Analysis of Brownfields Cleanup Alternatives
Former Grover's Exxon
415 & 417 Broadway Ave, Townsend, Montana

Tetra Tech Project No. 117-8292003
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PRESENTED TO

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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
ABCA	Analysis of Brownfields Cleanup Alternatives
ACM	Asbestos Containing Materials
AHERA	Asbestos Hazard Emergency Response Act
CMBC	Central Montana Brownfields Coalition
CRP	Community Relations Plan
DEQ	Department of Environmental Quality
DRO	Diesel Range Organics
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
LBP	Lead Based Paint
µg/L	Micrograms per Liter
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIH	Northern Industrial Hygiene
NIOSH	National Institute for Occupational Safety and Health
PCB	Polychlorinated Biphenyl
ppm	Parts Per Million
PTRCB	Petroleum Tank Release Compensation Board
RACM	Regulated Asbestos Containing Material
RBSL	Risk Based Screening Level
RLF	Revolving Loan Fund
SAP	Sampling and Analysis Plan
SMDC	Snowy Mountain Development Corporation
UST	Underground Storage Tank
QEP	Qualified Environmental Professional

1.0 INTRODUCTION AND BACKGROUND

This document presents an Analysis of Brownfields Cleanup Alternatives (ABCA) for the Former Grover's Exxon in Townsend, Montana (the Site). This document was prepared for the Central Montana Brownfields Coalition (CBMC) Revolving Loan Fund program as part of the U.S. Environmental Protection Agency (EPA) Brownfields Cleanup Grant Application in conjunction with the Community Relations Plan (CRP) being submitted by Snowy Mountain Development Corporation (SMDC).

1.1 SITE LOCATION AND OWNERSHIP

The Site is located at located at 415 and 417 Broadway Avenue in Townsend, Broadwater County, Montana. The legal description is: Townsend Original Townsite, S31, T07 N, R02 E, BLOCK 23, Lots A, B, & E, Amended Plat, 121B. The Site is currently owned by Broadwater County Hospital District Board.

1.2 PREVIOUS SITE USES

The Grover's Exxon property occupied Lot A, and the former Townsend Star occupies Lot B, both are listed by the Montana Department of Environmental Quality (DEQ) – Petroleum Tank Cleanup Section. The gas station was operational and dispensing fuel during the 1980's. A total of nine underground storage tanks (USTs) have been removed from the Site at various times and several indicated the presence of petroleum contamination in soil and groundwater. Two excavations have occurred but were limited in extent due the presence of the Townsend Star building on Lot B which was categorized as a resolved leaking UST by DEQ in 1996. Due to the age of the building on Lot B, circa 1940, asbestos containing material (ACM), lead based paint (LBP), and polychlorinated biphenyls (PCBs) are present in certain building materials. The Broadwater County Hospital District, in conjunction with Broadwater Health Center, would like to demolish the existing building so that residual petroleum contamination can be removed, and a new, modernized health facility can be constructed.

1.3 SITE ASSESSMENT FINDINGS

The following presents a timeline of assessment work that has been completed to date:

1.3.1 Townsend Star

This petroleum release site is listed by DEQ as Facility 04-13269, Release No. 2290 and is located at 417 Broadway Avenue. According to the 'Resolved Petroleum Release' letter prepared by DEQ dated September 24, 1996, the release at the Townsend Star that was discovered on August 8, 1994 was from a buried used oil tank. Earlier that year, approximately 7-cubic yards of soil was removed to a depth of 14-feet. Some minor contamination was left in place, 420 parts per million (ppm) diesel range organics (DRO), from the bottom of the excavation but was below regulatory action levels at the time of cleanup (DEQ, 1996).

Broadwater County applied for a Targeted Brownfields Assessment and had an EPA contractor perform a Phase I Environmental Site Assessment (ESA) of this property in 2016. EPA's contractor identified this property as a resolved leaking UST facility, as well as other properties along Broadway Street. Additionally, due to the age of the structure the ESA stated that ACM, LBP and PCB may be present in building materials (Weston, 2016). Subsequently in 2017, a Phase II ESA was issued that that confirmed soil and groundwater contamination associated with the adjacent Grover's Exxon facility (Section 1.3.2) and hazardous materials in building materials including ACM and LBP, and light ballasts likely containing PCBs (Weston, 2017).

1.3.2 Grover's Exxon

This petroleum release is listed by DEQ as Facility 04-07957, with Release numbers 358 and 1632, and is located at 415 Broadway Avenue. Grover's Exxon sold retail gasoline and diesel at this location from 1974 until October 1992 and had a total of nine USTs at different times throughout its operation with fuel tanks ranging from 6,000 to 10,000-gallon capacity and a 275-gallon used oil tank. The responsible party's consultant, Earl Griffith formerly of Tetra Tech, installed observation wells and began monitoring groundwater in September 1993 after all the USTs had been removed from the property and significant impacts were observed in soil beneath the tank basin. From 1993 to 1995 a pilot study for in-situ remediation was conducted to evaluate the potential for use of soil-vapor extraction, however low permeability eliminated this and other in-situ remedial options. Excavation was selected as the best alternative due to low permeability soils, shallow groundwater, and cost effectiveness. In 1996 approximately 2,250-cubic yards of contaminated soil was removed and hauled to an off-site treatment facility, and the excavation area backfilled with pit run gravel from a local source (Griffith, 2003).

The former Grover's Exxon building was evaluated for asbestos materials in 2003 and subsequently demolished after all ACM were removed. Thirty gallons of used oil were also removed from an oil storage tank and properly disposed of. Soils beneath the building were excavated to approximately 18-feet including soil from the previous excavation because free product had contaminated the backfill. Approximately 25-gallons of free product was recovered during the excavation and hauled away in drums, and a total of approximately 500-cubic yards of soil was excavated and hauled offsite for treatment. Confirmation soil samples from the excavation base indicated residual soil contamination (<1.0 ppm benzene) was still present near the corner of Broadway and Oak Street, the northeast corner along Oak Street, and in a test trench in the alley north of the former Townsend Star building (Griffith, 2003).

Four monitoring wells were installed in 2004 to evaluate groundwater in the former excavation area, and another four wells were installed hydraulically down-gradient of the excavation to evaluate off-site impacts. A sampling event conducted in November 2012 identified benzene concentrations ranging between not-detected and 21 micrograms per liter (µg/L), whereas the DEQ risk-based screening level (RBSL) for benzene is 5 µg/L. Of note, monitoring well GMW-11 located immediately northeast of the former Townsend Star building had a concentration of 17 µg/L benzene in groundwater indicating source material is likely present beneath the existing structure.

1.4 PROJECT GOAL

The goal of this project is to demolish the former Townsend Star building for the purpose of accessing residual soil contamination. By removing the last source of the area material, the County hopes that groundwater contaminant concentrations will be below RBSLs or become non-detect. Once the Site is excavated and groundwater shows a declining trend for contaminants of the concern, the planned reuse goal for the Site is for the County to construct a new medical building to support their rural health clinic.

2.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

2.1 CLEANUP OVERSIGHT RESPONSIBILITY

Tetra Tech has been hired by Snowy Mountain Development Corporation (SMDC) to provide qualified environmental professional (QEP) services for this project. Tetra Tech's scope of work consists of preparing brownfields related documents including this ABCA, a site-specific project worksheet to support the industrial hygiene (IH) projects Sampling and Analysis Plan (SAP), preparation of the ACM and LBP design plan, mini-bid assistance for contracting an abatement firm, contracting assistance, asbestos abatement surveillance and clearance monitoring services. Clearance and monitoring services will include the collection of air samples during all abatement activities to document any release of airborne asbestos, if it occurs, completion of post-abatement final visual inspections, clearance air monitoring, sample analysis, and report preparation. Once the IH portion of the project is complete, Tetra Tech will participate in project stakeholder meetings and review all documents associated with cleanup of petroleum contamination in soil and groundwater. A final Cleanup Summary Report will be completed at the completion of the Brownfields portion of the work.

2.2 CLEANUP STANDARDS FOR MAJOR CONTAMINANTS

2.2.1 Asbestos

The Asbestos Hazard Emergency Response Act (AHERA) requires that 13 Transmission Electron Microscopy air samples to be collected on all friable asbestos removal projects over 160-square feet or 260-linear feet, and phase contrast microscopy samples on non-friable projects or friable projects under 160-square feet or 260-linear feet. The onsite analyses for building materials includes the National Institute for Occupational Safety and Health (NIOSH) Method 7400 for asbestos fiber counting. The DEQ Asbestos Control Program requires that five samples in a single containment to be below 0.01 fibers per cubic centimeter in buildings for clearance purposes.

2.2.2 Lead

LBP is defined as surface coatings with a lead concentration greater than or equal to 1.0-milligrams per square centimeter or 0.5 percent by weight (40 Code of Federal Regulations [CFR] Part 745). Deteriorated LBP can cause elevated lead levels in dust and exposure risks to building occupants. For disposal purposes, under 40 CFR 261.24, lead hazardous waste is defined as products that have test results above 0.5 milligrams per liter of lead in samples submitted to a laboratory for the toxicity characteristic leaching procedure extract procedure.

2.2.3 Petroleum

Tetra Tech has identified the following petroleum related contaminants of potential concern for the Site.

- Petroleum compounds including gasoline, diesel, and waste oil in soil at the Site associated with former fuel storage and dispensing operations; and
- Petroleum compounds leached from impacted soil into groundwater.

2.3 LAWS AND REGULATIONS APPLICABLE TO CLEANUP

2.3.1 Asbestos

As delegated by EPA and the Asbestos Control Act of Montana, DEQ administers regulatory requirements from sections of the NESHAP and Montana Administrative Rules, governing building renovations/demolitions, asbestos disposal and other asbestos-related activities. Asbestos is defined as a group of naturally occurring fibrous

minerals including chrysotile, amosite, crocidolite, anthophyllite, actinolite and tremolite that presents a potential exposure and health hazard. The following list presents the federal regulations regarding the removal and disposal of ACM enforced by DEQ:

- 29 CFR 1926.1101 - Asbestos; Construction Industry Standard; Final Rule, August 24, 2006.
- 29 CFR 1910.1001, Asbestos; General Industry Standard; Final Rule, August 24, 2006.
- 40 CFR 763, Asbestos; Asbestos-Containing Materials in Schools; Final Rule, November 12, 1987.
- 40 CFR 61(M) - National Emission Standard for Asbestos; Final Rule, November 20, 1990, revised June 19, 1995.

2.3.2 Lead

The followings items represent the list of regulations associated with the sampling and handling of LBP:

- 40 CFR 745, Lead; Requirements for Lead-Based Paint Activities in Target Housing and Child Occupied Facilities; Final Rule, August 29, 1996, revised January 5, 2001.
- 24 CFR 35 & 40.745, Lead; Requirements for Disclosure of Know Lead-Based Paint and/or Lead-Based Paint Hazards in Housing; Final Rule, March 6, 1996.
- 40 CFR 40.260, Hazardous Waste Management System; General; Final Rule, July 1, 2012.
- 40 CFR 40.261, Identification and Listing of Hazardous Waste; Final Rule, July 1, 2012.
- 40 CFR 40.262, Standards Applicable to Generators of Hazardous Waste; Final Rule, July 1, 2012.
- 40 CFR 40.263, Standards Applicable to Transporters of Hazardous Waste; Final Rule, July 1, 2012.
- 40 CFR 40.264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Final Rule, July 1, 2012.
- 40 CFR 40.265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Final Rule, July 1, 2012.
- 40 CFR 40.268, Land Disposal Restrictions; Final Rule, July 1, 2012.
- 29 CFR 29.1926.62, Occupational Health and Environmental Controls, Final Rule May 4, 1993, revised March 26, 2012
- Housing and Community Development Act, Residential Lead-Based Paint Hazard Reduction Act, Title X, 1992.
- Housing and Urban Development, Guidelines for the Control of Lead-Based Paint Hazards in Housing, June 1995, revised 1997 and 2000.

Worker exposure to lead hazards in construction is regulated under 29 CFR 1926.62. OSHA has established provisions for worker protection including, but not limited to training and medical monitoring requirements for personnel engaging in the oversight and removal of LBP, exposure limits, respiratory protection, personnel protective equipment, work practices, engineering controls, and storage of wastes.

The handling storage, transport, and disposal of lead or lead-contaminated waste must be conducted in accordance with 40 CFR 260-265, and building owners must comply with land disposal restriction notification requirements as required by 40 CFR 268.

2.3.3 Petroleum

Petroleum contamination is regulated by the DEQ under authority from MCA 75.11 Part 3 Petroleum Storage Tank Cleanup Sections 301 to 322 for DEQ guidelines regarding release detection, cleanup, and monitoring. RBSLs and the May 2017 DEQ Circular-7 Montana Numeric Water Quality Standards are used to evaluate whether cleanup is considered complete.

3.0 EVALUATION OF CLEANUP ALTERNATIVES

3.1 CLEANUP ALTERNATIVES CONSIDERED

To address impacts to the Site from contaminants of concern, four cleanup alternatives were considered:

1. No Action: The no action alternative would be to do nothing at the Site and leave known quantities of ACM, LBP, PCBs, and petroleum in place.
2. Delayed Abatement/No Excavation: The delayed abatement alternative would leave hazardous materials in building materials in place temporarily with the intention of performing abatement at a later date. Petroleum impacts are not addressed under this option.
3. Full Abatement/No Excavation: The full abatement alternative includes removal and disposal of all ACM, LBP, and PCBs for demolition of the Site but not remove petroleum contamination from soils.
4. Full Abatement/Soil Excavation: The full abatement alternative includes removal and disposal of all ACM, LBP, and PCBs for full renovation of the Site and excavating petroleum impacted soils for disposal.

3.2 CLEANUP ALTERNATIVES EVALUATION

The following sections evaluate the effectiveness, implementability, and preliminary costs of each alternative.

3.2.1 Effectiveness

1. No Action: No action is not effective in controlling or preventing exposure of receptors to ACM, LBP, PCBs, and petroleum at the Site.
2. Delayed Abatement/No Excavation: In the short-term, delayed abatement would not be protective from exposure to ACM, LBP, and PCBs and would prevent excavation of residual petroleum source material from being remediated.
3. Full Abatement/No Excavation: This option would be effective at reducing exposure risks from building materials if the building was demolished, however it would not be effective at reducing risks associated with petroleum contamination in soil and groundwater.
4. Full Abatement/Soil Excavation: The full abatement alternative would be the most effective option for preventing exposure to ACM, LBP, and PCBs, and excavation of contaminated soil would be the most effective option for reducing risk from petroleum contamination at the Site.

3.2.2 Implementability

1. No Action: No Action is easy to implement since no actions will be conducted.
2. Delayed Abatement/No Excavation: Delayed abatement in the short term is easy to implement because no immediate action is required, however future actions would require the same level of effort as the full abatement alternatives. No excavation is also easy to implement; however, continued groundwater monitoring of the existing well network would likely be required by the DEQ Petroleum Cleanup Section.
3. Full Abatement/No Excavation: This alternative would require the property owner and CMBC to execute the abatement work immediately but not the soil excavation. Since the Montana Petroleum Tank Release Compensation Board (PTRCB) is fully reimbursing the abatement costs to the Brownfields Revolving Loan Fund (RLF) under the condition that petroleum contamination will be removed as well, not excavating soil would likely cause the abatement work and subsequent demolition to lose funding, making the County responsible for repayment of costs. Broadwater County may not have funds available for this, hence under this alternative the entire project may be stalled indefinitely.
4. Full Abatement/Soil Excavation: Full abatement will take the most amount of time to complete as every regulated building material will have to be removed before asbestos clearance samples can be collected.

Soil excavation will also require a timely process that involves DEQ requesting a work plan from the County's environmental consultant, preparation of the work plan, the implementation timeline, and reporting. This is the only alternative where all costs will be fully eligible for reimbursement by the PTRCB as building abatement and demolition is considered necessary to access the remaining soil contamination.

3.2.3 Cost

1. No Action: There are no immediate costs to implement this alternative, however long-term groundwater monitoring would likely cost $5,000-$10,000/year depending on required monitoring frequency.
2. Delayed Abatement/No Excavation: The short term and long-term costs would be similar the no action alternative, however brownfields and PTRCB funding may not be available at a later date.
3. Full Abatement/No Excavation: Under this alternative the cost of abatement oversight by Tetra Tech is approximately $6,400 and actual abatement work would be approximately $25,000. The cost of building demolition is not included under this alternative nor is soil excavation.
4. Full Abatement/Soil Excavation: The abatement cost under this alternative is estimated to be the same the previous alternative, plus costs for building demolition and soil removal. The costs associated with petroleum removal is unknown at this time because the work plan has not been prepared, however costs are likely to exceed $100,000. Building demolition would likely be included in this estimate as it is most cost effective to mobilize a single construction contractor to the site for this.

3.2.4 Climate Change

Per EPA's memo "How to Address Changing Climate Concerns in an ABCA" (EPA, 2014), this section discusses how climate change may affect the City of Townsend and which of the four remedial alternatives considered is best suited to meet the objectives of this project. According to the National Oceanic and Atmospheric Administration, Montana's average annual temperature has increased approximately 2 degrees Fahrenheit since the early 20th century as evidenced in winter time where there have been fewer very cold days since 1990. Projected increases in spring precipitation may have negative impacts for residents in flood prone areas as the frequency and severity of flood events may increase. The frequency and severity of wildfire occurrences is also projected to increase throughout Montana (https://statesummaries.ncics.org/mt#).

The direct negative impacts of climate change for the existing residents of Townsend may include the need for additional healthcare due to increased smoke from wildfires along the urban-wildland interface and the effects of flooding on those living within the Missouri River 100-year flood plain. Also, a potential increase in sea level in coastal communities may have an indirect negative impact on the City of Townsend if US citizens living near the ocean choose to relocate to inland cities placing additional burdens on existing medical facilities. For these reasons, only alternative No. 4 fully addresses remediation of the Site that would allow redevelopment and add additional medical facilities to support a growing rural population whose health may be negatively impacted from the effect's climate change.

4.0 RECOMMENDED CLEANUP ALTERNATIVE

The recommended cleanup alternative is No. 4, full abatement with excavation. Full abatement provides the greatest reduction in exposure to hazardous materials in building materials such as ACM, LBP, and PCBs, and petroleum contamination in soil and groundwater. This option fully leverages available funding from both CMBC's Brownfields RLF as well as the PTRCB. Climate change predictions also support the need for a modernized and larger health care facility for the community of Townsend.

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