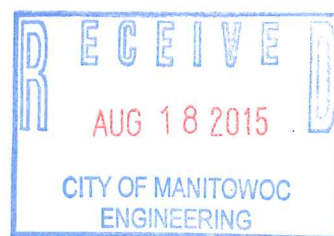




AECOM
1555 N RiverCenter Drive, Suite 214
Milwaukee, WI 53212

414.944.6080 tel
414.944.6081 fax

15-941



August 13, 2015

Mr. Greg Minikel, P.E.
Engineering Team Leader
City of Manitowoc
900 Quay Street
Manitowoc, WI 54220

Subject: **Change Order and Cost Estimate for Additional Remedial Investigation and Groundwater Monitoring Activities
Flambeau Street Site, 2418 S. 18th Street, Manitowoc, Wisconsin
BRRTS No. 02-36-553420, PECFA No. 54220-6456-18-A
AECOM Project No. 60134830 (113845)**

Dear Greg,

AECOM Technical Services, Inc. (AECOM) is providing this change order and cost estimate to the City of Manitowoc (the City) for the additional investigation and groundwater monitoring activities being required at the Flambeau Street site.

As you are aware, AECOM submitted a Case Closure Request packet to the Wisconsin Department of Natural Resources (WDNR) in January 2014. In a Case Closure denial letter dated April 7, 2014, Mr. Tom Versteegen of the WDNR requested additional off-site investigation, groundwater monitoring, and sub-slab vapor sampling at the site. The scope of work presented below for the additional activities is based on the denial letter and a telephone conversation with Mr. Versteegen on April 14, 2014. Based on the telephone conversation, additional off-site investigation activities must include construction of one monitoring well and one piezometer in the vicinity of soil boring B-108 on the property owned by Mr. Charles Blish at 2418 S. 18th Street, two groundwater sampling events at a total five wells, and conducting a sub-slab vapor assessment at the 2418 S. 18th Street property.

Mr. Versteegen acknowledged that multiple efforts were made previously by AECOM to contact Mr. Blish at 2418 S. 18th and gain access to his private property to conduct the vapor intrusion assessment. These efforts were documented in the closure request submittal. However, Mr. Versteegen stated that the members of the Northeast Region Closure Committee felt it was important that a vapor assessment be completed at this site and indicated additional efforts should be made to contact Mr. Blish. Mr. Versteegen indicated these efforts could start again with an access agreement request sent via certified mail. We should clearly indicate to Mr. Blish that refusal to allow access to his property to complete activities required by the WDNR would result in a transfer of responsibility to him for any future investigation and/or cleanup required on his property by the WDNR. If Mr. Blish still does not respond it is recommended we again try to contact him by telephone and AECOM and/or the City should make physical visits to the site to contact him at his residence. If further attempts to contact Mr. Blish fail, Mr. Versteegen indicated the WDNR may also attempt to contact him directly.

In general, the scope of work described below includes tasks to complete the additional WDNR requested services.

Project Summary

The Blish property at 2418 S. 18th Street is a residential property that was previously part of a larger parcel utilized by the F. Radandt Sons, Inc excavation company. A 1,000-gallon gasoline tank was located in what is now the Flambeau Street right-of-way north and adjacent to the 2418 S. 18th Street property. Soil contamination was discovered in 2001 during new home construction activities at 2410 S. 18th Street and reported to the Wisconsin Department of Natural Resources (WDNR). Limited soil and groundwater investigation activities were conducted by STS Consultants, Inc. in 2001 and 2002.

In June 2009 the City of Manitowoc retained AECOM to conduct Phase II Site Investigation activities which included the advancement of eight (8) Geoprobe[®] soil borings and collection of soil and groundwater samples on October 22, 2009. Prior to field work, AECOM contacted Mr. Blish at 2418 S. 18th Street in a letter dated August 3, 2009 to obtain a Right-of-Entry (ROE) access agreement onto the private property for investigation activities. ROE was granted by Mr. Blish on August 16, 2009. Based on the results of the Phase II, additional investigation was required to adequately define the full extent and degree of contamination to the south west and assess groundwater quality at the site. In addition, vapor intrusion screening was recommended for the private residence at 2418 S. 18th Street. In a letter dated January 29, 2010 the WDNR indicated the Site falls under the definition of a "low or medium" risk site and oversight of the project was being transferred from WDNR to the Department of Safety and Professional Services (DSPS) [previously the Wisconsin Department of Commerce {WDCOM}].

In a letter to Mr. Blish dated June 7, 2011 AECOM requested access to the private residence to complete the vapor intrusion assessment at his property. Mr. Blish did not return the ROE agreement either granting or denying access to the property. AECOM also attempted to reach the property owner by telephone on multiple occasions without success. AECOM subsequently informed the DSPS that permission to complete the vapor screening had not been granted by Mr. Blish. In a letter dated August 16, 2011, Mr. Bob Klauk of the DSPS notified Mr. Blish of the possibility of air contamination in the basement of the residence and requested that he contact the agency within 15 days. The letter was sent by certified mail and signed for by a recipient at the 2418 S. 18th St. residence. Prior to the November 2011 remedial investigation (RI) activities, neither AECOM nor DSPS had received a response from Mr. Blish.

The remedial investigation activities included the advancement of four soil borings on November 11, 2011, to investigate the vertical and lateral extent of soil contamination previously identified at the site and assess groundwater contaminant trends. One of the soil borings was advanced off site to the west of the subject site on the residential property located at 1809 Flambeau St. to define the extent of soil contamination. The other three borings were advanced in the Flambeau Street and South 18th Street rights-of-way for construction of groundwater monitoring wells and collection of groundwater samples. Groundwater samples were collected from the three monitoring wells in November 2011, February and May 2012. At that time neither AECOM, the City, nor the DSPS had received a response from Mr. Blish at 2418 S. 18th Street allowing access to the property, therefore vapor monitoring was not completed.

AECOM submitted a Remedial Investigation and Groundwater Monitoring Report to the City and the DSPS in September 2012. In the report AECOM recommended continuing groundwater sampling at monitoring well MW-3 on an annual basis until a stable or decreasing contaminant trend was established. In a letter dated November 2, 2012, Mr. Verstegen (at that time of the DSPS) requested additional off-site investigation and groundwater sampling. The scope of work for additional activities was based on the November 2012 DSPS letter and a telephone conversation with Mr. Verstegen on November 29, 2012. Based on the telephone conversation, after completion of the required additional

Mr. Greg Minikel
City of Manitowoc
August 13, 2014

off-site investigation activities (including construction of two monitoring wells) and one groundwater sampling event of all site wells, the DSPS would potentially re-consider a closure request, if appropriate. In addition, further efforts were to be made to contact Mr. Blish at 2418 S. 18th Street to complete the requested vapor intrusion assessment.

Mr. Blish was sent a certified letter dated February 14, 2013 requesting access, which he received and signed for on February 21, 2013. Prior to the April 2013 additional RI activities, AECOM had not received the signed access agreement back nor gotten any calls from Mr. Blish with questions or concerns. The telephone number on file for Mr. Blish, and the phone number found with an on-line search was reported as disconnected and no longer in service.

The April 2013 additional off-site RI activities included the advancement of two soil borings on April 1, 2013 for soil sampling and subsequent installation of monitoring wells MW-4 and MW-5. MW-4 was installed in the east S. 18th Street right-of-way, east of the subject site. MW-5 was installed in the west S. 18th Street right-of-way, southeast of the subject site. Groundwater samples were collected at all site wells on May 7, 2013 and submitted for laboratory analysis. Based on the analytical results the Case Closure Request was submitted to the WDNR in January 2014 as discussed above.

Scope of Work

WDNR Cost Estimate Approval Letter:

Based on the scope of work required by WDNR, AECOM will prepare a cost cap exceedance approval request letter for costs eligible for reimbursement under the PECFA program. The cost estimate will be calculated in accordance with the current Usual & Customary (U&C) unit rates established by WDNR. The cost estimate will be prepared on the U&C Standardized Invoice (Schedule 15) to show a breakdown of how the proposed costs were developed. It is our understanding that the costs associated with the work required by WDNR should be eligible for PECFA reimbursement.

Please note that, although our cost cap exceedance request will include estimated costs associated with regulatory correspondence, standardized invoice preparation, well abandonment, and PECFA claim submittal, these costs are generally not approved at the time of request. It is generally indicated that costs associated with these tasks will be reviewed at the time of PECFA claim submittal and reimbursed according to task specifications with the submittal of proper supporting documentation.

In addition, although the PECFA program may reimburse a substantial share of the cost of conducting investigation and remediation of petroleum contamination, the owner will have a program deductible which they must pay. In addition, there may be costs incurred that are above the maximum that will be reimbursed by the PECFA fund.

Remedial Investigation:

- AECOM will prepare scopes of work and request competitive bids for laboratory analysis, boring advancement and monitoring well/piezometer installation, well abandonment, and soil and development/purge water disposal services.
- AECOM will update the existing Health and Safety Plan (HASP) for additional RI and groundwater monitoring activities. Additionally, AECOM, or our subcontractors, will be responsible for identifying private and publicly located underground utilities prior to commencing work. A private utility locator will be subcontracted to identify potential underground utilities on the private property at 2418 S. 18th Street.

Mr. Greg Minikel
City of Manitowoc
August 13, 2014

- AECOM will make additional attempts to contact Mr. Blish at 2418 S. 18th Street including letter correspondence sent by certified mail, telephone calls/messages and/or visits to the residence to contact Mr. Blish. For purposes of this estimate, AECOM will include costs for making one trip to the site. If successful, AECOM will work with Mr. Blish to install additional wells and complete the vapor intrusion screening in the basement of his private property.
- Air sampling will be conducted in the basement area of the residence at 2418 S. 18th Street only. The goal of the vapor intrusion testing is to evaluate whether petroleum VOC vapors are present beneath the slab and determine if they exceed the levels determined by WDNR to necessitate further investigation and/or vapor mitigation activities. The sampling protocols will generally follow the Wisconsin Department of Natural Resources' guidance "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin", PUB-RR-800, dated December 2010.

AECOM will collect one indoor and one outdoor ambient air sample. The indoor sample will be collected in the basement in the vicinity of the sub-slab sample. The outdoor sample will be collected at a location to be determined during the initial site visit. Each sample will be collected approximately 4 to 5 feet above the floor/ground. Samples will be collected in a laboratory supplied 6-liter Summa canister fitted with a 24-hour flow regulator. The samples will be collected for approximately 24 hours or until the can vacuum reaches approximately 4 inches Hg. The canisters will be left unattended over night at the residence and will require a second visit to the Site to retrieve the Summa canisters.

Sub-slab sampling in the basement will begin with a slab penetration using a power drill at a location to be determined during the initial site visit. The penetration will be approximately 5/8 inches in diameter. A 1.5-inch diameter recess hole will be drilled to approximately 2 inches below the floor grade so that a temporary brass sampling "pin" can be recessed below the floor surface. A hand pump will be used to test for sub-slab air flow by checking for vacuum at the sampling location. Sub-slab pressure will also be checked at the sampling port location using a Magnehelic[®] pressure gage.

A shut-in test will be performed on the sample tubing, in-line particulate filter, and swage-lock connection to a laboratory supplied 6-liter Summa canister. The sample tubing will then be connected to the sampling pin and the Summa canister valve will be opened. The Summa canisters will be unregulated and are expected to continuously sample for at least 30 minutes, or until the can vacuum reached four inches Hg.

Following conclusion of the indoor ambient air sampling, the sub-slab sampling pin/concrete seal will be integrity tested using helium as a tracer gas. At the completion of the sub-slab sampling, the sampling pin will be capped with a removable elastic cap. The sampling penetration will be capped with a removable black plastic cap making the floor penetration nearly flush with the floor surface. By capping and leaving the sample pins in-place, the pins are available for future sample collection if necessary. Once it is determined that no further sampling will be needed, the vapor sampling point will be properly abandoned by filling and sealing the holes with hydraulic cement.

The Summa canisters will be submitted to Pace Analytical, 1700 Elm Street SE, Suite 200, Minneapolis, MN 55414 for analysis of VOCs by EPA Method TO-15.

- Advancement of two soil borings that will be completed as a NR 141 compliant groundwater monitoring well and piezometer at 2418 S. 18th Street. The locations of the proposed borings/wells are shown on the attached Figure 1 – Proposed Well Locations. The well and piezometer will be nested together and constructed in the vicinity of soil boring B-108. The soil

boring for the monitoring well will be blind drill and no soil sampling will be conducted. The soil boring for the piezometer will be evaluated and visually classified in the field. The soil samples will be described in the field with respect to the soil type, grain size distribution, and color (or discoloration), odor, and moisture content. Visual observations of the recovered material will also be documented in accordance with ASTM Method D-2488-93. Field observations from the boring will be recorded on soil boring logs for submittal to WDNR.

- It is anticipated that the monitoring well (designated MW-6) will be completed at a depth of approximately 14 feet below ground surface (bgs) with a 10 foot screen. The piezometer (designated PZ-6) will be completed at a depth of approximately 29 bgs with a 5-foot screen.
- AECOM will develop the new well and piezometer in accordance with NR 141. AECOM will conduct two rounds of groundwater sampling at a total of 5 well (MW-2, MW-3, MW-4, MW-6, and PZ-1). The sampling events will be conducted no less than 3 months apart. Groundwater elevations will also be measured at MW-1 and MW-5 during each round to assist with groundwater flow direction determination.
- Groundwater samples collected from the MW-2, MW-3, and MW-4 will be analyzed for petroleum volatile organic compounds (PVOCs) plus naphthalene based on previous results. Groundwater samples collected from the MW-6 and PZ-1 will be analyzed for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and Resource Conservation and Recovery Act (RCRA) metals (i.e. lead and cadmium) during the first round of sampling. Dependent upon analytical results, PAH and RCRA metal sampling may be eliminated during the second round of sampling and VOCs reduced to PVOCs plus naphthalene. A quality control duplicate sample will be collected at one location during each sampling round and analyzed for VOCs/PVOCs + Naphthalene along with a trip blank.
- AECOM will coordinate disposal of soil and water drums generated during investigation and monitoring activities. AECOM anticipates that up to three drums of soil will be generated during well/piezometer construction, one to two drums of water may be generated during well well/piezometer development, and up to two drums of water may be generated during the groundwater sampling events. Similar to previous fieldwork activities, AECOM anticipates contacting the City garage to transfer and stage the drums at the City garage property prior to pick up and disposal by the waste disposal contractor(s).

Technical Memorandum

AECOM will prepare a brief technical memorandum to document the vapor intrusion sampling results. The technical memorandum will be prepared for submittal to the City and Mr. Blish to present the methods and results of vapor sampling at the private residence.

Semi-Annual Progress Report

AECOM will prepare a semi-annual progress report, as required by NR 724.13(3) of the Wisconsin Administrative Code. AECOM anticipates that only one progress report will be required to be prepared during the course of the project. The progress report will either be completed on the Remediation Site Progress and Operation, Maintenance, Monitoring & Optimization Report form (WDNR Form 4400-194) or as a summary letter report, whichever is acceptable to the WDNR project manager.

Updated Closure Request:

Unless analytical results suggest additional monitoring or investigation is required. AECOM will prepare an updated closure request packet for submittal to WDNR. The updated request will include boring logs, well construction and development forms, sampling forms, certified mail receipts for access agreement and notification letters, and analytical reports associated with the additional investigation efforts. Updated tables and figures will be prepared and submitted. Based on the analytical results, the draft maintenance plan and soil management plan submitted with the initial closure request will also be updated as necessary.

The initial closure request included notification letters submitted to a total of three private property owners. AECOM anticipates that based on the additional investigation activities and groundwater analytical results new notification letters will have to be submitted to the property owners.

Well Abandonment:

Typically site closure letters require proper abandonment of any monitoring wells associated with the project as a condition of receiving site closure. Upon receiving preliminary site closure approval, AECOM proposes to abandon the monitoring wells as required. Monitoring well abandonment forms will be prepared for submittal to the regulating agency.

PECFA Claim Submittal:

The investigation and remedial activities associated with the former gasoline UST qualifies for reimbursement under the PECFA program. The initial PECFA claim was submitted in June 2014. AECOM will follow PECFA program protocols for the proposed additional site investigation and monitoring activities. Based on recent changes to the PECFA program, claims for reimbursement must be submitted within 180 days after incurring the eligible costs. It is anticipated that the proposed scope of work can be completed in less than six months. Upon receiving a closed remedial action status and following abandonment of monitoring wells, AECOM will prepare the second PECFA claim requesting reimbursement of PECFA eligible expenses incurred. However, if the additional investigation activities extend over six months it may be necessary to submit a change order for additional services to complete a third PECFA claim.

As noted previously, although the PECFA program may reimburse a substantial share of the cost of conducting investigation and remediation of a petroleum contamination, the owner will have a program deductible which they must pay. In addition, there may be costs that are above the maximum that will be reimbursed by the fund.

Estimated Cost:

Costs associated with the above scope of work include labor, travel, equipment, supplies, driller, analytical laboratory, and waste disposal subcontractor, sample shipment costs, fieldwork, project management, and reporting. The drilling, analytical, waste disposal, and abandonment services will be competitively bid to ensure competitive pricing.

AECOM estimates that the overall costs to complete the scope of work required by WDNR to be approximately **\$27,900**. A detailed cost estimate is attached for your review.

Uncertainty is inherent in any estimate of closure costs, especially where remediation and additional monitoring have been recommended. The costs presented above are estimates; however, AECOM will seek cost savings options and approaches throughout the project. Additionally, AECOM will include a summary table of costs expended to date, anticipated remaining costs, and budget

Mr. Greg Minikel
City of Manitowoc
August 13, 2014

comparisons with each monthly invoice. Services that are not described in this proposal will not be provided without written authorization from the client.

Authorization:

The Terms of the Consulting Agreement and Authorization to Proceed dated June 15, 2009 with the City of Manitowoc, the project proposal dated April 25, 2011, and this change order dated August 11, 2014 associated with this site will be applied to this Task Order. If the scope of work, cost estimate, and schedule are satisfactory, please authorize Task Order #5 and return to me. Upon receipt of the signed Task Order and approval of PECFA eligible costs from WDNR, AECOM will initiate the work described herein.

If you have any questions or need additional information please call me at 715-342-3043 or email at dean.fenske@aecom.com.

Sincerely,

AECOM Technical Services, Inc.



Dean W. Fenske
Project Manager

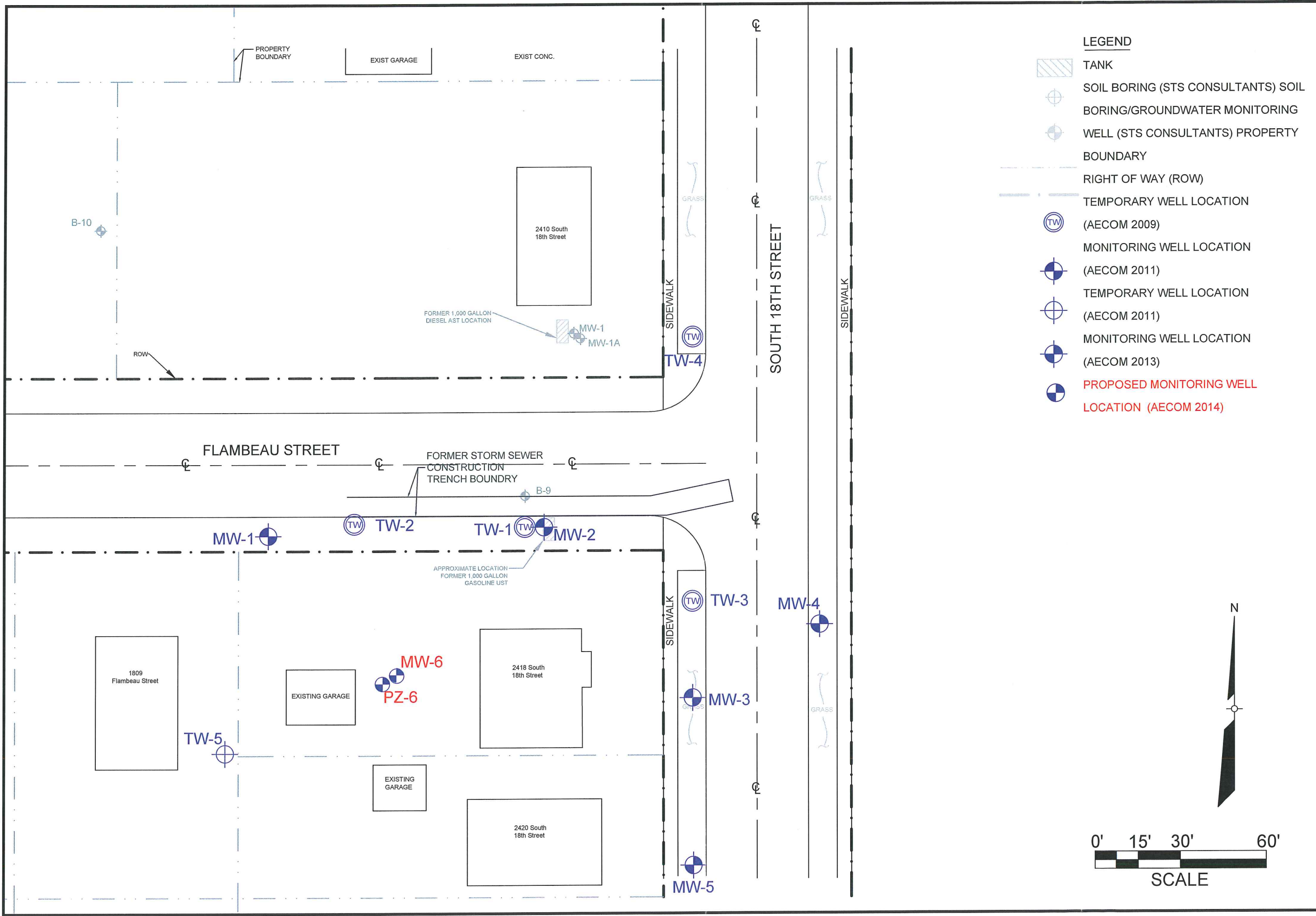


David S. Henderson, P.E.
Senior Project Manager



Kevin L. Brehm, P.E.
Wisconsin Operations Manager

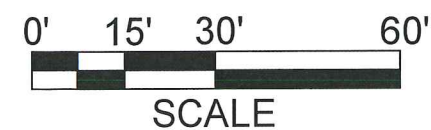
Attachments: Figure 1
Cost Estimate
Authorization to Proceed



LEGEND

- TANK
- SOIL BORING (STS CONSULTANTS) SOIL BORING/GROUNDWATER MONITORING WELL (STS CONSULTANTS) PROPERTY BOUNDARY
- RIGHT OF WAY (ROW)
- TEMPORARY WELL LOCATION (AECOM 2009)
- MONITORING WELL LOCATION (AECOM 2011)
- TEMPORARY WELL LOCATION (AECOM 2011)
- MONITORING WELL LOCATION (AECOM 2013)
- PROPOSED MONITORING WELL LOCATION (AECOM 2014)

<p>AECOM</p> <p>Milwaukee Office 1555 RiverCenter Dr Milwaukee, WI 414.944.6080</p>	<p>PROPOSED MONITORING WELL LOCATIONS</p>
<p>CITY OF MANITOWOC FLAMBEAU STREET MANITOWOC WISCONSIN</p>	
DATE	5/30/2014
PROJECT NO.	60134830
FILENAME	Flambeau Street - CLOSURE 2013.dwg
SHEET NO.	
DRAWING NO.	1



1-INCH = 100 FEET
VERIFY SCALE IF PLAN SHEET IS REDUCED

REV	DESCRIPTION	DRN	CHK	DATE

Cost Estimate City of Manitowoc Flambeau Street site Manitowoc, Wisconsin				
Task	Quantity	Units	Rate	Sub-Total
Additional Investigation and Monitoring				
Consulting				
Project management/coordination	14	hours	\$ 115.00	\$ 1,610.00
QA/QC	2	hours	\$ 160.00	\$ 320.00
Update Health & Safety Plan	4	hours	\$ 160.00	\$ 640.00
Cost Cap Letter Preparation	4	hours	\$ 115.00	\$ 460.00
Contractor Bids/Contract	2	hours	\$ 115.00	\$ 230.00
Access Agreement	2	hours	\$ 115.00	\$ 230.00
Site Visit for Access Agreement	4	hours	\$ 90.00	\$ 360.00
Technical Memorandum - Vapor Intrusion	2	hours	\$ 115.00	\$ 230.00
Semi-Annual Progress Report	8	hours	\$ 115.00	\$ 920.00
Administrative support	6	hours	\$ 75.00	\$ 450.00
Fieldwork - 2 borings				
Consulting				
PM-Field Coordination	6	hours	\$ 115.00	\$ 690.00
Fieldwork, prep. & followup	3	hours	\$ 75.00	\$ 225.00
Fieldwork, data analysis	11	hours	\$ 75.00	\$ 825.00
Equipment fees	1	each	\$ 175.00	\$ 175.00
Drilling Subcontractor - Two (2) Wells				
Install two borings/wells	1	each	\$ 2,580.00	\$ 2,580.00
Private Utility Mark Subcontractor				
Private Property Utility Mark	1	each	\$ 500.00	\$ 500.00
Fieldwork - 2 rounds - 5 wells				
Consulting				
PM-Field Coordination	8	hours	\$ 115.00	\$ 920.00
Fieldwork, prep. & followup	6	hours	\$ 75.00	\$ 450.00
Fieldwork, data analysis	22	hours	\$ 75.00	\$ 1,650.00
Equipment fees	1	each	\$ 700.00	\$ 700.00
Fieldwork - Air sampling (2 trips; 1st in coord. w/ well install)				
Consulting				
PM-Field Coordination	4	hours	\$ 115.00	\$ 460.00
Fieldwork, prep. & followup	4	hours	\$ 115.00	\$ 460.00
Fieldwork, data analysis	12	hours	\$ 115.00	\$ 1,380.00
Equipment fees	1	each	\$ 400.00	\$ 400.00
Laboratory : Groundwater Samples				
Groundwater samples - 1 round-5 wells				
PVOCs + Naphthalene*	8	each	\$ 40.00	\$ 320.00
VOCs*	2	each	\$ 75.00	\$ 150.00
PAHs*	2	each	\$ 80.00	\$ 160.00
RCRA Metals*	2	each	\$ 60.00	\$ 120.00
* assumes a duplicate and trip blank				
Laboratory : Air Sample				
Summa canister sample - VOCs*	3	each	\$ 250.00	\$ 750.00
Waste Disposal				
Soil, drum	3	each	\$ 350.00	\$ 1,050.00
Groundwater, drum	4	each	\$ 320.00	\$ 1,280.00
Closure Request Packet				
Consulting				
Drafting (min. 5 figure updates)	4	hours	\$ 90.00	\$ 360.00
Update Notification letters	4	hours	\$ 115.00	\$ 460.00
Update WDNR Close Out Forms	2	hours	\$ 115.00	\$ 230.00
Updated GIS Registry Packet	6	hours	\$ 115.00	\$ 690.00
Senior Review/Signature	2	hours	\$ 160.00	\$ 320.00
Administrative support	4	hours	\$ 75.00	\$ 300.00
Post Closure Activities				
Consulting				
Project management	6	hours	\$ 115.00	\$ 690.00
Letter Preparation - Abandonment form submittal	2	hours	\$ 115.00	\$ 230.00
PECEFA Claim Preparation	10	hours	\$ 115.00	\$ 1,150.00
Internal PECEFA Claim Review	2	hours	\$ 160.00	\$ 320.00
Fieldwork (Well Abandonment)	10	hours	\$ 75.00	\$ 750.00
Subcontractor				
Abandonment of seven (7) monitoring wells	1	each	\$ 1,705.00	\$ 1,705.00
TOTAL				\$ 27,900.00

Any cost estimate provided by the Consultant will be on a basis of experience and judgment. Because Consultant has no control over market conditions or bidding procedures, Consultant cannot warrant that bids, construction costs, or project economics will not vary from these opinions.



AECOM
1555 N RiverCenter Drive, Suite 214
Milwaukee, WI 53212

414.944.6080 tel
414.944.6081 fax

August 13, 2015

Mr. Greg Minikel, P.E.
Engineering Team Leader
City of Manitowoc
900 Quay Street
Manitowoc, WI 54220

Subject: **Change Order and Cost Estimate for Additional Remedial Investigation and Groundwater Monitoring Activities
Flambeau Street Site, 2418 S. 18th Street, Manitowoc, Wisconsin
BRRTS No. 02-36-553420, PECFA No. 54220-6456-18-A
AECOM Project No. 60134830 (113845)**

Dear Greg,

AECOM Technical Services, Inc. (AECOM) is providing this change order and cost estimate to the City of Manitowoc (the City) for the additional investigation and groundwater monitoring activities being required at the Flambeau Street site.

As you are aware, AECOM submitted a Case Closure Request packet to the Wisconsin Department of Natural Resources (WDNR) in January 2014. In a Case Closure denial letter dated April 7, 2014, Mr. Tom Versteegen of the WDNR requested additional off-site investigation, groundwater monitoring, and sub-slab vapor sampling at the site. The scope of work presented below for the additional activities is based on the denial letter and a telephone conversation with Mr. Versteegen on April 14, 2014. Based on the telephone conversation, additional off-site investigation activities must include construction of one monitoring well and one piezometer in the vicinity of soil boring B-108 on the property owned by Mr. Charles Blish at 2418 S. 18th Street, two groundwater sampling events at a total five wells, and conducting a sub-slab vapor assessment at the 2418 S. 18th Street property.

Mr. Versteegen acknowledged that multiple efforts were made previously by AECOM to contact Mr. Blish at 2418 S. 18th and gain access to his private property to conduct the vapor intrusion assessment. These efforts were documented in the closure request submittal. However, Mr. Versteegen stated that the members of the Northeast Region Closure Committee felt it was important that a vapor assessment be completed at this site and indicated additional efforts should be made to contact Mr. Blish. Mr. Versteegen indicated these efforts could start again with an access agreement request sent via certified mail. We should clearly indicate to Mr. Blish that refusal to allow access to his property to complete activities required by the WDNR would result in a transfer of responsibility to him for any future investigation and/or cleanup required on his property by the WDNR. If Mr. Blish still does not respond it is recommended we again try to contact him by telephone and AECOM and/or the City should make physical visits to the site to contact him at his residence. If further attempts to contact Mr. Blish fail, Mr. Versteegen indicated the WDNR may also attempt to contact him directly.

In general, the scope of work described below includes tasks to complete the additional WDNR requested services.

Project Summary

The Blish property at 2418 S. 18th Street is a residential property that was previously part of a larger parcel utilized by the F. Radandt Sons, Inc excavation company. A 1,000-gallon gasoline tank was located in what is now the Flambeau Street right-of-way north and adjacent to the 2418 S. 18th Street property. Soil contamination was discovered in 2001 during new home construction activities at 2410 S. 18th Street and reported to the Wisconsin Department of Natural Resources (WDNR). Limited soil and groundwater investigation activities were conducted by STS Consultants, Inc. in 2001 and 2002.

In June 2009 the City of Manitowoc retained AECOM to conduct Phase II Site Investigation activities which included the advancement of eight (8) Geoprobe[®] soil borings and collection of soil and groundwater samples on October 22, 2009. Prior to field work, AECOM contacted Mr. Blish at 2418 S. 18th Street in a letter dated August 3, 2009 to obtain a Right-of-Entry (ROE) access agreement onto the private property for investigation activities. ROE was granted by Mr. Blish on August 16, 2009. Based on the results of the Phase II, additional investigation was required to adequately define the full extent and degree of contamination to the south west and assess groundwater quality at the site. In addition, vapor intrusion screening was recommended for the private residence at 2418 S. 18th Street. In a letter dated January 29, 2010 the WDNR indicated the Site falls under the definition of a "low or medium" risk site and oversight of the project was being transferred from WDNR to the Department of Safety and Professional Services (DSPS) [previously the Wisconsin Department of Commerce {WDCOM}].

In a letter to Mr. Blish dated June 7, 2011 AECOM requested access to the private residence to complete the vapor intrusion assessment at his property. Mr. Blish did not return the ROE agreement either granting or denying access to the property. AECOM also attempted to reach the property owner by telephone on multiple occasions without success. AECOM subsequently informed the DSPS that permission to complete the vapor screening had not been granted by Mr. Blish. In a letter dated August 16, 2011, Mr. Bob Klauk of the DSPS notified Mr. Blish of the possibility of air contamination in the basement of the residence and requested that he contact the agency within 15 days. The letter was sent by certified mail and signed for by a recipient at the 2418 S. 18th St. residence. Prior to the November 2011 remedial investigation (RI) activities, neither AECOM nor DSPS had received a response from Mr. Blish.

The remedial investigation activities included the advancement of four soil borings on November 11, 2011, to investigate the vertical and lateral extent of soil contamination previously identified at the site and assess groundwater contaminant trends. One of the soil borings was advanced off site to the west of the subject site on the residential property located at 1809 Flambeau St. to define the extent of soil contamination. The other three borings were advanced in the Flambeau Street and South 18th Street rights-of-way for construction of groundwater monitoring wells and collection of groundwater samples. Groundwater samples were collected from the three monitoring wells in November 2011, February and May 2012. At that time neither AECOM, the City, nor the DSPS had received a response from Mr. Blish at 2418 S. 18th Street allowing access to the property, therefore vapor monitoring was not completed.

AECOM submitted a Remedial Investigation and Groundwater Monitoring Report to the City and the DSPS in September 2012. In the report AECOM recommended continuing groundwater sampling at monitoring well MW-3 on an annual basis until a stable or decreasing contaminant trend was established. In a letter dated November 2, 2012, Mr. Verstegen (at that time of the DSPS) requested additional off-site investigation and groundwater sampling. The scope of work for additional activities was based on the November 2012 DSPS letter and a telephone conversation with Mr. Verstegen on November 29, 2012. Based on the telephone conversation, after completion of the required additional

Mr. Greg Minikel
City of Manitowoc
August 13, 2014

off-site investigation activities (including construction of two monitoring wells) and one groundwater sampling event of all site wells, the DSPS would potentially re-consider a closure request, if appropriate. In addition, further efforts were to be made to contact Mr. Blish at 2418 S. 18th Street to complete the requested vapor intrusion assessment.

Mr. Blish was sent a certified letter dated February 14, 2013 requesting access, which he received and signed for on February 21, 2013. Prior to the April 2013 additional RI activities, AECOM had not received the signed access agreement back nor gotten any calls from Mr. Blish with questions or concerns. The telephone number on file for Mr. Blish, and the phone number found with an on-line search was reported as disconnected and no longer in service.

The April 2013 additional off-site RI activities included the advancement of two soil borings on April 1, 2013 for soil sampling and subsequent installation of monitoring wells MW-4 and MW-5. MW-4 was installed in the east S. 18th Street right-of-way, east of the subject site. MW-5 was installed in the west S. 18th Street right-of-way, southeast of the subject site. Groundwater samples were collected at all site wells on May 7, 2013 and submitted for laboratory analysis. Based on the analytical results the Case Closure Request was submitted to the WDNR in January 2014 as discussed above.

Scope of Work

WDNR Cost Estimate Approval Letter:

Based on the scope of work required by WDNR, AECOM will prepare a cost cap exceedance approval request letter for costs eligible for reimbursement under the PECFA program. The cost estimate will be calculated in accordance with the current Usual & Customary (U&C) unit rates established by WDNR. The cost estimate will be prepared on the U&C Standardized Invoice (Schedule 15) to show a breakdown of how the proposed costs were developed. It is our understanding that the costs associated with the work required by WDNR should be eligible for PECFA reimbursement.

Please note that, although our cost cap exceedance request will include estimated costs associated with regulatory correspondence, standardized invoice preparation, well abandonment, and PECFA claim submittal, these costs are generally not approved at the time of request. It is generally indicated that costs associated with these tasks will be reviewed at the time of PECFA claim submittal and reimbursed according to task specifications with the submittal of proper supporting documentation.

In addition, although the PECFA program may reimburse a substantial share of the cost of conducting investigation and remediation of petroleum contamination, the owner will have a program deductible which they must pay. In addition, there may be costs incurred that are above the maximum that will be reimbursed by the PECFA fund.

Remedial Investigation:

- AECOM will prepare scopes of work and request competitive bids for laboratory analysis, boring advancement and monitoring well/piezometer installation, well abandonment, and soil and development/purge water disposal services.
- AECOM will update the existing Health and Safety Plan (HASP) for additional RI and groundwater monitoring activities. Additionally, AECOM, or our subcontractors, will be responsible for identifying private and publicly located underground utilities prior to commencing work. A private utility locator will be subcontracted to identify potential underground utilities on the private property at 2418 S. 18th Street.

Mr. Greg Minikel
City of Manitowoc
August 13, 2014

- AECOM will make additional attempts to contact Mr. Blish at 2418 S. 18th Street including letter correspondence sent by certified mail, telephone calls/messages and/or visits to the residence to contact Mr. Blish. For purposes of this estimate, AECOM will include costs for making one trip to the site. If successful, AECOM will work with Mr. Blish to install additional wells and complete the vapor intrusion screening in the basement of his private property.
- Air sampling will be conducted in the basement area of the residence at 2418 S. 18th Street only. The goal of the vapor intrusion testing is to evaluate whether petroleum VOC vapors are present beneath the slab and determine if they exceed the levels determined by WDNR to necessitate further investigation and/or vapor mitigation activities. The sampling protocols will generally follow the Wisconsin Department of Natural Resources' guidance "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin", PUB-RR-800, dated December 2010.

AECOM will collect one indoor and one outdoor ambient air sample. The indoor sample will be collected in the basement in the vicinity of the sub-slab sample. The outdoor sample will be collected at a location to be determined during the initial site visit. Each sample will be collected approximately 4 to 5 feet above the floor/ground. Samples will be collected in a laboratory supplied 6-liter Summa canister fitted with a 24-hour flow regulator. The samples will be collected for approximately 24 hours or until the can vacuum reaches approximately 4 inches Hg. The canisters will be left unattended over night at the residence and will require a second visit to the Site to retrieve the Summa canisters.

Sub-slab sampling in the basement will begin with a slab penetration using a power drill at a location to be determined during the initial site visit. The penetration will be approximately 5/8 inches in diameter. A 1.5-inch diameter recess hole will be drilled to approximately 2 inches below the floor grade so that a temporary brass sampling "pin" can be recessed below the floor surface. A hand pump will be used to test for sub-slab air flow by checking for vacuum at the sampling location. Sub-slab pressure will also be checked at the sampling port location using a Magnehelic[®] pressure gage.

A shut-in test will be performed on the sample tubing, in-line particulate filter, and swage-lock connection to a laboratory supplied 6-liter Summa canister. The sample tubing will then be connected to the sampling pin and the Summa canister valve will be opened. The Summa canisters will be unregulated and are expected to continuously sample for at least 30 minutes, or until the can vacuum reached four inches Hg.

Following conclusion of the indoor ambient air sampling, the sub-slab sampling pin/concrete seal will be integrity tested using helium as a tracer gas. At the completion of the sub-slab sampling, the sampling pin will be capped with a removable elastic cap. The sampling penetration will be capped with a removable black plastic cap making the floor penetration nearly flush with the floor surface. By capping and leaving the sample pins in-place, the pins are available for future sample collection if necessary. Once it is determined that no further sampling will be needed, the vapor sampling point will be properly abandoned by filling and sealing the holes with hydraulic cement.

The Summa canisters will be submitted to Pace Analytical, 1700 Elm Street SE, Suite 200, Minneapolis, MN 55414 for analysis of VOCs by EPA Method TO-15.

- Advancement of two soil borings that will be completed as a NR 141 compliant groundwater monitoring well and piezometer at 2418 S. 18th Street. The locations of the proposed borings/wells are shown on the attached Figure 1 – Proposed Well Locations. The well and piezometer will be nested together and constructed in the vicinity of soil boring B-108. The soil

boring for the monitoring well will be blind drill and no soil sampling will be conducted. The soil boring for the piezometer will be evaluated and visually classified in the field. The soil samples will be described in the field with respect to the soil type, grain size distribution, and color (or discoloration), odor, and moisture content. Visual observations of the recovered material will also be documented in accordance with ASTM Method D-2488-93. Field observations from the boring will be recorded on soil boring logs for submittal to WDNR.

- It is anticipated that the monitoring well (designated MW-6) will be completed at a depth of approximately 14 feet below ground surface (bgs) with a 10 foot screen. The piezometer (designated PZ-6) will be completed at a depth of approximately 29 bgs with a 5-foot screen.
- AECOM will develop the new well and piezometer in accordance with NR 141. AECOM will conduct two rounds of groundwater sampling at a total of 5 well (MW-2, MW-3, MW-4, MW-6, and PZ-1). The sampling events will be conducted no less than 3 months apart. Groundwater elevations will also be measured at MW-1 and MW-5 during each round to assist with groundwater flow direction determination.
- Groundwater samples collected from the MW-2, MW-3, and MW-4 will be analyzed for petroleum volatile organic compounds (PVOCs) plus naphthalene based on previous results. Groundwater samples collected from the MW-6 and PZ-1 will be analyzed for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and Resource Conservation and Recovery Act (RCRA) metals (i.e. lead and cadmium) during the first round of sampling. Dependent upon analytical results, PAH and RCRA metal sampling may be eliminated during the second round of sampling and VOCs reduced to PVOCs plus naphthalene. A quality control duplicate sample will be collected at one location during each sampling round and analyzed for VOCs/PVOCs + Naphthalene along with a trip blank.
- AECOM will coordinate disposal of soil and water drums generated during investigation and monitoring activities. AECOM anticipates that up to three drums of soil will be generated during well/piezometer construction, one to two drums of water may be generated during well well/piezometer development, and up to two drums of water may be generated during the groundwater sampling events. Similar to previous fieldwork activities, AECOM anticipates contacting the City garage to transfer and stage the drums at the City garage property prior to pick up and disposal by the waste disposal contractor(s).

Technical Memorandum

AECOM will prepare a brief technical memorandum to document the vapor intrusion sampling results. The technical memorandum will be prepared for submittal to the City and Mr. Blish to present the methods and results of vapor sampling at the private residence.

Semi-Annual Progress Report

AECOM will prepare a semi-annual progress report, as required by NR 724.13(3) of the Wisconsin Administrative Code. AECOM anticipates that only one progress report will be required to be prepared during the course of the project. The progress report will either be completed on the Remediation Site Progress and Operation, Maintenance, Monitoring & Optimization Report form (WDNR Form 4400-194) or as a summary letter report, whichever is acceptable to the WDNR project manager.

Updated Closure Request:

Unless analytical results suggest additional monitoring or investigation is required. AECOM will prepare an updated closure request packet for submittal to WDNR. The updated request will include boring logs, well construction and development forms, sampling forms, certified mail receipts for access agreement and notification letters, and analytical reports associated with the additional investigation efforts. Updated tables and figures will be prepared and submitted. Based on the analytical results, the draft maintenance plan and soil management plan submitted with the initial closure request will also be updated as necessary.

The initial closure request included notification letters submitted to a total of three private property owners. AECOM anticipates that based on the additional investigation activities and groundwater analytical results new notification letters will have to be submitted to the property owners.

Well Abandonment:

Typically site closure letters require proper abandonment of any monitoring wells associated with the project as a condition of receiving site closure. Upon receiving preliminary site closure approval, AECOM proposes to abandon the monitoring wells as required. Monitoring well abandonment forms will be prepared for submittal to the regulating agency.

PECFA Claim Submittal:

The investigation and remedial activities associated with the former gasoline UST qualifies for reimbursement under the PECFA program. The initial PECFA claim was submitted in June 2014. AECOM will follow PECFA program protocols for the proposed additional site investigation and monitoring activities. Based on recent changes to the PECFA program, claims for reimbursement must be submitted within 180 days after incurring the eligible costs. It is anticipated that the proposed scope of work can be completed in less than six months. Upon receiving a closed remedial action status and following abandonment of monitoring wells, AECOM will prepare the second PECFA claim requesting reimbursement of PECFA eligible expenses incurred. However, if the additional investigation activities extend over six months it may be necessary to submit a change order for additional services to complete a third PECFA claim.

As noted previously, although the PECFA program may reimburse a substantial share of the cost of conducting investigation and remediation of a petroleum contamination, the owner will have a program deductible which they must pay. In addition, there may be costs that are above the maximum that will be reimbursed by the fund.

Estimated Cost:

Costs associated with the above scope of work include labor, travel, equipment, supplies, driller, analytical laboratory, and waste disposal subcontractor, sample shipment costs, fieldwork, project management, and reporting. The drilling, analytical, waste disposal, and abandonment services will be competitively bid to ensure competitive pricing.

AECOM estimates that the overall costs to complete the scope of work required by WDNR to be approximately **\$27,900**. A detailed cost estimate is attached for your review.

Uncertainty is inherent in any estimate of closure costs, especially where remediation and additional monitoring have been recommended. The costs presented above are estimates; however, AECOM will seek cost savings options and approaches throughout the project. Additionally, AECOM will include a summary table of costs expended to date, anticipated remaining costs, and budget

Mr. Greg Minikel
City of Manitowoc
August 13, 2014

comparisons with each monthly invoice. Services that are not described in this proposal will not be provided without written authorization from the client.

Authorization:

The Terms of the Consulting Agreement and Authorization to Proceed dated June 15, 2009 with the City of Manitowoc, the project proposal dated April 25, 2011, and this change order dated August 11, 2014 associated with this site will be applied to this Task Order. If the scope of work, cost estimate, and schedule are satisfactory, please authorize Task Order #5 and return to me. Upon receipt of the signed Task Order and approval of PECFA eligible costs from WDNR, AECOM will initiate the work described herein.

If you have any questions or need additional information please call me at 715-342-3043 or email at dean.fenske@aecom.com.

Sincerely,

AECOM Technical Services, Inc.



Dean W. Fenske
Project Manager



David S. Henderson, P.E.
Senior Project Manager



Kevin L. Brehm, P.E.
Wisconsin Operations Manager

Attachments: Figure 1
Cost Estimate
Authorization to Proceed

Cost Estimate City of Manitowoc Flambeau Street site Manitowoc, Wisconsin				
Task	Quantity	Units	Rate	Sub-Total
Additional Investigation and Monitoring				
Consulting				
Project management/coordination	14	hours	\$ 115.00	\$ 1,610.00
QA/QC	2	hours	\$ 160.00	\$ 320.00
Update Health & Safety Plan	4	hours	\$ 160.00	\$ 640.00
Cost Cap Letter Preparation	4	hours	\$ 115.00	\$ 460.00
Contractor Bids/Contract	2	hours	\$ 115.00	\$ 230.00
Access Agreement	2	hours	\$ 115.00	\$ 230.00
Site Visit for Access Agreement	4	hours	\$ 90.00	\$ 360.00
Technical Memorandum - Vapor Intrusion	2	hours	\$ 115.00	\$ 230.00
Semi-Annual Progress Report	8	hours	\$ 115.00	\$ 920.00
Administrative support	6	hours	\$ 75.00	\$ 450.00
Fieldwork - 2 borings				
Consulting				
PM-Field Coordination	6	hours	\$ 115.00	\$ 690.00
Fieldwork, prep. & followup	3	hours	\$ 75.00	\$ 225.00
Fieldwork, data analysis	11	hours	\$ 75.00	\$ 825.00
Equipment fees	1	each	\$ 175.00	\$ 175.00
Drilling Subcontractor - Two (2) Wells				
Install two borings/wells	1	each	\$ 2,580.00	\$ 2,580.00
Private Utility Mark Subcontractor				
Private Property Utility Mark	1	each	\$ 500.00	\$ 500.00
Fieldwork - 2 rounds - 5 wells				
Consulting				
PM-Field Coordination	8	hours	\$ 115.00	\$ 920.00
Fieldwork, prep. & followup	6	hours	\$ 75.00	\$ 450.00
Fieldwork, data analysis	22	hours	\$ 75.00	\$ 1,650.00
Equipment fees	1	each	\$ 700.00	\$ 700.00
Fieldwork - Air sampling (2 trips; 1st in coord. w/ well install)				
Consulting				
PM-Field Coordination	4	hours	\$ 115.00	\$ 460.00
Fieldwork, prep. & followup	4	hours	\$ 115.00	\$ 460.00
Fieldwork, data analysis	12	hours	\$ 115.00	\$ 1,380.00
Equipment fees	1	each	\$ 400.00	\$ 400.00
Laboratory : Groundwater Samples				
Groundwater samples - 1 round-5 wells				
PVOCs + Naphthalene*	8	each	\$ 40.00	\$ 320.00
VOCs*	2	each	\$ 75.00	\$ 150.00
PAHs*	2	each	\$ 80.00	\$ 160.00
RCRA Metals*	2	each	\$ 60.00	\$ 120.00
* assumes a duplicate and trip blank				
Laboratory : Air Sample				
Summa canister sample - VOCs*	3	each	\$ 250.00	\$ 750.00
Waste Disposal				
Soil, drum	3	each	\$ 350.00	\$ 1,050.00
Groundwater, drum	4	each	\$ 320.00	\$ 1,280.00
Closure Request Packet				
Consulting				
Drafting (min. 5 figure updates)	4	hours	\$ 90.00	\$ 360.00
Update Notification letters	4	hours	\$ 115.00	\$ 460.00
Update WDNR Close Out Forms	2	hours	\$ 115.00	\$ 230.00
Updated GIS Registry Packet	6	hours	\$ 115.00	\$ 690.00
Senior Review/Signature	2	hours	\$ 160.00	\$ 320.00
Administrative support	4	hours	\$ 75.00	\$ 300.00
Post Closure Activities				
Consulting				
Project management	6	hours	\$ 115.00	\$ 690.00
Letter Preparation - Abandonment form submittal	2	hours	\$ 115.00	\$ 230.00
PECEFA Claim Preparation	10	hours	\$ 115.00	\$ 1,150.00
Internal PECEFA Claim Review	2	hours	\$ 160.00	\$ 320.00
Fieldwork (Well Abandonment)	10	hours	\$ 75.00	\$ 750.00
Subcontractor				
Abandonment of seven (7) monitoring wells	1	each	\$ 1,705.00	\$ 1,705.00
TOTAL				\$ 27,900.00

Any cost estimate provided by the Consultant will be on a basis of experience and judgment. Because Consultant has no control over market conditions or bidding procedures, Consultant cannot warrant that bids, construction costs, or project economics will not vary from these opinions.



AECOM
 1555 N RiverCenter Drive, Suite 214
 Milwaukee, WI 53212

414.944.6080 tel
 414.944.6081 fax

**TASK ORDER #5
 AUTHORIZATION TO PROCEED**

**Remedial Investigation, Monitoring, and Closure Request Services
 Flambeau Street Site, Manitowoc, Wisconsin
 AECOM Project No. 60134830 (113845)**

A. Purpose of Task Order

AECOM is to provide consulting and subcontract services associated with remedial investigation, groundwater monitoring, and closure request activities at the City of Manitowoc's Flambeau Street site. The Terms of the Consulting Agreement and Authorization to Proceed dated June 15, 2009, with the City of Manitowoc, the project proposal dated April 25, 2011, and this change order dated August 13, 2015, will be applied to this additional work.

B. Scope of Work

See Change Order #5 Proposal dated August 13, 2015.

C. Schedule

AECOM will commence the additional activities upon written authorization to proceed.

D. Compensation

The cost to complete the additional activities is estimated to be \$27,900.

By signing below and returning to Dean W. Fenske at AECOM's Stevens Point, Wisconsin office, this letter will serve as written authorization to proceed.

The above is understood and authorization to proceed is given as noted by the undersigned:

Task Order Date: August 13, 2015

Approved by:

City of Manitowoc

 Signature

 Authorized Individual

 Title

 Date

Accepted by:

AECOM Technical Services, Inc.

Jennifer Obertino

 Signature

Jennifer L. Obertino, P.E.

 Authorized Individual

Vice President, Central Midwest Environment
 Business Unit Lead

 Title

August 13, 2015

 Date



AECOM
1555 N RiverCenter Drive, Suite 214
Milwaukee, WI 53212

414.944.6080 tel
414.944.6081 fax

August 13, 2015

Mr. Greg Minikel, P.E.
Engineering Team Leader
City of Manitowoc
900 Quay Street
Manitowoc, WI 54220

Subject: **Change Order and Cost Estimate for Additional Remedial Investigation and Groundwater Monitoring Activities
Flambeau Street Site, 2418 S. 18th Street, Manitowoc, Wisconsin
BRRTS No. 02-36-553420, PECFA No. 54220-6456-18-A
AECOM Project No. 60134830 (113845)**

Dear Greg,

AECOM Technical Services, Inc. (AECOM) is providing this change order and cost estimate to the City of Manitowoc (the City) for the additional investigation and groundwater monitoring activities being required at the Flambeau Street site.

As you are aware, AECOM submitted a Case Closure Request packet to the Wisconsin Department of Natural Resources (WDNR) in January 2014. In a Case Closure denial letter dated April 7, 2014, Mr. Tom Verstegen of the WDNR requested additional off-site investigation, groundwater monitoring, and sub-slab vapor sampling at the site. The scope of work presented below for the additional activities is based on the denial letter and a telephone conversation with Mr. Verstegen on April 14, 2014. Based on the telephone conversation, additional off-site investigation activities must include construction of one monitoring well and one piezometer in the vicinity of soil boring B-108 on the property owned by Mr. Charles Blish at 2418 S. 18th Street, two groundwater sampling events at a total five wells, and conducting a sub-slab vapor assessment at the 2418 S. 18th Street property.

Mr. Verstegen acknowledged that multiple efforts were made previously by AECOM to contact Mr. Blish at 2418 S. 18th and gain access to his private property to conduct the vapor intrusion assessment. These efforts were documented in the closure request submittal. However, Mr. Verstegen stated that the members of the Northeast Region Closure Committee felt it was important that a vapor assessment be completed at this site and indicated additional efforts should be made to contact Mr. Blish. Mr. Verstegen indicated these efforts could start again with an access agreement request sent via certified mail. We should clearly indicate to Mr. Blish that refusal to allow access to his property to complete activities required by the WDNR would result in a transfer of responsibility to him for any future investigation and/or cleanup required on his property by the WDNR. If Mr. Blish still does not respond it is recommended we again try to contact him by telephone and AECOM and/or the City should make physical visits to the site to contact him at his residence. If further attempts to contact Mr. Blish fail, Mr. Verstegen indicated the WDNR may also attempt to contact him directly.

In general, the scope of work described below includes tasks to complete the additional WDNR requested services.

Project Summary

The Blish property at 2418 S. 18th Street is a residential property that was previously part of a larger parcel utilized by the F. Radandt Sons, Inc excavation company. A 1,000-gallon gasoline tank was located in what is now the Flambeau Street right-of-way north and adjacent to the 2418 S. 18th Street property. Soil contamination was discovered in 2001 during new home construction activities at 2410 S. 18th Street and reported to the Wisconsin Department of Natural Resources (WDNR). Limited soil and groundwater investigation activities were conducted by STS Consultants, Inc. in 2001 and 2002.

In June 2009 the City of Manitowoc retained AECOM to conduct Phase II Site Investigation activities which included the advancement of eight (8) Geoprobe[®] soil borings and collection of soil and groundwater samples on October 22, 2009. Prior to field work, AECOM contacted Mr. Blish at 2418 S 18th Street in a letter dated August 3, 2009 to obtain a Right-of-Entry (ROE) access agreement onto the private property for investigation activities. ROE was granted by Mr. Blish on August 16, 2009. Based on the results of the Phase II, additional investigation was required to adequately define the full extent and degree of contamination to the south west and assess groundwater quality at the site. In addition, vapor intrusion screening was recommended for the private residence at 2418 S. 18th Street. In a letter dated January 29, 2010 the WDNR indicated the Site falls under the definition of a "low or medium" risk site and oversight of the project was being transferred from WDNR to the Department of Safety and Professional Services (DSPS) [previously the Wisconsin Department of Commerce {WDCOM}].

In a letter to Mr. Blish dated June 7, 2011 AECOM requested access to the private residence to complete the vapor intrusion assessment at his property. Mr. Blish did not return the ROE agreement either granting or denying access to the property. AECOM also attempted to reach the property owner by telephone on multiple occasions without success. AECOM subsequently informed the DSPS that permission to complete the vapor screening had not been granted by Mr. Blish. In a letter dated August 16, 2011, Mr. Bob Klauk of the DSPS notified Mr. Blish of the possibility of air contamination in the basement of the residence and requested that he contact the agency within 15 days. The letter was sent by certified mail and signed for by a recipient at the 2418 S. 18th St. residence. Prior to the November 2011 remedial investigation (RI) activities, neither AECOM nor DSPS had received a response from Mr. Blish.

The remedial investigation activities included the advancement of four soil borings on November 11, 2011, to investigate the vertical and lateral extent of soil contamination previously identified at the site and assess groundwater contaminant trends. One of the soil borings was advanced off site to the west of the subject site on the residential property located at 1809 Flambeau St. to define the extent of soil contamination. The other three borings were advanced in the Flambeau Street and South 18th Street rights-of-way for construction of groundwater monitoring wells and collection of groundwater samples. Groundwater samples were collected from the three monitoring wells in November 2011, February and May 2012. At that time neither AECOM, the City, nor the DSPS had received a response from Mr. Blish at 2418 S. 18th Street allowing access to the property, therefore vapor monitoring was not completed.

AECOM submitted a Remedial Investigation and Groundwater Monitoring Report to the City and the DSPS in September 2012. In the report AECOM recommended continuing groundwater sampling at monitoring well MW-3 on an annual basis until a stable or decreasing contaminant trend was established. In a letter dated November 2, 2012, Mr. Verstegen (at that time of the DSPS) requested additional off-site investigation and groundwater sampling. The scope of work for additional activities was based on the November 2012 DSPS letter and a telephone conversation with Mr. Verstegen on November 29, 2012. Based on the telephone conversation, after completion of the required additional

Mr. Greg Minikel
City of Manitowoc
August 13, 2014

off-site investigation activities (including construction of two monitoring wells) and one groundwater sampling event of all site wells, the DSPS would potentially re-consider a closure request, if appropriate. In addition, further efforts were to be made to contact Mr. Blish at 2418 S. 18th Street to complete the requested vapor intrusion assessment.

Mr. Blish was sent a certified letter dated February 14, 2013 requesting access, which he received and signed for on February 21, 2013. Prior to the April 2013 additional RI activities, AECOM had not received the signed access agreement back nor gotten any calls from Mr. Blish with questions or concerns. The telephone number on file for Mr. Blish, and the phone number found with an on-line search was reported as disconnected and no longer in service.

The April 2013 additional off-site RI activities included the advancement of two soil borings on April 1, 2013 for soil sampling and subsequent installation of monitoring wells MW-4 and MW-5. MW-4 was installed in the east S. 18th Street right-of-way, east of the subject site. MW-5 was installed in the west S. 18th Street right-of-way, southeast of the subject site. Groundwater samples were collected at all site wells on May 7, 2013 and submitted for laboratory analysis. Based on the analytical results the Case Closure Request was submitted to the WDNR in January 2014 as discussed above.

Scope of Work

WDNR Cost Estimate Approval Letter:

Based on the scope of work required by WDNR, AECOM will prepare a cost cap exceedance approval request letter for costs eligible for reimbursement under the PECFA program. The cost estimate will be calculated in accordance with the current Usual & Customary (U&C) unit rates established by WDNR. The cost estimate will be prepared on the U&C Standardized Invoice (Schedule 15) to show a breakdown of how the proposed costs were developed. It is our understanding that the costs associated with the work required by WDNR should be eligible for PECFA reimbursement.

Please note that, although our cost cap exceedance request will include estimated costs associated with regulatory correspondence, standardized invoice preparation, well abandonment, and PECFA claim submittal, these costs are generally not approved at the time of request. It is generally indicated that costs associated with these tasks will be reviewed at the time of PECFA claim submittal and reimbursed according to task specifications with the submittal of proper supporting documentation.

In addition, although the PECFA program may reimburse a substantial share of the cost of conducting investigation and remediation of petroleum contamination, the owner will have a program deductible which they must pay. In addition, there may be costs incurred that are above the maximum that will be reimbursed by the PECFA fund.

Remedial Investigation:

- AECOM will prepare scopes of work and request competitive bids for laboratory analysis, boring advancement and monitoring well/piezometer installation, well abandonment, and soil and development/purge water disposal services.
- AECOM will update the existing Health and Safety Plan (HASP) for additional RI and groundwater monitoring activities. Additionally, AECOM, or our subcontractors, will be responsible for identifying private and publicly located underground utilities prior to commencing work. A private utility locator will be subcontracted to identify potential underground utilities on the private property at 2418 S. 18th Street.

Mr. Greg Minikel
City of Manitowoc
August 13, 2014

- AECOM will make additional attempts to contact Mr. Blish at 2418 S. 18th Street including letter correspondence sent by certified mail, telephone calls/messages and/or visits to the residence to contact Mr. Blish. For purposes of this estimate, AECOM will include costs for making one trip to the site. If successful, AECOM will work with Mr. Blish to install additional wells and complete the vapor intrusion screening in the basement of his private property.
- Air sampling will be conducted in the basement area of the residence at 2418 S. 18th Street only. The goal of the vapor intrusion testing is to evaluate whether petroleum VOC vapors are present beneath the slab and determine if they exceed the levels determined by WDNR to necessitate further investigation and/or vapor mitigation activities. The sampling protocols will generally follow the Wisconsin Department of Natural Resources' guidance "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin", PUB-RR-800, dated December 2010.

AECOM will collect one indoor and one outdoor ambient air sample. The indoor sample will be collected in the basement in the vicinity of the sub-slab sample. The outdoor sample will be collected at a location to be determined during the initial site visit. Each sample will be collected approximately 4 to 5 feet above the floor/ground. Samples will be collected in a laboratory supplied 6-liter Summa canister fitted with a 24-hour flow regulator. The samples will be collected for approximately 24 hours or until the can vacuum reaches approximately 4 inches Hg. The canisters will be left unattended over night at the residence and will require a second visit to the Site to retrieve the Summa canisters.

Sub-slab sampling in the basement will begin with a slab penetration using a power drill at a location to be determined during the initial site visit. The penetration will be approximately 5/8 inches in diameter. A 1.5-inch diameter recess hole will be drilled to approximately 2 inches below the floor grade so that a temporary brass sampling "pin" can be recessed below the floor surface. A hand pump will be used to test for sub-slab air flow by checking for vacuum at the sampling location. Sub-slab pressure will also be checked at the sampling port location using a Magnehelic[®] pressure gage.

A shut-in test will be performed on the sample tubing, in-line particulate filter, and swage-lock connection to a laboratory supplied 6-liter Summa canister. The sample tubing will then be connected to the sampling pin and the Summa canister valve will be opened. The Summa canisters will be unregulated and are expected to continuously sample for at least 30 minutes, or until the can vacuum reached four inches Hg.

Following conclusion of the indoor ambient air sampling, the sub-slab sampling pin/concrete seal will be integrity tested using helium as a tracer gas. At the completion of the sub-slab sampling, the sampling pin will be capped with a removable elastic cap. The sampling penetration will be capped with a removable black plastic cap making the floor penetration nearly flush with the floor surface. By capping and leaving the sample pins in-place, the pins are available for future sample collection if necessary. Once it is determined that no further sampling will be needed, the vapor sampling point will be properly abandoned by filling and sealing the holes with hydraulic cement.

The Summa canisters will be submitted to Pace Analytical, 1700 Elm Street SE, Suite 200, Minneapolis, MN 55414 for analysis of VOCs by EPA Method TO-15.

- Advancement of two soil borings that will be completed as a NR 141 compliant groundwater monitoring well and piezometer at 2418 S. 18th Street. The locations of the proposed borings/wells are shown on the attached Figure 1 – Proposed Well Locations. The well and piezometer will be nested together and constructed in the vicinity of soil boring B-108. The soil

boring for the monitoring well will be blind drill and no soil sampling will be conducted. The soil boring for the piezometer will be evaluated and visually classified in the field. The soil samples will be described in the field with respect to the soil type, grain size distribution, and color (or discoloration), odor, and moisture content. Visual observations of the recovered material will also be documented in accordance with ASTM Method D-2488-93. Field observations from the boring will be recorded on soil boring logs for submittal to WDNR.

- It is anticipated that the monitoring well (designated MW-6) will be completed at a depth of approximately 14 feet below ground surface (bgs) with a 10 foot screen. The piezometer (designated PZ-6) will be completed at a depth of approximately 29 bgs with a 5-foot screen.
- AECOM will develop the new well and piezometer in accordance with NR 141. AECOM will conduct two rounds of groundwater sampling at a total of 5 well (MW-2, MW-3, MW-4, MW-6, and PZ-1). The sampling events will be conducted no less than 3 months apart. Groundwater elevations will also be measured at MW-1 and MW-5 during each round to assist with groundwater flow direction determination.
- Groundwater samples collected from the MW-2, MW-3, and MW-4 will be analyzed for petroleum volatile organic compounds (PVOCs) plus naphthalene based on previous results. Groundwater samples collected from the MW-6 and PZ-1 will be analyzed for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and Resource Conservation and Recovery Act (RCRA) metals (i.e. lead and cadmium) during the first round of sampling. Dependent upon analytical results, PAH and RCRA metal sampling may be eliminated during the second round of sampling and VOCs reduced to PVOCs plus naphthalene. A quality control duplicate sample will be collected at one location during each sampling round and analyzed for VOCs/PVOCs + Naphthalene along with a trip blank.
- AECOM will coordinate disposal of soil and water drums generated during investigation and monitoring activities. AECOM anticipates that up to three drums of soil will be generated during well/piezometer construction, one to two drums of water may be generated during well well/piezometer development, and up to two drums of water may be generated during the groundwater sampling events. Similar to previous fieldwork activities, AECOM anticipates contacting the City garage to transfer and stage the drums at the City garage property prior to pick up and disposal by the waste disposal contractor(s).

Technical Memorandum

AECOM will prepare a brief technical memorandum to document the vapor intrusion sampling results. The technical memorandum will be prepared for submittal to the City and Mr. Blish to present the methods and results of vapor sampling at the private residence.

Semi-Annual Progress Report

AECOM will prepare a semi-annual progress report, as required by NR 724.13(3) of the Wisconsin Administrative Code. AECOM anticipates that only one progress report will be required to be prepared during the course of the project. The progress report will either be completed on the Remediation Site Progress and Operation, Maintenance, Monitoring & Optimization Report form (WDNR Form 4400-194) or as a summary letter report, whichever is acceptable to the WDNR project manager.

Updated Closure Request:

Unless analytical results suggest additional monitoring or investigation is required. AECOM will prepare an updated closure request packet for submittal to WDNR. The updated request will include boring logs, well construction and development forms, sampling forms, certified mail receipts for access agreement and notification letters, and analytical reports associated with the additional investigation efforts. Updated tables and figures will be prepared and submitted. Based on the analytical results, the draft maintenance plan and soil management plan submitted with the initial closure request will also be updated as necessary.

The initial closure request included notification letters submitted to a total of three private property owners. AECOM anticipates that based on the additional investigation activities and groundwater analytical results new notification letters will have to be submitted to the property owners.

Well Abandonment:

Typically site closure letters require proper abandonment of any monitoring wells associated with the project as a condition of receiving site closure. Upon receiving preliminary site closure approval, AECOM proposes to abandon the monitoring wells as required. Monitoring well abandonment forms will be prepared for submittal to the regulating agency.

PECFA Claim Submittal:

The investigation and remedial activities associated with the former gasoline UST qualifies for reimbursement under the PECFA program. The initial PECFA claim was submitted in June 2014. AECOM will follow PECFA program protocols for the proposed additional site investigation and monitoring activities. Based on recent changes to the PECFA program, claims for reimbursement must be submitted within 180 days after incurring the eligible costs. It is anticipated that the proposed scope of work can be completed in less than six months. Upon receiving a closed remedial action status and following abandonment of monitoring wells, AECOM will prepare the second PECFA claim requesting reimbursement of PECFA eligible expenses incurred. However, if the additional investigation activities extend over six months it may be necessary to submit a change order for additional services to complete a third PECFA claim.

As noted previously, although the PECFA program may reimburse a substantial share of the cost of conducting investigation and remediation of a petroleum contamination, the owner will have a program deductible which they must pay. In addition, there may be costs that are above the maximum that will be reimbursed by the fund.

Estimated Cost:

Costs associated with the above scope of work include labor, travel, equipment, supplies, driller, analytical laboratory, and waste disposal subcontractor, sample shipment costs, fieldwork, project management, and reporting. The drilling, analytical, waste disposal, and abandonment services will be competitively bid to ensure competitive pricing.

AECOM estimates that the overall costs to complete the scope of work required by WDNR to be approximately **\$27,900**. A detailed cost estimate is attached for your review.

Uncertainty is inherent in any estimate of closure costs, especially where remediation and additional monitoring have been recommended. The costs presented above are estimates; however, AECOM will seek cost savings options and approaches throughout the project. Additionally, AECOM will include a summary table of costs expended to date, anticipated remaining costs, and budget

Mr. Greg Minikel
City of Manitowoc
August 13, 2014

comparisons with each monthly invoice. Services that are not described in this proposal will not be provided without written authorization from the client.

Authorization:

The Terms of the Consulting Agreement and Authorization to Proceed dated June 15, 2009 with the City of Manitowoc, the project proposal dated April 25, 2011, and this change order dated August 11, 2014 associated with this site will be applied to this Task Order. If the scope of work, cost estimate, and schedule are satisfactory, please authorize Task Order #5 and return to me. Upon receipt of the signed Task Order and approval of PECFA eligible costs from WDNR, AECOM will initiate the work described herein.

If you have any questions or need additional information please call me at 715-342-3043 or email at dean.fenske@aecom.com.

Sincerely,

AECOM Technical Services, Inc.



Dean W. Fenske
Project Manager



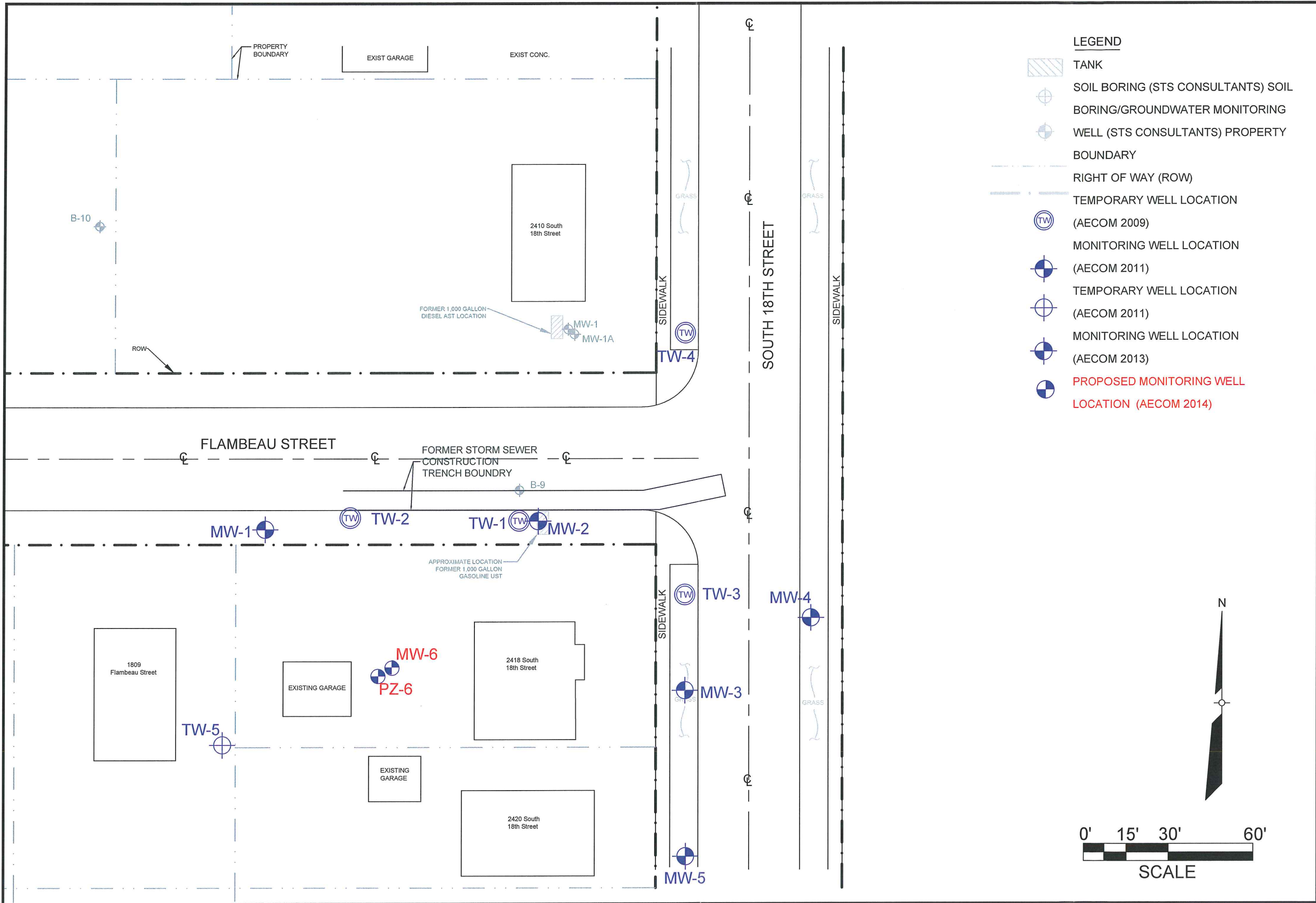
David S. Henderson, P.E.
Senior Project Manager



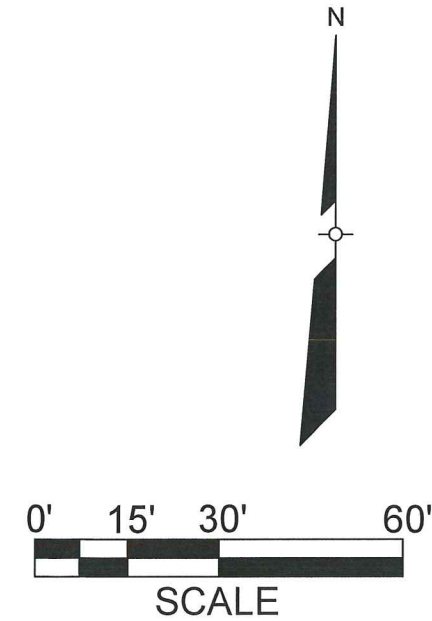
Kevin L. Brehm, P.E.
Wisconsin Operations Manager

Attachments: Figure 1
Cost Estimate
Authorization to Proceed

Filename: L:\work\113645\Cadd\Flambeau Street - CLOSURE 2013.dwg



- LEGEND**
-  TANK
 -  SOIL BORING (STS CONSULTANTS) SOIL BORING/GROUNDWATER MONITORING
 -  WELL (STS CONSULTANTS) PROPERTY BOUNDARY
 -  RIGHT OF WAY (ROW)
 -  TEMPORARY WELL LOCATION (AECOM 2009)
 -  MONITORING WELL LOCATION (AECOM 2011)
 -  TEMPORARY WELL LOCATION (AECOM 2011)
 -  MONITORING WELL LOCATION (AECOM 2013)
 -  **PROPOSED MONITORING WELL LOCATION (AECOM 2014)**



CITY OF MANITOWOC FLAMBEAU STREET MANITOWOC WISCONSIN				
PROPOSED MONITORING WELL LOCATIONS				
AECOM Milwaukee Office 1555 RiverCenter Dr Milwaukee, WI 414.944.6080				
DATE	5/30/2014	DRN BY:	SAP	VERIFY SCALE IF PLAN SHEET IS REDUCED
PROJECT NO.	60134830	DES BY:	DES BY:	1-INCH
FILENAME	Flambeau Street - CLOSURE 2013.dwg	CHK BY:	CHK BY:	1
SHEET NO.		APP BY:	APP BY:	
DRAWING NO.	1	REV	DESCRIPTION	DATE

Cost Estimate City of Manitowoc Flambeau Street site Manitowoc, Wisconsin				
Task	Quantity	Units	Rate	Sub-Total
Additional Investigation and Monitoring				
Consulting				
Project management/coordination	14	hours	\$ 115.00	\$ 1,610.00
QA/QC	2	hours	\$ 160.00	\$ 320.00
Update Health & Safety Plan	4	hours	\$ 160.00	\$ 640.00
Cost Cap Letter Preparation	4	hours	\$ 115.00	\$ 460.00
Contractor Bids/Contract	2	hours	\$ 115.00	\$ 230.00
Access Agreement	2	hours	\$ 115.00	\$ 230.00
Site Visit for Access Agreement	4	hours	\$ 90.00	\$ 360.00
Technical Memorandum - Vapor Intrusion	2	hours	\$ 115.00	\$ 230.00
Semi-Annual Progress Report	8	hours	\$ 115.00	\$ 920.00
Administrative support	6	hours	\$ 75.00	\$ 450.00
Fieldwork - 2 borings				
Consulting				
PM-Field Coordination	6	hours	\$ 115.00	\$ 690.00
Fieldwork, prep. & followup	3	hours	\$ 75.00	\$ 225.00
Fieldwork, data analysis	11	hours	\$ 75.00	\$ 825.00
Equipment fees	1	each	\$ 175.00	\$ 175.00
Drilling Subcontractor - Two (2) Wells				
Install two borings/wells	1	each	\$ 2,580.00	\$ 2,580.00
Private Utility Mark Subcontractor				
Private Property Utility Mark	1	each	\$ 500.00	\$ 500.00
Fieldwork - 2 rounds - 5 wells				
Consulting				
PM-Field Coordination	8	hours	\$ 115.00	\$ 920.00
Fieldwork, prep. & followup	6	hours	\$ 75.00	\$ 450.00
Fieldwork, data analysis	22	hours	\$ 75.00	\$ 1,650.00
Equipment fees	1	each	\$ 700.00	\$ 700.00
Fieldwork - Air sampling (2 trips; 1st in coord. w/ well install)				
Consulting				
PM-Field Coordination	4	hours	\$ 115.00	\$ 460.00
Fieldwork, prep. & followup	4	hours	\$ 115.00	\$ 460.00
Fieldwork, data analysis	12	hours	\$ 115.00	\$ 1,380.00
Equipment fees	1	each	\$ 400.00	\$ 400.00
Laboratory : Groundwater Samples				
Groundwater samples - 1 round-5 wells				
PVOCs + Naphthalene*	8	each	\$ 40.00	\$ 320.00
VOCs*	2	each	\$ 75.00	\$ 150.00
PAHs*	2	each	\$ 80.00	\$ 160.00
RCRA Metals*	2	each	\$ 60.00	\$ 120.00
* assumes a duplicate and trip blank				
Laboratory : Air Sample				
Summa canister sample -				
VOCs*	3	each	\$ 250.00	\$ 750.00
Waste Disposal				
Soil, drum	3	each	\$ 350.00	\$ 1,050.00
Groundwater, drum	4	each	\$ 320.00	\$ 1,280.00
Closure Request Packet				
Consulting				
Drafting (min. 5 figure updates)	4	hours	\$ 90.00	\$ 360.00
Update Notification letters	4	hours	\$ 115.00	\$ 460.00
Update WDNR Close Out Forms	2	hours	\$ 115.00	\$ 230.00
Updated GIS Registry Packet	6	hours	\$ 115.00	\$ 690.00
Senior Review/Signature	2	hours	\$ 160.00	\$ 320.00
Administrative support	4	hours	\$ 75.00	\$ 300.00
Post Closure Activities				
Consulting				
Project management	6	hours	\$ 115.00	\$ 690.00
Letter Preparation - Abandonment form submittal	2	hours	\$ 115.00	\$ 230.00
PECFA Claim Preparation	10	hours	\$ 115.00	\$ 1,150.00
Internal PECFA Claim Review	2	hours	\$ 160.00	\$ 320.00
Fieldwork (Well Abandonment)	10	hours	\$ 75.00	\$ 750.00
Subcontractor				
Abandonment of seven (7) monitoring wells	1	each	\$ 1,705.00	\$ 1,705.00
TOTAL				\$ 27,900.00

Any cost estimate provided by the Consultant will be on a basis of experience and judgment. Because Consultant has no control over market conditions or bidding procedures, Consultant cannot warrant that bids, construction costs, or project economics will not vary from these opinions.



AECOM
 1555 N RiverCenter Drive, Suite 214
 Milwaukee, WI 53212

414.944.6080 tel
 414.944.6081 fax

**TASK ORDER #5
 AUTHORIZATION TO PROCEED**

**Remedial Investigation, Monitoring, and Closure Request Services
 Flambeau Street Site, Manitowoc, Wisconsin
 AECOM Project No. 60134830 (113845)**

A. Purpose of Task Order

AECOM is to provide consulting and subcontract services associated with remedial investigation, groundwater monitoring, and closure request activities at the City of Manitowoc's Flambeau Street site. The Terms of the Consulting Agreement and Authorization to Proceed dated June 15, 2009, with the City of Manitowoc, the project proposal dated April 25, 2011, and this change order dated August 13, 2015, will be applied to this additional work.

B. Scope of Work

See Change Order #5 Proposal dated August 13, 2015.

C. Schedule

AECOM will commence the additional activities upon written authorization to proceed.

D. Compensation

The cost to complete the additional activities is estimated to be \$27,900.

By signing below and returning to Dean W. Fenske at AECOM's Stevens Point, Wisconsin office, this letter will serve as written authorization to proceed.

The above is understood and authorization to proceed is given as noted by the undersigned:

Task Order Date: August 13, 2015

Approved by:

City of Manitowoc

 Signature

 Authorized Individual

 Title

 Date

Accepted by:

AECOM Technical Services, Inc.

Jennifer Obertino

 Signature

Jennifer L. Obertino, P.E.

 Authorized Individual

Vice President, Central Midwest Environment
 Business Unit Lead

 Title

August 13, 2015

 Date