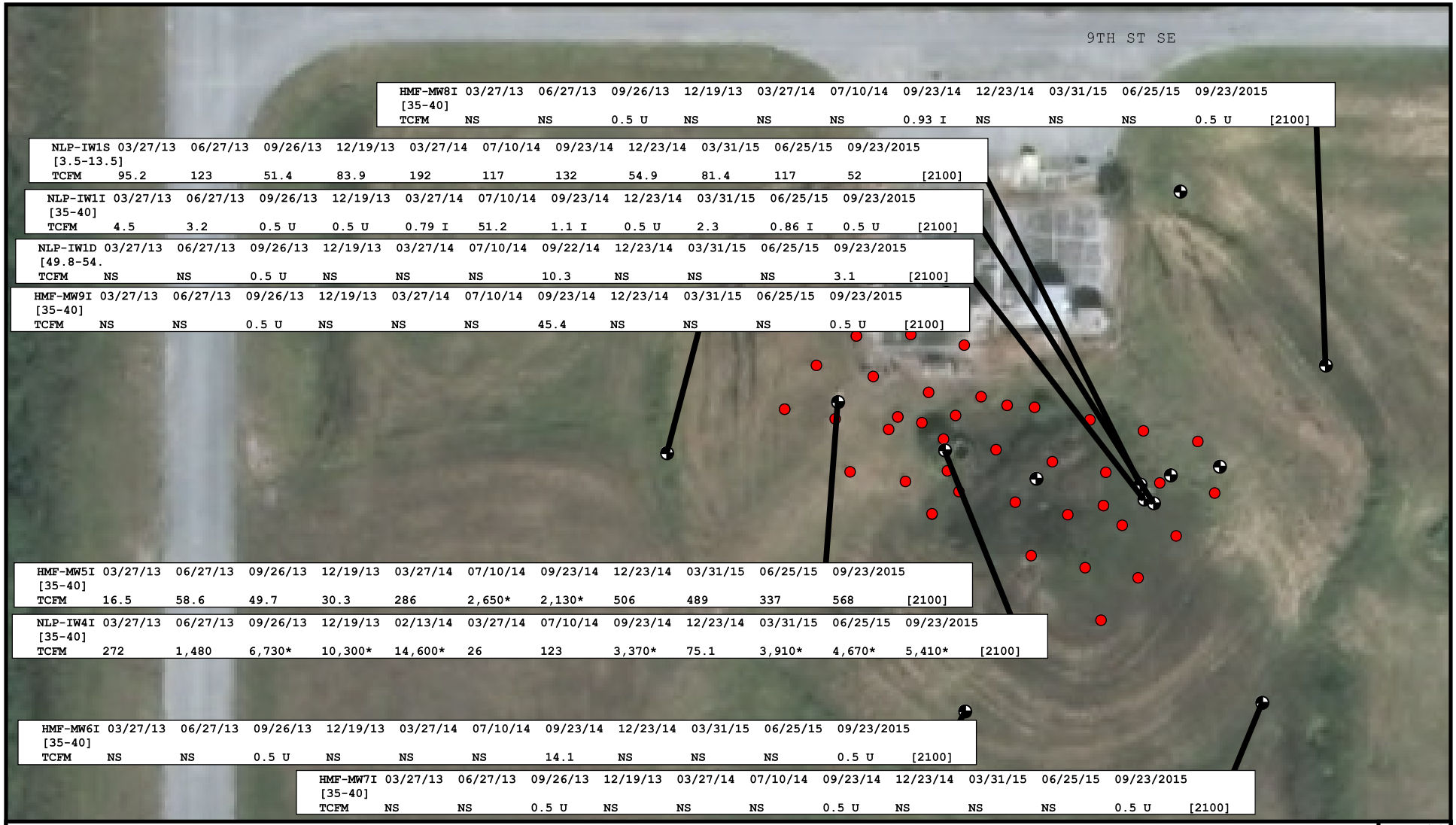
Bolded values indicate TCFM results greater than the GCTL (2,100 µg/L).
Shaded cells indicate TCFM results greater than the MNA-DV (21,000 µg/L).
I - Reported value is between method detection limit and practical quantitation limit.
U - Not detected at associated detection limit.
E - Above calibration range.
L - Exceeds calibration limit.

Table 2-3. Groundwater Elevation Data - October 29, 2015

Monitoring Well	Top of Well Casing Elevation (feet amsl)	Screen Interval (feet BTOC)	Static Depth to Water (feet BTOC)	Groundwater Elevation (feet amsl)
NLP-IW1I	2.09	35 - 40	0.85	1.24
NLP-IW2I	5.42	37 - 42	4.43	0.99
NLP-IW3I	0.33	35.5 - 40.5	NM	--
NLP-IW4I	1.87	35 - 40	3.95	-2.15(1)
HMF-MW5I	4.65	35 - 40	3.41	1.24
HMF-MW6I	1.84	35 - 40	1.10	0.74
HMF-MW7I	0.96	35 - 40	0.22	0.52

1 Not used in potentiometric surface map due to apparently anomalous reading.
BTOC = Below top of casing.
amsl = Above mean sea level.

FIGURE 2-1 GROUNDWATER TCFM RESULTS SUMMARY
SWMU 70, KENNEDY SPACE CENTER, FLORIDA



Legend

- Air Sparging Well
- Monitoring Well

HMF-MW5I 09/08/05
[35-40]
TCFM 49200 * [2100]

- Monitoring Well
- Sample Date
- Well Screen Interval, feet below ground surface
- GCTL
- Detected Concentration (ug/l), * indicates GCTL exceedance
- Contaminant

Note: TCFM - Trichlorofluoromethane
I - Reported value between MDL and PQL
L - Exceeds calibration limit
U - Not detected at or above MDL
NS - Not Sampled

50 0 50 Feet

HMF AGWMR Yr 10
Revision: 0
January 2016

20150410

Figure 2-2. TCFM Concentrations Versus Time

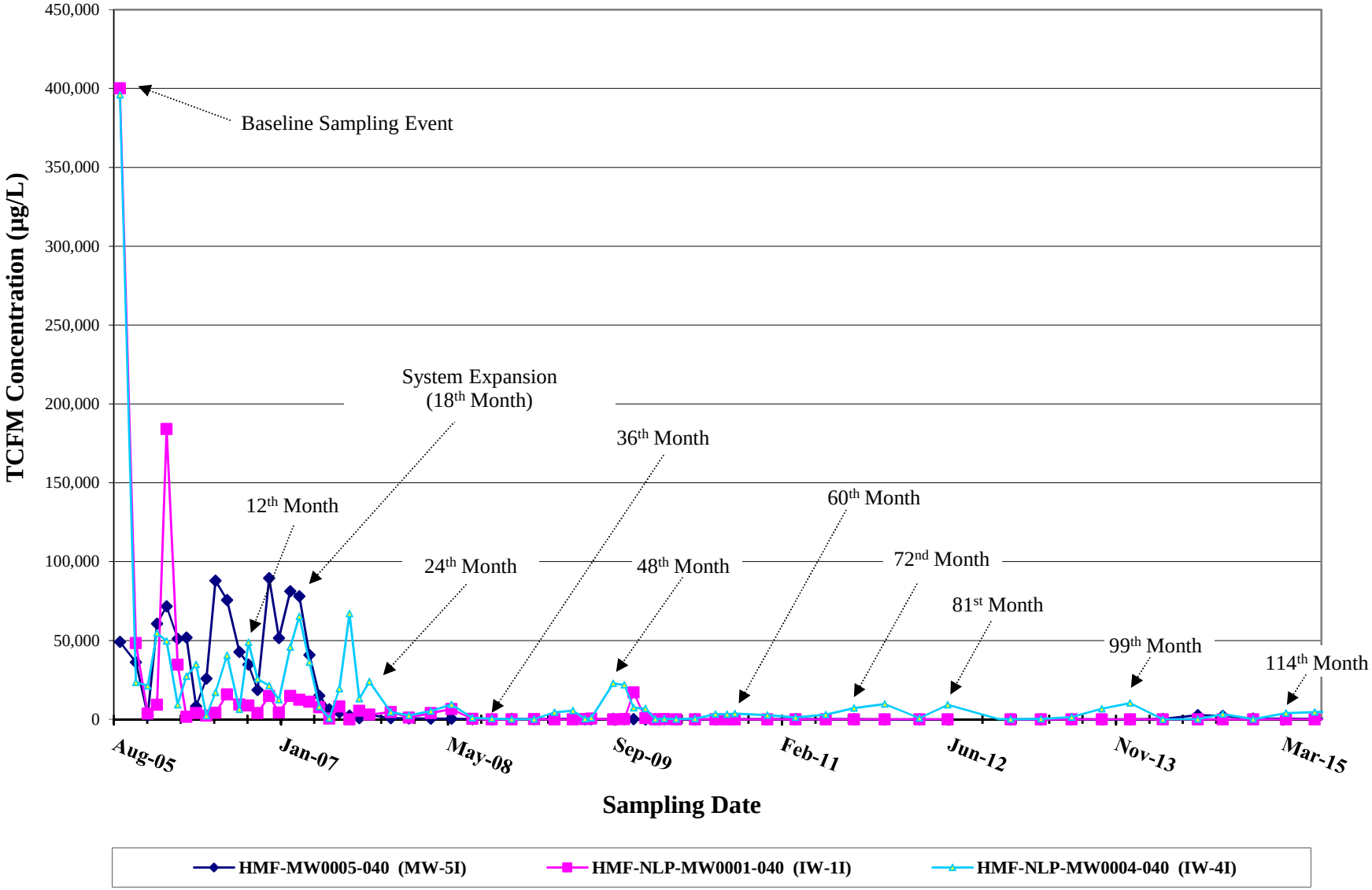


FIGURE 2-3 YEAR 10 ANNUAL GROUNDWATER TCFM RESULTS SUMMARY
SWMU 70, KENNEDY SPACE CENTER, FLORIDA

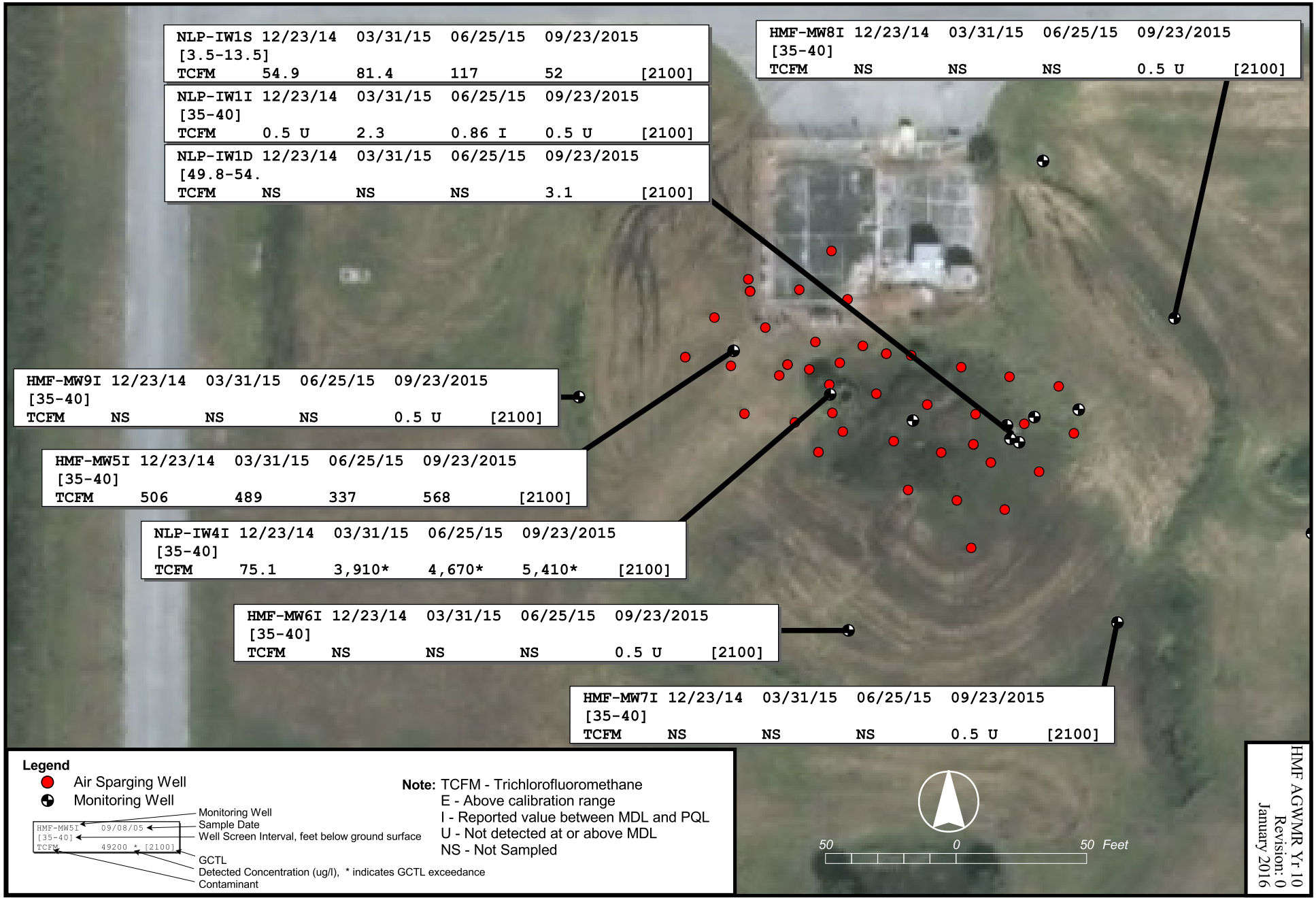


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Figure 2-4. Year 10 TCFM Concentrations Versus Time

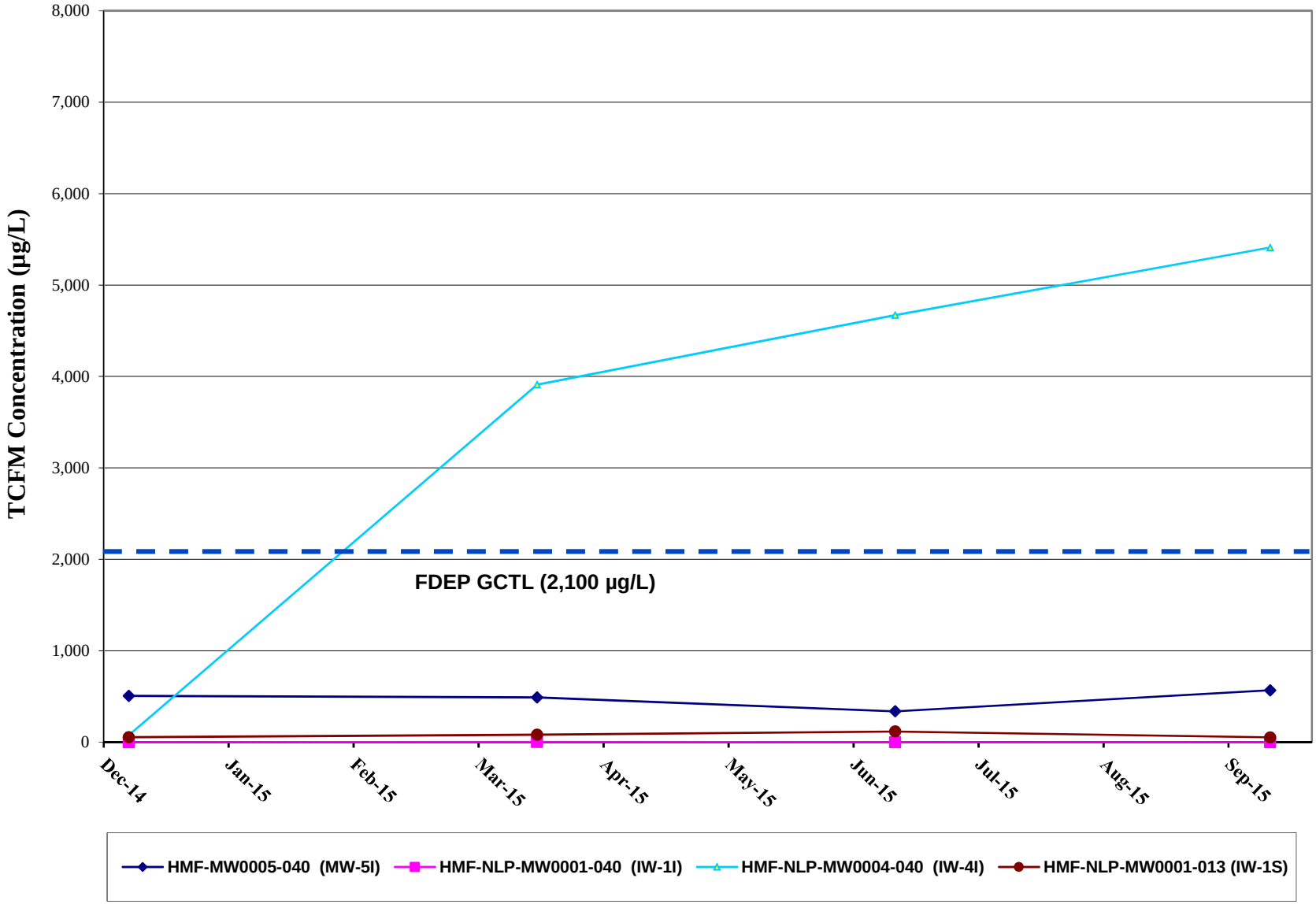
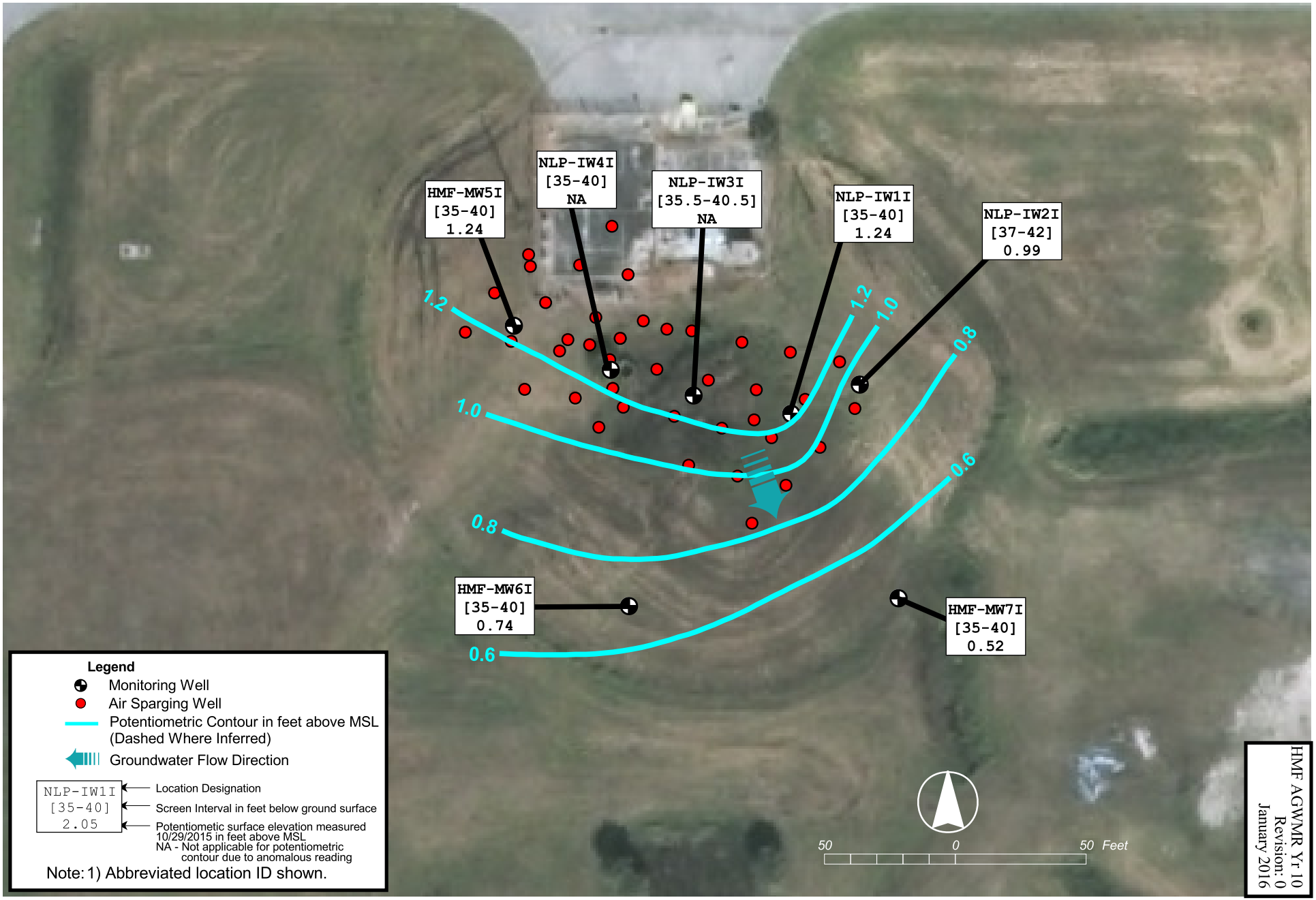


FIGURE 2-5 POTENTIOMETRIC SURFACE MAP - OCTOBER 2015

SWMU 70, KENNEDY SPACE CENTER, FLORIDA



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SECTION 3

OBSERVATIONS AND RECOMMENDATIONS

This section provides observations about the results from the tenth year of CMI and recommendations based on these observations.

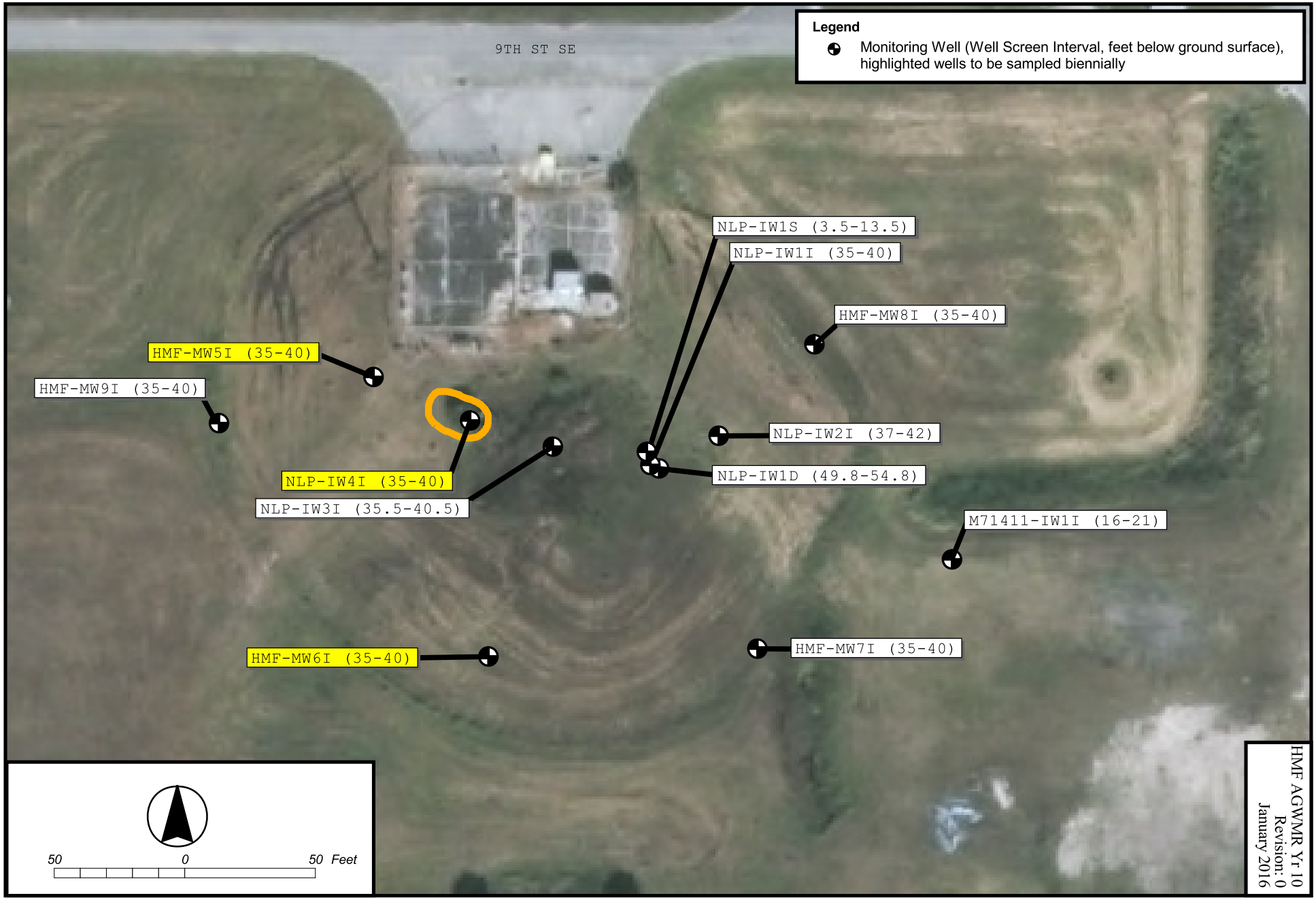
During the project's tenth year, the air sparging system remained off, and quarterly groundwater monitoring events were conducted in December 2014 and March, June, and September 2015. Groundwater sampling was conducted at the three source area wells (NLP-IW1I, NLP-IW4I, and HMF-MW5I) and the shallow well (NLP-IW1S) during all four events, and during the September 2015 annual event, deep well NLP-IW1D and perimeter wells HMF-MW6I, HMF-MW7I, HMF-MW8I, and HMF-MW9I were also sampled.

Periodic operation of the air sparging system at HMF between 2005 and 2010 removed a significant amount of TCFM, as evidenced by groundwater sampling results. While the system was operational during the fourth and fifth years of implementation (2008 and 2009), TCFM concentrations in the source area decreased to less than the GCTL; however, during periods when the system was off line, TCFM concentrations greater than the GCTL were detected in the source area. At the KSCRT Meeting in October 2011, the team reached consensus to install additional sparging wells and to conduct additional air sparging to address rebounding TCFM concentrations in the NLP-IW4I area, with the objective of site closure. The modified system, which included three additional sparging wells with flow concentrated in the NLP-IW4I area, operated from October 2012 to March 2013, when operations were discontinued based on two rounds with TCFM concentrations less than the GCTL in all wells. However, concentrations at NLP-IW4I increased to greater than the GCTL in September 2013 and increased further in December 2013. KSCRT consensus in February 2014 included operation of the system for 5 months, with sparging concentrated in the NLP-IW4I area and a likely transition to long-term monitoring only (i.e., no additional air sparging) if rebounding occurred after the 5 months of operation. Based on rebounding TCFM concentrations at NLP-IW4I and HMF-MW5I, KSCRT

consensus was reached in November 2014 to conduct an additional year of quarterly monitoring, in December 2014 and March, June, and September 2015, and if TCFM concentrations continued to exceed the GCTL, a long-term monitoring plan would be developed for continued monitoring. If concentrations decreased to and remained less than the GCTL in all wells, a sampling period would be determined to support NFA. Also, based on KSCRT consensus at the February 2014 meeting, NLP-IW4I can again be used as a compliance well because the required 1 year after use of the well as a sparging well ended in July 2015.

Based on the continued detection of TCFM at concentrations exceeding the GCTL at NLP-IW4I during the tenth year of monitoring, it is recommended that the sampling frequency be reduced from quarterly to biennial and that the number of wells sampled be reduced from four wells during quarterly events and nine wells during the annual event to three wells, source area wells NLP-IW4I and HMF-MW5I and downgradient well HMF-MW6I, during biennial events (see Figure 3-1). Existing data were evaluated to determine whether any seasonal trends existed in TCFM concentrations over time; no significant seasonal trends were observed. The first biennial sampling event is scheduled for September 2016. The time of year for sample collection may be re-evaluated in the future and may be modified to verify the lack of seasonal trends prior to site closeout.

FIGURE 3-1 LONG-TERM MONITORING WELL LOCATION MAP
SWMU 70, KENNEDY SPACE CENTER, FLORIDA



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SECTION 4

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APPENDIX A

MEETING MINUTES

Meeting Minutes Summary Report

Meeting Start Date:	Meeting ID:	Minute ID:	Presenter:	PRL / SWMU:
10/05/2011	154	5	Simcik, Rob	HMF SOUTH HAZ WASTE STAGING, M7-1410 (SWMU 070)

Topic:

HMF (SWMU 70) CMI Year 6 Annual Update

Discussion:

A revised ADP was distributed at the team meeting. HMF milestones were presented and the team discussed if additional sampling was warranted around monitoring well IW-4I. It was determined that additional investigation is not required at this time. Suggestion was made to turn the system on and add additional sparge wells. Team feels that there is likely something outside the influence of the air sparge well adjacent to IW-4I. NASA wants to be proactive and do something in the area of this well. The current concentration of TCFM is 3X the GCTL in this well, and the question was raised if the team would be discussing this if the concentration was 3 µg/L for VC. If this well was put into the industrial area LTM program, the question was asked "what do the team do if concentrations continue to increase?" Suggestion was made to add a few more sparge points in the area around this well and not sparge the rest of the site. Team consensus reached to install additional air sparge wells around IW0004I and sparge area with the NASA air sparge trailer. Tetra Tech will come back to the team with proposed intervals for additional air sparge wells. Following the team meeting additional information was submitted to the team for consensus. The information provided was for proposing additional air sparge system wells to be installed prior to resuming air sparging activities. Figures and text were provided outlining the proposed path forward. Comments were received and responded to. Team consensus reached to install three sparge wells with two foot screens in the area of IW-4I installed to total depths of 31, 36 and 44 feet. Depths will be fine-tuned based on split spoon soil boring near IW-4I to determine any lithology changes in the immediate area.

Goal:

Present year 6 annual groundwater monitoring results and obtain team consensus on path forward.

Decision:14	Team consensus reached to install additional air sparge wells around IW0004I and sparge area with the NASA air sparge trailer.
Decision:15	Team consensus reached to install three sparge wells with two foot screens in the area of IW-4I installed to total depths of 31, 36 and 44 feet. Depths will be fine-tuned based on split spoon soil boring near IW-4I to determine any lithology changes in the immediate area.

Meeting Minutes Summary Report

Meeting Start Date:	Meeting ID:	Minute ID:	Presenter:	PRL / SWMU:
02/06/2014	170	12	Simcik, Rob	HMF SOUTH HAZ WASTE STAGING, M7-1410 (SWMU 070)

Topic:

HMF South Hazardous Waste Staging Area (SWMU 70)

Discussion:

Year 8 quarterly groundwater monitoring results for TCFM:
• NLP-MW0001S – no GCTL exceedances since September 2009; minor fluctuations.
• NLP-IW0001I - no GCTL exceedances since September 2009; consistent.
• HMF-MW0005I - no GCTL exceedances since September 2009; consistent.
• NLP-MW00041 – concentrations below GCTL with system operation. Rebounding observed after system shutdown. Highest result since September 2009 was 10,300 µg/L.

There is residual contamination in area of monitoring well NLP-IW0004I. Original system (2005) was very effective in removing majority of contamination (87%/173lbs). First system expansion in 2007 obtained excellent results in HMF-IW0005I, but MLP-IW0004I became stagnant above the GCTL after an initial reduction. Second system expansion in 2012 reduced NLP-IW0004I TCFM concentration to below GCTLs when operational, but rebounding observed.

Reasonable alternatives for path forward for the site include LTM, continued operation of the system, or a combination of both.
(1) Option 1: LTM – this would be appropriate as all results are below NADC with only one well greater than GCTL.
(2) Option 2: Continued AS with existing equipment.
a. Utilize existing equipment to aggressively sparge individual AS wells in this area for longer durations than conducted previously.
b. Set up secondary compressors to provide continuous air to selected wells for 2 days then alternate to another AS well. This provided the benefit of increased contact time while maintaining benefits of cycling.
c. Emphasis would be placed on deep wells (ASW-0011 and ASW-0038) and cycle would incorporate other ASWs in area to encourage aquifer movement in zone being monitored.
d. This option is cost effective.
(3) Option 3: Include use of NLP-IW0004I as AS well
a. Same setup as option 2 except add NLP-IW0004I into air sparge rotation. This well would continue to be sampled as part of the monitoring program.
b. After one year of post-active remediation use MLP-IW0004I for compliance point again.

If continued AS operation selected, make modifications and turn AS system on. Next quarterly sampling event scheduled for March 2014. Sampling of the sparge wells installed in the zone of contamination could be conducted prior to system restart. These wells include ASW-34 (TD: 40'); ASW-39 (TD: 35'); and ASW-40 (TD: 31').

Team agreed to continue sparging at the site. Team feels that the contamination is within the clay around the NLP-IW0004I. Some feel that this monitoring well is a conduit. The area of contamination appears to be in a very small area. Sampling sparge wells was considered a good idea. FDEP feels that something else could be done at this site to determine where this residual contamination is located. Questioned if there is a tool like MIP that would help determine the location of the contamination. The original MIP and 2006 DPT data showed it was in the zone being sparged. Is there harm in sparging NLP-IW0004I? Many felt this was a good idea and might provide benefit. Sparging would be for 5 months. If contamination rebounds again after this effort, would likely go to LTM.

Team consensus reached on option 3. Will conduct baseline sampling of select ASWs and NLP-IW0004I prior to system restart.

Goal:

Present annual performance monitoring.

Decision:43	Team consensus reached on option 3. Will conduct baseline sampling of select ASWs and NLP-IW0004I prior to system restart.

Meeting Minutes Summary Report

Meeting Start Date:	Meeting ID:	Minute ID:	Presenter:	PRL / SWMU:
11/18/2014	175	6	Simcik, Rob	HMF SOUTH HAZ WASTE STAGING, M7-1410 (SWMU 070)

Topic:

HMF South (SWMU 070)

Discussion:

Air sparging identified in CMD for TCFM. TCFM NADC is 21,000 µg/L and GCTL is 2,100 µg/L. Technology achieved significant reduction. Periodic operation and modifications completed to address residual contamination and rebound.

MNA identified for aluminum and vinyl chloride. Achieved NFA for aluminum as of September 2006 and for vinyl chloride as of October 2010.

Based on TCFM rebound at NLP-IW4I as presented at the February 2014 team meeting, further operation of the system was recommended. Team consensus in February 2014 to continue air sparging with existing equipment, use of NLP-IW4I as air sparge well, operate modified system for 5 months and if rebound occurred, likely go to LTM, and use NLP-IW4I as compliance well again after active remediation. Sample NLP-IW4I, ASW-34, ASW-38, and ASW-39 prior to startup.

System was modified prior to operation: connected two DeWalt portable compressors in series to operate 24/7 without over heating; 1.6-hp motor, 5 cfm at 190 psi (maximum) in order to use existing equipment to aggressively sparge wells in NLP-IW4I area for longer periods of time. Set up secondary compressor to provide continuous air flow to select well for 2 days, then alternate. Used NLP-IW4I as a sparging well.

Pre-startup sample results (February 2014): NLP-IW4I – 14,600 µg/L, ASW-34 – 79.8 µg/L, ASW-38 – 20.8 µg/L, and ASW-39 – 4,160 µg/L. System was restarted in February and operated until June 30th.

Quarterly monitoring results:
March 27, 2014:
• Four source area wells – NLP-IW0001S, IW0001I, IW0004I and HMF-MW0005I
• System was on for 37 days prior to sampling
• TCFM was less than GCTL in all wells
• System was turned off on July 1, 2014
July 10, 2014
• Four source area wells
• System was off for 8 days prior to sampling
• TCFM rebounded to greater than GCTL at HMF-MW0005I (2,650 µg/L)
September 23, 2014 (Annual event)
• Nine wells – four source area wells, four perimeter wells (HMF-MW0006I, MW0007I, MW0008I, and MW0009I), and deep well (NLP-IW0001D)
• System was off for 12 weeks prior to sampling
• TCFM was greater than GCTL at HMF-MW0005I (2,130 µg/L) and NLP-MW0004I (3,370 µg/L)

NLP-MW001S (shallow well): No GCTL exceedances since September 2009; minor fluctuations in 2014.

NLP-IW0001I: No GCTL exceedances since September 2007; slight increase in July 2014

HMF-MW0005I: Increased from less than 60 ppb in 2013 to greater than 2,000 ppb in July and September 2014; first exceedances since 2007.

NLP-MW0004I: Decreased to less than GCTL with system operation (Feb. 19 to July 2); rebounded to greater than GCTL in September 2014.

Team consensus reached based on rebounding concentrations at NLP-IW0004I and HMF-MW0005I: conduct an additional year of quarterly monitoring (December 2014 and March, June, and September 2015). If concentrations continue to exceed GCTL, develop an LTM plan for continued monitoring or if concentrations decrease to less than GCTL, determine sampling period required for supporting NFA, assuming all wells remain less than GCTL.

Goal:

Present 2014 performance monitoring results and obtain team consensus on path forward.

Decision:17	Team consensus reached based on rebounding concentrations at NLP-IW0004I and HMF-MW0005I: conduct an additional year of quarterly monitoring (December 2014 and March, June, and September 2015). If concentrations continue to exceed GCTL, develop an LTM plan for continued monitoring or if concentrations decrease to less than GCTL, determine sampling period required for supporting NFA, assuming all wells remain less than GCTL.

APPENDIX B

FIELD LOGBOOK

Work continued from Page

12-23-14

Sample 1S - 1I - 4I - 5I

MW 1I 1235 - 1255 purge Sample 1300
ID HMF-MLP-MW 0001 - 0325 - 20141223 IDW 20L

MW 1S 1330 - 1350 purge Sample time 1355
ID HMP MLP MW 0001 0085 - 20141223 IDW 60L

MW 4I 1420 - 1440 purge sample time 1445
ID HMF MLP MW 0004 - 20141223 IDW 20L

MW 5I 1515 - 1525 purge Sample time 1540
ID HMF - MW 0005 - 0325 - 20141223 IDW 20L

Samples Packed on Ice Total IDW
& Pick-up By Accutest Courier 120L

IDW Drum 174120
IDW Pallet 185255

Work continued to Page

SIGNATURE DATE

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

march 31 - 2015 GW Sampling HMF @ KSC

Weather 7:00 am 65°

Calibrate YSI 556 MPS
SN 12A100316

Cond. 1413 mS/cm Pre. 1223 Post 1217
Exp 3-10-15 lot# 10875

DO% 765.5 Pre. 100.1 Post 100.7

ORP. 240. mV Pre. 250.3 Post 240.0
Exp. 4-18 lot# not readable

PH. 7.0 Pre 6.81 post 7.00
4.0 Pre 4.21 post 4.00
10.0 Pre 10.31 post 10.05

Lamotte 2020 SN 5213

0 NTU Pre. .20 Post .15 Exp 3-16 lot C472431B
1 NTU Pre. .86 Post 1.00 Exp 5-16 lot C474736
10 NTU Pre. 9.19 Post 10.0 Exp 5-16 lot C471805

March 31 - 2015 GW sampling HMF-NLP KSC

~~09:50~~ 09:50 → Set up on well HMF-NLP-MW0004-037.5

10:00 Initiated purge
10:25 End Purge
10:30 Collected sample IDW 3

10:50 Set up on well HMF-NLP-MW005-37.7-20153 31
10:55 Initiated purge
11:20 End purge
11 25 collect sample IDW 3

12:05 Set up on well# HMF-NLP-MW0001I-0377-
12:15 Initiated purge 2015 3 31
12:40 End purge
12:45 collect sample IDW 3

13:05 Set up on well #HMF-NLP-MW0001S-0087-2015 331
13:15 Initiate purge
13:40 End purge
13:45 collect sample IDW 3

3-31-2015 IDW total 12

IDW put into containment drum on site.

Thursday June 25-2015 GW Sampling HMF, KSC

morning. Drizzle, 75°F

YSI Cal.

Cond. 1.413 mS/cm Pre ~~1498~~ 1413 µS/cm Post ~~1486~~ 1413

orp. 240.0 mV Pre 270.1 Post 240.
Exp. 04-2018 Lot# non leadgeable

DO% 765.8 pre 76.9 % post 100.9 %

PH 7.0 Pre ~~7.1~~ 7.04 Post 7.00 Exp. 9-31-16 Lot# 2410694
4.0 Pre 4.04 Post 4.00 Exp. 7-31-14 Lot# 2407910
10.0 Pre 9.88 Post 9.98

Lamotte 2020

1.0 NTU Pre .99 Post 1.00 Exp. 5-16 Lot# C474736
0.0 NTU Pre .21 Post .21 Exp. 3-16 Lot# C4724378
10.0 NTU Pre 8.10 Post 10.0 Exp. 5-16 Lot# C471805

11:00 Set up on well # HMF-NLP-MW0005I-037.0-20150625
11:05 Initiated purge
11:30 End Purge IDW. 3.0 L
11:35 Collect Sample

12:10 Set up on well # HMF-NLP-IW0004I-037.5-20150625
12:15 Initiate purge
12:40 End purge IDW 3.0 L
12:45 collect sample

13:30 Set up on well # HMF-NLP-IW0001S-008.5-20150625
13:10 Initiate purge
13:30 End purge IDW 2.5 L
13:35 collect Sample

15:55 Set up on well # HMF-NLP-IW0001I-037.5-20150625
16:00 Initiate purge
16:25 End Purge IDW 3.0 L
16:30 collect Sample TDW Total for 20150625 11.5 L

Wed. Sep. 23-2015 GW sampling HMF KSC

Weather. Sunny

YSI cal. 556 MPS SN# 12A100316

Cond. 1.413 mS/cm Pre 1409 mS/cm Post 1413 Exp. 11-31-2016 Lot#3AK643

Orp. 240.0 mV Pre 239.7 Post 240.0 Exp. 2-2019 Lot#7320

Do% 760.6 Pre 97.5% Post 100.1

pH 7.0 Pre 6.79 Post 7.00
4.0 Pre 4.23 Post 4.00
10.0 Pre 10.15 Post 10.03

Lamotte 2020

1.0	NTU	Pre .99	Post 1.00
0.0	NTU	Pre .21	Post .01
10.0	NTU	Pre 8.10	Post 10.0

07:15 Set up on well#HMF-NLP-MW0001-008.5-20150923
07:25 Initiate purge
07:50 End purge IDW 3.0
08:00 collect sample

08:10 Set up on well#HMF-NLP-MW0001-037.5-20150923
08:15 Initiate purge
08:40 End purge IDW 3.0
08:45 Collect sample

09:00 Set up on well#HMF-NLP-MW001-051.5-2015092
09:10 Initiate purge
09:35 End purge IDW 3.0
09:45 Collect sample

ed Sep 23 2015 GW sample HMF ESC

10:00 Set up on Well # HMF-NLP-MW004-0375-20150923
10:05 Initiate purge
10:30 End purge IDW 3.0
10:40 Collect Sample

10:55 Set up on Well # HMF-MW0005-037.5-20150923
11:00 Initiate purge
11:25 End purge IDW 3.0
11:30 Collect Sample

11:45 Set up on well # HMF-MW0006-037.5-20150923
11:50 Initiate purge
12:15 End purge IDW 3.0
12:25 collect Sample

12:35 Set up on well # HMF-MW0009-037.5-20150923
12:40 Initiate purge
13:05 End purge IDW 3.0
13:10 Collect Sample

13:25 Set up on well # HMF-MW0008-037.5-20150923
13:30 Initiate purge
13:55 End purge IDW 3.0
14:05 collect Sample

14:25 Set up on well # HMF-MW007-037.5-20150923
14:30 Initiate purge
15:00 End purge IDW 3.5
15:05 Collect Sample

Total IDW for the day 27.0 L

HMF water Levels

Work continued from Page

10-29-15

RW 1S – 1.18
RW 1I – .85
RW 1D – .77
RW 4I – 3.95
RW 5I – 3.41
RW 6I – 1.10
RW 7I – .22
RW 8I – 1.20
RW 9I – .12

Work continued to Page

SIGNATURE

DATE

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

APPENDIX C

GROUNDWATER CHAIN-OF-CUSTODY FORMS AND SAMPLE LOG SHEETS

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **MW-5I**	SAMPLE ID: **HMF-MW0005-037.5-20141223**	DATE: 12-23-14

PURGING DATA

WELL DIAMETER (in): 1	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 35.00 ft. to 40.00 ft.	STATIC DEPTH TO WATER (ft): 29.4	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)

Liters

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 37.5	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 37.5	PURGE INITIATED AT: 1515	PURGE ENDED AT: 1535	TOTAL VOLUME PURGED (Liters): 2.6

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1515	–	–	100	29.2	–	–	–	–	–	–	Clear
1520	.5	.5	11	30.6	7.6	23.85	11344	2.41	8.4	52.4	"
1525	.5	1.0	1	30.8	7.75	23.90	11411	2.41	8.2	52.9	"
1530	.5	1.5	11	31.0	7.80	23.53	11421	2.46	8.0	52.8	"
1535	.5	2.0	4	31.2	7.82	23.51	11430	2.37	8.1	53.1	"
				Sample		Final	1540				

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1535	SAMPLING ENDED AT: 1540
PUMP OR TUBING DEPTH IN WELL (feet): 37.5	SAMPLE PUMP FLOW RATE (mL per minute): APP	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type: _____	MS/MSD: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: Hypergol Maintenance Facility (HMF)	SITE LOCATION: John F. Kennedy Space Center (KSC)	
WELL NO: IW-1I	SAMPLE ID: HMF-NLP-MW0001-037.5-20141223	DATE: 12-23-14

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 35.00 ft. to 40.00 ft.	STATIC DEPTH TO WATER (ft): 33	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)

Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 37.5	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 37.5	PURGE INITIATED AT: 1235	PURGE ENDED AT: 1255	TOTAL VOLUME PURGED (Liters): 2.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1235	–	–	low	.55	–	–	–	–	–	–	Clear
1240	.5	.5	"	.73	7.34	23.71	3472	2.89	8.6	133.7	"
1245	.5	1.0	"	.74	7.42	23.69	3484	2.41	8.5	133.8	"
1250	.5	1.5	"	.74	7.46	23.6	3481	2.40	8.7	131.7	"
1255	.5	2.0	"	.77	7.46	23.65	3.182	2.38	8.2	131.0	"
				Sample Time		1300					

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1255	SAMPLING ENDED AT: 1300
PUMP OR TUBING DEPTH IN WELL (feet): 37.5	SAMPLE PUMP FLOW RATE (mL per minute): RFPP	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type: ____	MS/MSD: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

1560S

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **IW-1S**	SAMPLE ID: **HMF-NLP-MW0001-008.5-20141223**	DATE: 12-23-14

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 3.00 ft. to 13.00 ft.	STATIC DEPTH TO WATER (ft): 7.7	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)

Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 8.5	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8.5	PURGE INITIATED AT: 1330	PURGE ENDED AT: 1350	TOTAL VOLUME PURGED (Liters): 6

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1330	-	-	300	7.7	-	-	-	-	-	-	Clear
1335	1.5	1.5	4	8.3	7.63	23.21	7530	1.37	5.2	258	"
1340	3.5	3.0	4	8.8	7.62	23.18	7596	1.38	8.7	238	"
1345	1.5	4.5	"	8.8	7.63	23.20	7573	1.36	8.7	229	"
1350	1.5	6.0	"	8.6	7.63	23.21	7554	1.35	8.3	225	"
				Sample time		1355					

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1352	SAMPLING ENDED AT: 1357
PUMP OR TUBING DEPTH IN WELL (feet): 8.5	SAMPLE PUMP FLOW RATE (mL per minute): RFPP	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	MS/MSD: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **IW-4I**	SAMPLE ID: **HMF-NLP-MW0004-037.5-20141223**	DATE: 12-23-14

PURGING DATA

WELL DIAMETER (in): 1	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 35.00 ft. to 40.00 ft.	STATIC DEPTH TO WATER (ft): 35.5	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)

Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 37.5	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 37.5	PURGE INITIATED AT: 1420	PURGE ENDED AT: 1440	TOTAL VOLUME PURGED (Liters): 2.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1420	–	–	100	35.5	–	–	–	–	–	–	CLEAR
1425	.5	.5	11	36.6	7.35	24.35	7181	1.76	2.4	282	"
1430	.5	1.0	11	37.0	7.32	24.46	7166	1.54	2.0	322	"
1435	.5	1.5	11	22.1	7.31	24.41	7161	1.51	2.1	30.6	"
1440	.5	2.0	11	37.1	7.32	24.38	7166	1.45	2.2	30.7	"
					SAMPLE	TIME	1445				

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1440	SAMPLING ENDED AT: 1445
PUMP OR TUBING DEPTH IN WELL (feet): 37.5	SAMPLE PUMP FLOW RATE (mL per minute): STEP	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y (N) FILTER SIZE: ____ µm Filtration Equipment Type:	MS/MSD: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # | PAGE 1 OF 1

Accutest Quote # | SKIFF#

Client / Reporting Information

Company Name: Tetra Tech NUS
Address: 661 Andersen Drive
City: Pittsburgh State: PA Zip:
Project Contact: Rob Sipolik E-mail:
Phone#: 412 921 7090
Sampler(s) Name(s) (Printed): SKIFF

Project Information

Project Name: KSC - HMF
Street:
City: Kennedy Space Center State:
Project #: 112502382
Fax #:
Client Purchase Order #:

Analytical Information

Only 8270 TCLP

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	Only 8270 TCLP	LAB USE ONLY
	HMF-NLP-MW0001-0325-20141223	12-23	1300	SV	GW	3			Y							Y	
	HMF-NLP-MW0001-0085-20141223	12-23	1355	SV	GW	3			Y							Y	
	HMF-NLP-MW0004-0325-20141223	12-23	1445	SV	GW	3			Y							Y	
	HMF-MW0005-0225-20141223	12-23	1540	SV	GW	5			Y							Y	

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [x] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Cool to 4°C

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by :	Date Time:	Received By:
1	12/23 1040	2	3		4
Relinquished by:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
5		6	7		8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius:

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
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Accutest JOB # | PAGE 1 OF 1

Accutest Quote # | SKIFF#

Client / Reporting Information

Company Name: Tetra tech nus
Address: 661 Andersen dr.
City: Pittsburgh State: PA Zip: 2
Project Contact: Rob Samsik E-mail:
Phone#:
Sampler(s) Name(s) (Printed): Ronnie Linton

Project Information

Project Name: HMF-NLP-KSC
Street:
City: KSC m.I. State: FL
Project #: 112G02382
Fax #:
Client Purchase Order #:

Analytical Information

8260

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MeOH	LAB USE ONLY
HMF-	NLP-MW0004-037.5-20153 31	3-31	10:30	RL	GW	3			✓							1
HMF-	NLP-MW0005-037.7-2015331	3-31	11:25	RL	GW	3			✓							2
HMF-	NLP-MW0001I-037.5-2015331	3-31	12:45	RL	GW	3			✓							3
HMF-	NLP-MW0001S-008.5-2015331	3-31	13:45	RL	GW	3			✓							4

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [✓] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

cooled to 4°C

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
1 Ronnie Linton	4/1/15 11:50	2 ASE	3 ASE 4/1/15 14:30		4
Relinquished by:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
5		6	7		8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius: 3-6

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: HMF - NLP - KSC
Project No.: 112G06773

[] Domestic Well Data
[■] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: HMF-NLP-MW005I - 037.0
Sample Location: HMF
Sampled By: Ron Linton
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 06-25-2015	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: ~~11:00~~ 11:35	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: RFPP		6.64	10400	28.46	5.15	.35	5.43	-83.4

PURGE DATA:

Date: 06-25-2015	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	~~Other~~ ORP	
Method: RFPP	0	6.69	11504	28.10	0.26	6.40	6.04	-82.0	11:05
Monitor Reading (ppm): ~~200~~ 100	1.0	6.63	10943	26.93	5.34	.93	5.95	-80.6	11:10
Well Casing Diameter & Material	.5/1.5	6.66	10994	27.40	5.31	.65	5.92	-70.8	11:15
Type: PVC 1"	.5/2.0	6.67	10961	27.58	5.29	.54	5.87	-72.4	11:20
Total Well Depth (TD):	.5/2.5	6.67	10819	27.79	5.23	.47	5.76	-77.0	11:25
Static Water Level (WL): 4.21	.5/3.0	6.66	10574	28.34	5.20	.38	5.54	-81.0	11:30
One Casing Volume(gal/L):									
Start Purge (hrs): 11:00									
End Purge (hrs): 11:30									
Total Purge Time (min): 30									
Total Vol. Purged (gal/L): 3.0									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
8260	HCl	cooled to 4°c	3

OBSERVATIONS / NOTES:

11:40 Phase ~~two~~ one electrical storm

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Project Site Name: HMF-NLP-KSC
Project No.: 112G06773

Sample ID No.: HMF-NLP-IW0004I -37.5
Sample Location: HMF
Sampled By: Ronnie Linton
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

[] Domestic Well Data
[] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

SAMPLING DATA:

Date: 06-25-2015	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 17:45	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	ORP
Method: RFPP	clear	6.77	10591	27.52	5.01	.35	5.50	-77.00

PURGE DATA: ORP

Date: 06-25-2015	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other	
Method: RFPP	0	6.77	10590	27.51	12.00	.50	5.68	-76.7	12:15
Monitor Reading (ppm): 200 - 100	1.0	6.71	10608	27.48	10.86	.45	5.69	-75.1	12:20
Well Casing Diameter & Material	.5/1.5	6.70	10607	27.41	3.14	.40	5.70	-77.0	12:25
Type: PVC 1"	.5/2.0	6.70	10587	27.22	3.40	.37	5.70	-77.0	12:30
Total Well Depth (TD):	.5/2.5	6.70	10557	27.08	5.00	.36	5.70	-77.8	12:35
Static Water Level (WL): 5.19	.5/3.0	6.70	10506	26.95	5.10	.35	5.63	-77.0	12:40
One Casing Volume(gal/L):									
Start Purge (hrs): 12:15									
End Purge (hrs): 12:40									
Total Purge Time (min): 25									
Total Vol. Purged (gal/L): 3.0									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
8260	HCl	cooled to 4°C	3

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Ronnie L. Linton

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: HMF - NLP - KSC
Project No.: 112G06773

[] Domestic Well Data
[] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: HMF-NLP-IW0001S -0085
Sample Location: HMF - KSC
Sampled By: Ron Linton
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 06-25-2015	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 13:35	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	
Method: RFPP	Clear	6.46	7020	24.85	5.02	.47	3.65	-151.

PURGE DATA: ORP

Date: 06-25-2015	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other	
Method: RFPP	0	6.55	8556	26.10	6.82	6.00	4.64	-136.2	13:10
Monitor Reading (ppm): 200-100	1.0	6.49	8429	25.89	6.00	2.23	4.60	-138.	13:15
Well Casing Diameter & Material	.5/1.5	6.48	8379	25.84	5.90	1.66	4.55	-142.	13:20
Type: Alum 2"	.5/2.0	6.47	7033	24.83	5.37	.63	3.85	-151.	13:25
Total Well Depth (TD):	.5/2.5	6.46	7000	24.84	5.01	.59	3.78	-151.	13:30
Static Water Level (WL): 2.55									
One Casing Volume(gal/L):									
Start Purge (hrs): 13:10									
End Purge (hrs): 13:30									
Total Purge Time (min): 20									
Total Vol. Purged (gal/L): 2.54									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
8260	HCl	Cooled to 4°C	3

OBSERVATIONS / NOTES:

13:40 Phase Two electrical Storm.

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: HMF · NLP - KSC
Project No.: 112606773

[] Domestic Well Data
[] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: HMF-NLP-IW0001I-37.5
Sample Location: HMF KSC
Sampled By: Ron Linton
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 06-25-2015	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: ~~16:00~~ 16:30	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	
Method: RFPP								

PURGE DATA: ORP

Date: 06-25-2015	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other	
Method: RFPP	0	7.15	2756	23.23		4.75	1.48	-136.	16:00
Monitor Reading (ppm): 200-100	1.0	7.12	2727	23.26	6.04	3.72	1.46	-144.	16:05
Well Casing Diameter & Material	.5/1.5	7.10	2696	23.31	3.36	2.70	1.44	-146.	16:10
Type: PVC 2"	.5/2.0	7.09	2671	23.29	2.69	2.08	1.43	-148.	16:15
Total Well Depth (TD):	.5/2.5	7.08	2654	23.33	2.51	1.74	1.42	-152.	16:20
Static Water Level (WL):	.5/3.0	7.08	2643	23.36	2.50	1.55	1.41	-153.	16:25
One Casing Volume(gal/L):									
Start Purge (hrs): 16:00									
End Purge (hrs): 16:25									
Total Purge Time (min): 25									
Total Vol. Purged (gal/L): 3.0									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
8260	HCl	Cool to 4°c	3

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Ronald E Linton

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB #

PAGE 1 OF 1

Accutest Quote #

SKIFF#

Client / Reporting Information

Company Name: Tetra tech
Address: 661 Andersen dr.
City: Pittsburgh State: PA Zip: 15220
Project Contact: Rob Samsik E-mail:
Phone#: 412 921 7090
Sampler(s) Name(s) (Printed): Ronnie Linton

Project Information

Project Name: HMF - NLP - KSC
Street:
City: KSC State: FL
Project #: 112G06773
Fax #:
Client Purchase Order #:

Analytical Information: 8260

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe

Accutest Sample # / Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	Total # of Bottles	Other	None	HCl	NaOH	HNO3	H2SO4	NaOH+ZnA[illegible]	DI Water	MeOH	8260	Lab Use Only
~~HMF-NLP-MW0005I-20150625~~																
HMF-NLP-MW0005I-37.0-20150625	6-25	1135	RL	GW	3			✓							✓	
HMF-NLP-IW0004I-37.5-20150625	6-25	1245	RL	GW	3			✓							✓	
HMF-NLP-IW0001S-008.5-2015062[illegible]	6-25	1335	RL	GW	3			✓							✓	
HMF-NLP-IW0001I-37.5-20150625	6-25	1630	RL	GW	3			✓							✓	

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [x] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
1 Ronnie E Linton	6-26	2 [signature] ASE 6/26/15 1315	3 [signature] ASE 6/26/15 1420		4 [signature] (ASE) 6-27-15 0920
Relinquished by: 5	Date Time:	Received By: 6	Relinquished by: 7	Date Time:	Received By: 8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: / Cooler Temperature (s) Celsius: 3.2

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **IW-1S**	SAMPLE ID: **HMF-NLP-MW0001-008.5-20150923**	DATE: 9-23-15

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 3.00 ft. to 13.00 ft.	STATIC DEPTH TO WATER (ft): 0.75	PURGE PUMP TYPE OR BAILER: Peristaltic Pump Yes

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
_____ Liters

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
_____ Liters 0.0014 x 20 + 0.5 = 0.523

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGE INITIATED AT: 07 20	PURGE ENDED AT: 7:50	TOTAL VOLUME PURGED (Liters): 3.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
7:25	0	0	.200	95							
7:30	1	1	.100	.95	6.55	25.58	7231	1.08	2.23	-102.	clear
7:35	.5	1.5	.100	.95	6.39	25.69	7260	.77	2.20	-91.0	clear
7:40	.5	2.0	.100	.95	6.32	26.17	7248	.53	2.17	-103.9	clear
7:45	.5	2.5	.100	.95	6.29	26.30	7227	.36	2.15	-112.	clear
7:50	.5	3.0	.100	.95	6.28	26.30	7214	.27	2.17	-114.	clear

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Ron Linton Hous	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 7:55	SAMPLING ENDED AT: 8:00
PUMP OR TUBING DEPTH IN WELL (feet): 9.00 CL	SAMPLE PUMP FLOW RATE (mL per minute): .100	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type: _____	MS/MSD: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **IW-11**	SAMPLE ID: **HMF-NLP-MW0001-037.5-20150923**	DATE: 9-23-15

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 37.00 ft. to 42.00 ft.	STATIC DEPTH TO WATER (ft): .45	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
Liters 0.0014 x 47 + 0.5 =

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters 0.0014 x 47 + 0.5 = 0.56

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 37.0	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 37.	PURGE INITIATED AT: 8:15	PURGE ENDED AT: 8:40	TOTAL VOLUME PURGED (Liters): 3.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
8:15	0	0	.200	.45							
8:20	1	1	.100	.87	6.88	25.66	1451	.14	4.14	-126.	Yellow
8:25	.5	1.5	.100	.87	6.95	25.38	1542	.06	2.74	-129.	Yellowish
8:30	.5	2.0	.100	.87	6.95	25.35	1579	.06	2.78	-129.5	Yellowish
8:35	.5	2.5	.100	.87	6.95	25.33	1592	.05	2.79	-128.	Clear
8:40	.5	3.0	.100	.87	6.96	25.34	1602	.05	2.17	-117.	Clear

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Ron Cintron Haus	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 8:45	SAMPLING ENDED AT: 8:50
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	MS/MSD: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **IW-1D**	SAMPLE ID: **HMF-NLP-MW0001-051.5-20150923**	DATE: 9-23-15

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 48.00 ft. to 53.00 ft.	STATIC DEPTH TO WATER (ft): 49	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
_____ Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
_____ Liters 0.0014 x 58. + 0.5 = 0.58

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 50.	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 50.	PURGE INITIATED AT: 9:10	PURGE ENDED AT: 9:35	TOTAL VOLUME PURGED (Liters): 3.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
9:10	0	0	.200	.49							
9:15	1	1	.100	.64	7.05	25.22	577	7.76	1.65	-54.	clear
9:20	.5	1.5	.100	.64	6.87	25.05	771	.30	1.64	-83.	clear
9:25	.5	2.0	.100	.65	6.80	24.91	1080	.12	2.10	-104.	clear
9:30	.5	2.5	.100	.65	6.77	24.98	1450	.07	2.26	-113.	clear
9:35	.5	3.0	.100	.65	6.78	25.03	1638	.06	2.30	-117.	clear

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Ron Linton Haus	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 9:40	SAMPLING ENDED AT: 9:45
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	MS/MSD: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **IW-4I**	SAMPLE ID: **HMF-NLP-MW0004-037.5-20150923**	DATE: 9-23-15

PURGING DATA

WELL DIAMETER (in): 1	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 35.00 ft. to 40.00 ft.	STATIC DEPTH TO WATER (ft): 3.46	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)

Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

Liters 0.0014 x 45 + 0.5 = 0.56

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 37.	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 37.	PURGE INITIATED AT: 10:05	PURGE ENDED AT: 10:30	TOTAL VOLUME PURGED (Liters): ~~10.30~~ 3.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
10:05	0	0	.200	3.46							
10:10	1	1	.100	4.35	6.85	26.07	4128	3.78	41.60	-10.4	clear
10:15	.5	1.5	.100	4.18	6.89	26.06	9321	.56	6.95	-23.	clear
10:20	.5	2.0	.100	4.18	6.72	26.18	10400	.37	3.92	-16.8	clear
10:25	.5	2.5	.100	4.19	6.76	26.08	10624	.34	4.56	-13.	clear
10:30	.5	3.0	.100	4.20	6.76	26.01	10679	.32	4.30	-10.	clear

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Ron Linton Hanz	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 10:35	SAMPLING ENDED AT: 10:40
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	MS/MSD: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **MW-5I**	SAMPLE ID: **HMF-MW0005-037.5-20150923**	DATE: 9-23-15

PURGING DATA

WELL DIAMETER (in): 1	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 35.00 ft. to 40.00 ft.	STATIC DEPTH TO WATER (ft): 2.96	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)

Liters

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

Liters 0.0014 x 45 + 0.5 = 0.56

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 37.	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 37.	PURGE INITIATED AT: 11:00	PURGE ENDED AT: 11:25	TOTAL VOLUME PURGED (Liters): 3.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
11:00	0	0	.200	2.96							
11:05	1	1	.100	3.60	7.07	26.33	9020	2.56	7.55	10.9	clear
11:10	.5	1.5	.100	3.61	6.98	26.35	9002	.41	6.59	9.5	clear
11:15	.5	2.0	.100	3.62	6.95	26.26	8993	.27	4.86	11.0	clear
11:20	.5	2.5	.100	3.62	6.94	26.23	8979	.25	5.07	12.4	clear
11:25	.5	3.0	.100	3.62	6.94	26.13	8945	.21	5.20	14.0	clear

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Ron Linton Hans	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 11:25	SAMPLING ENDED AT: 11:30
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	MS/MSD: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **MW-6I**	SAMPLE ID: **HMF-MW0006-037.5-20150923**	DATE: 9-23-15

PURGING DATA

WELL DIAMETER (in): 1	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 35.00 ft. to 40.00 ft.	STATIC DEPTH TO WATER (ft): .02	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)

_____ Liters

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

_____ Liters 0.0014 x 45 + 0.5 = 0.56

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 37.	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 37.	PURGE INITIATED AT: 11:50	PURGE ENDED AT: 12:5	TOTAL VOLUME PURGED (Liters): 3.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
11:50	0	0	.200	.02							
11:55	.5	.5	.100	1.51	7.57	28.53	5444	6.69	64.8	34.7	murk
12:00	.5	1.5	.100	3.71	7.43	26.06	4845	.47	42.	-150.	murk
12:05	.5	2.0	.100	5.60	7.40	26.47	4818	4.09	27.	-125.	murk
12:10	.5	2.5	.100	7.81	7.39	26.67	4874	2.53	16.	-125.	clear
12:15	.5	3.0	.100	7.88	7.38	26.83	4973	.59	10.0	-138.	clear

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Ron Linton-Hans	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 12:20	SAMPLING ENDED AT: 12:25
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type: _____	MS/MSD: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **MW-9I**	SAMPLE ID: **HMF-MW0009-037.5-20150923**	DATE: 9-23-15

PURGING DATA

WELL DIAMETER (in): 1	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 35.00 ft. to 40.00 ft.	STATIC DEPTH TO WATER (ft): 2.02	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
Liters

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters 0.0014 × 45 + 0.5 = 0.56

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGE INITIATED AT: 12:40	PURGE ENDED AT: 13:05	TOTAL VOLUME PURGED (Liters): 3.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
12:40	0	0	.200	2.02							
12:45	1	1	.100	3.64	7.38	26.78	6019	2.49	28.2	-162.	clear
12:50	.5	1.5	.100	3.80	7.23	26.62	5889	.23	20.	-147.	clear
12:55	.5	2.0	.100	3.75	7.14	26.54	5959	.17	12.	-144.	clear
13:00	.5	2.5	.100	3.75	7.03	26.25	6175	.14	10.	-146.	clear
13:05	.5	3.0	.100	3.75	7.03	26.28	6137	.14	10.	-141.	clear

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Ron Linton Hans	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 13:05	SAMPLING ENDED AT: 13:10
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	MS/MSD: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**	
WELL NO: **MW-8I**	SAMPLE ID: **HMF-MW0008-037.5-20150923**	DATE: 9-23-15

PURGING DATA

WELL DIAMETER (in): 1	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 35.00 ft. to 40.00 ft.	STATIC DEPTH TO WATER (ft): 1.28	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)

Liters

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

Liters 0.0014 x 45 + 0.5 = 0.56

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGE INITIATED AT: 13:30	PURGE ENDED AT: 13:55	TOTAL VOLUME PURGED (Liters): 3.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
13:30	0	0	.200	1.28							
13:35	1	1	.100	3.63	7.95	30.99	1242	5.93	25.	-68.5	clear
13:40	.5	1.5	.100	5.20	7.80	28.26	1254	1.67	20.	-66.	clear
13:45	.5	2.0	.100	5.70	7.77	27.52	1222	.80	16.	-70.	clear
13:50	.5	2.5	.100	9.30	7.78	26.81	1198	.62	11.	-84.	clear
13:55	.5	3.0	.100	10.30	7.72	26.42	1188	.53	9.0	-106.	clear

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Ron Linton Hrus	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 14:00	SAMPLING ENDED AT: 14:05
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	MS/MSD: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

SITE NAME: **Hypergol Maintenance Facility (HMF)**	SITE LOCATION: **John F. Kennedy Space Center (KSC)**
WELL NO: **MW-7I**	SAMPLE ID: **HMF-MW0007-037.5-20150923** DATE: 9-23-15

PURGING DATA

WELL DIAMETER (in): 1	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 35.00 ft. to 40.00 ft.	STATIC DEPTH TO WATER (ft): .02	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
__________ Liters

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
__________ Liters 0.0014 × 45 + 0.5 = 0.56

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGE INITIATED AT: 14:30	PURGE ENDED AT: 15:00	TOTAL VOLUME PURGED (Liters): 3.5

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
14:30	0	0	.200	.02							
14:35	1	1	.100	2.09	7.68	31.28	19021	.37	40.	-157.	murky
14:40	.5	1.5	.100	2.90	7.60	26.51	19345	.30	15.	-161.	murk
14:50	1	2.5	.100	3.09	7.61	26.63	21119	.17	7.90	-167.	clear
14:55	.5	3.0	.100	3.15	7.56	26.74	21119	.17	7.91	-161.	clear
15:00	.5	3.5	.100	3.20	7.56	26.96	21254	.17	7.10	-156.	clear

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ [signature]	SAMPLER(S) SIGNATURES: [signature]	SAMPLING INITIATED AT: 15:00	SAMPLING ENDED AT: 15:05
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type:	MS/MSD: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
PP	3	CG	40 mL	HCL	NONE	<2	Select VOCs (TCFM) /8260B	RFPP

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Accutest Laboratories Southeast
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
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www.accutest.com

Accutest JOB # | PAGE 1 OF 1

Accutest Quote # | SKIFF#

Client / Reporting Information	Project Information
Company Name: Tetra Tech MWS	Project Name: KSC - HMF
Address: 661 Andersen Drive	Street:
City: Pittsburgh State: PA Zip:	City: Kennedy Space Center State: FL
Project Contact: Rob Simcik E-mail:	Project #: 112G06773
Phone#: 412 921 7090	Fax #:
Sampler(s) Name(s) (Printed): Skip V, Ron Linton	Client Purchase Order #:

Analytical Information: 8260 TCLP; TCLP only

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe

Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH-ZNAC	DI WATER	MEOH	LAB USE ONLY
	HMF-NLP-MW0001-0285-20150923	23	800	RL	GW	3			X							
	HMF-NLP-MW0001-0375-20150923	23	845	RL	GW	3			X							
	HMF-NLP-MW0001-0575-20150923	23	945	RL	GW	3			X							
	HMF-NLP-MW0004-0375-20150923	23	1040	RL	GW	3			X							
	HMF-MW0005-0375-20150923	23	1130	RL	GW	3			X							
	HMF-MW0006-0375-20150923	23	1225	RL	GW	3			X							
	HMF-MW0007-0375-20150923	23	1505	RL	GW	3			X							
	HMF-MW0008-0375-20150923	23	1405	RL	GW	3			X							
	HMF-MW0009-0375-20150923	23	1310	RL	GW	3			X							

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [X] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Cool to 4°C

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by :	Date Time:	Received By:
1	9-25 1350	2 FedEx	3		4
Relinquished by:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
5		6	7		8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius: _____

APPENDIX D

ANALYTICAL RESULTS

GROUNDWATER MONITORING EVENTS

- **111th MONTH: DECEMBER 2014 – SDG FA21050**
- **114th MONTH: MARCH 2015 – SDG FA23260**
- **117th MONTH: JUNE 2014 – SDG FA25567**
- **120th MONTH: SEPTEMBER 2015 – SDG FA27924**

- **Full analytical reports (SDG packages) provided on project CD**

111th MONTH: DECEMBER 2014 – SDG FA21050

Southeast
ACCUTEST LABORATORIES

12/21/15

Technical Report for

Tetra Tech NUS

HMF

112G02382

Accutest Job Number: FA21050

Sampling Date: 12/23/14

Report to:

Tetra Tech, NUS

Mark.Jonnet@tetratech.com

ATTN: Mark Jonnet

Total number of pages in report: **13**

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (2937), TX (T104704404), PA (68-03573), VA (460177), AK, AR, GA, KY, MA, NV, OK, UT, WA

Sections: 1 2 3 4 5

Table of Contents

Sample Summary

Tetra Tech NUS

Job No: FA21050

HMF
Project No: 112G02382

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA21050-1	12/23/14	13:00	SV	12/24/14	AQ	Ground Water	HMF-NLP-MW0001-037.5-20141223
FA21050-2	12/23/14	13:55	SV	12/24/14	AQ	Ground Water	HMF-NLP-MW0001-008.5-20141223
FA21050-3	12/23/14	14:45	SV	12/24/14	AQ	Ground Water	HMF-NLP-MW0004-037.5-20141223
FA21050-4	12/23/14	15:45	SV	12/24/14	AQ	Ground Water	HMF-MW0005-037.5-20141223

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FA21050

Site: HMF **Report Date:** 1/7/2015 3:06:56 PM

4 Sample(s) were collected on 12/23/2014 and were received at Accutest SE on 12/24/2014 properly preserved, at 2.8 Deg. C and intact. These Samples received an Accutest job number of FA21050. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: AQ **Batch ID:** VB4172

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

VB4172-BS: No MS/MSD available for this run.

Matrix: AQ **Batch ID:** VB4173

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA21114-1MS, FA21114-1MSD were used as the QC samples indicated.

Matrix: AQ **Batch ID:** VB4174

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA21114-17MS, FA21114-17MSD were used as the QC samples indicated.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Date: January 7, 2015

Manual Integration Summary

Lab Sample ID	Analysis Type	File ID	Manual Integrations
FA21114-17MS	MSVOA	B103017.D	tert-Butylbenzene
VB4165-IC4165	MSVOA	B102752.D	Trichlorofluoromethane

2 Manual Integrations were found for FA21050

Summary of Hits

Job Number: FA21050
Account: Tetra Tech NUS
Project: HMF
Collected: 12/23/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA21050-1	**HMF-NLP-MW0001-037.5-20141223**					
No hits reported in this sample.						
FA21050-2	**HMF-NLP-MW0001-008.5-20141223**					
Trichlorofluoromethane		54.9	4.0	1.0	ug/l	SW846 8260B
FA21050-3	**HMF-NLP-MW0004-037.5-20141223**					
Trichlorofluoromethane		75.1	4.0	1.0	ug/l	SW846 8260B
FA21050-4	**HMF-MW0005-037.5-20141223**					
Trichlorofluoromethane		506	20	5.0	ug/l	SW846 8260B

Southeast ACCUTEST LABORATORIES

4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	HMF-NLP-MW0001-037.5-20141223		
Lab Sample ID:	FA21050-1	**Date Sampled:**	12/23/14
Matrix:	AQ - Ground Water	**Date Received:**	12/24/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B102948.D	1	12/31/14	DP	n/a	n/a	VB4172
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	100%		85-112%
460-00-4	4-Bromofluorobenzene	98%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-MW0001-008.5-20141223		
Lab Sample ID:	FA21050-2	**Date Sampled:**	12/23/14
Matrix:	AQ - Ground Water	**Date Received:**	12/24/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B102978.D	2	01/02/15	DP	n/a	n/a	VB4173
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	54.9	4.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		83-118%
17060-07-0	1,2-Dichloroethane-D4	111%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	100%		83-118%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-MW0004-037.5-20141223		
Lab Sample ID:	FA21050-3	**Date Sampled:**	12/23/14
Matrix:	AQ - Ground Water	**Date Received:**	12/24/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B102979.D	2	01/02/15	DP	n/a	n/a	VB4173
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	75.1	4.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-MW0005-037.5-20141223		
Lab Sample ID:	FA21050-4	**Date Sampled:**	12/23/14
Matrix:	AQ - Ground Water	**Date Received:**	12/24/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B102951.D	1	12/31/14	DP	n/a	n/a	VB4172
Run #2	B102997.D	10	01/05/15	DP	n/a	n/a	VB4174

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	506 [a]	20	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%	102%	83-118%
17060-07-0	1,2-Dichloroethane-D4	103%	99%	79-125%
2037-26-5	Toluene-D8	102%	98%	85-112%
460-00-4	4-Bromofluorobenzene	99%	102%	83-118%

(a) Result is from Run# 2

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Southeast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # FA21050 PAGE 1 OF 1

Accutest Quote # | SKIFF#

Client / Reporting Information

Company Name: tetra tech NUS
Address: 661 Andersen Drive
City: Pittsburgh State: PA Zip:
Project Contact: Rob Simcik E-mail:
Phone#: 412 921 7056
Sampler(s) Name(s) (Printed): SEVT

Project Information

Project Name: KSC - HMF
Street:
City: Kennedy Space Center State:
Project #: 117602388
Fax #:
Client Purchase Order #:

Analytical Information: 8260 TCFM / 1100

Matrix Codes: DW - Drinking Water, GW - Ground Water, WW - Water, SW - Surface Water, SO - Soil, SL - Sludge, OI - Oil, LIQ - Other Liquid, AIR - Air, SOL - Other Solid, WP - Wipe

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	Total # of Bottles	Other	None	HCl	NaOH	HNO3	H2SO4	NaOH-ZnAc	DI Water	MeOH	8260 TCFM / 1100	LAB USE ONLY
1	HMF-NLP-MW0001-0325-20141223	12-23	1201	SV	GW	3			X							X	
2	HMF-NLP-MW0001-0085-20141223	12-23	1355	SV	GW	3			X							X	
3	HMF-NLP-MW0004-0325-20141223	12-23	1445	SV	GW	3			X							X	
4	HMF-MW0005-0275-20141223	12-23	1541	SV	GW	5			X							X	

TURNAROUND TIME (Business Days) — Approved By: / Rush Code

- [x] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks: Cool to 4°C

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
1 [signature]	12/24 1040	2 [signature] ALSE	3 [signature] ALSE	12/24/14 11:45	4 [signature] (ALSE) 11:45
Relinquished by: 5	Date Time:	Received By: 6	Relinquished by: 7	Date Time:	Received By: 8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: 1 Cooler Temperature (s) Celsius: 2.8

5.1 5

FA21050: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA 21050 CLIENT: TETRA TECH PROJECT: USC-LIMF

DATE/TIME RECEIVED: 12-24-14 11:45 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: FEDEX UPS (ACCUTEST COURIER) DELIVERY OTHER:

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM_____ 5-GRAM_____

NUMBER OF 5035 FIELD KITS ? _____

NUMBER OF LAB FILTERED METALS ? _____

pH PAPER LOT#s WIDE RANGE A036122 NARROW RANGE HC421754 OTHER (specify) 405-230010

SUMMARY OF COMMENTS:

TEMPERATURE INFORMATION

- [ ] IR THERM ID 1 CORR. FACTOR +0.4
- [ ] OBSERVED TEMPS: 2.4
- [ ] CORRECTED TEMPS: 2.8

SAMPLE INFORMATION

- [ ] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] 5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
- [ ] BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] RESIDUAL CHLORINE PRESENT LOT#_____

{APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

TECHNICIAN SIGNATURE/DATE 12-24-14 REVIEWER SIGNATURE/DATE 12-24-14

NF 10/14

receipt confirmation 102914.xls

5.1 5

FA21050: Chain of Custody

Page 2 of 2

114th MONTH: MARCH 2015 – SDG FA23260

Southeast
ACCUTEST LABORATORIES

12/21/15

Technical Report for

Tetra Tech NUS

HMF

112G02382

Accutest Job Number: FA23260

Sampling Date: 03/31/15

Report to:

Tetra Tech, NUS

Mark.Jonnet@tetratech.com

ATTN: Mark Jonnet

Total number of pages in report: **13**

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (2937), TX (T104704404), PA (68-03573), VA (460177), AK, AR, GA, KY, MA, NV, OK, UT, WA

Sections: 1 2 3 4 5

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Sample Summary

Tetra Tech NUS

Job No: FA23260

HMF
Project No: 112G02382

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA23260-1	03/31/15	10:30	RL	04/01/15	AQ	Ground Water	HMF-NLP-MW0004-037.5-2015331
FA23260-2	03/31/15	11:25	RL	04/01/15	AQ	Ground Water	HMF-NLP-MW0005-037.7-2015331
FA23260-3	03/31/15	12:45	RL	04/01/15	AQ	Ground Water	HMF-NLP-MW0001I-037.5-2015331
FA23260-4	03/31/15	13:45	RL	04/01/15	AQ	Ground Water	HMF-NLP-MW0001S-008.5-2015331

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FA23260

Site: HMF **Report Date:** 4/15/2015 3:17:32 PM

4 Sample(s) were collected on 03/31/2015 and were received at Accutest SE on 04/01/2015 properly preserved, at 3.6 Deg. C and intact. These Samples received an Accutest job number of FA23260. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: AQ **Batch ID:** VP1182

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA23436-2MS, FA23436-2MSD were used as the QC samples indicated.

FA23260-3: Sample was treated with an anti-foaming agent.

Matrix: AQ **Batch ID:** VP1183

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA23471-6MS, FA23471-6MSD were used as the QC samples indicated.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____ Date: April 15, 2015

Kim Benham, Client Services (signature on file)

Manual Integration Summary

Lab Sample ID	Analysis Type	File ID	Manual Integrations
FA23260-3	MSVOA	P31781.D	Trichlorofluoromethane
FA23260-4	MSVOA	P31813.D	Trichlorofluoromethane
FA23436-2MS	MSVOA	P31783.D	Carbon Tetrachloride
FA23436-2MSD	MSVOA	P31784.D	Carbon Tetrachloride
FA23471-6MS	MSVOA	P31814.D	Carbon Tetrachloride
FA23471-6MSD	MSVOA	P31815.D	Carbon Tetrachloride
VP1161-IC1161	MSVOA	P31196.D	1,4-Dichlorobenzene, Dichlorodifluoromethane, Trichlorofluoromethane
VP1161-IC1161	MSVOA	P31197.D	Carbon Tetrachloride
VP1161-IC1161	MSVOA	P31198.D	Carbon Tetrachloride
VP1161-IC1161	MSVOA	P31200.D	Carbon Tetrachloride
VP1161-IC1161	MSVOA	P31201.D	Carbon Tetrachloride
VP1161-ICC1161	MSVOA	P31199.D	Carbon Tetrachloride
VP1161-ICV1161	MSVOA	P31203.D	Carbon Tetrachloride
VP1182-BS	MSVOA	P31760.D	Carbon Tetrachloride
VP1182-CC1161	MSVOA	P31759.D	Carbon Tetrachloride
VP1183-BS	MSVOA	P31791.D	Carbon Tetrachloride
VP1183-CC1161	MSVOA	P31790.D	Carbon Tetrachloride

17 Manual Integrations were found for FA23260

Summary of Hits

Job Number: FA23260
Account: Tetra Tech NUS
Project: HMF
Collected: 03/31/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA23260-1	**HMF-NLP-MW0004-037.5-2015331**					
Trichlorofluoromethane		3910	100	25	ug/l	SW846 8260B
FA23260-2	**HMF-NLP-MW0005-037.7-2015331**					
Trichlorofluoromethane		489	20	5.0	ug/l	SW846 8260B
FA23260-3	**HMF-NLP-MW0001I-037.5-2015331**					
Trichlorofluoromethane [a]		2.3	2.0	0.50	ug/l	SW846 8260B
FA23260-4	**HMF-NLP-MW0001S-008.5-2015331**					
Trichlorofluoromethane		81.4	10	2.5	ug/l	SW846 8260B

(a) Sample was treated with an anti-foaming agent.

Southeast ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	HMF-NLP-MW0004-037.5-2015331		
Lab Sample ID:	FA23260-1	**Date Sampled:**	03/31/15
Matrix:	AQ - Ground Water	**Date Received:**	04/01/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P31779.D	1	04/10/15	KM	n/a	n/a	VP1182
Run #2	P31811.D	50	04/13/15	KM	n/a	n/a	VP1183

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	3910 [a]	100	25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	97%	83-118%
17060-07-0	1,2-Dichloroethane-D4	105%	102%	79-125%
2037-26-5	Toluene-D8	98%	101%	85-112%
460-00-4	4-Bromofluorobenzene	105%	104%	83-118%

(a) Result is from Run# 2

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-MW0005-037.7-2015331		
Lab Sample ID:	FA23260-2	**Date Sampled:**	03/31/15
Matrix:	AQ - Ground Water	**Date Received:**	04/01/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P31780.D	1	04/10/15	KM	n/a	n/a	VP1182
Run #2	P31812.D	10	04/13/15	KM	n/a	n/a	VP1183

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	489 [a]	20	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%	99%	83-118%
17060-07-0	1,2-Dichloroethane-D4	105%	103%	79-125%
2037-26-5	Toluene-D8	100%	101%	85-112%
460-00-4	4-Bromofluorobenzene	104%	105%	83-118%

(a) Result is from Run# 2

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-MW0001I-037.5-2015331		
Lab Sample ID:	FA23260-3	**Date Sampled:**	03/31/15
Matrix:	AQ - Ground Water	**Date Received:**	04/01/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	P31781.D	1	04/10/15	KM	n/a	n/a	VP1182
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	2.3	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		83-118%
17060-07-0	1,2-Dichloroethane-D4	106%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	106%		83-118%

(a) Sample was treated with an anti-foaming agent.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-MW0001S-008.5-2015331		
Lab Sample ID:	FA23260-4	**Date Sampled:**	03/31/15
Matrix:	AQ - Ground Water	**Date Received:**	04/01/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P31782.D	1	04/10/15	KM	n/a	n/a	VP1182
Run #2	P31813.D	5	04/13/15	KM	n/a	n/a	VP1183

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	81.4 [a]	10	2.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%	102%	83-118%
17060-07-0	1,2-Dichloroethane-D4	106%	106%	79-125%
2037-26-5	Toluene-D8	100%	100%	85-112%
460-00-4	4-Bromofluorobenzene	105%	104%	83-118%

(a) Result is from Run# 2

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Southeast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # FA23260 PAGE 1 OF 1

Accutest Quote # | SKIFF#

Client / Reporting Information

Company Name: Tetra tech nus
Address: 661 Andersen dr.
City: Pittsburgh State: PA Zip: 2
Project Contact: Rob Samsik E-mail:
Phone#:
Sampler(s) Name(s) (Printed): Ronnie Linton

Project Information

Project Name: HMF-NLP-KSC
Street:
City: KSC m.I. State: FL
Project #: 112G02382
Fax #:
Client Purchase Order #:

Analytical Information

8260

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION OTHER	NONE	HCl	MeOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	8260	LAB USE ONLY
HMF-	NLP-MW0004-037.5-20153 31	3-31	10:30	RL	GW	3			✓							✓	1
HMF-	NLP-MW0005-037.7-20153 31	3-31	11:25	RL	GW	3			✓							✓	2
HMF-	NLP-MW0001I-037.5-2015331	3-31	12:45	RL	GW	3			✓							✓	3
HMF-	NLP-MW0001S-008.5-2015331	3-31	13:45	RL	GW	3			✓							✓	4

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [✓] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

cooled to 4°c

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
1 Ronnie L Linton	4/1/15 11:50	2 RSE	3 RSE 4/1/15 14:30		4
Relinquished by:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
5		6	7		8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius: 3-6

5.1 5

FA23260: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA23260 CLIENT: TetraTech PROJECT: HMF-NLP-ESC

DATE/TIME RECEIVED: 04-01-15 1430 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: FEDEX UPS (ACCUTEST COURIER) DELIVERY OTHER:

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [Y] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM_____ 5-GRAM_____

NUMBER OF 5035 FIELD KITS ? _____

NUMBER OF LAB FILTERED METALS ? _____

TEMPERATURE INFORMATION

- [ ] IR THERM ID 1 CORR. FACTOR -0.2
- [ ] OBSERVED TEMPS: 3.8
- [ ] CORRECTED TEMPS: 3.6

SAMPLE INFORMATION

- [ ] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] 5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
- [ ] BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] RESIDUAL CHLORINE PRESENT LOT#_____

{APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

pH PAPER LOT#s WIDE RANGE A036122 NARROW RANGE HC421754 OTHER (specify) 405-230010

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE 04/01/15 REVIEWER SIGNATURE/DATE 4-1-15

NF 10/14 receipt confirmation 102914.xls

5.1 5

FA23260: Chain of Custody

Page 2 of 2

117th MONTH: JUNE 2014 – SDG FA25567

Southeast
ACCUTEST LABORATORIES

12/21/15

Technical Report for

Tetra Tech NUS

HMF

112G06773

Accutest Job Number: FA25567

Sampling Date: 06/25/15

Report to:

Tetra Tech, NUS

Mark.Jonnet@tetratech.com

ATTN: Mark Jonnet

Total number of pages in report: **13**

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (2937), TX (T104704404), PA (68-03573), VA (460177), AK, AR, GA, KY, MA, NV, OK, UT, WA

Sections: 1 2 3 4 5

Table of Contents

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Sample Summary

Tetra Tech NUS

Job No: FA25567

HMF
Project No: 112G06773

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA25567-1	06/25/15	11:35	RL	06/27/15	AQ	Ground Water	HMF-NLP-MW0005I-37.0-20150625
FA25567-2	06/25/15	12:45	RL	06/27/15	AQ	Ground Water	HMF-NLP-IW0004I-37.5-20150625
FA25567-3	06/25/15	13:35	RL	06/27/15	AQ	Ground Water	HMF-NLP-IW0001S-008.5-20150625
FA25567-4	06/25/15	16:30	RL	06/27/15	AQ	Ground Water	HMF-NLP-IW0001I-37.5-20150625

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FA25567

Site: HMF **Report Date** 7/13/2015 10:43:18 AM

4 Samples were collected on 06/25/2015 and were received at Accutest SE on 06/27/2015 properly preserved, at 3.2 Deg. C and intact. These Samples received an Accutest job number of FA25567. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: AQ **Batch ID:** VB4320

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA25608-5MS, FA25608-5MSD were used as the QC samples indicated.

Matrix: AQ **Batch ID:** VI767

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA25541-15MS, FA25541-15MSD were used as the QC samples indicated.

Sample(s) FA25541-15MSD has surrogates outside control limits. Probable cause is due to matrix interference.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

_____ Date: July 13, 2015

Lovelie Metzgar, QA Officer (signature on file)

Manual Integration Summary

Lab Sample ID	Analysis Type	File ID	Manual Integrations
FA25541-15MS	MSVOA	I31366.D	Carbon Tetrachloride
FA25541-15MSD	MSVOA	I31367.D	Carbon Tetrachloride
FA25567-4	MSVOA	B106761.D	Trichlorofluoromethane
VB4317-IC4317	MSVOA	B106670.D	tert-Butylbenzene
VB4317-ICC4317	MSVOA	B106668.D	Methylcyclohexane
VB4320-CC4317	MSVOA	B106751.D	cis-1,2-Dichloroethylene
VI765-IC765	MSVOA	I31270.D	1,4-Dichlorobenzene, Acetone
VI765-IC765	MSVOA	I31271.D	Carbon Tetrachloride
VI765-IC765	MSVOA	I31272.D	Carbon Tetrachloride
VI765-IC765	MSVOA	I31274.D	Carbon Tetrachloride
VI765-IC765	MSVOA	I31275.D	Carbon Tetrachloride
VI765-ICC765	MSVOA	I31273.D	Carbon Tetrachloride
VI765-ICV765	MSVOA	I31281.D	Carbon Tetrachloride
VI767-BS	MSVOA	I31342.D	Carbon Tetrachloride
VI767-CC765	MSVOA	I31340.D	Carbon Tetrachloride

15 Manual Integrations were found for FA25567

Summary of Hits

Job Number: FA25567
Account: Tetra Tech NUS
Project: HMF
Collected: 06/25/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA25567-1	**HMF-NLP-MW0005I-37.0-20150625**					
Trichlorofluoromethane		377	20	5.0	ug/l	SW846 8260B
FA25567-2	**HMF-NLP-IW0004I-37.5-20150625**					
Trichlorofluoromethane		4670	100	25	ug/l	SW846 8260B
FA25567-3	**HMF-NLP-IW0001S-008.5-20150625**					
Trichlorofluoromethane		117	10	2.5	ug/l	SW846 8260B
FA25567-4	**HMF-NLP-IW0001I-37.5-20150625**					
Trichlorofluoromethane		0.86 I	2.0	0.50	ug/l	SW846 8260B

Southeast ACCUTEST LABORATORIES

4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	HMF-NLP-MW0005I-37.0-20150625		
Lab Sample ID:	FA25567-1	**Date Sampled:**	06/25/15
Matrix:	AQ - Ground Water	**Date Received:**	06/27/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I31361.D	1	07/08/15	WV	n/a	n/a	VI767
Run #2	B106758.D	10	07/08/15	WV	n/a	n/a	VB4320

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	377 [a]	20	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%	99%	83-118%
17060-07-0	1,2-Dichloroethane-D4	100%	104%	79-125%
2037-26-5	Toluene-D8	100%	104%	85-112%
460-00-4	4-Bromofluorobenzene	100%	110%	83-118%

(a) Result is from Run# 2

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-IW0004I-37.5-20150625		
Lab Sample ID:	FA25567-2	**Date Sampled:**	06/25/15
Matrix:	AQ - Ground Water	**Date Received:**	06/27/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I31362.D	1	07/08/15	WV	n/a	n/a	VI767
Run #2	B106759.D	50	07/08/15	WV	n/a	n/a	VB4320

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	4670 [a]	100	25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	104%	106%	79-125%
2037-26-5	Toluene-D8	97%	105%	85-112%
460-00-4	4-Bromofluorobenzene	99%	106%	83-118%

(a) Result is from Run# 2

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-IW0001S-008.5-20150625		
Lab Sample ID:	FA25567-3	**Date Sampled:**	06/25/15
Matrix:	AQ - Ground Water	**Date Received:**	06/27/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I31363.D	1	07/08/15	WV	n/a	n/a	VI767
Run #2	B106760.D	5	07/08/15	WV	n/a	n/a	VB4320

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	117 [a]	10	2.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%	102%	83-118%
17060-07-0	1,2-Dichloroethane-D4	105%	106%	79-125%
2037-26-5	Toluene-D8	99%	105%	85-112%
460-00-4	4-Bromofluorobenzene	99%	97%	83-118%

(a) Result is from Run# 2

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-IW0001I-37.5-20150625		
Lab Sample ID:	FA25567-4	**Date Sampled:**	06/25/15
Matrix:	AQ - Ground Water	**Date Received:**	06/27/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B106761.D	1	07/08/15	WV	n/a	n/a	VB4320
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	0.86	2.0	0.50	ug/l	I

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		83-118%
17060-07-0	1,2-Dichloroethane-D4	106%		79-125%
2037-26-5	Toluene-D8	104%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Southeast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # FA25567 PAGE 1 OF 1

Accutest Quote # | SKIFF#

Client / Reporting Information

Company Name: Tetra Tech
Address: 661 Andersen dr.
City: Pittsburgh State: PA Zip: 15220
Project Contact: Rob Samsik E-mail:
Phone#: 412 921 7090
Sampler(s) Name(s) (Printed): Ronnie Linton

Project Information

Project Name: HMF - NLP - KSC
Street:
City: KSC State: FL
Project #: 112G06773
Fax #:
Client Purchase Order #:

Analytical Information

8260

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH-ZnAc	DI WATER	MeOH	LAB USE ONLY
~~HMF-NLP-MW0005I-20150625~~																
HMF-NLP-MW0005I-37.0-20150625		6-25	1135	RL	GW	3			✓							
HMF-NLP-IW0004I-37.5-20150625		6-25	1245	RL	GW	3			✓							
HMF-NLP-IW0015-008.5-20150625		6-25	1335	RL	GW	3			✓							
HMF-NLP-IW0001I-37.5-20150625		6-25	1630	RL	GW	3			✓							

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [x] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
1 Ronnie E Linton	6-26	2 [signature] NSE 6/26/15 1315	3 [signature] NSE 6/26/15 1420		4 Courier (Date) 6-27-15
Relinquished by:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
5		6	7		8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius: 3-2

5.1 5

FA25567: Chain of Custody
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ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA 25567 CLIENT: TETRA TECH PROJECT: HME

DATE/TIME RECEIVED: 6-27-15 08:00 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: FEDEX UPS (ACCUTEST COURIER) DELIVERY OTHER:

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET

TEMPERATURE INFORMATION

- [ ] IR THERM ID 1 CORR. FACTOR -0.2
- [ ] OBSERVED TEMPS: 3.4
- [ ] CORRECTED TEMPS: 3.2

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] 5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
- [ ] BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] RESIDUAL CHLORINE PRESENT LOT#

{APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM 5-GRAM

NUMBER OF 5035 FIELD KITS ?

NUMBER OF LAB FILTERED METALS ?

pH PAPER LOT#s WIDE RANGE A036122 NARROW RANGE HC421754 OTHER (specify) 405-230010

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE R 6-27-15 REVIEWER SIGNATURE/DATE Jen Zen 6-27-15

NF 10/14

receipt confirmation 102914.xls

5.1 5

FA25567: Chain of Custody

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120th MONTH: SEPTEMBER 2015 – SDG FA27924

Southeast
ACCUTEST LABORATORIES

12/21/15

Technical Report for

Tetra Tech NUS

HMF

112G06773

Accutest Job Number: FA27924

Sampling Date: 09/23/15

Report to:

Tetra Tech, NUS

Mark.Jonnet@tetratech.com

ATTN: Mark Jonnet

Total number of pages in report: **19**

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (2937), TX (T104704404), PA (68-03573), VA (460177), AK, AR, GA, KY, MA, NV, OK, UT, WA

Sections: 1 2 3 4 5

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Sample Summary

Tetra Tech NUS

Job No: FA27924

HMF
Project No: 112G06773

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA27924-1	09/23/15	08:00	SVRL	09/26/15	AQ	Ground Water	HMF-NLP-MW0001-008.5-20150923
FA27924-2	09/23/15	08:45	SVRL	09/26/15	AQ	Ground Water	HMF-NLP-MW0001-037.5-20150923
FA27924-3	09/23/15	09:45	SVRL	09/26/15	AQ	Ground Water	HMF-NLP-MW0001-051.5-20150923
FA27924-4	09/23/15	10:40	SVRL	09/26/15	AQ	Ground Water	HMF-NLP-MW0004-037.5-20150923
FA27924-5	09/23/15	11:30	SVRL	09/26/15	AQ	Ground Water	HMF-MW0005-037.5-20150923
FA27924-6	09/23/15	12:25	SVRL	09/26/15	AQ	Ground Water	HMF-MW0006-037.5-20150923
FA27924-7	09/23/15	15:05	SVRL	09/26/15	AQ	Ground Water	HMF-MW0007-037.5-20150923
FA27924-8	09/23/15	14:05	SVRL	09/26/15	AQ	Ground Water	HMF-MW0008-037.5-20150923
FA27924-9	09/23/15	13:10	SVRL	09/26/15	AQ	Ground Water	HMF-MW0009-037.5-20150923

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FA27924

Site: HMF **Report Date:** 10/8/2015 3:10:01 PM

9 Sample(s) were collected on 09/23/2015 and were received at Accutest SE on 09/26/2015 properly preserved, at 3 Deg. C and intact. These Samples received an Accutest job number of FA27924. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: AQ **Batch ID:** VB4388

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA27924-3MS, FA27924-3MSD were used as the QC samples indicated.

Matrix: AQ **Batch ID:** VB4389

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA27924-4MS, FA27924-4MSD were used as the QC samples indicated.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____ Date: October 8, 2015

Kim Benham, Client Services (signature on file)

Manual Integration Summary

Lab Sample ID	Analysis Type	File ID	Manual
FA27924-3MS	MSVOA	B108635.D	Trichlorofluoromethane
FA27924-3MSD	MSVOA	B108636.D	Trichlorofluoromethane
FA27924-4MS	MSVOA	B108678.D	Trichlorofluoromethane
FA27924-5	MSVOA	B108668.D	Trichlorofluoromethane
VB4382-IC4382	MSVOA	B108459.D	1,3-Butadiene, Isobutyl Alcohol, Methyl Methacrylate, Trichlorofluoromethane
VB4382-IC4382	MSVOA	B108460.D	1,3-Butadiene, Acetonitrile, Ethyl Alcohol, Isobutyl Alcohol, Methyl Methacrylate, tert-Butylbenzene, Trichlorofluoromethane
VB4382-IC4382	MSVOA	B108461.D	1,3-Butadiene, Acetonitrile, Chloroprene, Ethyl Alcohol, Isobutyl Alcohol, Methyl Methacrylate, tert-Butylbenzene
VB4382-IC4382	MSVOA	B108463.D	1,3-Butadiene, Methyl Methacrylate, tert-Butylbenzene, Trichlorofluoromethane
VB4382-IC4382	MSVOA	B108464.D	Acetonitrile, Ethyl Alcohol, Isobutyl Alcohol, Methyl Methacrylate, tert-Butylbenzene, Trichlorofluoromethane
VB4382-ICC4382	MSVOA	B108462.D	1,3-Butadiene, Acetonitrile, Ethyl Alcohol, Methyl Methacrylate, Trichlorofluoromethane
VB4382-ICV4382	MSVOA	B108466.D	Cyclohexanone, tert-Butylbenzene, Trichlorofluoromethane
VB4388-BS	MSVOA	B108626.D	Trichlorofluoromethane
VB4389-BS	MSVOA	B108664.D	Trichlorofluoromethane
VB4389-IC4389	MSVOA	B108656.D	1,2-Dichlorotrifluoroethane, Tert-Butyl Alcohol
VB4389-IC4389	MSVOA	B108657.D	Ethyl Alcohol, Trichlorofluoromethane
VB4389-IC4389	MSVOA	B108660.D	tert-Butylbenzene, Trichlorofluoromethane
VB4389-IC4389	MSVOA	B108661.D	tert-Butylbenzene, Trichlorofluoromethane
VB4389-ICV4389	MSVOA	B108663.D	tert-Butylbenzene, Trichlorofluoromethane

18 Manual Integrations were found for FA27924

Summary of Hits

Job Number: FA27924
Account: Tetra Tech NUS
Project: HMF
Collected: 09/23/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA27924-1	**HMF-NLP-MW0001-008.5-20150923**					
Trichlorofluoromethane		52.0	2.0	0.50	ug/l	SW846 8260B
FA27924-2	**HMF-NLP-MW0001-037.5-20150923**					
No hits reported in this sample.						
FA27924-3	**HMF-NLP-MW0001-051.5-20150923**					
Trichlorofluoromethane		3.1	2.0	0.50	ug/l	SW846 8260B
FA27924-4	**HMF-NLP-MW0004-037.5-20150923**					
Trichlorofluoromethane		5410	400	100	ug/l	SW846 8260B
FA27924-5	**HMF-MW0005-037.5-20150923**					
Trichlorofluoromethane		568	20	5.0	ug/l	SW846 8260B
FA27924-6	**HMF-MW0006-037.5-20150923**					
No hits reported in this sample.						
FA27924-7	**HMF-MW0007-037.5-20150923**					
No hits reported in this sample.						
FA27924-8	**HMF-MW0008-037.5-20150923**					
No hits reported in this sample.						
FA27924-9	**HMF-MW0009-037.5-20150923**					
No hits reported in this sample.						

Southeast ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	HMF-NLP-MW0001-008.5-20150923		
Lab Sample ID:	FA27924-1	**Date Sampled:**	09/23/15
Matrix:	AQ - Ground Water	**Date Received:**	09/26/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B108628.D	1	10/06/15	WV	n/a	n/a	VB4388
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	52.0	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	99%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-MW0001-037.5-20150923		
Lab Sample ID:	FA27924-2	**Date Sampled:**	09/23/15
Matrix:	AQ - Ground Water	**Date Received:**	09/26/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B108629.D	1	10/06/15	WV	n/a	n/a	VB4388
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	98%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-MW0001-051.5-20150923		
Lab Sample ID:	FA27924-3	**Date Sampled:**	09/23/15
Matrix:	AQ - Ground Water	**Date Received:**	09/26/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B108630.D	1	10/06/15	WV	n/a	n/a	VB4388
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	3.1	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	101%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-NLP-MW0004-037.5-20150923		
Lab Sample ID:	FA27924-4	**Date Sampled:**	09/23/15
Matrix:	AQ - Ground Water	**Date Received:**	09/26/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B108667.D	200	10/07/15	WV	n/a	n/a	VB4389
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	5410	400	100	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		83-118%
17060-07-0	1,2-Dichloroethane-D4	103%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	100%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-MW0005-037.5-20150923		
Lab Sample ID:	FA27924-5	**Date Sampled:**	09/23/15
Matrix:	AQ - Ground Water	**Date Received:**	09/26/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B108668.D	10	10/07/15	WV	n/a	n/a	VB4389
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	568	20	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	107%		79-125%
2037-26-5	Toluene-D8	104%		85-112%
460-00-4	4-Bromofluorobenzene	104%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-MW0006-037.5-20150923		
Lab Sample ID:	FA27924-6	**Date Sampled:**	09/23/15
Matrix:	AQ - Ground Water	**Date Received:**	09/26/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B108633.D	1	10/06/15	WV	n/a	n/a	VB4388
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	102%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-MW0007-037.5-20150923		
Lab Sample ID:	FA27924-7	**Date Sampled:**	09/23/15
Matrix:	AQ - Ground Water	**Date Received:**	09/26/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B108640.D	1	10/06/15	WV	n/a	n/a	VB4388
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		83-118%
17060-07-0	1,2-Dichloroethane-D4	105%		79-125%
2037-26-5	Toluene-D8	101%		85-112%
460-00-4	4-Bromofluorobenzene	105%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-MW0008-037.5-20150923		
Lab Sample ID:	FA27924-8	**Date Sampled:**	09/23/15
Matrix:	AQ - Ground Water	**Date Received:**	09/26/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B108644.D	1	10/06/15	WV	n/a	n/a	VB4388
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	102%		85-112%
460-00-4	4-Bromofluorobenzene	109%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HMF-MW0009-037.5-20150923		
Lab Sample ID:	FA27924-9	**Date Sampled:**	09/23/15
Matrix:	AQ - Ground Water	**Date Received:**	09/26/15
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	HMF		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B108649.D	1	10/06/15	WV	n/a	n/a	VB4388
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	103%		79-125%
2037-26-5	Toluene-D8	104%		85-112%
460-00-4	4-Bromofluorobenzene	104%		83-118%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # FA27924 PAGE 1 OF 1

Accutest Quote #

SKIFF#

Client / Reporting Information

Company Name: Tetra Tech Nus
Address: 661 Andersen Drive
City: Pittsburgh State: PA Zip:
Project Contact: Rob Simcik E-mail:
Phone#: 412 921 7090
Sampler(s) Name(s) (Printed): Skip V. / Ron Linton

Project Information

Project Name: KSC - HMF
Street:
City: Kennedy Space Center State:
Project #: 112G06723
Fax #:
Client Purchase Order #:

Analytical Information: 8260 TCEM / TCEM only

Accutest Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	8260 TCEM
1	HMF-DLP-MW0001-0095-201509	23	800	RL	GW	3			X							X
2	HMF-DLP-MW0001-0375-201509	23	845	RL	GW	3			X							X
3	HMF-DLP-MW0001-0575-201509	23	945	RL	GW	3			X							X
4	HMF-DLP-MW0004-0375-201509	23	1040	RL	GW	3			X							X
5	HMF-MW0005-0375-201509	23	1130	RL	GW	3			X							X
6	HMF-MW0006-0375-201509	23	1225	RL	GW	3			X							X
7	HMF-MW0007-0375-201509	23	1505	RL	GW	3			X							X
8	HMF-MW0008-0375-201509	23	1405	RL	GW	3			X							X
9	HMF-MW0009-0375-201509	23	1310	RL	GW	3			X							X

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

LAB USE ONLY

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [x] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Cool to 4°C

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
1 [signature]	9-25 1350	2 [signature] ALSE	3 [signature] ALSE	9/25/15 1610	4 [signature] (ALXE) 9-26-15 0800
Relinquished by: 5	Date Time:	Received By: 6	Relinquished by: 7	Date Time:	Received By: 8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius: 3.0

5.1

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ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA27924 CLIENT: TETRA TECH PROJECT: KSL-HMF

DATE/TIME RECEIVED: 9-26-15 08:00 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: FEDEX UPS (ACCUTEST COURIER) DELIVERY OTHER:

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM_____ 5-GRAM_____

NUMBER OF 5035 FIELD KITS ? _____

NUMBER OF LAB FILTERED METALS ? _____

pH PAPER LOT#s WIDHC131225 NARROW RANGE _____AO36133____ OTHER (specify) ____405-230010___

TEMPERATURE INFORMATION

- [ ] IR THERM ID____1____ CORR. FACTOR -0.4
- [ ] OBSERVED TEMPS: 3.4
- [ ] CORRECTED TEMPS: 3.0

SAMPLE INFORMATION

- [ ] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] 5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
- [ ] BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] RESIDUAL CHLORINE PRESENT LOT#_____

{APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE: 9-26-15 REVIEWER SIGNATURE/DATE: 9-26-15

NF 10/14 YELLOWSHEET110514.xls

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