CORRECTIVE MEASURES WORK PLAN

AMERICAN CLEANERS MIDDLETOWN INC.
MIDDLETOWN, NY

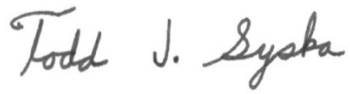
BROWNFIELD CLEANUP PROGRAM (BCP)
SITE NUMBER C336091

November 06, 2024

Prepared By
Todd J. Syska Inc.

Certification

I Todd J. Syska certify that I am currently a NYS registered professional geologist and that this Corrective Measures Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).@;



Todd J. Syska P.G.
NYS PG # 393

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1.0 Site Information

American Cleaners Middletown is located in the Town of Wallkill, approximately 0.4 miles east of the Middletown City Boundary at 360 Route 211E at the Caldor-Lloyds Mall. American Cleaners constructed their current building and commenced operations in 1982. Tetrachloroethene (PCE) was routinely used in the dry-cleaning machines, and as a spot cleaner, as a normal part of their operation until about 2015. Groundwater under the site and soil vapor under the building contain traces of PCE. The source of the onsite contamination was one known spill of approximately 20gallons of dry-cleaning fluid which occurred during an unloading operation. This spill occurred in the vicinity of the back door to the building. Tetrachloroethene is no longer used at the site. A site location map is included, (Attachment 1).

2.0 Site Inspection and Monitoring

A requirement of the ongoing remediation of the site includes a site inspection and the monitoring of groundwater and soil vapor on a 15-month schedule.

In February 2024, the site inspection and sampling for the above site was completed in accordance with the Site Maintenance Plan (SMP).

3.0 Groundwater Information

Groundwater on site is generally located at a depth of approximately 4 ft - 8ft below grade. The direction of groundwater flow is towards the north. (Attachment 2)

3.1 Previous Groundwater Remediation

Site investigations have been conducted on this site since before 2018. In 2019 a groundwater remediation project was undertaken at the site. Sodium Lactate was injected into the groundwater through dedicated remediation wells. Following sufficient time for the Sodium Lactate to remove the dissolved oxygen from the groundwater bacteria was introduced through the same dedicated remediation wells. The intent was for this specialized bacterium to convert the PCE in the groundwater, into harmless byproducts over an approximate five-year period.

3.2 Groundwater Monitoring

The constituents of concern (COC) for the site are Tetrachloroethylene (PCE) and the breakdown products ,Trichloroethylene (TCE), Dichloroethene (DCE), and Vinyl Chloride (VC)

The results of the February 2024 groundwater monitoring indicate that these products still exist on site at levels ranging from Non-Detect to 857 mg/l. A site plan indicating the levels of the COC at each monitoring well is attached, (Figure 3)

4.0 Planned Groundwater Injection Event

For this upcoming groundwater injection event two products form EOS Remediation will be used. EOS Pro, an emulsified vegetable oil enriched to optimize anaerobic bioremegiation of chloroinated solvents and other recalcitrant chemicals in contaminated groundwater and BAC-9 a microbial consortium of dehalococcoides, mccartyi enriched to degrade PCE and TCE completely. This enriched bioaugmentation culture is capable of degrading chloronated solvents to innocuous compounds via halorespiration. EOS Remediation product information sheets are attached. (Attachment 4)

It is recommended that 220 gallons, approximately 1,600 pounds, of EOS Pro, and 4 liters of EOS Bac 9 be divided among injection wells, per the manufactures instructions, and the following table. This product has been shown to be effective in treating the contamination on this site and should boost the remediation effort, bringing the site to closure. A site plan showing the location of the injection wells is attached. (Attachment 5).

Injection Well #	Lactate (gallons)	Bac-9 (liters)
A1	30	0.5
A2	30	0.5
A3	30	0.5
B1	50	1.0
B3	50	1.0
B5	30	0.5

5.0 Supplemental Soil Investigation

A Soil Vapor Extraction System (SVES) has been in operation at the site for several years. As part of the 15 month scheduled site monitoring, the soil vapor beneath the building is monitored at 4 locations. The results of this monitoring reviewed that the soil vapor under the building is still above acceptable limits. It is therefore proposed, as part of this work plan, that an investigation be conducted to determine if a source of these vapors exists within the soils under the building, that would warrant modifications to the existing SVES.

The supplemental soil investigation consists of taking eight soil samples from beneath the building. The building was constructed with five trenches, 2.5 feet deep, within the building for the purpose of hanging clothing. Two soil samples will be taken from soils between each of the trenches, to investigate if the soils between the trenches contain residual soil contamination. The samples will be taken from just below the concrete slab to a depth of two feet to investigate if residual contamination is present. Additional information regarding the soil sampling event is included. (Attachment 6) A building diagram is included showing the location of the proposed soil samples. (Attachment 7)

6.0 Schedule

The supplemental soil investigation is scheduled for December 2024.

A report regarding the findings of the supplemental soil investigation will be submitted in January of 2025.

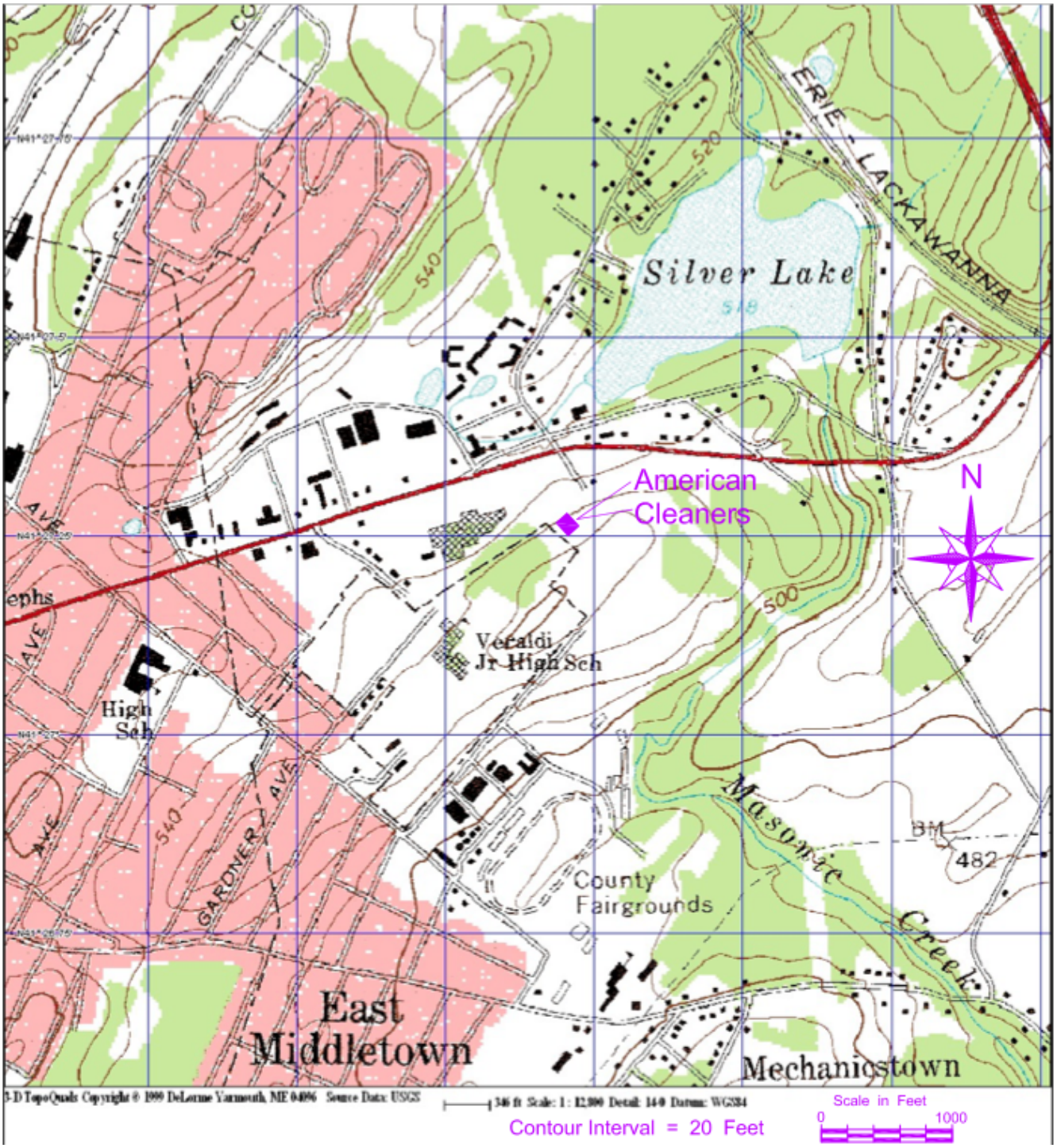
The groundwater injection event will occur in the spring of 2025. The results of the groundwater injection will be monitored and reported as part of the approved ongoing monitoring plan.

7.0 Waste Generation

With the exception of minor solid waste associated with the remediation event, there will be no waste generated as part of the on-site remediation efforts. The solid waste generated will be placed in the on site dumpster targeted for a municipal waste landfill.

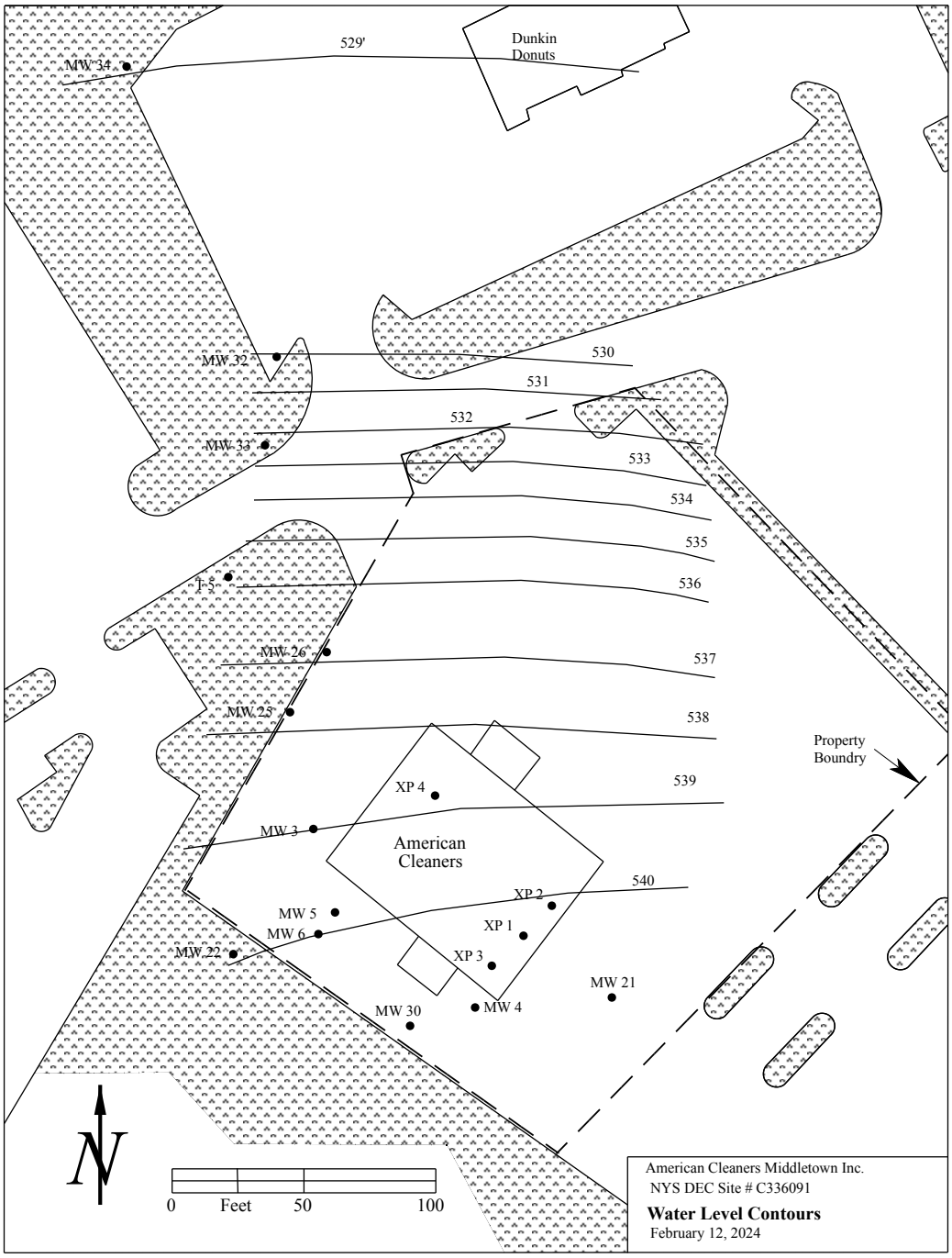
Attachment 1

Site Location Map



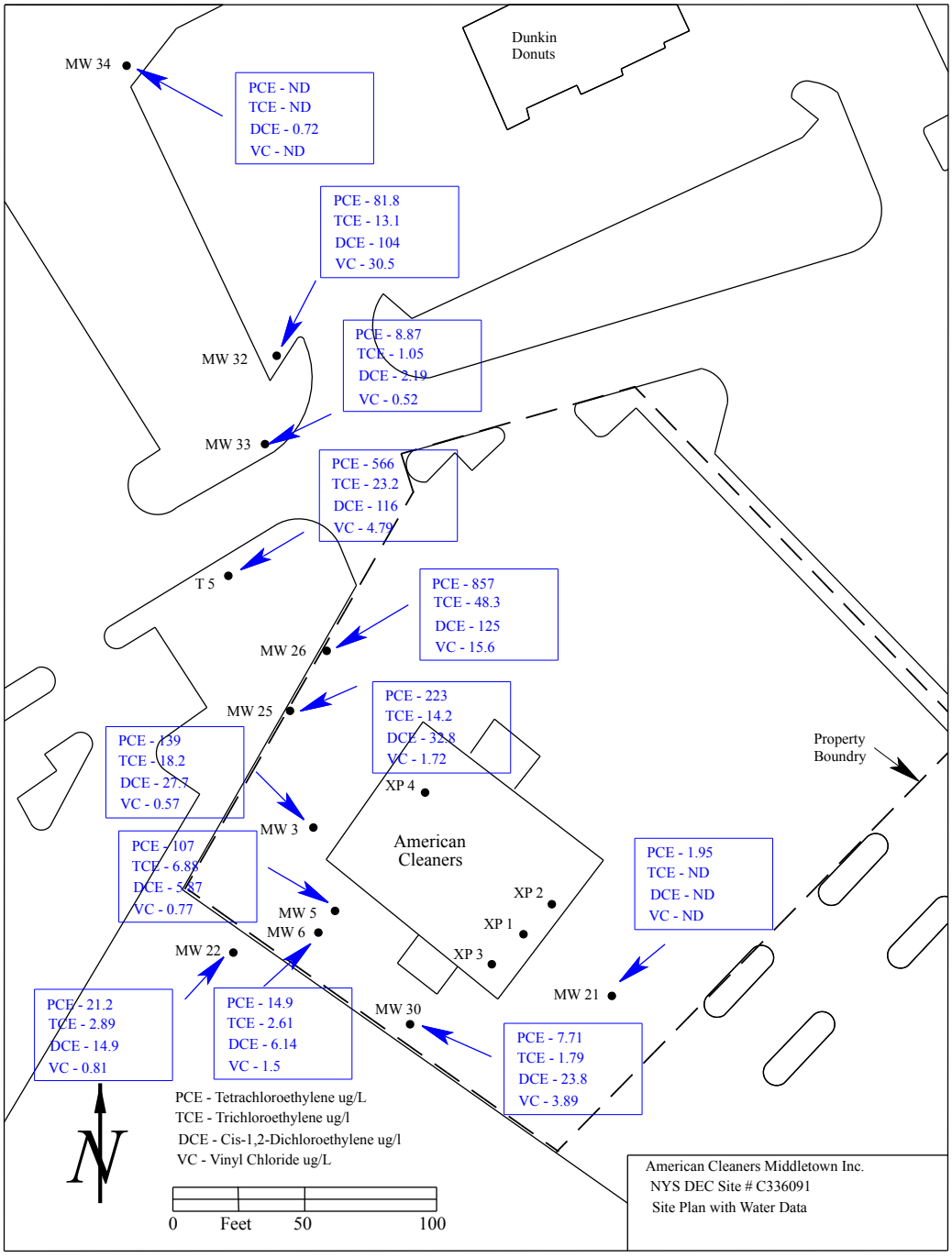
Attachment 2

Water Level Contour Map



Attachment 3

Groundwater Data



Attachment 4

EOS Remediation
Product Information

Emulsified vegetable oil (EVO) enriched to optimize anaerobic bioremediation of chlorinated solvents and other recalcitrant chemicals in contaminated groundwater.

USDA CERTIFIED BIOBASED PRODUCT
PRODUCT 95%

Product Advantages

- New and improved nutrient package for optimal *Dehalococcoides (Dhc) mccartyi* growth
- Slow and fast release substrates
- Engineered for effective transport
- Third party validated
- Food-grade and USDA certified
- 74% fermentable carbon
- Regulatory acceptance

**Experience you can rely on,
Products you can trust™**

EOS Remediation

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info@eosremediation.com

NEW & IMPROVED
EOSPRO

Description

EOSPRO is a nutrient-enriched, DoD-validated, emulsified vegetable oil (EVO). EOSPRO is engineered to quickly stimulate microbial activity while providing long-term nourishment to enhance anaerobic bioremediation of chlorinated solvents, nitrates, perchlorate, energetics, acid mine drainage, and other recalcitrant chemicals in contaminated groundwater. EOSPRO can also be used to reduce redox sensitive metals and radionuclides. The negative surface charges on the droplets combined with small droplet size promote effective transport in the subsurface.

EOSPRO benefits include:

- New and improved nutrient package for optimal *Dehalococcoides (Dhc) mccartyi* growth
- Rapidly-biodegradable substrates to "jump start" bacterial growth
- Slow release biodegradable substrates to promote long-term biological activity
- Engineered for effective transport in the subsurface
    - Small oil droplet size
    - Negative surface charge
- Extensive third-party validation

EOSPRO incorporates the patented EOS® technologies that clients have trusted for more than two decades. Domestic supply made in the USA with US farmed soybeans.

USDA CERTIFIED BIOBASED PRODUCT
PRODUCT 95%

Chemical & Physical Properties

Oil Emulsion Concentrate: EOSPRO	Typical
Refined and Bleached US Soybean Oil (% by wt.)	59.8
Rapidly Biodegradable Soluble Substrate (% by wt.)	4
Other Organics (emulsifiers, nutrients, etc.) (% by wt.)	10
Specific Gravity	0.96 - 0.98
pH (Standard Units)	6 - 7
Median Oil Droplet Size (microns)	1.0
Organic Carbon (% by wt.)	74

Packaging

Shipped in 55-gallon drums, 275-gallon IBC totes or bulk tankers (40,000 lbs.)

Handling & Storage

EOSPRO is shipped as a ready-to-use concentrated emulsion that can be diluted with water in the field to prepare a high quality suspension for easy injection. EOSPRO has a low viscosity and can be distributed with commonly available pumps or by continuous metering with a diluter (e.g., Dosatron™). Dilution ratios for EOSPRO typically range from 4:1 to 20:1 (water: EOSPRO) depending on site conditions. EOSPRO injections should be followed with additional chase water to maximize distribution of EOSPRO into the formation.

EOSPRO can be injected with EOSQR, CoBupH or BAC-9. Call us for more details.

For best performance, use EOSPRO as shipped, within 60 days of delivery and store at a temperature between 40°F (4°C) to 100°F (38°C).

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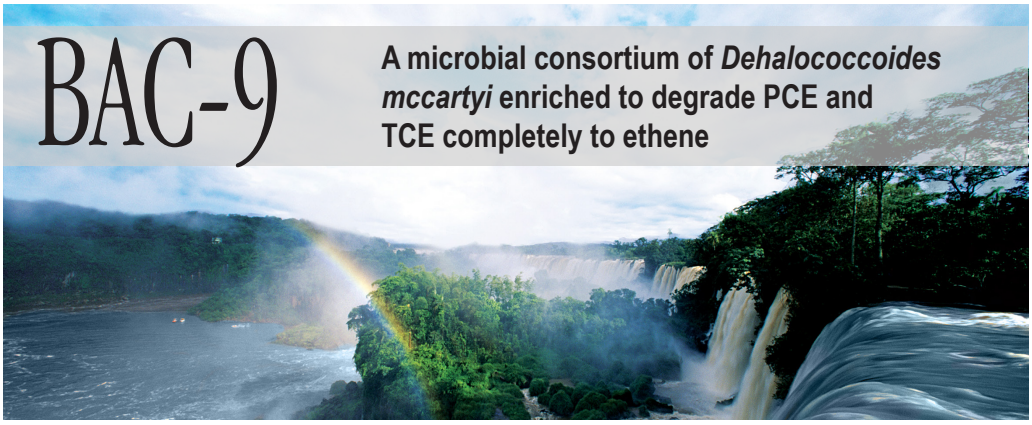
www.eosremediation.com

Rev. 4.2023



Enriched bioaugmentation culture capable of degrading chlorinated solvents to innocuous compounds via halorespiration

Product Advantages

- High cell concentration: 10^{11} Cells/L
- Direct injection for in situ treatment of chlorinated ethenes
- Degrades: PCE, TCE, cis & trans-DCE, VC, Freon 113, mixed plumes containing 1,1,1-TCA & 1,1,2-TCA, dichloroethane isomers, CT, chloroform, and bromine compounds

EOS Remediation

**Experience you can rely on,
Products you can trust™**

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www.eosremediation.com

Brad Elkins
BElkins@eosremediation.com

BAC-9

Description

BAC-9 is an enriched bioaugmentation culture capable of degrading chlorinated solvents to innocuous compounds efficiently via halorespiration.

Applications:

- Direct injection for *in situ* treatment of chlorinated ethenes
- Inoculation of on-site bioreactors
- Degrades: tetrachloroethylene (PCE), trichloroethene, (TCE), dichloroethene isomers (cis & trans-DCE), vinyl chloride (VC), Freon 113, mixed plumes containing trichloroethane (1,1,1-TCA & 1,1,2-TCA), dichloroethane isomers, carbon tetrachloride (CT), chloroform, and bromine compounds (carbon tetrabromide, bromoform, ethylene dibromide (EDB) and bromoethane)

Chemical & Physical Properties

	Typical
Bioaugmentation Culture: BAC-9 Microbial consortium including *Dehalococcoides mccartyi* and enzymes in a water-based medium	10^{11} Cells/L

Packaging

Shipped in 19 liter pressurized soda keg. Orders greater than 19 liters are concentrated up to 10-fold to significantly reduce shipping and supply costs for your project. Actual volumes and concentration factor will be written on a hang tag attached with the keg.

See the EOS® website for an instructional video on BAC-9 handling and injection procedure.

Handling & Storage

BAC-9 is shipped overnight direct to your site in a chilled cooler. Your BAC-9 delivery includes: instruction manual, delivery cylinder (request 1, 2 or 3.5 liter) with quick connects and ¼" ID tubing hose barbs. An inert gas (Nitrogen or Argon) cylinder, regulator, and additional tubing to reach the injection point are required but not included.

BAC-9 must be stored at 4°C (40°F) and can remain usable for up-to three weeks from delivery.

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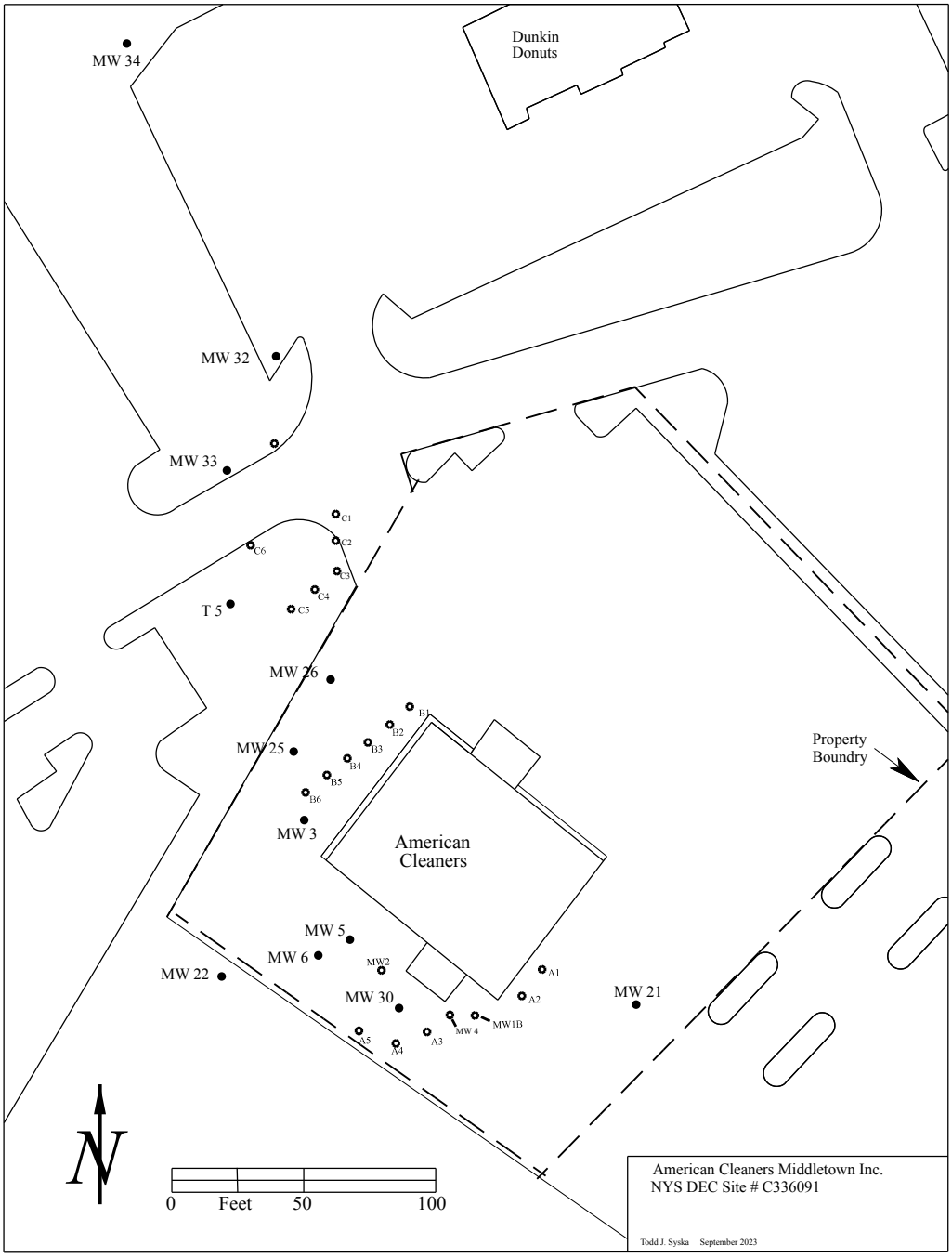
Rev. 5.2016

Attachment 5

Injection Well Locations



Attachment 6

Supplemental Soil Investigation
Additional Information

	No. Samples	EPA Method	Container	Preservative	Hold Time
Soil Samples	8	8260	Terracore Kit 4 X 40 ml	DI, MeOH	14 days
Soil Duplicate	1	8260	Terracore Kit 4 X 40 ml	DI, MeOH	14 days
Field Blank	1	8260	3 X 40 ml	HCL	14 days
Trip Blank	1	8260	3 X 40 ml	HCL	14 days
Equipment Blank	1	8260	3 X 40 ml	HCL	14 days
MSMSD	2	8260	Terracore Kit 4 X 40 ml	DI, MeOH	14 days
MSMSD Duplicate	1	8260	Terracore Kit 4 X 40 ml	DI, MeOH	14 days

Attachment 7

Soil Sample Locations