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SUPPLEMENTAL REMEDIAL ACTION PLAN

ROCO, LTD SITE
1746 DALE ROAD
CHEEKTOWAGA, NEW YORK

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1. INTRODUCTION

Leader Professional Services, Inc. ("Leader") was retained by RoCo, Ltd. ("RoCo") to implement a Remedial Action Plan ("RAP") and a groundwater monitoring program, under the Voluntary Cleanup Program ("VCP") guidelines, for the property at 1746 Dale Road, Cheektowaga, Erie County, New York (hereafter referred to as "the Site"). This Supplemental Remedial Action Plan ("SRA") includes a description of the proposed second injection of materials to enhance the biodegradation of the chlorinated volatile organic compounds ("VOCs") at the Site.

1.1 Background

Leader prepared and submitted a March 2004 VCP Supplemental Site Investigation ("SSI"), Bioremediation Pilot Study ("BPS"), and RAP document for the Site that was approved by New York State Department of Environmental Conservation ("NYSDEC") for implementation (see the March 2004 submittal for additional background information regarding the Site). The Hydrogen Release Compound ("HRC") injection portion of the RAP, using HRC®-X, was ultimately implemented in September 2005. These remedial activities were followed by monthly groundwater level and water quality measurements through May 2008. Bimonthly analytical testing summaries for three (3) of the monitoring wells were submitted electronically to the NYSDEC throughout the course of the monitoring program.

In 2007, NYSDEC requested that intrusive vapors be assessed at the Site. Leader submitted an Intrusive Soil Vapor Sampling and Analysis ("ISVSA") Program to the NYSDEC in September 2007. Upon approval of the ISVSA Plan, Leader commenced sampling activities at the Site on December 3, 2007. The results were submitted to NYSDEC in a January 2008 summary report, along with the groundwater monitoring data that had been collected.

In a March 25, 2008 letter, NYSDEC requested additional measures to improve the rate of VOC reduction in groundwater. During a May 27, 2008 meeting, NYSDEC requested that Leader evaluate additional remedial technologies and alternatives and prepare this SRA.

1.2 Purpose

The purpose of this SRA is to summarize a supplemental remedial action appropriate for the Site that will accelerate the reduction of chlorinated VOCs in the groundwater. An additional objective of the proposed remedial action is to reduce the mass of chlorinated VOCs in the saturated subsurface, thereby reducing potential indoor air vapor intrusion of these analytes.

1.2 Scope of Work

The SRA will generally consist of the following tasks:

- An injection geoprobe will be mobilized to the Site and HRC Primer® and Metals Reducing Compound ("MRC®") will be injected at eight (8) locations;
- Approximately 240 pounds of HRC Primer and approximately 480 pounds of MRC will be injected into the subsurface soils at designated points near GW-3, GW-4, GW-6, and GW-7, where some chlorinated VOC concentrations are above applicable NYSDEC groundwater standards;
- The month prior to the HRC Primer and MRC injections and each month following, Leader will continue to monitor field parameters (i.e., groundwater measurements, etc.) in GW-1, GW-2, GW-3, GW-4, GW-5, GW-6 and GW-7;
- Every other month beginning with two (2) months following the injections, one groundwater sample will be collected from GW-1, GW-3, and GW-7 and analyzed for sulfate, total organic carbon ("TOC"), dissolved iron, and target compound list ("TCL") VOC analysis using USEPA Method 8260;

- Bi-monthly reports will be electronically submitted to NYSDEC; and
- A written report will be prepared relating the findings of this SRA.

2. PROPOSED REMEDIAL ACTION PLAN

2.1 Supplemental Remedial Action Field Activities

This section outlines the SRA, which involves a focused bioremediation program at the Site. The activities summarized herein will be conducted in general accordance with the NYSDEC-approved Health and Safety Plan and QA/QC Plan for this VCP.

Based on a review of the historical groundwater data for the Site, Leader and Regenesis engineers designed a combined HRC Primer and MRC mixture injection program to specifically address the remaining chlorinated VOCs. Based on the nature of the plume and the prior success of the HRC injection, a focused HRC Primer and MRC injection program was identified as the most cost effective approach. A description of this remedial alternative is summarized below.

2.2 Remedial Technology Description

The goal of this project is to provide an additive that will complete the bioremediation program initiated in 2005. HRC and HRC-X were applied to promote anaerobic biodegradation of target chlorinated VOCs. Significant reductions were observed; however, some biodegradation products such as dichloroethene ("DCE") and vinyl chloride ("VC") remain. The HRC Primer and MRC have been developed to address these types of residual compounds.

Use of HRC to Accelerate Bioremediation

HRC is used to enhance in situ biodegradation rates for chlorinated hydrocarbons ("CHs") by supporting the anaerobic reductive dechlorination processes. Reductive dechlorination is now recognized as one of the primary attenuation mechanisms by which chlorinated VOC groundwater plumes can be contained and/or remediated.

HRC is a proprietary polylactate ester that, upon being deposited into the subsurface,

slowly releases lactate. Lactate is metabolized by naturally occurring microorganisms, resulting in the creation of anaerobic aquifer conditions and the production of hydrogen. Naturally occurring microorganisms capable of reductive dechlorination then use the hydrogen to progressively remove chlorine atoms from chlorinated hydrocarbon contaminants (i.e., convert compounds such as tetrachloroethene ("PCE") to trichloroethene ("TCE") to DCE to VC, and eventually to ethene).

HRC is manufactured as a viscous gel that can be injected into the saturated zone in a grid or barrier configuration for either localized area or cutoff-based treatment approaches. The use of HRC for groundwater remediation offers a comparatively simple and cost effective remediation alternative for sites that would otherwise require unacceptably long periods of time for natural attenuation or the high levels of capital investment and operating expense associated with active remediation technologies. HRC is also a component of MRC.

HRC Primer

HRC Primer is a less viscous version of the standard HRC product. It is a thinner, water-like compound that is typically injected into an aquifer where it releases lactic acid at a rate faster than standard HRC (several weeks), but at a slower, more controlled rate than dispersing aqueous simple sugar solutions or straight lactic acid (several days). HRC Primer makes lactic acid more immediately available for fermentation by subsurface microbes. The lactic acid is in turn used by other microbes to produce hydrogen, the key ingredient in the anaerobic contaminant degrading process known as reductive dechlorination. HRC Primer is typically recommended where high levels of competing electron acceptors ("CEAs"), primarily sulfates, exist and need to be reduced.

MRC

MRC is supplied as a viscous liquid for direct injection into contaminated and saturated soils. The material itself is very much like HRC. This product is comprised of a polylactate polymer and a benign organosulfur compound ("BOC") allowing for a

controlled release of its active components for a longer term. Since MRC contains a polylactate polymer, reductive dechlorination can be enhanced by the available electron donor and carbon source.

The product is typically used for hexavalent chromium ("Cr VI") and chlorinated solvent removal. MRC also has the ability to foster the direct chemical reduction of not only metals but chlorinated solvents such as TCE, DCE and VC. The organosulfur compound is a direct reductant and is responsible for chemical reaction. Therefore, MRC may be used to enhance the rate of both biotic and abiotic cVOC reductions.

2.3 Remedial Design

Design Parameters

Based on the data collected to date, the following estimates were developed to identify system design variables and dose amounts. The plume was divided into two (2) treatment zones based on the TCE, DCE and VC concentrations.

Treatment Area

Area A: Source

- Plume area requiring treatment: 20 x 30 ft (GW-3)
- Representative contaminant concentration: 53,000ug/L DCE; 29,000ug/L VC
- Contaminated saturated zone thickness requiring treatment: 10 feet

Current groundwater geochemistry is estimated to be: oxygen 2mg/L, nitrate 1mg/L, potential manganese reduction demand 5 mg/L, potential ferric iron reduction demand 15 mg/L, and potential sulfate reduction demand 50 mg/L.

Area B: Plume

- Plume area requiring treatment: approximately 20 ' x60' (GW-7)

- Representative contaminant concentration: 25ug/L TCE; 450ug/L VC
- Contaminated saturated zone thickness requiring treatment: 10 feet

Current groundwater geochemistry is estimated to be: oxygen 2mg/L, nitrate 1mg/L, potential manganese reduction demand 5 mg/L, potential ferric iron reduction demand 15 mg/L, and potential sulfate reduction demand 50 mg/L.

Preliminary Design for Full-Scale Remediation

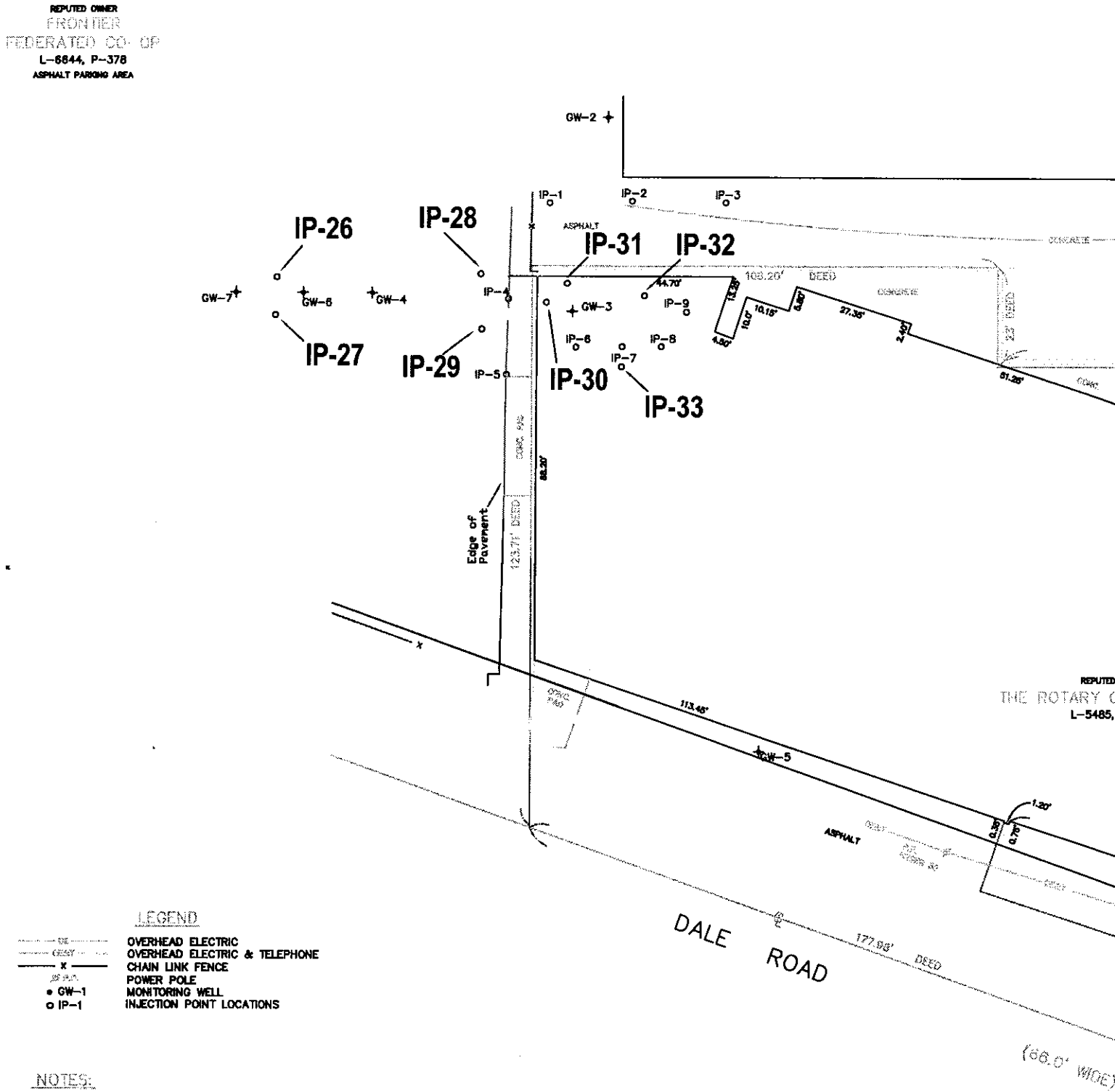
It is assumed that the full-scale remediation approach for the Site would consist of a grid-based application to reduce contaminant levels in the plume.

HRC Primer and MRC Treatment - Grid Application **Area A - Source**	
Design Feature	**Specification**
Thickness requiring treatment	10 feet
Treatment Area	20 feet x 30 feet
VOC Concentration	53,300 ug/L DCE; 29,000 ug/L VC
Delivery: Injection Point Spacing	4 injection points
MRC dose rate HRC Primer	MRC: 7 lbs per vertical foot HRC Primer: 3 lbs per vertical foot
Material requirement	MRC: 4 points x 7 lbs per foot x 10 feet =280 lbs adjust to 300 lbs (sold in 30 lb units) HRC Primer: 4 points x 3 lbs/ft x 10 feet= 120 lbs

HRC Primer and MRC Treatment - Grid Application Area B - Plume	
Design Feature	**Specification**
Thickness requiring treatment	10 feet
Treatment Area	20 feet x 60 feet
VOC Concentration	25 ug/L DCE, 450 ug/L VC
Delivery: Injection Point Spacing	4 injection points
MRC dose rate HRC Primer	4 lbs per vertical foot 3 lbs per vertical foot
Material requirement	MRC: 4 points x 4 lbs per foot x 10 feet = 160 lbs adjust to 180 lbs MRC (sold in 30 lb units) HRC primer: 4 points x 3 lbs per foot x 10 feet = 120 lbs

2.4 Injection of HRC Primer and MRC

The SRA will involve the insitu bioremediation of the soil and groundwater at the Site through the addition of proprietary compounds called HRC Primer and MRC that enhance natural biodegradation of the chlorinated VOCs. Approximately 240 pounds of HRC Primer and 480 pounds of MRC will be injected into the subsurface soils in designated areas near GW-3, GW-4, GW-6, and GW-7 (See Figure 1). The HRC Primer and MRC Dispersion Remedial Plan (See Table 1) shows the loading amounts for each injection point. Figure 1 shows the proposed eight (8) injection point locations. Injection points IP-26 through IP-29 will be located west of the Site on the Upstate Farms Cooperative, Inc. property, and injection points IP-30 through IP-33 will be located within the interior of the RoCo Site building.



LEGEND

- OVERHEAD ELECTRIC
- OVERHEAD ELECTRIC & TELEPHONE
- CHAIN LINK FENCE
- POWER POLE
- GW-1 MONITORING WELL
- IP-1 INJECTION POINT LOCATIONS

NOTES:

1) SUPPLEMENTAL REMEDIAL ACTION INJECTION POINTS ARE IN LARGE BOLD PRINT.

Title	SRA INJECTION LOCATION PLAN RoCo, Ltd., Cheektowaga, New York
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Project Number:	147.007		
Date:	JUNE 2008		
Drawn By:	LAA	Checked By:	JAW
Scale:	1" = 30 FEET		

TABLE 1 HRC PRIMER AND MRC DISPERSION - REMEDIAL PLAN
RoCo, Ltd. 1746 Dale Road, Cheektowaga, New York

Injection Point	Depth of Injection Point (ft)	Total lbs of HRC Primer per Injection Point	Total lbs of MRC per Injection Point	Notes:
IP-26	10	30	40	Area B: Plume
IP-27	10	30	40	Area B: Plume
IP-28	10	30	40	Area B: Plume
IP-29	10	30	40	Area B: Plume
IP-30	10	30	70	Area A: Source
IP-31	10	30	70	Area A: Source
IP-32	10	30	70	Area A: Source
IP-33	10	30	70	Area A: Source
		Total: 240 lbs	**Total: 440 lbs**	

Adjusted Total*: 480 lbs

*HRC Primer and MRC are sold in 30 lb units.

Zebra Environmental, Inc. ("Zebra") will mobilize the following equipment to the Site for the implementation of the RAP: 1) a track unit; 2) a core drill; 3) a GS2000 pump; and 4) HRC Primer and MRC. The injection points will be drilled and HRC Primer and MRC will then be injected into the points in accordance with the design mixtures previously discussed. After completion of the injections, each point will be sealed with bentonite and a concrete/asphalt surface seal.

2.5 Monitoring

The following schedule presents the monitoring program for the SRA.

Time	Groundwater Measurements	Redox	Analytical Testing
Prior to HRC Primer and MRC Injections	X	X	Sulfate, TOC, Iron, VOCs in Monitoring Wells GW-1, GW-3, and GW-7
Month No.1	X	X	
Month No.2	X	X	
Month No.3	X	X	
Month No.4	X	X	Sulfate, TOC, Iron, VOCs in Monitoring Wells GW-1, GW-3, and GW-7
Month No.5	X	X	
Month No.6	X	X	Sulfate, TOC, Iron, VOCs in Monitoring Wells GW-1, GW-3, and GW-7
Month No.7	X	X	
Month No.8	X	X	Sulfate, TOC, Iron, VOCs in Monitoring Wells GW-1, GW-3, and GW-7
Month No.9	X	X	
Month No.10	X	X	Sulfate, TOC, Iron, VOCs in Monitoring Wells GW-1, GW-3, and GW-7

Month No.11	X	X	
Month No.12	X	X	Sulfate, TOC, Iron, VOCs

The month prior to the HRC Primer and MRC injection and each month following, Leader will monitor field parameters (i.e, groundwater measurements, Reduction-Oxidation ("Redox")) in GW-1, GW-2, GW-3, GW-4, GW-5, GW-6 and GW-7.

Every other month following the third month after injection, one groundwater sample will be collected from GW-1, GW-3, and GW-7 and analyzed for sulfate, TOC, dissolved iron, and TCL VOC analysis using USEPA Method 8260.

2.6 Site-Specific RAOs

It is anticipated that the selected remedy will achieve the general Remedial Action Objectives ("RAOs") summarized below:

- To prevent future exposure of human or animal receptors to contaminated groundwater or soil; and
- To prevent or mitigate the migration of contaminants that will cause groundwater contamination above the site-specific RAOs

However, bioremediation using HRC Primer and MRC may not result in groundwater concentrations at all monitoring well locations being below drinking water standards (e.g., the groundwater standard for TCE is 0.7 ppb). Thus, Site-specific RAOs have been developed that achieve the General RAOs while providing for some flexibility should future remedial efforts reach a point of diminishing returns. These site-specific RAOs are summarized below.

- Future residual groundwater and/or soil contamination will not pose an unacceptable risk to human health and the environment;
- The residual groundwater and soil contamination, if present, will be compatible with the anticipated future use of the site; and

- An approximate "zero slope" will be reached with regard to groundwater quality (i.e., continued treatment will not result in a decrease in the concentration of analytes in the groundwater).

This approach is reasonable based on the following site-specific conditions:

- The local groundwater currently has no beneficial use and is unlikely to be used in the foreseeable future;
- The present lack of completed pathways of human exposure and the absence of a significant threat to public health;
- The technical impracticability of restoring the groundwater to pre-release conditions, given the inaccessibility of the source area and the heterogeneous subsurface conditions; and
- The site's commercial/industrial setting and the absence of sensitive environmental receptors.

2.7 Report

A written report will be prepared relating the findings of the SRA. This report will include conclusions and recommendations. This report will also include photographs of field activities, analytical laboratory reports and figures and tables.

2.8 Schedule

Following NYSDEC approval of the SRA, Leader will schedule the HRC Primer and MRC injections with Zebra. Prior to the start of the work, Leader and Zebra will meet on-Site to determine the accessibility of the proposed injection points. Once the injection point locations are determined, the areas will be marked for clearing of current on-Site equipment where possible. Zebra will mobilize the equipment to the Site and begin coring the injection points. Following one day of coring, HRC Primer and MRC will be

injected into the completed injection points while the remaining injection points are cored. The total injection program is anticipated to take approximately two (2) days.

3. LIMITATIONS AND USE OF REPORT

This SRA was prepared by Leader Professional Services, Inc. in accordance with generally accepted practices of other consultants preparing similar reports, and we observed that degree of care and skill generally exercised by other consultants under similar circumstances and conditions. The analyses and conclusions submitted in this report are based upon data and information, provided by others, and is contingent upon their validity.

This SRA was prepared exclusively for Jackle, Fleischmann & Mugel, LLP for specific application to the RoCo, Ltd, Cheektowaga, New York Site in accordance with generally accepted engineering practice. No other warranty, expressed or implied, is made.