Lu Engineers
ENVIRONMENTAL • TRANSPORTATION • CIVIL

September 3, 2010

Peter S. Ouderkirk, P.E.
Environmental Engineer II
New York State Department of Environmental Remediation
Division of Environmental Remediation, Region 6
Dulles State Office Building, 317 Washington Street
Watertown, New York 13601-3787

RE: Pilot Test for Proposed Interim Remedial Measures, PAOC2
Sewall's Island ERP Site (E#623021)
City of Watertown, Jefferson County, New York

Dear Mr. Ouderkirk:

Per our recent discussions, Lu Engineers proposes to evaluate the viability of total fluids extraction (TFE) as an Interim Remedial Measure (IRM) to address residual subsurface petroleum contamination associated with PAOC2 located on the subject ERP Site. We propose to conduct a TFE pilot study under the IRM program for this site in order to evaluate the utility of this method for removal of free phase oil and petroleum tied up in the soils within PAOC2. A plan is attached that provides a detailed view of PAOC2.

The proposed pilot test approach is comprised of three primary components:

- Extraction Well/Piezometer (EW) Installation
- Total Fluids Extraction
- Evaluation of Effectiveness

Extraction Well/Piezometer Installation
Review of site RI findings to date has helped to infer the extent of petroleum-impacted soils associated with PAOC2. Affected soils appear to be generally limited to the southern end of the former foundation slab to the immediate east of the northeast wing wall of the Pearl Street bridge over the south branch of the Black River. The occurrence of an oil sheen seep in the bedrock river bed adjacent to this location is consistent with the inferred extent of contamination.

It is assumed that a total of up to 10 locations may be selected for EW installation as part of potential full IRM implementation. We propose to initially install two (2) piezometer/extraction wells (EWs) at the locations indicated in the attached plan. These wells will be installed in accordance with applicable procedures detailed in NYSDEC DER 10. These and the adjacent wells

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(MW-02S and 02D) will also be used as piezometers to gage the effectiveness and radial influence of the TFE process.

As indicated on the attached plan, the proposed EWs have been located based on an assumed minimal radial vacuum influence of 20 feet such that the entire area of inferred petroleum contamination is accessible to TFE. The area to include the two (2) pilot test EWs is considered to be the most heavily contaminated portion of PAOC2 due to its proximity to the oil seep. The 20-foot radius is based on Lu Engineers' findings during TFE and vapor extraction efforts on sites with similar soil types. If the radial influence is observed to be inadequate during the Pilot Test, additional EWs would be considered for full IRM implementation.

The EWs will be set with a discreet screened interval to be determined based on the observed occurrence of petroleum contamination as the drilling progresses. Samples will be obtained by split spoon or direct-push type tooling as necessary to identify the areas requiring remediation. Photoionization Detector (PID) readings will be taken on all sample intervals. Drill logs and construction diagrams will be prepared to accurately document the EW installations.

An example of the proposed EW design is attached for reference. Based on the findings to date, it is assumed that the screen interval will be approximately 2 feet in each location. The well screen interval will be as small as possible to assure high vacuum levels at the well casing outside the well and mitigate short-circuiting to the extent possible. Each well will be terminated at the bedrock/overburden interface. Sand will be used to fill the well bore annulus to 1 foot above the screen. A 5% bentonite grout will be used to seal the well bore above the screen to prevent vacuum short circuiting. Protective casings will not be installed. J-Plugs will be used to seal each EW when not in use.

The uppermost portion of the well casing will be fitted with male "Cam-Lock" fittings to facilitate attachment of two-inch diameter vacuum hose while TFE efforts are underway.

Total Fluids Extraction Implementation

A vacuum tanker truck is proposed for use as the vacuum source and storage container for purposes of the TFE pilot test. The vacuum truck will be capable of generation a vacuum of approximately 24 inches of mercury and storing a total of 3,500 gallons of oil/water mixture. The vacuum truck will be grounded using a 5-foot copper sheathed grounding rod driven into the soils adjacent to the truck.

A vacuum will be applied to each of the two proposed EWs for a minimum of up to 6 hours each. Vacuum and water levels will be checked at each of the surrounding wells while TFE testing is in progress to gage actual radial influence and effectiveness. PID and/or explosimeter readings will also be taken from the system vapor effluent during operation of the TFE system. All readings will be recorded and used to evaluate subsurface conditions and more completely document contaminant mass removal. Air effluent permitting is not anticipated for this part of the IRM process.

Pilot testing is proposed to be conducted over a two day period. The actual test period will be determined based on the findings of the in-progress testing with the concurrence of the City and NYSDEC. Accumulated fluids will be transported to and disposed of at Industrial Oil Services, Incorporated located in Utica, NY after each day of testing. All transportation and disposal will be conducted in accordance with applicable laws and regulations.

Evaluation of Effectiveness

The vacuum and field instrument readings obtained during the TFE process will be used to determine the effectiveness of this IRM approach in mitigating the occurrence of oil seepage into the south branch of the Black River in this location. Vapor and oil/water volumes and aqueous phase concentrations will be used to determine the total contaminant mass removal to allow projected removal mass during full implementation.

It is noted that the methodology proposed herein is based on the assumption that this work will be conducted during the months of September and/or October 2010 to minimize the potential presence of groundwater within the affected soil strata in PAOC2. If this pilot test or the full IRM are completed while groundwater and river elevations are not at a minimum, additional provisions and costs for water handling and disposal will be necessary.

A request for additional State Assistance Contract funding to complete this portion of the project was previously sent under separate cover. Please call or e-mail (gregandrus@luengineers.com) with any questions or comments you may have.

Respectfully,

Gregory L. Andrus, CHMM
Group Leader
Investigation/Remediation

Enclosures as Noted

Cc: Ken Mix – City of Watertown

PEARL STREET

Chainlink Fence

R.O.W.

R.O.W.

Concrete Wall

440

450

SB-20

TP-22

PROJECTED RADIIAL
VACUUM INFLUENCE (TYP.)

TP-21

(FORMER)
BUILDING FOOTPRINT

TP-23

APPROXIMATE AREA
OF OIL SEEP

MW-02S
GRND. ELEV=459.56'

Top of Bank

MW-02D
GRND. ELEV=459.52'

SB-19

SB-37

RAILROAD BRIDGE

Bottom of Bank/Debris Line

460

Railroad Underpass

470

flow

BLACK
RIVER

SB-32

459

MW-04
GRND. ELEV=470.85'

LEGEND

- TEST PIT
- MONITORING WELL
- SOIL BORING
- PROPOSED EXTRACTION WELL/PIEZOMETER (FULL IMPLEMENTATION)
- PROPOSED EXTRACTION WELL/PIEZOMETER (PILOT TEST)

DATE: MAY 2010

SCALE: 1" = 20'-0"

DESIGNED/DRAWN/CHECKED: GLA/DLS/GLA

IMAGE SOURCE
NEW YORK STATE DIGITAL ORTHOIMAGERY PROGRAM
GIS DATA - HIGH RESOLUTION IMAGERY, 2006

FIGURE __. PA06-2 DETAIL
REMEDIAL INVESTIGATION

CITY OF WATERTOWN
SEWELL'S ISLAND
WATERTOWN, NEW YORK

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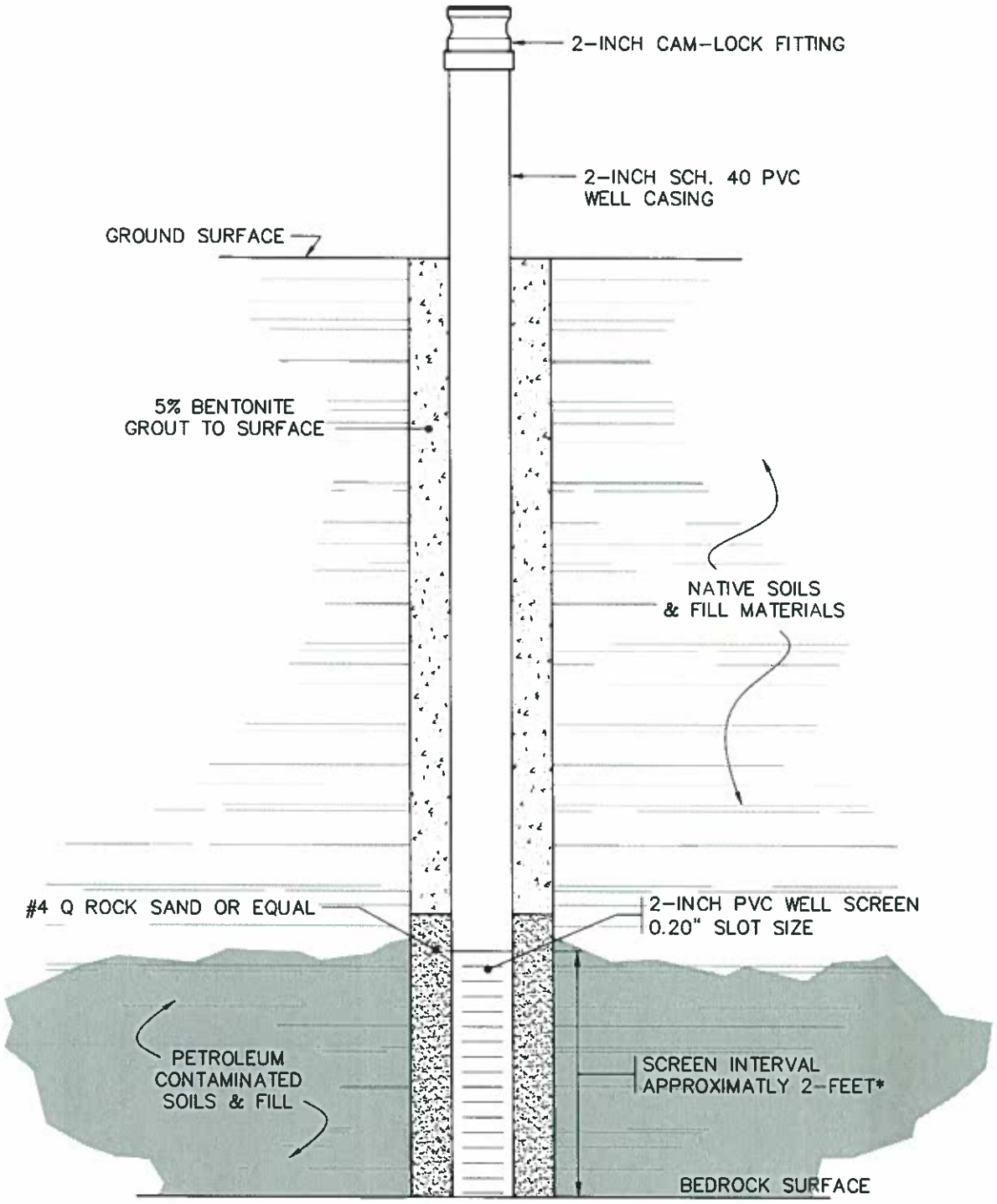

EXTRACTION WELL DETAIL

NOT TO SCALE

*TO BE DETERMINED BASED ON FINDINGS DURING WELL INSTALLATION

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TOTAL FLUIDS EXTRACTION WELL DETAIL

CITY OF WATERTOWN
SEWALL'S ISLAND ERP SITE

DATE:	JUNE 2010
SCALE:	NONE
DRAWN/CHECKED	DLS/GLA
P.N.	34202

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