day
DAY ENVIRONMENTAL, INC.

ENVIRONMENTAL CONSULTANTS
AN AFFILIATE OF DAY ENGINEERING, P.C.

October 15, 2014

Mr. Eugene Melnyk
Division of Environmental Remediation
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203-2899

Re: Remedial Action Work Plan Supplement: Polishing Treatment of Residuals
Anderson Cleaners Site
Jamestown, New York
Brownfield Cleanup Program Site #C907027

Dear Mr. Melnyk:

Day Environmental, Inc. (DAY) prepared this letter on behalf of Anderson Cleaners (Anderson) describing the proposed steps for implementing the polishing stage of the remedial activity in progress at the Anderson Cleaners facility located on 5 Hunt Road, Jamestown, New York (the Site). In accordance with the staged remediation program developed under the NYSDEC-approved Remedial Action Work Plan (RAWP, dated March 2013) for this Site, the proposed polishing activity is intended to assist in remediation of residuals remaining in the soil and groundwater following completion of the dense non-aqueous phase liquid (DNAPL) extraction stage of the RAWP.

Background

The Site consists of approximately 2.4 acres of land located partially in the City of Jamestown and partially in the Town of Ellicott, New York. As described in the RAWP, dry cleaning operations at the Site were conducted using Stoddard solvent (1947-1978) and perchloroethene (1978-2002), and subsequent remedial investigation work identified the contaminants of concern (COC) at the Site to include Dense Non-Aqueous Phase Liquid (DNAPL), or undissolved PCE, that acts as a source material for the following breakdown products detected within the groundwater at the Site:

- perchlorothene (PCE);
- trichloroethene (TCE);
- 1,1-dichloroethene (1,1 DCE);
- trans-1, 2-dichloroethene (trans-1, 2 DCE);
- cis-1, 2-dichloroethene (cis-1,2 DCE); and
- vinyl chloride (VC).

A Remedial Action Work Plan (RAWP, dated March 2013) was subsequently developed and implemented for the Site, which prescribed a staged remediation approach to include the following:

- DNAPL Extraction intended to physically remove undissolved PCE that serves as a source material for dissolved phase PCE and associated breakdown products that migrate through the groundwater, and potentially other media.

- Plume Containment completed in conjunction with the DNAPL Extraction to preclude off-site contaminant migration of COC.

- Chemical Oxidation used as a polishing step after DNAPL is extracted to the extent possible to remove the PCE source.

- If deemed necessary, In-Situ Bioremediation after the DNAPL source zone is adequately addressed.

To date, DNAPL Extraction has been completed to the extent possible and Plume Containment activities have been initiated. This supplement to the RAWP describes the Chemical Oxidation proposed for the DNAPL removal area.

Polishing Treatment of Residuals

In accordance with the RAWP, in-situ chemical oxidation will be used as a polish to address remaining residual contamination at the Site. A solution of potassium permanganate will be injected into three of the existing monitoring wells at the Site, the locations of which are depicted on Figure 1. These monitoring wells are three of the extraction wells previously utilized for the DNAPL extraction stage of the Site remedy, and which are located in areas of highest observed contamination. Potassium permanganate is a strong oxidizer that breaks down organic compounds such as contaminants of concern at the Site, including perchlorothene (PCE), trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC), into their elemental components.

The chemical injections will be introduced using a passive (non-pressurized) process wherein an aqueous solution of soluble potassium permanganate is slowly released into each of the monitoring wells shown in Figure 1. To assure even distribution of the chemical, the permanganate solution will be gravity applied at only one well at a time, wherein the application rate of the solution will be controlled through use of a needle valve to slowly release the chemical through tubing into each well. Once the measured amount of permanganate solution has been added to the well, the injection process will be repeated at another of the injection well locations, until a minimum amount of 125 lb of potassium permanganate has been applied to each of the three injection wells. The chemical applied at each well will passively diffuse into the groundwater table, oxidizing any organic content that it contacts.

The potassium permanganate solution will be mixed onsite in a 500-gallon steel tank, using a garden hose and vacuum educator to pull the potassium permanganate powder into solution while minimizing personnel contact and respiratory exposure risks. Personnel health and safety procedures will be the same as those approved for use in handling and management of PCE recovered during completion of the DNAPL extraction activities, and as described in the Health and Safety Plan (HASP) provided as part of the RAWP for these activities. In addition to the RAWP HASP protocols, the following precautions will also be implemented for the polishing stage work:

- To respond to potential personnel exposure emergencies, a neutralizer solution of water, hydrogen peroxide and white distilled vinegar will be maintained on site in spray bottles for emergency application to skin exposure as needed.

- Sodium thiosulfate will also be maintained onsite for neutralization of potassium permanganate spills that may occur.

Effectiveness monitoring will be accomplished through review and evaluation of results from the long term groundwater monitoring program that was implemented as part of the RAWP. Monitoring of contaminant and/or permanganate concentrations over time in this manner will dictate the need for additional potassium permanganate applications, and/or additional remedial stages, as per the RAWP.

Should you have questions or require further information, please feel free to call.

Very truly yours,
Day Environmental, Inc.

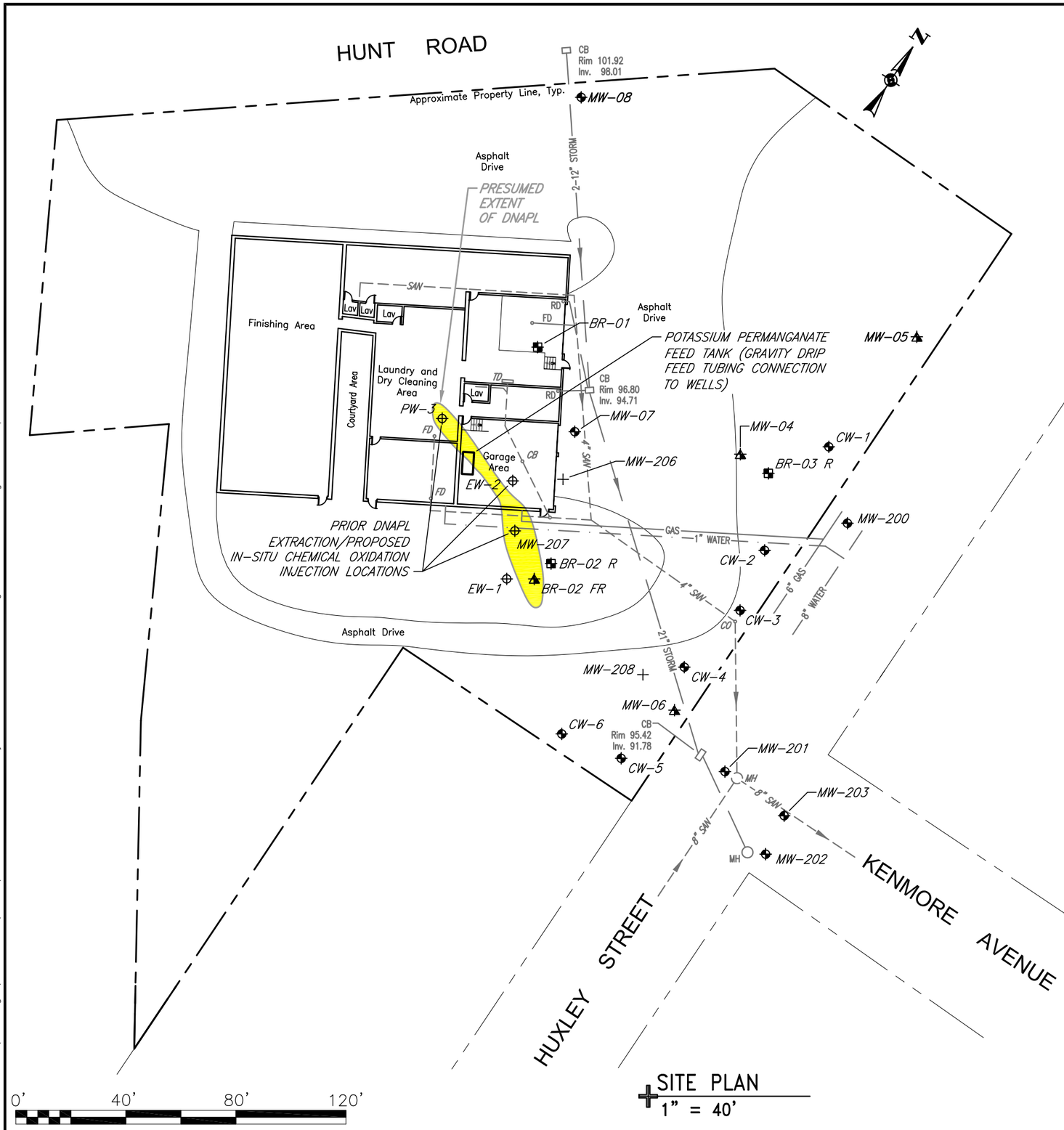
Raymond L. Kampff
Associate Principal

RLK/s

Figures
Figure 1 Site Plan – Polishing Stage Chemical Injection Locations

cc: M. Lyons

BFK3854



LEGEND:

BR-03 R	Bedrock Monitoring Well
MW-04	Top of Rock/Fractured Rock Monitoring Well
CW-1	Overburden/Top of Till Monitoring Well
EW-1	DNAPL Extraction Well
MW-208	Bioremediation Pilot Test Injection Well
CB	Catch Basin
FD	Floor Drain
MH	Manhole
Rim 100.83	Rim Elevation In Feet
Inv. 95.55	Invert Elevation In Feet
RD	Roof Drain
TD	Trench Drain
6" GAS	Gas Line (Approx 2.5 feet below grade)
8" SAN	Sanitary Sewer (Approx 5–7 feet below grade)
STORM	Storm Sewer (Approx 4–6 feet below grade)
8" WATER	Water Line (Approx 5–7 feet below grade)

NOTES:

1. Site Plan produced from drawings by Habiterra Associates, Thorsell, Kennedy, Casker, Arnone & Hedin. P.C. entitled "Addition and Renovations, Anderson Cleaners, Inc", drawings A–1 Floor Plan dated October 22, 1985 and L–1 Grading Plan and from notes of site visits by representatives of Day Environmental, Inc.
2. Well locations MW–04, MW–06, MW–07 and MW–08 were obtained in the field by a Trimble GeoXT GPS. Other well and test boring locations were obtained by tape measurement from existing site structure. Locations should be considered accurate to the degree implied by the method used.
3. Utility locations were obtained in the field by a Trimble GeoXT GPS, from drawings referenced in Note 1, A 1967 map from Jamestown DPW showing the proposed location of a permanent easement for the purpose of constructing and maintaining a storm sewer from the existing catch basin on the west side of Huxley Street to the west city line, and from a 1951 DPW storm sewer filed book number 438S, page 107. Locations should be considered accurate to the degree implied by the method used.
4. Elevation survey data determined by Michael J. Rodgers, LS, PC, and referenced to an arbitrary site wide datum. Elevations should be considered accurate to the degree implied by the method used.
5. Approximate depths of gas line, sanitary sewer, storm sewer and water line were obtained from a hand drawn plan from "Jamestown Board of Public Utilities, Anderson Cleaners Sewer Connection Map", dated October 2, 1985.

PROJECT MANAGER	BFK
DATE	10-2014
DRAWN BY	RJM
DATE DRAWN	10-15-2014
SCALE	As Noted
DATE ISSUED	10-15-2014

day
DAY ENVIRONMENTAL, INC.
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PROJECT TITLE
5 HUNT ROAD
JAMESTOWN, NEW YORK

REMEDIAL ACTION WORK PLAN SUPPLEMENT - BCP #C907027

DRAWING TITLE
Site Plan - Polishing Stage Chemical Injection Locations

PROJECT NO.
3563S-04

FIGURE 1

Ref1:
Ref2:
Ref3:
Xerox432AnsiB-2; 11 x 17
Layout Name: Layout1
Pen Setting File: 800psFullcolor.ctb
Time Plotted: Wednesday, October 15, 2014 2:06:54 PM
File Name: P:\Drawings\Brownfield\3563\40 Scale Chemical Injection Well Oct 2014.dwg