

2 April 2020

Robert Evans
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**Subject: Report for a Vapor Intrusion Assessment – Revised Based on ADEC Comments
Healy Small Tracts Subdivision Site, Hazard ID 1073
Healy, Alaska**

Dear Mr. Evans:

Geosyntec Consultants Inc. (Geosyntec) has been retained by Evans Industries to conduct a vapor intrusion assessment at the Healy Carquest / McKinley Polaris (Carquest/Polaris) building that is part of the Healy Small Tracts Subdivision site in Healy, Alaska. This document is a letter-style report for the vapor intrusion assessment.

BACKGROUND

In 1990, Shannon and Wilson removed an underground storage tank (UST) located on the south side of the original building and a floor drain leach field and septic system on the north side of the building. These removals resulted in three separate excavations on the property (Figure 1). Soils suspected of petroleum impacts were removed based on field screening data. Clean backfill was placed in the excavations. Three floor drains in the building were abandoned in place by filling them with concrete.

Shannon and Wilson documented the contamination left in-place at the edges and bottom of excavations. In particular, soil with 38,000 milligrams per kilogram (mg/kg) of total petroleum hydrocarbons (TPH) was left in-place 12 feet below ground surface (bgs) in the floor drain leach field directly beneath the building exterior wall. Samples from the floor drain leach field and septic system excavations showed detectable concentrations of volatile organic compounds (VOCs) at the base and sides of excavation: 1,2-dichlorobenzene (3.4 mg/kg), 1,3-dichlorobenzene (3.3 mg/kg), 1,4-dichlorobenzene (1.7 mg/kg), toluene (41 mg/kg), ethylbenzene (22 mg/kg), and xylenes (260 mg/kg).

In 2001 and 2018, additions were added to the Carquest/Polaris building, which expanded the building footprint to the east, west, and north. The northern expansion covered the excavations of the floor drain leach field and septic system (Figure 1).

OBJECTIVES

The objective of this assessment is to evaluate whether sub-slab soil gas underneath the Carquest/Polaris building may be impacted by residual petroleum hydrocarbons left in-place following removal actions in 1990, and whether impacted soil gas could pose a risk for a complete vapor intrusion pathway.

FIELD ACTIVITIES

Geosyntec performed field activities on October 9, 2019. Weather conditions were approximately 40°F with winds from the westerly direction. A building survey was conducted in association with sampling activities (Attachment 1). The building is an auto parts store; showroom for all-terrain vehicles (ATVs), snow machines, and chainsaws; and small engine maintenance and repair shop. Lubricating oils, fuels, cleaning agents, and spent chemicals, are present throughout the building and part of typical commercial activities occurring in the building.

A sub-slab monitoring port was installed in the north-central portion of the Carquest/Polaris building (Figure 1). This location is part of the expanded section of the building and near the areas of the former floor drain and septic system excavations. With direction from Geosyntec, Evans Industries personnel drilled a ½-inch port through the slab to be responsible for the in-floor radiant heat system. The concrete slab is approximately 6 inches thick. The sub-slab sample port was constructed by placing ¼-inch dedicated Teflon tubing into the penetration near the bottom of the hole but not resting on the bottom. Clean 10/20 silica sand was poured around the tubing to a level of approximately half of the penetration. The remaining portion of the penetration was filled with granular bentonite and hydrated with water. The bentonite seal was allowed to cure for 40 minutes before beginning sampling activities.

An adjacent sub-slab monitoring port was installed approximately 7 feet to the east. This port was used to collect cross-slab pressure differentials with a manometer during sub-slab sampling. Pressure differential readings were collected every 15 seconds for approximately Attachment 2 contains field notes, and Attachment 3 presents photographs from field activities.

Sampling commenced by placing an outdoor ambient air sample to the northwest of the building (Figure 1). Sampling of outdoor air began approximately 65 minutes prior to beginning sub-slab sampling activities. The outdoor air sample was upwind of the building at a height of approximately 4 feet above the ground surface. A 100%-certified 6-liter canister with a 4-hour flow controller was used to collect the sample. A tightness test (shut-in) of the outdoor air sample canister was performed prior to sample collection to ensure the canister held a vacuum.

The process for sub-slab sampling began by enclosing the sub-slab monitoring port in a leak detection shroud and connecting the Teflon tubing to two 1-liter, batch-certified canisters with 30-minute flow controllers (primary and duplicate sample pair). A tightness test (shut-in) of both canisters and connections was performed by pulling a vacuum on the sample train using a dedicated syringe and a valve to isolate the canisters.

The next step for sub-slab sampling involved purging and leak detection of the sub-slab monitoring port. The dedicated syringe was used to purge approximately 1.5 liters. During purging, helium was introduced to the leak detection shroud and the helium concentration inside the shroud was monitored with a helium gas meter. An average concentration of approximately 12 percent (%) helium was maintained in the shroud. The purged soil gas was captured in a tedlar bag and tested for helium and fixed gases. The helium concentration of the purged soil gas was 0 ppm, which meets the goal of less than 10% of the concentration (1.2% or 12,000 ppm) in the shroud and indicates a sufficient seal around the sub-slab monitoring port. In addition, the purged gas in the tedlar bag was tested for oxygen, carbon dioxide, and methane using a gas detection field instrument.

Following the successful purge and leak detection, the sub-slab sample canister valves were opened, and sampling commenced. Sub-slab sampling continued until the canisters had approximately 5 inches of mercury each, which took approximately 30 minutes. Cross-slab pressure readings were collected every 15 seconds beginning approximately 55 minutes prior to sub-slab sampling and ended approximately 15 minutes after sub-slab sampling ended. Attachment 4 contains the pressure differential readings from the manometer.

The collection of the outdoor sample continued for approximately 75 minutes after completion of sub-slab sampling for an entire duration of 3 hours, 10 minutes. The sub-slab monitoring ports were decommissioned at the completion of sampling activities.

DATA QUALITY

Samples were shipped to ALS Environmental in Simi Valley, CA on October 11, 2019 under chain-of-custody for analysis of VOCs by USEPA method TO-15. ALS provided a laboratory report to Geosyntec on November 7, 2019. Attachment 5 contains the ALS laboratory report, and Attachment 6 contains the ADEC laboratory checklist for air samples.

Field personnel documented that approximately 5 inches of mercury of ambient air were accidentally introduced to the duplicate sub-slab sample during the post-sampling vacuum check of the canister. This field error limits the evaluation of accuracy between the primary and duplicate samples. In addition, recovery of ethylbenzene, xylenes, and trimethylbenzene isomers were low for the laboratory control sample. Therefore, some of the analytical results for the duplicate samples have been flagged as estimated with low bias (JL). Table 1 and Attachment 5 contain more details. The data are usable for decision-making purposes. No other significant data quality issues are noted.

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FINDINGS

A combination of field and laboratory analytical data were collected to evaluate soil gas and the vapor intrusion pathway for the Carquest/Polaris building. The field data indicate the following about subsurface soil gas and the vapor intrusion pathway:

- Two hours of continuous pressure differential readings show that the sub-slab was slightly depressurized relative to indoors, and thus not conducive to vapor intrusion. The average of 488 readings was -0.01 Pascals (Pa), meaning that the average sub-slab pressure differential was depressurized relative to indoors. Sixty-six (66) percent of the readings were less than 0 Pa, meaning that 66% of the time the sub-slab was depressurized relative to indoors. The sum of all 488 readings is -6.6 Pa, meaning that incorporation of all readings do not indicate conditions that would have allowed vapor intrusion to be occurring regularly during sampling.
- Sub-slab soil gas had an oxygen concentration of 19.1%, carbon dioxide concentration of 0.9%, and methane concentration of 0.0%. The decreased oxygen and increased carbon dioxide suggest an increased rate of aerobic microbial activity beneath the foundation, likely as a result of the historical presence of hydrocarbons in the subsurface from the former excavations.
- The indoor air at the Carquest/Polaris building likely is influenced by the numerous background sources inside the building: ATVs, snow machines, chainsaws; lubricants, adhesives, and cleaners associated with the automobile parts department; and the ATV and snow machine maintenance and repair that actively occurs in the shop portion of the building.

Table 1 presents select results for compounds detected in the laboratory samples (the compounds, such as acrolein, acetone, methylene chloride, and ethyl acetate, often related to laboratory contamination and with low levels are not included on Table 1). Figure 2 shows the sample locations and analytical results. The analytical data indicate the following about subsurface soil gas and the vapor intrusion pathway:

- Outdoor air quality does not appear to be influencing sub-slab soil gas.
- Toluene, ethylbenzene, and xylenes are present in sub-slab soil gas, which is consistent with the findings from the 1990 excavations. The concentrations of ethylbenzene and xylenes exceed the default ADEC soil gas target levels.
- The dichlorobenzene isomers were not detected in sub-slab soil gas. The historical soil concentrations of these compounds from the 1990 excavations were at least an order of magnitude less than the historical soil concentrations of toluene, ethylbenzene, and

xylene; therefore, the absence of the dichlorobenzenes is expected given that they are also aerobically degraded like petroleum hydrocarbons (Kurt and Spain 2013).

- The trimethylbenzene isomers were detected in sub-slab soil gas. The concentration for 1,2,4-trimethylbenzene exceeds the default ADEC soil gas target level.

ANALYSIS

The default ADEC soil gas targets are based on an attenuation factor of 0.1, which is assumed to be a conservative, arbitrary metric given that the Vapor Intrusion Guidance for Contaminated Sites (2017) provides no explanation for its derivation. The guidance allows for use of less conservative attenuation factors when explained and approved by ADEC (Page 14). In this case, an attenuation factor of 0.026 is being proposed and used for the Carquest/Polaris building. The metric of 0.026 is based on the 95% percentile of all attenuation factors for buildings with slab foundations (basement or slab-on-grade) evaluated by the USEPA in *Vapor Intrusion Database: Evaluation and Characterization of Attenuation Factors for Chlorinated Volatile Organic Compounds and Residential Buildings* (2015). This means that only 5% of the 411 attenuation factors evaluated by the USEPA were greater than the 0.026. Given that the Carquest/Polaris building has a 6-inch slab, the use of 0.026 is a reasonable, fact-based alternative attenuation factor.

Soil gas target levels were recalculated using the alternative attenuation factor of 0.026. This resulted in alternate soil gas target levels approximately 3.8 times greater than the ADEC target levels and are presented adjacent to the ADEC target levels in Table 1. The sub-slab soil gas concentrations that exceeded the ADEC soil gas target levels (ethylbenzene, xylenes, and 1,2,4-trimethylbenzene) do not exceed the alternate target levels.

CONCLUSIONS

The Carquest/Polaris building is an active commercial business containing auto parts including numerous lubricants, adhesives, and cleaners; a showroom for ATVs, snow machines, and chainsaws; and a small engine maintenance and repair shop. Distinguishing low-level, parts per billion, or less, indoor air concentrations between potential vapor intrusion and the numerous indoor sources would be highly problematic. Furthermore, the field and analytical findings indicate that the vapor intrusion pathway poses minimal risk because the sub-slab was depressurized relative to indoor air during sampling, indicating that there is not a pressure gradient moving sub-slab soil gas across the slab. The 6-inch thickness of the concrete slab also minimizes the likelihood for cracks and points of increased permeability across the slab for vapor movement. Lastly, the sub-slab soil gas analytical results do not exceed target levels based on an empirically-derived, conservative attenuation factor.

These multiple lines of evidence provide the justification for recommending no further action related to the vapor intrusion pathway at the Carquest/Polaris building.

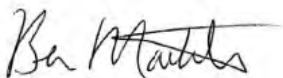
References:

Alaska Department of Environmental Conservation, 2017. Vapor Intrusion Guidance for Contaminated Sites. November.

United States Environmental Protection Agency, 2012. EPA's Vapor Intrusion Database: Evaluation and Characterization of Attenuation Factors for Chlorinated Volatile Organic Compounds and Residential Buildings. EPA 530-R-10-002. March 16.

Zohre, Kurt and Jim C. Spain (Zohre and Spain). 2013. *Environ. Sci. Technol.* 2013, 47, 13, 6846-6854.

Geosyntec Consultants, Inc.



Ben Martich, QEP
Principal

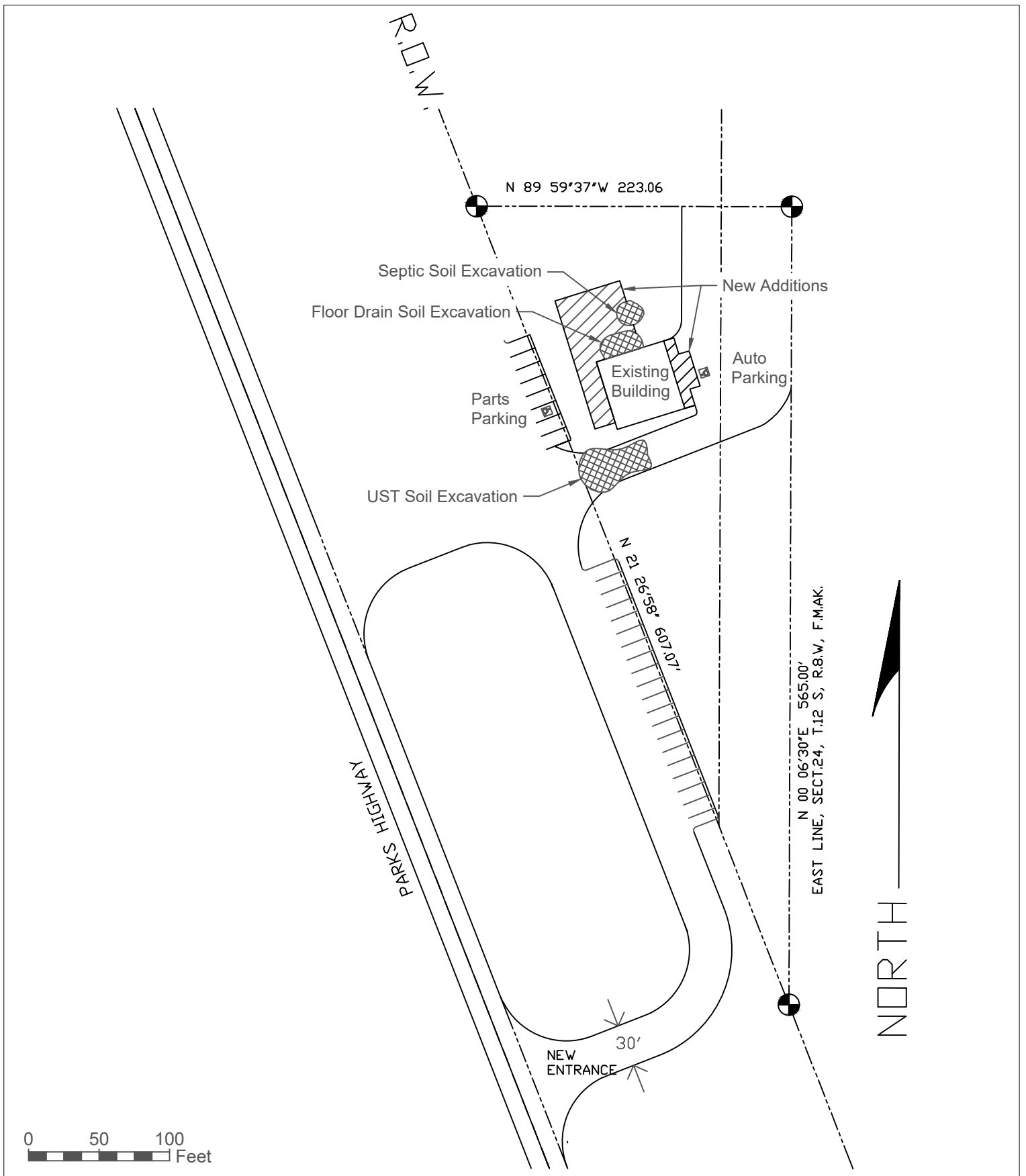


Samantha Fox, PE
Environmental Engineer

Attachments:

1. Building Survey
2. Field Notes
3. Photos
4. Pressure Differentials
5. Laboratory Report
6. ADEC Checklist
7. Response to Comments

FIGURES



- Notes:
1. All locations are approximate.
 2. Source: Evans Industries 2018

Site Details
 Vapor Intrusion Assessment Report
 Healy Small Tracts Subdivision Site
 Healy, Alaska



PNG0857

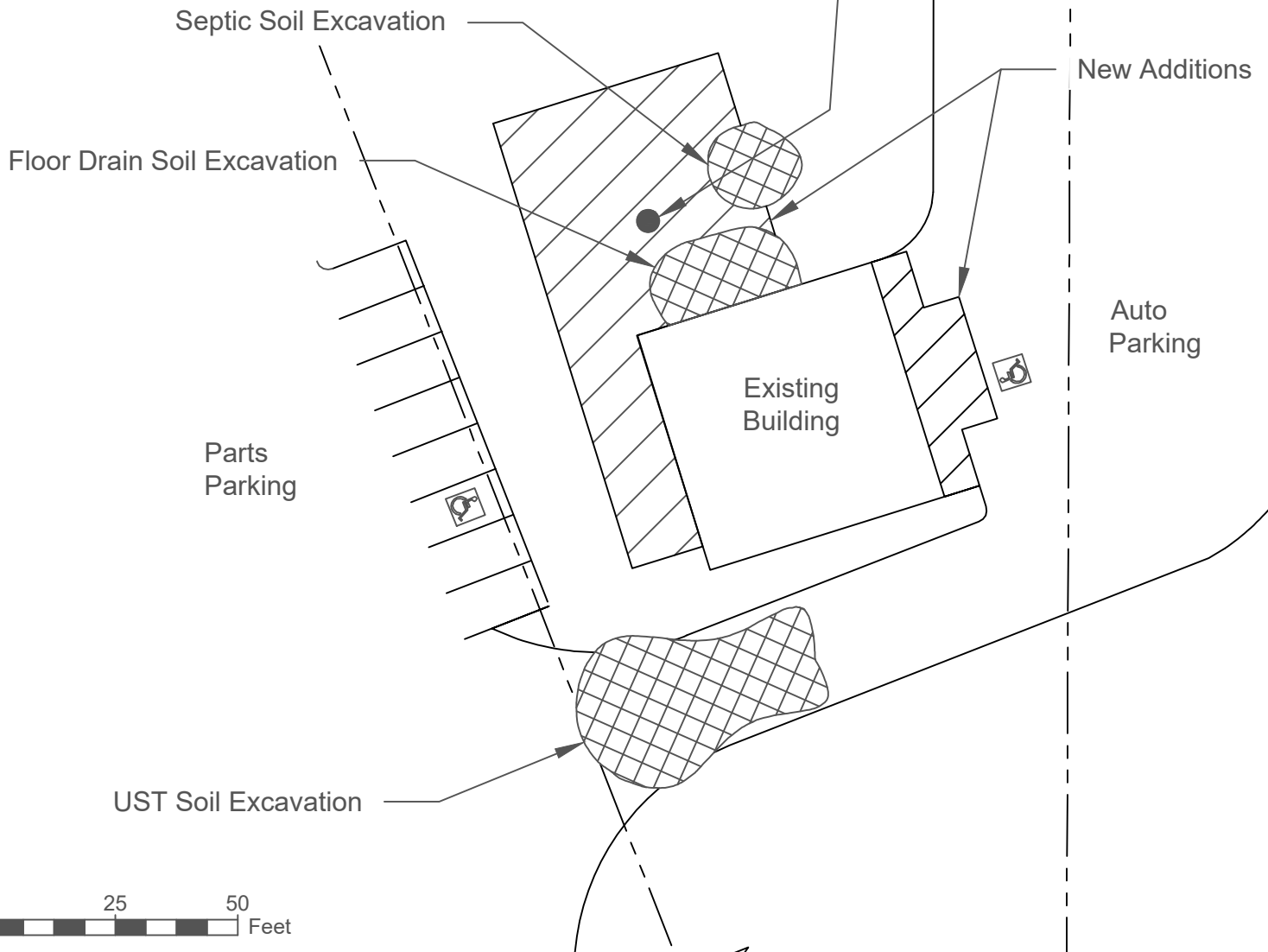
November 2019

Figure

1

Outdoor Air	
Compound	Concentration (µg/m3)
1,2-Dichlorobenzene	ND (1.1)
1,3-Dichlorobenzene	ND (1.1)
1,4-Dichlorobenzene	ND (1.1)
Toluene	ND (1.1)
Ethylbenze	ND (1.1)
Xylenes	ND (2.3)
1,3,5-Trimethylbenzene	ND (1.1)
1,2,4-Trimethylbenzene	ND (1.1)

Sub-Slab Soil Gas			
Compound	Concentration (µg/m3)	DEC Target Level (µg/m3)	Alternate Target Level (µg/m3)
1,2-Dichlorobenzene	ND (440)	880	3,400
1,3-Dichlorobenzene	ND (440)	880	3,400
1,4-Dichlorobenzene	ND (440)	110	420
Toluene	540	220,000	846,000
Ethylbenze	1,800 JL	490	1,900
Xylenes	6,000 JL	4,400	17,000
1,3,5-Trimethylbenzene	430 UJ	NA	NA
1,2,4-Trimethylbenzene	520 JL	310	1,200



Notes:

1. All locations are approximate.
2. Source: Evans Industries 2018
3. Analytical results reported as the maximum detection or the lowest non-qualified detection limit.
4. JL = Estimated value with potential low bias from low recovery in lab control sample.
5. NA = Indicates ADEC has not calculated an inhalation screening level for this chemical due to a lack of toxicity information for the inhalation exposure pathways.
6. ND = Not detected. Value in parentheses is the laboratory reporting limit.
7. UJ = Not detected. Value is an estimated laboratory reporting limit.

Analytical Results
Vapor Intrusion Assessment Report
 Healy Small Tracts Subdivision Site
 Healy, Alaska



PNG0857
 November 2019

Figure
 2

TABLE

Table 1
Analytical Results
Healy Small Tracts Subdivision Site

	Compound	Dichlorodi-fluoromethane	Trichloro-fluoromethane	1,2-Dichloro-benzene	1,3-Dichloro-benzene	1,4-Dichloro-benzene	Toluene	Ethylbenzene	Xylenes	Styrene	1,3,5-TMB	1,2,4-TMB
	CAS	75-71-8	75-69-4	95-50-1	541-73-1	106-46-7	108-88-3	100-41-4	179601-23-1 95-47-6	100-42-5	108-67-8	95-63-6
	units	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
<i>Outdoor Air</i>												
	19-HST-01-OA	2.4	1.3	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (2.3)	ND (1.1)	ND (1.1)	ND (1.1)
<i>Sub-Slab Soil Gas</i>												
	19-HST-01-SS	ND (430)	1,700	ND (440)	ND (440)	ND (440)	540	1,800 JL	6,000 JL	1,200	ND (430) UJ	520 JL
	19-HST-02-SS	ND (250) UJ	1,500 JL	ND (260) UJ	ND (260) UJ	ND (260) UJ	ND (260) UJ	1,700 JL	6,000 JL	1,200 JL	320 JL	510 JL
	<i>ADEC Soil Gas Target Level</i>	4,400	NA	880	880	110	220,000	490	4,400	44,000	NA	310
	<i>Alternate Soil Gas Target Level</i>	17,000	NA	3,400	3,400	420	846,000	1,900	17,000	170,000	NA	1,200

Notes: ADEC soil gas target level based on an attenuation factor of 0.1 from soil gas to indoor air

Alternate Target Level based on an attenuation factor of 0.026 from soil gas to indoor (95th percentile of sub-slab soil gas to indoor air attenuation factors taken from USEPA's Vapor Intrusion Database: Evaluation and Characterization of Attenuation Factors for Chlorinated Volatile Organic Compounds and Residential Buildings [2012])

Key:

JL estimated value with potential low bias from low recovery in lab control sample for the 19-HST-01-SS, and potential low bias from low recovery in lab control sample and introduced ambient air for 19-HST-02-SS

µg/m³ micrograms per cubic meter

NA Indicates ADEC has not calculated an inhalation screening level for this chemical due to a lack of toxicity information for the inhalation exposure pathways

ND Not detected. Value in parantheses is the laboratory reporting limit

UJ Not detected. Value is an estimated laboratory reporting limit

Attachment 1

Building Survey

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
BUILDING INVENTORY AND INDOOR AIR SAMPLING QUESTIONNAIRE

This form should be prepared by a person familiar with indoor air assessments with assistance from a person knowledgeable about the building. Complete this form for each building in which interior samples (e.g., indoor air, crawl space, or subslab soil gas samples) will be collected. Section I of this form should be used to assist in choosing an investigative strategy during workplan development. Section II should be used to assist in identification of complicating factors during a presampling building walkthrough.

Preparer's Name Ben Mertich Date/Time Prepared 10/9/2019
Preparer's Affiliation Geosyntec Consultants Phone No. 907-929-3326
Purpose of Investigation Sub-Slab Soil Gas Investigation

SECTION I: BUILDING INVENTORY

1. OCCUPANT OR BUILDING PERSONNEL:

Interviewed: Y / N

Last Name Evans First Name Robert

Address PO Box 520 57, Mile 250 Parks Hwy, Healy

County _____

Phone No. 907-683-2374

Number of Occupants/persons at this location 4+ Age of Occupants 21+

2. OWNER or LANDLORD: (Check if same as occupant)

Interviewed: Y / N

Last Name _____ First Name _____

Address _____

County _____

Phone No. _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

- Residential
- Industrial
- School
- Church
- Commercial/Multi-use
- Other _____

Diesel well septic

If the property is residential, type? (Circle appropriate response)

Ranch
Raised Ranch
Cape Cod
Duplex
Modular

2-Family
Split Level
Contemporary
Apartment House
Log Home

3-Family
Colonial
Mobile Home
Townhouses/Condos
Other _____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) Auto parts, ATV/chainsaw/snow machine dealer + repair

Does it include residences (i.e., multi-use)? Y N

If yes, how many? _____

Other characteristics:

Number of floors 2

Building age _____

Is the building insulated? Y N

How air tight? Tight Average Not Tight

Have occupants noticed chemical odors in the building? Y / N

If yes, please describe: chemical/petrochemical odors part of commercial work

4. AIRFLOW

Use air current tubes, tracer smoke, or knowledge about the building to evaluate airflow patterns and qualitatively describe:

Airflow between floors

Hot water, radiant heat, however there are frequent door openings, by doors on back of bldg, shop fans that create provide significant air movement

Airflow in building near suspected source

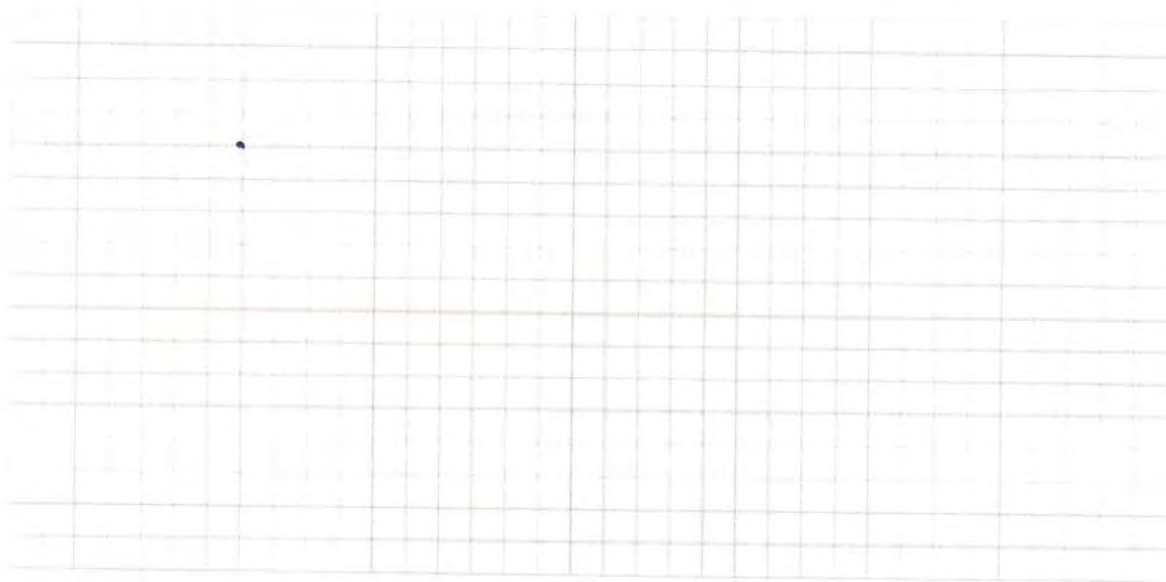
Outdoor air infiltration

Infiltration into air ducts

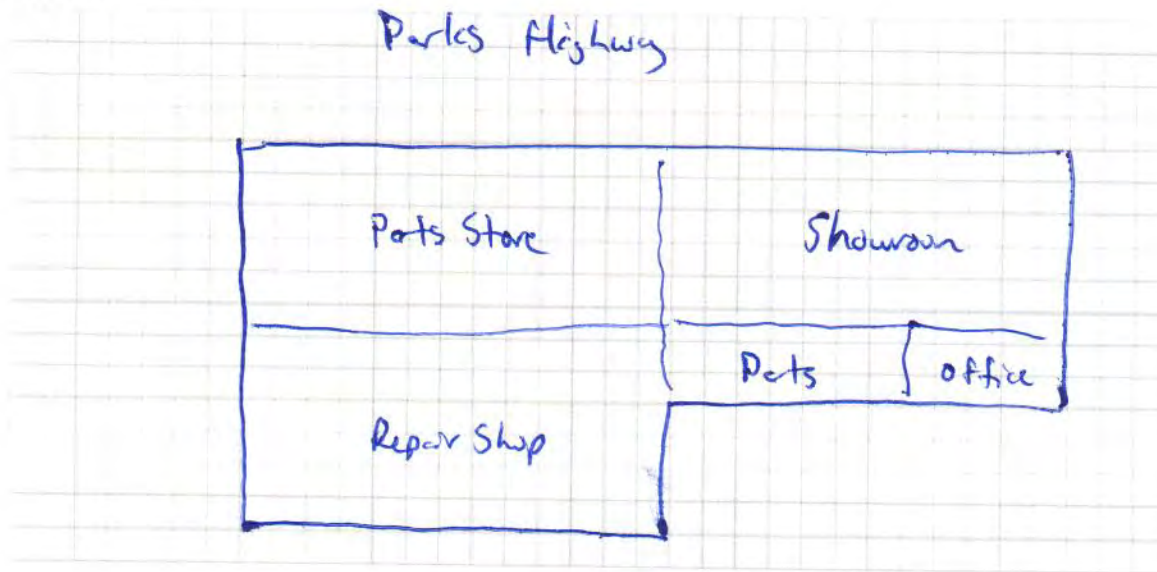
9. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



First Floor:



SECTION II: INDOOR AIR SAMPLING QUESTIONNAIRE

This section should be completed during a presampling walkthrough. If indoor air sources of COCs are identified and removed, consider ventilating the building prior to sampling. However, ventilation and heating systems should be operating normally for 24 hours prior to sampling.

a) 1. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

- Is there an attached garage? Y / N
- Does the garage have a separate heating unit? Y / N / NA
- Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, ATV, car) Y / N / NA
Please specify ATV, snow machines, chainsaws
- Has the building ever had a fire? Y / N When? _____
- Is a kerosene or unvented gas space heater present? Y / N Where? boiler in shop fueled by diesel
- Is there a workshop or hobby/craft area? Y / N Where & Type _____
- Is there smoking in the building? Y / N How frequently? _____
- Has painting/staining been done in the last 6 months? Y / N Where & When? _____
- Is there new carpet, drapes or other textiles? Y / N Where & When? _____
- Is there a kitchen exhaust fan? Y / N If yes, where vented? N/A
- Is there a bathroom exhaust fan? Y / N If yes, where vented? outside
- Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

Are cleaning products, cosmetic products, or pesticides used that could interfere with indoor air sampling? Y / N
If yes, please describe numerous cleaning agents sold in parts part of the building

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? shop work on small engines

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

- Yes, use dry-cleaning regularly (weekly) No
- Yes, use dry-cleaning infrequently (monthly or less) Unknown
- Yes, work at a dry-cleaning services

Attachment 2

Field Notes

10/19/19 Healy Small Tracts PNG0857

1355 Geosytec Ben Merish arrives at site

Meets with Robert Evans. Shown

two locations where they drilled

sub-slab monitoring points in the new

addition on the back half of the

building. The points have been plugged

as requested.

1405 Set out outdoor air sample 19-HST-01-0A

on north side of building in

upgradient wind direction

Casite ID AC02104

Flow controller ID FCR00507

4-hr outdoor air sample in 6-l can

1420 Set up manometer for lag cross-slab

pressure differential every 15 seconds

1435 Set sub-slab monitoring point. Needs

to set up for 30 minutes

before sampling

Pressure Control Point & Sub-slab point are

7 feet apart. Slab is at

least 4 inches thick per

Robert Evans who drilled the

points.

~~Ben Merish~~

~~10/19/19~~

PNG0857 Healy Small Tracts 10/19/19

Setup primary & duplicate sub-slabs

sample trainings pulled and held

5 in Hg vacuum for 5 minutes for

the shut-in test.

Primary sub-slab sample is 19-HST-01-SS

Casite ID is 15C00251

Flow controller is OA01656

1-l canister w/ 30-min flow controller

Duplicate sub-slab is 19-HST-02-SS

Casite ID is 15C00332

Flow controller is OA02164

1510 Begin a 10-minute purge of 1.5 liters

of soil gas. Collect last $\approx 3/4$ liter

into Tedlar bag for field testing.

CH₄ = 0.0%

O₂ = 20.9%

CO₂ = 0.9%

Helium concentration in air is 12%

Helium concentration in soil gas is 0 ppm

Leak test passed

1530 Begin sample. List duplicate sample

time as 1545.

1600 End sub-slab samples. Final vac in

primary sample is 6.7 in Hg. Final

vac in duplicate is 5.5 in Hg

Rate in air line

~~10/19/19~~

4 10/9/19 Heely Small Trees PNG0857
 1610 when checking final vcc on digp scope
 accidentally left valve open when
 running vcc queue. Final vcc went
 from 5.5 mths to 0.6 mths.
 1620 Downloaded Memomote data and
 take down all equipment
 1715 Rehive outdoor w/ scope. Final
 vcc is 12 mths.
 1730 Depart site

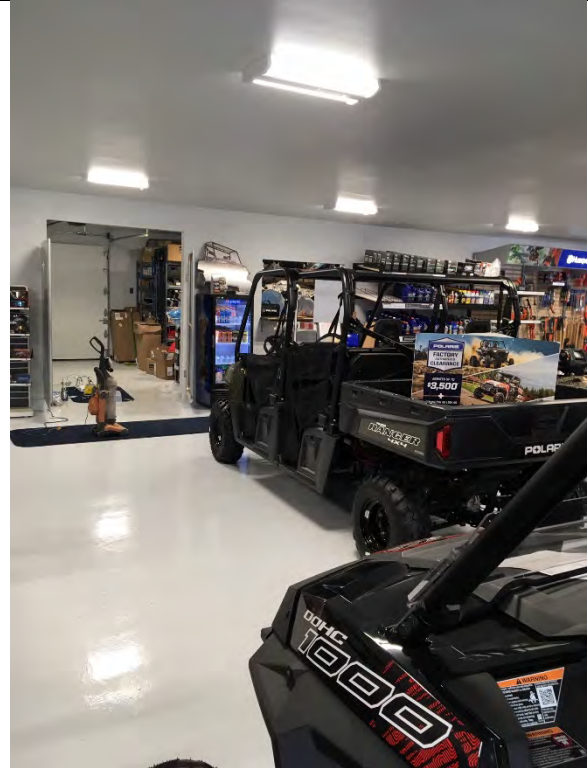
~~BTW
 10/9/19~~

Attachment 3

Photos



Outdoor air sample on north west side of building



Showroom with sub-slab sample location in background



Lubricating oils in the showroom



Auto parts store connected to the showroom



Curing of sub-slab monitoring point, and monitoring point for cross-slab pressure differentials in the background



Sampling sub-slab soil gas with a duplicate T. Leak detection shroud in place. Tedlar bag used to measure soil gas adjacent to helium meter.

Attachment 4

Pressure Differentials

SerialNumber: DG700-45248
ActiveChannels: 2
SessionTitle: Healy
SampleInterval: 15
AutozeroInterval: 60
ChannelAActive: 1
ChannelALabel: Cross-Slab
ChannelBActive: 1
ChannelBLabel: Null
TimeStamp: 2019-10-09 14:17:04
Observations: 488

month	day	year	hour	minute	sec	Cross-Slab Pressure (Pascals)
10	9	2019	14	17	19	-0.04
10	9	2019	14	17	34	-0.27
10	9	2019	14	17	49	-0.26
10	9	2019	14	18	4	-0.19
10	9	2019	14	18	19	0
10	9	2019	14	18	34	-0.01
10	9	2019	14	18	49	0.01
10	9	2019	14	19	4	0.04
10	9	2019	14	19	19	0.1
10	9	2019	14	19	34	0.03
10	9	2019	14	19	49	0.01
10	9	2019	14	20	4	-0.05
10	9	2019	14	20	19	-0.04
10	9	2019	14	20	34	-0.05
10	9	2019	14	20	49	-0.03
10	9	2019	14	21	4	-0.08
10	9	2019	14	21	19	0.01
10	9	2019	14	21	34	0
10	9	2019	14	21	49	0.02
10	9	2019	14	22	4	0
10	9	2019	14	22	19	-0.01
10	9	2019	14	22	34	0.01
10	9	2019	14	22	49	0.02
10	9	2019	14	23	4	0
10	9	2019	14	23	19	0.04
10	9	2019	14	23	34	0.03
10	9	2019	14	23	49	0.01
10	9	2019	14	24	4	-0.02
10	9	2019	14	24	19	-0.03
10	9	2019	14	24	34	-0.02
10	9	2019	14	24	49	-0.04
10	9	2019	14	25	4	-0.03
10	9	2019	14	25	19	0
10	9	2019	14	25	34	-0.01
10	9	2019	14	25	49	-0.01

10	9	2019	14	26	4	-0.01
10	9	2019	14	26	19	0
10	9	2019	14	26	34	-0.01
10	9	2019	14	26	49	-0.01
10	9	2019	14	27	4	-0.01
10	9	2019	14	27	19	-0.02
10	9	2019	14	27	34	-0.01
10	9	2019	14	27	49	-0.01
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10	9	2019	16	19	4	0.01

sum =	-6.62
readings <0 =	323
average =	-0.01

Attachment 5

Laboratory Report



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
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www.alsglobal.com

LABORATORY REPORT

November 7, 2019

Ben Martich, QEP
Geosyntec Consultants
3003 Minnesota Drive, Ste 302
Anchorage, AK 99503

RE: Healy Small Tracts / PNG0857

Dear Ben:

Enclosed are the results of the samples submitted to our laboratory on October 14, 2019. For your reference, these analyses have been assigned our service request number P1906184.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 3:33 pm, Nov 07, 2019

Sue Anderson
Project Manager



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Client: Geosyntec Consultants
Project: Healy Small Tracts / PNG0857

Service Request No: P1906184

CASE NARRATIVE

The samples were received intact under chain of custody on October 14, 2019 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Volatile Organic Compound Analysis

The samples were analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The spike recoveries of ethylbenzene, xylenes, n-propylbenzene and 1,3,5-trimethylbenzene for the Laboratory Control Sample (LCS) analyzed on first analytical batch on November 6, 2019. In addition, 1,2,4-trimethylbenzene was outside the Laboratory generated control criterion on both analytical batches. The recovery errors equate to a potential high bias. However, the spike recoveries of the analytes in question were within the method criteria; therefore, the data quality has not been significantly affected. No corrective action was taken.

The reporting limit has been elevated for samples 19-HST-01-SS (P1906184-002) and 19-HST-02-SS (P1906184-003). The chromatograms indicated the presence of non-target background components. Therefore, the samples were diluted in order to prevent damage to the instrument and to achieve optimal resolution of the target analytes.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.1 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1521096
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-006
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413- 19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA01627201 9-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Geosyntec Consultants
 Project ID: Healy Small Tracts / PNG0857

Service Request: P1906184

Date Received: 10/14/2019
 Time Received: 10:00

TO-15 - VOC Cans

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	
19-HST-01-OA	P1906184-001	Air	10/9/2019	14:05	AC02104	-5.50	4.54	X
19-HST-01-SS	P1906184-002	Air	10/9/2019	15:30	1SC00251	-2.21	5.48	X
19-HST-02-SS	P1906184-003	Air	10/9/2019	15:45	1SC00332	-0.45	5.76	X

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: 19-HST-01-OA
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P1906184-001

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:
 Container ID: AC02104

Date Collected: 10/9/19
 Date Received: 10/14/19
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -5.50 Final Pressure (psig): 4.54

Canister Dilution Factor: 2.09

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	1.1	ND	0.64	
75-71-8	Dichlorodifluoromethane (CFC 12)	2.4	1.1	0.49	0.22	
74-87-3	Chloromethane	ND	1.1	ND	0.54	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	1.1	ND	0.16	
75-01-4	Vinyl Chloride	ND	1.1	ND	0.44	
106-99-0	1,3-Butadiene	ND	1.1	ND	0.50	
74-83-9	Bromomethane	ND	1.1	ND	0.29	
75-00-3	Chloroethane	ND	1.1	ND	0.43	
64-17-5	Ethanol	ND	11	ND	5.8	
75-05-8	Acetonitrile	ND	1.1	ND	0.66	
107-02-8	Acrolein	2.7	2.1	1.2	0.91	
67-64-1	Acetone	11	11	4.7	4.7	
75-69-4	Trichlorofluoromethane (CFC 11)	1.3	1.1	0.22	0.20	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	4.4	ND	1.8	
107-13-1	Acrylonitrile	ND	1.1	ND	0.51	
75-35-4	1,1-Dichloroethene	ND	1.1	ND	0.28	
75-09-2	Methylene Chloride	ND	1.1	ND	0.32	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	1.1	ND	0.36	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	1.1	ND	0.15	
75-15-0	Carbon Disulfide	ND	2.3	ND	0.74	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	ND	0.28	
75-34-3	1,1-Dichloroethane	ND	1.1	ND	0.28	
1634-04-4	Methyl tert-Butyl Ether	ND	1.1	ND	0.31	
108-05-4	Vinyl Acetate	ND	11	ND	3.2	
78-93-3	2-Butanone (MEK)	ND	2.3	ND	0.78	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: 19-HST-01-OA
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P1906184-001

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:
 Container ID: AC02104

Date Collected: 10/9/19
 Date Received: 10/14/19
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -5.50 Final Pressure (psig): 4.54

Canister Dilution Factor: 2.09

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	1.1	ND	0.28	
141-78-6	Ethyl Acetate	ND	2.3	ND	0.64	
110-54-3	n-Hexane	ND	1.1	ND	0.32	
67-66-3	Chloroform	ND	1.1	ND	0.23	
109-99-9	Tetrahydrofuran (THF)	ND	1.1	ND	0.39	
107-06-2	1,2-Dichloroethane	ND	1.1	ND	0.28	
71-55-6	1,1,1-Trichloroethane	ND	1.1	ND	0.21	
71-43-2	Benzene	ND	1.1	ND	0.35	
56-23-5	Carbon Tetrachloride	ND	1.1	ND	0.18	
110-82-7	Cyclohexane	ND	2.3	ND	0.67	
78-87-5	1,2-Dichloropropane	ND	1.1	ND	0.24	
75-27-4	Bromodichloromethane	ND	1.1	ND	0.17	
79-01-6	Trichloroethene	ND	1.1	ND	0.21	
123-91-1	1,4-Dioxane	ND	1.1	ND	0.31	
80-62-6	Methyl Methacrylate	ND	2.3	ND	0.56	
142-82-5	n-Heptane	ND	1.1	ND	0.28	
10061-01-5	cis-1,3-Dichloropropene	ND	1.1	ND	0.24	
108-10-1	4-Methyl-2-pentanone	ND	1.1	ND	0.27	
10061-02-6	trans-1,3-Dichloropropene	ND	1.1	ND	0.24	
79-00-5	1,1,2-Trichloroethane	ND	1.1	ND	0.21	
108-88-3	Toluene	ND	1.1	ND	0.30	
591-78-6	2-Hexanone	ND	1.1	ND	0.28	
124-48-1	Dibromochloromethane	ND	1.1	ND	0.13	
106-93-4	1,2-Dibromoethane	ND	1.1	ND	0.15	
123-86-4	n-Butyl Acetate	ND	1.1	ND	0.24	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: 19-HST-01-OA
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P1906184-001

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:
 Container ID: AC02104

Date Collected: 10/9/19
 Date Received: 10/14/19
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -5.50 Final Pressure (psig): 4.54

Canister Dilution Factor: 2.09

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	1.1	ND	0.24	
127-18-4	Tetrachloroethene	ND	1.1	ND	0.16	
108-90-7	Chlorobenzene	ND	1.1	ND	0.25	
100-41-4	Ethylbenzene	ND	1.1	ND	0.26	
179601-23-1	m,p-Xylenes	ND	2.3	ND	0.53	
75-25-2	Bromoform	ND	1.1	ND	0.11	
100-42-5	Styrene	ND	1.1	ND	0.26	
95-47-6	o-Xylene	ND	1.1	ND	0.26	
111-84-2	n-Nonane	ND	1.1	ND	0.22	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.1	ND	0.16	
98-82-8	Cumene	ND	1.1	ND	0.23	
80-56-8	alpha-Pinene	ND	1.1	ND	0.20	
103-65-1	n-Propylbenzene	ND	1.1	ND	0.23	
622-96-8	4-Ethyltoluene	ND	1.1	ND	0.23	
108-67-8	1,3,5-Trimethylbenzene	ND	1.1	ND	0.23	
95-63-6	1,2,4-Trimethylbenzene	ND	1.1	ND	0.23	
100-44-7	Benzyl Chloride	ND	2.3	ND	0.44	
541-73-1	1,3-Dichlorobenzene	ND	1.1	ND	0.19	
106-46-7	1,4-Dichlorobenzene	ND	1.1	ND	0.19	
95-50-1	1,2-Dichlorobenzene	ND	1.1	ND	0.19	
5989-27-5	d-Limonene	ND	1.1	ND	0.20	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.1	ND	0.11	
120-82-1	1,2,4-Trichlorobenzene	ND	1.1	ND	0.15	
91-20-3	Naphthalene	ND	1.1	ND	0.21	
87-68-3	Hexachlorobutadiene	ND	1.1	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: 19-HST-01-SS
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P1906184-002

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Summa Canister
 Test Notes:
 Container ID: 1SC00251

Date Collected: 10/9/19
 Date Received: 10/14/19
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 0.0020 Liter(s)

Initial Pressure (psig): -2.21 Final Pressure (psig): 5.48

Canister Dilution Factor: 1.62

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	430	ND	250	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	430	ND	87	
74-87-3	Chloromethane	ND	430	ND	210	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	430	ND	61	
75-01-4	Vinyl Chloride	ND	440	ND	170	
106-99-0	1,3-Butadiene	ND	430	ND	190	
74-83-9	Bromomethane	ND	440	ND	110	
75-00-3	Chloroethane	ND	440	ND	170	
64-17-5	Ethanol	ND	4,200	ND	2,200	
75-05-8	Acetonitrile	ND	430	ND	260	
107-02-8	Acrolein	ND	810	ND	350	
67-64-1	Acetone	ND	4,300	ND	1,800	
75-69-4	Trichlorofluoromethane (CFC 11)	1,700	430	300	76	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1,700	ND	690	
107-13-1	Acrylonitrile	ND	430	ND	200	
75-35-4	1,1-Dichloroethene	ND	440	ND	110	
75-09-2	Methylene Chloride	640	430	180	120	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	440	ND	140	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	440	ND	57	
75-15-0	Carbon Disulfide	ND	890	ND	290	
156-60-5	trans-1,2-Dichloroethene	ND	440	ND	110	
75-34-3	1,1-Dichloroethane	ND	450	ND	110	
1634-04-4	Methyl tert-Butyl Ether	ND	440	ND	120	
108-05-4	Vinyl Acetate	ND	4,400	ND	1,200	
78-93-3	2-Butanone (MEK)	ND	890	ND	300	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: 19-HST-01-SS
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P1906184-002

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Summa Canister
 Test Notes:
 Container ID: 1SC00251

Date Collected: 10/9/19
 Date Received: 10/14/19
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 0.0020 Liter(s)

Initial Pressure (psig): -2.21 Final Pressure (psig): 5.48

Canister Dilution Factor: 1.62

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	430	ND	110	
141-78-6	Ethyl Acetate	2,500	890	700	250	
110-54-3	n-Hexane	ND	440	ND	120	
67-66-3	Chloroform	ND	440	ND	90	
109-99-9	Tetrahydrofuran (THF)	ND	450	ND	150	
107-06-2	1,2-Dichloroethane	ND	440	ND	110	
71-55-6	1,1,1-Trichloroethane	ND	440	ND	80	
71-43-2	Benzene	ND	430	ND	130	
56-23-5	Carbon Tetrachloride	ND	430	ND	68	
110-82-7	Cyclohexane	ND	890	ND	260	
78-87-5	1,2-Dichloropropane	ND	440	ND	95	
75-27-4	Bromodichloromethane	ND	440	ND	65	
79-01-6	Trichloroethene	ND	440	ND	81	
123-91-1	1,4-Dioxane	ND	440	ND	120	
80-62-6	Methyl Methacrylate	ND	890	ND	220	
142-82-5	n-Heptane	ND	440	ND	110	
10061-01-5	cis-1,3-Dichloropropene	ND	420	ND	93	
108-10-1	4-Methyl-2-pentanone	ND	430	ND	100	
10061-02-6	trans-1,3-Dichloropropene	ND	430	ND	95	
79-00-5	1,1,2-Trichloroethane	ND	440	ND	80	
108-88-3	Toluene	540	440	140	120	
591-78-6	2-Hexanone	ND	440	ND	110	
124-48-1	Dibromochloromethane	ND	440	ND	51	
106-93-4	1,2-Dibromoethane	ND	440	ND	57	
123-86-4	n-Butyl Acetate	ND	450	ND	94	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: 19-HST-01-SS
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P1906184-002

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Summa Canister
 Test Notes:
 Container ID: 1SC00251

Date Collected: 10/9/19
 Date Received: 10/14/19
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 0.0020 Liter(s)

Initial Pressure (psig): -2.21 Final Pressure (psig): 5.48

Canister Dilution Factor: 1.62

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	440	ND	94	
127-18-4	Tetrachloroethene	ND	420	ND	62	
108-90-7	Chlorobenzene	ND	440	ND	95	
100-41-4	Ethylbenzene	1,800	440	410	100	
179601-23-1	m,p-Xylenes	2,500	890	580	210	
75-25-2	Bromoform	ND	440	ND	42	
100-42-5	Styrene	1,200	430	270	100	
95-47-6	o-Xylene	3,500	440	810	100	
111-84-2	n-Nonane	ND	440	ND	83	
79-34-5	1,1,2,2-Tetrachloroethane	ND	440	ND	64	
98-82-8	Cumene	ND	440	ND	89	
80-56-8	alpha-Pinene	ND	440	ND	79	
103-65-1	n-Propylbenzene	ND	440	ND	89	
622-96-8	4-Ethyltoluene	ND	440	ND	89	
108-67-8	1,3,5-Trimethylbenzene	ND	430	ND	87	
95-63-6	1,2,4-Trimethylbenzene	520	440	110	89	
100-44-7	Benzyl Chloride	ND	890	ND	170	
541-73-1	1,3-Dichlorobenzene	ND	440	ND	73	
106-46-7	1,4-Dichlorobenzene	ND	440	ND	73	
95-50-1	1,2-Dichlorobenzene	ND	440	ND	73	
5989-27-5	d-Limonene	ND	440	ND	79	
96-12-8	1,2-Dibromo-3-chloropropane	ND	430	ND	44	
120-82-1	1,2,4-Trichlorobenzene	ND	440	ND	59	
91-20-3	Naphthalene	ND	420	ND	80	
87-68-3	Hexachlorobutadiene	ND	430	ND	40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: 19-HST-02-SS
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P1906184-003

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Summa Canister
 Test Notes:
 Container ID: 1SC00332

Date Collected: 10/9/19
 Date Received: 10/14/19
 Date Analyzed: 11/7/19
 Volume(s) Analyzed: 0.0030 Liter(s)

Initial Pressure (psig): -0.45 Final Pressure (psig): 5.76

Canister Dilution Factor: 1.44

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	250	ND	150	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	250	ND	51	
74-87-3	Chloromethane	ND	250	ND	120	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	250	ND	36	
75-01-4	Vinyl Chloride	ND	260	ND	100	
106-99-0	1,3-Butadiene	ND	250	ND	120	
74-83-9	Bromomethane	ND	260	ND	67	
75-00-3	Chloroethane	ND	260	ND	98	
64-17-5	Ethanol	ND	2,500	ND	1,300	
75-05-8	Acetonitrile	ND	250	ND	150	
107-02-8	Acrolein	ND	480	ND	210	
67-64-1	Acetone	ND	2,500	ND	1,100	
75-69-4	Trichlorofluoromethane (CFC 11)	1,500	250	270	45	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1,000	ND	410	
107-13-1	Acrylonitrile	ND	250	ND	120	
75-35-4	1,1-Dichloroethene	ND	260	ND	65	
75-09-2	Methylene Chloride	ND	250	ND	73	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	260	ND	83	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	260	ND	34	
75-15-0	Carbon Disulfide	ND	530	ND	170	
156-60-5	trans-1,2-Dichloroethene	ND	260	ND	65	
75-34-3	1,1-Dichloroethane	ND	260	ND	65	
1634-04-4	Methyl tert-Butyl Ether	ND	260	ND	72	
108-05-4	Vinyl Acetate	ND	2,600	ND	740	
78-93-3	2-Butanone (MEK)	ND	530	ND	180	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: 19-HST-02-SS
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P1906184-003

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Summa Canister
 Test Notes:
 Container ID: 1SC00332

Date Collected: 10/9/19
 Date Received: 10/14/19
 Date Analyzed: 11/7/19
 Volume(s) Analyzed: 0.0030 Liter(s)

Initial Pressure (psig): -0.45 Final Pressure (psig): 5.76

Canister Dilution Factor: 1.44

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	250	ND	64	
141-78-6	Ethyl Acetate	ND	530	ND	150	
110-54-3	n-Hexane	ND	260	ND	74	
67-66-3	Chloroform	ND	260	ND	53	
109-99-9	Tetrahydrofuran (THF)	ND	260	ND	90	
107-06-2	1,2-Dichloroethane	ND	260	ND	64	
71-55-6	1,1,1-Trichloroethane	ND	260	ND	48	
71-43-2	Benzene	ND	250	ND	80	
56-23-5	Carbon Tetrachloride	ND	250	ND	40	
110-82-7	Cyclohexane	ND	530	ND	150	
78-87-5	1,2-Dichloropropane	ND	260	ND	56	
75-27-4	Bromodichloromethane	ND	260	ND	39	
79-01-6	Trichloroethene	ND	260	ND	48	
123-91-1	1,4-Dioxane	ND	260	ND	72	
80-62-6	Methyl Methacrylate	ND	530	ND	130	
142-82-5	n-Heptane	ND	260	ND	63	
10061-01-5	cis-1,3-Dichloropropene	ND	250	ND	55	
108-10-1	4-Methyl-2-pentanone	ND	250	ND	62	
10061-02-6	trans-1,3-Dichloropropene	ND	250	ND	56	
79-00-5	1,1,2-Trichloroethane	ND	260	ND	48	
108-88-3	Toluene	ND	260	ND	69	
591-78-6	2-Hexanone	ND	260	ND	63	
124-48-1	Dibromochloromethane	ND	260	ND	30	
106-93-4	1,2-Dibromoethane	ND	260	ND	34	
123-86-4	n-Butyl Acetate	ND	260	ND	56	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 3 of 3

Client: Geosyntec Consultants
Client Sample ID: 19-HST-02-SS
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P1906184-003

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Summa Canister
 Test Notes:
 Container ID: 1SC00332

Date Collected: 10/9/19
 Date Received: 10/14/19
 Date Analyzed: 11/7/19
 Volume(s) Analyzed: 0.0030 Liter(s)

Initial Pressure (psig): -0.45 Final Pressure (psig): 5.76

Canister Dilution Factor: 1.44

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	260	ND	56	
127-18-4	Tetrachloroethene	ND	250	ND	37	
108-90-7	Chlorobenzene	ND	260	ND	56	
100-41-4	Ethylbenzene	1,700	260	400	60	
179601-23-1	m,p-Xylenes	2,400	530	550	120	
75-25-2	Bromoform	ND	260	ND	25	
100-42-5	Styrene	1,200	250	280	60	
95-47-6	o-Xylene	3,600	260	830	60	
111-84-2	n-Nonane	ND	260	ND	49	
79-34-5	1,1,2,2-Tetrachloroethane	ND	260	ND	38	
98-82-8	Cumene	ND	260	ND	53	
80-56-8	alpha-Pinene	ND	260	ND	47	
103-65-1	n-Propylbenzene	ND	260	ND	53	
622-96-8	4-Ethyltoluene	ND	260	ND	53	
108-67-8	1,3,5-Trimethylbenzene	320	250	64	52	
95-63-6	1,2,4-Trimethylbenzene	510	260	100	53	
100-44-7	Benzyl Chloride	ND	530	ND	100	
541-73-1	1,3-Dichlorobenzene	ND	260	ND	43	
106-46-7	1,4-Dichlorobenzene	ND	260	ND	43	
95-50-1	1,2-Dichlorobenzene	ND	260	ND	43	
5989-27-5	d-Limonene	ND	260	ND	47	
96-12-8	1,2-Dibromo-3-chloropropane	ND	250	ND	26	
120-82-1	1,2,4-Trichlorobenzene	ND	260	ND	35	
91-20-3	Naphthalene	ND	250	ND	48	
87-68-3	Hexachlorobutadiene	ND	250	ND	24	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 3

Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-MB

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result	MRL	Result	MRL	Data Qualifier
		µg/m ³	µg/m ³	ppbV	ppbV	
115-07-1	Propene	ND	0.53	ND	0.31	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.53	ND	0.11	
74-87-3	Chloromethane	ND	0.53	ND	0.26	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.53	ND	0.076	
75-01-4	Vinyl Chloride	ND	0.54	ND	0.21	
106-99-0	1,3-Butadiene	ND	0.53	ND	0.24	
74-83-9	Bromomethane	ND	0.54	ND	0.14	
75-00-3	Chloroethane	ND	0.54	ND	0.20	
64-17-5	Ethanol	ND	5.2	ND	2.8	
75-05-8	Acetonitrile	ND	0.53	ND	0.32	
107-02-8	Acrolein	ND	1.0	ND	0.44	
67-64-1	Acetone	ND	5.3	ND	2.2	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	0.53	ND	0.094	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	2.1	ND	0.85	
107-13-1	Acrylonitrile	ND	0.53	ND	0.24	
75-35-4	1,1-Dichloroethene	ND	0.54	ND	0.14	
75-09-2	Methylene Chloride	ND	0.53	ND	0.15	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.54	ND	0.17	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.54	ND	0.070	
75-15-0	Carbon Disulfide	ND	1.1	ND	0.35	
156-60-5	trans-1,2-Dichloroethene	ND	0.54	ND	0.14	
75-34-3	1,1-Dichloroethane	ND	0.55	ND	0.14	
1634-04-4	Methyl tert-Butyl Ether	ND	0.54	ND	0.15	
108-05-4	Vinyl Acetate	ND	5.4	ND	1.5	
78-93-3	2-Butanone (MEK)	ND	1.1	ND	0.37	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-MB

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.53	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.1	ND	0.31	
110-54-3	n-Hexane	ND	0.54	ND	0.15	
67-66-3	Chloroform	ND	0.54	ND	0.11	
109-99-9	Tetrahydrofuran (THF)	ND	0.55	ND	0.19	
107-06-2	1,2-Dichloroethane	ND	0.54	ND	0.13	
71-55-6	1,1,1-Trichloroethane	ND	0.54	ND	0.099	
71-43-2	Benzene	ND	0.53	ND	0.17	
56-23-5	Carbon Tetrachloride	ND	0.53	ND	0.084	
110-82-7	Cyclohexane	ND	1.1	ND	0.32	
78-87-5	1,2-Dichloropropane	ND	0.54	ND	0.12	
75-27-4	Bromodichloromethane	ND	0.54	ND	0.081	
79-01-6	Trichloroethene	ND	0.54	ND	0.10	
123-91-1	1,4-Dioxane	ND	0.54	ND	0.15	
80-62-6	Methyl Methacrylate	ND	1.1	ND	0.27	
142-82-5	n-Heptane	ND	0.54	ND	0.13	
10061-01-5	cis-1,3-Dichloropropene	ND	0.52	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.53	ND	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	0.53	ND	0.12	
79-00-5	1,1,2-Trichloroethane	ND	0.54	ND	0.099	
108-88-3	Toluene	ND	0.54	ND	0.14	
591-78-6	2-Hexanone	ND	0.54	ND	0.13	
124-48-1	Dibromochloromethane	ND	0.54	ND	0.063	
106-93-4	1,2-Dibromoethane	ND	0.54	ND	0.070	
123-86-4	n-Butyl Acetate	ND	0.55	ND	0.12	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 3 of 3

Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-MB

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.54	ND	0.12	
127-18-4	Tetrachloroethene	ND	0.52	ND	0.077	
108-90-7	Chlorobenzene	ND	0.54	ND	0.12	
100-41-4	Ethylbenzene	ND	0.54	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.1	ND	0.25	
75-25-2	Bromoform	ND	0.54	ND	0.052	
100-42-5	Styrene	ND	0.53	ND	0.12	
95-47-6	o-Xylene	ND	0.54	ND	0.12	
111-84-2	n-Nonane	ND	0.54	ND	0.10	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.54	ND	0.079	
98-82-8	Cumene	ND	0.54	ND	0.11	
80-56-8	alpha-Pinene	ND	0.54	ND	0.097	
103-65-1	n-Propylbenzene	ND	0.54	ND	0.11	
622-96-8	4-Ethyltoluene	ND	0.54	ND	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	0.53	ND	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	0.54	ND	0.11	
100-44-7	Benzyl Chloride	ND	1.1	ND	0.21	
541-73-1	1,3-Dichlorobenzene	ND	0.54	ND	0.090	
106-46-7	1,4-Dichlorobenzene	ND	0.54	ND	0.090	
95-50-1	1,2-Dichlorobenzene	ND	0.54	ND	0.090	
5989-27-5	d-Limonene	ND	0.54	ND	0.097	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.53	ND	0.055	
120-82-1	1,2,4-Trichlorobenzene	ND	0.54	ND	0.073	
91-20-3	Naphthalene	ND	0.52	ND	0.099	
87-68-3	Hexachlorobutadiene	ND	0.53	ND	0.050	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 3

Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-MB

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result	MRL	Result	MRL	Data Qualifier
		µg/m ³	µg/m ³	ppbV	ppbV	
115-07-1	Propene	ND	0.53	ND	0.31	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.53	ND	0.11	
74-87-3	Chloromethane	ND	0.53	ND	0.26	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.53	ND	0.076	
75-01-4	Vinyl Chloride	ND	0.54	ND	0.21	
106-99-0	1,3-Butadiene	ND	0.53	ND	0.24	
74-83-9	Bromomethane	ND	0.54	ND	0.14	
75-00-3	Chloroethane	ND	0.54	ND	0.20	
64-17-5	Ethanol	ND	5.2	ND	2.8	
75-05-8	Acetonitrile	ND	0.53	ND	0.32	
107-02-8	Acrolein	ND	1.0	ND	0.44	
67-64-1	Acetone	ND	5.3	ND	2.2	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	0.53	ND	0.094	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	2.1	ND	0.85	
107-13-1	Acrylonitrile	ND	0.53	ND	0.24	
75-35-4	1,1-Dichloroethene	ND	0.54	ND	0.14	
75-09-2	Methylene Chloride	ND	0.53	ND	0.15	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.54	ND	0.17	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.54	ND	0.070	
75-15-0	Carbon Disulfide	ND	1.1	ND	0.35	
156-60-5	trans-1,2-Dichloroethene	ND	0.54	ND	0.14	
75-34-3	1,1-Dichloroethane	ND	0.55	ND	0.14	
1634-04-4	Methyl tert-Butyl Ether	ND	0.54	ND	0.15	
108-05-4	Vinyl Acetate	ND	5.4	ND	1.5	
78-93-3	2-Butanone (MEK)	ND	1.1	ND	0.37	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-MB

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.53	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.1	ND	0.31	
110-54-3	n-Hexane	ND	0.54	ND	0.15	
67-66-3	Chloroform	ND	0.54	ND	0.11	
109-99-9	Tetrahydrofuran (THF)	ND	0.55	ND	0.19	
107-06-2	1,2-Dichloroethane	ND	0.54	ND	0.13	
71-55-6	1,1,1-Trichloroethane	ND	0.54	ND	0.099	
71-43-2	Benzene	ND	0.53	ND	0.17	
56-23-5	Carbon Tetrachloride	ND	0.53	ND	0.084	
110-82-7	Cyclohexane	ND	1.1	ND	0.32	
78-87-5	1,2-Dichloropropane	ND	0.54	ND	0.12	
75-27-4	Bromodichloromethane	ND	0.54	ND	0.081	
79-01-6	Trichloroethene	ND	0.54	ND	0.10	
123-91-1	1,4-Dioxane	ND	0.54	ND	0.15	
80-62-6	Methyl Methacrylate	ND	1.1	ND	0.27	
142-82-5	n-Heptane	ND	0.54	ND	0.13	
10061-01-5	cis-1,3-Dichloropropene	ND	0.52	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.53	ND	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	0.53	ND	0.12	
79-00-5	1,1,2-Trichloroethane	ND	0.54	ND	0.099	
108-88-3	Toluene	ND	0.54	ND	0.14	
591-78-6	2-Hexanone	ND	0.54	ND	0.13	
124-48-1	Dibromochloromethane	ND	0.54	ND	0.063	
106-93-4	1,2-Dibromoethane	ND	0.54	ND	0.070	
123-86-4	n-Butyl Acetate	ND	0.55	ND	0.12	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 3 of 3

Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-MB

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.54	ND	0.12	
127-18-4	Tetrachloroethene	ND	0.52	ND	0.077	
108-90-7	Chlorobenzene	ND	0.54	ND	0.12	
100-41-4	Ethylbenzene	ND	0.54	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.1	ND	0.25	
75-25-2	Bromoform	ND	0.54	ND	0.052	
100-42-5	Styrene	ND	0.53	ND	0.12	
95-47-6	o-Xylene	ND	0.54	ND	0.12	
111-84-2	n-Nonane	ND	0.54	ND	0.10	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.54	ND	0.079	
98-82-8	Cumene	ND	0.54	ND	0.11	
80-56-8	alpha-Pinene	ND	0.54	ND	0.097	
103-65-1	n-Propylbenzene	ND	0.54	ND	0.11	
622-96-8	4-Ethyltoluene	ND	0.54	ND	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	0.53	ND	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	0.54	ND	0.11	
100-44-7	Benzyl Chloride	ND	1.1	ND	0.21	
541-73-1	1,3-Dichlorobenzene	ND	0.54	ND	0.090	
106-46-7	1,4-Dichlorobenzene	ND	0.54	ND	0.090	
95-50-1	1,2-Dichlorobenzene	ND	0.54	ND	0.090	
5989-27-5	d-Limonene	ND	0.54	ND	0.097	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.53	ND	0.055	
120-82-1	1,2,4-Trichlorobenzene	ND	0.54	ND	0.073	
91-20-3	Naphthalene	ND	0.52	ND	0.099	
87-68-3	Hexachlorobutadiene	ND	0.53	ND	0.050	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Page 1 of 1

Client: Geosyntec Consultants
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister(s)
 Test Notes:

Date(s) Collected: 10/9/19
 Date(s) Received: 10/14/19
 Date(s) Analyzed: 11/6 - 11/7/19

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4	Toluene-d8	Bromofluorobenzene	Acceptance Limits	Data Qualifier
		Percent Recovered	Percent Recovered	Percent Recovered		
Method Blank	P191106-MB	97	103	103	70-130	
Method Blank	P191106-MB	96	101	102	70-130	
Lab Control Sample	P191106-LCS	93	107	107	70-130	
Lab Control Sample	P191106-LCS	94	100	107	70-130	
19-HST-01-OA	P1906184-001	97	102	103	70-130	
19-HST-01-OA	P1906184-001DUP	96	104	100	70-130	
19-HST-01-SS	P1906184-002	95	101	103	70-130	
19-HST-02-SS	P1906184-003	95	103	102	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-LCS

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
115-07-1	Propene	210	194	92	53-112	
75-71-8	Dichlorodifluoromethane (CFC 12)	210	203	97	62-103	
74-87-3	Chloromethane	212	160	75	51-121	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	206	202	98	56-111	
75-01-4	Vinyl Chloride	212	220	104	57-117	
106-99-0	1,3-Butadiene	212	219	103	53-134	
74-83-9	Bromomethane	212	207	98	65-110	
75-00-3	Chloroethane	214	208	97	64-111	
64-17-5	Ethanol	1,060	1030	97	57-124	
75-05-8	Acetonitrile	214	208	97	57-126	
107-02-8	Acrolein	206	203	99	62-121	
67-64-1	Acetone	1,070	1080	101	60-113	
75-69-4	Trichlorofluoromethane (CFC 11)	212	207	98	63-104	
67-63-0	2-Propanol (Isopropyl Alcohol)	422	446	106	60-124	
107-13-1	Acrylonitrile	212	223	105	66-125	
75-35-4	1,1-Dichloroethene	214	221	103	68-107	
75-09-2	Methylene Chloride	210	213	101	66-105	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	214	212	99	63-127	
76-13-1	Trichlorotrifluoroethane (CFC 113)	216	229	106	59-109	
75-15-0	Carbon Disulfide	212	198	93	67-109	
156-60-5	trans-1,2-Dichloroethene	214	220	103	70-115	
75-34-3	1,1-Dichloroethane	212	208	98	66-106	
1634-04-4	Methyl tert-Butyl Ether	214	193	90	67-109	
108-05-4	Vinyl Acetate	1,070	1160	108	68-136	
78-93-3	2-Butanone (MEK)	212	225	106	71-116	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-LCS

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
156-59-2	cis-1,2-Dichloroethene	212	213	100	67-110	
141-78-6	Ethyl Acetate	432	497	115	64-127	
110-54-3	n-Hexane	216	237	110	60-115	
67-66-3	Chloroform	214	216	101	66-105	
109-99-9	Tetrahydrofuran (THF)	220	216	98	65-110	
107-06-2	1,2-Dichloroethane	214	210	98	60-110	
71-55-6	1,1,1-Trichloroethane	214	224	105	64-108	
71-43-2	Benzene	210	208	99	67-106	
56-23-5	Carbon Tetrachloride	208	221	106	64-112	
110-82-7	Cyclohexane	422	458	109	67-110	
78-87-5	1,2-Dichloropropane	214	215	100	66-112	
75-27-4	Bromodichloromethane	218	223	102	67-113	
79-01-6	Trichloroethene	216	217	100	66-108	
123-91-1	1,4-Dioxane	216	234	108	70-116	
80-62-6	Methyl Methacrylate	430	469	109	73-118	
142-82-5	n-Heptane	214	222	104	66-110	
10061-01-5	cis-1,3-Dichloropropene	214	243	114	75-120	
108-10-1	4-Methyl-2-pentanone	212	229	108	65-124	
10061-02-6	trans-1,3-Dichloropropene	212	254	120	77-123	
79-00-5	1,1,2-Trichloroethane	214	235	110	68-112	
108-88-3	Toluene	212	229	108	62-111	
591-78-6	2-Hexanone	216	244	113	59-128	
124-48-1	Dibromochloromethane	214	254	119	67-123	
106-93-4	1,2-Dibromoethane	214	242	113	66-122	
123-86-4	n-Butyl Acetate	218	245	112	64-128	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 3 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-LCS

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
111-65-9	n-Octane	216	239	111	65-114	
127-18-4	Tetrachloroethene	208	233	112	55-120	
108-90-7	Chlorobenzene	214	231	108	61-114	
100-41-4	Ethylbenzene	212	242	114	64-113	L
179601-23-1	m,p-Xylenes	426	507	119	64-114	L
75-25-2	Bromoform	214	246	115	65-132	
100-42-5	Styrene	212	261	123	67-124	
95-47-6	o-Xylene	214	247	115	65-114	L
111-84-2	n-Nonane	214	243	114	64-117	
79-34-5	1,1,2,2-Tetrachloroethane	214	252	118	66-119	
98-82-8	Cumene	214	248	116	61-116	
80-56-8	alpha-Pinene	212	249	117	65-120	
103-65-1	n-Propylbenzene	214	254	119	63-117	L
622-96-8	4-Ethyltoluene	210	259	123	63-124	
108-67-8	1,3,5-Trimethylbenzene	212	256	121	60-117	L
95-63-6	1,2,4-Trimethylbenzene	212	274	129	61-122	L
100-44-7	Benzyl Chloride	214	244	114	77-142	
541-73-1	1,3-Dichlorobenzene	214	268	125	61-125	
106-46-7	1,4-Dichlorobenzene	214	262	122	59-123	
95-50-1	1,2-Dichlorobenzene	214	260	121	61-126	
5989-27-5	d-Limonene	212	261	123	66-124	
96-12-8	1,2-Dibromo-3-chloropropane	214	235	110	67-138	
120-82-1	1,2,4-Trichlorobenzene	216	241	112	62-141	
91-20-3	Naphthalene	212	265	125	62-145	
87-68-3	Hexachlorobutadiene	214	273	128	49-131	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly. L = Laboratory control sample recovery outside the specified limits, results may be biased high.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-LCS

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
115-07-1	Propene	210	186	89	53-112	
75-71-8	Dichlorodifluoromethane (CFC 12)	210	195	93	62-103	
74-87-3	Chloromethane	212	151	71	51-121	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	206	192	93	56-111	
75-01-4	Vinyl Chloride	212	214	101	57-117	
106-99-0	1,3-Butadiene	212	248	117	53-134	
74-83-9	Bromomethane	212	199	94	65-110	
75-00-3	Chloroethane	214	202	94	64-111	
64-17-5	Ethanol	1,060	991	93	57-124	
75-05-8	Acetonitrile	214	201	94	57-126	
107-02-8	Acrolein	206	197	96	62-121	
67-64-1	Acetone	1,070	1050	98	60-113	
75-69-4	Trichlorofluoromethane (CFC 11)	212	199	94	63-104	
67-63-0	2-Propanol (Isopropyl Alcohol)	422	433	103	60-124	
107-13-1	Acrylonitrile	212	218	103	66-125	
75-35-4	1,1-Dichloroethene	214	213	100	68-107	
75-09-2	Methylene Chloride	210	206	98	66-105	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	214	206	96	63-127	
76-13-1	Trichlorotrifluoroethane (CFC 113)	216	214	99	59-109	
75-15-0	Carbon Disulfide	212	192	91	67-109	
156-60-5	trans-1,2-Dichloroethene	214	214	100	70-115	
75-34-3	1,1-Dichloroethane	212	203	96	66-106	
1634-04-4	Methyl tert-Butyl Ether	214	195	91	67-109	
108-05-4	Vinyl Acetate	1,070	1120	105	68-136	
78-93-3	2-Butanone (MEK)	212	218	103	71-116	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-LCS

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
156-59-2	cis-1,2-Dichloroethene	212	208	98	67-110	
141-78-6	Ethyl Acetate	432	484	112	64-127	
110-54-3	n-Hexane	216	230	106	60-115	
67-66-3	Chloroform	214	209	98	66-105	
109-99-9	Tetrahydrofuran (THF)	220	211	96	65-110	
107-06-2	1,2-Dichloroethane	214	203	95	60-110	
71-55-6	1,1,1-Trichloroethane	214	216	101	64-108	
71-43-2	Benzene	210	202	96	67-106	
56-23-5	Carbon Tetrachloride	208	212	102	64-112	
110-82-7	Cyclohexane	422	443	105	67-110	
78-87-5	1,2-Dichloropropane	214	210	98	66-112	
75-27-4	Bromodichloromethane	218	216	99	67-113	
79-01-6	Trichloroethene	216	210	97	66-108	
123-91-1	1,4-Dioxane	216	226	105	70-116	
80-62-6	Methyl Methacrylate	430	451	105	73-118	
142-82-5	n-Heptane	214	217	101	66-110	
10061-01-5	cis-1,3-Dichloropropene	214	237	111	75-120	
108-10-1	4-Methyl-2-pentanone	212	224	106	65-124	
10061-02-6	trans-1,3-Dichloropropene	212	237	112	77-123	
79-00-5	1,1,2-Trichloroethane	214	218	102	68-112	
108-88-3	Toluene	212	218	103	62-111	
591-78-6	2-Hexanone	216	232	107	59-128	
124-48-1	Dibromochloromethane	214	238	111	67-123	
106-93-4	1,2-Dibromoethane	214	229	107	66-122	
123-86-4	n-Butyl Acetate	218	233	107	64-128	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
 Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 3 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184
 ALS Sample ID: P191106-LCS

Test Code: EPA TO-15
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 6.0 L Summa Canister
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 11/6/19
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
111-65-9	n-Octane	216	227	105	65-114	
127-18-4	Tetrachloroethene	208	221	106	55-120	
108-90-7	Chlorobenzene	214	219	102	61-114	
100-41-4	Ethylbenzene	212	231	109	64-113	
179601-23-1	m,p-Xylenes	426	483	113	64-114	
75-25-2	Bromoform	214	231	108	65-132	
100-42-5	Styrene	212	248	117	67-124	
95-47-6	o-Xylene	214	236	110	65-114	
111-84-2	n-Nonane	214	233	109	64-117	
79-34-5	1,1,2,2-Tetrachloroethane	214	241	113	66-119	
98-82-8	Cumene	214	236	110	61-116	
80-56-8	alpha-Pinene	212	235	111	65-120	
103-65-1	n-Propylbenzene	214	243	114	63-117	
622-96-8	4-Ethyltoluene	210	247	118	63-124	
108-67-8	1,3,5-Trimethylbenzene	212	243	115	60-117	
95-63-6	1,2,4-Trimethylbenzene	212	262	124	61-122	L
100-44-7	Benzyl Chloride	214	231	108	77-142	
541-73-1	1,3-Dichlorobenzene	214	254	119	61-125	
106-46-7	1,4-Dichlorobenzene	214	247	115	59-123	
95-50-1	1,2-Dichlorobenzene	214	246	115	61-126	
5989-27-5	d-Limonene	212	250	118	66-124	
96-12-8	1,2-Dibromo-3-chloropropane	214	224	105	67-138	
120-82-1	1,2,4-Trichlorobenzene	216	231	107	62-141	
91-20-3	Naphthalene	212	255	120	62-145	
87-68-3	Hexachlorobutadiene	214	259	121	49-131	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly. L = Laboratory control sample recovery outside the specified limits, results may be biased high.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Page 1 of 3

Client: Geosyntec Consultants

Client Sample ID: 19-HST-01-OA

Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184

ALS Sample ID: P1906184-001DUP

Test Code: EPA TO-15

Date Collected: 10/9/19

Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13

Date Received: 10/14/19

Analyst: Wida Ang

Date Analyzed: 11/6/19

Sample Type: 6.0 L Summa Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: AC02104

Initial Pressure (psig): -5.50

Final Pressure (psig): 4.54

Canister Dilution Factor: 2.09

Compound	Sample Result		Duplicate Sample Result		Average µg/m ³	% RPD	RPD Limit	Data Qualifier
	µg/m ³	ppbV	µg/m ³	ppbV				
Propene	ND	ND	ND	ND	-	-	25	
Dichlorodifluoromethane (CFC 12)	2.41	0.488	2.46	0.497	2.435	2	25	
Chloromethane	ND	ND	ND	ND	-	-	25	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	ND	ND	ND	-	-	25	
Vinyl Chloride	ND	ND	ND	ND	-	-	25	
1,3-Butadiene	ND	ND	ND	ND	-	-	25	
Bromomethane	ND	ND	ND	ND	-	-	25	
Chloroethane	ND	ND	ND	ND	-	-	25	
Ethanol	ND	ND	ND	ND	-	-	25	
Acetonitrile	ND	ND	ND	ND	-	-	25	
Acrolein	2.75	1.20	2.79	1.22	2.77	1	25	
Acetone	11.2	4.73	ND	ND	-	-	25	
Trichlorofluoromethane	1.26	0.224	1.27	0.227	1.265	0.8	25	
2-Propanol (Isopropyl Alcohol)	ND	ND	ND	ND	-	-	25	
Acrylonitrile	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethene	ND	ND	ND	ND	-	-	25	
Methylene Chloride	ND	ND	ND	ND	-	-	25	
3-Chloro-1-propene (Allyl Chloride)	ND	ND	ND	ND	-	-	25	
Trichlorotrifluoroethane	ND	ND	ND	ND	-	-	25	
Carbon Disulfide	ND	ND	ND	ND	-	-	25	
trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethane	ND	ND	ND	ND	-	-	25	
Methyl tert-Butyl Ether	ND	ND	ND	ND	-	-	25	
Vinyl Acetate	ND	ND	ND	ND	-	-	25	
2-Butanone (MEK)	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Page 2 of 3

Client: Geosyntec Consultants

Client Sample ID: 19-HST-01-OA

Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184

ALS Sample ID: P1906184-001DUP

Test Code: EPA TO-15

Date Collected: 10/9/19

Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13

Date Received: 10/14/19

Analyst: Wida Ang

Date Analyzed: 11/6/19

Sample Type: 6.0 L Summa Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: AC02104

Initial Pressure (psig): -5.50

Final Pressure (psig): 4.54

Canister Dilution Factor: 2.09

Compound	Sample Result		Duplicate Sample Result		Average µg/m ³	% RPD	RPD Limit	Data Qualifier
	µg/m ³	ppbV	µg/m ³	ppbV				
cis-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
Ethyl Acetate	ND	ND	ND	ND	-	-	25	
n-Hexane	ND	ND	ND	ND	-	-	25	
Chloroform	ND	ND	ND	ND	-	-	25	
Tetrahydrofuran (THF)	ND	ND	ND	ND	-	-	25	
1,2-Dichloroethane	ND	ND	ND	ND	-	-	25	
1,1,1-Trichloroethane	ND	ND	ND	ND	-	-	25	
Benzene	ND	ND	ND	ND	-	-	25	
Carbon Tetrachloride	ND	ND	ND	ND	-	-	25	
Cyclohexane	ND	ND	ND	ND	-	-	25	
1,2-Dichloropropane	ND	ND	ND	ND	-	-	25	
Bromodichloromethane	ND	ND	ND	ND	-	-	25	
Trichloroethene	ND	ND	ND	ND	-	-	25	
1,4-Dioxane	ND	ND	ND	ND	-	-	25	
Methyl Methacrylate	ND	ND	ND	ND	-	-	25	
n-Heptane	ND	ND	ND	ND	-	-	25	
cis-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
4-Methyl-2-pentanone	ND	ND	ND	ND	-	-	25	
trans-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
1,1,2-Trichloroethane	ND	ND	ND	ND	-	-	25	
Toluene	ND	ND	ND	ND	-	-	25	
2-Hexanone	ND	ND	ND	ND	-	-	25	
Dibromochloromethane	ND	ND	ND	ND	-	-	25	
1,2-Dibromoethane	ND	ND	ND	ND	-	-	25	
n-Butyl Acetate	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Page 3 of 3

Client: Geosyntec Consultants

Client Sample ID: 19-HST-01-OA

Client Project ID: Healy Small Tracts / PNG0857

ALS Project ID: P1906184

ALS Sample ID: P1906184-001DUP

Test Code: EPA TO-15

Date Collected: 10/9/19

Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13

Date Received: 10/14/19

Analyst: Wida Ang

Date Analyzed: 11/6/19

Sample Type: 6.0 L Summa Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: AC02104

Initial Pressure (psig): -5.50

Final Pressure (psig): 4.54

Canister Dilution Factor: 2.09

Compound	Sample Result		Duplicate Sample Result		Average µg/m ³	% RPD	RPD Limit	Data Qualifier
	µg/m ³	ppbV	µg/m ³	ppbV				
n-Octane	ND	ND	ND	ND	-	-	25	
Tetrachloroethene	ND	ND	ND	ND	-	-	25	
Chlorobenzene	ND	ND	ND	ND	-	-	25	
Ethylbenzene	ND	ND	ND	ND	-	-	25	
m,p-Xylenes	ND	ND	ND	ND	-	-	25	
Bromoform	ND	ND	ND	ND	-	-	25	
Styrene	ND	ND	ND	ND	-	-	25	
o-Xylene	ND	ND	ND	ND	-	-	25	
n-Nonane	ND	ND	ND	ND	-	-	25	
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	-	-	25	
Cumene	ND	ND	ND	ND	-	-	25	
alpha-Pinene	ND	ND	ND	ND	-	-	25	
n-Propylbenzene	ND	ND	ND	ND	-	-	25	
4-Ethyltoluene	ND	ND	ND	ND	-	-	25	
1,3,5-Trimethylbenzene	ND	ND	ND	ND	-	-	25	
1,2,4-Trimethylbenzene	ND	ND	ND	ND	-	-	25	
Benzyl Chloride	ND	ND	ND	ND	-	-	25	
1,3-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,4-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,2-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
d-Limonene	ND	ND	ND	ND	-	-	25	
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	-	-	25	
1,2,4-Trichlorobenzene	ND	ND	ND	ND	-	-	25	
Naphthalene	ND	ND	ND	ND	-	-	25	
Hexachlorobutadiene	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

Attachment 6

ADEC Checklist

Laboratory Data Review Checklist for Air Samples

Completed by:	Ben Martich		
Title:		Date:	Nov 20, 2019
CS Report Name:	Healy Tract Subdivision VI Report	Report Date:	
Consultant Firm:	Geosyntec Consultants		
Laboratory Name:	ALS	Laboratory Report Number:	P1906184
ADEC File Number:	150.38.001	ADEC Haz ID:	1073

1. Laboratory

a. Did a NELAP certified laboratory receive and perform all of the submitted sample analyses?

Yes No NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP approved?

Yes No NA (Please explain.) Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No NA (Please explain.) Comments:

b. Correct analyses requested?

Yes No NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample condition documented -Samples collected in gas tight, opaque/dark Summa canisters or other ADEC approved container? Canister vacuum/pressure checked, recorded upon receipt and contained no open valves?

Yes No NA (Please explain.) Comments:

b. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum etc.?

Yes No NA (Please explain)

Comments:

c. Data quality or usability affected? (Please explain.)

Yes No NA (Please explain)

Comments:

4. Case Narrative

a. Present and understandable?

Yes No NA (Please explain)

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No NA (Please explain)

Comments:

Spike recoveries for LCS outside of control, which equate to a high bias. Non-target background components in soil gas samples resulting in sample dilution and elevated reporting limits

c. Were all corrective actions documented?

Yes No NA (Please explain)

Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data usable with recommended qualifiers

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No NA (Please explain)

Comments:

b. Samples analyzed within 30 days of collection or within the time required by the method?

Yes No NA (Please explain)

Comments:

c. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?

Yes No NA (Please explain)

Comments:

Not all TO-15 compounds less than default ADEC soil gas targets; however, the compounds historically detected in the excavations (ethylbenzene, toluene, xylenes, dichlorobenzene isomers) had reporting limits less than ADEC default soil gas target levels

d. Data quality or usability affected?

Comments:

Data usability not affected

6. QC Samples

a. Method Blank

i. One method blank reported per analysis and 20 samples?

Yes No NA (Please explain)

Comments:

ii. All method blank results less than PQL?

Yes No NA (Please explain)

Comments:

iii. If above PQL, what samples are affected?

Comments:

N/A

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

Yes No NA (Please explain)

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

Data usability not affected

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. One LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?

Yes No NA (Please explain)

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No NA (Please explain)

Comments:

low recovery for ethylbenzene, xylenes, trimethylbenzenes

iii. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable.

Yes No NA (Please explain)

Comments:

iv. If %R or RPD is outside of acceptable limits, what samples are affected?

Yes No NA (Please explain) Comments:

sub-slab samples

v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain) Comments:

sub-slab sample results for ethylbenzene, xylenes, trimethylbenzenes have potential low bias and are flagged with "JL"

vi. Data quality or usability affected? (Please explain.)

Comments:

Data are useable with understanding of potential low bias

c. Surrogates

i. Are surrogate recoveries reported for field, QC and laboratory samples?

Yes No NA (Please explain) Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No NA (Please explain) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain) Comments:

iv. Data quality or usability affected? (Please explain.)

Comments:

No effect on data quality

d. Field Duplicate

i. One field duplicate submitted per analysis and 10 type (soil gas, indoor air etc.) samples?

Yes No NA (Please explain) Comments:

ii. Submitted blind to lab?

Yes No NA (Please explain) Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs? (Recommended: 25 %)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No NA (Please explain)

Comments:

For compounds detected in both samples, RPD acceptable

iv. Data quality or usability affected? (Please explain.)

Comments:

Accuracy between duplicates is established. Other data quality concerns with duplicate samples (surrogates and leakage) addressed elsewhere.

e. Field Blank (If not used explain why).

Yes No NA (Please explain)

Comments:

No non-dedicated, non-tested sampling apparatus used.

i. All results less than PQL?

Yes No NA (Please explain)

Comments:

ii. If above PQL, what samples are affected?

Comments:

iii. Data quality or usability affected? (Please explain.)

Comments:

7. Other Data Flags/Qualifiers

a. Defined and appropriate?

Yes No NA (Please explain)

Comments:

Reset Form

Attachment 7

Response to Comments

Alaska Department of Environmental Conservation
Comments on the Report for a Vapor Intrusion Assessment for Healy Small Tracts Subdivision

Commenters: (ADEC – Rebekah Reams)

Cmt. No.	Section	Comment/Recommendation	Response
1.	Findings	Please discuss possible sources for the elevated Acrolein concentrations present in outdoor air. The concentrations reported exceed Vapor Intrusion Screening Levels based on EPA indoor air target levels.	Acrolein can be produced from the burning of organics (https://www.atsdr.cdc.gov/ToxProfiles/tp124.pdf). The summer forest fires earlier in 2019 along the Parks Highway are a likely source.
2.	Building Inventory and Indoor Air Sampling Questionnaire	Please complete section five of the Building Inventory, Basement and Construction Characteristics. Although the building does not have a traditional basement the information provided in this section is still applicable and is necessary for understanding the airflow dynamics in the building.	A revised survey form is attached.
3.	ALS Environmental Sample Acceptance Check Form, Question 8	The sample receipt form does not demonstrate that chain of custody seals were present and intact as is required under DEC's October 2019 Field Sampling Guidance, 11.10 Chain-of-Custody and Sample Handling and Shipment. Please provide an affidavit from the lab stating that sample boxes did not appear to be tampered with during shipment and that the summa canisters provided to Geosyntec were the ones received.	A statement from the laboratory is attached.



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LABORATORY REPORT

March 30, 2020

Ben Martich, QEP
Geosyntec Consultants
3003 Minnesota Drive, Ste 302
Anchorage, AK 99503

RE: Healy Small Tracts / PNG0857 – Response to Alaska DEC

Dear Ben:

In response to the notation that the sample receipt form does not demonstrate that custody seals were present and intact, the job folder was checked to verify the information. No custody seals were in place on the box received, however per the sample receiving custodian Denise Posada the box received was taped shut and no anomalies were observed. Per the Sample Receiving SOP SMO-SMPL_REC, Rev. 18.0 Section 6.1 any abnormalities or departures from normal conditions must be recorded on the Sample Acceptance Check form.

The sample media shipped out for the project under Order #103000 matched the Chain of Custody documentation of cans utilized for the collection. All canisters and flow controllers have unique barcodes that are scanned prior to shipping out and are then scanned upon receipt back to the laboratory.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 1:47 pm, Mar 30, 2020

Sue Anderson
Project Manager