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August 5, 2025

Ms. Megan Kuczka
New York State Department of Environmental Conservation
700 Delaware Avenue
Buffalo, New York 14209

Re: Work Plan – Monitoring Well Re-Development, Hydraulic Evaluation, Treatment Injection, and Monitoring Well Repairs
Former Buffalo China Site
NYSDEC Site No. C915209

Dear Ms. Kuczka:

On behalf of Hayes Place Management Group, Inc. (HPMG), LiRo Engineers, Inc. (LiRo) has prepared the following Work Plan for Site Management Plan (SMP) activities at the Former Buffalo China (Brownfield Site #C915209) at 51 Hayes Place in Buffalo, New York (Figure 1).

INTRODUCTION

Following review of the 2023 Periodic Review Report (PRR), the New York State Department of Environmental Conservation (NYSDEC) had requested that a Work Plan be developed to address treatment of remaining chlorinated volatile organic compounds (cVOCs) remaining in groundwater. LiRo developed a Work Plan for performing Enhanced Reductive Dechlorination (ERD) which was included in the 2024 PRR. Following review of the 2024 PRR, NYSDEC requested that the ERD Work Plan be further developed and that monitoring wells with measurable sediment accumulation be re-developed to ensure good communication with the aquifer and that future samples are not excessively turbid. This Work Plan also includes routine maintenance activities that will be completed concurrently.

The rationale for the change from In-situ Chemical Oxidation to Enhanced Reductive Dechlorination is based on the following:

i. A total of eight (8) ISCO injection events have been previously completed at the Site as required by the SMP.
ii. Chlorinated Volatile Organic Compound (cVOCs) concentrations have decreased to a point in our opinion where ERD will be effective. ERD combined with the high sulfate in groundwater should work well to create reducing conditions for the treatment of PCE
iii. We believe that the effectiveness of the ISCO injections is limited by the buffering ability of the Onondaga Limestone bedrock beneath the Site.

1. Monitoring Well Re-development

Using the criteria of greater than 0.5 feet of sediment/debris accumulation and/or persistent elevated turbidity during sampling, LiRo has identified fifteen monitoring wells that will require re-development (Table 1 and Figure 2). LiRo will provide all necessary equipment and manpower to re-develop these monitoring wells.

The majority of the wells will be re-developed using a vacuum extraction method that will minimize the volume of water removed during re-development and prevent cross-contamination between well locations.

The vacuum extraction method that will be used for re-development consists of a trailer-mounted 300-gallon vacuum tank with a 1-inch diameter PVC stinger (pipe that can be inserted to the bottom of the well). The procedure that will be used is described below:

1. The vacuum trailer will be parked adjacent to the well to be re-developed;
2. The depth of the well will be measured and compared to the reported installation depth to verify the amount of infilling to be removed;
3. The vacuum pump will be started and the vacuum tank will be allowed to reach maximum vacuum pressure;
4. The stinger will be installed to the bottom of the well and will be attached to the vacuum tank with a flexible hose equipped with a shutoff valve;
5. When the vacuum tank reaches maximum vacuum pressure, the valve will be opened. The stinger will be manipulated around the bottom of the well to ensure removal of all fine-grained material. The well will be vacuumed for approximately five minutes; and,
6. The valve will be shut-off and the well will be allowed to recover (water level measurements will be used to determine recovery). Once recovered, the depth of the well will be measured again. If sediment remains in the well, this process will be repeated. If no sediment remains, the stinger will be removed and the trailer will be moved to the next well location.

   Note: In order to prevent cross-contamination between well locations, the submerged portion of the stinger will not be re-used in a different well. Clean PVC pipe will be used at each well location.

Where a monitoring well cannot be accessed with the vacuum trailer, an alternate method of re-development will be utilized. Where wells cannot be vacuumed, fine-grained materials will be removed by bailing and/or surging and pumping. The procedure that will be used is described below:

1. All necessary equipment will be placed adjacent to the well and the depth of the well will be measured and compared to the reported installation depth to verify the amount of infilling to be removed;

2. Either a bailer or an electric submersible pump will be lowered to the bottom of the well. If a pump is used, the pump will be started and once pumping begins, the pump will surged within the bottom 2 feet of the well. Water will be pumped until discharge is sediment free. If bailing, the bailer will be surged within the bottom 2 feet of the well and then removed. Bailing will continue until water is deemed sediment free; and,
3. The bailer or pump will be removed from the well and the well will be allowed to recover. Once recovered, the depth of the well will be measured again. If sediment remains in the well, this process will be repeated. If no sediment remains, the well be deemed re-developed.

Following re-development and a minimum of 24 hours to allow for settling, a sample will be collected from each re-developed monitoring well and a turbidity measurement will be made. Samples will be collected using a peristaltic pump and the dedicated tubing installed in each monitoring well. Prior to sample collection, the monitoring well will be purged for 20 minutes at a low flow rate (200 to 500 ml/minute).

All groundwater and sediment generated during the monitoring well re-development work will be stored within the 300-gallon vacuum trailer tank until the tank reaches capacity. Once filled, Environmental Services Group (ESG), a licensed waste transporter, will be notified and a pickup will be scheduled. ESG will provide a vacuum truck to empty the 300 gallon vacuum trailer and transfer the groundwater/sediment to a facility (to be determined) permitted to receive the waste. LiRo will notify NYSDEC of the facility receiving the waste once established.

2. Hydraulic Evaluation of Injection Gallery

LiRo will evaluate the injection gallery (Figure 3) to determine the most effective locations for injection of ELS® concentrate. ELS® is a lecithin based micro emulsion composed of complex organic carbon used to enhance anaerobic bioremediation. After three locations are selected, LiRo will perform falling head hydraulic tests at each of the three associated risers. The hydraulic testing will be used in determining an injection strategy.

Hydraulic testing will be performed using the following procedure:

1. The injection gallery risers will be located and verified;
2. The depth to bottom and water level in each riser will be measured and recorded;
3. 5-gallons of potable water will be instantaneously added to the riser being tested;
4. Immediately following the addition of the water, water level measurements will be made and recorded every one-minute until the water level in the riser returns to within 90 percent of its initial water level;
5. Testing will be repeated at each riser being considered for ERD injection.

The resultant water level recovery data will be used to calculate an appropriate flow rate for injection of ELS® solution.

3. Injection of ERD Treatment

LiRo will assist HPMG with dilution, mixing, and injection of approximately 1,840 pounds of ELS® concentrate.

LiRo has requested authorization to inject from the United States Environmental Protection Agency (USEPA). The USEPA has previously been provided site injection well and injection gallery inventory information and therefore, the injections of ELS solution should be authorized by rule in accordance with 40 Code of Federal Regulations (CFR) §144.26.

The ELS® concentrate will be delivered to the Site in four (4) 460 lb. drums. Each batch of ELS solution that will be injected into the injection gallery will consist of one half drum (230 lbs.) of ELS concentrate into 248 gallons of potable water. Eight batches of ELS® solution will be injected in total. A 300-gallon polyethylene storage tank will be used to mix the ELS® concentrate. The ELS® solution will be transferred to the injection gallery riser using a submersible pump and garden hose. The electric submersible pump will provide slight pressure to the injection gallery standpipe where injection is taking place. This will allow for the ELS® to flow away from the standpipe into the surrounding overburden formation.

Because the ELS® solution will be under slight pressure, over-addition of the solution could possibly result in breakout of the solution to ground surface or even into subsurface structures. In order to mitigate an ELS® solution breakout, visual and hydraulic monitoring will be performed during each injection event. The visual monitoring will consist of watching the area surrounding the injection gallery for evidence of breakout. The hydraulic monitoring will consist of obtaining water level measurements within the injection gallery and nearby overburden monitoring wells MW-5R and MW-19R. Water levels will be measured in the injection gallery standpipes nearest and furthest from the standpipe being used for injection and MW-5R and MW-19R. Once injection is initiated, water levels will be collected at each of these locations approximately every 5 to 10 minutes during active injection. If water levels within the monitoring points are raised to within two feet of ground surface, injection will be temporarily suspended to allow the solution to drain out into the overburden formation. Injection will be resumed upon water levels returning to 50 percent of the original pre-injection water level. The injection rate will be modified for future injection events to prevent excessive water levels.

In the event that ELS® solution does breakout, the injection will be stopped immediately and measures will be taken to contain the breakout. It would be anticipated that if a breakout were to occur, it would most likely occur within the gravel backfill area in the immediate vicinity of the injection gallery. If this occurs, a small trench will be dug at the site of breakout and either a submersible pump or the vacuum trailer will be used to capture the ELS® solution.

The rate and volume that will be injected to each injection gallery riser will be determined from the injection gallery hydraulic testing described above.

4. **Routine Monitoring Well Repairs**

Monitoring well MW-8A was damaged during the 2022-2023 reporting period causing the loss of the protective curb box. A new curb box was placed over the well as a temporary fix to prevent burial. LiRo will remove the curb box and excavate around the top of the well. The curb box will be re-installed with a concrete collar. LiRo will also replace missing lid bolts at locations identified during the 2024 Site Inspection.

SCHEDULE

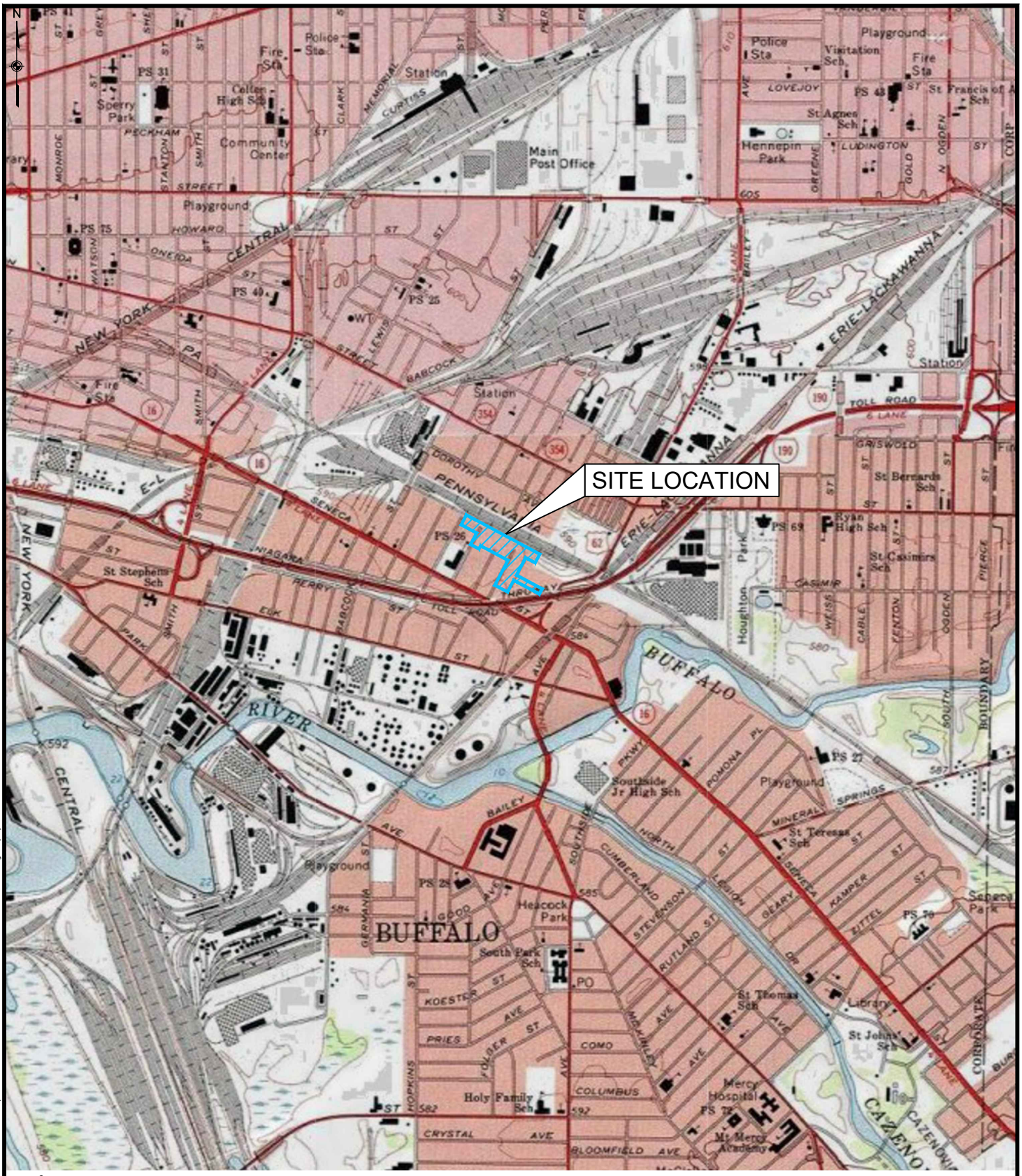
The work described above will be performed according to the following schedule (subject to modification due to approvals/authorizations):

- Request USEPA authorization to inject at the Former Buffalo China site– July 30, 2025
- Submit Work Plan for NYSDEC approval – August 1, 2025
- Re-development of monitoring wells and well repairs – August 11-15, 2025
- Evaluation of Injection Gallery – August 18-19, 2025
- Submit Injection Gallery Evaluation and updated injection details to NYSDEC for review (submission will include spider diagrams detailing analytes above GWQS in overburden and bedrock wells and trendlines, separately for each well, assessing cVOC degradation (TCE, DCE, vinyl chloride) - August 22, 2025
- Injection of ELS® solution – September, 2025
- Groundwater monitoring – October/November 2025
- Periodic Review Report – December 2025

REPORTING

All of the above described work will be summarized in the 2025 Periodic Review Report including rehabilitated well depths, hydraulic properties of the injection gallery, quantities of ELS® and water used in each injection batch, and photographs.

ATTACHMENTS



Reference:
UNITED STATES GEOLOGIC SURVEY BUFFALO NE, BUFFALO SE QUAD, NY
TOPOGRAPHIC, 7.5 MINUTES SERIES 1965 ~ SCALE: 1:24,000

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

Former Buffalo China Site
SITE LOCATION MAP

FIGURE NO.
1

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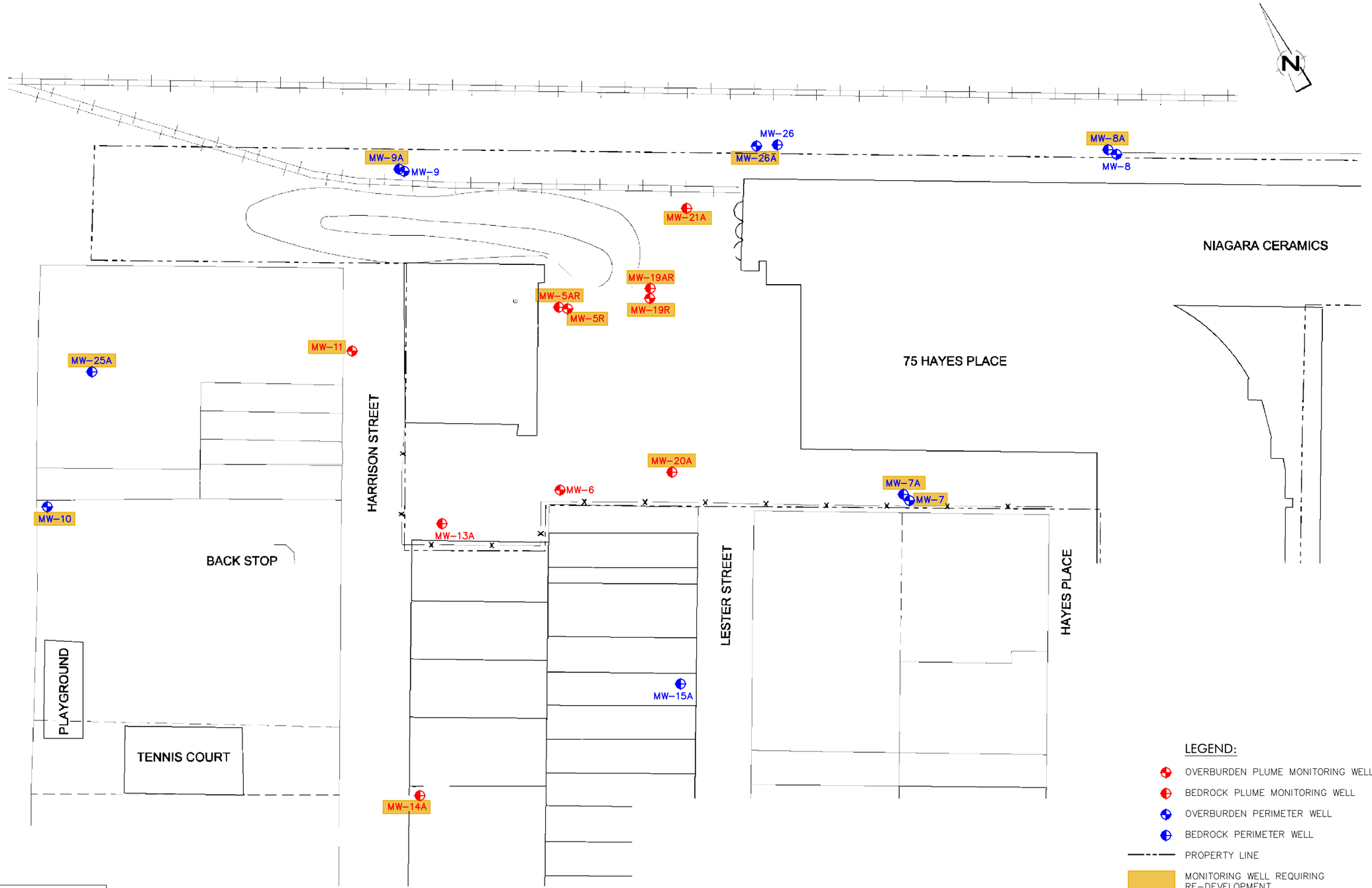

LEGEND:

- OVERBURDEN PLUME MONITORING WELL
- BEDROCK PLUME MONITORING WELL
- OVERBURDEN PERIMETER WELL
- BEDROCK PERIMETER WELL
- PROPERTY LINE
- MONITORING WELL REQUIRING RE-DEVELOPMENT

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REVISIONS		

Liro Engineers, Inc.
690 Delaware Avenue
Buffalo, New York

PROJ. ENG.:	CLIENT: HAYES PLACE MANAGEMENT GROUP, INC.	JOB TITLE AND LOCATION: FORMER BUFFALO CHINA	LIRO JOB NO.: 16-344-1389
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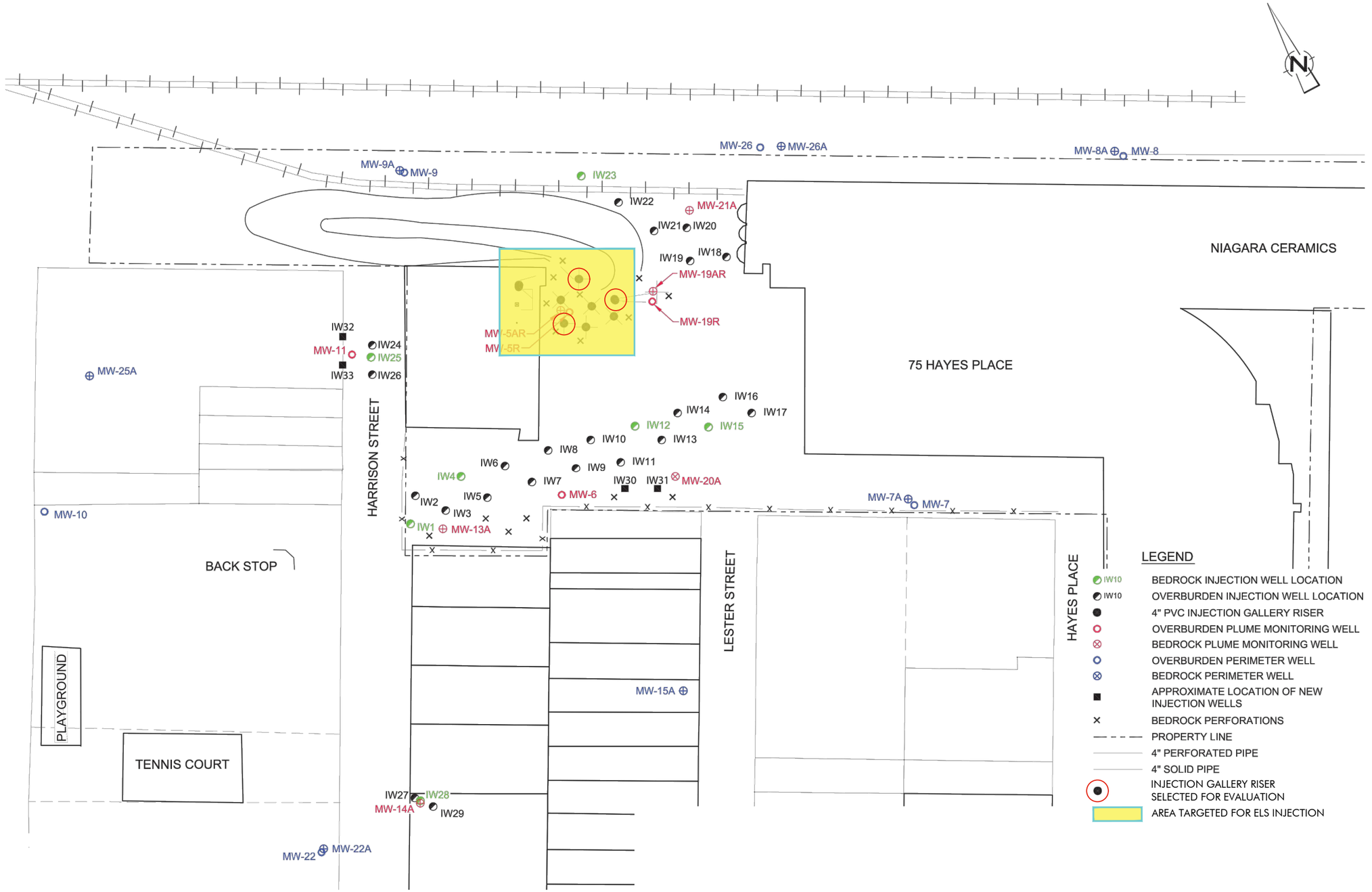
CHECKED BY:		DRAWING TITLE: MONITORING WELL LOCATIONS REQUIRING RE-DEVELOPMENT	FIGURE NO.: 2
DRAWN BY: A.M.K.	DATE: JULY 2025	SCALE: NOT TO SCALE	

J:\16-344-1389 buffalo china\CAD\ELS INJECTION PLAN\FIG 2 - MONITORING WELL LOCATIONS REQUIRING REDEVELOPMENT.dwg 7/31/2025 10:06 AM



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CHECKED BY:		DRAWING TITLE: INJECTION LOCATIONS 2025 ELS INJECTION	FIGURE NO. 3
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TABLE 1
Monitoring Wells Requiring Re-Development
Former Buffalo China Site
NYSDEC Site No. C915209

Monitoring Well I.D.	Sediment Thickness (feet)	Installed Depth[(1)] (feet BGS)
MW-5R	1.44	10.5
MW-5AR	< 0.5[(2)]	17.5
MW-7	1.3	8.7
MW-7A	2.47	16.1
MW-8A	NA	27.4
MW-9A	0.76	27
MW-10	0.61	9.5
MW-11	0.63	9.1
MW-14A	1.5	15.2
MW-19R	1.05	7.8
MW-19AR	6.89	25
MW-20A	0.96	19.1
MW-21A	0.93	21.5
MW-25A	1.03	14.5
MW-26A	0.87	17.5

Notes:
(1) - Installed depth measurements reference ground surface elevation.
(2) - Monitoring well being re-developed due to persistent elevated turbidity.