Response Action Plan and Construction Contingency Plan

Superior Street Reconstruction Corridor Duluth, Minnesota

Prepared for
LHB Corporation and the City of Duluth

MPCA VP32630/PB4791

December 2015

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Contents

List of Figures

Appendices

1.0 Introduction

This Response Action Plan (RAP) and Construction Contingency Plan (CCP) present the methods, actions and controls proposed to be implemented to protect human health and the environment for the Superior Street corridor from 6th Avenue West to 5th Avenue East in Duluth, Minnesota in St. Louis County (Section 27, T50N, R14W), referred to hereafter as the Property. The Property location is shown on Figure 1. The approximate project area is shown on Figure 2.

Barr Engineering Co. (Barr) was retained by LHB Corporation (LHB), the project civil engineer, on behalf of the City of Duluth (City) to prepare this RAP/CCP for the Property. The Property is enrolled in the Minnesota Pollution Control Agency (MPCA) Voluntary Investigation and Cleanup (VIC) and Petroleum Brownfield (PB) Programs. The VIC and PB numbers assigned to the Property are VP32630 and 4791, respectively. This RAP was prepared in support of planning for street reconstruction activities at the Property.

The Property is located along the Superior Street Corridor from 5th Ave East to 350 feet west of the 6th Ave West intersection (Figure 1 and Figure 2). The Property is an approximately 80 ft. wide by 5,200 ft. (0.98 mile) long roadway corridor in the heart of downtown Duluth. Road reconstruction and replacement of underground utilities are planned for the Property. The current and past use of the area surrounding the Property is commercial and residential.

1.1 Response Action Plan and Construction Contingency Plan Scope and Objectives

The scope of the RAP/CCP is to implement response action measures for management of contaminated soil and construction water during street reconstruction activities on the Property that are protective of human health and the environment and consistent with the proposed uses of the Property. Groundwater response actions are not anticipated.

The primary contaminants of concern (COCs) established for this property are diesel range organics (DRO) and benzene from petroleum products. The MPCA Soil Leaching Value (SLV) for benzene is 0.017 milligrams per kilogram (mg/kg) and the MPCA DRO reference value is 100 mg/kg.

The RAP includes proposed steps for managing contaminated soil necessary to achieve the cleanup and redevelopment objectives for the Property. The soil response actions will include a combination of excavation, on-site management, and off-site disposal of contaminated materials, off-site management of unregulated fill, and backfilling and covering with soil meeting site cleanup goals and pavement. Construction water management will consist of removing excess water from soils excavated from below the water table, as necessary. Water that is removed from the soils may be managed by onsite infiltration in the project area or by discharge to the sanitary sewer.

The CCP presents proposed contingency methods to be used and actions to be completed in the event of discovering additional hazardous substances or petroleum products not currently documented at the Property, but which may reasonably be expected to occur at the Property due to its past history. The CCP

also outlines the procedures that will be required for the contractor during construction activities to protect human health and the environment.

The methods, proposed response actions and construction contingency measures presented in this plan are based on the sampling data collected in November, 2014 (Barr, 2015b). However, the proposed response actions and construction contingency measures have been developed prior to the final reconstruction design plans and specifications and may be edited by addendum in the future, as needed.

1.2 Contact Information

Site Location:	Superior Street Corridor 6th Avenue West to 5th Avenue East Section 27, T50N, R14W, St. Louis County City of Duluth, Minnesota
Project Contact:	Patrick Loomis, Project Engineer City of Duluth 411 West First Street, Rm 211 Duluth, MN 55802 Phone: (218) 730-5094 Email: ploomis@duluthmn.gov
Barr Engineering Company (Consultant, Environmental):	Lynette Carney, Project Manager Barr Engineering Co. 325 South Lake Avenue, Suite 700 Duluth, MN 55802 Phone: (218) 529-7141 Email: lcarney@barr.com
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2.0 Property Background

This section summarizes previous investigations of the Property. Property background information is summarized from Barr's Environmental Evaluation Report (Barr, 2015a). The results of the November 2014 investigation were evaluated to provide an understanding of the existing environmental conditions at the Property.

2.1 Historic Uses

Historically, the Superior Street corridor has consisted of residential and commercial properties. It currently includes retail shops, residences, and office buildings zoned "F-7" for "Downtown Shopping" and "F-8" for "Downtown Mix".

2.1.1 Subsurface Utilities and Infrastructure

The City's 16-inch diameter water main is located along the entire length of the Property on the south side of Superior Street. The water main was installed in 1887. The City's sanitary main on Superior Street was installed in 1886. Buildings on the north side of Superior Street are connected to the sanitary main on Superior Street and buildings on the south side of the street are connected to the sanitary main on Michigan Street. Historic trolley rails and rail ties are present beneath the center of the roadway along the entire length of the Property. Historic and existing subsurface electrical conduits and vaults are present from the western-most end of the Property to 6th Avenue West and from 4th Avenue West and to 5th Avenue East.

2.2 Property Setting

Topography of the Property slopes to the southeast from 1st Street to Michigan Street and shallow groundwater flow direction at the Property is considered to be to the southeast toward Lake Superior or the Harbor, based on surface topography. In some locations groundwater may be perched in the clay-rich soil on top of bedrock. Otherwise the water table is expected to be in bedrock fractures at depths ranging from 25 to 35 feet below ground surface (bgs).

The soil encountered within environmental borings was observed to be primarily red-brown clay interlayered with silty-sand or sandy-silt. In some instances, the soil encountered was comprised entirely of alternating units of less than 3-4 feet thick of silty-sand, sandy-silt and clay. The soil encountered is likely representative of fill soils that have been placed or disturbed during previous utility and roadway construction activities. Bedrock was expected to be relatively shallow and based on boring refusal at B-26 through B-30 may be close as 5 feet bgs. Otherwise the depth to bedrock is expected to range from 10 to 20 feet bgs.

2.3 Future Uses

The Property is proposed for street reconstruction. Future development at the Property associated with this plan will consist of the demolition, removal, reconstruction and replacement of the existing road

surface and some subsurface utilities. At this time, design or final construction plans are not available. Therefore, the following discussion of assumed plans is based on discussions with LHB and the City.

The current assumed street reconstruction plans require the majority of excavated soil to be removed from the Property. The soil will be managed in general accordance with the Off-Site Use of Unregulated Fill Policy (c-rem2-02, MPCA, March 2012). During the November 2014 investigation a few areas with concentrations of COCs that exceeded the MPCA reference values were observed. It is likely that soil will be excavated from these areas. Site grading will be required throughout the Property. Trenching will also be required to install replacement utility lines. Existing utility trenches are expected to be utilized for the installation of new or reconstructed utilities. Existing utilities generally vary in depth between 2-ft to 10-ft bgs.

2.4 Previous Property Assessments

Previous environmental assessments and soil investigation work has been performed at the Property. Previous environmental reports consist of the following:

- Environmental Evaluation (Barr 2015a)
- Phase II Investigation Results (Barr 2015b)

2.5 Summary of Previous Investigations / Sampling Results

Barr completed an Environmental Evaluation (Barr, 2015a) along the Superior Street corridor, from 6th Avenue West to 5th Avenue East. The Environmental Evaluation identified properties adjacent to the corridor with the potential to impact soil, groundwater, or vapor. Records review, site reconnaissance, interviews, reporting, and file reviews were used to assess the adjacent properties. The results of the assessment identified 25 sites with the potential to impact the Superior Street corridor. These sites either had a documented historical release or the likelihood of a past release. The sites were categorized into Level 1 and Level 2 Findings based on the probability of environmental impact. Level 1 Findings have a lower probability of environmental impact to the property and Level 2 Findings have a higher probability of environmental impact to the property. Of the 25 Findings, 9 were Level 1 Findings and 16 were Level 2 Findings.

2.5.1 Soil – Benzene and DRO

Soil boring sampling investigations conducted at the Property in November 2014 indicated the potential for contamination to be encountered in the areas surrounding borings B-31, B-65, and B-66 (Figure 2) where low level petroleum impacts were observed in the vicinity of documented petroleum sources.

- Soil boring B-31 (9.5-11 feet bgs) had a DRO-silica gel cleanup detection of 140 mg/kg which is greater than the MPCA PRP guidance document criteria of 100 mg/kg. This boring was completed in the centerline of the road below the anticipated location of the trolley line tracks and in relatively close proximity to the US Bank Building which was identified as a Level 2 site due to the potential presence of an abandoned in-place fuel oil underground storage tank.

- Soil boring B-65 (7.5-9 feet bgs) had a benzene concentration of 0.21 mg/kg which is greater than the MPCA SLV criteria of 0.017 mg/kg. This boring was completed at the intersection of 4th Avenue East and downgradient from the Voyageurs Motel which was identified as a Level 1 Finding in the regulatory listing due to an MPCA underground storage tank leak site listing.

- Soil boring B-66 had an elevated PID headspace reading of 89.5 ppm at the depth of 9.5-11.0 feet which may be indicative of the presence of petroleum compounds in soil. This boring was completed near a former filling station.

In addition to these three locations, headspace readings above 10 ppm were detected at eleven other soil boring locations during the November 2014 investigation. The headspace readings at these locations ranged from 10 to 16.2 ppm. It should be noted that the average headspace reading during the investigation was approximately 6 ppm and very few readings were below 3 ppm. (The range of headspace readings was 1.4 to 89.5 ppm.) Therefore, it is likely that the background reading during the investigation was elevated and these locations could be considered within 10 ppm of the background. See Appendix A for a summary of the investigation headspace results.

2.5.2 Other Potential Environmental Concerns

In addition to contaminated soil, it is assumed that the following environmental concerns will need to be addressed during reconstruction activities:

- Historic trolley rails and rail ties present beneath the subsurface in the center of the roadway along the entire length of the Property.

- Asbestos Containing Material (ACM) from historic steam piping.

- Historic and existing subsurface electrical conduits and vaults.

3.0 Response Action Plan

This section of the RAP describes the tasks that will be implemented and the documentation that will be provided following completion of RAP activities.

The RAP is intended to primarily address contamination encountered in the following general areas of concern during Property reconstruction, including:

- Areas of soil potentially containing petroleum impacts at elevated levels
- Rail lines and rail ties from historic trolley line
- ACM from historic utility conduits
- Historic and existing subsurface electrical conduits and vaults which have the potential to include elements containing hazardous substances.

In general, soil contamination that could potentially be encountered at the Property is in the surficial fill. In the planned development area of the Site, the fill will be characterized and managed, as described below. The objectives of proposed response actions are to manage the known areas of contaminated soils encountered at the Site and to restrict future contact with the contaminated soils that may remain at the Site after response actions are completed. This will include:

- Segregation of contaminated soils that may be removed to construct the project.
- Disposal of some contaminated soil at an approved, off-site, permitted landfill facility.
- Management of contaminated soils on-site in accordance with this RAP.
- Documentation of potentially contaminated soils remaining at the limits of the project area.
- Removal of unregulated fill to off-site locations.

A final development design has not been completed for the Site; however, a general plan of a paved public street with associated utilities is proposed. Construction work is planned to commence in 2017 and will be completed in three phases over three years. The redevelopment project area is shown on Figures 1 and 2. These proposed response actions are intended to be flexible and can be coordinated to occur prior to or during Site redevelopment construction.

Corrective action for groundwater is not anticipated. Additionally, proposed soil remediation, the addition of covers such as pavement, new structures, or soil caps will reduce infiltration and potential for leaching through remaining historical fill materials.

3.1 General Approach and Operation

Exposure risk will be reduced by a combination of soil excavation, offsite disposal, as required, soil covers, and construction water management. Although final construction plans are not available, based on the Phase II investigation, it is assumed that contamination will likely be encountered during reconstruction activities along the Superior Street corridor.

The City will contract directly with a general contractor (Contractor) for the implementation of the response actions at the Property. The Contractor is required to be trained under the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations (HAZWOPER) regulations (29 CFR 1910.12c) for the areas identified for remediation, and have the proper training to correctly identify ACM. An Environmental Representative will observe the Contractor during contaminated soil excavation activities. The Environmental Representative will document soil excavation limits, field screen excavated material, collect soil samples for environmental screening and analysis, and coordinate the implementation of potential contingency actions listed in the Construction Contingency Plan (CCP) (Section 4). The Environmental Representative will also assist the Contractor with landfill profiling of contaminated materials to be disposed off-site, including collecting additional analytical samples for waste characterization.

3.2 Contaminants of Concern and Cleanup Goals

The COCs at the Property are benzene and DRO. In addition, several areas were identified with soil headspace screening results above the MPCA reference value of 10 ppm. However, based on the average headspace reading during the investigation of approximately 6 ppm and very few readings below 3 ppm, the PID readings in these nine areas (ranging from 10 to 16.2 ppm) appear to be within the reference values limits when the background assumptions are applied. Based on these results, it is proposed that the site cleanup goals be the MPCA SLV for benzene (0.017 mg/kg) and the MPCA reference value for DRO (100 mg/kg), and 16 ppm for soil headspace.

Impacted soils with COC concentrations exceeding the cleanup goals will be managed by removal, relocation, and/or covering. It is expected that following final grading, the Property will be covered with pavement. The following soil separation zones will be implemented.

- paved areas - soils exceeding the cleanup goals will be covered with two feet of soil and pavement, outside of utility corridors.
- water main utility corridors - soils exceeding the cleanup goals within water main utility corridors will be removed to provide a two foot buffer extending from the outside edge of the pipe.

If excavated soil that does not exceed the site cleanup criteria will remain on-site, it may be used to backfill areas needing fill. This would include excavated soil that registers above 10 ppm and less than 200 ppm PID headspace (MPCA Guidance Document 5-01). Soil that registers above 200 ppm or is petroleum-saturated will be removed and disposed of at a permitted and approved landfill. If needed to fill areas where contaminated soil is removed, clean soil (e.g., Class 5, select granular borrow and/or topsoil) will be imported from an off-site source.

The primary response actions for the Property are soil excavation, onsite management and offsite disposal of soil, and placement of a soil cover over in-place impacted soil. Implementation of the RAP will involve completion of the following tasks:

- Implement runoff and run-on control.

- Implement dust control procedures.
- Clear, remove, and dispose of surface debris from the Property.
- Excavate areas of soil with COC concentrations exceeding cleanup goals.
- Segregate excavated soils for management on-site or off-site.
- Dispose of contaminated soil and materials off-site at an approved, permitted landfill.
- Manage excavated contaminated soil with impacts below the cleanup goals off-site according to the MPCA Best Management Practices for the Off-Site Reuse of Unregulated Fill (MPCA, 2012).
- Dispose of construction dewatering-generated groundwater by on-site infiltration or discharge to the sanitary sewer (with appropriate pre-approval of the Western Lake Superior Sanitary District (WLSSD)).
- Backfill soil on-site, as necessary, to the depths required in the redevelopment plan.

3.3 Electric Vaults

Historic and existing subsurface electrical conduits and vaults are present from the western-most end of the Property to 6th Avenue West and from 4th Avenue West and to 5th Avenue East. Electrical vaults and associated construction waste will be removed and managed by Minnesota Power. Installation of new electric vaults will also be conducted by Minnesota Power.

3.4 Railroad Corridors

Historic trolley rails and rail ties are present beneath the subsurface in the center of the roadway along the entire length of the Property. During removal of these materials the Contractor will be responsible for screening the soil for any discoloration and/or odors. In the event that contamination is observed in the soil surrounding the historic trolley rails and rail ties, the impacted soil will be separately stockpiled and the Environmental Representative will conduct field screening of the stockpile and collect laboratory samples for analysis as needed. Rail ties will be disposed of in accordance with applicable rules and guidelines. The steel rail lines will be recycled at an approved recycling facility.

3.5 Steam Piping - Asbestos Containing Materials

It is anticipated that historic steam piping with ACM will be encountered during reconstruction activities. Some of the steam pipe may be left/abandoned in-place. If piping is removed, abatement and management of the associated ACM will be facilitated by Duluth Energy Systems utility company.

3.6 Erosion Control and Stormwater Management

Erosion control measures shall consist of silt fences, straw bales and/or other control measures implemented to prevent erosion and transport of contaminated materials off-site and to protect surface water quality. Care will be taken to divert any stormwater run-off from open excavation areas. Berms,

ditches, or other control measures may be constructed to direct run-off away from the excavation area and contaminated materials. Stormwater management planning and design will be coordinated by LHB, the civil engineer, with the MPCA and the City of Duluth. A stormwater management plan will be submitted to the City of Duluth.

3.7 Contaminated Soil Excavation, Removal, Transport, and Disposal

3.7.1 Limited Remedial Soil Excavations

Contaminated soil not meeting the cleanup goals will be excavated during development construction work by appropriately trained excavation operators (Hazardous Waste Site Operator (HAZWOPER)-trained individuals under the observation of the owner's Environmental Representative. Contaminated soil could be removed during:

- site preparation and development,
- road construction activities,
- utility trench excavation

Three areas with COC concentrations in the soil were identified during the previous subsurface investigation: in the vicinity of B-31 (approximately 120 feet east of 2nd Avenue West) and B-65 and B-66 (at the intersection of Superior Street and 4th Avenue East). The depth of contamination observed at B-31 was 9.5-11 feet bgs. At B-65 and B-66 the depths to observed contamination were 7.5-9 feet bgs and 9.5-11 feet bgs, respectively. If construction activities are planned within two feet of the target depths at these locations, then prior to construction activities, these three areas will be excavated to remove soil with COC concentrations exceeding the site cleanup goals. The proposed excavation limits are ten feet wide by ten feet long. Figure 2 shows the proposed locations of limited remedial soil excavations.

It is anticipated that the contractor or its subcontractor will use a backhoe or trackhoe to excavate contaminated soil from the Site. The excavated material will be temporarily stockpiled or direct loaded into trucks for transport to an approved disposal facility or to a designated area of the Property for temporary stockpiling. Loose debris encountered during contaminated soil excavation will be disposed offsite as contaminated material at a permitted, approved landfill. Following additional characterization of stockpiled soil, use of the stockpiled soil will be evaluated.

3.7.1.1 Soil Excavation Confirmation

The excavation areas will be staked in the field by the contractor or onsite Representative. The estimated depths of contaminated soil excavation will be marked on the boundary stakes and field verified by field screening and/or laboratory sample analysis. Excavation areas greater than four feet deep will be fenced with construction fence or surrounded with "Caution" tape after excavation is complete and prior to backfilling as a health and safety measure.

The proposed excavation limits are ten by ten feet. The contractor will excavate the soil materials to the proposed excavation limits. The onsite Representative will collect samples from the base and sidewalls to

confirm that contaminated soils were removed to the extent needed to meet the cleanup objectives for the Property. This will involve field screening soil with a photoionization detector (PID) using headspace procedures. In areas where headspace readings are above 16 ppm (demonstrated site background), additional soil screening or sampling may be required.

If elevated headspace readings are documented within the construction plan footprint, then soil screening and excavation will continue until the soil no longer registers above 16 ppm or when the required separation distance is reached or the limits of the project work area. If the suspect soil is at the edge of the construction area, then soil samples will be collected for analysis of DRO and VOCs by an approved laboratory for documentation purposes.

3.7.1.2 Additional Soil Screening Areas

As presented in section 2.5.1, there were eleven boring locations where headspace readings were between 10 and 16.2 ppm during the November 2014 investigation. These locations do not warrant a planned limited remedial excavation, however, if construction activities are planned within two feet of these locations and depths, then an onsite Representative will field screen soils to confirm that these soils meet the site-specific background headspace of approximately 16 ppm. If contaminated soils are encountered the excavation will proceed as a limited remedial soil excavation.

3.7.2 Temporary Soil Stockpiles, Transport, and Disposal

Excavated soil from the remedial excavations described in Section 3.7.1 above will be placed in a temporary soil stock pile area located on the Property. Stockpile locations will be determined in the field based on proximity to the work area(s), and protection from surface water drainage. A flat hard surface such as a former paved area or building slab will be used if accessible to the work area and equipment. Ten mil-thick polyethylene sheeting (poly) will line the bottom, with a berm of woodchips or sand ringing the perimeter. Soil will be placed on the poly, be covered with poly that is weighted down to hold the cover in place. The stockpiled soil will be maintained in the covered stockpile until the Contractor coordinates transport to the approved licensed landfill for off-site disposal.

It is anticipated that multiple stockpiles may be created based on field observations and screening results and construction work sequencing. Separate stockpiles may be used for managing soils of different textures, coloration, suspected contaminant, field screening observations, or debris content. If required for disposal characterization purposes, the stockpiles will be sampled and analyzed to characterize the particular COCs to determine its appropriate offsite or onsite management.

Trucks transporting contaminated soil off-site from stockpiles for disposal will be covered during transportation. Waste characterization and disposal facility profiling will be completed prior to removal of the soil from the stockpile.

3.8 Construction Water Management

The groundwater table lies an estimated 25 to 35 feet below ground surface and excavation of contaminated soils is not likely to require excavation below the water table. However, perched

groundwater within the fill material could cause groundwater infiltration into excavations. The construction dewatering water from excavations will be re-infiltrated on site or discharged to the sanitary sewer (with pre-approval of WLSSD).

If water generated by construction dewatering activities is to be discharged from target remediation areas and/or disposed of off-site, it will be sampled and analyzed for COCs, if required. Laboratory analytical services will be performed by a Minnesota Department of Health-certified laboratory.

3.9 Offsite Disposal of Excavated Materials

It is anticipated that contaminated materials planned for off-site disposal will be staged and loaded into trucks for offsite transport and disposal.

Waste characterization and disposal facility profiling will be completed prior to transporting materials offsite. Trucks transporting contaminated soil and debris will be covered prior to their departure from the Property. It is anticipated that contaminated materials will be disposed of in a local, contractor-selected, permitted non-hazardous waste landfill such as Vonco V, SKB, or Waste Management.

3.10 Documentation of Response Actions

The implementation of the proposed RAP will be documented in a Response Action Implementation (RAI) Report after the conclusion of response action activities. The RAI Report will include drawings showing the excavation area limits, depths of the excavation areas, and the soil and sampling locations. Data from documentation and waste profile samples will be included in the RAI Report. Excavation quantities and disposal facilities will be documented along with on-site management details.

3.11 Permitting

Permits necessary to perform the proposed activities at the Property will be obtained by LHB and may include, but are not limited to:

- Stormwater NPDES Permit (to be applied for by LHB prior to construction)

3.12 Implementation Schedule

Redevelopment of the Superior Street corridor is scheduled to begin in 2017. The construction activities are planned to be separated into three stages, with the completion of one stage per year over a three year period.

4.0 Construction Contingency Plan

The CCP describes development of a project-specific health and safety plan and environmental construction contingency measures that may be necessary to protect human health and the environment during the planned Property development construction work.

4.1 Site Safety Plan

The contractor selected to implement the response action construction activities will be required to prepare a *Site Safety and Site Contingency Plan* to address requirements of 29 CFR 1910.120. Contractor personnel completing the response action excavations and related activities that involve potential contact with contaminated materials will be required to provide documentation of appropriate training as described in 29 CFR 1910. Copies of project health and safety documents will be made available to the MPCA and maintained onsite. The Contractor will be required to derive appropriate "action levels" for identified contaminants on-site and conduct air monitoring as necessary to identify and quantify levels of hazardous substances with periodic monitoring to assure that proper protective equipment is being used.

4.2 Construction Contingency Plan

The RAP described in this report was developed for contaminated soils that are known to be present on the Property. Although unexpected, contaminated soil that is different than anticipated (dissimilar soils) based on the Phase II results, underground storage tanks, drums/containers, ACM, other debris or water may be encountered in the excavations. Such contingent conditions will be managed as follows.

4.2.1 Dissimilar Contaminated Soil

If dissimilar contaminated soil is encountered during excavation activities at the Property (based upon visual evidence of contamination, and/or odor), excavation and earthwork activities of the potentially impacted area will temporarily cease until the owner's Environmental Representative familiar with the CCP is made aware of the situation.

The owner's Environmental Representative shall be present during the excavation of dissimilar soils to screen soils, classify materials, and collect analytical samples. If it is decided the material should be removed/segregated, dissimilar soil will be staged to a stockpile. A dissimilar contaminated soil staging area (CSSA) will be constructed by placing a 10-mil-thick (minimum) polyethylene sheeting (poly) on the ground and constructing a 6-inch-high woodchips, sand, or soil berm around the perimeter. The poly will extend beyond the perimeter berm to prevent runoff from, and run on to, the dissimilar CSSA. A 10-mil-thick (minimum) poly cover will be placed over contaminated soil that is stockpiled in the dissimilar CSSA. The cover will extend beyond the perimeter berm and it will be secured and maintained in place until disposition of the stockpile soil has been determined by the owner's Environmental Representative.

The excavation will proceed after appropriate notification has been made. During excavation, dissimilar contaminated soil will be segregated based on appearance, odor, headspace testing and other field screening methods. Contaminated soil will be transported directly to the dissimilar CSSA.

4.2.2 Underground Storage Tanks

If unexpected USTs are encountered during excavation activities at the Property, earthwork activities will be temporarily ceased until the owner and/or owner's Environmental Representative is notified. Following appropriate notification, a certified tank remover and onsite representative will be present to oversee the removal of the UST. If fluids are present in the UST, they will be removed and characterized for proper disposal, generally prior to tank removal. The UST will then be removed in accordance with MPCA guidelines by a licensed contractor. After the UST is emptied and removed it will be transported to an approved facility for proper recycling or disposal. The Environmental Representative or other qualified representative will collect appropriate tank excavation soil samples for submittal to an appropriate analytical testing laboratory for guidance-required parameter analysis. Tank removal documentation or other reports will be submitted to the MPCA to document the completed tank removal activities.

4.2.3 Drums, Containers or Other Waste

If drums, containers or other waste items are encountered during excavation activities, earthwork activities will temporarily cease until the Environmental Representative is made aware of the situation. The owner's Environmental Representative shall be present for removal of the drums, containers or other waste. Waste items shall be individually removed and their condition assessed. If excavated drums/containers are not in good condition (e.g., severe rusting, structural defects, leaking, etc.), the materials will be transferred to a new drum or other appropriate container or temporarily placed on poly similar to Section 4.2.1. Prior to transport, these containers will meet the appropriate requirements of United States Department of Transportation (DOT), U.S. Occupational Safety and Health Administration (OSHA), and U.S. Environmental Protection Agency (EPA) regulations for the containment and transport of wastes.

Intact drums and repacked containers will be transported to a storage area and placed in roll-off boxes or other approved, appropriate containment areas. If appropriate, liquid wastes may be transferred to and bulk-stored in tanks. Each roll-off box or containment area will be lined to contain leaks, spills, or accumulated precipitation. Each roll-off box or containment area will be of sufficient capacity to contain the volume in drums or containers. Each roll-off box or containment area will be covered to prevent accumulation of precipitation.

4.2.4 Suspect ACM

If piping, debris or soil containing potential ACM, other than that found on steam piping discussed in Section 3.5, is encountered during excavation, excavation activities in the affected location shall temporarily cease and the owner's Environmental Consultant shall be notified. Visual inspection by a MDH certified and licensed asbestos inspector will be conducted to determine if the materials encountered are ACM and to assess the proper separation, handling and disposal of the material. Samples will be collected by the certified asbestos inspector. If the material contains ACM, a certified asbestos abatement company will remove the material and provide the proper handling and disposal of ACM in accordance with state and federal regulations. Proper notifications will be made to the MPCA.

All asbestos-related work will be conducted in accordance with Minnesota and Federal National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements. Monitoring of airborne asbestos

concentrations will be conducted in accordance with the Occupational Safety and Health Administration (OSHA) asbestos requirements for the construction industry, found in 29 CFR 1926.1101 (adopted by reference by Minnesota OSHA).

If significant quantities of ACM or ACM and soil mixtures are encountered during the excavation activities, an Asbestos-Containing Material Emission Control Plan will be developed and implemented for the work. The contractor will make required Agency notifications and implement appropriate operating procedures during excavation and abatement work to ensure protection and safeguard from asbestos exposure of the workers, visitors, employees and the environment. All soil containing potential ACM will be immediately wetted to minimize asbestos fiber release during excavation and loading activities. Soils will be segregated and disposed of at an offsite landfill based on visual observations and analytical testing results.

4.2.5 Excavation Water Management

If excavation water levels become too high after a storm event or excavation water COCs exceed desired concentrations then all activities in the affected location shall temporarily cease and the owner's Environmental Representative shall be notified.

Testing and possible treatment of accumulated water may be necessary to obtain a permit to discharge the water to the sanitary sewer or re-infiltrate back into site soil. If necessary, the construction contractor will obtain a sanitary sewer discharge permit from the Western Lake Superior Sanitary District (WLSSD) for discharge to the sanitary sewer system and perform all necessary testing, treatment and flow measuring in accordance with the permit requirements. The Environmental Representative can assist, as necessary, with collecting appropriate water samples.

4.2.6 Other Buried Debris

Concrete foundations or structures, asphalt or bricks buried in fill and other buried debris (greater than 50 percent by volume in soil) in the excavation area will be stockpiled separately from the excavated soil and other materials. The debris will be transported offsite for disposal in an approved landfill (i.e. demolition landfill facility).

Hazardous substances that could potentially be encountered may be in shallow soils below underground structures or utility conduits or vaults. If impacted soil is discovered during construction, the soil will be managed in accordance with Section 4.2.1

5.0 References

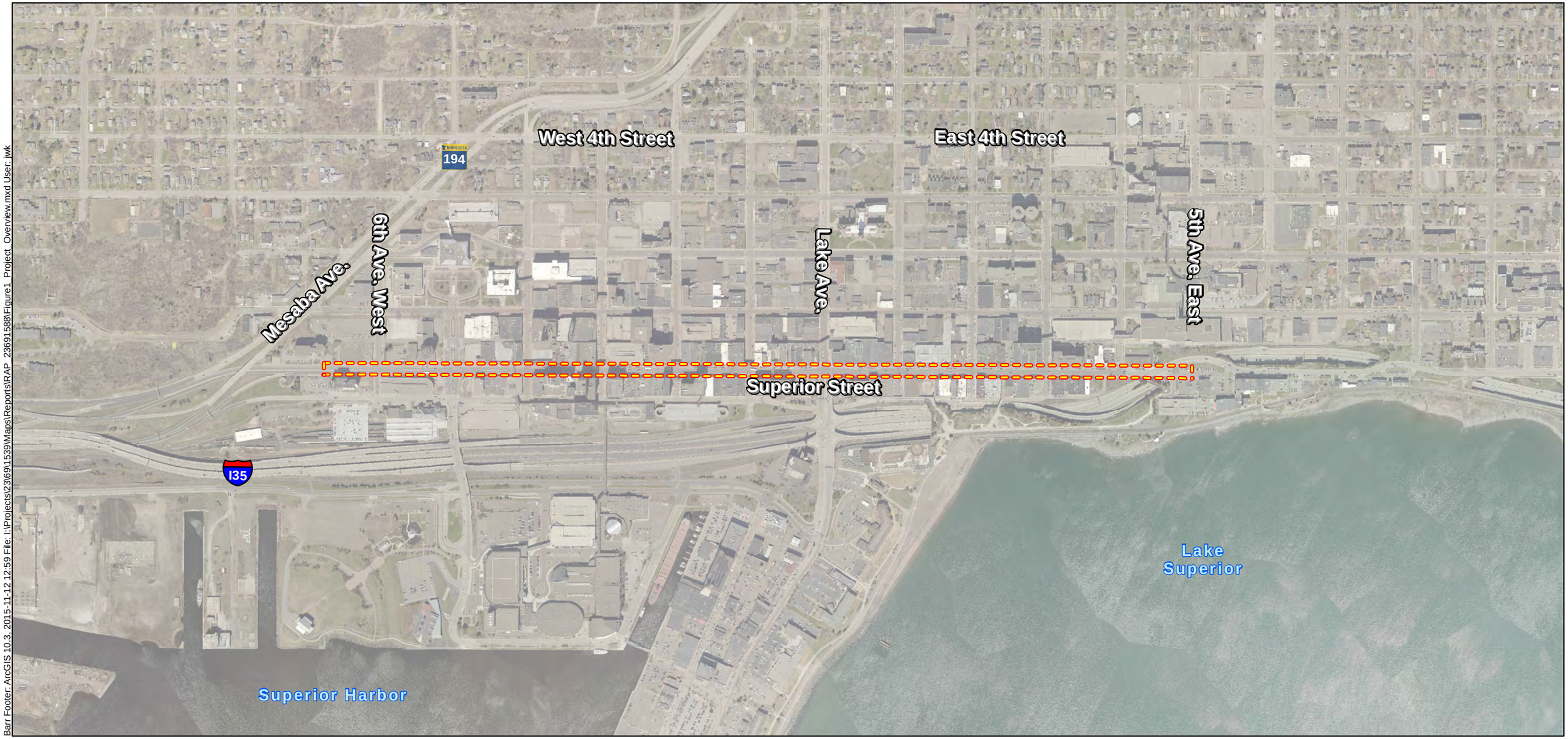
Barr, 2015a. Environmental Evaluation – UPDATED, Superior Street Corridor from 5th Ave East to 6th Ave West, Duluth, MN. To Patrick Loomis, City of Duluth. From: Lynette Carney, Barr Engineering Company. January 30, 2015.

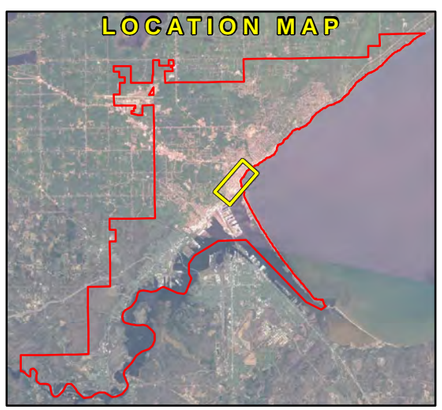
Barr, 2015b. Technical Memorandum "Phase II Investigation Results, Superior Street Reconstruction Corridor". To: Brad Scott, LHB Corporation. From: Lynette Carney, Barr Engineering Company. February 3, 2015.

MPCA, 2008, *Managing Petroleum Contaminated Soil at Public Works Projects*, Guidance Document 5-01. Petroleum Remediation Program. September 2008.

MPCA, 2012, *Best Management Practices for the Off-Site Use of Unregulated Fill*, Guidance Document c-rem1-01, February 2012.

Figures





Project Area

City of Duluth Boundary

0 600 1,200

Feet

1 Inch = 600 Feet

St. Louis County Imagery Circa May, 2013

Figure 1

PROJECT OVERVIEW
SUPERIOR STREET
RECONSTRUCTION PROJECT
Duluth, Minnesota

BARR

Barr Footer: ArcGIS 10.3 2015-11-20 10:21 File: I:\Projects\23\6911539\Maps\Reports\RAP 23691588\Figure2 Limited Remedial Excavations.mxd User: jwk

LOCATION MAP

- Project Area
- Soil Boring Locations with PID Results Greater than 10ppm
- Limited Remedial Soil Excavation Location
- Additional Boring Locations
- City of Duluth Boundary
- Approximate Contaminated Soil Screening Areas
- Approximate Excavation Extents

Depth of screening:
B-31 (7.5 - 13 ft bgs)
B-65 (5.5 - 11 ft bgs)
B-66 (7.5 - 13 ft bgs)

0 400 800

Feet

1 Inch = 400 Feet

St. Louis County Imagery Circa May, 2013

Figure 2

LIMITED REMEDIAL EXCAVATIONS
SUPERIOR STREET
RECONSTRUCTION PROJECT
Duluth, Minnesota

BARR

Appendix A

Soil Headspace Field Screening Investigation Results

Table A-1
November 2014 Investigation Headspace Results
Superior Street Reconstruction Project
Duluth, MN

Location / Depth (ft)	B-01	B-02	B-03	B-04	B-05	B-06	B-07	B-08	B-09	B-10	B-11	B-15	B-16	B-17	B-18	B-19	B-20	B-21	B-26	B-27	B-28	B-29	B-30	B-31	B-38
2.5 - 4	15.6	NM	NM	5.4	NM	NM	NM	6.1	NM	NM	NM	10.2	9.8	10.5	11.7	11.7	5.7	13.9	5.2	5.8	NM	NM	4.7	NM	7.4
4.5 - 6	7.2	6.6	9.8	8.5	14.5	NM	5.5	6.4	5.5	NM	0.3	10.4	9.7	9.3	NM	NM	4.5	4.4	4.7	NM		NM		4.3	5.7
7.5 - 9	13.2	6.7	10.9	NM	7.5	2.5	1.2	NM	5.5	3.3	0.6	11.2	15.8	5.2	NM	NM	3.7	4.6	NM					5.4	3.8
9.5 - 11	7.5	6.9	7.9	NM	15.1	5.8	3.6	3.5	4.6	3.5	0.4	13.2	10.2	6.6	NM	NM	5.2	4.6						8.1	4.4
11.5 - 13		7.1	12.4	8.7	15.7	4.5	3.7	3.8	1.6	NM	0.8	7.5	12.2	5.2	5.9	5.9	6.8	3.9						4.7	4.6
14.5 - 16		NM	13.7	9.4	NM	4.3	NM	NM	4.6	4.3	0.8	NM	10.9	5.2	4.9	4.9	4.2	4.4							
16.5 - 18													12.5												
18 - 19.5													NM												
19.5 - 21													NM												
Completion Depth (ft)	9.9	16	16	16	16	16	16	16	16	16	16	16	21	16	16	16	16	16	7.8	5	4.2	5	3.5	13	13.4

NM - Not Measured

PID screening results exceeds MPCA criteria of 10 ppm

12/7/2015
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Table A-1
November 2014 Investigation Headspace Results
Superior Street Reconstruction Project
Duluth, MN

Location / Depth (ft)	B-39	B-40	B-41	B-42	B-43	B-44	B-45	B-46	B-47	B-50	B-51	B-54	B-55	B-56	B-57	B-58	B-59	B-60	B-61	B-62	B-63	B-64	B-65	B-66
2.5 - 4	9.6	14.9	6.3	8	NM	8.3	7	4.6	2.8	2.2	2.8	4.3	3.6	4.3	9.9	NM	4.9	4.2	7.5	6.9	NM	5.1	4.3	2.8
4.5 - 6	8.4	10	6.1	8.4	7.1	6.7	5.4	4.2	NM	1.4	4	5.3	NM	3.8	6	6.2	10.2	4.3	6.1	8.9	3.8	6.1	7.1	3.5
7.5 - 9	7.4	NM	5.5	5.9	NM	5.4	6.9	4.8	4.3		3.8	6.1		3.7	5.6	6.9	6.7	5	7.3	3.6	2.5	5.7	7.1	4.1
9.5 - 11	6.9	9.4	6.4	5.5	NM	4.6	5.8	NM	NM			4.6		3.9	5		7.9	4.6	5.3	5.6	2.8	4.6		89.5
11.5 - 13	7.9	16.2	7.4	4.8	NM	4.6	3.9					NM		NM	NM		NM	1.7						NM
14.5 - 16	8.7	10.5	6.5	5.5	6.1	NM												NM						
16.5 - 18																								
18 - 19.5																								
19.5 - 21																								
Completion Depth (ft)	16	16	16	15.3	16	15	14.3	10	9.8	5.6	8.5	12	7.2	14	11.8	9	12	15	10.8	10.2	11.5	11.5	9	12

NM - Not Measured

PID screening results exceeds MPCA criteria of 10 ppm

12/7/2015
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