



CREDERE ASSOCIATES, LLC

776 Main Street
Westbrook, Maine 04092
Phone: 207-828-1272
Fax: 207-887-1051

January 29, 2021

Andrew Port
Director of Planning & Development
City of Newburyport
60 Pleasant Street
Newburyport, Massachusetts 01950

**SUBJECT: Project Peer Review - Former Circle Finishing
US Route 1 Traffic Circle
Newburyport, Massachusetts
MassDEP Release Tracking No. (RTN) 3-0392**

Dear Mr. Port:

Credere Associates, LLC (Credere) has reviewed available reports for the proposed redevelopment project at the Former Circle Finishing property located at U.S. Route 1 Traffic Circle in Newburyport, Massachusetts, (Site) to provide a peer review of the project and responses provided by Ransom Consulting, LLC to the Newburyport Department of Public Services regarding redevelopment in the area of contaminated soil and installation of a new water line.

Disposal Site Background

The 1.7-acre Site was the former location of Circle Finishing, a former metal plating facility, from the 1960s through 1993 and prior to that a gas station and fuel distribution facility prior to the 1960s. Circle Finishing discharged electroplating waste to an adjoining wetland in the 1960s and 1970s until the waste was redirected to the onsite treatment system. Thereafter, hazardous waste sludge was stockpiled outside the southeast corner of the former building. Release tracking number (RTN) 3-0392 was issued for the Site in the early 1990s due to the Site's listing as a Location to be Investigated (LTBI) related to their historical Resource Conservation and Recovery Act (RCRA) violations.

In December 1993, a fire destroyed the Circle Finishing electroplating facility, which resulted in the release of metals, petroleum and volatile organic compounds (VOCs) to the Site upland soil and groundwater and fire-fighting water runoff to the adjoining wetland. The release associated with the fire was issued RTN 3-10321, which was subsequently merged with the original RTN.

The Site was cleaned of fire debris, including building demolition, underground storage tank (UST) removals, and removal of remaining hazardous materials, and extensively assessed between 1995 and 2004. In 2004, a Phase III Remedial Action Plan recommended a Temporary Solution for the owner at the time due to financial inability to implement the excavation of impacted Site soil and wetland sediment at the Site. Tier I Permit extensions continued until approximately 2013 when a Remedy Implementation Plan was prepared for excavation of six upland soil areas and the

wetland. The wetland sediment was excavated in May 2014 and upland excavations were completed in June 2014.

Risk evaluation using post-remedial confirmatory results concluded No Substantial Hazard remained for human or ecological exposure; however, after groundwater and surface water monitoring the Phase V Remedy Operation Status (ROS) was rejected in August 2016 and further Phase II Comprehensive Site Assessment was completed under a new Tier II classification. Additional surface soil sampling was completed and the Method 3 Risk Characterization continued to indicate No Significant Risk of harm to human health but future vapor intrusion concerns from residual VOCs remained to be evaluated due to lack of an existing building at the time. Additionally, although there was No Substantial Hazard identified by the risk assessment and concentrations were observed to be decreasing, sediment and surface water concentrations continued to exceed water quality criteria and sediment screening values so a condition of No Significant Risk to the environment had not yet been achieved.

A Temporary Solution Statement was prepared in September 2017, which indicated further remediation of the remaining sediment contaminants was not feasible and that continued monitoring of attenuation was the recommended solution until a point where No Significant Risk to the environment exists. Continued groundwater monitoring was also recommended for the wells that exceed GW-2 standards to continue to monitor the attenuation of groundwater to support vapor intrusion evaluation for future development.

The most recent groundwater sampling event in March 2020 was reported in the May 6, 2020, Post-Temporary Solution Status Report. Vinyl chloride and cis-1,2-dichloroethene continued to exceed the GW-2 standards in wells MW-3D and MW-3R. Ongoing sediment monitoring in the wetland is showing continued decreasing or stable conditions and is ongoing as of Fall 2020 but is not pertinent to this peer review evaluation of the proposed redevelopment.

Physical Setting

Limited physical setting details related to soil depths and groundwater are pertinent in understanding the evaluation of the proposed water line and associated concerns. Prior site investigation reports have indicated soil at the Site to consist of granular soil and gravel to 4 to 8 feet below ground surface (bgs) underlain by clay extending to at least 30 feet bgs. Groundwater was measured ranging from 3 to 6 feet bgs.

Proposed Redevelopment and Questions

A mixed residential/retail use three-story building is proposed for the Site. The development proposes paved parking along the western edge of the Site with two access points from the Newburyport Turnpike. The project is currently in the municipal review process.

During the review, several questions/comments were raised regarding the water line and sewer force main placement. Those related to the environmental status of the property include the following:

- Routing of utilities at an uncommon angle? Wondering why these lines are not run straight in off the main? Is there an issue with soils in that area?



- Possible effects of a negative pressure event should soil around the water utility infiltrate the pipe.
- The assessment that the VOC's present will not infiltrate the proposed utilities (should mains and services be coated, double walled or shielded?)
- Depth of bury for utilities and service lines must be at 5' cover minimum from top of utility.

Based on the history of remedial activities, reports suggest there is limited residual contamination remaining in soil at Site. Historical sample location observations and sample results were reviewed to locate samples in closest proximity to the water line and forced main. Based on the requirement for direct bury of the line with 5 feet of cover, the reviewed target depth interval for the pipe was assumed to be between 5 and 7 feet bgs. Specifically, the following sample locations were reviewed:

- B-5: VOC photoionization detector (PID) readings from this boring in 2001 ranged from less than 1 part per million (ppm) from 0 to 4 feet bgs, 413 ppm from 6 to 8 feet bgs and 65 ppm from 8 to 12 feet bgs. Analytical results were limited to a trace detection of ethylbenzene from 5 to 8 feet bgs. Despite the elevated PID result from 2001, the 2014 confirmatory samples from the southern side wall (0-13 feet) and the southern base of Trench 6 excavation were non-detect for EPH and VPH.
- B-6: Metals results from 2001 from 4.5 to 10 feet bgs were non-detect. The soil boring log indicated no evidence of VOCs by PID.
- B-7: Groundwater analytical results for VPH, VOCs, metals and EPH were non-detect in January 2003. This well is in the upgradient position of the water line. PID results indicate 51.6 ppm from 4 to 8 feet bgs and 1.9 ppm from 8 to 12 feet bgs.
- B-8: VOC PID readings from this boring in 2001 ranged from 3.2 from 0 to 4 feet bgs, 22.6 ppm from 4.5 to 8 feet bgs and 3.2 ppm from 8 to 10 feet bgs.
- B-9: VOC results from 2001 indicate 491 ppm from 1 to 8 feet bgs. This location is on the approximate eastern edge of the Trench 5 2014 excavation. Confirmatory samples from the Trench 5 excavation indicate low levels of VPH along the southern sidewall below the Method 1 Soil Standards.
- B-12 was the location of Trench 6 upland soil excavation in 2014. Confirmatory samples from the base of the excavation at 13 feet bgs and the north and northwest corner of the excavation sidewalls continued to detect VPH fractions in the north end of the trench excavation.
- MW-1 is in the upgradient position of the Site and was historically sampled only for metals in soil with concentrations below the Method 1 Soil Standards.
- HA-1: Elevated chromium above the Method 1 S-1 soil standards was documented at the surface from 0-1 foot in 2016.

A copy of a marked-up figure showing these approximately locations relative to the proposed building and services lines is attached.

Based on review of the above available data for the closest sample points, soil contamination within the vicinity of the water and forced main appears limited and below Massachusetts Method 1 Soil Standards. The exception is the soil along the water main immediately near the building (HA-1 and Trench 5 southern sidewall). Groundwater results for the one well B-7 suggests groundwater upgradient of the water main does not have evidence of significant groundwater contamination that could play a role in potentially impacting water within the water service. The proposed locations of the service lines do appear to be selectively routed where limited historical sources of contamination are present and thereby limited data is available. Lack of data cannot always be construed as indicative of lack of contamination, but in this case, there is limited evidence of sources of contamination in areas of proposed service line locations.

The available data does not indicate the presence of significant contaminants that could enter the water line in the event of water main break/low pressure event. However, based on limited data along these lines, best management practices (BMPs) such as lining the utility trench with a filter fabric and backfilling to the surface with clean material is recommended. This BMP will allow for a clean corridor in case of the need for repair as well as provides a barrier between a broken main and the water supply to minimize contaminants that could enter the lines. In addition, the use of single continuous run of pipe (like HDPE) through the area of contamination, will minimize any seams or connections that could be location of infiltration. Use of non-draining hydrants along the road will also minimize the potential for contamination entering the water supply from any residual contamination along the road.

Alternative routes for the services lines that are perpendicular with the main along the street were also reviewed. For both lines, only an alternative position where both enter the proposed building at the same point and extend straight to the road were evaluated. For the water line, conditions along the proposed location and the alternative perpendicular location appear similar considering available data. The alternative location would put the water line closer to the prior Trench 6 excavation, which would be less favorable. For the force main, the current position does not appear to transect any evidence of contamination, where the alternative position would transect the north end of the Trench 6 excavation where residual petroleum contamination is documented. Therefore, the alternative location would be similarly less favorable.

Lastly, regarding the permeation of VOCs through piping to the water supply, is it Credere's opinion considering the type of contaminants and their last known concentration is the vicinity of the proposed service lines, that as long as the pipe is properly installed and constructed of copper, steel or PVC construction, there is no reason to expect VOCs would migrate through the pipe and impact the water within. The primary areas of remaining VOC contaminated groundwater is south of the proposed building. Similarly, as stated above, the use of single continuous run of pipe (like HDPE) through the area of contamination, will minimize any seams or connections that could be location of any VOC infiltration.

Conclusion

Based on the above discussion, Credere makes the following conclusions regarding City questions:

- Routing of utilities at an uncommon angle? Wondering why these lines are not run straight in off the main? Is there an issue with soils in that area?



- Credere Opinion: The proposed locations of the water and sewer services appear to be in the best feasible location considering the currently documented contamination assuming the lines must enter the building at the currently proposed location.
- Possible effects of a negative pressure event should soil around the water utility infiltrate the pipe.
 - Credere Opinion: There is limited contamination in the vicinity of the proposed service lines. BMPs such as lining the utility trench with a filter fabric and backfilling to the surface with clean material to create a clean utility corridor is recommended. In addition, consider utilizing HDPE pipe to minimize connections that could potentially be sources of infiltration.
- The assessment that the VOC's present will not infiltrate the proposed utilities (should mains and services be coated, double walled or shielded?)
 - Credere Opinion: Existing data in the vicinity of the proposed service line locations does not suggest migration of VOCs through piping would be a concern. The most significant remaining VOC contamination is at the southern end of the property/proposed building well away from the service lines. In addition, consider utilizing HDPE pipe to minimize connections that could potentially be sources of infiltration.
- Depth of bury for utilities and service lines must be at 5' cover minimum from top of utility.
 - Credere Opinion: This requirement will likely place the service lines below the water table in certain locations; however, based on the limited groundwater contamination in the vicinity of the proposed service lines, only limited residual soil contamination below the water table may be a concern, which is addressed in the above responses.

Based on the current status of the Site with a Temporary Solution under the MCP, Credere also recommends the new development continue along the path toward a Permanent Solution through continued monitoring of the surface water and sediment in the onsite wetland until a condition of no significant risk of harm to the environment is achieved. Additionally, although a condition of no significant risk of harm to human health has been achieved, the proposed development must evaluate the potential for vapor intrusion to the new building or include a vapor mitigation system proactively due to the remaining chlorinated VOC groundwater contamination above GW-2 standards at the south end of the property.

Recommendations

Therefore, Credere recommends the following specific changes to the design plans after consultation with the City of Newburyport:

1. Incorporation of elements of the BMP for a clean utility corridor/trench by the addition of a trench filter fabric liner and use of clean backfill within the proposed water utility trench(es). This change should be reflected on the applicants design plans in "Typical Trench Detail" and any associated specification.



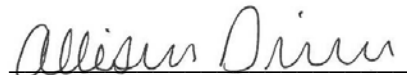
2. Use of continuous HDPE piping for the water service and fire service lines to reduce the number of connections made in area containing residual soil contamination. This type of plastic piping is also considered acceptable for use high water table environments similar to the Site. This recommendation will necessitate a change to Note 2 on "Water Installation Notes" in the applicant plans to reflect continuous HDPE line for the water service from the main to the proposed building. Additionally, General Note No. 13 will have to be updated accordingly.
3. Use of a non-draining fire hydrant to eliminate the opportunity for a contaminant backflow scenario. This change should be reflected in the "Typical Fire Hydrant" specification and changed General Notes No. 12 in the applicant's design plans.

Lastly, it is recommended that the City require continued compliance with MCP timelines, submittals, and progress toward a Permanent Solution for the Site.

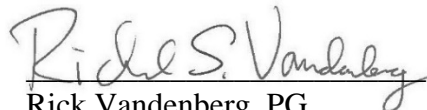
If you should have any questions or comments regarding this submittal, please do not hesitate to contact the undersigned at (207) 828-1272.

Sincerely,

Credere Associates, LLC



Allison Drouin, PG, LG
Senior Geologist/Project Manager



Rick Vandenberg, PG
Senior Geologist/Project Manager



Rip Patten, PE, LSP
Vice President/Engineer

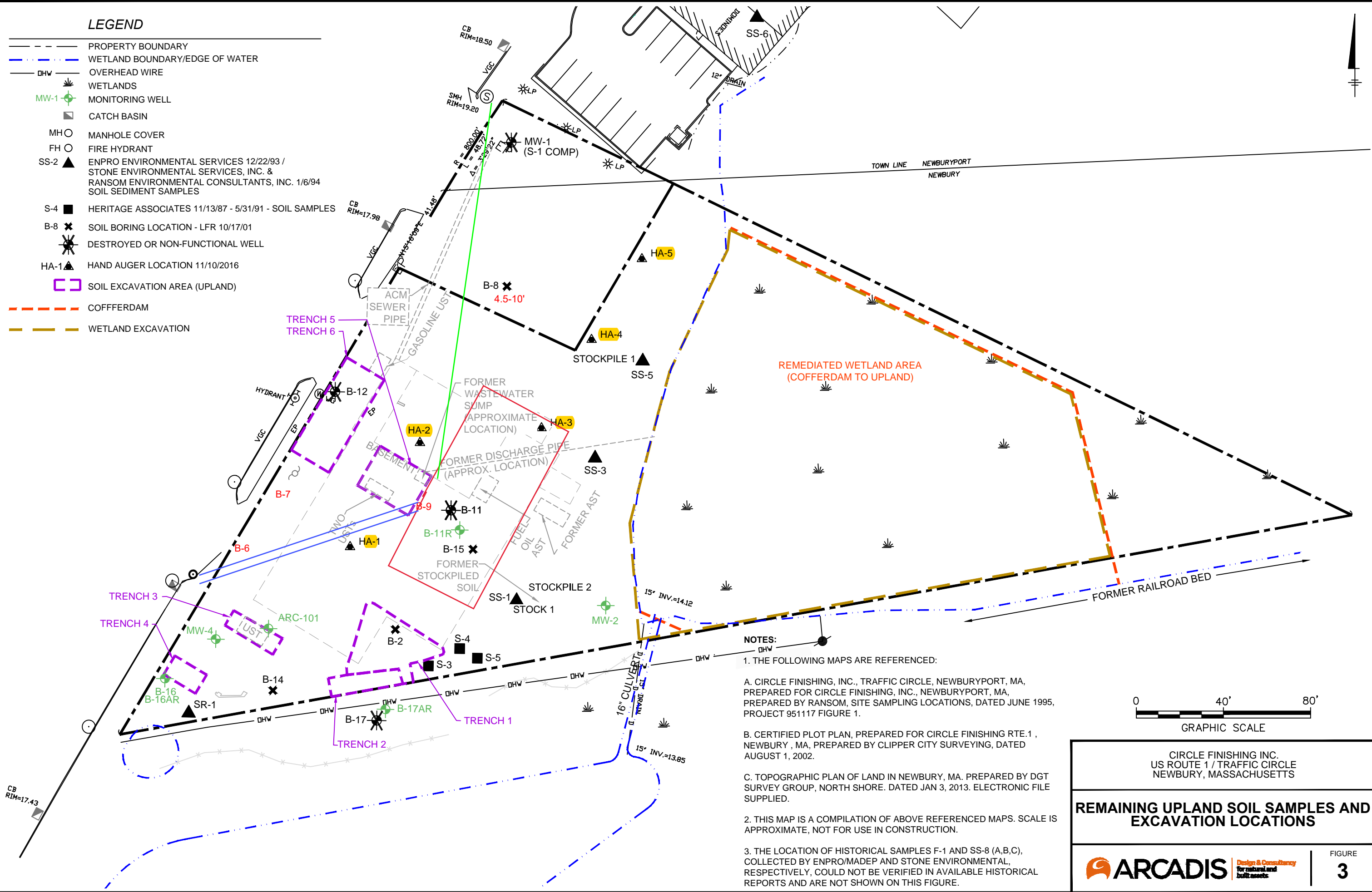
Attachments:

Arcadis Figure 3 Marked up to show reviewed data points, proposed building, and proposed service line proximity.

CITY: MANCHESTER DIV/GROUP: ENV/CAD DB: T-HALLIWELL PM: TM: G:\ENV\CAD\MANCHESTER\ACT\BNO127030009\0005\BNO127030009-804.dwg LAYOUT: 3 SAVED: 3/3/2017 9:08 AM ACADVER: 19.1S (LMS TECH) PAGES/SETUP: 1/1 PLOT/STYLE/TABLE: 1/1 PLOTTED: 3/3/2017 9:08 AM BY: HALLIWELL, TRISH

LEGEND

- PROPERTY BOUNDARY
- - - WETLAND BOUNDARY/EDGE OF WATER
- - - OVERHEAD WIRE
- WETLANDS
- MW-1 MONITORING WELL
- CATCH BASIN
- MHO MANHOLE COVER
- FH FIRE HYDRANT
- SS-2 ENPRO ENVIRONMENTAL SERVICES 12/22/93 / STONE ENVIRONMENTAL SERVICES, INC. & RANSOM ENVIRONMENTAL CONSULTANTS, INC. 1/6/94 SOIL SEDIMENT SAMPLES
- S-4 HERITAGE ASSOCIATES 11/13/87 - 5/31/91 - SOIL SAMPLES
- B-8 SOIL BORING LOCATION - LFR 10/17/01
- DESTROYED OR NON-FUNCTIONAL WELL
- HA-1 HAND AUGER LOCATION 11/10/2016
- SOIL EXCAVATION AREA (UPLAND)
- COFFERDAM
- WETLAND EXCAVATION



NOTES:

1. THE FOLLOWING MAPS ARE REFERENCED:
 - A. CIRCLE FINISHING, INC., TRAFFIC CIRCLE, NEWBURYPORT, MA, PREPARED FOR CIRCLE FINISHING, INC., NEWBURYPORT, MA, PREPARED BY RANSOM, SITE SAMPLING LOCATIONS, DATED JUNE 1995, PROJECT 951117 FIGURE 1.
 - B. CERTIFIED PLOT PLAN, PREPARED FOR CIRCLE FINISHING RTE.1, NEWBURY, MA, PREPARED BY CLIPPER CITY SURVEYING, DATED AUGUST 1, 2002.
 - C. TOPOGRAPHIC PLAN OF LAND IN NEWBURY, MA. PREPARED BY DGT SURVEY GROUP, NORTH SHORE. DATED JAN 3, 2013. ELECTRONIC FILE SUPPLIED.
2. THIS MAP IS A COMPILATION OF ABOVE REFERENCED MAPS. SCALE IS APPROXIMATE, NOT FOR USE IN CONSTRUCTION.
3. THE LOCATION OF HISTORICAL SAMPLES F-1 AND SS-8 (A,B,C), COLLECTED BY ENPRO/MADEP AND STONE ENVIRONMENTAL, RESPECTIVELY, COULD NOT BE VERIFIED IN AVAILABLE HISTORICAL REPORTS AND ARE NOT SHOWN ON THIS FIGURE.



CIRCLE FINISHING INC.
US ROUTE 1 / TRAFFIC CIRCLE
NEWBURY, MASSACHUSETTS

REMAINING UPLAND SOIL SAMPLES AND EXCAVATION LOCATIONS

Design & Consultancy
for natural and built assets

FIGURE
3