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Analysis of Brownfield Cleanup Alternatives (ABCA)

**Former Leatherworks Site
Girard, Trumbull County, Ohio**

May 25, 2022

Introduction and Background

The purpose of this ABCA is to document the remediation activities and the alternate remedial strategies that were considered for an approximately 11-acre portion of the former Leatherworks site located at 1052 North State Street in the City of Girard, Trumbull County, Ohio. The site straddles Squaw Creek and is adjacent to the Mahoning River (separated only by a transportation corridor consisting of the Youngstown Beltway Co. Railroad - formerly Conrail R.R.). The Property is situated on formerly industrial land within a mixed-use residential, commercial, and industrial area of Girard (see attached *Site Location Map*)

According to historical records and facility maps, the subject Property was owned by the Ohio Leather Company from approximately 1902 through 1972. The Ohio Leather Company produced finished leather from animal hides with processes including washing, fleshing, depilation, bating, tanning, dyeing, and tempering. Many chemicals were used during the tanning process including sodium sulfide and chloride, lime, ammonia salts, sulfuric acid, chromium sulfate, and mercury. From approximately 1974 through 1994, the site was owned by D.L & S.G. Realty (aka Berk Realty) and was used for material storage, including titanium metal shavings, used grinding wheels, 55-gallon drums, and totes of high pH solids. Various companies owned by Berk Realty operated on and/or utilized the Property during this time period. The property has been vacant and unused since 1994. A large fire destroyed the remaining large building on the site in 1995.

Currently, the main southern parcel contains a small gatehouse, concrete pump house, several pits, building foundations, brick and demolition debris pile, and two concrete reservoirs filled with soil, vegetation, and demolition debris. The northern portion of the Property is located north of Squaw Creek and contains two former lagoons partially filled with seasonal storm

runoff water, a small number of tires, and discarded debris. Also, on this portion of the property is a concrete aboveground storage tank (AST) “clarifier” reservoir filled with water, some concrete foundations, and a small water treatment plant consisting of several open-topped concrete vaults and piping. Although not considered for remedy or No Further Action (NFA) status under the current Remedial Action Plan (RAP), the western triangular portion of the former Leatherworks operation – located between the railroad tracks – is vacant and almost entirely wooded. Evidence of a former drum disposal area, a burn pile, and disposal of animal hides has been found scattered throughout this triangular offsite area consisting of approximately 2.2 acres.

The former Leatherworks industrial facility has been the subject of the multiple environmental assessments and some removal actions. The following summaries of assessment work conducted by regulatory agencies (i.e., Ohio EPA and USEPA) are copied from a 2007 draft of Findings and Orders prepared for the site by the Ohio EPA. In addition, summaries of previous Phase I and Phase II assessment work completed by environmental consultants/contractors on the property are provided in the following:

USEPA Removal Response Program Site Assessment (Tetra Tech EM Inc. June 5, 2001) – Shallow soil samples were collected, and the results showed elevated levels of chromium and lead, particularly in the waste water treatment area. Other contaminants included carbon disulfide, cadmium, and mercury.

Former Ohio Leather Company Property VAP Phase I ESA (McCabe Engineering & Contracting – October 2003) - This Phase I assessment designated 13 Identified Areas (IAs) in accordance with the Voluntary Action Program. Several of the IAs were rather broad in scope (e.g., IA-2 – Adjacent Tributaries; IA-7 Below Grade Concerns; and IA-13 Groundwater). Further Phase II assessment under the VAP was indicated to refine the scope of the IAs and to evaluate the nature and extent of contamination within the designated areas.

Preliminary Assessment/Site Inspection (Ohio EPA – 2004) - The sediment samples from the clarifier contained high levels of chromium at 218 mg/kg and lead a 5,110 mg/kg. Chromium and lead in analyzed soil samples reached 24,900 mg/kg and 83,500 mg/kg, respectively. Ground water samples collected also showed elevated metals, including lead (791 µg/L), nickel (603 µg/L), chromium (264 µg/L), and arsenic (815 µg/L). A number of soil and sediment samples (collected from the catch basins) contained high concentrations of polycyclic aromatic hydrocarbons (PAHs). Sample results for benzo(a)pyrene from the catch basin sediments ranged from 880 to 7,100 µg/L.

USEPA (2004) - Conducted sampling in an area of the Site where Ohio EPA had previously found approximately 300 abandoned drums.

USEPA (2005) - Conducted additional sampling of the clarifier and lagoon areas of the Site and directed Site owner, Navy Friends, to remove drums and associated contaminated soil.

Expanded Site Inspection (USEPA - 2005) - Additional soil samples were collected, and the results indicated benzo(a)pyrene concentrations up to 37,000 ppb, aroclor-1245 up to 8,900 ppb, and various metals, including chromium, lead, and zinc.

Navy Friends (Site owner) retained McCabe Engineering & Contracting (2006) - Drums and some contaminated soil removed from the site.

Phase I Environmental Site Assessment (Turn-Key Environmental, Inc. – September 23, 2013) - This Phase I assessment designated eight Identified Areas under the VAP. Like the previous Phase I, the IAs were rather broadly defined, but covered the same general areas of suspected and/or known areas of contamination resulting from prior site operations. The Phase I report recommended Phase II assessment to further investigate the nature and extent of potential environmental impact within the Identified Areas.

State of Ohio v. Navy Friend, Inc. (Consent Decree – March 25, 2014) – Signed Consent Decree satisfying civil liability to the State for all claims in the State’s Complaint related to costs incurred under CERCLA.

Biological Water Quality Assessment of the Mahoning River and Squaw Creek (Ohio Leatherworks Property) - (Midwest Biodiversity Institute - December 31, 2015) - Previous biological surveys by Ohio EPA in 1980, 1994, and 2006 revealed severely degraded conditions that reflected toxic impacts from both industrial and municipal point sources. While substantial improvements in the quality of the biological assemblages following reductions in pollutant loadings from these sources was documented in 1994 and 2006, impairment of the Warmwater Habitat (WWH) aquatic life use remained in 2015. As such, the Mahoning River is a recovering aquatic ecosystem that has demonstrated the capacity to respond positively to remedial efforts. Squaw Creek was impaired at the upstream site in 2015, due in part to a sewer line failure, but fully attained WWH at the mouth and on the Ohio Leatherworks property. Both heavy metal and organic compounds in sediments exceeded one or more screening levels in the Mahoning River and Squaw Creek in 2015.

The results of the 2015 study revealed yet further improvements in the overall condition of the biological assemblages which validates past efforts to abate the serious pollution and severe impairment that was evident in the 1980 and 1994 Ohio EPA assessments. However, impairment of the WWH use remained at 3 of the 5 sites assessed in 2015. Partial attainment of the WWH aquatic life use was documented at the upstream-most 2015 site (River Mile [RM] 26.2), which is impacted by past and present-day industrial and municipal sources between Warren and Girard.

Pre-Remedial VAP Phase II Property Assessment - Former Ohio Leatherworks Property (Brownfield Restoration Group, LLC – April 12, 2016) - Brownfield Restoration Group, LLC (BRG) performed a Phase II Property Assessment (Phase II) pursuant to the Ohio EPA Voluntary Action Program (VAP) rule at the site beginning in February 2015 and prepared a Phase II Property Assessment report dated April 12, 2016. Funding for this assessment work was received by the Western Reserve Port Authority through a Brownfield Coalition Assessment Grant administered by the U.S. Environmental Protection Agency (USEPA). Phase II activities were conducted in accordance with the USEPA-approved Property-specific Sampling and Analysis Plan (SAP) and Quality Assurance Protection Plan (QAPP) for work completed under the Brownfield assessment grant.

The following ten VAP Identified Areas (IAs) were designated for Phase II investigation under the VAP. These IAs were defined based on a review of previous assessment work, including two previous VAP Phase I assessments. The IAs designated below were targeted based on findings of previous work and cover the previously indicated areas of environmental concern [Note: the McCabe Phase I (2003) designated 13 separate IAs, but also encompassed an area of 27 acres compared to the 11 acres that comprise the subsection of the site currently targeted for remediation.]

Identified Area	Description	Source of Determination
IA-1	Historical Use for Leather Tanning Operations and Metal Storage/Disposal	Historical land use review
IA-2	Titanium Shavings/ Drum Accumulation Area 1 (79 drums west of Bldg. 8 & 9)	Historical land use review
IA-3	Drum Accumulation Area 2 (30 drums between reservoirs)	Historical land use review
IA-4	Drum Accumulation Area 3 (30 drums south of Bldg. 25)	Historical land use review
IA-5	Rail Spur	Historical land use review
IA-6	Transformer House and Engine Room	Historical land use review
IA-7	Oil/Gas Well	Historical land use review – site inspection
IA-8	Historical Use for Wastewater Treatment Plant	Historical land use review
IA-9	Three Wastewater Treatment Lagoons	Historical land use review – site inspection
IA-10	Disposal of Coal-related Waste	Historical land use review

Soil sample analyses from the IAs demonstrated that VAP direct-contact standards for commercial/industrial (C/I) land use were exceeded at several areas of the Property. IAs and

soil sampling locations are shown on the attached *Identified Area Location Map* and *Sampling Location Map*, respectively. The chemicals of concern (COCs) that were found to exceed applicable C/I direct-contact standards include antimony, arsenic, lead, mercury, PCBs, and total petroleum hydrocarbons (TPH). The most prevalent of these COCs was lead, with the other COCs being identified above applicable standards in relatively small and isolated areas. Soil results for lead exceed VAP Construction/Excavation (C/E) worker direct contact standards in one of the former lagoons. Additionally, sediments in the former lagoons also exceed several VOC, PAH, and metals screening standards for ecological receptors. Soil sampling locations exceeding VAP standards and requiring a remedy are identified on the attached map - *Areas of Property Subject to Proposed Soil Remediation*. Shallow ground water beneath the targeted property only slightly exceeds Unrestricted Potable Use Standards (UPUS) for arsenic at three ground water monitoring well locations (MW-1, MW-5, and MW-26) and for lead in one ground water monitoring well (MW-1).

Applicable Regulations and Cleanup Standards

The intended cleanup standards for this site are encompassed within Ohio EPA Voluntary Action Program (VAP). The previously conducted VAP Phase II Property Assessment (BRG - 2016) of environmental conditions at the site demonstrate that the predominant contaminant of concern is lead, although there are also areas impacted with TPH, PCBs, arsenic, mercury, and antimony found to exceed applicable soil standards. Potential exposure pathways are direct contact with soil, ground water ingestion, and impact to the ecological receptors in the adjacent Squaw Creek and Mahoning River. However, a simple ground water use restriction will block the ground water ingestion exposure pathway and the assessment data obtained from the site to date indicates that the onsite contamination is not impacting the adjacent surface water bodies.

The soil direct-contact standards are applied to the upper two feet of soil (point of compliance) in order to comply with VAP commercial/industrial land use. The VAP provides baseline standards that are generic, but also contains provisions for modifying generic standards based on actual environmental conditions and guidelines for performing site-specific risk assessment. Acceptable remedies under the VAP include various combinations of source removal, in-situ treatment, institutional controls (e.g., land use restrictions), and engineering controls. Assessment and remedial activities under the VAP must be overseen by an Ohio EPA Certified Professional.

Remedial actions must be implemented in the eight remediation areas (REMs) as shown on the attached figure – *Areas of Property Subject to Proposed Soil Remediation*. In order to achieve the stated purpose of the RAP, the following objectives must be met:

-
- The soil in the former Waste Water Treatment Plant lagoons (REM-1 and REM-2) exceeds VAP standards for sensitive ecological receptors and must be mitigated.
 - Soil in the upper two feet on the Property must meet direct contact standards in accordance with Environmental Covenants restricting land use to Commercial/Industrial (C/I) worker activities.
 - Soil within any portion of the site to be used for a trailhead as part of a bike/hike system, greenspace, and/or access to the Mahoning River must meet recreational use standards.
 - Soil on the property must meet direct contact standards for Construction/Excavation (C/E) workers or otherwise address this exposure pathway.
 - The ground water ingestion pathway on the Property must be eliminated. The data indicates that the ground water in the shallow aquifer exceeds UPUS at three locations on the Property but satisfies the VAP ground water response requirement that UPUS be met at the downgradient Property boundaries.

The proposed cleanup takes full advantage of the flexibility of the VAP to meet all applicable environmental laws and regulations, while maximizing protections of human health and the environment, and minimizing the overall cost. The preferred approach will combine source removal and replacement or placement of 2-feet of clean soil over areas impacted by metals and petroleum contamination in portions of the site; institute practical land use restrictions (e.g., mandate commercial/industrial land use over portions of the site and prohibit ground water use); and implement a Risk Mitigation Plan (RMP) to protect C/E workers from potentially impacted soil exceeding direct-contact standards.

This approach has been implemented at other local brownfields sites in the Mahoning valley area and has proven to be readily implemented, effective at meeting the remedial goals, and achieved within the proposed budget.

Evaluation of Cleanup Alternatives

There are several remedial alternatives available to address the primary contamination at the site (e.g., lead and other metals in soil). These alternatives and their rough order of magnitude costs are evaluated in the following summaries. However, some associated activities with few if any alternatives will be required regardless of the remedial measures selected. For example, the concrete AST removal will require dismantling and lagoon closures will require backfilling with soil under any of the evaluated alternatives. The selected remedial actions will require

oversight and documentation by a VAP Certified Professional and No Further Action (NFA) documents must be prepared no matter which remedial alternatives are implemented. For the purpose of evaluating cleanup alternatives, these associated activities are considered to be relatively fixed across each alternative. These fixed costs are estimated to be on the order of **\$100,000** for the remediation contractor (e.g., AST removal, lagoon closure, site clearing, permits, health and safety plans, mobilization/demobilization) and **\$110,000** for the VAP Certified Professional services (e.g., oversight, confirmatory sampling, report preparation, NFA preparation and submittal, Ohio EPA filing fee). A brief description of the alternatives considered, and the approximate associated costs are provided in the following summaries.

Take No Action - Although low cost and easy to implement, this alternative would not provide any positive effect toward reaching the remedial goal of achieving Ohio VAP re-use standards and obtaining NFA status and a Covenant Not to Sue (CNS) from the State of Ohio. Planned redevelopment would fail due to the site's regulatory status. The site would continue to be blighted and contribute to the health risk of the community.

Excavate and Dispose - This alternative would consist of the excavation and disposal of soil exceeding direct-contact standards in the upper two feet of soil in order to meet VAP commercial/industrial standards (REM-3 through REM-8) and ecological standards in the former lagoons (REM-1 and REM-2). Based on the Phase II assessment work completed to date, it is estimated that 8,015 tons of contaminated soil would be required to be removed from the site, disposed of at a properly licensed landfill, and replaced with clean fill. A significant benefit of this remedial approach is that the contaminated soil would no longer be available at the site to be a source of potential human health risk, environmental harm, or an impediment to future development plans. This alternative is readily implemented, effective, and reliable. However, it is costly and not achievable for the entire site within the project/grant budget. The estimated cost of removal, disposal, and replacement of 8,015 tons of non-hazardous soil at \$96.00 per ton is \$769,440. When ancillary fixed costs for the Remediation Contractor (\$100,000) as well as the VAP Certified Professional costs of oversight, reporting, and NFA preparation (\$110,000) costs are also included, the total cost of this alternative is approximately **\$979,440**.

In-situ Stabilization – Stabilization of heavy metals like lead is a proven technology and could be effective in chemically binding the metal so that it is no longer susceptible to leaching. This can also significantly lower disposal costs of lead-contaminated soil that fails leaching tests (TCLP) and is characteristically hazardous. Reduced leaching potential also lowers the risk of lead migration in the environment and exceeding standards for various exposure pathways in the future. However, stabilization does not lower the *total* lead concentration, which is the

concentration that VAP standards are based on, so this remedial alternative by itself is not likely to be advantageous for this site. The amount of soil estimated to be primarily impacted by lead (Remediation Areas REM-5 and REM-6) equates to approximately 4,901 tons. If this entire soil area were to be determined to be impacted at hazardous levels, the cost of stabilizing this soil in place at \$150 per ton is \$735,150. When ancillary fixed costs for the Remediation Contractor (\$100,000) as well as the VAP Certified Professional costs of oversight, reporting, and NFA preparation (\$110,000) costs are also included, the total cost of this alternative is approximately **\$945,150**.

Additionally, other metals (mercury, arsenic, antimony) as well as TPH and PCB contamination would remain in the soil with this alternative and would require more remedial actions, which would increase the cost of this alternative further still. This alternative is best considered as a partial remedial measure used in conjunction with other remedies in the event that a relatively small portion of the soil is found to be hazardous.

Clean Fill Barrier Placement - Direct contact standards for commercial/industrial and recreational land use incorporate a point-of-compliance that is comprised of the upper two feet of soil. An acceptable remedy for direct contact under the VAP is the placement of two or more feet of clean soil meeting the applicable direct contact standard. This approach is readily implemented, especially in lower lying areas that are likely to be subject to filling during site development anyway. A disadvantage is that the impacted soil will remain at the site beneath the clean fill barrier and is therefore available as a future source of potential human risk or environmental harm if the clean soil barrier is removed or altered during future development. The estimated cost of placement of two feet (8,015 tons) of clean soil over REM-1 through REM-8 at \$26.00 per ton is \$208,390. When ancillary fixed costs for the Remediation Contractor (\$100,000) as well as the VAP Certified Professional costs of oversight, reporting, and NFA preparation (\$110,000) costs are also included, the total cost of this alternative is approximately **\$418,390**.

Engineering Controls – Blocking or severing exposure pathways through implementation of engineering controls (e.g., pavement or building floors) is a cost effective and proven approach. If site development plans include large paved areas, such as parking lots, this approach is readily implementable. The primary disadvantage is that the contaminated soil remains at the site and is therefore available as a future source of potential human risk or environmental harm if the engineering control is removed or altered during future site work. An operation and maintenance plan (an agreement with the Ohio EPA) is required to be established and continued in perpetuity under this alternative in order to ensure continued protectiveness. The

estimated cost of installing 72,143 square foot of pavement engineering control in Remediation Areas REM-1 through REM-8 at \$5.00 per square foot is \$360,715. When ancillary fixed costs for the Remediation Contractor (\$100,000) as well as the VAP Certified Professional costs of oversight, reporting, and NFA preparation (\$110,000) costs are also included, the total cost of this alternative is approximately **\$570,715**.

Institutional Controls (Land Use Restrictions) – Land Use restrictions instituted via an Environmental Covenant with the Ohio EPA are a very cost effective and readily implemented means of addressing certain remediation issues. For example, a land use restriction prohibiting ground water use on the Property for potable purposes eliminates the ground water ingestion pathway. However, a land use restriction that would prevent potential contact with the lead-contaminated soil would need to restrict all access to that portion of the site and would render the Property unsuitable for most re-use purposes. The estimated cost of implementing institutional controls stringent enough to eliminate the known exposure pathways is estimated to cost **\$110,000** including other related cost such as reporting and NFA preparation. This approach would likely render the site unusable for most redevelopment projects.

Climate Change Evaluation

The subject Property is adjacent to the Mahoning River and straddles Squaw Creek, therefore flood waters may be expected to some extent. However, in the event of more frequent flooding induced by climate change, each of the alternatives evaluated are anticipated to readily withstand the event. In the rare instance of flooding on the Property, the flow energy outside the banks of the river and creek is expected to be relatively low. As a result, deposition of creek sediments onto portions of the site is considered to be far more likely than scouring and displacement of the clean soil layer or engineering controls installed at the site.

Recommended Cleanup Alternative

The preferred remedial approach incorporates a combination of the above alternatives. Source removal via ‘excavation and disposal’ will be performed in Remediation Areas REM-3, REM-4, REM-6, REM-7, and REM-8 totaling 2,926 tons of contaminated soil at \$96.00 per ton, which equates to a cost of \$280,896 for these areas. Placement of 2 feet of clean fill will be used and to block the direct-contact exposure pathway in REM-5. This will require the import of 3,083 tons of clean fill at \$26 per ton for REM-5 (\$80,158). As previously described, the fixed costs of active remediation are estimated to be on the order of \$100,000 for the remediation contractor (e.g., AST removal, REM-1 and REM-2 lagoon closure, site clearing, permits, health and safety plans, mobilization/demobilization) and \$110,000 for the VAP Certified Professional services (e.g., oversight, confirmatory sampling, report preparation, NFA preparation and submittal,

Ohio EPA filing fee). If an unexpectedly large amount of the contaminated soil in REM-3 through REM-8 is determined to be hazardous or if the contaminated soil volume exceeds the amount that can be cost-effectively removed and disposed, clean soil barrier placement and/or engineering controls will be implemented, as required, to complete the remedy. Institutional controls consisting of prohibiting ground water use and limiting specific portions of on-site land use to commercial/industrial activities will also be employed. This combination of alternatives will maximize the benefits of the remedial actions while maintaining good use of required resources (e.g., energy needed for remedial actions and prudent use of limited landfill space). Potential increased frequency of flooding related to climate change would have a minimal impact on this approach. As supported in the budget table for this project, the estimated total cost of the recommended cleanup is **\$571,054**.

Mayor James Melfi
The City of Girard, Ohio

Signed: 

Title: MAYOR

Date: 5-25-22

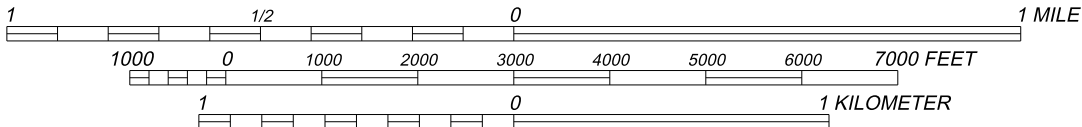
Attachments

- *Site Location Map*
- *Identified Area Location Map*
- *Sampling Location Map*
- *Areas of Property Subject to Proposed Soil Remediation*

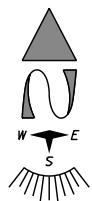
[This document prepared by Jim C. Smith (Ohio EPA Certified Professional No. 121) of Brownfield Restoration Group, LLC].



SCALE 1:24,000



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1988



GEOGRAPHIC COORDINATE-
LATITUDE: N. 41° 09' 55.78"
LONGITUDE: W. 80° 42' 28.99"
HORIZONTAL DATUM: NAD83



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USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)
QUADRANGLE:

GIRARD, OHIO 2013

**Site Location on
U.S.G.S. Topographic Map**

Former Leatherworks Property
1052 N. State Street, Girard, Ohio 44420

Prepared by: U.S.G.S. | Date: January 2019 | Project No. 10043



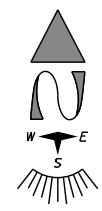
Identified Areas

- IA-1: Historical Use for Leather Tanning Operations and Metals Storage/Disposal
- IA-2: Titanium Shavings/Drum Accumulation Area #1 (79 drums west of bldg. 8 & 9)
- IA-3: Drum Accumulation Area #2 (30 drums between reservoirs)
- IA-4: Drum Accumulation Area #3 (30 drum south of bldg. 25)
- IA-5: Rail Spur
- IA-6: Former Transformer House and Engine Room
- IA-7: Oil/Gas Well
- IA-8: Historical Use for Waste Water Treatment Plant
- IA-9: Three Waste Water Treatment Lagoons
- IA-10: Disposal of Coal-related Waste

Legend



Identified Areas are interpreted from Figures 4A, 4B and 4C of a Phase I ESA by Turn-Key Environmental, Inc. dated September 23, 2013 and a Phase I ESA by McCabe Engineering dated October 2003. Locations are very approximate.



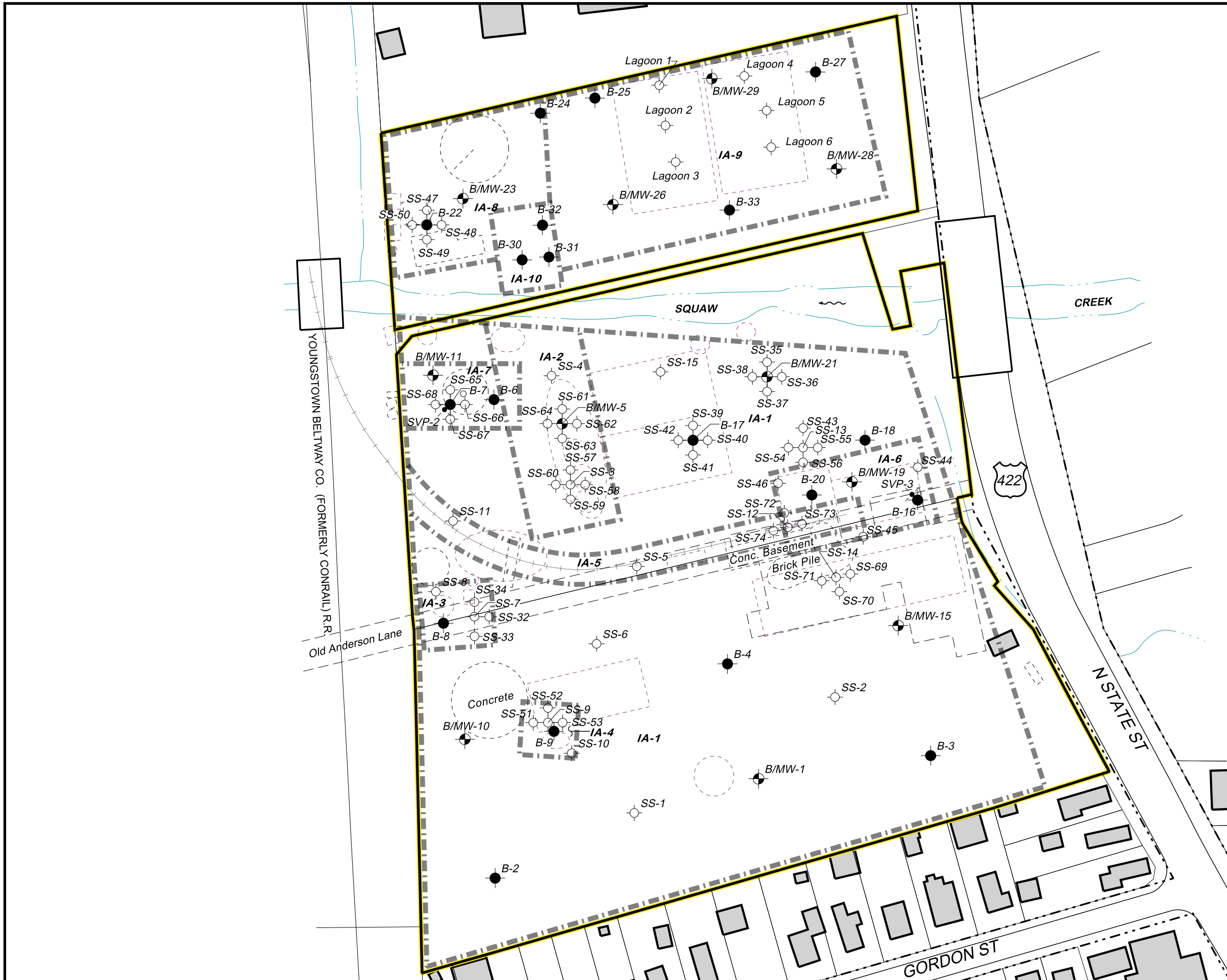
0 50 100
Scale in Feet

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Identified Area Location Map

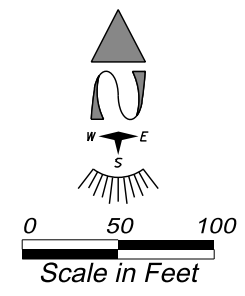
Former Leatherworks Property
1052 N. State Street, Girard, Ohio 44420


Prepared by: J. Kaufman | Date: January 2019 | Project No. 10043



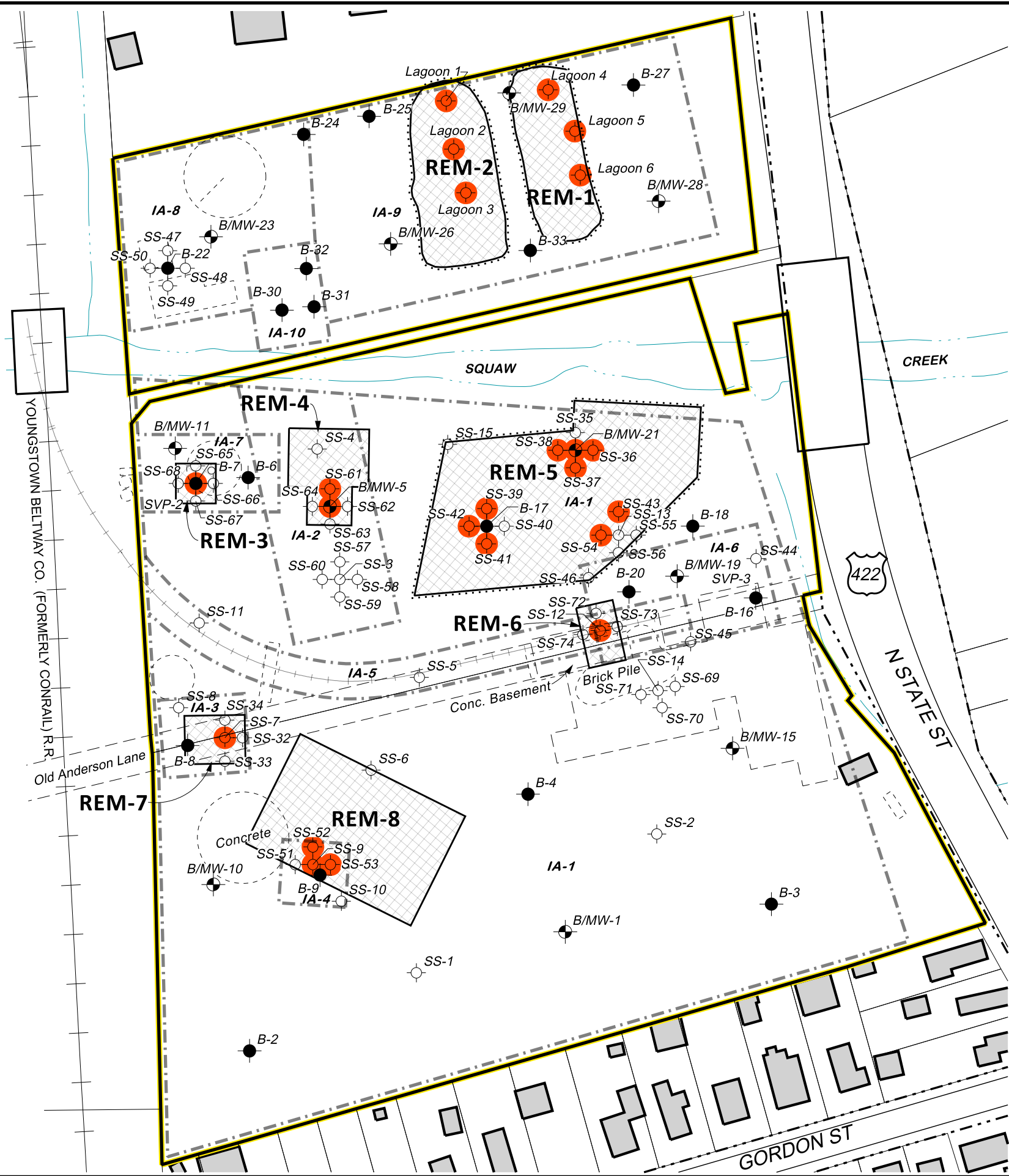
Note
 All purple, dashed features are interpreted from a Site Reconnaissance Map of a Phase I ESA by McCabe Engineering dated October 2003. Many of those features were adjusted according to the 1978 Sanborn Fire Insurance map. Locations are very approximate.

- Legend**
- Identified Area Boundary
 - Soil Boring/Monitoring Well
 - Soil Boring
 - Shallow Soil Sample (0-2')
 - ⊗ Soil Vapor Point




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Sampling Location Map
 Former Leatherworks Property
 1052 N. State Street, Girard, Ohio 44420
 Prepared by: J. Snyder | Date: January 2019 | Project No. 10043



Estimate of Quantities

SF x 2or4 = CF +27 = CY x 1.5 = Ton

Area	Description	Sq. Ft.	Depth	Cu. Ft.	Cu. Yd.	Ton
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Subject to Two feet or Four feet of fill placement

REM-1	East lagoon*	7,675	4'	30,700	1,137.04	1,705.56
REM-2	West lagoon*	10,375	4'	41,500	1,537.04	2,305.56
REM-5	Lead	27,745	2'	55,490	2,055.19	3,082.78

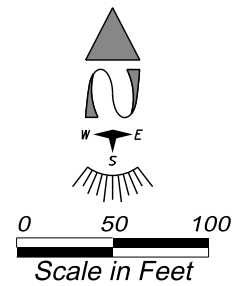
Subject to Soil Removal/Disposal/Replacement

REM-3	Mercury & TPH	1,156	2'	2,312	85.63	128.44
REM-4	PCBs	4,628	2'	9,256	342.81	514.22
REM-6	Arsenic	2,081	2'	4,162	154.15	231.22
REM-7	Antimony & Lead	2,119	2'	4,238	156.96	235.44
REM-8	Lead	16,364	2'	32,728	1,212.15	1,818.22

- * Sediment exceeds ecological standards
- Soil exceeds C/I direct contact soil standards

Legend

- Exceeds VAP Standards at 0-2' Depth
- Shallow Soil Sample (0-2')
- Soil Boring
- Soil Boring/Monitoring Well
- ⊗ Soil Vapor Point
- Identified Area Boundary
- ▨ Proposed Soil Remediation Area: excavation/disposal
- ▩ Proposed Soil Remediation Area: clean fill placement



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Areas of Property Subject to Proposed Soil Remediation

Former Leatherworks Property
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Prepared by: P. Kuonen | Date: January 2019 | Project No. 10043