Vermont HydroGeo, LLC

September 7, 2014

Mr. Gerold Noyes, P.E. Vermont Agency of Natural Resources Department of Environmental Conservation Waste Management and Prevention Division 1 National Life Drive – Davis 1 Montpelier, VT 05620-37044

Re: Groundwater Monitoring Results – June 2014 Former Kestler's Market Alburgh, Vermont (SMS #20043278)(Site or Property)

Dear Mr. Noyes:

This report presents the results of semi-annual groundwater monitoring conducted by Vermont HydroGeo, LLC (VHG) on June 4, 2014 at the Former Kestler's Market, located at 286 US Route 2, Alburgh, Vermont (Site or Property) (**Figure 1**). The work was recommended in VHG's report dated April 18, 2014, and agreed upon in your letter dated April 22, 2014. The ongoing monitoring program is being implemented to track temporal variations in contaminant concentrations in the overburden aquifer and evaluate the risk posed to the downgradient bedrock drinking water well.

# 1.0 SITE DESCRIPTION AND PHYSICAL SETTING

The former Kestler's Market Site is located on the west side of US Route 2 at the intersection of Center Bay Road (**Figures 1** and **2**). The Site is bound by US Route 2 to the east, a vacant residence to the north, and farm land to the south and west. The Property is currently owned by Mr. Harry Mashtare.

There are two structures on the Property: a main building and a garage. The main building is located immediately west of US Route 2, and is divided with the former market occupying the southern half of the building, and residential space occupying the northern half of the building. The basement of the main building has an earthen floor and stone foundation. A 275-gallon, heating oil aboveground storage tank (AST) is located off the northeast corner of the main building. A single-car garage is located off the northwest corner of the main building. The Property is currently vacant.

Drinking water for the Site was formerly provided by a dug well located within the southern portion of the Property. Neighboring properties are served by drilled bedrock wells. All properties in the vicinity of the Site have individual, on-site septic systems.

2113 Stony Brook Road Northfield, VT 05663 (802) 485-9466 The USGS topographic quadrangle map (**Figure 1**) shows the overall topography of the area gently sloping toward Lake Champlain' Ransoms Bay, located about 1,500 feet east of the Site. In front of the Property, there is a local rise to the edge of the road, which is banked towards the west. South of the Site the topography gently slopes toward an ephemeral stream that flows from west to east. There is a catch basin located in the northeast portion of the Property that collects storm water from this area, and discharges it to a swale within the southeast portion of the Site via a storm drain that parallels US Route 2. The balance of storm water runoff from the Site likely flows toward the ephemeral stream to the south of the Site.

The Property was formerly a local market and gas station. A single fuel dispenser was located in front of the store that was served by an underground storage tank (UST) located off the northeast corner of the main building. According to Mr. Walter Mashtare, the UST and fuel dispenser were removed circa 1984; however, the VT DEC does not have a record of these activities.

### 2.0 BACKGROUND

In October 2004, Phelps Engineering encountered gasoline-contaminated soil in front of the former Kestler's Market while completing exploration soil borings for a new waterline along US Route 2. The water line has not been installed to date.

The Sites Management Section (SMS) subsequently hired the environmental consulting firm Heindel & Noyes (H&N) to implement a limited site investigation to assess the likely source of contamination and possible impacts on sensitive receptors.

H&N acquired site history from the Property owner, conducted a reconnaissance of the area surrounding the zone of contamination, screened the basement of the main building with a photoionization detector (PID), and sampled on-Site and neighboring water supply wells at 1, 4, 5, and 8 Center Bay Road, and 277 US Route 2. No immediate risk to human health and the environment, or contaminated water supplies were found during H&N's limited site assessment.

In 2009, the SMS received a federal EPA grant to investigate and perform limited cleanup at Leaking Underground Storage Tank (LUST) sites where the owner is unable to do this work themselves. The SMS subsequently contracted Applied GeoSolutions, LLC (AGS) under the Site Investigation Contract to complete a supplemental site investigation (SSI) at the Property.

In April 2010, AGS implemented the SSI, the results of which were documented in AGS' report dated June 8, 2010. On-Site soils within the upper two feet below ground surface (bgs) were determined to be impacted by ethylbenzene, total xylenes, and 1,2,4-trimethylbenzene (TMB) at concentrations above the respective residential Regional Screening Levels (RSLs), and total petroleum hydrocarbons (TPH) at concentrations above the Vermont Department of Health's cleanup guidelines of 200 milligrams per Kilogram (mg/Kg) and 1,000 mg/Kg for residential and commercial Sites, respectively (for direct contact). Also, the shallow aquifer was determined to be impacted by select target VOCs at concentrations above the respected Vermont Groundwater Enforcement Standards (VGESs). The SSI reasonably characterized soil and groundwater contamination on-Site; however, the downgradient extent of the contaminant plume was not defined. As such, AGS recommended additional work to

Mr. Gerold Noyes, P.E.

- 3 -

characterize the plume and better evaluate the risk to off-Site sensitive receptors, including the indoor air and drinking water supplies at 1 and 4 Center Bay Road.

In June/July 2010, AGS implemented the SSI, the results of which were documented in AGS' report dated August 25, 2010. The report concluded that a dissolved-phase plume appeared to be confined primarily within the sand unit that is present from about 6 to 9 feet bgs. It was concluded that the underlying clay had possibly limited the risk of the dissolved-phase impact to the bedrock aquifer. Mitigation/removal of the impacted soils was recommended to reduce the long-term impact to groundwater.

In July/August 2011, Stone Environmental, Inc. (Stone) implemented the excavation proposal submitted to the SMS in March 2011 and removed soils from where the former underground storage tank (UST) was located as well as around the area where the suspected pump island was located. During this excavation it was discovered that contaminated soils were generated around the former UST location as well as the pipe fittings from the former pump island. Contaminated soils were removed down to approximately where soils exhibited PID readings of 100 parts per million volume/volume (ppm v/v). Monitoring wells in the area of excavation were replaced down to the clay layer at approximately 8 feet bgs. A groundwater sampling round was also completed in August; results indicated that groundwater contamination appeared to be primarily onSite, with concentrations lower than previously observed.

Beginning in June 2012, a semi-annual groundwater monitoring program was implemented for the Site to track temporal variations in contaminant concentrations in the overburden aquifer and evaluate the risk posed to the downgradient bedrock drinking water well. Due to increasing concentration trends at cluster monitoring wells MW-10S and MW-10D, the monitoring frequency at off-Site monitoring wells was subsequently increased to quarterly to more closely track plume migration toward downgradient bedrock water supplies. Following the December 2013 monitoring event, the monitoring frequency was again reduced to semi-annually based on apparent decreasing contaminant concentration trends.

# 3.0 WORK COMPLETED

# 3.1 Groundwater Monitoring

On June 4, 2014, VHG collected a synoptic round of liquid levels from all Site monitoring wells (except MW-6 and MW-7) using an electronic interface probe. VHG then collected groundwater samples from monitoring wells MW-3R, MW-4R, MW-5, MW-8, MW-9, MW-10S, MW-10D, MW-11, and MW-12. Wells were purged and sampled in general accordance with United States Environmental Protection Agency (US EPA) Region 1 low-flow monitoring protocol. Monitoring wells were purged and sampled using a peristaltic pump, with dedicated Teflon-lined polyethylene and silicone tubing. Physical/chemical field parameters (pH, Specific Conductance, Dissolved Oxygen, Temperature, and Oxidation-Reduction Potential) were measured using a YSI multi-parameter meter and flow-through cell system.

VHG acquired a trip blank and a duplicate sample from MW-8 for quality assurance / quality control (QA/QC) purposes.

VHG also collected groundwater samples from the drilled bedrock supply well and shallow dug well located at the residence / bed & breakfast at 4 Center Bay Road. The bedrock supply well sample was collected from an interior spigot located upstream of a water treatment system. The sample from the shallow dug well was collected with a dedicated bailer and drop line.

Following collection, all samples were properly preserved and placed in an ice-filled cooler for transport under chain-of-custody to Endyne, Inc., located in Williston, Vermont. All samples were analyzed for target petroleum VOCs via EPA Methods 8021B. Target VOCs include methyl tert-butyl ether (MTBE), benzene, toluene, ethylbenzene, total xylenes, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.

# 4.0 RESULTS

### 4.1 Hydrogeologic Observations

On June 4, 2014, depth-to-water measurements in the overburden monitoring wells ranged from 1.48 feet below the top of casing (BTOC) in monitoring well MW-2 to 4.52 feet BTOC in monitoring well MW-10D. Calculated relative groundwater elevations ranged from 93.25 feet at monitoring well MW-10D to 96.04 feet at monitoring well MW-1R (**Table 4-1**). Groundwater elevations were generally between about 0.5 and one foot higher than those observed during the previous groundwater sampling round in December 2013, and the highest since the groundwater monitoring program commenced.

Well I.D.	Top-of-Casing Elevation (feet)	Depth-to-Water (feet BTOC)	Groundwater Elevation (feet)
MW-1R	97.77	1.73	96.04
MW-2	97.50	1.48	96.02
MW-3R	97.69	1.70	95.99
MW-4R	97.22	1.59	95.63
MW-5	97.02	1.61	95.41
MW-8	99.27	4.15	95.12
MW-9	98.66	3.66	95.00
MW-10S	97.85	3.38	94.47
MW-10D	97.77	4.52	93.25
MW-11	98.79	4.12	94.67
MW-12	97.28	3.51	93.77

Note: BTOC= Below Top of Casing

Apparent shallow groundwater flow in the overburden aquifer was generally to the east / southeast, toward Lake Champlain, generally consistent with previous monitoring events (**Figure 3**). Based on hydraulic data from cluster monitoring wells MW-10S and MW-10D, there was a relatively strong downward vertical flow component within that portion of the overburden aquifer.

### 4.2 Water Quality

Analytical results for VOCs from the June 4, 2014 sampling round are included in **Table 4-2** and on **Figure 4**. Time-series graphs for select wells are provided in **Attachment A**. The laboratory report for the June 2013 event is included in **Attachment B**. Low-flow sampling forms are provided in **Attachment C**.

Sample Location	MTBE	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Total TMBs	Naph- thalene	Total Target VOCs
MW-1	ND<2.0	ND<1.0	ND<1.0	1.2	ND<2.0	2.2	ND<2.0	3.4
MW-3	ND<2.0	ND<1.0	ND<1.0	4.1	ND<2.0	10.8	ND<2.0	14.9
MW-4	ND<10.0	ND<5.0	ND<5.0	ND<5.0	ND<10.0	306.3	ND<10.0	306
MW-5	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND<2.0	ND
MW-8	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	1.4	ND<2.0	1.4
MW-9	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND<2.0	ND
MW-10S	ND<2.0	ND<1.0	1.5	2.5	3.3	3.5	ND<2.0	10.8
MW-10D	ND<2.0	ND<1.0	1.4	69.0	6.8	26.6	6.5	110.3
MW-11	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	3.0	ND<2.0	3.0
MW-12	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND<2.0	ND
Dug Well	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND<2.0	ND
4 Center Bay	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND<2.0	ND
			Ģ	QA/QC				
ТВ	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND<2.0	ND
MW-8	ND<2.0	ND<1.0	ND<2.0	ND<1.0	ND<1.0	1.4	ND<2.0	1.4
DUP	ND<2.0	ND<1.0	ND<2.0	ND<1.0	ND<1.0	1.4	ND<2.0	1.4
RPD						0.0		0.0
VGES	40	5	1,000	700	10,000	350	20	

Table 4-2. Groundwater VOC Analytical Results: June 4, 2014.

Notes: All concentrations reported in µg/L. Shaded values exceed the VGES.

In the overburden monitoring wells, detected total target VOC concentrations ranged from 1.4 micrograms per Liter ( $\mu$ g/L) in off-Site monitoring well MW-8 to 306  $\mu$ g/L in on-Site monitoring well MW-4. No target VOCs were detected in samples collected from monitoring wells MW-5 and MW-9, or the bedrock supply well and dug well at 4 Center Bay Road.

For the first time since the monitoring program commenced, no target VOCs were detected at concentrations above the respective VGES in any of the groundwater samples.

The duplicate sample collected from MW-8 was within acceptable levels (less than 30%). No VOCs were detected in the trip blank.

### 5.0 UPDATED CONCEPTUAL SITE MODEL

VHG has developed the following updated conceptual site model (CSM) based on the contaminant distribution and hydrogeologic data available for the Site. A CSM is a set of working hypotheses which describe key aspects of the problem(s) at a site. As with any hypothesis, the CSM is not conclusive and

may require testing to arrive at desired levels of certainty. The CSM includes discussion of Site geology/hydrogeology, how contaminants of concern were released at the Site, their transport pathways and fate mechanisms, as well as exposure routes for both ecological and human receptors based on current Site use. Two hydrogeologic cross sections (A-A' and B-B') are provided to help visualize the CSM (**Figure 5**).

### <u>Geology / Hydrogeology</u>

Overburden materials within the investigated area generally consist of a couple feet of fine to coarse sand with varying amount of silt and organic matter, overlying fine sands to between six (6) to nine (9) feet bgs. The fine sand unit is a maximum of about 5.5 feet thick in the vicinity of on-Site monitoring well MW-3, and decreases to about 2-3 feet in thickness to the southeast of the Site, at off-Site monitoring wells MW-11 and MW-12. The sand is generally underlain by a thin layer (<1 foot thick) of fine sand and silty clay (with shell fragments), which overlies clay. At monitoring wells MW-10S and MW-10D, the clay is underlain by a thin layer (about 0.5-feet) of silty fine sand (**Figure 5**).

Bedrock was not encountered in on-Site borings to the maximum exploratory depth of 15 feet bgs, but appears to have been encountered at off-Site soil boring SB-16 (MW-10D) at a depth of about 10.3 feet bgs. According to the drinking water well logs for bedrock wells believed to be located at 1 and 4 Center Bay Road, which were obtained from the Vermont Agency of Natural Resources GIS website, bedrock was encountered at these locations between nine and 15 feet bgs. Bedrock beneath the Site is mapped as the Stony Point Formation, which is calcareous black shale that grades into argillaceous limestone. Fluid flow in the bedrock aquifer would occur through interconnected fracture networks.

The depth to water table within the overburden aquifer on-Site fluctuates seasonally between about 1.5 to 5.5 feet bgs; the depth to water within the off-Site water-table monitoring wells fluctuates between about 3.5 to 7 feet bgs. The water table is generally present within the fine sand unit. Shallow groundwater flow within the overburden aquifer is generally to the east / southeast, toward Lake Champlain. A relatively strong downward vertical groundwater gradient is typically observed between cluster wells MW-10D and MW-10D.

### **Contaminant Distribution / Fate and Transport**

Gasoline was released at the Site from a former UST system and its appurtenances. The release(s) occurred over 30 years ago (the time the UST is reported to have been removed); however, the precise timing and volume of the release(s) is unknown. Given the contaminant distribution observed during the SSI and during the soil excavation, gasoline was likely released to the subsurface in the suspected vicinity of former gasoline UST and at the location of the former fuel dispenser.

In general, once released to the subsurface, petroleum hydrocarbons (e.g. gasoline) can partition into four phases: 1) vapor (i.e. soil gas), 2) aqueous (dissolved in pore water or groundwater), 3) sorbed (to soil minerals and organic matter), and 4) remain as light non-aqueous phase liquid (LNAPL), either residual or mobile. The phase partitioning and migration of petroleum hydrocarbons, once released to the subsurface, depends on several factors, including: the volume of the release, the physical and chemical properties of the individual hydrocarbon compounds, and the physical and chemical properties of the media that the hydrocarbons were released into. At the former Kestler's Market Site, the gasoline release initially impacted soil and groundwater at concentrations above applicable

standards for select compounds, and hydrocarbons were known to be present in the vapor, sorbed, and dissolved phases. No measureable free-phase NAPL was detected in any of the Site monitoring wells; however, heavy sheening was observed in several soil borings, suggesting residual LNAPL was also present.

Pre-remedial investigations determined that the dissolved VOC plume was relatively mature (e.g. depleted with respect to benzene) and extended in the direction of shallow groundwater flow to the southeast at least 120 feet downgradient of the former UST area, beneath US. Route 2 and onto the property at 4 Center Bay Road. Of the target VOCs, only total TMBs exceeded its VGES on the eastern side of US Route 2 (at MW-11). The lateral terminus of the dissolved-phase plume was not completely defined; however, it appeared that total TMB concentrations in excess of the VGES did not likely extend far beyond off-Site monitoring well MW-11. It was concluded that the dissolved VOC plume was primarily confined to the overburden aquifer, and did not appear to present a significant future risk to the existing bedrock drinking water wells in the area. Removal of impacted shallow on-Site soils was recommended to mitigate exposure pathways for human receptors and to reduce the long-term impact to groundwater.

In July 2011, about 82 tons of grossly contaminated soils containing an estimated 29 pounds of gasoline mass were excavated from beneath the eastern portion of the Site; these soils were disposed off-Site. This corrective action appears to have removed all shallow soils within two feet of ground surface with contaminant concentrations in excess of the Vermont Soil Screening Levels (VSSLs), thereby significantly reducing the risk of exposure. However, petroleum-impacted soils with concentrations above select VSSLs remained at greater depths within the source area at the Site (3.5 to five feet bgs); any future Site redevelopment or intrusive activities at these depths within the eastern portion of the Site could possibly result in exposure.

Post-excavation groundwater monitoring results indicate that dissolved VOC concentrations have decreased significantly in source-area monitoring wells MW-1R, MW-3R, and MW-4R since the corrective action (**Graph 5-1**, and **Graphs 1**, **2**, and **3 - Attachment A**), and no target VOCs were detected at concentrations above the VGESs in any of these monitoring wells during the last two monitoring events.



Graph 5-1. Total Target VOC Concentrations Over Time in Source-Area Monitoring Wells.

During the post-remedial monitoring event in June 2012, target VOCs were detected for the first time in off-Site monitoring wells MW-8, MW-9, MW-10S, MW-10D, and MW-12, with VGES exceedances for several compounds. The benzene concentrations present in MW-8 and MW-9 during this event were substantially higher than those detected within the on-Site source area prior to corrective action. VOC concentrations at MW-9 have since decreased significantly during the six subsequent monitoring events, and were non-detect during the most recent event in June 2014 (**Graph 5-2**, and **Graph 5** - **Attachment A**). VOC concentrations at MW-8 have also decreased significantly since June 2012, and only a relatively low concentration of 1,2,4-TMB was detected in this well during the most recent event (**Graph 5-2**, and **Graph 4** - **Attachment A**).

At downgradient, deeply-screened monitoring well MW-10D, VOC concentrations were exhibiting an increasing trend through April 2013 with VGES exceedances for total TMBs and naphthalene, suggesting that the VOC plume was advancing in this portion of the deep overburden aquifer (**Graph 5-2**, and **Graph 7**, **Attachment A**). However, VOC concentrations decreased considerably during the subsequent monitoring events, with no VGES exceedances.

VOC concentrations in the shallow cluster well MW-10S previously increased to levels comparable to those detected in source-area monitoring wells MW-1 and MW-3 prior to active source-area remediation, but decreased an order of magnitude during the August 2013 monitoring event, and no compounds exceeded the VGES during the last two monitoring events (**Graph 5-2**, and **Graph 8**, **Attachment A**). In these cluster wells, the presence of higher molecular weight and more recalcitrant compounds such as naphthalene and total TMBs and the absence of benzene, which is more readily biodegraded, is consistent with a weathered gasoline plume emanating from the former Kestler's Market Property.



Graph 5-2. Total Target VOC Concentrations in OffSite Downgradient Monitoring Wells.

Based on data from cluster wells MW-10 S & D, the leading edge of the plume had migrated at least 120 feet downgradient of the former UST area. The unused, dug water supply well at 4 Center Bay Road may be a suitable downgradient sentinel well as it appears to be located hydraulically downgradient of the plume and upgradient of the drilled bedrock supply well, and extends vertically through the deep overburden aquifer. No VOCs were detected in this well during the April 2013, August 2013, or June 2014 monitoring events, suggesting the downgradient extent of the plume is reasonably delineated at this time (**Figure 4**). Water-table monitoring well MW-12, which located between monitoring wells MW-10 S & D and the dug well, may not be suitable for defining the downgradient extent of the plume because: A) it is possible that the flow path for the core of the plume is slightly to the south of MW-12; or B) the plume may be "diving" beneath the shallow well due to the downward vertical flow component in the shallow aquifer.

At the onset of the investigation, monitoring data suggested that the dissolved-phase plume was confined primarily within the fine sand unit, and that the underlying clay layer was limiting the risk of dissolved-phase impact to the bedrock aquifer. However, given the strong downward vertical flow component within the overburden aquifer at cluster wells MW-10S and MW-10D (which is screened directly on top of bedrock) and the increasing trend in concentrations at MW-10D (prior to the August 2013 monitoring event), it appeared that the plume had penetrated the silty-clay layer and continued to migrate, thereby presenting a risk to the downgradient bedrock water supply well located about 100 feet to the east of the well cluster. The recent decrease in VOC concentrations in MW-10S and MW-10D suggest the plume is now shrinking.

The dissolved VOC plume in the overburden aquifer could enter the bedrock aquifer through dipping fractures that intercept the top of bedrock surface, if present. Fluid flow through fractured bedrock is more complex and less understood relative to flow in porous unconsolidated media. Fluid flow in the bedrock aquifer occurs through interconnected fracture networks; the connectedness of possible bedrock fracture sets in the shallow bedrock and those that intercept water supply wells in the area are

currently unknown. As a plume migrates through a bedrock aquifer, the VOCs can diffuse into the aquifer matrix. Once matrix diffusion has occurred, the process of back diffusion can act as a long-term source for contaminant impact to the bedrock aquifer after the overburden plume has ceased entering the fracture network.

### 6.0 CONCLUSIONS AND RECOMMENDATIONS

Given the results of the most recent groundwater sampling event and previous Site work, VHG has drawn the following conclusions:

- During the June 2014 monitoring event, no target VOCs were detected at concentrations above the respective VGES in any of the groundwater samples for the first time since the monitoring program was implemented. However, the water table was at a historic high elevation during this event, and contaminant concentrations could have been biased low due to recharge of "clean" groundwater to the shallow overburden aquifer. Additional monitoring is needed to determine whether water quality continues to achieve enforcement standards under varying water table conditions.
- Total TMBs and naphthalene concentrations in cluster monitoring wells MW-10S and MW-10D, located about 120 feet downgradient of the former UST area, have decreased significantly during the last three monitoring events, thereby reversing the increasing trends observed in the wells previously. These data suggest that the total TMBs and naphthalene plumes are now shrinking.
- The existing well network appears sufficient for monitoring the status of the groundwater plume.

Based on the above conclusions, VHG recommends the following:

Groundwater monitoring should continue at the Site on a semi-annual basis to track contaminant concentrations in the overburden aquifer under varying water table conditions and evaluate the risk posed to the downgradient drilled bedrock drinking water well. The next event should occur in fall 2014, and should include monitoring wells MW-1R, MW-3R, MW-4R, MW-5, MW-8, MW-9, MW-10S, MW-10D, MW-11, and MW-12, in addition to the drilled and shallow dug water supply wells at 4 Center Bay Road. Monitoring wells MW-2, MW-6, and MW-7 should continue to be eliminated from the monitoring program for the time being, however, a water level should be recorded from MW-2 to assist in evaluating groundwater flow direction. If contaminant concentrations remain below the VGES for three consecutive events, the Site should be eligible for a Site Management Activity Completed (SMAC) designation, once the Site monitoring wells are properly abandoned.

Yours truly, Vermont HydroGeo, LLC

Eric J. Swiech, P.G. Principal Hydrogeologist

Attachments

cc: Mr. Harry Mashtare

# **FIGURES**



Name: ROUSES POINT Date: 3/13/2010 Scale: 1 inch equals 2000 feet Location: 044° 56' 50.72" N $\,$  073° 16' 12.58" W $\,$  NAD 27 Caption: Figure 1. Site Location Map





9/7/14





DRAWN BY: EJS







FORMER KESTLER'S MARKET



# NOTES:

#### ALL LOCATIONS ARE APPROXIMATE.

ALL ELEVATIONS ARE RELATIVE TO AN ARBITRARY SITE DATUM OF 100.00 FEET.

THIS FIGURE IS INTENDED SOLELY FOR THE DEVELOPMENT OF A CONCEPTUAL MODEL OF CONTAMINANT DISTRIBUTION AND SITE GEOLOGY/HYDROGEOLOGY AND IS SUBJECT TO REVISION AS ADDITIONAL DATA BECOME AVAILABLE.

> SCALE HORIZONTAL: 1"=10' VERTICAL: 1"=4' V.E. = 2.5X





TITLE:

PROJECT:

DATE:





# ATTACHMENT A

# Graph 1. Monitoring Well MW-1 VOC Concentrations in Groundwater Over Time

Former Kestler's Market Alburgh Center, Vermont



Date	Total VOCs	MTBE	Benzene	Toluene	Ethyl benzene	Xylenes	Total TMBs	Naph- thalene	Ground- water Elevation
4/15/2010	18,639	41	17	1,140	2,290	12,060	2,776	356	95.30
6/30/2010	17,170	ND<10	ND<10	660	1,700	12,700	1,810	300	94.28
8/9/2011	8,621	51	22	305	1,030	4,950	2,109	205	90.89
6/7/2012	669	ND<2.0	1.8	7.2	100	320	226	14	94.30
11/18/2012	1.8	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	1.8	ND<2.0	93.72
4/30/2013	104.1	ND<2.0	ND<1.0	ND<1.0	14.0	64.1	26.0	ND<2.0	95.15
12/6/2013	ND	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND<2.0	95.05
6/4/2014	3.4	ND<2.0	ND<1.0	ND<1.0	1.2	ND<2.0	2.2	ND<2.0	96.04
VGES		40	5	1,000	700	10,000	350.0	20	

Notes:

Results reported in micrograms per liter ( $\mu g/L$ ) ND- None detected at indicated detection limit.

VGES - Vermont Groundwater Enforcement Standards

MTBE - Methyl tert-butyl ether

# Graph 2. Monitoring Well MW-3 VOC Concentrations in Groundwater Over Time

Former Kestler's Market Alburgh Center, Vermont



Date	Total VOCs	MTBE	Benzene	Toluene	Ethyl benzene	Xylenes	Total TMBs	Naph- thalene	Ground- water Elevation
4/15/2010	11,963	ND<1.0	59	587	1,380	7,330	2,267	340	95.16
6/30/2010	8,973	ND<10	33	250	1,000	6,100	1,280	310	94.18
8/9/2011	1,576	17	ND<5.0	18	288	807	430	33	91.05
6/7/2012	581	ND<2.0	1.3	2.7	76.0	283	167	51.0	93.81
11/18/2012	1.4	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	1.4	ND<2.0	93.83
4/30/2013	20.9	ND<2.0	ND<1.0	ND<1.0	3.5	9.4	8.0	ND<2.0	95.14
12/6/2013	4.7	ND<2.0	ND<1.0	ND<1.0	1.4	ND<2.0	3.3	ND<2.0	95.03
6/4/2014	14.9	ND<2.0	ND<1.0	ND<1.0	4.1	ND<2.0	10.8	ND<2.0	95.99
VGES		40	5	1,000	700	10,000	350.0	20	

Notes:

Results reported in micrograms per liter ( $\mu$ g/L) ND- None detected at indicated detection limit.

VGES - Vermont Groundwater Enforcement Standards

MTBE - Methyl tert-butyl ether

# Graph 3. Monitoring Well MW-4 VOC Concentrations in Groundwater Over Time

Former Kestler's Market Alburgh Center, Vermont



Date	Total VOCs	MTBE	Benzene	Toluene	Ethyl benzene	Xylenes	Total TMBs	Naph- thalene	Ground- water Elevation
4/15/2010	4,134	ND<1.0	2.7	22	54	1,328	2,507	220	95.03
6/30/2010	3,061	ND<10	ND<10	ND<10	31	890	1,910	230	94.21
8/9/2011	371	ND<4.0	ND<2.0	2.8	4.6	59.9	299	5.0	91.93
6/7/2012	642	ND<2.0	ND<2.0	ND<2.0	4.4	34.5	586	17.0	94.45
11/18/2012	1,832	ND<20.0	ND<10.0	ND<2.0	14.3	65.6	1,752	ND<20.0	94.67
4/30/2013	396	ND<10.0	ND<5.0	ND<5.0	ND<5.0	11.0	385	ND<10.0	94.78
12/6/2013	175	ND<2.0	ND<1.0	ND<1.0	1.3	5.1	168.6	ND<2.0	95.17
6/4/2014	306	ND<10.0	ND<5.0	ND<5.0	ND<5.0	ND<10.0	306.3	ND<10.0	95.63
VGES		40	5	1,000	700	10,000	350.0	20	

Notes:

Results reported in micrograms per liter ( $\mu g/L$ ) ND- None detected at indicated detection limit.

VGES - Vermont Groundwater Enforcement Standards

MTBE - Methyl tert-butyl ether

### Graph 4. Monitoring Well MW-8 VOC Concentrations in Groundwater Over Time

Former Kestler's Market Alburgh Center, Vermont



Date	Total VOCs	MTBE	Benzene	Toluene	Ethyl benzene	Xylenes	Total TMBs	Naph- thalene	Ground- water Elevation
6/30/2010	ND< 2.0	ND<1.0	ND< 1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND< 2.0	93.65
8/9/2011	ND< 2.0	ND<2.0	ND< 1.0	ND<1.0	ND<1.0	ND<2.0	ND<2.0	ND< 2.0	92.29
6/7/2012	4,578	ND<2.0	540	35.0	1,000	2,326	437	240	94.23
11/18/2012	1,847	12.5	307	41.2	728	391	256	111	94.32
2/15/2013	41	3.1	25.4	1.2	2.1	4.0	5.0	ND< 2.0	93.62
4/30/2013	105	9.6	22.8	3.3	41.9	9.1	18.2	ND< 2.0	94.43
08/30/13	121	2.7	13.6	2.1	38.7	42.8	16.7	4.5	92.31
12/06/13	2,695	ND<20.0	167	35.8	632	1,300	465	95.4	94.22
06/04/14	1.4	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	1.4	ND<2.0	95.12
VGES		40	5	1,000	700	10,000	350.0	20	

Notes:

Results reported in micrograms per liter ( $\mu$ g/L)

ND- None detected at indicated detection limit.

VGES - Vermont Groundwater Enforcement Standards

MTBE - Methyl tert-butyl ether

### Graph 5. Monitoring Well MW-9 VOC Concentrations in Groundwater Over Time

Former Kestler's Market Alburgh Center, Vermont



Date	Total VOCs	MTBE	Benzene	Toluene	Ethyl benzene	Xylenes	Total TMBs	Naph- thalene	Ground- water Elevation
6/30/2010	ND< 2.0	ND<1.0	ND< 1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND< 2.0	93.53
8/9/2011	ND< 2.0	ND<2.0	ND< 1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND< 2.0	92.08
6/7/2012	4,492	ND<2.0	870	24.0	710	1,708	910	270	94.07
11/18/2012	74	21.8	37.4	6.4	2.0	3.4	3.2	ND< 2.0	94.14
2/15/2013	144	9.5	114	4.1	1.8	4.1	2.9	7.6	93.44
4/30/2013	76	6.1	60	3.3	2.2	4.5	ND<1.0	ND< 2.0	94.26
08/30/13	9.7	ND<2.0	2.2	ND<1.0	1.9	4.1	1.5	ND< 2.0	92.06
12/06/13	19.3	14.6	ND< 1.0	1.6	2.1	ND<2.0	ND<1.0	ND< 2.0	94.06
06/04/14	ND< 2.0	ND<2.0	ND< 1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND< 2.0	95.00
VGES		40	5	1,000	700	10,000	350.0	20	

Notes:

Results reported in micrograms per liter (µg/L)

ND- None detected at indicated detection limit.

VGES - Vermont Groundwater Enforcement Standards

MTBE - Methyl tert-butyl ether

### Graph 6. Monitoring Well MW-10S VOC Concentrations in Groundwater Over Time

Former Kestler's Market Alburgh Center, Vermont



Date	Total VOCs	MTBE	Benzene	Toluene	Ethyl benzene	Xylenes	Total TMBs	Naph- thalene	Ground- water Elevation
6/30/2010	ND< 2.0	ND<1.0	ND< 1.0	ND<1.0	ND<1.0	ND<2.0	ND< 1.0	ND< 2.0	93.13
6/7/2012	1,276	ND<2.0	5	3.9	190	317	701	59	93.50
11/18/2012	7,678	ND<2.0	ND< 10.0	ND<10.0	822	3,930	2,611	315	93.70
2/15/2013	15,365	ND<200	ND< 100	ND<100	1,900	8,800	4,274	391	92.97
4/30/2013	1,713	ND<200	ND< 100	ND<100	200	535	827	151	93.75
12/6/2013	4.6	ND<2.0	ND< 1.0	ND<1.0	1.4	ND<2.0	3.2	ND< 2.0	93.77
6/4/2014	10.8	ND<2.0	ND< 1.0	1.5	2.5	ND<2.0	3.3	3.5	94.47
VGES		40	5	1,000	700	10,000	350	20	

Notes:

Results reported in micrograms per liter ( $\mu$ g/L)

ND- None detected at indicated detection limit.

VGES - Vermont Groundwater Enforcement Standards

MTBE - Methyl tert-butyl ether

### Graph 7. Monitoring Well MW-10D VOC Concentrations in Groundwater Over Time

Former Kestler's Market Alburgh Center, Vermont



Date	Total VOCs	MTBE	Benzene	Toluene	Ethyl benzene	Xylenes	Total TMBs	Naph- thalene	Ground- water Elevation
6/30/2010	ND< 2.0	ND<1.0	ND< 1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND< 2.0	91.87
6/7/2012	103	ND<2.0	1.8	0.7	48	16	34	2.8	92.47
11/18/2012	1,004	ND<20.0	ND< 10.0	ND<10.0	182	434	338	49.8	92.58
4/30/2013	2,971	ND<20.0	ND< 10.0	ND<10.0	513	1,420	925	113	92.29
8/30/2013	94	ND<2.0	ND< 1.0	ND<1.0	12	39	35	8.3	88.86
12/6/2013	18	ND<2.0	ND< 1.0	ND<1.0	1.6	3.4	13.2	ND< 2.0	92.41
6/4/2014	110	ND<2.0	ND< 1.0	1.4	69.0	6.8	26.6	6.5	93.25
VGES		40	5	1,000	700	10,000	350.0	20	

Notes:

Results reported in micrograms per liter ( $\mu$ g/L) ND- None detected at indicated detection limit.

VGES - Vermont Groundwater Enforcement Standards

MTBE - Methyl tert-butyl ether

# Graph 8. Monitoring Well MW-11 VOC Concentrations in Groundwater Over Time

Former Kestler's Market Alburgh Center, Vermont



Date	Total VOCs	MTBE	Benzene	Toluene	Ethyl benzene	Xylenes	Total TMBs	Naph- thalene	Ground- water Elevation
6/30/2010	2,274	ND<1.0	1.4	2.4	300	1,338	622	10	93.45
8/9/2011	27	ND<2.0	ND<1.0	ND<1.0	8.0	7.4	11	ND<2.0	91.89
6/7/2012	ND	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<6.0	ND<1.0	ND<2.0	93.80
11/18/2012	ND	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND<2.0	94.00
4/30/2013	1,046	ND<2.0	ND<1.0	1.5	262	541	229	11.7	94.04
12/6/2013	450	ND<2.0	ND<1.0	ND<1.0	105	254	87	3.7	93.97
6/4/2014	3.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	3.0	ND<2.0	94.67
VGES		40	5	1,000	700	10,000	350.0	20	

Notes:

Results reported in micrograms per liter ( $\mu$ g/L)

ND- None detected at indicated detection limit.

VGES - Vermont Groundwater Enforcement Standards

MTBE - Methyl tert-butyl ether

# ATTACHMENT B



Laboratory Report

100905

Vermont HydroGeo

2113 Stony Brook Rd Northfield, VT 05663

Atten: Eric Swiech

PROJECT: Kestler's WORK ORDER: **1406-10655** DATE RECEIVED: June 06, 2014 DATE REPORTED: June 18, 2014 SAMPLER: Eric

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and "N" the Plattsburgh, NY lab under certification ELAP 11892. "Sub" indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. "A" indicates the referenced laboratory is NELAC accredited for the parameter reported. "N" indicates the laboratory is not accredited. "U" indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an "A" meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D. Laboratory Director



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### CLIENT: Vermont HydroGeo PROJECT: Kestler's REPORT DATE: 6/18/2014

DATE RECEIVED:

	1406-10655	
D:	06/06/2014	

Page 2 of 4

				TEST	METHOD:	EPA 80	)21B					
001	Site: MW-11				Date Sa	ampled:	6/4/14	12:35	Analysis Date:	6/17/	/14 W	/ SJM
Parameter	<u>.</u>	Result	Unit	Nelac	Qual	Paramet	er		Result	<u>Unit</u>	Nelac	Qual
Methyl-t-bu	tyl ether (MTBE)	< 2.0	ug/L	Ν		Benzene			< 1.0	ug/L	Ν	
Toluene		< 1.0	ug/L	Ν		Ethylbenze	ene		< 1.0	ug/L	Ν	
Xylenes, To	otal	< 2.0	ug/L	Ν		1,3,5-Trim	ethylbenzene		< 1.0	ug/L	Ν	
1,2,4-Trime	ethylbenzene	3.0	ug/L	Ν		Naphthale	ne		< 2.0	ug/L	Ν	
Surr. 1 (Bro	omobenzene)	101	%	Ν		Unidentifi	ed Peaks		3		Ν	
				TEST	METHOD:	EPA 80	021B					
002	Site: MW-10S				Date Sa	ampled:	6/4/14	12:40	Analysis Date:	6/16/	/14 W	/ SJM
Parameter		Result	Unit	Nelac	Qual	Paramet	er		Result	Unit	Nelac	Qual
Methyl-t-bu	ityl ether (MTBE)	< 2.0	ug/L	Ν		Benzene			< 1.0	ug/L	Ν	
Toluene		1.5	ug/L	Ν		Ethylbenze	ene		2.5	ug/L	Ν	
Xylenes, To	otal	3.3	ug/L	Ν		1,3,5-Trim	ethylbenzene		< 1.0	ug/L	Ν	
1,2,4-Trime	ethylbenzene	3.5	ug/L	Ν		Naphthale	ne		< 2.0	ug/L	Ν	
Surr. 1 (Bro	omobenzene)	106	%	Ν		Unidentifi	ed Peaks		>10		Ν	
				TEST	METHOD:	EPA 80	)21B					
003	Site: MW-10D				Date Sa	ampled:	6/4/14	12:45	Analysis Date:	6/16/	′14 W	/ SJM
Parameter		Result	<u>Unit</u>	Nelac	<u>Qual</u>	Paramet	er		Result	<u>Unit</u>	Nelac	Qual
Methyl-t-bu	tyl ether (MTBE)	< 2.0	ug/L	Ν		Benzene			1.0	ug/L	Ν	
Toluene		1.4	ug/L	Ν		Ethylbenze	ene		69.0	ug/L	Ν	
Xylenes, To	otal	6.8	ug/L	Ν		1,3,5-Trim	ethylbenzene		< 1.0	ug/L	Ν	
1,2,4-Trime	ethylbenzene	26.6	ug/L	Ν		Naphthale	ne		6.5	ug/L	Ν	
Surr. 1 (Bro	omobenzene)	100	%	Ν		Unidentifi	ed Peaks		>10		Ν	
_				TEST	METHOD:	EPA 80	)21B					
004	Site: MW-12				Date Sa	ampled:	6/4/14	12:50	Analysis Date:	6/16/	/14 W	/ SJM
Parameter		Result	<u>Unit</u>	Nelac	Qual	Paramet	er		Result	<u>Unit</u>	Nelac	Qual
Methyl-t-bu	tyl ether (MTBE)	< 2.0	ug/L	Ν		Benzene			< 1.0	ug/L	Ν	
Toluene		< 1.0	ug/L	Ν		Ethylbenze	ene		< 1.0	ug/L	Ν	
Xylenes, To	otal	< 2.0	ug/L	Ν		1,3,5-Trim	ethylbenzene		< 1.0	ug/L	Ν	
1,2,4-Trime	ethylbenzene	< 1.0	ug/L	Ν		Naphthale	ne		< 2.0	ug/L	Ν	
Surr. 1 (Bro	omobenzene)	107	%	Ν		Unidentifi	ed Peaks		0		Ν	
				TEST	METHOD:	EPA 80	)21B					
005	Site: MW-5				Date Sa	ampled:	6/4/14	13:15	Analysis Date:	6/16/	/14 W	/ SJM
Parameter	<u> </u>	Result	Unit	Nelac	Qual	Paramet	er		Result	Unit	Nelac	Qual
Methyl-t-bu	ityl ether (MTBE)	< 2.0	ug/L	N		Benzene			< 1.0	ug/L	N	-
Toluene		< 1.0	ug/L	Ν		Ethylbenze	ene		< 1.0	ug/L	Ν	
Vulanas Ta	otal	< 2.0	ug/L	Ν		1.3.5-Trim	ethylbenzene		< 1.0	ug/L	Ν	
Aylenes, IC						2-2-						
1,2,4-Trime	thylbenzene	< 1.0	ug/L	Ν		Naphthale	ne		< 2.0	ug/L	Ν	



### CLIENT: Vermont HydroGeo PROJECT: Kestler's REPORT DATE: 6/18/2014

 WORK ORDER:
 1406-10655

 DATE RECEIVED:
 06/06/2014

				TEST	METHOD:	EPA 802	21B					
006	Site: MW-4				Date Sa	mpled:	6/4/14	13:27	Analysis Date:	6/16/	14 W	' SJM
Paramete	<u>r</u>	Result	<u>Unit</u>	Nelac	Qual	Parameter	<u>r</u>		Result	Unit	<u>Nelac</u>	Qual
Methyl-t-b	utyl ether (MTBE)	< 10.0	ug/L	Ν		Benzene			< 5.0	ug/L	Ν	
Toluene		< 5.0	ug/L	Ν		Ethylbenzen	ie		< 5.0	ug/L	Ν	
Xylenes, T	otal	< 10.0	ug/L	Ν		1,3,5-Trimet	thylbenzene		42.3	ug/L	Ν	
1,2,4-Trim	ethylbenzene	264	ug/L	Ν		Naphthalene	e		< 10.0	ug/L	Ν	
Surr. 1 (Br	omobenzene)	96	%	Ν		Unidentified	l Peaks		>10		Ν	
				TEST	METHOD:	EPA 802	21B					
007	Site: MW-3				Date Sa	mpled:	6/4/14	13:46	Analysis Date:	6/16/	14 W	SJM
Paramete	<u>r</u>	Result	<u>Unit</u>	Nelac	Qual	Parameter	<u>r</u>		Result	Unit	Nelac	Qual
Methyl-t-b	utyl ether (MTBE)	< 2.0	ug/L	Ν		Benzene			< 1.0	ug/L	Ν	
Toluene		< 1.0	ug/L	Ν		Ethylbenzen	ie		4.1	ug/L	Ν	
Xylenes, T	otal	< 2.0	ug/L	Ν		1,3,5-Trimet	thylbenzene		< 1.0	ug/L	Ν	
1,2,4-Trim	ethylbenzene	10.8	ug/L	Ν		Naphthalene	e		< 2.0	ug/L	Ν	
Surr. 1 (Br	omobenzene)	104	%	Ν		Unidentified	l Peaks		>10		Ν	
				TEST	METHOD.	EPA 802	21B					
				12011	ill illob.	LIII002	10					
008	Site: MW-1				Date Sa	mpled:	6/4/14	14:06	Analysis Date:	6/16/	14 W	SJM
Paramete	<u>r</u>	Result	<u>Unit</u>	<u>Nelac</u>	<u>Qual</u>	Parameter	<u>r</u>		<u>Result</u>	<u>Unit</u>	<u>Nelac</u>	<u>Qual</u>
Methyl-t-b	utyl ether (MTBE)	< 2.0	ug/L	Ν		Benzene			< 1.0	ug/L	Ν	
Toluene		< 1.0	ug/L	Ν		Ethylbenzen	ie		1.2	ug/L	Ν	
Xylenes, T	otal	< 2.0	ug/L	Ν		1,3,5-Trimet	thylbenzene		< 1.0	ug/L	Ν	
1,2,4-Trim	ethylbenzene	2.2	ug/L	Ν		Naphthalene	e		< 2.0	ug/L	Ν	
Surr. 1 (Br	omobenzene)	104	%	Ν		Unidentified	l Peaks		0		Ν	
				TEST	METHOD:	EPA 802	21B					
009	Site: MW-8				Date Sa	mpled:	6/4/14	14:29	Analysis Date:	6/17/	14 W	SJM
Paramete	<u>r</u>	Result	Unit	Nelac	Qual	Parameter	<u>r</u>		Result	Unit	Nelac	Qual
Methyl-t-b	utyl ether (MTBE)	< 2.0	ug/L	Ν		Benzene			< 1.0	ug/L	Ν	
Toluene		< 1.0	ug/L	Ν		Ethylbenzen	ie		< 1.0	ug/L	Ν	
Xylenes, T	otal	< 2.0	ug/L	Ν		1,3,5-Trimet	thylbenzene		< 1.0	ug/L	Ν	
1,2,4-Trim	ethylbenzene	1.4	ug/L	Ν		Naphthalene	e		< 2.0	ug/L	Ν	
Surr. 1 (Br	omobenzene)	96	%	Ν		Unidentified	l Peaks		>10		Ν	
				TEST	METHOD:	EPA 802	21B					
010	Site: MW-9				Date Sa	mpled:	6/4/14	14:53	Analysis Date:	6/17/	14 W	' SJM
Paramete	<u>r</u>	Result	Unit	Nelac	Qual	Parameter	<u>r</u>		Result	Unit	Nelac	Qual
Methyl-t-b	utyl ether (MTBE)	< 2.0	ug/L	N		Benzene			< 1.0	ug/L	N	
Toluene	- · · /	< 1.0	ug/L	Ν		Ethylbenzen	ie		< 1.0	ug/L	Ν	
Xylenes. T	otal	< 2.0	ug/L	Ν		1,3,5-Trimet	thylbenzene		< 1.0	ug/L	Ν	
1,2,4-Trim	ethylbenzene	< 1.0	ug/L	N		Naphthalene	2		< 2.0	ug/L	Ν	
Surr. 1 (Br	omobenzene)	100	%	N		Unidentified	l Peaks		0	0	Ν	
	/											



### CLIENT: Vermont HydroGeo PROJECT: Kestler's REPORT DATE: 6/18/2014

 WORK ORDER:
 1406-10655

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 06/06/2014

				TEST	METHOD:	EPA 8021B					
011	Site: Trip Blank				Date Sa	ampled: 6/4/14	14:38	Analysis Date:	6/16/	14 W	SJM
Paramete	<u>r</u>	Result	<u>Unit</u>	Nelac	Qual	Parameter		Result	<u>Unit</u>	<u>Nelac</u>	Qual
Methyl-t-b	utyl ether (MTBE)	< 2.0	ug/L	Ν		Benzene		< 1.0	ug/L	Ν	
Toluene		< 1.0	ug/L	Ν		Ethylbenzene		< 1.0	ug/L	Ν	
Xylenes, T	otal	< 2.0	ug/L	Ν		1,3,5-Trimethylbenzen	e	< 1.0	ug/L	Ν	
1,2,4-Trim	ethylbenzene	< 1.0	ug/L	Ν		Naphthalene		< 2.0	ug/L	Ν	
Surr. 1 (Br	omobenzene)	105	%	Ν		Unidentified Peaks		0		Ν	
-				TEST	METHOD:	EPA 8021B					
012	Site: WS				Date Sa	ampled: 6/4/14	15:20	Analysis Date:	6/16/	14 W	SJM
Paramete	<u>r</u>	Result	Unit	Nelac	Qual	Parameter		Result	<u>Unit</u>	Nelac	Qual
Methyl-t-b	utyl ether (MTBE)	< 2.0	ug/L	Ν		Benzene		< 1.0	ug/L	Ν	
Toluene		< 1.0	ug/L	Ν		Ethylbenzene		< 1.0	ug/L	Ν	
Xylenes, T	otal	< 2.0	ug/L	Ν		1,3,5-Trimethylbenzen	e	< 1.0	ug/L	Ν	
1,2,4-Trim	ethylbenzene	< 1.0	ug/L	Ν		Naphthalene		< 2.0	ug/L	Ν	
Surr. 1 (Br	omobenzene)	105	%	Ν		Unidentified Peaks		0		Ν	
				TEST	METHOD:	EPA 8021B					
013	Site: Dug Well				Date Sa	ampled: 6/4/14	15:25	Analysis Date:	6/16/	14 W	SJM
Paramete	r	<u>Result</u>	<u>Unit</u>	<u>Nelac</u>	Qual	Parameter		Result	<u>Unit</u>	Nelac	<u>Qual</u>
Paramete Methyl-t-b	<u>r</u> utyl ether (MTBE)	<u>Result</u> < 2.0	<u>Unit</u> ug/L	<u>Nelac</u> N	<u>Oual</u>	<u>Parameter</u> Benzene		<u>Result</u> < 1.0	<u>Unit</u> ug/L	<u>Nelac</u> N	<u>Qual</u>
Paramete Methyl-t-b Toluene	<u>r</u> utyl ether (MTBE)	<u>Result</u> < 2.0 < 1.0	<u>Unit</u> ug/L ug/L	<u>Nelac</u> N N	<u>Qual</u>	<u>Parameter</u> Benzene Ethylbenzene		<u>Result</u> < 1.0 < 1.0	<u>Unit</u> ug/L ug/L	<u>Nelac</u> N N	<u>Qual</u>
Paramete Methyl-t-b Toluene Xylenes, T	<u>r</u> utyl ether (MTBE) otal	<u>Result</u> < 2.0 < 1.0 < 2.0	<u>Unit</u> ug/L ug/L ug/L	<u>Nelac</u> N N N	<u>Qual</u>	Parameter Benzene Ethylbenzene 1,3,5-Trimethylbenzen	e	<u>Result</u> < 1.0 < 1.0 < 1.0	<u>Unit</u> ug/L ug/L ug/L	<u>Nelac</u> N N N	<u>Qual</u>
Paramete Methyl-t-b Toluene Xylenes, To 1,2,4-Trim	<u>r</u> utyl ether (MTBE) otal ethylbenzene	<u>Result</u> < 2.0 < 1.0 < 2.0 < 1.0	<u>Unit</u> ug/L ug/L ug/L ug/L	<u>Nelac</u> N N N	Qual	Parameter Benzene Ethylbenzene 1,3,5-Trimethylbenzen Naphthalene	e	Result < 1.0 < 1.0 < 1.0 < 2.0	<u>Unit</u> ug/L ug/L ug/L ug/L	<u>Nelac</u> N N N	<u>Qual</u>
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		Reactivity	s, herbicides)	Cd, Co, Cr, Cu, Fe,	Conductivity	Turbidity	TDS	TSS	Total Solids		e/Time Received	¢									WATER X	Matrix R B		Mailing	Client/C Phone #	Special Reportin	CI
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- Client)				), Sb, Se, Sn, Tl, U, V, Z	8270 B/N or Acid	8260B	8015 DRO	8015 GRO	1664 TPH/FOG	40 1335	Date/Time	4					-				to me itel	le Containers Type/Size Preservati	3, VT-0565	BROAK PD.	ery ery		Y-RECORD
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Page 1 of 2							Temp: $S T \neq 42\%$	Delivery: 1 13 - 100	LAB USE ONLY	W 6/6/14 1730	1 / Date/Time			×.								FieldResults/Remarks Due Date	SAMUE	S1.10	SAME	Nº 70566	

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		Reactivity	es, herbicides)	Cd, Co, Cr, Cu, F	Conductivity	Turbidity	TDS	TSS	Total Solids		te/Time Receiv										WATOR X	Matrix BA		Maili	Clien	Special Report	
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White - Laboratory / Y		Other	Other	K, Mg, Mn, Mo, Na, N	VOC Halocarbons	VT PCF	COD	Coliform (Specify)	Sulfate	rant 6/2	)								1525	1520	1438	Date/Time Sampled $\mathcal{L} = \frac{4}{\sqrt{7}}$	NORTH	dress: 21/2 S	act Name: VT HY	structions/PO#:	IN-OF-CUST
éllow				Vi, Pb,	25	24	23	22	21	100								Ł			2	Samp No.	19/13	1245C	28		ÔĐ
- Client)				Sb, Se, Sn, Tl, U, V, Zr	8270 B/N or Acid	8260B	8015 DRO	8015 GRO	1664 TPH/FOG	140,133	Date/Time						X	X A			40 mi Hel	le Containers Type/Size Preservat	53250 21/02	RUSTE RD	Geo LIC		Y-RECORD
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Page Zof Z							2,74/00,N	ivery Chart / Kgd	LABUSE ONLY /	6/6/14 1730	Date/Time											VeldResults/Remarks Due Date			ne	Nº 70567	

# ATTACHMENT C

Screened Interval Below Inner Casing (feet):

Monitoring Well:

WW-5

	Site: Date:	6	KESTLEN	is.			
	Date:	6	41-4-				
			l ,				
	Sampler(s):		EIS				
Time Pumping ]	Rate Depth to Water	ηH	Sporifia	Tuchidike			
		F	Conductance	- marriertey	Oxygen	remberature	OKI
	(feet)	(su)	whas/cm	(NTU)	(mg/l)	(degree C)	(inv)
ml/mii	n ref.: inner casing	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 3%	+/- 10mv
1300	1,61				2 2		
1302 100	2.30						
1305	2.39	692	2.981			Stihl	-28
1308		626	3.224	-	1.22	1528	t+-
1158	2,66	666	5.493		84.0	15.06	7500
1314		6.62	5.516	1	0.49	14.53	-42
A 1315 cm	LOCI SANPLE	<sup>1</sup>					
			. 1 .				

LFP Form

ow-Flow	
Ground	Vermo
Water	nt Hydro
Sampling	oGeo, LLC
Data	
Sheet	

Monitoring Well:

MW-

2

SamTimePumping RateDepth to W $(feet)$ <td< th=""><th>Screet Sampling Inle</th><th>ned Interval Belov It Depth Below In</th><th>v Inner Casing ner Casing To</th><th>g (feet): p (feet) Site:</th><th>g (feet): p (feet) Site:</th><th>g (feet): p (feet) Site: VESTUR</th><th>g (feet): p (feet) Site: VESTORS</th><th>g(feet): p(feet) Site: VESTUR Site: VESTUR</th></td<>	Screet Sampling Inle	ned Interval Belov It Depth Below In	v Inner Casing ner Casing To	g (feet): p (feet) Site:	g (feet): p (feet) Site:	g (feet): p (feet) Site: VESTUR	g (feet): p (feet) Site: VESTORS	g(feet): p(feet) Site: VESTUR Site: VESTUR
e Pumping Rate Depth to Water P ml/min ref.: inner casing $+/ml/min$ ref.: inner casing $+/100$ $1.85$ $6.72.00$ $6.732.4$ $100$ $1.85$ $6.76.732.4$ $100$ $6.77.76.76.76.77.76.77.76.77.7$			Date:		6.	6-4-14	6-4-14	6-4-14
me         Pumping Rate         Depth to Water         p)           ml/min         ref.: inner casing         +/-           10         100         1.85         6.2           23         100         1.85         6.2           24         100         6.2         6.3           23         2.00         6.3         6.4           24         100         6.4         6.4           23         2.00         6.3         6.4           24         6.4         6.4         6.4           26         6.4         6.4         6.4           132.4         6.4         6.8         6.4			Sampler(s):		Ũ	EIS	EI)	EI S
(seet) (st ml/min ref.: inner casing +/ ( 100 1.35 6.7 22 100 1.85 6.7 22 2.00 6.7 26 6.7 132 4 6.8 132 4 6.8	ime	Pumping Rate	Depth to Water	pF	H	I Specific Conductance	I Specific Turbidity Conductance	I Specific Turbidity Dissolved Conductance Oxygen
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A 1327 326 326 326 6.78	222		2.00	74.9		2.066	2.066 -	2.066 - 0.31
7.26 7.76 6.80	326			84:9		1.596	1.596 -	1.596 - 0.27
A 1327	326			680		1.523	1.523 -	1.523 - 0.24
	A 132	to						
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LFP Form

Low-Flow	
Ground Water	Vermont Hydr
Sampling	oGeo, LLC
Data	
Sheet	

Sampler(s):	Date:	Site:	Sampling Inlet Depth Below Inner Casing Top (feet)	Screened Interval Below Inner Casing (feet):	Monitoring Well:
R	6-4-14	KESTLOUS			MM - 3

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						A 1346	1345	1342	1339	1335	1334			Time
					2	CUTUN				100		ml/min		Pumping Rate
						7 SANDL			1.70	041	1,20	ref.: inner casing	(feet)	Depth to Water
						es		7.03	205	6:58		+/- 0.1	(su)	рH
								1.020	t 201	1,385		+/- 3%	W Jus/cm	Specific Conductance
												+/- 10%	(NTU)	Turbidity
-								0.28	0.37	1.6 2	1	+/- 10%	(mg/l)	Dissolved Oxygen
								14.57	14.34	14		+/- 3%	(degree C)	Temperature
								-/05	-108	-99		+/- 10mv	(mv)	ORP
							De l'Alle Concert Demoles	1345 A 1346 UTLET SANDLES IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	1342 7.03 1.020 7 0.28 14.57 -105 1345 WILLET SMULLES 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	ml/min         tet:inner casing         4/.01 $4/.30\%$ $4/.10\%$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$

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			ī		¢	DIYOS	1405	1400	1357	1356			Time					Sampling Inle	Screen	na de président de la contra de Na de président de la contra de la
						lonted			001		ml/min		Pumping Rate					t Depth Below Inr	ed Interval Below	normalized and the second s
		×				SANNUE			1.75	54:1	ref.: inner casing	(feet)	Depth to Water		Sampler(s):	Date:	Site:	ner Casing Top (feet)	v Inner Casing (feet):	Monitoring Well:
						N	7.08	7.02	2.14		+/- 0.1	(su)	РЧ		m	6.	Ke			M
							1.208	1,161	566.0		+/- 3%	MudS/cm	Specific Conductance		M	4-14	STLER'S			W I
							Canada	)			+/- 10%	(NTU)	Turbidity	×.						
							0.33	0.43	2.16		+/- 10%	(mg/l)	Dissolved Oxygen							
		8			D.		14.08	14.14	-16.03		+/- 3%	(degree C)	Temperature							
							49	-70	イナー		+/- 10mv	(mv)	ORP							

Vermont HydroGeo, LLC Low-Flow Ground Water Sampling Data Sheet

Printed - 6/2/2014

LFP Form

Low-Flow	
Ground Water	Vermont Hydr
Sampling	oGeo, LLC
Data	
Sheet	

Sampler(s):	Date:	Site	Sampling Inlet Depth Below Inner Casing Top (feet)	Screened Interval Below Inner Casing (feet):	Monitoring Well:	
Z	6-4-14	LESTLEN'S			R- MW	

					Aura	1429	14 25	1422	14 (a	1416	1414	5141			Time
	2				Gul			÷			001		ml/min		Pumping Rate
			the	7-	H Stup			hth		452	4.35	4.15	ref.: inner casing	(feet)	Depth to Water
			0		282	6.37	6.43	6.54	87.9	589	5):1		+/- 0.1	(su)	рН
		e.				742'1	1.957	1844	0441	1.758	1.334		+/- 3%	WhtS/cm	Specific Conductance
					-					l			+/- 10%	(NTU)	Turbidity
-	-					1.09	41,1	1.04	0,96	1.28	1.39		+/- 10%	(mg/l)	Dissolved Oxygen
						11.40	18.11	12.09	12.89	26.21	94.51		+/- 3%	(degree C)	Temperature
				÷		4	22	( W	- 20	11-	-42		+/- 10mv	(mv)	ORP

LFP Form

Low-Flow	
Ground Wate	Vermont Hy
er Sampling	droGeo, LLC
Data	
Shee	

Sampler(s):	Date:	Sife:	Sampling Inlet Depth Below Inner Casing Top (feet)	Screened Interval Below Inner Casing (feet):	Monitoring Well:
EJS	6.4.14	Kestler's			MW-9

				5-14	1452	1449	1446	1443	1440	8241	1437			Time
				31						100		ml/min		Pumping Rate
				Caller		4.00	4,00		3,90		3.66	ref.: inner casing	(feet)	Depth to Water
				SAMPLE	658	6.57	6.55	6.55	6.55	÷		+/- 0.1	(su)	рН
2	2			У_ - -	1907	1 2 89	1748.1	2857	1.590			+/- 3%	wxaS/cm	Specific Conductance
			4		}			١	1			+/- 10%	(NTU)	Turbidity
			Ξ.		272	2.66	HT.1	1.57	1.23			+/- 10%	(mg/l)	Dissolved Oxygen
					1227	12.43	12.48	Jt.2)	(3.03			+/- 3%	(degree C)	Temperature
					4	3	0	3	-2	ĥ		+/- 10mv	(mv)	ORP

LFP Form