ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES (ABCA)

West Blum Property
411 East 15th Street
Dubuque County
Dubuque, Iowa

December 2, 2016

Prepared for:

City of Dubuque
50 W. 13th Street
Dubuque, IA 52001

HRGreen

1.0 INTRODUCTION AND BACKGROUND

1.1 Site Location

The subject property is located within the SE ¼ of the SE ¼ of Section 24, Township 89 North, Range 2 East in Dubuque County, Iowa, and is further located by the approximate latitude and longitude at 42.508840° North and -90.664071° West.

1.2 Previous Site Use(s) and any previous cleanup/remediation

The following table outlines previous uses according to available historical records.

Date(s)	Source(s)	Property Use(s)
1884-present	Historical aerial photographs, city directories, and Sanborn maps, Dubuque County Assessor's Office website, and site reconnaissance	Industrial development Historical Sanborn maps display the following: • 1884, 1891, and 1909: Subject property identified as part of the "Iowa Coffin Co." which included painting, varnishing, coal storage and a dry kiln. • 1950 and 1970: Subject property identified as part of the "Blum Co." junk yard City directories identified the subject property as 411 East 15th Street and listed it as "Blum Co Steel" in 1954, 1958, 1963, 1968, 1973, 1978, 1983, 1988, 1992, 1995, 1999, 2003, 2008, and 2013. The subject property currently contains a junkyard/metal recycling center.

No previous cleanup or remediation activities have taken place at the subject property.

1.3 Site Assessment Findings

HR Green, Inc. prepared a Phase I ESA and a Phase I ESA Update on the subject property in conformance with the scope and limitations of ASTM Practice E 1527-13 on behalf of the City of Dubuque as part of its EPA Brownfields Petroleum Assessment Grant. The reports, dated June 13, 2016 and December 2, 2016 identified several on-and-off-site recognized environmental concerns (RECs) including the following:

On-Site RECs:

1. The subject property historically contained a coffin company from approximately 1884 until 1909. Historical Sanborn maps depict coal storage, a dry kiln, varnishing, and painting.
2. The subject property has operated as a scrap yard and recycling facility since the early 1950s. A Groundwater Hazard Statement associated with the subject property identified tetrachloroethene in groundwater and arsenic and lead present in shallow soils. Additionally, an interview with the City of Dubuque Fire Department identified several accounts of illegal burning activities on the property.
3. HR Green observed several 76-pound steel flask shipping containers of liquid mercury in the first-floor office space of the main building. The containers were heavily corroded. Mr. Blum reported that they are secured with a "finger-tight" seal (similar conditions were observed during the Hazardous Materials Inventory; see Appendix G for further details).
4. HR Green observed many apparent chemical spills throughout the subject property. It is not known if the hydraulic fluids used by various equipment (i.e crusher, baler, etc.) contain hazardous components such as PCBs (similar conditions were observed during the Hazardous Materials Inventory; see Appendix G for further details).
5. HR Green observed a large number of apparent empty chemical drums throughout the subject property. It is not known if residual chemicals remain in these drums or if any of the drums leaked.
6. HR Green was informed by Mr. Blum of an approximate 500-1,000 gallon diesel fuel UST in the central portion of the subject property. HR Green was unable to locate the UST due a large amount of solid waste in the area of the tank.
7. HR Green observed batteries, transformers, motors, and other automobile parts stored in multiple locations on the subject property with associated staining on the ground.
8. HR Green observed hydraulic machinery that may contain PCBs (no "PCB-Free" labels were visible) with associated staining on the subject property.
9. HR Green observed stained pavement throughout the subject property associated with past and present scrap material storage.

Off-Site RECs:

10. The historical use of the adjacent property to the east of the subject property as railroad tracks from prior to 1884 until present.
11. The historical and current use of the adjacent property to the east of the subject property as a scrap yard and recycling facility since 1963.
12. The historical use of the adjacent property to the east, across the railroad tracks, as an automotive repair shop from 2004-2013.
13. The historical and current use of the adjacent properties to the south of the subject property as a coal yard, garage, and automotive repair operation. Sanborn maps dated 1950 and 1970 depicted a filing station on the coal yard with an associated gasoline UST on the former document. A truck repair shop is currently located on one of the properties.
14. The historical use of the adjacent property to the north as a casket hardware

manufacturer in 1909 and a sash and door manufacturer from approximately 1909 until 1970.

HR Green, Inc. prepared a Phase II ESA on the subject property in conformance with the scope and limitations of ASTM Practice E 1903-11 on behalf of the City of Dubuque as part of its EPA Brownfields Petroleum Assessment Grant. The investigation identified the following:

- **Range 1 Soil:** A total of one (1) PCB, one (1) TEH, seventeen (17) PAHs, nineteen (19) VOCs, and seven (7) RCRA metals were detected in Range 1 soil and seven (7) PCBs and one (1) VOC reported as non-detect concentrations above applicable SWSs. Results for total PCBs, waste oil, benzo(a)pyrene, 1,2,3-trichloropropane, arsenic, and lead are reported at concentrations or non-detect concentrations *above* SWSs at multiple sample locations.
- **Range 2 Soil:** No samples were collected from Range 2 soil as part of this assessment due to field observations per the Phase II Sampling Plan.
- **Groundwater:** One (1) TEH, two (2) PAHs, thirteen (13) VOCs, and three (3) RCRA metals were detected above laboratory reporting limits or were reported at non-detect values that exceed applicable SWSs. All concentrations of reported PAHs and RCRA metals were *below* applicable SWSs. Waste oil, benzene, and tetrachloroethene were detected at concentrations above applicable SWSs and 1,2-dibromo-3-chloropropane, 1,2-dibromoethane, 1,1,2,2-tetrachloroethane, and 1,2,3-trichloropropane were reported as non-detect values *above* applicable SWSs.
- **Vapor Intrusion:** Fourteen (14) compounds detected in groundwater including two (2) PAHs and twelve (12) VOCs are sufficiently volatile and sufficiently toxic to present a vapor intrusion risk. Thirteen (13) of these compounds were evaluated using the Johnson & Ettinger Vapor Intrusion Model for Forward Calculation of Indoor Air Concentration with one (1) compound that was not available to model in this program. The vapor intrusion risk is included in the Cumulative Risk Evaluation findings. The calculated results for this media indicate that vapor intrusion alone does not pose a risk on this site. Cumulative risk is discussed below.
- **Cumulative Risk Evaluation:** Cumulative cancer risk for a site resident and a site worker and non-cancer risk for a site resident, site worker, and construction worker are *unacceptable*. Cumulative cancer risk for a construction worker is *acceptable*. These risk assessment results consider redevelopment on the subject property for a **slab-on-grade** building; risk assessment calculations for a basement structure can be found in Section 4.3 of this report and does not change the cumulative risk evaluation findings from a slab-on-grade building.

  The *unacceptable* cancer and non-cancer determinations for site resident, site worker, and construction worker are driven by Range 1 contaminant concentrations. PCBs, benzo(a)pyrene, waste oil, arsenic, lead, and VOC concentrations are the primary contaminants driving the *unacceptable* cancer risk. PCBs, waste oil, RCRA metals, PAHs, and VOC concentrations are responsible for the *unacceptable* cancer risk determination.

The City of Dubuque has an ordinance (Section No. 16-11-20) that prevents the installation of private wells unless public water is not available. This requires permit approval by the County's Health Department. Further, no wells may be installed within 500 feet of a LUST site. HR Green recommends that the findings of this report be provided to the City of Dubuque's Water

Department for their records. HR Green recommends notifying the County's Health Department of the groundwater results contained in this Phase II ESA, to prevent the installation of new wells on the subject property or on adjacent properties. This action will sever the groundwater ingestion pathway for the subject property.

The results of this study indicate that shallow soil impact across the subject property presents an *unacceptable* risk to site occupants and construction personnel without remediation of shallow soil. Additional investigation to delineate the identified contamination should be completed to identify the extent of soil impacts. Remediation of shallow soil or implementation or engineering or institutional controls (environmental covenant, engineered clean soil barrier with geo-membrane vapor barrier, etc.) on the subject property is needed to sever this exposure pathway. The material which has accumulated on the basement floor of the main office building (BC as shown on Figure 2) and the underlying concrete (including building footers) should be removed, characterized, and disposed of according to local state and federal regulations.

A site specific health and safety plan addressing OSHA compliance for construction workers should be in place before any redevelopment activities involving earthwork or building demolition occur on the subject property due to the Calculator determination of unacceptable non-cancer risk for construction workers. The results of this study indicate that vapor intrusion does not present a risk to construction workers or to future users of the subject property.

While sample collection was completed according to the EPA-approved Phase II Sampling Plan, samples were not collected from Range 2 soil. This is the result of elevated PID readings being observed at higher concentrations in Range 1 soil than Range 2 soil resulting in a Range 1 soil sample collection to analyze for the highest concentration. Vertical delineation should be addressed during additional investigations accordingly. Additional samples were collected outside of the scope of the Phase II Sampling Plan when observations and professional judgement warranted; this is discussed further in Section 4.0 of this report and includes the addition of a sample from around the base of the crusher on the subject property where significant staining and product were observed during sampling activities.

An asbestos assessment was completed on the subject property under a separate scope of work. Significant asbestos containing material (ACM) was identified on the subject property in this assessment. Abatement of the ACM is required before the structure is demolished.

1.4 Project Goal

This property will serve as the gateway to the Bee Branch and Mississippi River recreational opportunities created along this corridor. Re-use plans for the subject property include constructing a bike trail waypoint, playground/athletic use area, public art display, and a 5,500 square foot building for public use and public works occupation to serve the adjoining Bee Branch Creek daylighting project. The property will also provide important connectivity to the South Port area via the national Mississippi River Trail.

2.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

2.1 Cleanup Oversight Responsibility

The City of Dubuque will enroll the subject property into the Iowa Department of Natural Resources (IDNR) Land Recycling Program (LRP). A qualified environmental professional will oversee the cleanup in conjunction with IDNR. The qualified environmental professional will comply with and submit all required LRP documentation to IDNR. A certified asbestos

contractor will complete all mitigation of identified asbestos containing material (ACM) and will comply with all documentation and notification requirements issued by the IDNR Air Quality Bureau. A professional engineer will develop and review any necessary design and institutional control plans, as needed.

2.2 Cleanup Standards for major contaminants

The City of Dubuque plans to compare soil and groundwater results to the IDNR's Statewide Standards. However, it is possible that site-specific standards will be generated for compounds of concern, in accordance IAC Chapter 137. For ACM monitoring all material containing more than one percent asbestos will be mitigated as ACM. Screening during the removal and associated cleanup of asbestos will be completed per 40 CFR61.145 and 40 CFR61.150.

2.3 Laws & Regulations Applicable to the Cleanup

Laws and regulations that are applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Federal Davis-Bacon Act, state environmental law, and City regulations and ordinances. Federal, state, and local laws regarding procurement of contractors to conduct the cleanup will be followed.

In addition, all appropriate permits (*e.g.*, notify before you dig, soil transport/disposal manifests) will be obtained prior to the work commencing.

3.0 EVALUATION OF CLEANUP ALTERNATIVES

3.1 Cleanup Alternatives Considered

The City of Dubuque considered four alternatives to address contamination at the site including the following Alternative #1: No Action, Alternative #2: Removal of Structures and Capping, Alternative #3: Removal of Structures and Excavation with Off-site Disposal, and Alternative #4: Removal of Structures and Excavation with Encapsulation of Contaminated Soil in an On-site Berm.

3.2 Cost Estimate of Cleanup Alternatives

To following outlines the effectiveness, ability to implement, impact on climate change, and cost of each alternative:

<u>Effectiveness</u>

Alternative #1: Undertaking no action is not effective in controlling or preventing the exposure to receptors to contamination at the subject property.

Alternative #2: Capping after the completion of structure removal (including ACM mitigation and impacted surface material and debris in the basement of the office building) is an effective way to prevent recreational receptors that could come into direct contact with contaminated soils, building material, and debris currently located on the subject property, if the cap is maintained. However, direct contact risks for construction and utility workers who would be on-site for redevelopment still exist. In order to accommodate these risks and allow access to the area where contaminated soil has been identified, that soil would require chelation prior to capping. In addition, an institutional control (environmental covenant) would need to be recorded on the deed to prevent any uncontrolled digging or subsurface work (in order to meet the objective of eliminating the direct contact pathway of exposure). This institutional control would limit access

to the site for authorized construction and properly trained utility workers to handle potentially contaminated soils.

Alternative #3: Excavation with off-site disposal after the completion of structure removal (including ACM mitigation and impacted surface material and debris in the basement of the office building) is an effective way to eliminate risk at the subject property for all receptors and pathways while still allowing access to the subsurface for future development, as contamination will be removed and the exposure pathways will no longer exist. An environmental covenant could be included for any identified contamination beyond three (3) feet below ground surface outside of designated utility trench areas, if such contamination is identified.

Alternative #4: Excavation with encapsulation of contaminated soil in an on-site berm after the completion of structure removal (including ACM mitigation and impacted surface material and debris in the basement of the office building) is an effective way to eliminate risk at the subject property for all receptors and pathways while still allowing access to the subsurface for future development, as contamination will be removed and the exposure pathways will no longer exist. An environmental covenant could be included for any identified contamination beyond three (3) feet below ground surface outside of designated utility trench areas, if such contamination is identified.

Ability to Implement

Alternative #1: The City is easily able to implement no action.

Alternative #2: The mitigation of ACM and impacted surface material followed by the demolition of the structures is moderately difficult to implement due to the coordination (dust suppression, confirmation and perimeter screening, etc.) while scheduling all parties to be on-site as needed and the transportation of hazardous materials off of the subject property. Once this process is completed, capping is relatively easy to implement. Ongoing monitoring and maintenance of the cap will require periodic coordination and reporting. While implementing this alternative may not be the most difficult, it does limit the access to the subsurface preventing the installation of utilities and footings for any structures that would be placed on the property in the future. This alternative is not considered the most difficult to implement, and is restrictive to subsurface redevelopment components. However, the City plans to own, operate, and maintain this property over the long-term and so this restriction is acceptable.

Alternative #3: The mitigation of ACM and lead-contaminated debris followed by the demolition of the structure is moderately difficult to implement due to the coordination (dust suppression, confirmation and perimeter screening, etc.) while scheduling all parties to be on-site as needed and the transportation of hazardous materials off of the subject property. Excavation with off-site disposal is also moderately difficult to implement. Short-term disturbance to the community (*e.g.*, trucks transporting contaminated soils and backfill) is anticipated. However, ongoing monitoring and maintenance will not be required following excavation and off-site disposal. Further, utilizing an institutional control in the form of an environmental covenant to address any contaminated soil beyond three (3) feet below ground surface and outside of utility trenches is easy to implement. Therefore, this alternative is considered difficult to implement, however, it is the minimally restrictive to redevelopment.

Alternative #4: The mitigation of ACM and lead-contaminated debris followed by the demolition of the structure is moderately difficult to implement due to the coordination (dust suppression, confirmation and perimeter screening, etc.) while scheduling all parties to be on-site as needed and the transportation of hazardous materials off of the subject property. Excavation with on-site management is also moderately difficult to implement. Short-term disturbance to the community during soil excavation and berm construction is anticipated. Ongoing monitoring and maintenance of the berm will be required in addition to an environmental covenant controlling access to the footprint of the berm will be required. Further, utilizing an institutional control in the form of an environmental covenant to address any contaminated soil beyond three (3) feet below ground surface and outside of utility trenches is easy to implement. Therefore, this alternative is considered the most difficult to implement, and it is moderately restrictive to redevelopment.

Impact on Climate Change - Additional review and consideration was given to the cleanup alternatives included in the City's ABCA for the property as they pertain to limiting the property's and cleanup activities' impact to climate change. EPA's Principles for Greener Cleanups identify five elements to assist in the evaluation and selection of cleanup activities including total energy use and renewable energy use; air pollutions and greenhouse gas emissions; water use and impacts to water resources; materials management and waste reduction; and land management and ecosystems protection. The following outlines the greener cleanup options of each cleanup alternative.

Alternative #1: Undertaking no action will result in no expended energy, create no air emissions, generate no waste water or materials that need to be treated or transported from the property, and does nothing to address or resolve any of the degraded or impacted media on the property.

Alternative #2: The removal of the structures on the property includes the implementation of heavy machinery, the creation of air emissions and dust, and the creation of waste that must be disposed of or recycled on the property. The removal of asbestos-containing material in addition to additional hazardous material identified on the property must be disposed of per all Federal and State regulations and will not be recycled. In instances where material can be salvaged or recycled (concrete, etc.), the City will plan to implement these actions effectively minimizing the waste generated at the property that will be disposed of at a solid waste facility. To further minimize the waste generation, this alternative will not disturb impacted soil on the property and will cap the property, severing access to impacted media. To minimize the total fuel consumed and emission of greenhouse gases, the City will plan to implement best management practices such as engine idle reduction practices. To minimize the total dust generated, the City will plan to implement best management practices such as controlling traffic on the construction site and maintaining adequate soil moisture during grading activities.

Alternative #3: The removal of the structures on the property includes the implementation of heavy machinery, the creation of air emissions and dust, and the creation of waste that must be disposed of or recycled on the property. The removal of asbestos-containing material in addition to additional hazardous material identified on the property must be disposed of per all Federal and State regulations and will not be recycled. In instances where material can be salvaged or recycled (concrete, etc.), the City will plan to implement these actions effectively minimizing the waste generated at the property that will be disposed of at a solid waste facility. The off-site disposal of the impacted soil included in this alternative increased the carbon footprint of this alternative significantly as the impact to shallow soil includes PCB contamination that will need to disposed of at a specialized facility that is located at a significant distance from the property. While rail transportation would be used, minimizing emissions of numerous trucks

covering this distance, the emissions and fossil fuel consumption with this transportation is sizeable. For practices on the site, the City would seek to minimize the total fuel consumed and emission of greenhouse gases by implementing best management practices such as engine idle reduction practices. To minimize the total dust generated, the City will plan to implement best management practices such as controlling traffic on the construction site and maintaining adequate soil moisture during grading activities.

Alternative #4: The removal of the structures on the property includes the implementation of heavy machinery, the creation of air emissions and dust, and the creation of waste that must be disposed of or recycled on the property. The removal of asbestos-containing material in addition to additional hazardous material identified on the property must be disposed of per all Federal and State regulations and will not be recycled. In instances where material can be salvaged or recycled (concrete, etc.), the City will plan to implement these actions effectively minimizing the waste generated at the property that will be disposed of at a solid waste facility. The excavation of soil and encapsulation of impacted soil on the property will require additional equipment use on the property but will not require the hauling and additional mileage, fuel consumption, and emissions of removing this material from the property for disposal. To minimize the total fuel consumed and emission of greenhouse gases, the City will plan to implement best management practices such as engine idle reduction practices. To minimize the total dust generated, the City will plan to implement best management practices such as controlling traffic on the construction site and maintaining adequate soil moisture during grading activities.

Cost

Alternative #1: No cost.

Alternative #2: Removal of Structures and Capping costs will be on the order of $877,000.

Alternative #3: Removal of Structures and Excavation with Off-site Disposal is estimated to cost roughly $1,207,000.

Alternative #4 Removal of Structures and Excavation with Encapsulation of Contaminated Soil in an On-site Berm is estimated to cost roughly $838,000.

3.3 Recommended Cleanup Alternative

Alternatives #2 and #4: Removal of Structures and Capping, and Removal of Structures and Excavation with Encapsulation of Contaminated Soil in an On-site Berm, respectively, are the preferred methods. These two methods are of roughly equivalent cost and meet the City's goals for redevelopment. Since the City plans to own, operate, and maintain this property over the long-term, restrictions to development or utility access in the form of environmental covenant is acceptable. The City cannot recommend Alternative #1 as it does not address the identified risks. Alternative #3 is cost-prohibitive and would necessitate disposal of a large volume of material, occupying significant landfill capacity and creating unnecessary greenhouse gas emissions during soil hauling activities. For these reasons, Alternatives #2 and # 4 are the recommended alternatives.