ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES & CLEANUP AND REUSE PLAN

Tonopah Airport Fixed Base Operator (FBO) Building
1 Airport Road
Tonopah, Nevada 89049

Nye County Assessor Parcel Number: 012-471-03

Prepared For:
Nye County
2100 East Walt Williams Drive, Suite 100
Pahrump, Nevada 89048

On Behalf of:
Rural Desert Southwest Brownfields Coalition

Prepared By:
BEC Environmental, Inc.
7660 West Sahara Avenue, Suite 150
Las Vegas, Nevada 89117

Project No. 804.11.Task3
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BEC Environmental, Inc.

7660 West Sahara Avenue
Suite 150
Las Vegas, Nevada 89117
702.304.9830

PO Box 11083
Reno, Nevada 89510
775.345.5261

www.becnv.com

bec environmental, inc.
Environmental Services

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ACRONYMS

ABCA .....Analysis of Brownfields Cleanup Alternatives
ACM .....Asbestos containing material
APN .....Assessor's Parcel Number
AST.....Aboveground storage tank
BCA .....Bureau of Corrective Actions
CFR.....Code of Federal Regulations
EPA .....United States Environmental Protection Agency
ESA.....Environmental Site Assessment
FBO.....Fixed Based Operator
HAZWOPER ...Hazardous Waste Operations and Emergency Response Standard
NDEP .....Nevada Division of Environmental Protections
OSHA.....Occupational Safety and Health Administration
OSHES.....Nevada Occupational Safety and Health Enforcement Section
RC .....Reportable Concentration
RCRA.....Resource Conservation and Recovery Act
RLF .....Revolving Loan Fund
RSL .....Regional Screening Level
SHPO .....State Historical Preservation Office
TEM.....Transmission electron microscopy
TPH.....Total petroleum hydrocarbons
USACE .....United State Army Corps of Engineers
VOC.....Volatile organic compound

Units of measure
mg/kg .....milligrams per kilogram
ppm .....parts per million

1 INTRODUCTION AND BACKGROUND

BEC Environmental, Inc. has been authorized by Nye County, Nevada to prepare this Analysis of Brownfield Cleanup Alternatives (ABCA) and Cleanup and Reuse Plan for the Tonopah Airport Fixed Based Operator (FBO) Building located in Nye County, Nevada, assessor's parcel number (APN) 012-471-03. This document is being prepared as part of the Rural Desert Southwest Brownfields Coalition Assessment grant funded by the United States Environmental Protection Agency (EPA). The site occupies 0.75-acres of the 2,171 acre Tonopah General Aviation Airport and consists of the airport operations building (FBO Building), the Federal Aviation Administration buildings, and support structures located at 1 Airport Road, Tonopah, Nevada 89049. The Site is situated 201 miles northwest of Las Vegas as depicted on **Figure 1** Vicinity Map.

The property owner, Nye County, desires to replace the circa 1940's FBO Building with a modern prefabricated structure to continue functioning as the airport operations center. Previous investigations have identified environmental hazards associated with the building materials of the FBO Building, and petroleum impacted soils associated with a fuel storage tank.

The purpose of the ABCA is the evaluation of site conditions and planned reuse in conjunction with remedial alternatives.

1.1 Site Location

The Site is located off of Highway 6 East about eight miles east of downtown Tonopah, Nevada. The Site is situated in the west central Ralston Valley which extends northeast and south. The San Antonio Mountains are located to the west and the Monitor Mountain Range is located to the northeast. The surface of the site is relatively flat and gently slopes to the southeast and is situated at an elevation of approximately 5,420 feet above mean sea level. No natural surface water bodies, including ponds, streams, or other bodies of water, are present on the site. The legal description of the subject property is 0.75-acre portion of T3N R43E S36 & T3N R44E S31 & T2N R43E S1 & T2N R44E S5, 6, 7 & all of S8 2,171 acres in the Tonopah Airport, Nevada.

The site is a portion of the former Tonopah Army Air Field, a World War II-era military facility. The site is primarily comprised of the FBO building, concrete foundations, and ancillary support structures for airport operations. Additional buildings located within the site include a manufactured home and three prefabricated buildings for office space and storage (**Figure 2**). The unpaved portions of the site to the north and east are landscaped. Above ground storage tanks located within the site include a 500-gallon propane tank which services the manufactured home, a 1,000-gallon propane tank noted as inactive, and a 300-gallon steel tank which feeds the heating furnace through a below ground service line.

1.2 Ownership and Previous Use

The site is currently used as the operations facility for the airport, providing communications between aircraft and other airport facilities, and housing a pilots' lounge and meeting space for airport operations. Of the three prefabricated buildings constructed on a portion of the foundation of the historic operation building, one is used as a storage unit by the County and two are leased by the Federal Aviation Administration. A manufactured home is located north of the FBO building and is currently occupied by the airport operator and his family.

The site was first developed in the 1940's as the operations building for the Tonopah Army Air Field. The Tonopah Army Airfield was used during World War II for crew training and equipment testing. The air field is a Formerly Used Defense Site (J09NV0969). The Tonopah Army Airfield was closed and the land and all the buildings were transferred to Nye County under Quit Claim Deed. Nye County has

operated the property as a general aviation airport since 1949. Airport operations, commercial and military, are the only known and documented use of the site.

Surrounding the site is the remaining 2,170-acre parcel and two additional parcels that comprise the Tonopah General Aviation Airport property. Significant features of the airport include two asphalt runways, three original (1940's airfield) aircraft hangars, three original bunkers, numerous former building remnants and foundation slabs. Development of property after transfer of the former Tonopah Army Air Field to Nye County included a residential subdivision, an oil refinery, and a sand and gravel quarry, and a race track. Nye County public works continues to operate and maintain the wastewater treatment plant located on the west side of Airport Road, in the southwest portion of the airport property.

1.3 Site Assessment Findings

The Tonopah Army Air Field is a Formerly Used Defense Site that was assessed by the US Army Corps of Engineers (USACE), as described through a series of documents dated between February 1991 (Ninyo and Moore, 2002) and May 2004 (NDEP, 2004). On June 9, 2004, the Nevada Division of Environmental Protection (NDEP) prepared a Draft Decision Document that provided a no further action determination based on information provided by USACE. Based upon review of investigation findings for the air field no recognized environmental concerns were identified or associated with the site from former military operations (BEC 2014a).

In February of 2014, BEC Environmental, Inc. conducted a Phase I Environmental Site Assessment (ESA) and noted the potential for asbestos-containing building materials (ACMs) and lead-based paint within the FBO Building (BEC 2014a). Petroleum contamination was also raised as a concerned due to the presence of an active above ground storage tank (AST).

A Phase II ESA was conducted by BEC in May of 2014. An AST containing jet fuel was noted as a potential site for leaks/spills. Four soil samples were collected from the area under the AST and analyzed for total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), and Resource Conservation and Recovery Act (RCRA) metals. Laboratory analytical results of surface soil samples indicated the presence of TPH in all samples ranging from 690 milligram per kilogram (mg/kg) to 130 mg/kg. TPH is above the NDEP Reportable Concentration (RC) of 100 mg/kg.

During April 9, 2014, asbestos and lead-based paint surveys, 34 separate suspect asbestos building materials were identified. Converse Consultants collected 72 samples, which were submitted for asbestos analysis. Three separate types of materials suspected of lead-based paint were identified and collected from the building materials, as well as one composite soil sample from the building perimeter.

Converse reported that the acoustic ceiling texture, drywall system, sheet flooring, and transite wallboard and paneling within the FBO Building required removal prior to any renovation or demolition that could disturb these regulated ACMs. Implementation of proper engineering controls or removal of non-friable ACMs, specifically: floor tiling and mastic, and roofing mastic, was also recommended since they have a high probability of becoming pulverized or reduced to powder by the forces expected to act on the material in the course of demolition.

The lead survey found only one of the three paint chip samples contained a concentration of lead greater than the detection limit of the analytical method. The green/paint on the exterior plaster had 1,500 parts per million (ppm) of lead detected which is regulated by Nevada Occupational Safety and Health Enforcement Section (OSHES); it does not meet the federal definition of lead based paint. As such, demolition of the FBO building must ensure activities minimize the potential for release of lead containing materials into the environment and are carried out by properly trained contractors.

In order to maintain EPA, State of Nevada OSHES, and federal Occupational Safety and Health Administration (OSHA) regulatory compliance, the following procedures are recommended prior to demolition (BEC 2014b):

- All materials which were identified as containing greater than one percent asbestos should be removed from the building prior to any renovation projects commencing which would disturb these materials.
- All materials which are currently stable, but would be disturbed and become friable during demolition, should be removed along with regulated ACM in order to allow for concrete building foundations to be recycled.
- A certified asbestos abatement consultant licensed in the State of Nevada should be contracted to develop abatement specifications based on this investigation and any other additional findings.
- A certified asbestos abatement contractor licensed in the State of Nevada should be contracted to perform all activities involving the removal or disturbance of materials which contain greater than one percent asbestos. All abatement work should be done in strict accordance with applicable Federal, State, and local regulations.
- Notification to the EPA and State of Nevada OSHA, which regulate the removal of asbestos, should be performed by an asbestos abatement contractor if required.
- A certified asbestos consultant licensed in the State of Nevada should be contracted to conduct perimeter air monitoring and project oversight during the removal of all ACM, and final clearance air sampling assessments after the asbestos abatement is complete.
- Confirmation sampling of surface soils for asbestos within the footprint of former FBO building should be performed.

Nevada OSHA regulations require the implementation of worker protection if there is a potential that paint containing lead will be disturbed during demolition activities. In accordance with these regulations, the following approach was recommended (BEC 2014b):

- Ensure demolition activities pertaining to the lead containing materials are carried out by a qualified Nevada licensed contractor that has undergone the necessary Nevada OSHA lead training. The demolition contractor will be notified that they are required to follow Nevada OSHA methods of compliance as regarding employee protection and safe work practices.
- Waste resulting from the demolition activities must be characterized for lead using the Toxicity Characteristic Leaching Procedure method.
- A certified lead consultant should be contracted to monitor the removal activities and to provide final clearance inspection reports.
- Confirmation sampling of surface soils for lead within the footprint of former FBO building should be performed.

The analytical results of the soil samples exceeding the action levels are summarized on **Figure 3**.

1.4 Project Goal

Nye County plans to replace the current FBO Building with a 28 foot by 60 foot prefabricated building to continue serving as the airport operations center.

The project goal is to prepare the Site by remediation of environmental impacts in accordance with regulatory guidelines and mitigate potential chemical hazards to construction workers and users of the redeveloped property.

2 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

The section identifies the cleanup oversight responsibility and cleanup standards for major contaminants.

2.1 Cleanup Oversight Responsibility

Based on the nature of the release and its impact on human health, safety, and the environment, different types of agencies have jurisdiction over regulation of the Site and, in some cases, jurisdiction is shared between agencies. Site assessment was funded under a 104(k) Community Wide Assessment grant as part of the Rural Desert Southwest Brownfields Coalition Assessment grant. The interested parties are seeking assistance for the cleanup expenses through the Nevada Rural Brownfields Partnership Revolving Loan Fund (RLF) Grant Program. As such, the EPA Brownfields office will have oversight responsibility for the cleanup should the Site's loan application be approved.

NDEP's Bureau of Corrective Actions (BCA) was notified on May 13, 2014, that soil contamination associated with the AST exceeds NDEP reportable concentrations. The NDEP spill report (#140513-01) will trigger a response from the owner requiring reporting of investigation findings and closure plans. As such, NDEP BCA will have oversight regarding the cleanup and confirmation sampling of petroleum impacts at the site.

Upon initiation of the RLF loan process, the EPA Project Officer will be required to coordinate with the State Historical Preservation Office (SHPO) regarding cleanup and redevelopment plans for the site. That said, SHPO will have oversight authority as regards to approval of project plans.

Before construction activities are initiated, the Federal Aviation Administration must be contacted to ensure appropriate profile limitations are understood and stipulated within the demolition specifications. Additionally, notification of the governing agencies (Nevada OSHES and the EPA) regulating the abatement of asbestos must be made.

2.2 Cleanup Standards for Major Contaminants

The NDEP BCA has published draft guidelines establishing RCs for discovery events. The NDEP RCs are based upon the principles applied by EPA Region 9 in calculating regional screening levels (RSL). These screening levels are chemical-specific concentrations for individual contaminants in air, drinking water, and soil that warrant further investigation or site cleanup. Typically, screening levels are not cleanup standards. For this site, the NDEP RCs served as preliminary remediation goals during the assessment phase to select appropriate detection limits for investigative sampling. The NDEP RC for TPH is an NDEP derived value. Standard practice for derivation of cleanup levels of TPH greater than the RC would be a risk-based evaluation. The cost of additional sampling to support a risk assessment coupled with the risk assessment itself, far exceeds the cost of excavation and proper disposal of petroleum impacted soils. As such, the cleanup standard for which confirmation soils samples will be measured is established as 100 milligrams per kilogram (mg/kg) TPH in soil (NDEP 2009).

In addition to visual clearance by a qualified asbestos consultant, air monitoring will be conducted to ensure levels are safe for building reentry during general demolition activities to remove lead containing materials. In accordance with the Asbestos Hazard Emergency Response Act (40 Code of Federal Regulations [CFR] §763.90[i]), ACBM removal actions are considered complete when representative air samples from the affected functional space, analyzed by transmission electron microscopy (TEM) method, are not statistically significantly different than outside concentrations or do not exceed the filter background level of 70 asbestos fiber structures per square millimeter.

Removal of lead containing materials (painted exterior plaster) during demolition activities (pulverization) has a potential to impact surface soils in the vicinity of the FBO Building. The potential

for dispersion of lead containing materials will be minimized through the use of engineering controls. As such, limited surface soil sampling after the FBO Building demolition is warranted. The cleanup standard for which confirmation soils samples will be measured is established as the NDEP RC of 400 mg/kg lead in soil.

It should be noted the lead standard is applicable to a residential use scenario; however, the airport operator and family resides immediately adjacent to the FBO building. Children's play equipment and toys were observed around the FBO Building perimeter (BEC 2014a). A conservative standard for lead in soil is therefore warranted. Additionally, confirmation sampling for analysis of asbestos in soil surrounding the FBO Building perimeter will also be conducted. The cleanup standard for which confirmation soil samples will be measured for asbestos in soil is less than one percent by mass.

2.3 Laws and Regulations Applicable to the Cleanup

Preconstruction cleanup activities at the Site will be conducted by contractors operating in accordance to the US Department of Labor OSHA Hazardous Waste Operations and Emergency Response Standard (HAZWOPER), 29 CFR §1910.120. HAZWOPER applies to clean-up operations at sites recognized by federal, state, local, or other governmental body as uncontrolled hazardous waste sites.

Asbestos abatement activities will be conducted in accordance with the following appropriate and applicable regulations:

- Asbestos Hazard Emergency Response Act (40 CFR Part 763) as it relates to final air monitoring clearance standards.
- The asbestos National Emission Standards for Hazardous Air Pollutants **(**NESHAP**)** regulations specify work practices for asbestos to be followed during demolitions and renovations of all structures, installations, and buildings (40 CFR Part 61, Subpart M) .
- OSHA oversees the working conditions for workers by implementing and managing occupational safety and health standards. The following regulations pertain to handling asbestos in the workplace.
    - Asbestos General Standard—Specification of permissible exposure limits, engineering controls, worker training, labeling, respiratory protection, and disposal of asbestos waste (29 CFR §1910.1001)
    - Asbestos Construction Standard—Covers construction work involving asbestos, including work practices during demolition and renovation, worker training, disposal of asbestos waste, and specification of permissible exposure limits (29 CFR §1926.1101)

Additionally, Nevada OSHA follows the federal OSHA standards pertaining to all construction work where an employee may be occupationally exposed to lead. These regulations are found in OSHA Title 29 CFR Part 1926 Safety and Health Regulations for Construction Subpart D Occupational Health and Environmental Controls (20 CFR §1926.62).

Laws and regulations applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Federal Davis-Bacon Act, and county laws regarding procurement of contractors to conduct the cleanup. In addition, excavation and grading permits and underground service alert notifications will be obtained prior to the work commencing.

3 EVALUATION OF BROWNFIELD CLEANUP ALTERNATIVES

The following section discusses the cleanup alternatives and provides an evaluation to derive the preferred alternative.

3.1 Cleanup Action Objectives

The objective of remediation at the Site is to achieve Site closure by demonstrating that a condition of no significant risk has been achieved for current and future users of the property. To achieve such an outcome, exposure to low concentrations of petroleum related compounds and lead in soil through direct contact and/or the air migration pathway must be prevented for the continued use of the Site as commercial/residential. Additionally, any renovation activities associated with the dated FBO Building must abate hazardous substances contained within the building materials.

3.2 Identification and Evaluation of Cleanup Alternatives

Several potential alternatives were evaluated for addressing the environmental hazards at the Site. From that evaluation, BEC identified a limited number of practicable remedial alternatives that could be implemented based on available Site data and professional experience. The "No Further Action" alternative was also included as part of the evaluation to establish a basis for conducting remedial actions at the Site. The remedial alternatives indentified for consideration include:

1. No Further Action
2. FBO Building Abatement/Demolition, Surface/Subsurface Evaluation and Risk Assessment
3. FBO Building Abatement/Demolition, Soil Excavation and Off-Site Disposal

Evaluation criteria include effectiveness, implementability, and cost. The evaluation for effectiveness considers the appropriateness of the alternative with respect to long and short-term satisfaction of cleanup goals and comprehensiveness in terms of protection to human and environmental health and safety. Implementability addresses the technical and administrative feasibility of the remedial alternative. Cost evaluations address the short and long-term costs associated with remedy implementation.

3.2.1 Alternative 1 – No Further Action

Under the No Further Action Alternative, impacted media would remain in place without treatment.

Effectiveness: This alternative would not lower concentrations of contaminants known to pose a potential risk to current occupants and to future construction/utility workers at the Site. For this reason, the No Further Action Alternative would not be effective with respect to the protection of human health.

Implementability: This alternative is easily implemented.

Cost: No costs would be incurred during the implementation of this alternative.

3.2.2 Alternative 2 – FBO Building Abatement/Demolition, Surface/Subsurface Evaluation and Risk Assessment

This alternative involves abatement of asbestos containing materials, removal of lead containing materials during building demolition, followed by further evaluation of petroleum related impacts to soils. The results will be used to evaluate if additional petroleum-impacted soils in the vicinity of the heating oil AST and conveyance line are present. A human health risk assessment would be performed to derive safe levels of contamination that can remain in-place based upon re-use scenarios.

Effectiveness: This alternative would lower concentrations of contaminants (ACM and lead) known to pose a potential risk to current occupants and to future construction/utility workers at the Site. In regards to petroleum related impacts, protective concentrations much higher than the NDEP RC have been derived at similar sites likely allowing the contamination to remain in-place. However, the potential remains that the risk derived protective concentrations for petroleum impacted soils may necessitate additional action (e.g. site use limits, capping, or removal).

Implementability: This alternative can be implemented with professional environmental consultants specializing in site investigation and human health risk assessment.

Cost: The abatement of hazardous materials from the site is approximately $95,000. Additionally, the delineation sampling and accompanying risk assessment is approximately $35,000.

3.2.3 Alternative 3 – FBO Building Abatement/Demolition, Soil Excavation and Off-Site Disposal

This alternative involves abatement of asbestos containing materials, removal of lead containing materials during building demolition, followed by remediation of petroleum impacted soils. Remediation activities would include removal of the existing AST and appurtenances, excavation of shallow subsurface soils, and transportation to an appropriately licensed treatment/disposal facility for disposal. **Figure 4** depicts this proposed alternative. The excavation area would be backfilled and compacted with clean material.

Effectiveness: This alternative would completely remove all Site contaminants, eliminating all exposure pathways. The extent of petroleum impacts is currently not well understood. However, based upon the low level concentrations and lack of visual evidence of stains, conservative assumptions regarding excavation limits can be applied. Confirmation sampling along the bottom edge of the excavation boundaries should provide sufficient information to support a finding of no significant risk remaining.

Implementability: This alternative can be readily implemented. Removal of the 300 gallon AST and conveyance pipeline would be required prior to excavation of shallow subsurface soils.

Cost: The abatement of hazardous materials from the site is approximately $95,000. Additionally, the remediation of the petroleum impacted soils is approximately $20,000. The volumes considered when determining cost projections were estimated based upon the limited sampling in February 2014 (BEC 2014b). The sample locations were selected beneath the edges of the elevated AST. Excavation limits were set at two feet laterally from the AST edges and one foot deep. The conveyance pipeline from the AST to the FBO Building is approximately 60 feet in length and assumed to be shallow (less than six inches below ground surface). No investigative data exists along this alignment. Excavation limits for the conveyance line were set at two feet laterally (one foot each side of the pipeline) and one foot deep. Based upon these conservative assumptions, approximately ten cubic yards of petroleum impacted soils would be generated. It should be noted, a relatively small potential exists that confirmation sampling could indicate the presence of residual contamination at the bottom of the excavation. Since the site is remote, one mobilization for the contractor is practicable. Residual contamination, if any, would be addressed by NDEP Petroleum Constituent Closure pathways, as applicable.

3.3 Comparison of Alternatives

The No Further Action Alternative (**Alternative 1**) would meet none of the protective criteria for this project and is therefore dismissed without additional evaluation. Of the remaining two alternatives (**Alternative 2** and **Alternative 3**), each removes the potential human health hazards associated with asbestos and lead containing materials. The variation among the two alternatives is the approach to addressing the petroleum impacted soils.

Alternative 2 would likely not reduce contamination levels of petroleum impacts through the increase of allowable concentrations through a site-specific risk-assessment. The lateral and vertical extent of petroleum impacts is not well defined. Additional sampling would be required to characterize the release and support a human health risk assessment. As compared to **Alternative 3**, this alternative would not incur the remediation expenses of the AST and conveyance line removal, excavation, transportation, and off-site disposal. This approach would likely involve increased efforts in obtaining NDEP BCA approval on the closure plan.

Alternative 3 would likely eliminate contamination levels of petroleum impacts through excavation. The only uncertainty in the approach is the excavation limits since they are not based upon a complete nature and extent profile. Applying conservative boundaries for excavation, eight cubic yards of soil removal is estimated. The remediation would be documented as complete through confirmation sampling within the bottom of excavation limits. Although both alternatives include additional field sampling, the scope of the confirmation sampling is less than a risk-based sample design.

Table 1 provides a summary of the cleanup alternative considered.

Table 1 – Cost Estimate Comparison for Cleanup Alternatives

	Cleanup Alternative 1	Cleanup Alternative 2	Cleanup Alternative 3
Description	No further action – no remediation conducted	FBO Building Abatement/Demolition, Surface / Subsurface Evaluation and Risk Assessment	FBO Building Abatement/Demolition, Excavation and Off-Site Disposal
Cost Estimate	No associated direct costs	$130,000	$115,000

Costs are preliminary estimates based on consultant review of alternatives.

Of the two remaining alternatives (**Alternative 2** and **Alternative 3**), each offers short-term protectiveness with **Alternative 3** providing a high level of protectiveness in the long-term. Additionally, **Alternative 3** is estimated at about 15% percent lower project cost. It should be noted, cost estimates have been generated based upon results from the Phase I and II conducted in early 2014, which provided limited understanding of the horizontal and vertical extents of contamination at the Site. Additional characterization of the Site would better delineate the horizontal and vertical extent. However, based upon the low concentrations of existing soil data and remoteness of the Site, the most likely cost effective approach for Site closure is to focus limited resources on removal of known hazards coupled with confirmation sampling.

As such, the Site Cleanup Plan for **Alternative 3** is included in **Appendix B**. This evaluation will be expanded, modified if necessary, and incorporated into the final Site Cleanup Plan for review by the community, project partners, the regulatory oversight agency and the EPA.

3.4 Consideration of Climate Impacts

Scientific evidence demonstrates that the climate is changing at an increasingly rapid rate. The EPA must adapt to climate change if it is to continue fulfilling its statutory, regulatory, and programmatic requirements. The EPA is therefore planning for future changes in the climate to ensure it continues to fulfill its mission of protecting the human health and the environment. As part of the EPA's Climate Change Adaptation Plan in Region 9's Implementation Plan (EPA, 2013), the ABCA must take into consideration the affects of climate impacts upon effectiveness of the proposed alternatives.

Potential climate impacts for the Nye County regional area include lack of rainfall, future droughts, and temperature increase (Global Change, 2014). The effects of these changes will likely impact groundwater levels, wildlife prevalence, agricultural productivity, habitat viability, and ecosystems.

The effectiveness of **Alternative 2** (no reduction of TPH contamination concentrations) could have future negative impacts should wildfires and dust storms put more particulate matter into the atmosphere which could reduce air quality and negatively impact human health. The effectiveness of **Alternative 3** will not directly be affected by the projected climate impacts in the area. However, the following measures will be implemented where applicable, beneficial, or feasible to improve the overall sustainability of the proposed remedial alternative.

3.4.1 Green Remediation Steps

Administrative

- Green remediation principles will be incorporated into the contracting process, as possible.
- Interim and final documents will be submitted in digital rather than hardcopy format, unless otherwise requested by EPA or required by law, in an effort to save paper.
- The use of electronic and centralized communication and outreach to the local community will be optimized.

General Site Operations

- Existing buildings will be utilized for field offices, if possible.
- Energy efficient equipment will be used.
- Water will be reused or recycled.
- Water will be protected and conserved.
- Alternative fuel vehicles (hybrid-electric, biodiesel, ultra-low sulfur diesel) will be used.
- Carpooling for site visits and project meetings will be encouraged.
- Activities will be scheduled efficiently so as to minimize travel to and from the Site.

Remediation Operations

- The use of fuel-efficient/alternative fuel vehicles and equipment will be encouraged.
- Mobilizations will be minimized.
- The use of diesel engines that meet the most stringent EPA on-road emissions standards available upon time of project's implementation will be encouraged.
- An idle reduction policy will be implemented and idle reduction devices will be installed on machinery as practicable.
- Ultra-low sulfur diesel and/or fuel-grade biodiesel will be used as fuel on machinery.
- The use of machinery equipped with advanced emission controls will be maximized
- Efficiency in transport/disposal of soils and backfill, utilizing practices such as backloading will be maximized.

4 LIMITATIONS AND ADDITIONAL ASSESSMENT NEEDS

The environmental services described in this report have been conducted in general accordance with current regulatory guidelines and the standard of care exercised by environmental consultants performing similar work in the project area. Recommendations provided are not necessarily inclusive of all possible conditions. No other warranty, expressed or implied, is made regarding the professional opinions

presented in this report. This document is intended to be used in its entirety. No portion of this document, by itself, is designed to completely represent any aspect of the project described herein. Nye County should be contacted if the reader requires any additional information or has questions regarding the content, interpretations presented, or completeness of this document.

The conclusions presented in this report are professional opinions based solely upon indicated data described in this report. The conclusions and recommendations are intended exclusively for the purpose outlined herein and for the site location and project indicated. This ABCA has been prepared for use by Nye County and the RDSBC. This document shall not be relied upon by or transferred to any additional parties, or used for any other purpose, without the express written authorization of Nye County.

The findings, opinions, and conclusions contained herein are based on analytical results from soil, building material, and paint samples collected at the subject property. The conditions of the site can change with time as a result of natural processes or the activities of man at or within the vicinity of the Site. Additionally, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this document may, therefore, be invalidated over time, in part or in whole, by changes over which neither Nye County nor BEC has any control. Neither Nye County nor BEC can warrant or guarantee that not finding indicators of any particular hazardous material means that this particular hazardous material or any other hazardous materials do not exist on the parcel. Additional research, including invasive testing, can reduce the uncertainty, but no techniques now commonly employed can eliminate the uncertainty altogether.

5 NEVADA ENVIRONMENTAL MANAGER CERTIFICATION

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312.

I, Victoria Tyson-Bloyd, hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state, and local statutes, regulations, and ordinances.

9/24/14

Victoria Tyson-Bloyd
Certified Environmental Manager
No. 2200
Expires: September 24, 2015

Date

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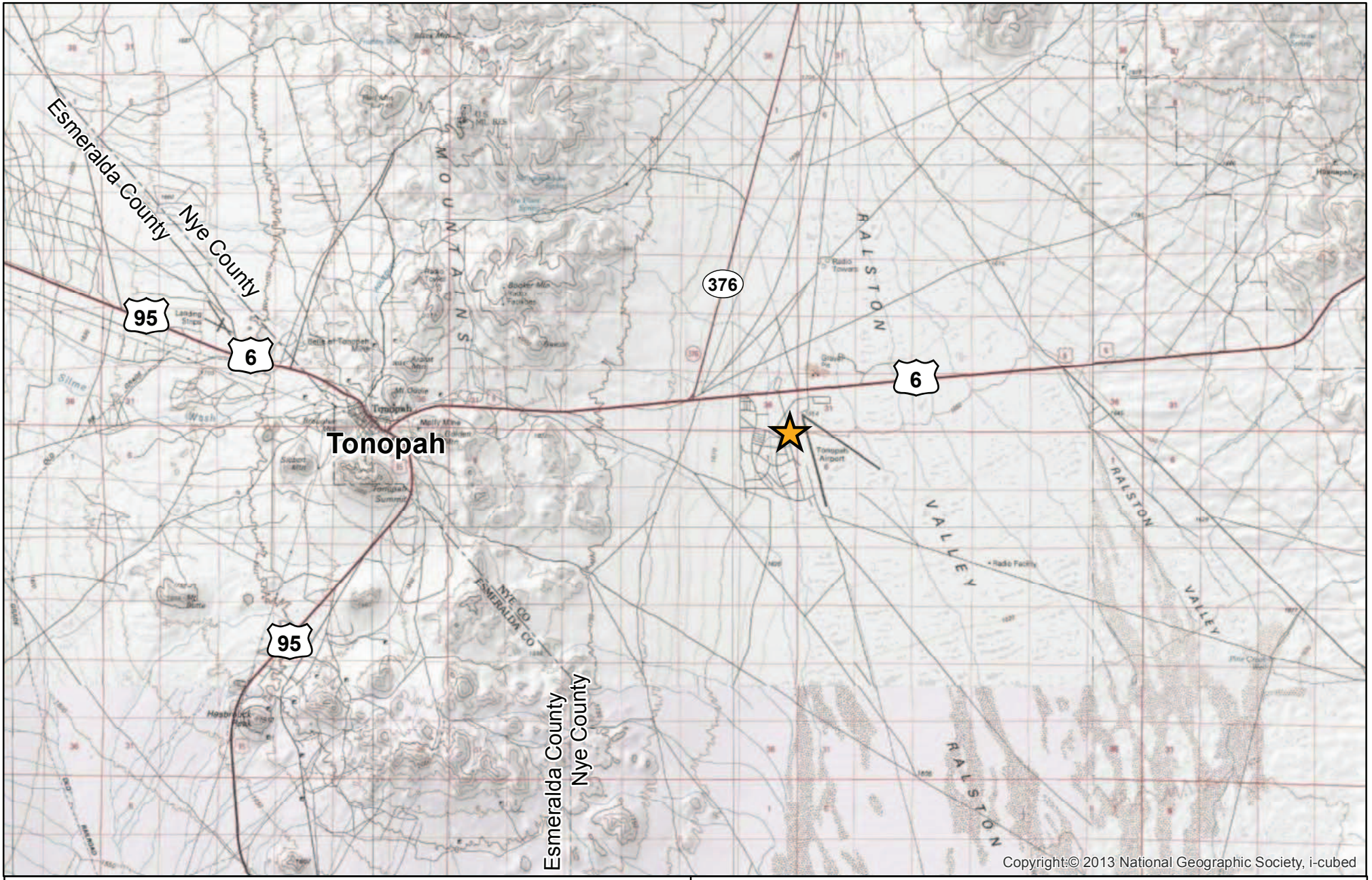

Figure 1 - Vicinity Map

Tonopah FBO Building
Tonopah, Nye County, Nevada

0 1.25 2.5 5 7.5 10
Miles

N

bec environmental, inc.

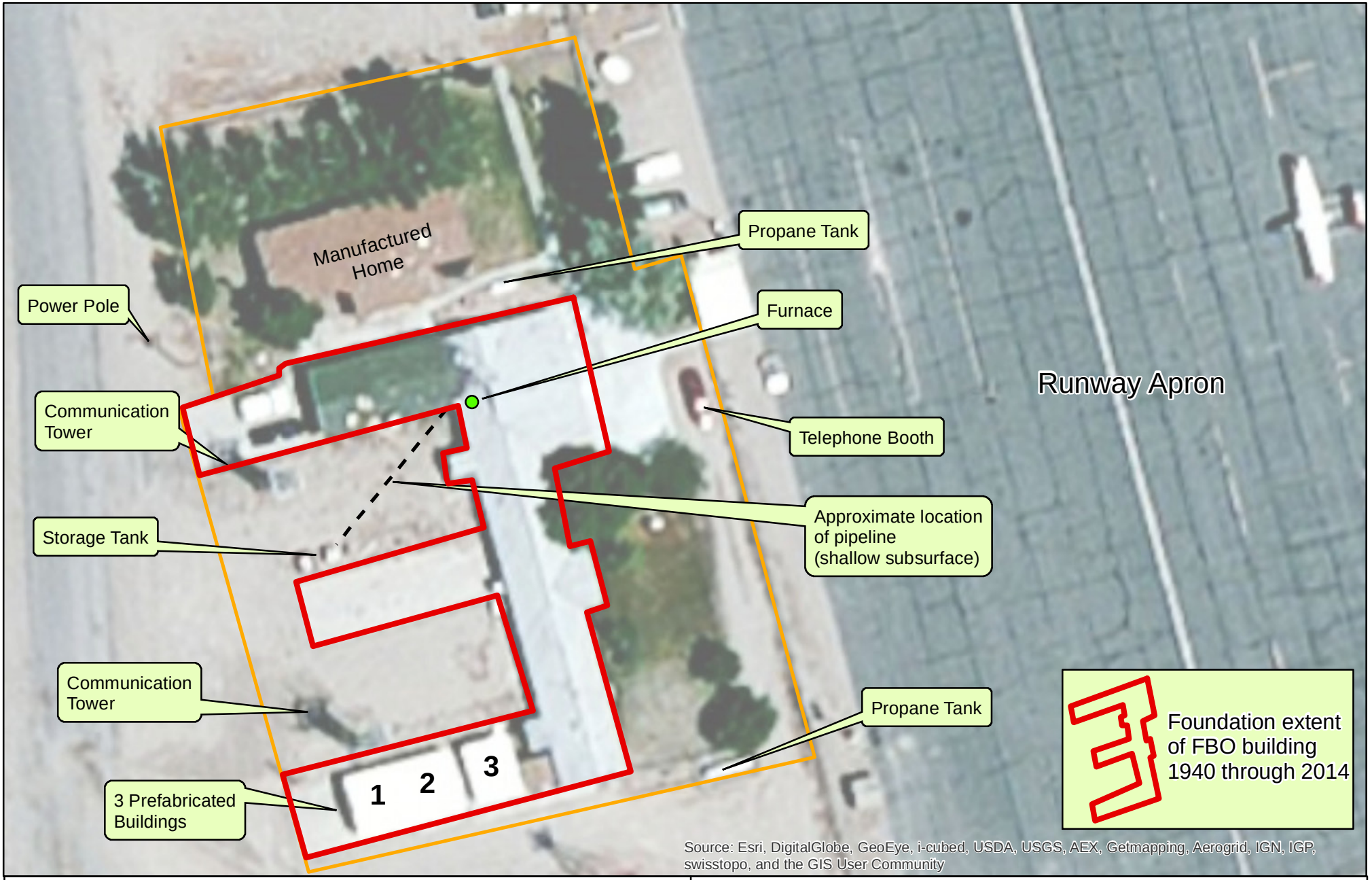

Figure 2 - Site Map

Tonopah FBO Building
Tonopah, Nye County, Nevada

0 37.5 75 150

Feet

N

bec environmental, inc.

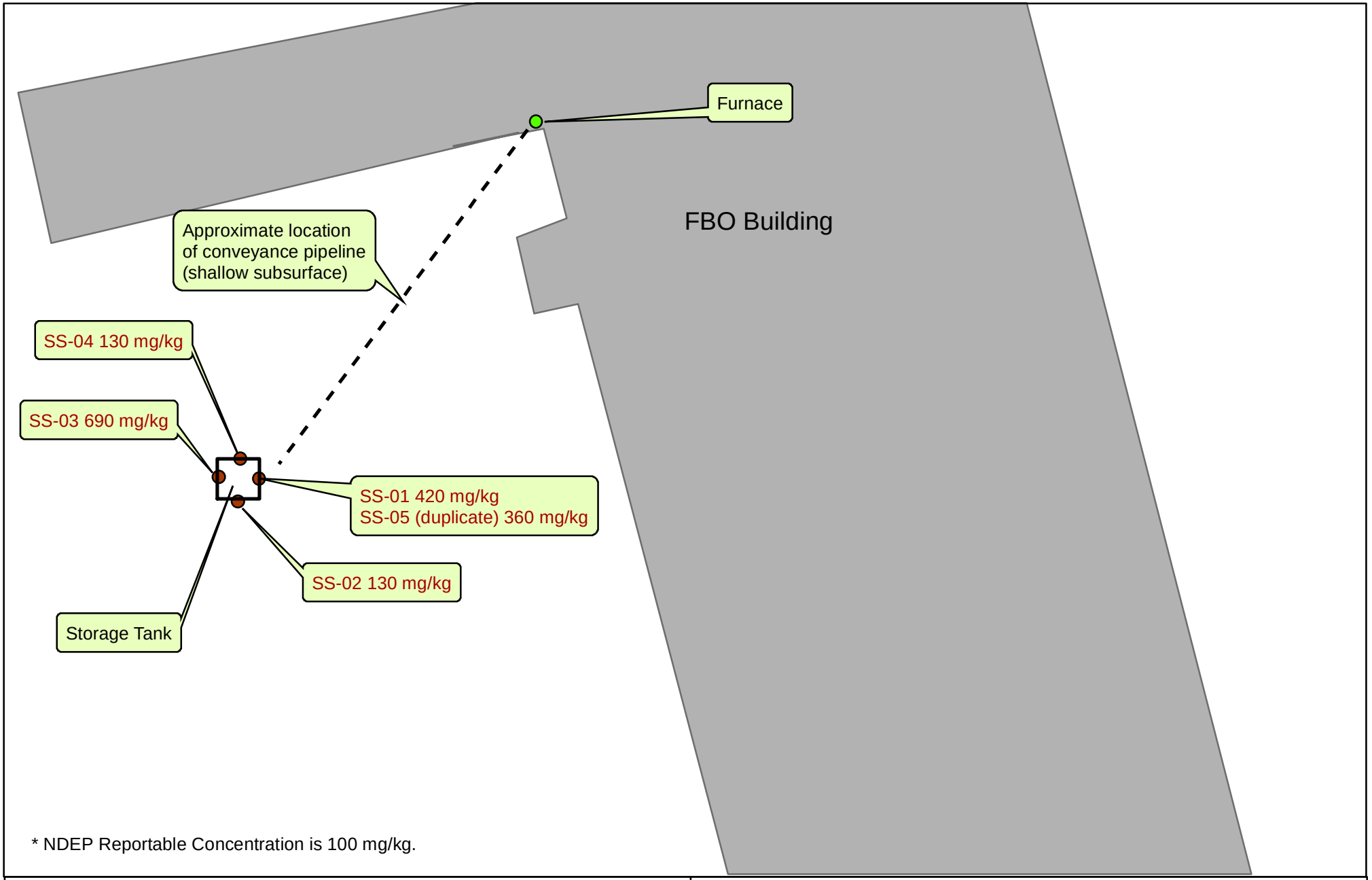

Figure 3 - Total Petroleum Hyrocarbon Results in Soil

Tonopah FBO Building
Tonopah, Nye County, Nevada

0 15 30 60
Feet

N

bec environmental, inc.

Figure 4 - Excavation Aerial Alternative 3
Proposed Excavation Plan

Tonopah FBO Building
Tonopah, Nye County, Nevada

0 45 90 180
Feet

N

bec environmental, inc.

Appendix A

Cleanup Plan

NYE COUNTY
PUBLIC WORKS
David Fanning, Director

Pahrump Office
250 N Hwy 160 # 2,
Pahrump NV 89060

Office: (775) 751-6262
Fax: (775) 751-4336
dfanning@co.nye.nv.us

September 24, 2014

Mr. Alexi Lanza, P.E.
Bureau of Corrective Actions
Nevada Division of Environmental Protection
901 S. Steward Street, Suite 4001
Carson City, Nevada 89701

Dear Mr. Lanza:

SUBJECT: Cleanup Plan for Tonopah Airport FBO Building Petroleum Impact Soils
BEC Environmental, Inc. (BEC) has been authorized by Nye County, Nevada to prepare this Cleanup Plan for the Tonopah Airport Fixed Based Operator (FBO) site located in Nye County, Nevada, on a portion of assessor's parcel number (APN) 012-471-03. The site occupies 0.75-acres of the 2,171 acre Tonopah General Aviation Airport and consists of the airport operations building (FBO Building), the Federal Aviation Administration buildings, and support structures located at 1 Airport Road, Tonopah, Nevada 89049. The Site is situated 201 miles northwest of Las Vegas as depicted on **Figure 1** Vicinity Map. This document is being prepared as part of the Rural Desert Southwest Brownfields Coalition Assessment grant funded by the United States Environmental Protection Agency (EPA).
In January of 2014, BEC Environmental conducted a Phase I Environmental Site Assessment (ESA) and noted the potential for petroleum contamination as a concern due to the presence of an active above ground storage tank (AST) (BEC 2014a). The AST contained jet fuel and was noted as a potential site for leaks/spills since there was no containment system.
A Phase II ESA was conducted by BEC Environmental in May 2014 (BEC 2014b). Four soil samples were collected from the area under the AST and analyzed for total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), and Resource Conservation and Recovery Act (RCRA) metals. Laboratory analytical results of surface soil samples indicated the presence of TPH in all samples ranging from 690 milligram per kilogram (mg/kg) to 130 mg/kg. This is above the Nevada Department of Environmental Protection (NDEP) Reportable Concentration (RC) of 100 mg/kg for TPH.

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Because soil contamination associated with the AST exceeded NDEP reportable concentrations, the NDEP Bureau of Corrective Actions (BCA) was notified on May 13, 2014. The NDEP issued a Request for Release/Spill Information (spill report #140513-01) to Nye County officials on May 22, 2014. Upon Nye County's request (the owner), a three month extension was granted by the NDEP for a response. The spill report is due to NDEP by October 7, 2014.
BEC has prepared this Cleanup Plan to present the procedures for implementing the recommended remedy of excavation and off-site disposal of petroleum impacted soils for approval by the NDEP. This section describes the subject site, presents the project background, and summarizes the scope and purpose of the Cleanup Plan.

Project History

The site is currently used as the operations facility for the airport, providing communications between aircraft and other airport facilities, and housing a pilots' lounge and meeting space for airport operations. Of the three prefabricated buildings constructed on a portion of the foundation of the historic operation building, one is used as a storage unit by the County and two are leased by the Federal Aviation Administration. A manufactured home is located north of the FBO building and is currently occupied by the airport operator and his family.
The site was first developed in the 1940's as the operations building for the Tonopah Army Air Field. The Tonopah Army Airfield was used during World War II for crew training and equipment testing. The air field is a Formerly Used Defense Site (J09NV0969). The Tonopah Army Airfield was closed and the land and all the buildings were transferred to Nye County under a Quit Claim Deed. Nye County has operated the property as a general aviation airport since 1949. Airport operations, commercial and military, are the only known and documented use of the site. The property owner desires to replace the circa 1940's FBO Building with a modern prefabricated structure to continue functioning as the airport operations center.
Nye County, as part of the Nevada Rural Brownfields Partnership, is applying for a loan through the EPA Brownfields Revolving Loan Fund (RLF) Grant program to cover the cleanup costs associated with the site.

Document Purpose and Organization

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The purpose of this Cleanup Plan is to present and describe all of the known activities necessary to excavate, transport, and dispose of the contaminated soils from the Site.
After this introductory section, this Cleanup Plan document is organized into five additional sections, as follows:

- Section 2 – Site preparation procedures to be performed prior to implementing the approved remedial alternative.
- Section 3 – Remediation activities to be performed, including excavation, transportation, and disposal.
- Section 4 – Reporting procedures and summaries of the community involvement process for the project.
- Section 5 – Proposed schematic schedule for performing remediation activities.
- Section 6 – References.

Site Preparation
Site preparation activities that will be performed prior to undertaking excavation and transportation, include work area preparation such as excavation area clearing and documentation of pre-excavation site conditions; permitting; and establishment of site controls.
Work Area Preparation

All underground pipes, electrical conductors, water lines, and sewer lines in the remediation areas shall be identified and located to the extent they exist; these will be de-energized, locked out, or blinded off prior to commencement of excavation, as appropriate. Nye County Public Works will coordinate and clear the work area prior to commencement of activities.
Prior to the commencement of excavation, the AST will be disconnected from the conveyance line and relocated pursuant to the owner's direction. The area requiring excavation will then be staked in the field. Excavation boundaries will be documented utilizing a hand-held global positional satellite unit and noted in the daily report.
Permitting

The disturbed area is less than the 0.25 acre in overall area and the trenching less than one hundred (100) feet in length for the project. Therefore, no dust control permit is required for the

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soil excavation activity of the project. However, it is noted, and will be a requirement upon the contractor to obtain all necessary permits as they pertain to the FBO building abatement and demolition.

Site Controls

Site controls will be employed to control traffic flow, including pedestrian traffic, within the Site during remediation. These site controls are necessary to direct the following:

- Remediation workers
- Vendors and subcontractors
- Site visitors (e.g., agency staff, elected or appointed government officials, airport traffic)

The visitor exclusion zone for the soil remediation project consists of the area depicted on **Figure 2**. Visitors will not be allowed access to this exclusion zone. A work support area has been established just west of the Site as noted on **Figure 2**.

Remediation

Remediation activities, including soil excavation procedures and the transportation of soils to the permitted disposal facility, and confirmation sampling are described below.

Soil Excavation and Transportation

The area planned for excavation is shown on **Figure 2** as determined by sampling results from the Phase II (BEC 2014b). The sample locations were selected beneath the edges of the elevated AST. Excavation limits were set at two feet laterally from the AST edges and one foot deep. The conveyance pipeline from the AST to the FBO Building is approximately 60 feet in length and assumed to be shallow (less than six inches below ground surface). No investigative data exists along this alignment. Excavation limits for the conveyance line were set at two feet laterally (one foot each side of the pipeline) and one foot deep. Based upon these conservative assumptions, approximately ten cubic yards of petroleum impacted soils would be generated. It should be noted, there is some likelihood that confirmation sampling might indicate the presence of residual contamination at the bottom of the excavation. Since the site is remote, one mobilization for the contractor is practicable. Residual contamination would be addressed by other NDEP-approved evaluations.

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A Nye County contractor will complete the excavation in accordance with the plans and specifications developed for this work, under the direction of the County's Qualified Environmental Professional (QEP). The contractor will use construction equipment (e.g., excavator, loader, etc.), as appropriate, to remove the surface soil containing elevated concentrations of TPH. The soils being excavated will be placed directly into a roll-off box or dump truck.

All site work shall take place during daylight hours during favorable weather conditions. Excavation will cease when limits have been reached. Excavation boundaries may be increased based upon field observations (visual staining, odor, or field screening). The final excavation limits will be documented in the daily report. Upon completion the excavation will be graded to reduce safety hazards. Depending upon redevelopment plans, the Owner may elect to backfill the area with gravel or clean import fill material.

The Tonopah municipal landfill does not accept petroleum impacted soils in excess of 100 parts per million. Therefore, excavated soils will be transported to the closest permitted facility, US Ecology's facility in Beatty, Nevada. Based upon characterization data, the soils can be accepted under a nonhazardous waste profile.

Confirmation Sampling

The County's QEP is required to prepare a sampling and analysis (SAP)/quality assurance project plan (QAPP) for all site sampling activities. The SAP will establish the protocol governing the collection, handling, and analysis of samples. This document will be subject to review and approval by the County and EPA.

However, for the purposes of this plan, it is anticipated that the sample design will entail collection of approximately seven soil samples. Three samples will be collected along the sidewall of excavation boundary, one sample in the bottom middle of excavation, and three samples along bottom of the excavation along the conveyance pipeline as shown in the following schematic.

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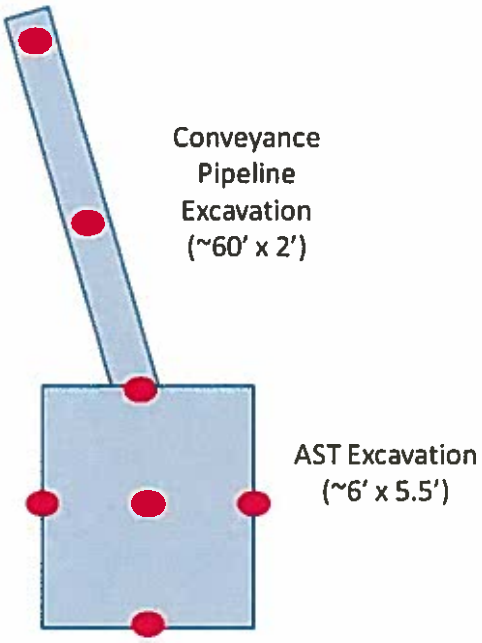

Confirmation Sampling Schematic

The analytical program will include TPH, VOC, and semi-volatile organic compounds (SVOCs). It is anticipated that any residual TPH remaining in subsurface soil will be below the NDEP action level of 100 mg/kg. However, collection of VOC and SVOC confirmation data will enable additional evaluation against NDEP Petroleum in Soils Closure criteria (NDEP 2014). It should be noted that the Phase I ESA determined the AST contained jet fuel as documented in the material safety data sheet (BEC 2014a). The jet fuel was reported as aviation turbine fuel or otherwise known as Jet A, Avjet, or Jet 1-A.

The samples will be analyzed by EPA Method 8015B for TPH, EPA Method 8060B for VOCs, EPA SW-846 Method 8270C using Secondary Ion Mass Spectrometry (SIMS) for SVOCs.

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Health and Safety

All remediation activities will be performed in accordance with a Health and Safety Plan(s) (HASP) developed for Site remediation activities by the contractor(s) selected for the project. This HASP(s) shall apply to the contractor's employees and subcontractors. The HASP shall include the following:

- Identification of chemical and physical hazards associated with the remediation activities
- Minimum training requirements for site workers
- Minimum Personal Protective Equipment (PPE) for site workers and visitors and criteria for upgrades
- Emergency information, such as emergency telephone numbers and directions to the nearest hospital
- Administrative requirements, such as documentation of training, daily health and safety tailgate meetings, and documentation of air monitoring

Dust Control

A Specific Dust control and mitigation plan is not warranted due to the small size of the disturbed area. However, contract documents will include dust control requirements. Basically, these procedures will consist of wetting surface soil in the immediate excavation areas and along transport routes prior to and during excavation activities. The soil excavation activities will be conducted under a water spray applied as needed to mitigate airborne dust. The water used for this purpose will be potable water obtained from the Town of Tonopah's water supply system.

Decontamination Procedures

Decontamination of sampling equipment must be conducted consistently to ensure the quality of samples collected. All material that comes into contact with potentially contaminated soil will be decontaminated. Disposable equipment intended for one-time use will not be decontaminated, but will be packaged for appropriate disposal. Decontamination will occur prior to and after each use of a piece of equipment. All sampling devices used, including sampling knives, will be decontaminated according to EPA recommended procedures. The following, to

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be carried out in sequence, is an EPA Region 9 recommended procedure for the decontamination of sampling equipment:

- Non-phosphate detergent and tap water wash, using a spray bottle and if necessary, a brush
- Tap-water rinse using a spray bottle
- Deionized/distilled water rinse using a spray bottle

At the conclusion of sampling activities, all disposable sampling materials and/or PPE will be packaged for appropriate disposal.
Sampling equipment decontamination will include the following:

- Sampling equipment decontamination (e.g., hand trowel, shovel, and homogenization pan) will be conducted between individual sampling points to avoid potential cross-contamination.
- Minor decontamination such as scraping off residual soils (i.e., those caked onto equipment) may be conducted as deemed necessary within the work site.

The following steps will be used to decontaminate construction equipment.

- Construction equipment decontamination will be conducted at the Contractor's facility or on-site within equipment decontamination pad.
- Personnel will dress in proper personal protective equipment to reduce personal exposure.
- Equipment heavily caked with soil and/or other material will be scraped off with a flat-bladed scraper.
- Equipment will be decontaminated using steam cleaning equipment. The condensate will be contained and managed appropriately.

Reporting, documentation, and public participation
Daily logs, field notes, and digital photographs will be prepared to document each day's field activities and relevant observations of Site conditions and remediation progress. Following completion of the remedial actions at the Site, the County's QEP will prepare the Spill Report for submittal to NDEP to document the progress of remedial activities and the proper completion of

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remediation. This report will include a description of the remediation activities performed, including data collection procedures and a summary of post-remediation site conditions based on those data. Copies of all the daily logs, field notes, site maps, field surveying results and analytical results associated with the confirmation sampling will be provided.
A project-specific Community Relations Plan has been developed for this Site and reviewed and approved by the EPA (BEC 2014c). For the purposes of this plan the major elements are as follows:

- Nye County publicly noticed a request from County staff to the Nye County Board of Commissioners for permission to apply for Brownfields Revolving Loan Fund funding for the Tonopah Airport FBO Building on September 2, 2014.
- The Nye County Board of Commissioners heard and approved the request during their meeting.
- Coordination with the State Historic Preservation Office (SHPO) has been initiated to determine if any items or structures of historical significance exist at the site and require protection during the redevelopment process.
- Notice of intent to redevelop the site, and initiation of the public comment period for the Analysis of Brownfields Cleanup Alternatives (ABCA) will be publicly noticed on the websites for both Nye County and the Rural Desert Southwest Brownfields Coalition.
- The ABCA (containing this Cleanup Plan) will be included in reference material for the Tonopah Town Board. Town Board reference materials are also available to the public for review.

Schedule
Given the regulatory and municipal involvement, there are fixed and sometimes significant schedule durations between tasks to achieve project milestones for the completion. The actual field work is anticipated to last approximately one week. However, the following milestones must be achieved prior to commencing field activities:

- Nye County Board of Commissioners approval to submit application for the RLF Grant (completed on September 2, 2014)
- SHPO consultation (on-going)

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- Public comment period
- Inclusion of project in Tonopah Town Board reference material for review
- Procurement of contractor(s)

Currently, these activities are scheduled for the months of September and early October, 2014, with field activities commencing in October, 2014.
Please contact me at dfanning@co.nye.nv.us or 775-751-6262 or our environmental consultant BEC, if you have any questions, or if I can be of further assistance. The representative for BEC is Victoria Tyson-Bloyd and she can be reached at victoria@becnv.com or 702-304-9830

Sincerely,

David Fanning
Director, Nye County Public Works

CC: Joni Eastley, Assistant Nye County Manager
Eileen Christensen, BEC
Victoria Tyson-Bloyd, BEC