FINAL ENGINEERING REPORT

Interim Remedial Measure (IRM)
Excavation/Removal of Petroleum Impacted Soils

Environmental Restoration Program Project
For the Bush Site Number: E905029
Village of Cattaraugus

Prepared for:

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1.0 INTRODUCTION

1.1 Purpose of Report

The primary purpose of this report is to describe the Interim Remedial Measures (IRM) completed at the Bush Site in the Village of Cattaraugus, New York (refer to Figure 1) in 2007/2008 pursuant to an approved IRM Work Plan. The IRM was initiated to excavate and dispose off site petroleum impacted soils identified during a 2006 site investigation as part of the Site Investigation/Remedial Alternatives Report (SI/RAR) program at the Bush. This report provides details of the IRM remedial activities and a survey map identifying the boundaries of the site subject to the SI/RAR/IRM program.

In addition to the IRM, as part of the SI/RAR, the final remedy for the site requires a site management plan (SMP) consisting of institutional/engineering controls (IC/EC) for future site development. The SMP was issued final under separate cover in February 2009 (*Site Management Plan, Environmental restoration Program Project for the Bush Site No. E905029, prepared for: Village of Cattaraugus, prepared by; PEI, February 2009).*The SMP provides a description of these controls including ICs for an environmental easement with site classification restrictions and ECs for soils management requirements to mitigate human exposure to slightly impacted site soils during future development.

1.2 Background

1.2.1 Site History and Description

The Bush Site is the location of the former Setter Brothers/Bush Industries property, located at 1 North Main Street in the Town of New Albion, Village of Cattaraugus, Cattaraugus County, New York. Vacant since about 1989, the property consists of approximately 4.43-acres and is currently owned by the Village of Cattaraugus (refer to Figure 2).

Prior to the SI/RAR, the site contained the remnants of a former manufacturing facility including parts of the building shell and building rubble from a partial demolition by a previous owner. As part of the SI/RAR, the remaining shell and building rubble were removed in 2007 to the foundation level. Concrete slab foundations from former buildings covered much of the west end of the Site up to and immediately adjacent Main Street. Prior to Setter Brothers/Bush Industries use of the entire site, historical maps of the property indicated that a Standard Oil facility, an apple evaporator, and gasoline service were formerly associated with portions of the west end of the site adjacent to Main Street. These were located on the site prior to the Bush facility which eventually expanded and took over the entire site. A more detailed history of the site is contained in the SI/RAR report.

1.2.2 Site Investigations

In 2005, the Village of Cattaraugus contracted Panamerican Environmental, Inc. (PEI) and its teaming partner URS Corporation (URS) to conduct the SI and prepare a RAR under the New York State Department of Environmental Protection (DEC) Environmental Restoration Program (ERP -under the 1996 Clean Water/Clean Air Bond Act ECL Article 56 - 6NYCRR 375-4). The goal of the program was to complete focused environmental investigations to accurately assess the potential for contamination, its source, nature and extent, and to develop sufficient data to support the development of long-term remedial alternatives at the site. The final SI/RAR (*Site Investigation and Remedial Action Report, Former Bush industries Site No. E905029, prepared for: Village of Cattaraugus, prepared by; PEI/URS, April 2008)* concluded that petroleum impacted soils existed in the area of the former Standard Oil facility with volatile organic compound (VOC) concentrations that exceeded soil cleanup guidelines (SCGs) established for the site (NYSDEC TAGM 4046 and/or 6 NYCRR Part 375 Restricted Residential Soil Cleanup Guidance Values). To remove this contaminate source, a work plan was completed and approved in August 2007 for an IRM to excavate and dispose off site the impacted soils.

1.2.3 Site Survey

A property/boundary survey was completed in 2005 as part of the SI/RAR program. The property survey was referenced to the New York State Plane Coordinate System West Zone North American Datum of 1983 (NAD83) as a basis of horizontal control and North American Vertical Datum of 1988 (NAVD88) as a basis of vertical control.

A property title research was first completed at the Village and County Clerk's Offices. Once completed, the final exterior boundary was surveyed and monumented with iron pins at the corners where none existed. All of the title information, recovered monuments and new set corner monuments were incorporated onto a final map. The survey map (refer to Figure 2) indicates the boundary lines with all existing buildings (since removed), fences, and other key site features and boundary analysis data.

An environmental easement was established as part of the SMP. A copy of the environmental easement and metes and bounds description is provided in Appendix G.

2.0 INTERIM REMEDIAL MEASURES

2.1 Remedial Actions

Upon NYSDEC and the Village's approval of the IRM work plan in 2007, construction bid documents were prepared for implementing the IRM. The project was publically advertised and bids were received on November 9, 2007. After bid review, a contract was awarded to the lowest

bidder, Horizon Environmental Services. Construction began on December 5, 2007 and was completed on January 16, 2008 (backfilling to grade). The area and depth of the petroleum impacted soils removed along with confirmation sample locations are provided in Figure 7.
The IRM remedial actions consisted of:

- The excavating and stockpiling of the surface concrete slab covering the area of impacted soil;

- The excavation, transportation, and landfill disposal of 3,397 tons of petroleum impacted soils;

- The pumping of groundwater (after testing) encountered during excavation and disposal of this groundwater to the ground downgradient of the excavation;

- The backfilling of the excavation to grade with the stockpiled concrete, an estimated 750 tons of on-site fill, and 3,402 tons of approved imported clean fill.

2.2 Cleanup Levels

The potential area of soil impact was estimated from the results of the SI/RAR prior to the IRM and used in developing the specification for the IRM. Soil cleanup levels were based on NYSDEC Technical Assistance and Guidance Memorandum 4046 (TAGM, revised 1994) soil cleanup guideline levels and Soil Cleanup Objectives (SCOs) as presented in 6 NYCRR Part 375 for "Restricted Residential" cleanup levels. The IRM resulted in all petroleum impacted soils being excavated from the area that had VOC/SVOC concentrations exceeding TAGM 4046 soil cleanup guideline levels and/or Part 375 "Restricted Residential" cleanup levels.

2.3 IRM Construction

2.3.1 Surface Concrete Removal

To gain access to the impacted soils a concrete slab (former building floor) that covered the entire impacted area had to be removed. The concrete varied in thickness. The majority was about 6-8 inches thick and was removed with a backhoe. Thicker concrete areas (1-2 feet), which consisted primarily of old building footers and a subsurface floor slab, were broken up with a larger pavement breaker before removal. All surface concrete sections were inspected for petroleum residue by PEI's site inspector and DEC representative. Most of the concrete was determined to be "clean" and was stockpiled for reuse as backfill. Some of the sub-floor concrete pieces were visually contaminated and disposed of with the impacted soil.

2.3.2 Impacted Soil Removal

After removal of the concrete surface slab, petroleum impacted soils were removed by using a track excavator. The excavator loaded impacted soils into dump trucks for transport to the

Chautauqua County Landfill (located at 3889 Towerville Road, Jamestown, New York 14701). This landfill is permitted to except petroleum impacted soils for disposal. Each truck delivering soils from the site to the landfill received a manifest/weigh ticket showing the tonnage received at the landfill for disposal and included appropriate signatures, ticket numbers, dates, etc. Copies of all weigh tickets/manifests are provided in Appendix B. A total of 3,397 tons of petroleum impacted soil was excavated and disposed of at the landfill.

During excavation activities, PEI's site inspector monitored the excavated soil and excavation using a total organic vapor monitor - photoionization detector (PID) and performed visual and olfactory observations. Soil was screened for the presence of petroleum-based volatile organic compounds (VOC's) as the excavation progressed. Screening was performed in two ways: 1) by placing a representative sample from the excavation walls or floor into a ziplock plastic bag, sealing the bag, and allowing the sample to volatilize for an average of 10 minutes and 2) using the PID directly over soil as it was excavated. The concentration of VOC's were measured and recorded by inserting the tip of the Photoionization Detector (PID) into the sample head-space or over the newly excavated soil.

All soils with visual signs of contamination (discoloring), odors and/or elevated PID readings (VOCs) were removed. When the inspector determined the lateral or vertical extent of the impacted soils had been reached by the means noted above, confirmation samples were collected for laboratory analysis (refer to Section 2.3.4). NYSDEC representatives were on-site during some of the excavation, screening and sample activities and observed the final excavation prior to backfilling.

2.3.3 Groundwater Control

Groundwater and surface water/rain/snow melt that entered the excavation was collected in a sump constructed at the low end of the excavation. In general, the water was observed to be visibly "clean" and free of any extensive sheen. The sump water was sampled and analyzed for petroleum related compounds. No petroleum related compounds were detected. Based on these results and in accordance with NYSDEC approval, the water was pumped from the sump to the ground surface sufficiently down gradient and away from the excavation. The excavation sump water analytical sample results are provided in Appendix A.

2.3.4 Excavation Confirmation Testing

Upon completion of excavation and before backfill placement, confirmation samples were collected from the excavation sidewalls and bottom (refer to Figure 7). Two samples were collected from each sidewall of the excavation (8 total) and four collected from the excavation bottom for a total of 12 samples. All the samples analyzed were non-detect for petroleum related compounds. Based on visual observations, PID results and sample analysis, it was determined that all of the petroleum impacted soils had been removed from the area. Analytical results for the confirmation samples are provided in Appendix A.

2.3.5 Excavation Backfill

The contract technical specifications called for using approximately 1,500 tons of on site stockpiled fill as excavation backfill. This material was previously sampled and analyzed and determined to be acceptable for use as backfill. However, because the IRM was conducted in December/January, some of this material was completely saturated and therefore only a portion was used to backfill the excavation (500 to 700 tons). Additional fill was imported from an acceptable offsite source. The remainder of the saturated fill was spread out on the site for use in the spring to fill in any portions of the area that had settled. Prior to backfilling with soil, the stockpiled surface concrete slabs were placed at the bottom of the excavation upon approval by NYSDEC.

The additional imported backfill came from the NYSDEC permitted DR Smith Gravel Pit in the Town of Persia, County of Cattaraugus, New York. A copy of their mining permit is provided in Appendix C. A composite sample was collected from the source soil prior to transporting any fill to the site. The sample was analyzed for the compounds listed in the NYSDEC DER-10 Imported Fill Requirements. The analysis indicated that the concentrations of detected compounds were significantly below the DER-10 Track 2 - Restricted Residential acceptance levels accept for the metal Selenium at 5.9 ppm verses the DER-10 level of 4 ppm. Overall the material was deemed acceptable for site backfill. Sample analytical results for the backfill material are provided in Appendix C.

PEI's site inspector recorded 162 truck loads of material placed in the excavation over a five day period to fill the excavation to grade. An additional three truck loads of fill (63 tons) were placed in March 2008 as part of the site restoration to fill in low areas and complete final grading. The total amount of fill imported to fill the excavation was 3,465 tons.

2.3.6 Site Restoration

At completion of backfilling, disturbed areas were graded for drainage with partial success because of extremely wet conditions due to the mid winter time frame. Final site grading was completed in March of 2008 include filling depressed areas with additional fill (refer to 2.3.5 Excavation Backfill) and grading the IRM area.

Also, in December 2008, the remaining two on-site groundwater monitoring wells (MW-3 and MW-4) that were installed during the SI/RAR were decommissioned by over drilling the casings and grouting the wells. Field well decommissioning forms are provided in Appendix F. Both MW-1 and MW-2 were destroyed/removed during the IRM excavation process.

Photographs of the IRM construction program are provided in Appendix E.

2.4 Changes to Design Documents

The only significant change to the design documents was not being able to use all of the on-site stockpiled soil for fill due to the extremely wet soil conditions (refer to Section 2.3.5 above). This resulted in the importation of additional soil to make up the difference.

3.0 QUANTITIES AND COSTS

A summary table of construction quantities and costs comparing bid/contract quantities/costs to actual completion quantities/costs is provided in Appendix D.

4.0 CERTIFICATIONS

The engineer's and Owner's certifications are provided in Appendix H.