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September 2nd, 2015 LFCI 14010

The Missouri Attorney General's Office
Attention: Peggy A. Whipple
Supreme Court Building
Post Office Box 899
Jefferson City, Missouri, USA 65102

Dear Ms. Whipple:

Re: Review of Subsurface Self Sustaining Exothermic Reaction Incident at Bridgeton Landfill, with a Focus on Causes, Suppression Actions Taken and Future Liabilities

Landfill Fire Control Inc. (LFCI) is pleased to submit this report in support of our analysis of the ongoing heating incident in the South Quarry at Bridgeton Landfill, 13570 St. Charles Rock Road, Bridgeton, Mo.

Scope: LFCI staff have been retained by the Missouri Attorney General's office to complete seven specific tasks to support the Attorney General's office as specialist advisors in the technical areas of landfill fire and exothermic reactions, landfill gas management and landfill operations.

At the onset of this project the scope of LFCI's support included the following:

1. Familiarize LFCI staff with site
2. Familiarize with Fire History Events
3. Familiarize with Documented Interpretation of Fire Cause
4. Review and Analyze LFG System Information
5. Review and Analyze Leachate Treatment System Information
6. Explore Possible Causes of Fire
7. Reporting and Consultation

As the project evolved a three day site visit was organized that included a full day inspection of Bridgeton Landfill, a full day of LFG sampling of 10 operating extraction wells and half day orientation tour of nearby Champ Landfill, a quarry fill facility in a very similar setting to that of Bridgeton.

During the review of project data it became clear that Bridgeton Landfill, LLC believes that the incident does not involve a fire, but rather some form of burning process believed to involve pyrolysis. LFCI undertook additional research and consultation with several industry experts in an attempt to better explain the causes of the heating incident that has clearly resulted in significant impacts on Bridgeton and nearby communities and that poses ongoing environmental risks into the future.

The following report is based on the technical knowledge of two LFCI specialists, Dr. Tony Sperling, P.Eng. and Dr. Ali Reza Abedini. The report is founded on the knowledge and experience summarized below.

Dr. Sperling has gained over 25 years of landfill engineering experience, initially with consulting firm Gartner Lee Limited for five years, and subsequently as the President and Chief Engineer of Sperling Hansen Associates for twenty years. In that time, Dr. Sperling has completed more than 1,000 engineering assignments involving the design of landfills, environmental control systems for leachate and landfill gas and monitoring programs.

Dr. Sperling is also a recognized authority on the topic of Landfill Fire. He has worked on more than 30 landfill fire projects as Incident Commander or Technical Advisor on suppression strategies. Most notably, he was the lead advisor during the extinguishment of the massive Cerro Patacon Landfill Fire in Panama in 2013. In 2014 Dr. Sperling developed extinguishment plans for the Iqaluit Landfill fire and suppression strategy for the Lake County Landfill Fire in Montana. Dr. Sperling has taught a full day Landfill Fire Course on numerous occasions, including nine cities in 2014, and has presented numerous papers on Landfill Fires at major SWANA conferences over the years.

LFCI's report is based on personal knowledge and experience gained on the above assignments as well as a detailed but not all encompassing review of available information supplied by the Attorney General's office and the three day site visit. Additional research and consultations were undertaken in the areas of smoldering, pyrolysis and exothermic reactions during the course of this assignment.

Dr. Sperling is the lead engineer who prepared this report with technical support in the specialty area of landfill gas by Dr. Ali Abedini, a landfill gas specialist employed by Sperling Hansen Associates. Dr. Sperling also relied on specialist input on chemical reactions from Dr. John Grace, P.Eng., Professor Emeritus in the Chemistry Department at the University of British Columbia and Landfill Fire Specialist Patrick Foss – Smith, M.Sc., MInstRE, MCIWM. (See Appendix O for all specialist CVs).

Prepared by:
LANDFILL FIRE CONTROL INC.



September 2nd, 2015

Dr. Tony Sperling, P.Eng. (British Columbia)
President

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1. Project Objectives

LFCI was retained by the Missouri Attorney General's Office to provide an expert review of technical information relating to the Bridgeton Landfill incident. LFCI's scope is as follows:

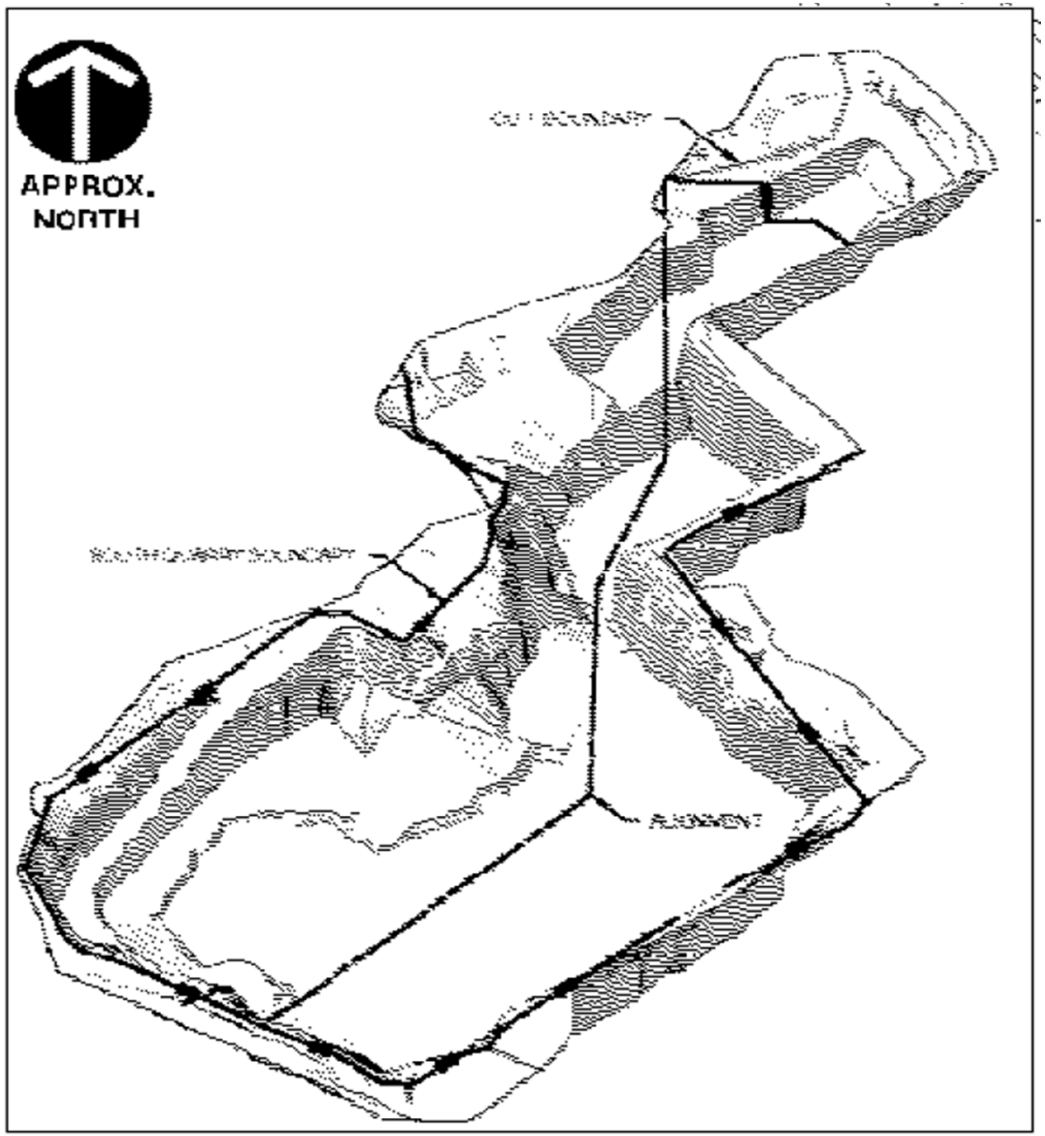
- to provide an opinion on the likely cause of the Bridgeton Landfill incident;
- to review available data and based on that data to comment on whether action was taken at the earliest possible time to control the incident;
- to provide an opinion on the mechanism that is causing the heat build up and gas emissions at Bridgeton landfill, be it a subsurface fire, a subsurface smoldering event (SSE), a subsurface oxidation event (SSO) or a subsurface reaction event (SRE);
- to comment on whether the measures undertaken by Bridgeton Landfill LLP and its parent company Republic Waste Services to contain the incident represent best practice;
- to comment on any additional measures that should be taken to prevent the fire from migrating into the North Quarry, and ultimately toward the radiological waste that is situated in Westlake OU1 approximately 1,000 feet north of the neck;
- to comment on any future risks that need to be considered and managed;
- to opine on possible methods of containing the incident.

2. Site History

2.1 Site Development

The Bridgeton Landfill has been developed in an old limestone quarry complex that includes the South Quarry and the North Quarry. Quarrying first commenced in 1930. The two quarries are separated by a narrow canyon referred to as "the Neck". Figure 2-1 provides a 3D rendition of the rock quarry geometry.

A number of conduits were developed in the waste mass during the landfill operational history. There is a 1962 reference to the construction of Lateral gas vents to be installed into MSW below DLC, consisting of round openings filled with graded crushed limestone. As well, a number of vertical leachate wells, referenced as "reinforced concrete pipes" or RCP's were progressively constructed as the quarry was filled to allow leachate to be extracted from the bottom of the waste mass. These historic pieces of infrastructure, where present, likely provide ideal preferential pathways for migration of landfill gas, steam and heat through the waste mass.



Project No.: LFCI.PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015		**3D SCHEMATIC OF BRIDGETON QUARRY** **BY P.J. Carey & Associates and Civil & Environmental Consultants** **SOURCE: BSL_001_0000145**	Figure **2-1**

Unlike the Champ Landfill that is currently being developed with a bottom geomembrane and low permeability compacted clay barriers along the side walls, the Bridgeton Quarries did not include any engineered liner systems to contain leachate and landfill gas within the quarries. Instead, the plan was to contain leachate with an inward gradient pumping system and to contain landfill gas with an LFG extraction system. In LFCI's opinion, this decision was flawed given the geologic and hydrogeologic information available at the time.

2.2 Site Geometry

The Bridgeton Landfill complex occupies a total footprint of 214 acres and houses numerous landfill units including the North Quarry, the South Quarry, and the OU1 radiological area. Together, the South Quarry and North Quarry occupy 52 acres, of which about 32 acres are occupied by the South Quarry. The North Quarry landfill footprint is 20 acres. Both quarries are 210 to 240' feet deep from crest to base.

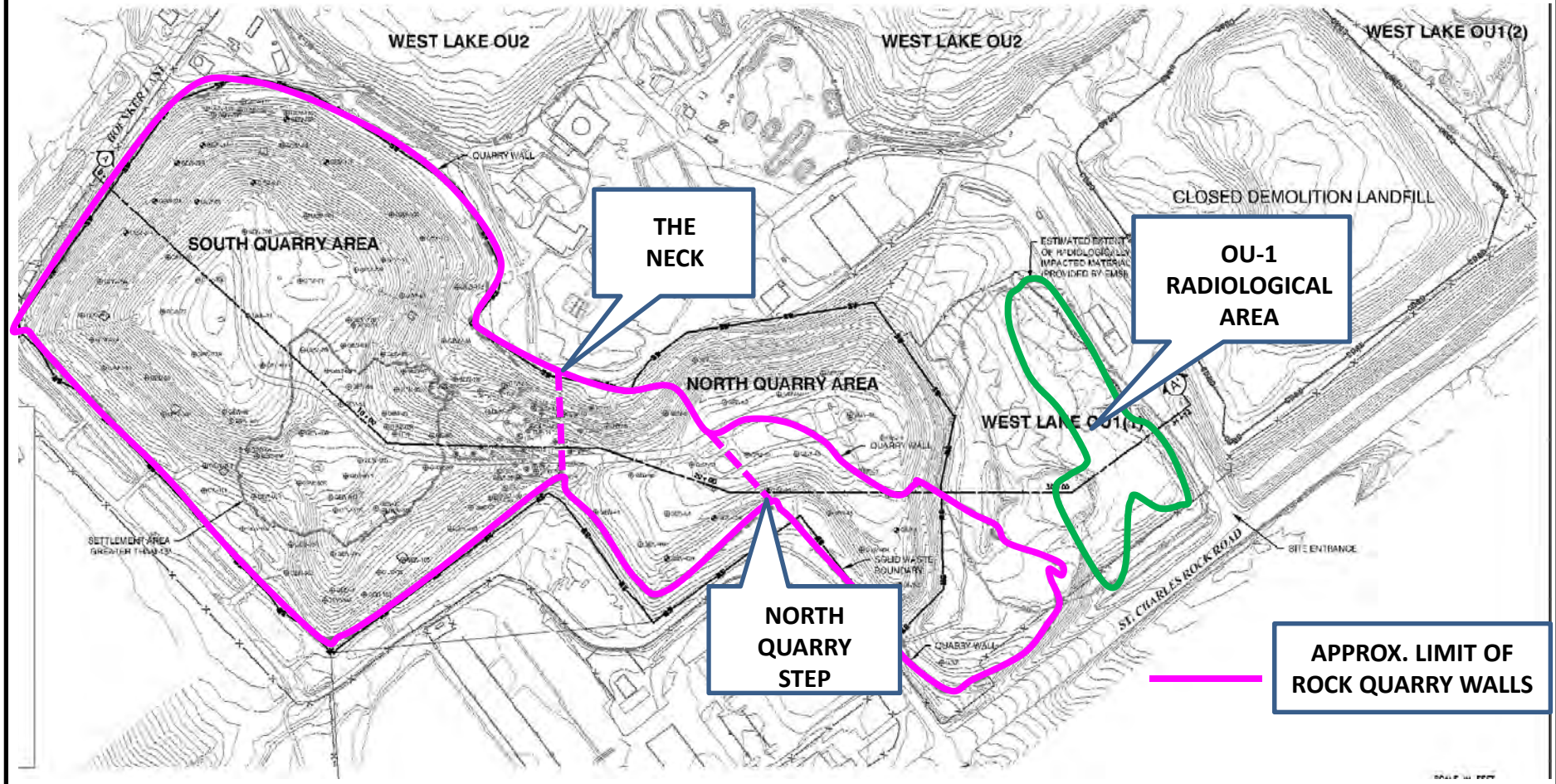
Figure 2-2 is a map from the North Quarry Contingency Plan prepared by P.J. Carey and Associates and identified with a Bates number BSL_001_0000145. LFCI has enhanced the approximate limits of the vertical quarry wall on the figure, as well as "the neck", the north quarry step and the OU1 area that contains radiological waste. The quarry floor is at an elevation 250' above sea level (ASL) and the quarry crest is at about 460' ASL. Both quarries have been filled from the quarry floor to the rim with MSW. As shown on a schematic cross section along the long axis of the rock quarries in Figure 2-3 (also derived from BSL_001_0000145), MSW was subsequently landfilled approximately 90 ft. above the quarry rim. Landfilling started in 1952 in the North Quarry and progressed from North to South. Landfilling was completed in December, 2004.

2.3 Site Geology

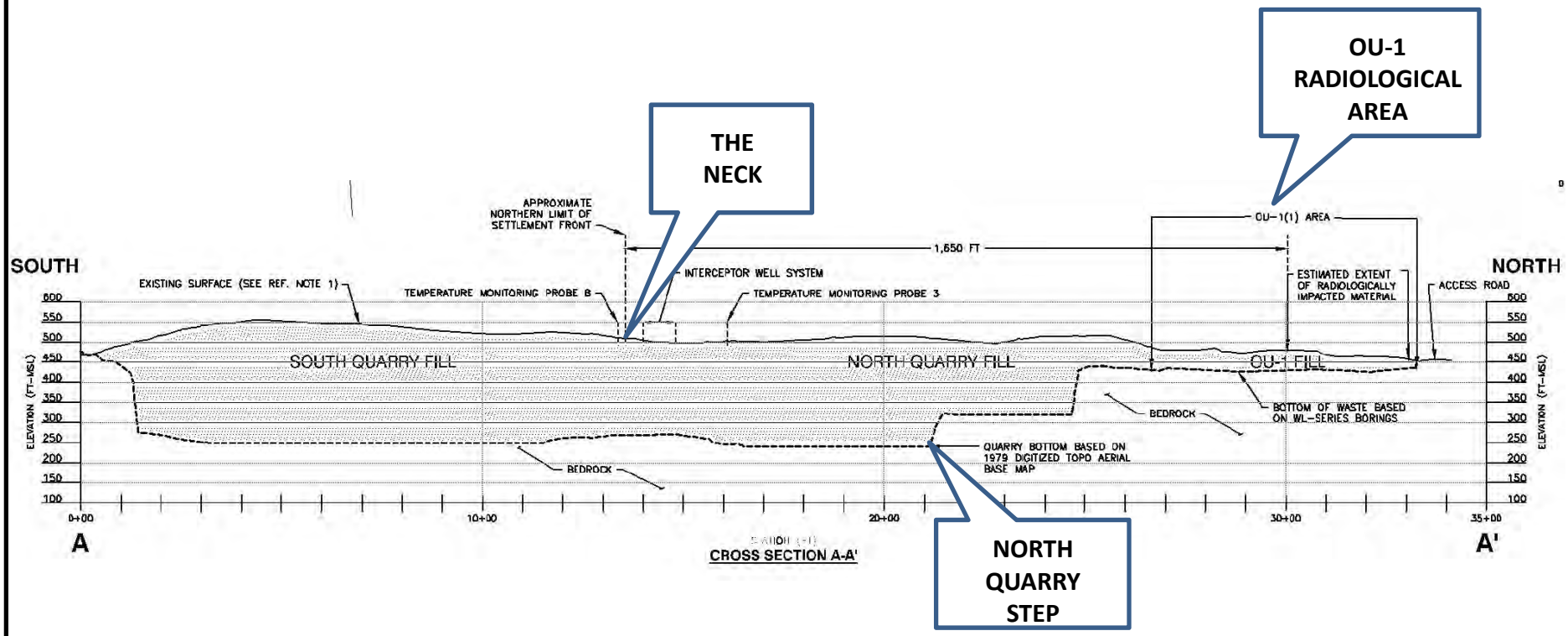
The Bridgeton rock quarries have been developed into two massive limestone formations known as the St. Louis Formation and the Salem Formation. According to a 1985 Hydrogeological Investigation of West Lake Landfill prepared by Burns & McDonnell (Bates No PL1-0563196) the bedrock geology in the Bridgeton area is as follows, reported stratigraphically from top down:

- Cherokee Group Limestone – thin deposit (not present at Bridgeton)
- Ste. Genevieve Limestone – 30 ft. thick (not present at Bridgeton)
- St. Louis Formation – 100 ft. thick (quarried)
- Salem Formation – 100 to 160 – thick (quarried)
- Warsaw Formation – Shaley Limestone 80' thick (not quarried)

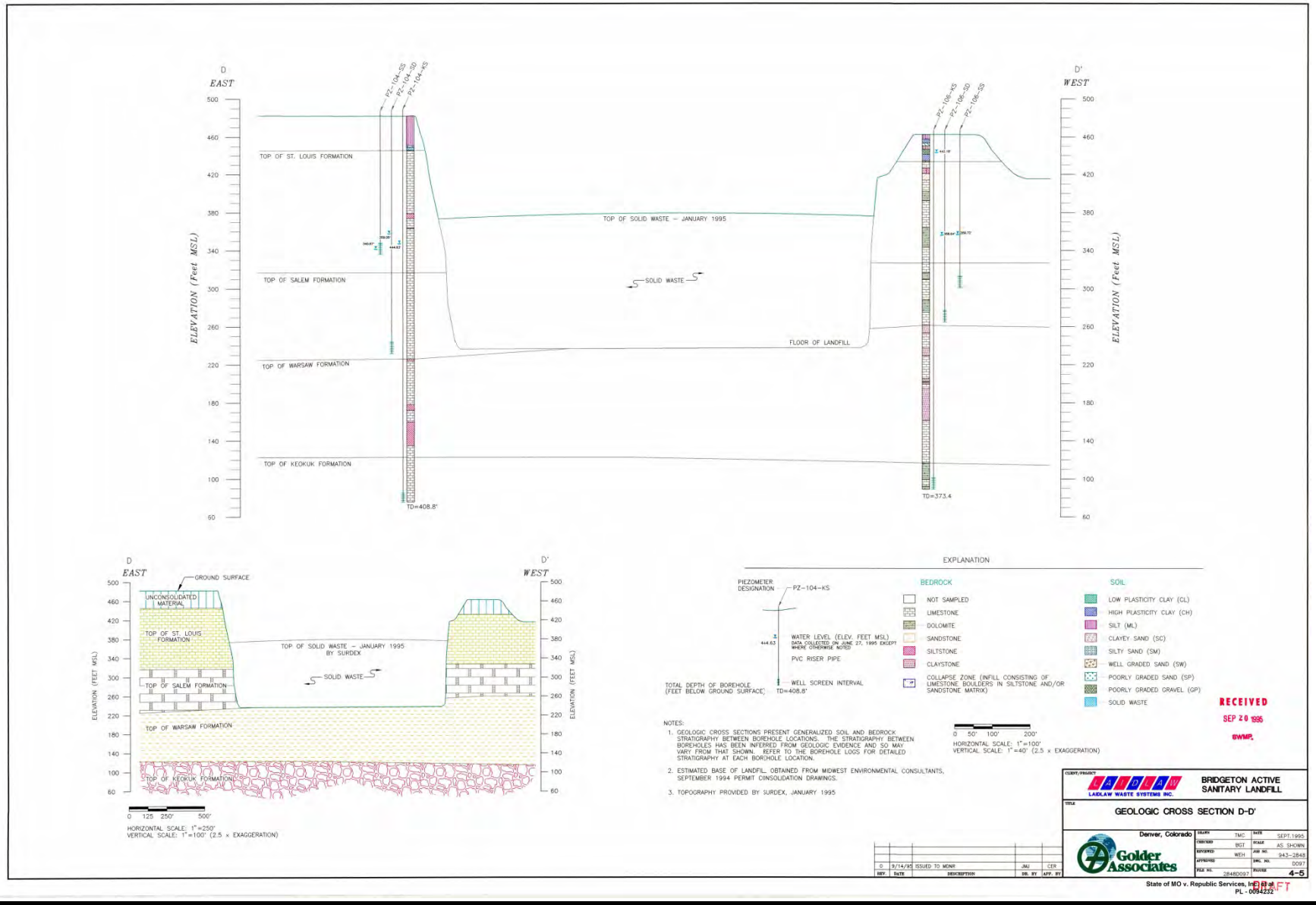
Figure 2-4 produced by Golder Associates summarizes the site stratigraphy in the area of the South Quarry.



Project No.: LFCI.PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**TOPOGRAPHIC MAP OF BRIDGETON LANDFILL** **SOURCE: BSL_001_0000145**	Figure **2-2**



Project No.: LFCI.PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**CROSS-SECTION TRHOUGH BRIDGETON SOUTH QUARRY, NORTH QUARRY AND OU-1** **SOURCE: BSL_001_0000145**	Figure **2-3**



Project No.: LECI.PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015		**BEDROCK GEOLOGY BY GOLDER**	Figure **2-4**

The bedrock geology is very continuous in the area of Bridgeton, and despite being folded and faulted and tilted elsewhere, around Bridgeton the above formations are relatively flat and continuous. The same geologic features also extend to the Champ Landfill quarry where LFCI conducted an inspection of the quarry walls and landfilling operations. The limestone is reported to be massive and relatively free of fractures in that report; however, according to information provided in the Bridgeton Landfill Gas Corrective Action Plan Update (Civil and Environmental Consultants, Inc. July, 2013) reported that the upper bedrock zone between 20 and 60' below ground surface was weathered and fractured. Photo 2-1 is a recent photograph taken at the Champ Quarry located 0.9 miles southwest of Bridgeton South Quarry. Both landfills are identified on a recent Google Earth satellite photo presented in Figure 2-5. As the geology in the area is reported to be flat lying and continuous, it is reasonable to assume that rock walls within the Bridgeton Quarry were similar in character to those pictured in the Photo.

Photo 2-1 Champ Quarry North East Wall, note groundwater seepage locations



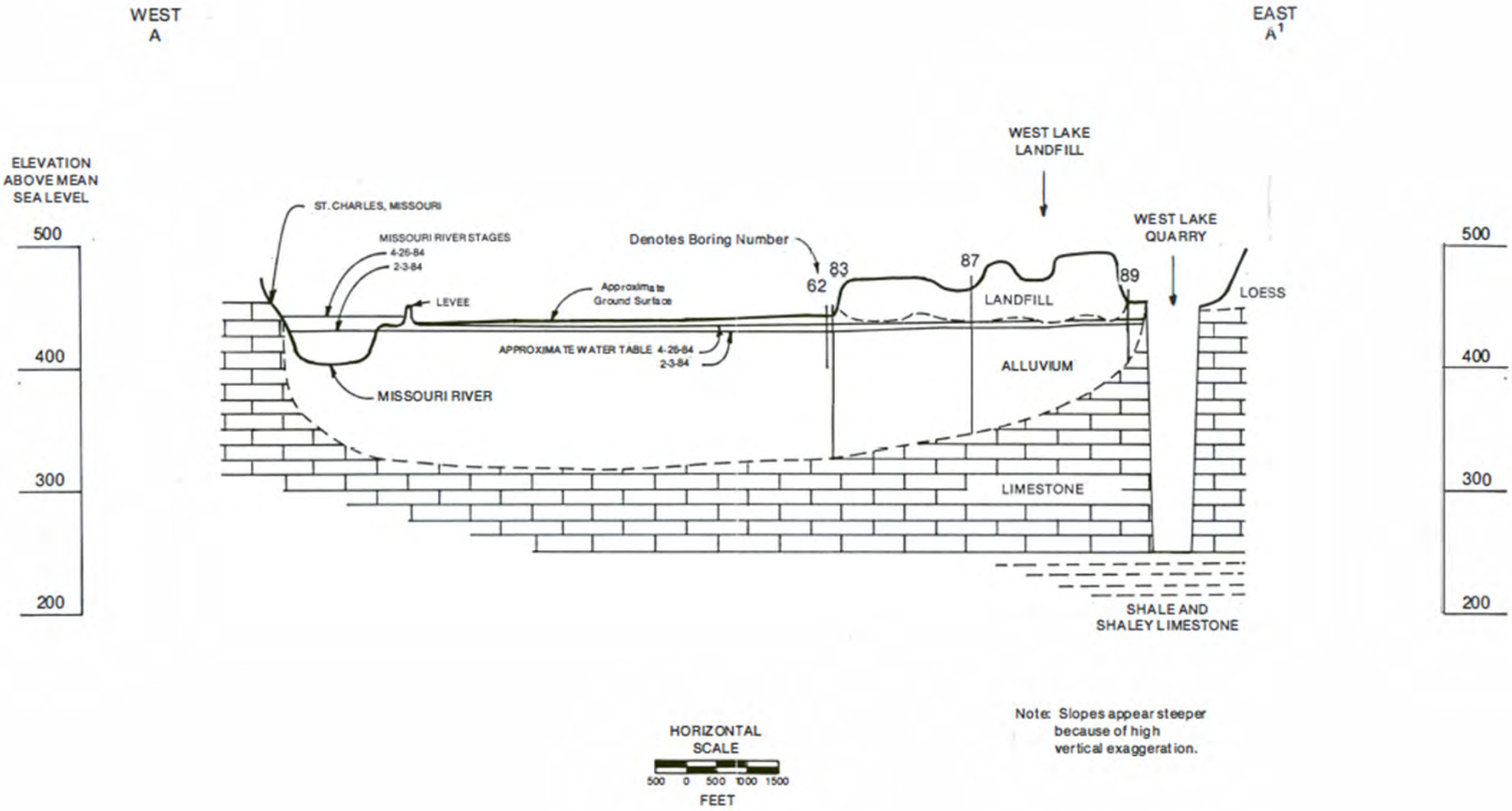
Surficial geology plays a very important part in the control of groundwater flow, as discussed below. For this reason, surficial geology is also briefly reviewed here.

A broad valley was historically carved into the bedrock by the Missouri River. The valley was approximately 2 miles wide and approximately 100 ft. deep. According to mapping provided by Burns & McDonnell, the valley walls extend to within 120' of the vertical quarry walls according to



Project No.: LECI.PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**GOOGLE SATELLITE PHOTO OF BRIDGETON AREA**	Figure **2-5**

Figure 2-6, originally prepared by Burns & McDonnell (PL-0563212). During the most recent ice age during the Holocene epoch the bedrock canyon has been infilled by alluvial deposits. The lowermost 100' of deposits are coarse grained, including sands and gravels. These deposits form a broad aquifer unit. The overlying strata are less pervious and include a layer of alluvial silts and clays. Figure 2-6 presents the Burns & McDonnell interpretation of surficial geology. Of interest, the water table in the alluvial aquifer formation is virtually flat and fluctuates between 430 and 440' as shown. Figure 2-7 presents a more detailed interpretation of the stratigraphy of the alluvial infill of the ancestral Missouri River canyon.



Project No.: LFCI PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**RELATIONSHIP BETWEEN ALLUVIAL AQUIFER AND SOUTH QUARRY** **PER BURNS & McDONNELL**	Figure **2-6**

2.4 Site Groundwater Hydrogeology

The massive limestone formation is relatively impervious. Some groundwater seepage does occur through fractures, but the bulk of groundwater flow occurs in the overlying overburden, and possibly in the near surface weathered and fractured bedrock.

The sand and gravel aquifer within the historic canyon of the Missouri River is a high capacity aquifer that is capable of yielding more than 2,000 gallons per minute (gpm) from wells. Although the risk to groundwater supply wells around the landfill is an important topic, this expert report does not investigate the groundwater pollution issue in detail, but flags potential risks as they relate to the ongoing subsurface reaction.

The water table in the aquifer is hydrologically connected to the Missouri River and fluctuates seasonally by about 10', between 430 and 440' in the area of the landfill. The mean stage of the Missouri River 2 miles to the west is about 413.7' ASL. A very gentle regional gradient drives groundwater flow toward the river valley.

The alluvial deposits within the river valley have a hydraulic conductivity of $2.4x10^{-4}$ to $2.5x10^{-1}$ cm/s according to Burns & McDonnell. This means that the alluvial aquifer is highly transmissive, and should contaminants enter into this aquifer they could travel quickly in a plume.

The water level in Bridgeton Landfill was controlled by four vertical pumping towers LCS-1 to LCS-4, located roughly in the four corners of the South Quarry. No other leachate control works such as liners or drainage blankets at the base of the landfill were noted. Based on LFCI's experience, MSW becomes highly impervious as it decomposes and when subjected to large compressive stresses of overlying waste. Hydraulic conductivities as low as $1x10^{-9}$ cm/s have been measured at several landfills in B.C. and LFCI would expect that similar levels of hydraulic conductivity would be experienced at depth at Bridgeton Landfill. In that case, the radius of influence of leachate collection wells will be very limited and the wells will not be particularly effective at dewatering the lower portions of the rock quarries. Therefore, LFCI recommends that leachate levels be sounded in inactive LFG wells or new piezometers to establish the true leachate level within the MSW waste as was previously done by Aquaterra in 2010.

This is important because Bridgeton Landfill has been set up as an inward gradient landfill. To contain the pollutants within the rock quarry perimeter it is absolutely critical that water levels everywhere within the rock quarry be maintained well below the regional water table level which was historically about 430' ASL in the surficial aquifer, while the potentiometric surfaces in the limestone units appear to be about 340 to 350' ASL according to measurements conducted by Golder in 1995.

2.5 Groundwater Inflow

The Bridgeton Quarries were developed well below the natural water table. As a result of dewatering efforts, a significant drawdown cone has developed around the rock quarry in the deeper bedrock

units. Water level measurements prepared by Golder in 1995 suggest that at that time the potentiometric surfaces in those formations had been drawn down by approximately 100' to 340 to 350' ASL, although some perched water may remain at higher levels within the much more pervious near surface aquifer systems.

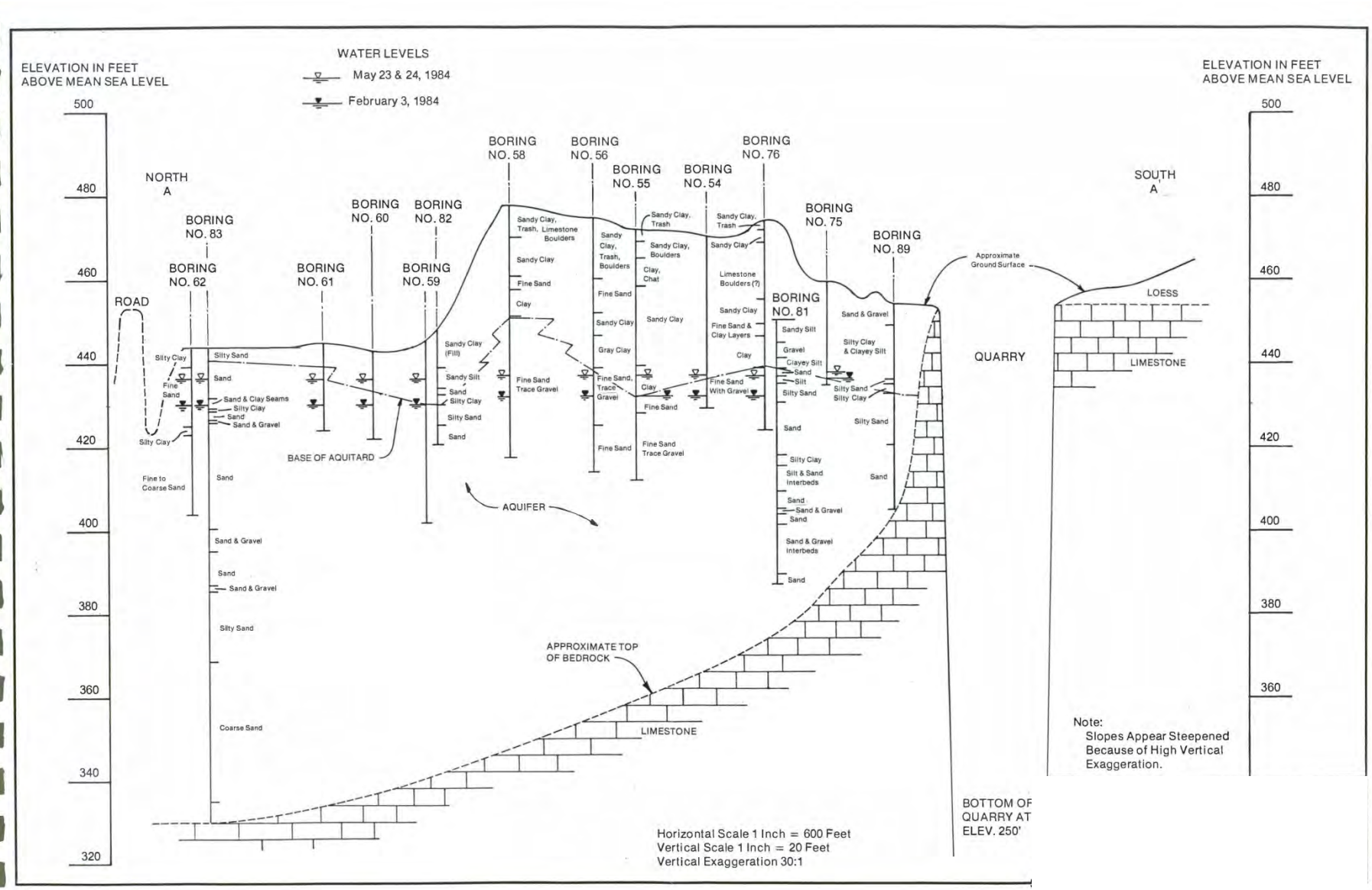
In 1985 Burns & McDonnell reported that groundwater inflow into the Bridgeton Quarries was on the order of 75 to 100 GPM. In 1995 Golder noted that the total leachate being pumped from the Bridgeton Quarries at that time was 216,500 gallons per day. This translates to 150 GPM which would suggest that at the time about 50% of leachate being extracted was originating as groundwater inflow and 50% was leachate produced by the compression and breakdown of MSW and precipitation input. In 2010 the average daily leachate inflow rate was reported to be 225,381 gallons per day.

LFCI reviewed the average precipitation input into the 52 acre quarry footprint and determined that with an average annual rainfall of 38.7 inches, an estimated evaporation rate of 40% the annual leachate contribution from precipitation is estimated at 32.8 million gallons, which translates to 89,917 gallons per day or 62.5 GPM.

Golder reported 88 seeps were noted discharging water into the rock quarry near the top of the St. Louis formation where the fractured and weathered bedrock was noted. The same groundwater inflow process was noted by LFCI when we toured the nearby Champ Landfill. LFCI believes that this groundwater seepage process continues to contribute water into the rock quarry to this day. This means that water will have to be controlled in perpetuity to ensure that the inward hydraulic gradient can be maintained.

In 2010 leachate was extracted from the waste mass via six leachate collection sumps (LCS), 54 perimeter dual extraction wells (PEW), condensate traps / sumps (CT), and 20 landfill based dual extraction wells (GEW). Based on sounding of wells, Aquaterra reported in 2010 that leachate levels in the South Quarry were typically at an elevation of 450 to 460 ft. except in drawdown cone depressions around five apparent pumping nodes that can be seen in Figure 2-8, an interpreted contour plot. LFCI has previously flagged the concern that due to the low permeability, the actual slope of the drawdown cone may be a lot steeper than inferred by the contouring package in areas not supported by additional piezometer measurements. This is because contouring packages typically use contouring algorithms like Kriging that linearly approximate between known data points.

Looking at Figure 2-7 it would appear that in 2010 the water level in the quarry was very close to the rim of the limestone quarry at approximately 450 to 460 ft. elevation. This could be very problematic from a groundwater pollution perspective if the inward gradient into the rock quarry was / is not being maintained since the water level in the gravel aquifer to the west is reportedly at 430 to 440' elevation and groundwater flows from high levels to low.



Project No.: LECI PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**RELATIONSHIP BETWEEN ALLUVIAL AQUIFER AND SOUTH QUARRY** **PER BURNS & McDONNELL**	Figure **2-7**

The most recent sampling conducted by MDNR's consultants indicates that water levels in bedrock on the east side of the landfill are found at an elevation of 460 to 470' ASL while water levels on the west side appear to be at 430 to 440' ASL. Thus it would appear that the regional gradient is to the west, as expected. However, without an accurate topographic contour plan of water levels, such as the one produced in Figure 2-8 for January, 2010 water levels, it is not possible to conclude whether leachate drawdowns in the rock quarries are sufficient to maintain a hydraulic trap, or whether leachate is escaping westward toward the Missouri River. LFCI recommends that a number of inactive LFG wells be sounded to determine the current leachate levels within the landfill.

We noted above that the upper portion of the St. Louis formation appears to be highly weathered and fractured, allowing both air and groundwater flow to occur. LFCI flags this issue, but notes that it is not a focus point of our investigation.

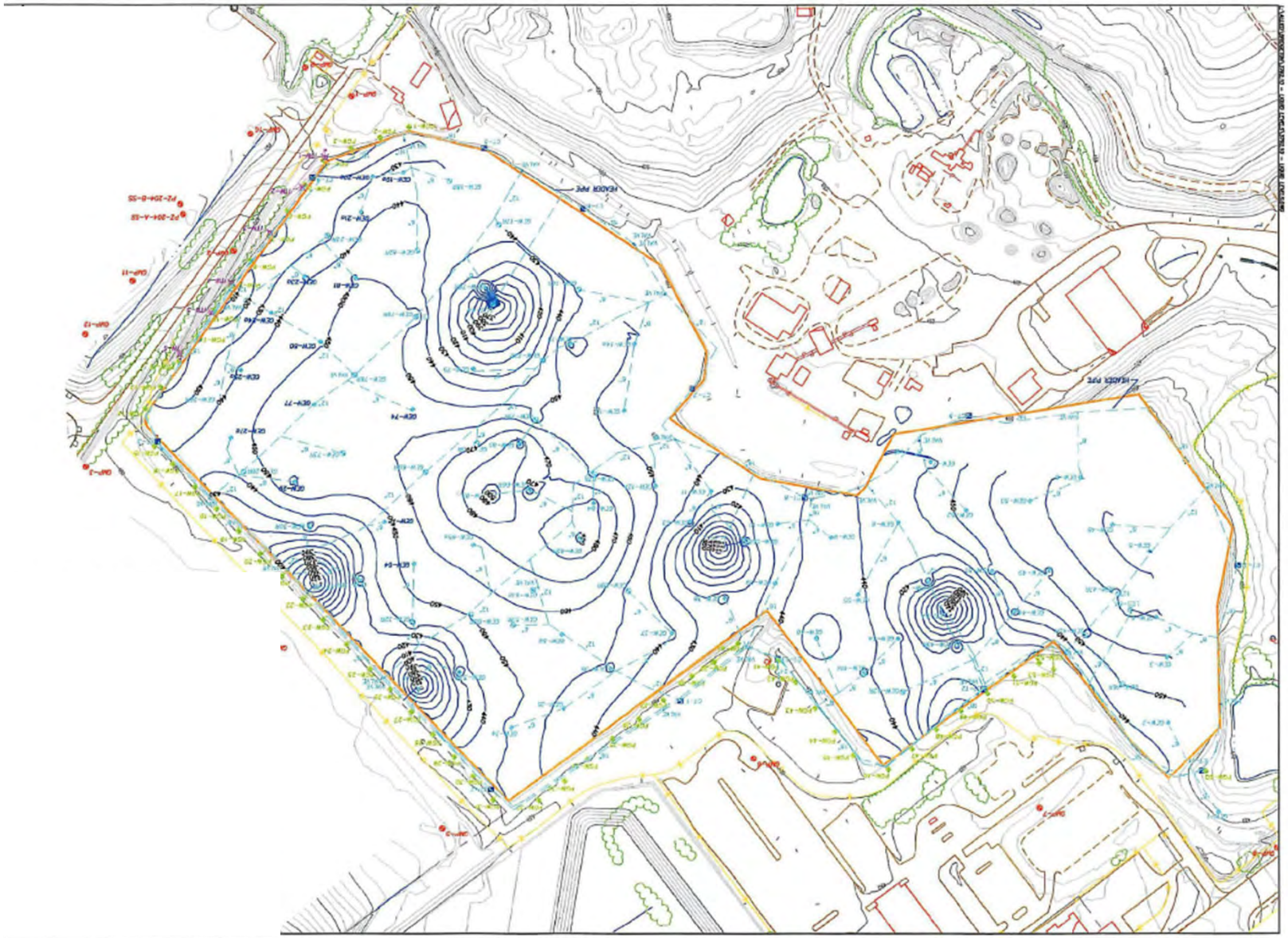
Figure 2-9, which shows the approximate thickness of the unsaturated waste mass above the water table in 2010, indicates that prior to the recent settlement activity, the thickness of the saturated zone was 90 to 150' below the ground surface. LFCI is of the opinion that the bottom of the SSSER is constrained by the water table, so we would expect that the reaction will be limited to an elevation of about 450 to 460', except in areas where pumping has drawn down the water table deeper into the waste mass (around TMP#7 for example). For this reason, LFCI questions whether a strategy of accelerated dewatering of the waste mass is wise in light of the data that is presented in this report, as dewatering the waste mass appears to facilitate the escalation of the reaction to greater depths.

Figure 2-10 is a thermal plot from TMP-7R which shows a rapid cooling of temperatures from 240ºF to 160 ºF at a depth of 150'. The boiling point conversion occurs at 212 ºF at STP. The sharp temperature step suggests that at this location the water table is currently situated at an elevation of about 350'.

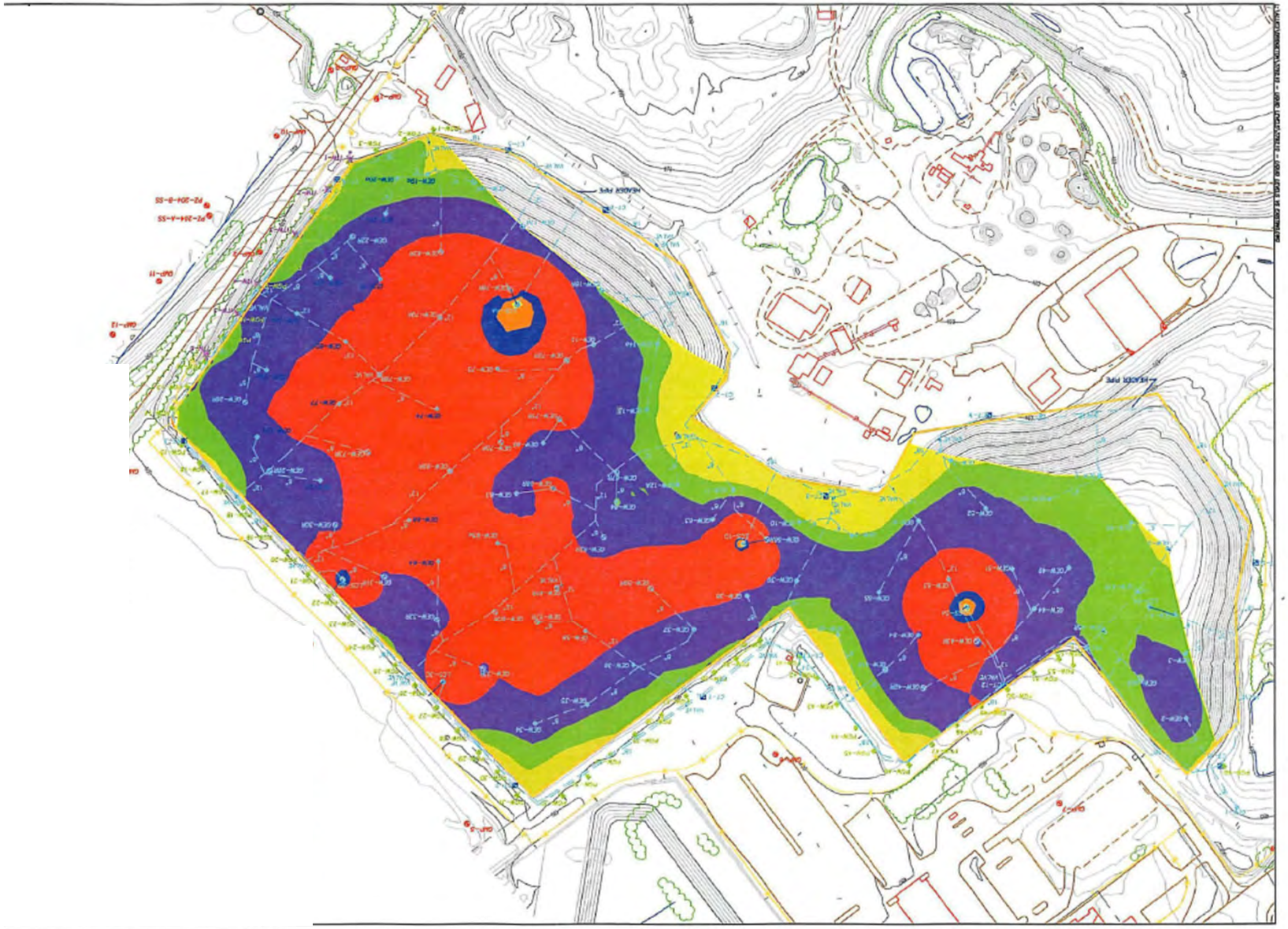
The current water level within the MSW in the rock quarries will be important for a number of reasons in future discussions:

Foremost, leachate floods out wells and inhibits effective gas collection. Since the leachate level is expected to be at 90 to 150' below pre-settlement ground level (see red zone in Figure 2-8), LFCI concludes that for the purposes of controlling the reaction, development of future extraction wells should be limited to the water table elevation.

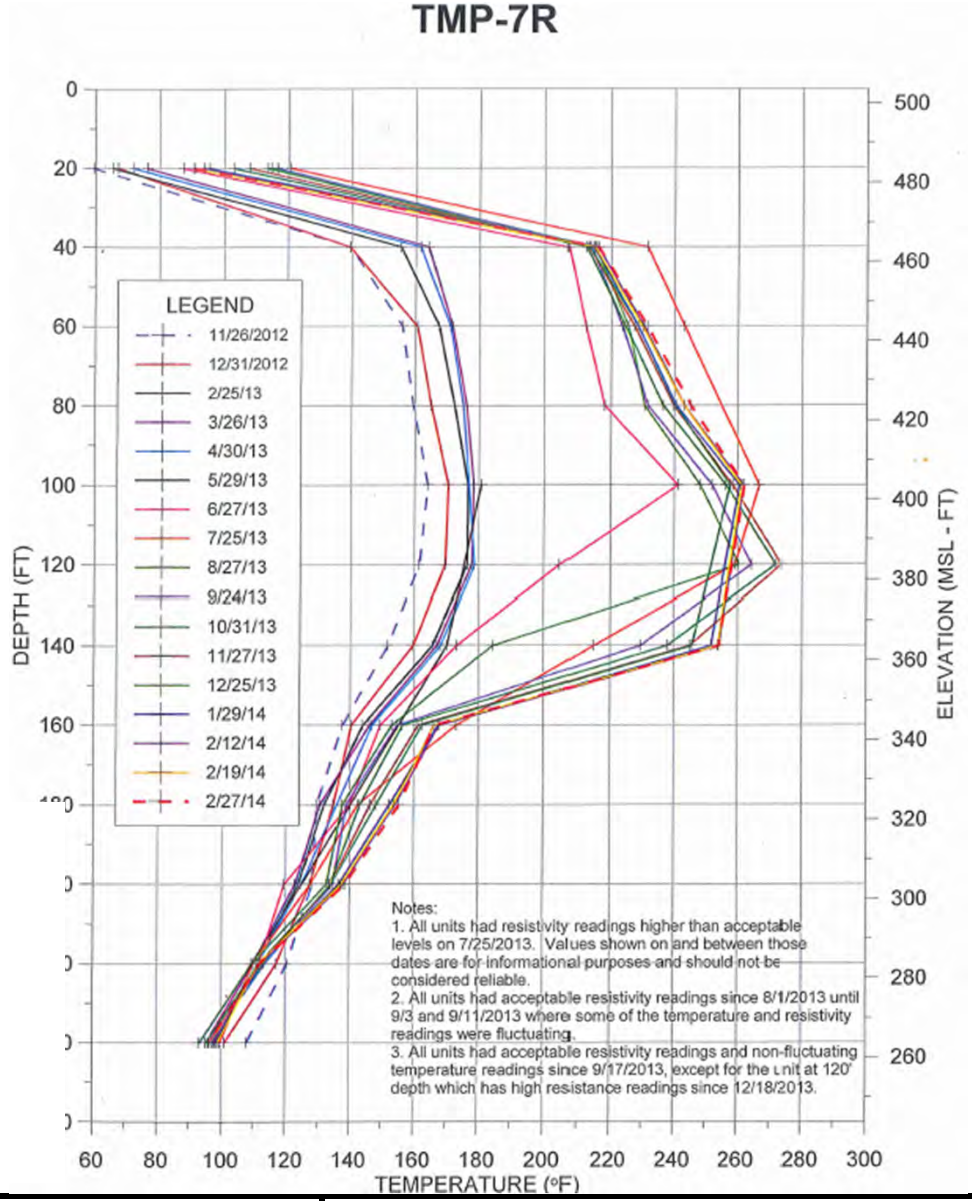
Second, water is a very strong cooling agent as a tremendous amount of energy is consumed (40.65 kJ/mol) in converting water from liquid to gas phase. One would anticipate that most of the burning / SSSER activity is taking place in areas that are above the water table, where sufficiently high temperatures can be developed to sustain the reactions.



Project No.: LFCI.PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**WATER TABLE CONTOURS IN MSW AT BRIDGETON LANDFILL 2010** **PER AQUATERRA ENVIRONMENTAL** **BSL_006_0059634**	Figure **2-8**



Project No.: LFCI.PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**THICKNESS OF USNATURATED MSW AT BRIDGETON LANDFILL 2010** **PER AQUATERRA ENVIRONMENTAL** **BSL_006_0059637**	Figure **2-9**



Project No.: LFCI.PRJ14010
Drawn By: NL
Reviewed By: TS
Date: 24 AUG 2015

TEMPERATURE PROFILE IN TMP-7R

BSL_001_0000302

Figure

2-10

Third, evaporation of water, migration of steam in the gaseous phase, followed by condensation of the of the steam at a down gradient location is a very efficient heat transport mechanism that is likely playing a major role in rapid distribution of the heat within the waste mass.

Based on the above, LFCI believes that flooding the quarry to the highest possible level that would not compromise groundwater seepage may be an effective suppression strategy to help control the SSSER. Allowing the quarry to flood may not be consistent with containment of leachate; however, LFCI suspects that a dewatering strategy using perimeter wells in the bedrock, possibly coupled with a grouting program, may be more effective and reliable in preventing off-site leachate migration. LFCI recommends that Bridgeton LLC and MDNR may want to revisit the requirement to maintain the sump elevations at 30' above the base of the quarry floor given that the SSSER is occurring.

The water level in the North Quarry may play an inhibiting role in the spread of the SSSER in that area. LFCI recommends that Bridgeton Landfill LLC give very careful consideration to the pros and cons of aggressive dewatering of leachate from gas collection wells in the north quarry. Furthermore, LFCI recommends that all existing wells be accurately sounded for the current water level.

LFCI is of the opinion that any planned containment structures such trench excavations, cut-off walls, cooling wells, inert gas injection wells, etc. that were investigated in detail need not be extended the full 240' depth of the rock quarry to contain the SSSER. Instead, such structures need only be extended a small distance below the water table to achieve containment (as long as the water table is maintained). Failure to recognize this has resulted in a massive overestimation of the effort and capital cost required to construct and maintain an effective isolation barrier in the neck.

Based on experience gained with the formation of water gas in the UK, LFCI cautions that addition of small amounts of water to hot char at slow rates may have unintended consequences (formation of steam and flammable hydrogen gas via the water gas reaction). If addition of water is going to be undertaken, it would have to be rapid and aggressive.

Furthermore, aggressive dewatering from LCS-1D, immediately south of the neck and drawdown from LCS-5A (drawdown cone north of the neck), has resulted in the development of two distinct drawdown cones that have locally pulled down the water table to 360' and to 440' in the "neck" area. Unfortunately, information on the position of the water table today is lacking. However, based on the TMP data LFCI believes that the water table is currently around 350'. As discussed later, LFCI believes that dewatering of the waste mass will make containment of the SSSER in the neck area more problematic.

LFCI notes that according to Aquaterra, the water table in the northern portion of the North Quarry exceeds 480' ASL. No data is presented for the water level in OU-1. Given the observed groundwater flow gradient in the North Quarry, suggesting southwestward groundwater flow from the North Quarry into the South Quarry, if the same water table slope extends northward, then groundwater flow could be occurring from OU-1 into the North Quarry. LFCI questions whether this could be a potential pathway for radionuclides to be transported into the North Quarry waste mass. This is potentially an

important question as a reaction of that waste mass in the North Quarry and the associated generation of large volumes of steam could then release these materials into the atmosphere.

The leachate sample recently collected by the AGO indicates that Bridgeton leachate is highly polluted with very high Chemical Oxygen Demand (COD) at 3.2 g/L and total dissolved solids at 18 g/L. These levels are indicative of a very strong leachate. Heavy metals that are elevated include Arsenic at 7 times water quality guidelines, Mercury at 6 times DW limits and Chromium at 1.4 times DW limit. Of greater concern, a number of volatile organic species also exceed guidelines, including **Benzene at 182 times DW limits**, and 1,4 Dichlorobenzene at 6.7 times DW limits. Also, very unusually elevated are two organic species that LFCI has never encountered at such high concentrations in landfill leachate. Acetone is being reported at 140,000 µg/L which is 140 mg/L. Although there is no US EPA standard for Acetone, the U.S. Geological Survey reports that there is a significant increase in the risk of contracting cancer at Acetone concentrations of 6 mg/L. Also 2-Butanone is being reported at 8,700 µg/L, 8.7 mg/L (ppm). The EPA reports a 10 day health advisory for a 10 Kg child at 7.5 mg/L concentration, and a lifetime advisory at 4 mg/L. The lab results for Bridgeton Leachate chemistry are presented in Appendix J).

Given the elevated levels of a number of pollutants, particularly benzene, LFCI recommends to the Missouri Attorney General's office that due consideration be given to the long term methods and costs of containing leachate within the rock quarry confines. Given the highly aggressive nature of the leachate and a strongly acidic pH of 5.5, resulting in rapid corrosion of steel, maintaining a pumping system operational will likely prove very costly.

2.6 Waste Materials Received (tires, etc.)

Bridgeton Landfill was permitted to receive municipal solid waste (MSW). The landfill operated between 1979 and 2004. Records show that this landfill received approximately 10 million cu.yd of waste between 1990 and 2004. Based on very crude measurements by LFCI, it is estimated that Bridgeton received about 21 million cu.yds. of MSW, during its operating period. Assuming an average density of 1,000 lbs/cu.yd. the landfill likely received on the order of 10.5 million tons of MSW, an annual average of 420,000 tons per year. It is our understanding that the vast majority of MSW received at Bridgeton was curbside waste from residential and commercial sources in the Greater St. Louis area; however, other materials including quantities of demolition waste, gypsum wallboard and up to 500,000 automobile tires were also deposited in the landfill.

2.7 Radiological Waste

Radiological waste comprised of 40,000 tonnes of waste material mixed with barium sulfate residues was landfilled in the Westlake Landfill Operating Unit 1 (OSU 1) in 1973. OSU 1 is located immediately south of the Bridgeton scale access road between the scale and the North Quarry landfill. The OSU1 area is directly connected to the North Quarry fill. Based on the cross section presented in Figure 2-3, the overall thickness of material is 30'. Therefore, construction of fire and heat proof barrier of inert soil to isolate the radiological waste should be relatively straightforward as long as

radiological material has not been drawn into the North Quarry as a result of leachate and/or groundwater seepage.
LFCI recommends that the groundwater levels between the North Quarry and the OU-1 area be carefully assessed to determine groundwater flow directions. If there is a risk of southwestward groundwater flow into the North Quarry, then given LFCI's concern that the reaction is spreading into the North Quarry (as discussed in Chapter 9), it would be prudent to establish a physical barrier between the North Quarry and OU1 that is an effective thermal barrier as well as a barrier to groundwater flow, particularly given such a project seems relatively straightforward given the shallow waste thickness in the area.

2.8 Fill Placement

LFCI has not come across any information on the landfilling practices that were in use to construct Bridgeton Landfill. Based on observations at Champ Landfill and numerous other landfill operations across North America, LFCI assumes that waste was placed in each quarry from the bottom up in lifts, each lift being 10 to 20' thick and covered with a soil intermediate cover. It is our understanding that Bridgeton Landfill received hydrocarbon contaminated soil, and we anticipate that this material was used for intermediate cover purposes as this is a common practice in landfills.

2.9 Intermediate and Final Cover

Operational cover or intermediate cover was periodically applied, but according to County Health inspection in Dec. 1992 considered the operational cover inadequate and large areas of exposed MSW was present at surface. A 1994 inspection by DOH noted that settlement had opened up fissures along the quarry walls and that a leachate collection well in "Pit 2" was exposed and venting. The inspection also noted that a 5' diameter "blow hole" with fissures had developed in "Pit 1" that was venting gas. In 1994 Laidlaw requested authorization to use contaminated soil for daily and intermediate cover. LFCI noted a mottled texture in the July, 2004 photo that is typical of exposed MSW.

Photo 2-2. South Quarry July 28, 2004. Large area of what appears to be exposed waste



2.10 Regulatory Requirements and Constraints

The following operational requirements have been placed on Bridgeton Landfill in various Federal, State and County regulations and permits that are of significance to the heating incident.

- Subsurface landfill gas must be controlled so that methane concentrations do not exceed 2.5% at the facility property boundary.
- Leachate levels in extraction wells must be maintained within 30' of the quarry floor.
- Landfill gas temperatures in LFG extraction wells should be maintained below 131ºF.
- Nitrogen levels from LFG extraction wells shall be maintained below 20%.
- Oxygen levels from LFG extraction wells shall be maintained below 5%.

3. Normal Landfill Conditions

Municipal Solid Waste (MSW) contains combustible and reactive organic matter that includes paper, plastic, wood, food waste, rubber and assorted textile materials. Typically, the carbon content of MSW is 27-32% on a wet weight basis (Bahor et. al. 2008). Although food waste decomposes quickly, cellulose, hemi-cellulose, plastics and other complex organic molecules may take decades and longer to decompose.

Most landfills develop and maintain methanogenic conditions relatively quickly whereby oxygen becomes depleted and methanogenic bacteria dominate. Methanogenic bacteria consume and break down available biomass to produce methane gas (CH_4), carbon dioxide (CO_2) and water (H_2O). Landfill gas is generally composed of 50 to 60% methane and 40 to 50% CO_2 on a dry volume basis. Landfill gas is typically saturated with H_2O. Much smaller concentrations of assorted volatile organic compounds are also present in landfill gas. These constituents are commonly grouped together as Non Methane Organic Compounds (NMOC's).

Oxygen is not produced in landfill gas, but can be encountered if LFG extraction systems are operated with excessive vacuum such that air intrusion develops into one or more extraction wells in the well field. Oxygen can also be pulled into the well field through cracks and defective welds in the extraction piping. Best operational guidance is to maintain O_2 concentrations in LFG wells below 2%. The U.S. EPA's New Source Protection Standards (NSPS) require that LFG wells be operated in such a way that O_2 concentrations are maintained below 5%. The Bridgeton Operations and Maintenance Manual (1993) stipulates that LFG operating vacuum in wells should be adjusted based on methane content, with methane in wells maintained at 40 to 50%. The manual does not discuss oxygen, balance gas, temperature or CO levels.

Like oxygen, nitrogen gas (N_2) is also not produced by methanogenic bacteria, but is drawn into the waste mass from atmospheric air through the air intrusion process described above. Atmospheric air is typically composed of 21% O_2 and 79% N_2. N_2 is an inert (non reactive) gas that is sometimes used to control subsurface landfill fires. Landfill gas analyzers such as the Landtec GEM2000+, GEM5000 and Elkins Envision analyze the LFG for CH_4, CO_2 and O_2. The analyzers also report "Balance Gas". In general, balance gas is very rich in N_2; however, in the reacting areas of the South Quarry at Bridgeton, the balance gas can contain high concentrations of hydrogen gas.

Carbon monoxide (CO) is not produced during methanogenesis and is typically found in landfill gas at concentrations of less than 100 ppm. Elevated concentrations of CO are considered indicative of subsurface landfill fire. The significance of CO is discussed in Section 8.8.

In the methanogenic state normal landfill temperatures are 60 to 131 ºF.

Decomposition of MSW in landfills is a slow process. In LFCI's experience, normal settlement rates in MSW are below 2% of the total waste column thickness per year. Settlement rates generally decline with the age of refuse as the rapidly decaying organics are consumed.

4. Air Intrusion

4.1 Air Intrusion Background

LFCI has encountered air intrusion as the leading cause of spontaneous combustion fires on numerous landfill fire projects over the years. Side slope air intrusion is particularly problematic in construction / demolition / land clearing debris (DLC) landfills that generally have a higher air permeability than MSW landfills. In MSW landfills, like Bridgeton, the primary cause of air intrusion occurs through the overdraw of LFG extraction wells.

It has long been recognized by the landfill industry that overdraw of LFG extraction wells can lead to aerobic conditions in the landfill, and ultimately, if the problem is not corrected, to subsurface landfill fire. For this reason the NSPS guidance is to maintain O_2 levels below 5% and to maintain nitrogen levels (as balance gas) below 20%. The risk of overdraw induced fires or SSO's is recognized broadly in the industry with most landfill SOP's having limits for air intrusion, including oxygen and balance gas. In 2013, Hammer Consulting prepared a report that reviewed the Standard Operating Procedures (SOP's) for a number of major landfills in North America, including those operated by Republic Services. Table 4-1 below provides a summary of the SOP's, as developed by Hammer Consulting.

Notably, the Republic Services SOP calls for oxygen to be ideally maintained below 1% and the maximum allowable level being 2%. Also, the SOP stipulates that methane concentrations be maintained above 48% and temperatures below 120ºF.

In his deposition during the Marsha Buck et. al. vs. Republic case (BSLXL_030_0001923), Craig Almanza noted that oxygen intrusion is a common cause of subsurface landfill fires and that wells that experience SSO need to be shut down promptly to control the reaction.

Table 4-1 LFG Well Control SOP's compiled by Hammer Consulting (2013)

Document	Recommended /Allowed Oxygen Intrusion	Normal and Action Methane Range	Temperature Action Range	Carbon Monoxide (CO) Action Level	Symptoms/Indications of a Smoldering Event or Comments
Republic	<1% typical <2% Max	Normal Arid 43-48% Non Arid 48-52% Action Level <48%	>120°F Temperature exceeding an est. variance >20% from historic temp	>300 ppm	• Dramatic localized landfill settlement • Charred or cracked surface cover • Stressed or dead vegetation • Smoke or smoky odor • Drastic or unusual increase in flowing gas temperature • Abnormal discoloration of a wellhead/riser
Cornerstone	Hold at 0.2% Never allowed to exceed 1%	Normal 50% to 70% Action Level <47% Extreme well stress <40%	Should not exceed 130°F	CO near a subsurface fire may vary from 100 to 1,000 ppm	• Smoke emitting from landfill cover openings • Extraordinary and rapid subsidence of a localized landfill area • Presence of carbon monoxide in the extracted LFG.
Geosyntec	<5%	*No Information*	>140°F	>1,000 ppm	• Gas temperatures exceeding 167°F and CO greater than 1,000 ppm are indicators of a potential fire
SWANA	Ideal 0 to 0.5% <1%	Normal 45 to 58%	Typical range is 60ºF to 125°F Action 125ºF to 140°F	Trace <25 ppm	• CO is an indicator of the possible presence of a subsurface fire • 165°F is the temperature limit for PVC • CO is a byproduct of incomplete combustion and hence an indicator of a possible subsurface fire • Landfill fire may be tested by monitoring CO • Best way to treat a LFG fire is to starve the fire of oxygen • High residual N_2 levels may indicate a landfill fire • If oxygen is sufficiently high (around 10% or greater) the LFG can be in the combustible range within the collection piping
ISWA	3 to 4%	Normal 35 to 50%	*No Information*	*No Information*	• Operators should also periodically monitor for the presence of high levels of residual nitrogen since

					this could indicate conditions that could spark a landfill fire • Operation of extraction wells at temperatures greater than 145°F may result in the weakening and possible collapse of thermoplastic well casings.
ME-BC	2.0% Shall not exceed 2.5%	Normal 30 to 60%	Action Level >140°F	>1,000 ppm	• Active LFG collection areas that are overdrawn and may have too much available vacuum being applied to the well field • Monitoring data shows high O_2, high CO (> 1,000 ppm), and high LFG temperature (> 140°F) • Accelerated landfill settlement in localized areas • Impacted infrastructure such as melted wellheads or piping • Smoke, odor, or residue • A landfill fire may be officially confirmed through the use of field equipment monitoring and laboratory testing for incomplete combustion compounds such as CO. • While an effectively-operated LFG management system can be a fire prevention system, inappropriate operations can pose a fire risk
US EPA	Typical 0.1 to 1% Max. <5%	Normal 45 to 60%	Action Level >130°F	0 to 2,000 ppm	• Landfill fires can occur from the excessive influx of ambient air into the landfill wastes. • Underground landfill fires generally occur when ambient air is drawn into the landfill. • There must be data demonstrating that the elevated parameter(s) does not cause fires or significantly inhibit anaerobic decomposition of the waste (40 CFR §60.753)
USACE	Increasing and exceeds 3.2%	Normal 40-70%	Optimum 85ºF to 105ºF Action Level increasing and exceeds >140°F	>1,000 ppm	• Carbon monoxide can be monitored as an indicator of a landfill fire if the gas temperature begins to rise. • If a fire occurs, fire control may be accomplished through the injection of nitrogen or CO_2 into the landfill to suffocate the fire. The following parameters are evidence of fire within the landfill: • Gas temperature exceeds 167°F • Rapid settlement of the cover system • Carbon monoxide levels are greater than 1,000 ppm

					• Combustion residue is present in the LFG lines
Ohio EPA	<1.5% for and HOV request	Action level >45% for an HOV request	>150°F for an HOV request	<100 ppm for an HOV request	• Excess nitrogen may be associated with the consumption of oxygen. • CO is a good indicator for the presence of fires in a waste mass • Agrees with the National Solid Waste Management Association that when methane content of a wellhead drops below 45%, then "something" adverse is happening

LFCI has worked on the control of several LFG initiated landfill fires and agrees that the primary means of control is to shut down the LFG extraction well. However, if the fire is initiated in an area that continues to draw oxygen from the ground surface even after a well is shut down, then additional control measures are needed to prevent the SSO from spreading.

In case an SSO develops, the Republic Services SOP for Subsurface Oxidation events calls for the following:

- Oxygen suppression is key protocol
- Health and safety concerns, collapse
- Turn off vacuum in wells around area
- Add dirt cover with LGP equipment
- Do not add water (concern with odours, steam)
- Do not excavate through cover system (will add extra oxygen)
- Do not remove well head, field under vacuum, will draw oxygen in
- Do not add dry ice, will need wellhead to be removed
- Do continued monitoring

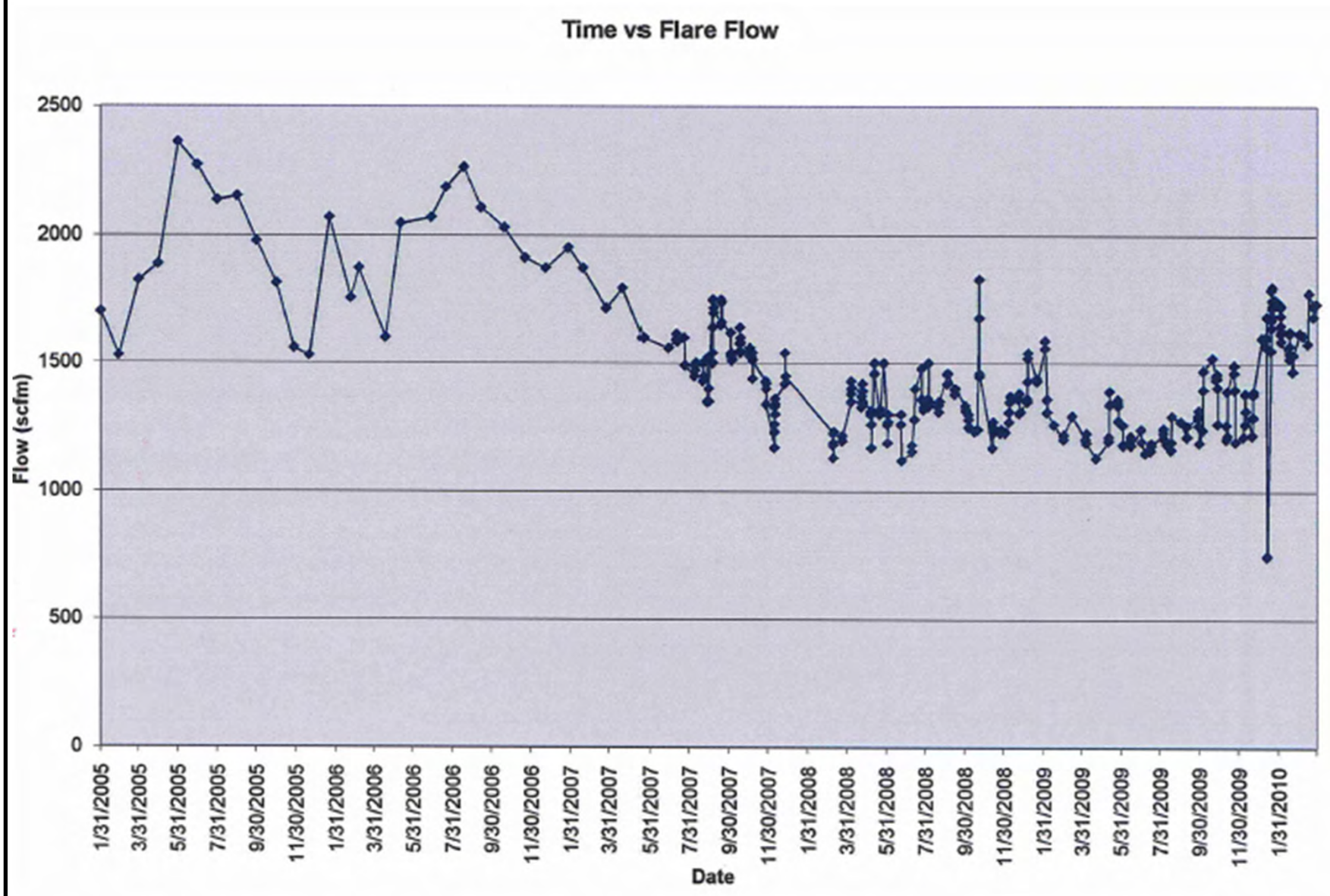
4.2 Air Intrusion at Bridgeton Landfill South Quarry

Landfills are required to apply intermediate cover on MSW deposited in the landfill, in part, to prevent the intrusion of atmospheric air into the waste mass. As well, landfills are required to implement final closure with an impervious cap once the final landfill geometry is reached.

At Bridgeton the final closure cap was constructed in 2005 and 2006. However, significant cracking and slumping of that cap has been reported in the 2010 Annual Financial Report. The Google air photo record indicates that black geomembrane liner was deployed in two areas along the landfill toe of the South Quarry in 2011 and subsequently, additional liner was added in 2012.

Under NSPS landfills are required to maintain methane concentrations at the property below 2.5% methane on a volume basis. Given the rock quarry geometry, the presence of overburden at surface underlain by fractured and weathered limestone at the top of the St. Louis formation, and given that there is no low permeability liner on the quarry walls to contain methane, control of off-site gas migration has been an ongoing challenge at Bridgeton landfill and has resulted in Orders being issued to Bridgeton LLC starting in 2005. In January, 2010 perimeter wells 1, 5, 7 and 11 were in non-compliance for exceeding the 2.5% methane concentration. In the 2010 Annual Financial Report, it is noted that off-property LFG migration remains as a top priority risk and that substantial fines were issued against the company.

From the LFG extraction record presented in Figure 4-1, it is evident that Bridgeton commenced aggressive extraction of the LFG around November, 2009, with LFG flows increasing from about 1,200 SCFM to about 1,700 SCFM, an increase of 42%. However, LFCI's review of LFG extraction well monitoring data compiled by Aquaterra between 2005 and 2008 (see Appendix H) indicates that



Project No.: LFCI.PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**METHANE FLOW TO FLARE 2005-2009** **BSL_006_0059638**	Figure **4-1**

Bridgeton Landfill had a history of exceeding oxygen levels and temperatures in a number of monitoring wells, and that the frequency of exceedances increased in 2008 and 2009 as more aggressive action was taken to control the offsite LFG migration.

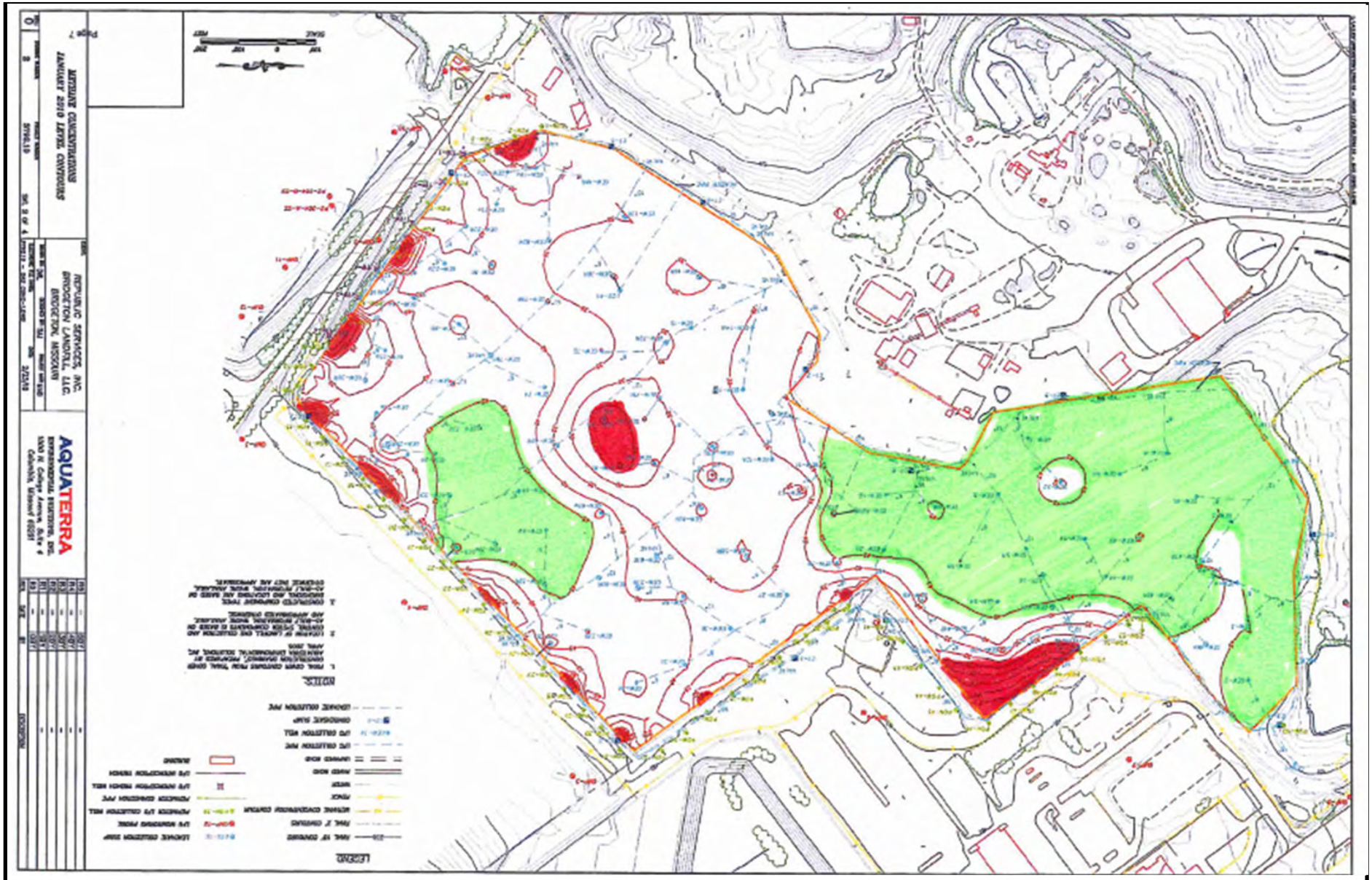
Table 4-2 Summary of temperature and O_2 concentration exceedances of NSPS 2005-2008

Year	# of Temp Exceedences	Temp Percent Exceedence (%)	# of O2 Exeedences	O2 Percent Exceedence	# ofBal Gas Exeedences	Bal Gas Exceedence	Entries	Frequency	Comments
2005	4	1.4	6	2.1	74	25.4	291	M	
2005	4	1.9	6	2.8	37	17.5	211	M	
2006	15	3.1	9	1.9	N/A	N/A	485	M	No data for first half
2007	27	2.3	138	11.5	N/A	N/A	1200	M	
2007	59	5.4	104	9.6	N/A	N/A	1089	Bi-weekly	No data for :Oct, Nov, Dec
2008	25	1.2	290	13.5	N/A	N/A	2146	Bi-weekly	

By 2008 the record indicates that LFG wells were experiencing oxygen overdraw on 13.5% of readings taken. This level of overdraw is well above the norm and exceeds Republic's own SOP's for LFG extraction well operation. Many of the exceedances originated from perimeter extraction wells (PEW's) and from interception trench risers (IT's). This data indicates that atmospheric air was being drawn into the MSW bedrock interface. Although, this tactic helped to control gas migration at the property line, it also introduced very high concentrations of O_2 into the waste mass beneath the final cover.

As shown by the methane concentrations for GEW's plotted for January, 2010 in Figure 4-2, most of the South Quarry is in a state of significant overdraw. Normal methane concentrations above 45% methane are noted only in a small area on the southeast side of the landfill, with more than 2/3 of the South Quarry reporting methane levels below 40%., well below Republic's minimum methane level of 48%, as per their SOP. Of particular concern, as indicated by the red zones on Figure 4-2, severe air intrusion is evident on the northeast and southeast sides of the South Quarry and in a red zone in the middle of the quarry as well where methane concentrations are below 25%.

LFCI undertook a review of the oxygen and balance gas concentrations from the latest SCS data base provided to us by the AGO. LFCI has plotted the oxygen and balance gas concentrations for a selected group of 36 wells from that data base. The concentration vs. time graphs are presented in Appendix F. On the plots LFCI has highlighted readings that exceeded NSPS operating guidelines (5% O_2 and 20% Nitrogen as Balance Gas). The record indicates that a number of wells have been consistently over-extracted for extended periods, well above NSPS guidelines and Republic's SOP's. In particular, overdraw is evident in wells 12A, 21A, 63 and 70. Some of these are the same wells that subsequently developed elevated temperatures and were placed on the County elevated temperature monitoring list on December 15th, 2008. Figure 4-3 shows a balance gas plot for SEW-063, while Figure 4-4 shows the corresponding oxygen concentration plot for the same well. Note that the well was operated from 2007 to late 2010 with balance gas concentrations well above the NSPS guideline. This resulted in significant air incursions, particularly in August, 2009. It should be noted that Oxygen may be stripped away by the aerobic bacteria as the intruded air travels through the waste mass.



Project No.: LFCI.PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**METHANE CONCENTRATIONS JANUARY 2010** **BSL_006_0059635**	Figure **4-2**

Therefore, depending on the distance between the air intrusion point and the LFG collection well, elevated oxygen levels may not have necessarily been observed in all the over-pulled wells.

Figure 4-3 Balance Gas and Vacuum Plot for SEW-063

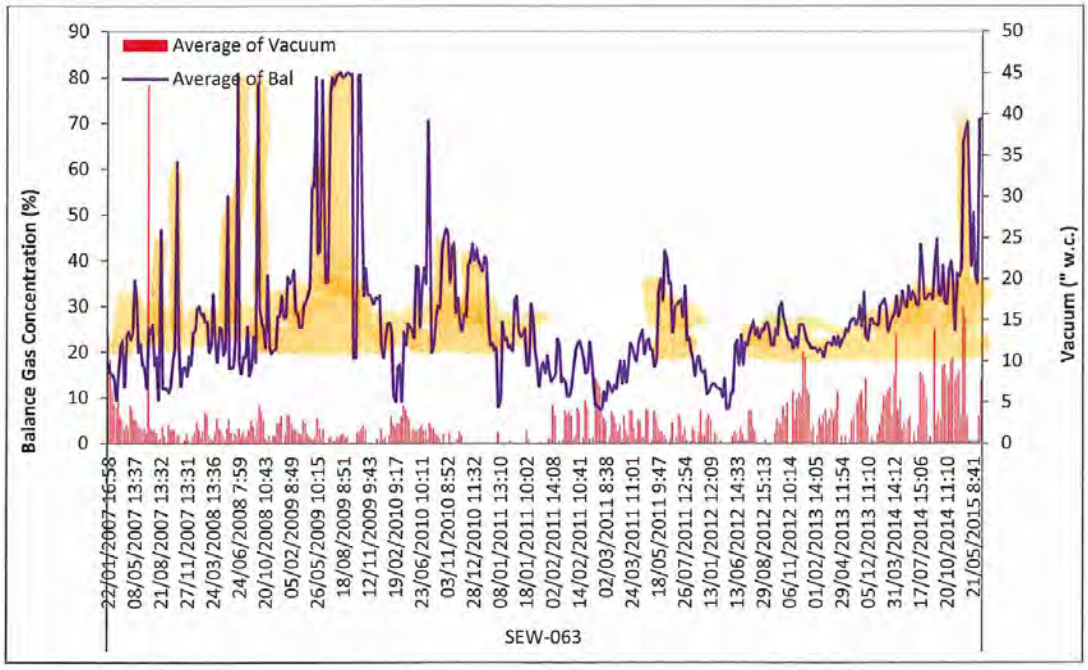
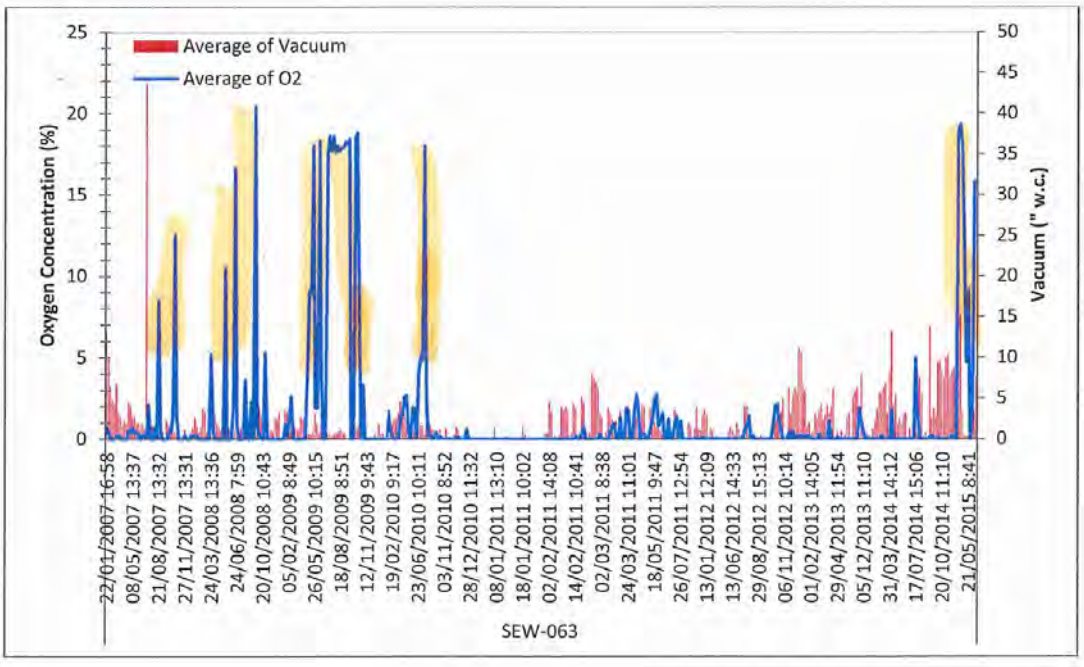


Figure 4-4 Oxygen Plot for SEW-63



It has been LFCI's experience that allowing air entry into landfills is dangerous. Aerobic decomposition leads to elevated waste mass temperatures. Elevated temperatures increase the risk of triggering other exothermic chemical reactions that ultimately lead to heat build up, spontaneous combustion of the waste mass and SSO or smoldering. LFCI's experience is echoed by the Environment Agency (UK). According to the agency, air intrusion is a common cause of subsurface landfill fires or "hot spots". The EA report states "*Air ingress to the waste as a result of active gas extraction systems and the over-abstraction of landfill gas was suspected to be the principal contributing factor for the majority (62 per cent) of the (78) sites*".

In the case of Bridgeton Landfill, allowing the over-extraction of LFG to continue unchecked for an extended period of time resulted in heat build up. This ultimately led to the initiation of a self sustaining subsurface exothermic reaction (SSSER), as discussed later in this report.

5. Thermal Events

Landfills can experience a range of burning events that include fire, smolder, pyrolysis and SSSER.

5.1 Burning

Burning or to burn is defined as:

- to undergo rapid combustion or consume fuel in such a way as to give off heat, gases, and, usually, light; be on fire (http://dictionary.reference.com/browse/burn)
- marked by flame or intense heat (http://www.thefreedictionary.com/burning)

In the context of a landfill, the burning process involves a chemical reaction that results in the rapid generation of heat, gases and usually (but not always) light.

5.2 Combustion

Combustion or fire is the most recognized form of burning. Fire is a strongly exothermic oxidation reaction whereby a fuel is rapidly oxidized, typically producing CO_2 as the primary combustion gas, fine particulate as smoke and ash. Fires give off light in the visible spectrum as flame, and in the invisible infra-red spectrum. Fires generate a large amount of heat due to their strongly exothermic nature. The reaction requires high temperatures to be sustaining, typically temperatures above 600°F. Photo 5-1 presents a photograph from the Cerro Patacon Landfill fire that was extinguished by the Panamanian Bomberos under direction of Dr. Sperling from LFCI.

Photo 5-1. Cerro Patacon Landfill Fire in Panama



5.3 Smoldering

Smoldering is also recognized as a form of burning, as in "a burning cigarette". Smoldering is also an exothermic reaction, whereby combustion products react with limited amounts of oxygen to produce gases and heat. In many cases smoldering does not generate visible flame or light, but it does consume fuel, release heat through as a result of the exothermic oxidation reaction, and generate exhaust gases, typically rich in carbon monoxide (CO). Typical temperatures of the smoldering front are 932 to 1292ºF (G. Rein, 2009); however, initiation of smoldering has been documented at temperatures as low as 170ºF (Babaruskas, 2003). Typical CO concentrations during smoldering are 100 to 10,000 ppm.

Photo 5-2 is a picture of a typical smoldering front observed at Carmon Landfill in Israel. Similar depressions with abnormally high temperatures have been observed beneath the EVOH geomembrane on the southwest side of the South Quarry.

Photo 5-2 Typical Collapse Crater with Smoldering Front – Carmon, Israel



Research into smoldering suggests that in most cases the smoldering reaction occurs as a two step process (Rein, 2009). First organic material (e.g. wood) is heated to a temperature that initiates the break up of more complex organic molecules such as cellulose and lignin into smaller gaseous molecules including CO, CO_2, CH_4, H_2 and H_2O and char. This process is generally endothermic. In the second step, the gases react with available oxygen in highly exothermic oxidation reactions to produce the combustion gases and heat. The heat subsequently drives the pyrolysis process. Thus smoldering can be a self sustaining reaction provided sufficient oxygen remains available.

Smoldering is known to propagate at oxygen concentrations as low as 3% (DeHann, 2007). The SCS data base indicates that many GEW wells at Bridgeton are currently operated at levels that will support smoldering. Given the elevated temperatures and the history of oxygen intrusion, LFCI suspects that smoldering is occurring in the shallower areas of the waste mass. Characteristic smoke residue is not being observed in the LFG because the waste mass itself serves as an excellent particulate filter. However, all of the reaction products of smoldering are being observed in the LFG being extracted from the South Quarry, and drill cuttings from Sonic drilling programs are bringing up a grey material that has the characteristics of ash (Brenda Ardrey, personal communication). In his deposition, Mr. Craig Almanza indicated that the post reaction materials are reduced and are turning to ash and char.

5.4 Pyrolysis

Pyrolysis is defined as the breakdown of solid hydrocarbons in an inert (oxygen free) atmosphere. Two characteristic forms of pyrolysis are recognized, high temperature pyrolysis such as is utilized in waste to energy facilities and low temperature pyrolysis which is also referenced as torrefaction. Torrefaction occurs at temperatures below about 600°F (Grace, 2015). Torrefaction is always an endothermic process, meaning it consumes heat. For this reason pyrolysis is not burning and pyrolysis on its own cannot be self sustaining. However, just as in the burning cigarette reaction, pyrolysis plays a key role in the self sustaining subsurface exothermic reaction, as described below.

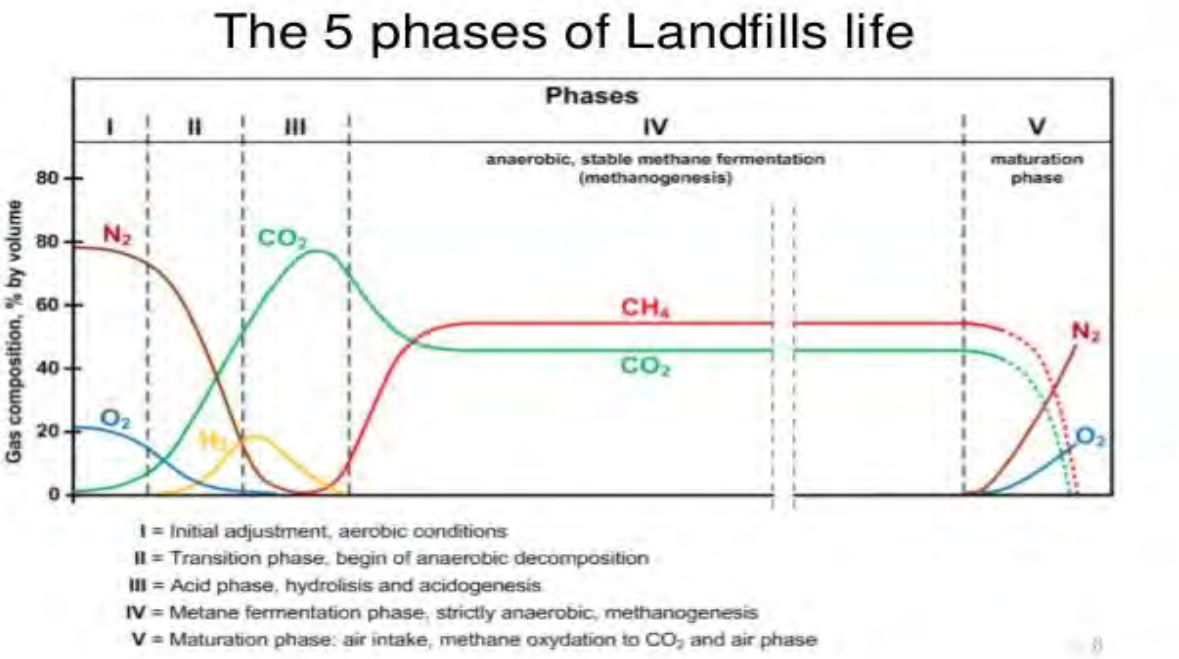
5.5 Self Sustaining Subsurface Exothermic Reaction (SSSER)

SSSER is a true burning process. It is a self sustaining reaction that consumes fuel, produces large quantities of product gases and generates lots of heat. SSSER is not well recognized and is not well documented in the technical literature.

LFCI first became aware of the potential for SSSER at Winnipeg Landfill in 2014 when LFCI's client detected very high CO levels in a number of their newly installed LFG extraction wells. Subsequent testing revealed that the LFG contained abnormally elevated levels of H_2 gas. Although elevated levels of H_2 do occur during the early deposition of MSW as the waste transitions from aerobic through Phase II Transition and Phase III acidic stages, once steady state methanogenic conditions are established in Phase IV methane fermentation stage H_2 levels in LFG are typically very low (See Figure 5-1).

In researching the potential source of H_2, LFCI identified the mildly exothermic water gas shift reaction as a possible source of the hydrogen. Subsequent research revealed that other landfill fire specialists in the UK identified the water gas reaction as another possible source of hydrogen gas in subsurface exothermic reactions. (Hall, 2007, Foss-Smith personal communication; 2015(see Appendix I for communication and Appendix O for Foss-Smith CV))

Figure 5-1. Gas Composition During 5 Phases of Landfill Evolution (after Hofstetter)



Organic chemistry is a subject in which the LFCI project team has only a limited working knowledge gained from attending several Chemistry courses in the early years of engineering school. For this reason LFCI consulted with Dr. John R. Grace, professor emeritus in Chemical Engineering at UBC and former Canada Research Chair in Clean Energy combustion processes, with a focus on fluidized bed reactors (see Appendix O for Dr. Grace's CV).

Dr. Grace was asked to inform the LFCI team on the likely chemical mechanisms that could be leading to the generation of heat, the consumption of methane, the generation of abnormally high levels of CO and relatively rapid subsidence in a subsurface landfill environment. Dr. Grace prepared a brief report that is presented in Appendix K in its entirety and key sections are extracted and italicized in this section.

Dr. Grace supported LFCI hypothesis that torrefaction of the waste is producing reaction gases. He pointed out that torrefaction is a purely endothermic process and therefore, there must be another mechanism generating the heat necessary to drive the pyrolysis reaction.

Dr. Grace identified the following exothermic reactions that all involve reaction products known to exist in significant quantities in the subsurface LFG, including CH_4, CO_2, H_2O, H_2, C(solid) and O_2. Oxygen has been drawn into the landfill around wells that have been over-extracted, and is also being pulled in through the southeast and southwest quarry walls, as previously indicated by gas concentration patterns visible on Figure 4-2.

Water-Gas Shift (WGS) Reaction*: $CO + H_2O \leftrightarrows CO_2 + H_2$. This is a reversible mildly exothermic process. Industrially, it is carried out at high temperatures (e.g. in excess of 1500°F (816°C), as well as in low-temperature shift reactors at temperatures as low as 392°F (200°C). As an exothermic reaction, its equilibrium constant increases with decreasing temperature, meaning that more reaction would occur if equilibrium were to be achieved. However, the kinetic rate constants for the reaction decrease with decreasing temperature. In industrial reactors, the reaction is catalysed by various metals and metal oxides, with copper oxide (CuO) and platinum most commonly deployed as catalysts in low-temperature WGS reactors. Various catalyst poisons (in particular sulphur compounds, chlorides and some heavy metals) can lead to the deactivation of catalysts. Because there is no change in the total number of moles in this reaction, the equilibrium conversion is independent of the total pressure.*

Mr. Patrick Foss-Smith, a renowned landfill fire specialist from the UK, as well as members of the UK Fire College and UK Environment Agency are of the opinion that initiation of the water gas shift reaction can occur at temperatures as low as 100 ºF.

Steam Gasification: *$C_{(s)} + H_2O \rightarrow CO + H_2$: Sometimes referred to as the "**Water-Gas Reaction**", this endothermic and essentially irreversible reaction converts carbon and steam into a synthesis gas. Its rate is dependent on the nature of the carbonaceous solid, as well as the temperature and steam concentration.* According to the Environment Agency (UK) H_2 concentrations in excess of 20% in landfill gas have been reported in areas where water has been slowly introduced into an area with a suspected hot spot (Hall, et. al. 2007).

Boudouard Reaction*: $CO_2 + C_{(s)} \leftrightarrows 2CO$. This reversible reaction provides a route by which carbon monoxide can be produced from carbon dioxide and vice versa. The kinetics of this reaction depend heavily on the specific hydrocarbon represented by the "C", as well as on the temperature. In the direction shown, the reaction is endothermic, so that it is less favoured thermodynamically at low temperatures. The reverse reaction could be relevant in the landfill as it is more favoured at lower temperatures.*

Methanation Reactions*: $CO_2 + 4H_2 \leftrightarrows CH_4 + 2H_2O$ and $CO + 3H_2 \leftrightarrows CH_4 + H_2O$.*
These are exothermic reactions, the reverse of the steam reforming reactions used widely in industry to produce hydrogen, usually with nickel oxide catalysts, but various other metals can also act as catalysts. Both these reactions are exothermic, and hence equilibrium conversions are higher at lower temperatures. Once again, various poisons can reduce the activity of the catalysts, with sulphur compounds being especially important catalyst poisons in industrial reactors. Given the decrease in the number of moles for both of these reactions as written, equilibrium conversions are favoured by increased pressure. In addition, both would decrease the total pressure locally, leading to some infiltration of gases from the surrounding area.

Oxidation reactions: *Of the compounds involved in the other reactions identified above, hydrogen, carbon monoxide, methane and carbon can all be oxidized by air/oxygen:*
$H_2 + \frac{1}{2}O_2 \rightarrow H_2O$; $CO + \frac{1}{2}O_2 \rightarrow CO_2$; $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$; and $C_{(s)} + O_2 \rightarrow CO_2$.

All of these reactions are strongly exothermic. At the relatively low temperatures of interest, oxidation catalysts such as the noble metals platinum and palladium would need to be present, in addition to intruding oxygen, for these reactions to be playing a major role.

Dr.'s Sperling and Abedini are not experts in chemical reactions. In Chapter 8 of this report we identify striking patterns in the reaction trends observed in the vast majority of the wells that suggest to us that certain chemical reactions must be occurring in a pre-determined sequence, with the outcome of one reaction leading to the next. We recommend that experts in the field of torrefaction, smoldering and low temperature combustion be consulted to confirm the observed trends, confirm the reactions that are causing the trends and advise on control strategies that can be adopted to control those reactions.

6. SER Control History

To determine whether Bridgeton Landfill LLC and its contractors took all reasonable actions and followed best management practices leading up to the SSER event, LFCI constructed a chronological record of key events, starting from the time the rock quarry was initially developed to present day. The record is presented in Table 6-1. Particularly significant events are highlighted in orange, and less critical but still relevant information is highlighted in yellow.

6.1 Period before problems developed 1930-2007

Work on the Bridgeton quarries commenced sometime in the 1930's. Golder reports that quarrying first started in 1939. Landfilling operations first started in 1952 for "combustible materials", Westlake Landfill was issued a permit to receive MSW in 1962. 40,000 tonnes of radiological waste were received at Westlake Landfill and placed in the OU1 area. Landfilling in the rock quarry area commenced in 1979. Quarrying operations ceased in 1988. Landfilling operations at Bridgeton Landfill ceased on December 31, 2004.

In 1992 Bridgeton Landfill was ordered to install an active landfill gas collection system to control odours. In late 1992 Bridgeton Landfill experienced a subsurface fire that eventually broke out at surface along a quarry wall in the North Quarry. A subsequent inspection summarized in a DNR letter dated December 30, 1992 identified a large area that lacked soil cover, numerous erosion gullies in the soil cover, strong odours and an ongoing fire. The fire event ultimately lasted until March, 1995, when it was finally fully extinguished. The 1992 fire event and subsequent fires are explored in Chapter 7.

6.2 Offsite Gas Migration Period 2002-2008

An inspection report dated August 14, 2002 noted that methane levels exceeding allowable concentrations were being detected in property monitoring wells. On May 14, 2003 MDNR referred Bridgeton Landfill to the enforcement unit for repeated violations concerning elevated methane levels in gas monitoring probes at the property boundary. Work commenced on a corrective Settlement Agreement that was ultimately issued to Bridgeton on January 18, 2006. The Agreement stipulated that Bridgeton must:

- complete the final cover by December 1st, 2006
- prepare a remediation plan for to correct ongoing off-site LFG migration
- construct four additional leachate recovery wells by January 2nd, 2006
- install 26 additional perimeter gas extraction wells by January 2nd, 2006
- complete an upgrade to the gas collection system including 8 replacement wells and 22 new extraction wells by January 2nd, 2006

In response to the Agreement the landfill was capped with a low permeability soil cover in 2005 and 2006 and the gas infrastructure was upgraded.

Table 6-1. Event Log for Bridgeton SSSER Incident

Reference Date	Source / Bates #			Event
1930-01-01		Rock Quarry Operations		Site used as Rock Quarry
1939-01-01	PL0013784			Limestone Quarry and Crushing Operation Initiated in 1939 according to Golder
1952-04-23				Site permitted as landfill for combustible material
1962-02-16			MSW Landfill Operation	Westlake Landfill authorized to receive all MSW, sanitary MSW
				Areas 1, 2, 3, 4 and 5 all used for sanitary MSW and DLC
				Areas 1, 3, 5 and 6 originally sanitary and DLC, capped with 2' clay and converted to DLC under permit 218903
				Lateral gas vents to be installed into MSW below DLC round openings filled with graded crushed limestone (see plan sheet 25)
1973-01-01	BSL_001_0000145			Radioactive waste received in West Lake OU1 Area 1 in 1973
1979-01-01	BSL_001_0000145			Quarry Bottom digitized in 1979
1979-01-01	PL-0013785			Landfilling in North Rock Quarry initiated in 1979 according to Golder
1985-11-18	Missouri DNR Web			Permit Issued for Bridgeton Landfill to Laidlaw
1988-12-31				Operation of Rock Quarry was stopped according to Golder
1992-07-31	DNR Order			Change LFG management from passive to active
1992-09-25	Missouri DNR Web			Subsurface Fire reported by Laidlaw North Quarry, Taussig Road
1992-11-30	Laidlaw Letter to DNR	1992 Fire Event North Quarry		Fire smoke first detected November 30, 1992 along quarry wall. Fire air leakage though weathered rock 15' above waste.
1992-12-29	County Health Inspectio			Lack of soil cover, large area of exposed waste. New flare to be operational by Feb 1, 1993. "Enormous Odour Problems"
1992-12-30	DNR Letter			Inspection, large uncovered area, erosion gullies in wet weather area, subsurface fire. Ongoing odour issue.
1993-12-10	SCS Fire Proposal			Investigate North Quarry Fire, Infrared Thermography, Thermisters, Mitigate with Bentonite Slurry
1994-01-10	SCS Fire Proposal			Revised workplan submitted
1994-02-18	Laidlaw Letter to DNR			Requests immediate approval of SCS workplan
1994-03-04	Inspection by DOH			Noted settlement has opened fissures along quarry walls. Flames and smoke noted along eastern wall of Pit 2.
				Abandoned leachate well in Pit 2 has surfaced and is venting.
				Pit 1 has developed a 5' diameter blow hole that is venting gas and fissures.
1994-03-04	DNR Letter			Approves waiving of liner on ramp and sidewalls of quarry
1994-03-08	DNR Letter			DNR approves implementation of SCS Workplan
1994-03-22	Dept. of Health			DOH approved drilling of monitoring wells
1994-03-29	SCS Report			Infrared shows hot spot in north quarry, at quarry wall.
				cold zone temperature probes below 100F (37C)
				Elevated warm zone temps of 100 to 140 F (37 to 60C)
				Gas is normal LFG 50-64% CH4, 34-42%CO2, 0.1-2.5%O2, 0-6.7% N2 Low CO concentrations
				Recommend injection of Portland Cement Slurry into fissures
1994-04-27	DNR Inspection			Site is looking good, no fire evident
1994-06-22	DNR Inspection			Site looked good. Pit #2 fire appears out. Good soil cover.
1994-07-05	Midwest Env. Letter			Request to use hydrocarbon contaminated soil as ADC
				Page 199 of report has really good map of historic permits
1994-07-07	DNR Letter			Letter approves augering. Notes uncertainty whether DLC material may be encountered in North Quarry
1994-10-31	Missouri DNR Web	North Quarry 1994 Fire		Second Subsurface Fire Reported
1994-10-31	Laidlaw Letter to DNR			Initial 1992 Fire Reignited, fissure opened. Smoke observed from second area on Taussig Road at Quarry wall.
1994-12-01	DNR Inspection			Leachate levels above 30
1995-03-29	Missouri DNR Web			Initial fire in North Quarry extinguished (additional data indicates 2nd fire did not occur???)
1995-03-29	Laidlaw Letter to DNR			Initial fire caused by TRW gas extraction wells.
1995-06-13	Laidlaw Letter to DNR			Gas system on line, failure of header due to differential settlement. Failure of piping system in southern area
1995-06-15	Midwest Env. Report			Major report on Environment. Reference chimney drain design change?
1995-10-03	Laidlaw Letter to DNR			Reference to underground historic fire around W-4, reference SCS monitoring with some thermistors above 140F
1997-11-26	Dept. of Health			Inspection Letter. All systems working. Comments provided on planned upgrades
2003 XXXX				XXX Inspector detects off site migration of LFG in perimeter wells. Works starts toward corrective order.
2004-12-31	BSLXL-030-0002960 and Missouri DNI			Bridgeton stopped receiving waste
2004-12-31	BSLXL_030_0002961			In 2004 Republic started work on GCCS Gas Collection Control System Plan
				Took for years to receive high temperature variance on 7 wells.
2005-05-01	BSL_006_0059629		Lateral Gas Migration off Property is Top Priority	Soil capping of Bridgeton Landfill Initiated under Aquaterra's Overview
2006-10-01	BSL_006_0059629			Soil capping of Bridgeton Landfill finished under Aquaterra's Overview
2007-01-01				Almanza becomes Manager of Landfill Gas Operations in Republic Head Office, Phoenix Arizona sometime in 2007.
2008	BSLXL_030_0004336			St. Louis County Health Violation issued to Bridgeton for non compliance on monitoring. 13 exceedances noted. Violation #1412.
2008-09-12	DNR Letter			Documents meeting regarding overlap between permit and USEPA CERCLA Superfund
		Hot Well Variance		St. Louis County at some time approved operating the wells above 130F. Probably Dec. 15, 2008
2008-12-31	BSLXL_030_0002961			Republic requests high temperature variance on 7 wells some time in 2008.
2009-03-01	BSLXL_030_0002864			Vasbinder hired as Environmental Manager Bridgeton Landfill LLC
2009-05-27	BSLXL_030_0004341	Aerobic Decomposition / High Temperatures		Bridgeton monthly report indicates subsurface oxidation in wells 12A, 59, 63. Temps above 130.
2009-05-27	BSLXL_030_0004341			MCC obtained additional samples, CO data indicates that levels do not exceed threshold.
2009-05-27	BSLXL_030_0004341			Monitoring indicates wells had elevated temperatures.
2009-07-31	BSLXL_030-0004347			Wells 12A, 57 and 63 indicate SSO.
2009-09-30	BSLXL_030-0004349			Wells 12A, 57 and 63 indicate SSO.
2009-09-30	BSL_006_0059638			LFG extraction ramped up by 40%
2009-10-31	BSLXL_030_0004353			Well 12A, 57 and 63 continue to show signs of SSO. CO below 500 ppm.
2009-11-30	BSLXL_030_0004355			Wells 12A, 57, 59R and 63 indicate signs of SSO.
2009-12-31				Lambrich sends e-mail that 12A and 63 are high temp, CO below 500 ppm.
2009-12-10	BSLXL_030_004333	Subsurface Smoldering / SSO		Michael Lambrich sends e-mail to Dave Vasbinder re high CO readings in wells. CO of 600 ppm in Well 67.
2010-01-01				Vasbinder E-mail to Almanza indicating LFG property line non compliance in wells 1, 5, 7 and 11 for methane.
2010-02-28				Larger than normal settlements noted in South Quarry, especially SE facing slope
2010-02-28	BSLXL_030_004359			Wells 12A and 67 have high CO 350 to 700 ppm. SSO occurring.
2010-03-31	BSLXL_030_004361			Wells 12A and 67 CO levels 350 to 700. SSO event occurring.
2010-03-01	BSL_006_0059629			20 Gas wells converted to dual phase leachate / gas extraction in Q1
2010-04-10	BSL_001_0000118			Bridgeton New Release, Completed installation of 40 new LFG wells in addition to 160 already in place.
2010-04-12	Aquaterra Test Pits			Excavated about 100 test pits 162-406 with Mini Excavator
2010-04-30	BSLXL_030_0004370			Wells 12A and 67 indicating SSO. CO 350-750.
2010-05-31	BSLXL_030_0004370			Wells 12A, 13, 59R, 63 and 67 indicate signs of SSO.
2010-05-30	BSLXL_030_0004374			Vasbinder complains to Lambrich at MCC about Flare Shut Down.
2010-12-22	BSLXL_030-0004324			Mike Lambrich detects high CO around 600 ppm in GEW 67
2010-12-22	BSLXL_030-0004321			Mike Lambrich notifies Vasbinder about high CO in GEW 67, first day of his new career??? (but reaction started 18 months previous)
2010-12-22	BSLXL_030-0004323			Mike Lambrich testifies that there was absolutely nothing indicating problems before Dec. 22, 2010???
2010-12-22	BSLXL_030_0004344			Gas wells 12, 29, 63 and 67 were indicating high temperatures in subsurface.
2010-12-23				Almanza Gets phone call from Vasbinder re 15 wells with high temps, provides contacts that could assist, then nothing
2010-12-23	BSLXL_030_0004328			Lambrich sends Vasbinder an e-mail about elevated CO levels in 67.
2011-01-21	BSLXL_030_002923			Key Meeting with MDRNR and County in Jefferson City. Decide on Action Plan.
2011-01-31	BSLXL_030_002975			Jim Walsh of SCS brought in to help consult on problem.
2011-02-28	BSLXL_030_002975			Installed new wells to get heat and gas out according to Vasbinder, Feb, March, April 2011 (total 6 wells)
2011-03-30	BSLXL_030_0004411			Michael Lambrich hired internally by Bridgeton
2011-04-30	BSLXL_030_0003013			Odour back under control with HDPE? Liner and wells installed, according to Vasbinder.
2011-12-31	BSLXL_030_0003013			Between April 2011 and January, 2012 general feeling was that reaction was under control according to Vasbinder.
2012-01-06	BSLXL_030_0002111			Burning electrical chemical type odour complaint reported.
2012-04-28	BSLXL_030_0002943			Vasbinder requests authority for more wells from MDNR.
2012-05-30	BSLXL_030_0002943			Bridgeton installed evoh additional liner.
2012-06-01	BSLXL_030_0002982			Jim Teter from corporate brought in to make Bridgeton a Corporate priority, additional resources allocated.
2012-06-27	BSLXL_030_0002113			Very strong odours reported in nearby business.
2012-08-31	BSLXL_030_0002942			Work started on first toe trench at top of quarry wall to intercept gas, temperature, pressure.
2012-08-31	BSLXL_030_0002945			Work on GIW's started in August of 2012
2012-08-31	BSLXL_030_0003029			Air Quality Monitoring Program implemented in August, 2012 First time ambient Air SUMMA samples pulled
2012-09-14	BSL_001_0000229			Original TMP Plan David Vasbinder or Republic Submitted to DNR
2012-09-27	BSL_001_0000230			MDNR Approval Letter
2012-11-30	LFG CAP Update			5 New Trench Wells
2012-11-30	BSLXL_030_0002937			Almanza becomes Area Manager in November, 2012. Becomes more involved. Becomes point person
2012-11-30	BSLXL_030_0002069			According to Almanza, Bridgeton prepared Odour Management Plan in Nov., 2012
2012-12-31	BSLXL_030_0001935			Almanza transferred to Bridgeton to help manage SSE problem
2012-12-31	BSLXL_030_0002887			Vasbinder transferred from Bridgeton Landfill to Lemon.
2012-12-29	BSL_001_0000210			Heat Dissipation Barrier Plan, PJ Carey Associates
2013-01-03	BSL_001_0000237			Expanded Design for GIW System by SCS
2013-01-04	BSL_001_0000154			North Quarry Heat Barrier System Report, P.J. Carey Associates
2013-01-10	BSL_001_0000216			From: Craig Almanza, Bridgeton LLC and SCS Design of Gas Interceptor Wells
2013-01-11	BSL_001_0000227			Charlene Fitch Approval Letter from MDNR to Bridgeton LLC
2013-01-12	BSL_001_0000119			Grid based settlement monitoring program initiated
2013-02-06	BSL_001_0000222			Letter from Daniel Brennan, P.E. SCS to Charlene Fitch DNR re Expanded GIW Program
2013-02-08				MDNR Approval Letter of GIW Expanded Design (copy not provided)
2013-02-18	BSLX_030_000196			Odour complaints from nearby SSM DePaul Health Centre
2013-02-27				Meeting with MDNR and Bridgeton LLC team (minutes not provided)
2013-03-29	BSL_001_0000240			Overview Report of Monitoring Results and Barrier Options by PJ Carey Associates
2013-04-12	BSL_001_0000118			Bridgeton announces completion of 40 new promised gas wells.
2013-05-20				Commenced removal or RCP (reinforced concrete pipe) frac tanks
2013-06-20	BSLXL_001_00002895			Monthly Data Submittals Dec. 2012 - March, 2013
2013-06-27	BSL_001_0000119			North Quarry Contingency Plan Issued
2013-07-26	BSL_001_0000139			Bridgeton to submit construction plans for EVOH Cap on North Quarry Area
2013-08-23	BSLXL_030_0002157			Almanza gives deposition
2013-08-30	LFG CAP Update			Placement of 32 acres of evoh geomembrane cap completed
2014-02-16				Fire breaks out at surface, allegedly due to broken gas pipe.
2015-02-10		Subsurface Self Sustaining Exothermic Reaction (SSSER)		Pattonville Fire Dept InfraRed shows two hot spots North Quarry high temps. Deputy Chief LaVanchy
				Republic spent $410 million at Bridgeton to date

BSLXL_030_0002158

6.3 LFG Overdraw Leading to Aerobic Conditions Jan. 2008- Dec. 2009

In 2008 St. Louis County Health Dept. issued a Violation Order citing 13 exceedances. As a result of the Orders, Bridgeton expanded the LFG well field and commenced operating the LFG extraction system more aggressively. This resulted in an increase in oxygen intrusion in a number of LFG extraction wells that resulted in elevated well temperatures. In 2008, Bridgeton requested a high temperature operating variance for 7 wells. The variance was approved by the County on December 15, 2008.

Michael Lambrich was hired as a landfill gas technician by Monitoring Control and Compliance (MCC) in March, 2008. Bridgeton Landfill was one of numerous sites that he monitored and maintained the well field, together with a team of other technicians. He was subsequently hired by Bridgeton Landfill, LLC. in 2011. Mr. Lambrich's deposition indicates that he received one year of on the job training for the position by Jared Romaine and received minimal course type training.

David Vasbinder was hired as area Environmental Manager in March, 2009. Bridgeton Landfill was one of about 25 landfills he was responsible for. Mr. Vasbinder's deposition indicates that he had limited formal training in landfill gas management prior to starting his job at Bridgeton.

Monthly monitoring of temperatures and CO in the five high temperature wells commenced in May, 2009. The May data set indicated that CO levels of all 5 wells were below 500 ppm. The Monitoring Control and Compliance (MCC) Report for May stated that "The results of the CO samples revealed readings below concerning levels and MCC will continue to watch this area closely to prevent the chance of subsurface oxidation."

Monthly monitoring of the wells continued with no apparent action being taken to control the air intrusion problem. In September, 2009 high temperatures were again noted in wells 12A, 57 and 63. Notwithstanding the hot wells control of off-site migration of LFG appeared to remain a priority and gas extraction rates were increased by 40% in September, 2009.

In July, 2009 Bridgeton staff concluded that a subsurface oxidation reaction (SSO) was occurring at wells 12A, 57 and 63 and that the wells were operating hot. Despite this, the well monitoring data clearly shows that the wells remained operational. Well 12A was pumped with a vacuum that varied between 1 and 4" though until Dec, 2010. Well 57 was pumped at a vacuum of 1 to 7" until Dec. 2010 and well 63 was pumped with a vacuum of 1 to 5" until Dec. 2010.

6.4 Subsurface Smolder / SSO Period Dec. 2009 – Feb. 2011

Not surprising to LFCI given that air intrusion into LFG wells is recognized as the leading cause of subsurface fires in MSW, **on December 10, 2009 high CO levels above 500 ppm were detected in well 67 by technician Mike Lambrich. This marks the start of the burning event at Bridgeton with initiation of a smoldering fire.** The 600 ppm reading was reported to David Vasbinder in an e-mail dated December 10, 2009. (BSLXL_030_004333).

Continued extraction of LFG from wells that are clearly showing rapidly decreasing methane concentrations, increasing balance gas levels and CO levels above 500 ppm violated NSPS guidelines, Republic's SOP's and industry best practices. In LFCI's opinion, a knowledgeable and experienced landfill gas system operator such a Republic Services should have recognized the significant risks that the company was taking by overpulling the LFG control system.

LFCI can only speculate that the very risky decision to continue overpulling was made in an attempt to control the off-site gas migration issues. Based on the apparent level of training and workload of key Republic staff including Mr. Vasbinder and Mr. Lambrich, it is also possible that the problem simply did not receive the attention it deserved in 2009 and 2010 because they were not aware of risks they were taking by continuing to overpull the gas field. The 2010 financial report for example identifies that the biggest risks to the Bridgeton operating unit are the ongoing methane migration issue and the increased costs of leachate disposal. The issue of a potential SSO in the vicinity of wells 12A and 67 is only mentioned in passing.

When Mr. Lambrich detected elevated CO in well 67 in February, 2010, he reported the exceedance and then MCC waited to receive direction and approval from St. Louis County and Aquaterra to decommission the well. The pumping record indicates that the well remained active. Monitoring of high CO levels continued monthly until December, 2010 when Bridgeton staff appeared to realize that they had a very serious subsurface fire occurring, at which time all wells in the area were shut down and senior management including Mr. Vasbinder and Mr. Almanza were notified. Figure 6-1 presents the flow and pumping record for the well.

Given that high CO levels were first detected in Well 67 in February, 2010, the flow and applied vacuum data indicate that the well was not shut down (or control valve defected and not fully shut) until September, 2010, some eight months later. In LFCI's experience a lot can happen at landfills experiencing sub-surface burning in eight months.

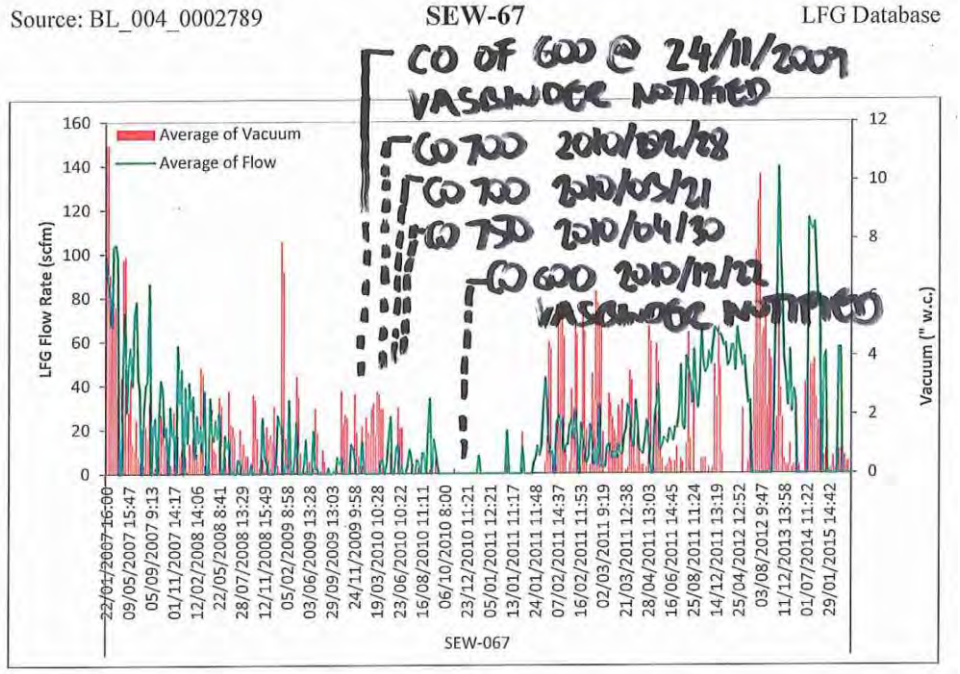
As discussed in Section 8.8, LFCI's review of the gas composition starts to indicate abnormally elevated CO_2 readings in well 67 going back to February, 2009, indicating overdraw conditions and air incursion.

In February, 2010, larger than normal settlements were noted in the South Quarry, particularly on the southeast facing slopes.

In March, 2010 Bridgeton converted 20 wells to dual phase wells capable of pumping both leachate and LFG and 40 new wells were added in addition to the 160 already in place.

In April, 2010, Aquaterra excavated 100 test pits through the final cover with a mini excavator to assess cover integrity.

Figure 6-1. Pumping Record for Well 67, the Well where SSSER Initiated



On December 22nd, 2010, Mike Lambrich again notified David Vasbinder regarding high CO levels in well 67. Although the CO level was reportedly 600 ppm, the same as in February, 2010, this time the information was immediately passed on Mr. Almanza, Republic's Senior Manager responsible for Landfill Gas.

Despite extensive experience in SSSER at other facilities, Mr. Almanza did not personally engage in the Bridgeton problem until two years later. Instead, he referred Mr. Vasbinder to consulting experts, including Mr. Walsh of SCS Engineers.

In early 2011 six new wells were drilled and HDPE geomembrane was installed at the landfill toe to control venting. This geomembrane was evident during LFCI's air photo review.

According to Mr. Vasbinder, between April 2011 and January, 2012 there was a general feeling that the reaction was under control.

6.5 The SSSER Period February, 2011 to present

The detailed gas record indicates a completely different story. LFCI's analysis determined that the **SSSER commenced at Well 67 in February, 2011**. The reaction quickly spread. A second node initiated in March, 2011 at Well 34.

Michael Lambrich was hired by Bridgeton Landfill LLC. to manage the gas field in March, 2011.

In January, 2012 a strong **burning,** electrical, chemical type odour was detected. The odour problem was very serious in nature.

In April, 2012 public meetings regarding the odour issues were convened. Odorous leachate and landfill gas were being expressed at the quarry wall and around most of the LFG wells. A comprehensive air sampling program was initiated.

In May, 2012 the toe slopes of the southeast side of the South Quarry were covered with an EVOH liner to control odours and limit air intrusion.

In June, 2012 Jim Teter, a senior Republic executive was brought in to Bridgeton. Additional corporate resources were allocated. Very strong odours continued to be reported in nearby business.

In August, 2012 work started on the first toe trench at top of quarry wall to intercept gas, temperature, pressure. The toe trench was designed to capture leachate and landfill gas escaping at the MSW/ Bedrock interface. Work on the GIW's also started in August of 2012.

An Air Quality Monitoring Program was implemented in August, 2012. It was the first time ambient Air SUMMA samples pulled.

Five New Trench Wells were completed in November, 2012. Craig Almanza becomes Area Manager. He becomes the point person for the incident. An Odour Management Plan was prepared under his direction in Nov., 2012

In December, 2012 Craig Almanza was transferred to Bridgeton to help manage SSE problem. David Vasbinder was transferred from Bridgeton Landfill to Lemon Landfill. A Heat Dissipation Barrier Plan was also prepared by PJ Carey Associates.

In January, 2013 SCS prepared a detailed design for the Gas Interceptor Well System (GIW). The design competed with the heat removal system recommended by Carey. Almanza chose to implement the SCS design. The plan was approved by MDNR. A grid based settlement monitoring program was initiated to track the reaction front.

In February, 2013 odour complaints continued. A key complaint was from nearby SSM DePaul Health Centre. MDNR issued an Order to start collecting air quality data.

On March 1, 2014 Bridgeton experienced a blow out failure on gas well 30R. Crews had to work through the night to contain the blow-out.

On March 21, 2013 MDNR referred the violations to Attorney General Kris Koster. The AG filed a lawsuit to ensure Republic Services completed all promised actions.

In April, 2013 Bridgeton announced the completion of 40 new promised gas wells.

In May, 2013, Bridgeton commenced removal of the RCP (reinforced concrete pipe) that was a source of LFG venting and odours. The First Agreed Order was reached between the Attorney General and Bridgeton.

In June, 2013 the RCP abandonment program was completed.

Photo 6-1. Decommissioning RCP in June, 2013. (Source PL1 – 0562625)



In July, 2013 Bridgeton submitted plans for an EVOH Cap on entire South Quarry Area.

In August, 2013 placement of 32 acres of EVOH geomembrane was completed. This was initially partially successful as leakage continued around wells. First EVOH boots were added, and later Neoprene boots were added to affect a good seal.

On February 16, 2014 a fire broke out on the Southeast Side of the landfill. The fire was allegedly caused by a break in a high pressure pneumatic air line driving the leachate well pumps.

On February 10, 2015 the Pattonville Fire Dept. InfraRed showed two hot spots in the North Quarry with high temps according to Deputy Chief LaVanchy.

In March, 2014 Bridgeton upgraded the on-site leachate storage system adding first of four 1 million gallon storage tanks.

Photo 6-2. Drilling Replacement LFG Well With Bucket Auger Rig. Jan. 20, 2015 (Source, Brenda Ardrey)



In controlling the SSSER Republic Services reportedly spent $410 million at Bridgeton to February 10, 2015.

7. Landfill Fire History

The Bridgeton Landfill has a long standing history of landfill fire. Fire in the North Quarry occurred in 1992 and subsequently reignited (or was never properly put out) in 1994. MDNR staff have also suggested that a fire may have occurred in 2006. The current event started as a subsurface smoldering event on or before December 10th, 2009 and escalated to a full scale SSSER event sometime in February, 2011. A surface fire commenced due to the broken oxygen line on the southwest face of the South Quarry on February 16th, 2014.

In reviewing statistics published by the NFPA, LFCI has determined that the statistical probability of a major Level 4 landfill fire is about one in 200 per annum. With three or four major fire / reaction events in less than 20 years Bridgeton Landfill is well outside the norm, especially since it has been a closed facility for more than 10 years.

7.1 1992 Fire Incident

The 1992 fire occurred in the North Quarry at Taussig Road. The fire was first reported as a subsurface fire, on September 25th, 1992. Subsequently, the fire broke out to surface at the bedrock MSW interface on November 30th, 1992. The fire was extremely difficult to fight because it burned at depth and because the fire was getting oxygen through the rock mass.

According to the County Health Inspector the area in the vicinity of the fire was poorly covered with lots of exposed waste and resulted in enormous odour problems.

The fire continued to burn throughout 1993 and 1994 while strategies to contain it were developed. Leachate wells in the area started venting as a result of the fire in 1994 and a 5’ diameter blow hole developed.

A suppression plan involving pumping of bentonite slurry along the bedrock interface was initiated to cut off the oxygen supply in April, 2014. This strategy was effective and the fire was extinguished on April, 27th, 1994, a year and a half after the fire first started.

7.2 2006 Fire

Ms. Brenda Ardrey has a recollection of a fire event that was mentioned in a historical report. As of the time of writing this document, she has not located the paper.

7.3 2009 SSO / Spontaneous Combustion / Smoldering

Bridgeton field staff commenced reporting hot wells in 2008 and requested authorization to operate the wells at elevated temperature. Bridgeton staff reported the initiation of a subsurface oxidation event (SSO) in May, 2009. At that time well CO levels were below 500 ppm. On December 10th, 2009 CO levels in well 67 exceeded the 500 ppm threshold. LFCI believes that spontaneous combustion was initiated near well 67 as a result of elevated temperatures due to the SSO. LFCI uses the 500 ppm CO

concentration as an indicator that a smoldering reaction is likely. New wells were added and pumping rates increased by 40% in September of 2009.

The smoldering fire grew to involve more and more wells. By December 22nd, 2010 about 15 wells were involved in the SSO/smolder. The event was reported to Senior Management and aggressive action to contain the burning event was initiated.

Measures were undertaken in 2010 to control odours. These included additional wells, geomembrane liners and increased extraction rates on the LFG system.

In February, 2011 heat from the smoldering fire initiated an SSSER. The SSSER spread quickly to involve about 75% of the South Quarry by 2014. The SSSER continues to this day, being most active in the Southwest corner and approaching the area of the "neck".

In 2012 the SSSER became more aggressive and continued to grow throughout 2012 and 2013. The reaction generated catastrophic odour impacts on the community of Bridgeton. The record indicates that a number of individuals with chemical sensitivities were seriously affected.

LFCI notes that during a review of the Deposition by Craig Almanza, he indicated that he would never purchase a house near a landfill due to the risks of odour. He indicated that "Landfills do not bake cookies." This comment suggests an apparent lack of compassion regarding the impacted residents of the area. The serious odours clearly affected their lives for several years.

On a previous project in Iqaluit, Canada, LFCI has conducted research on the release of dioxins and furans during low temperature burning of landfill gas. The research papers that were reviewed suggest that generation of dioxins during low-temperature smoldering-type fires in MSW is common. Generation of Dioxins and Furans is an environmental impact that is generally not assessed due to the difficulty of sampling for these compounds. LFCI recommends that MDNR undertake dioxin sampling in nearby areas downwind the South Quarry in the prevailing wind direction.

7.4 2014 Fire

On February 16th, 2014 the Pattonville Fire Dept. responded to a fire that occurred at the landfill toe on the northwest side of Bridgeton Landfill. According to the Bridgeton staff this fire incident was initiated by the failure of a sub-cover pneumatic air line that introduced a steady flow of oxygen beneath the geomembrane liner. The air leak initiated a spontaneous combustion fire that subsequently melted the geomembrane.

The fire was promptly extinguished and the area was buried by dirt by site staff and landfill contractors until the liner could be repaired. Subsequently, Bridgeton staff relocated all air lines above the geomembrane liner. Photos 7-1 and 7-2 relates to this fire incident.

Photo 7-1. February 2014 Fire Before Suppression Action



Photo 7-2. Fire Zone after fire extinguished



8. Monitoring Data Review

8.1 Temperature Background

Temperature is a key indicator in the detection of landfill fires, and indeed, landfill decomposition processes in general. Table 8-1 presents a visual summary of key temperatures associated with anaerobic and aerobic decomposition of MSW, subsurface oxidation reaction, smoldering and combustion.

Most MSW landfills are operated in the anaerobic state, whereby methanogenesis (the production of CH_4 and CO_2 by methanogenic bacteria) is promoted. Typically, anaerobic temperatures in the core of MSW landfills exist at temperatures of typically 131 ºF or less (some reported maximum of 140 ºF). For this reason, 131ºF is the New Source Performance Standard (NSPS) for maximum LFG extraction well temperature. Landfill operators are required to obtain authorization to operate wells above this threshold temperature.

Aerobic bacteria produce more heat. Thus, if oxygen is allowed to enter into the MSW mass as a result of aggressive application of vacuum at an LFG control well, temperatures in the waste mass can escalate. Aerobic bacteria typically generate MSW temperatures up to 167 ºF and have been known to increase temperatures up to 176 ºF. It is generally recognized in the solid waste industry that operation of landfills in the aerobic mode is subject to an increased risk of spontaneous combustion and landfill fire.

Temperatures above 170 ºF in landfills are considered indicative of some form of chemical oxidation, chemical hydration, or other chemical reaction occurring within the waste mass. Hydration of aluminum dross is a prime example of an exothermic chemical reaction that can develop temperatures above 170 ºF in the waste mass, and ultimately lead to subsurface exothermic reactions (SER), and/or subsurface fire.

The boiling point of water is 212 ºF. Because the conversion of water from liquid to gas phase, commonly known as steam generation, is a strongly endothermic (energy consuming) reaction, water is very effective at cooling the surrounding waste mass. LFCI has effectively prescribed water application as a cooling medium on many landfill fire suppressions over the years. The conversion of water to steam results in a volume increase of 1,700 times at STP. In a confined space, such as deep within the waste mass, this conversion leads to a large increase in the partial pressure of water, and indeed in the total subsurface pressure. Production of steam is a key reason why an uncontrolled blow out of an LFG well has been experienced at Bridgeton in the past, as illustrated in Photo 8-1, taken by Brenda Ardrey on March 1, 2014.

Fahrenheit Deg. F	Celsius Deg. C		
1,832	1,000	Fire	
1,382	750		
932	500		
608	320		Upper Limit of Torrefaction (low temp. Pyrolysis)
601	316		Wood ignites spontaneously
500	260	Exothermic Decay of Wood	
400	204		
392	200		
392	200		Minimum temperature for Industrial Water Gas Shift Reaction (fast)
324	162		Melting point of EVOH Resin
300	149		
290	143	Suspected Subsurface Exothermic Reaction in MSW	
280	138		
270	132		
260	127		
250	121		
240	116		
230	110		
220	104		Bridgeton Trigger for Elevated Temps in Waste per TMP's
212	100		Boiling Point of Water
210	99	Heat Transfer and Exothermic Metal Oxidation	
200	93		
190	88		
180	82		
176	80		Maximum Biological Temperature per LFCI experience
175	79		Bridgeton Trigger for Elevated Temps in GEW's
170	77		
167	75	Aerobic Biological Decomposition	Upper Limit of Aerobic Biologic Decomposition Temps. MSW
165	74		Bridgeton typical top line of methanogenesis.
160	71		
150	66		
145	63		Temperature to which variance issued for running hot wells
140	60		
131	55	Anaerobic Biological Decomposition	NSPS standard for maximum temperature in well
130	54		
120	49		
110	43		
100	38		
90	32		
80	27		
70	21		
60	16		

Project No.: LFCI PRJ14010
Drawn By: NL
Reviewed By: TS
Date: 24 AUG 2015



LFCI TEMPERATURE SCALE IDENTIFYING KEY TEMPERATURE RANGES

Table **8-1**

Photo 8-1. Steam Released During Blow-Out of GEW-30R (Source, Brenda Ardrey).



A review of the monthly well field monitoring reports for the period leading up to the SER, between 2005 and 2008 indicates that a number of wells in the Bridgeton South Quarry area were routinely operated at temperatures above 131ºF (See Appendix H, LFG extraction well monitoring data compiled by Aquaterra between 2005 and 2008). In LFCI's opinion, aggressive operation of LFG extraction wells at temperatures above 131ºF presents risk of initiating a subsurface fire, and should be avoided.

Subsurface temperatures above 212 ºF are extremely hot and only occur in situations where an aggressive chemical reaction or subsurface fire is occurring. Because all water has converted to the gaseous phase at these temperatures, the waste quickly dries out as the steam is drawn out of the waste mass via the LFG extraction system. Thus, a hot, dry waste mass could potentially develop. Such a waste mass would be at higher risk of conventional fire (exothermic oxidation) should the waste mass be introduced to an oxygen source, such as incursion of atmospheric air as a result of a failure in the air impervious cover system.

During a personal communication with Ms. Brenda Ardrey of MDNR, LFCI was informed that most of the material encountered during borings into the reacted zone is grey, wet and has the consistency of wet sloppy ash. Therefore, it would appear that the reaction is consuming most of the available carbon as combustion gases, leaving behind mainly inert ash.

It has been LFCI's experience that temperatures measured at subsurface monitoring points are invariably much lower than the highest temperatures that are actually present in the subsurface. Foremost, the temperature of LFG drawn out of Bridgeton's gas wells, which is recorded by

monitoring technicians during their rounds by inserting a Fluke thermometer into the gas flow, is an averaged temperature of all of the gas being drawn from that particular well. As such, it measures the average temperature of a mixture of LFG drawn from both cooler and warmer zones within the well's zone of influence.

Second, it has been LFCI's experience that even point specific monitoring probes such as the TMPs are very rarely developed exactly at the hot spot in the subsurface. In LFCI's experience, sub surface fires tend to develop in localized areas and then spread out somewhat akin to octopus tentacles, following air permeable pathways that efficiently convey the heated gas. As a result, most of the waste mass in the subsurface remains much colder than nearby zones that are actually combusting. Typically, LFCI's subsurface thermistor investigations yield temperatures of 167 ºF or less, while follow up excavations ultimately expose material that is actually on fire, in some cases at temperatures above 1,832ºF. Photo 8-2 shows very hot material within an MSW landfill where nearby temperatures in the surrounding waste mass were less than 167 ºF and the ground temperature was -104 ºF.

Therefore, LFCI recommends that the temperatures being observed at Bridgeton, particularly the temperatures from the GEW's and GIW's be considered only as rough indicators of subsurface temperature, and that it be anticipated that actual subsurface temperatures in the heart of a reaction will likely be much hotter.

Photo 8-2. Hot Zone at Dawson Creek Landfill in 2007 (exposed SSO)



Third, as in a burning cigarette, the temperature at the reaction front will be much hotter than the temperature in the rest of the waste mass, both ahead, and behind the reaction front. As an example, during a fire investigation project at Carmon Landfill in Israel LFCI investigated a number of smoldering collapse craters that had developed on the landfill surface. Although waste mass

temperatures were less than 110 ºF in front of and behind the smoldering front, at the smoldering front itself, temperatures exceeded 932 ºF.

In three dimensions, the smoldering front, or reaction front occurring in the subsurface is likely to be some form of irregular 2 dimensional surface, like a growing sphere, crater, sink hole, or pipe. In any case, as this front advances and expands, it is likely to affect only a small portion of a gas extraction well at any given time, thus temperature measurements from GEWs are less likely to record the full temperature increase of the reaction.

8.2 Early Temperature Measurements

Well monitoring data from 2005 to 2008 indicates that seven South Quarry wells were operated at temperatures above 131 ºF under authorization from St. Louis Dept. of Health, including 12A, 13, 19A, 28, 34, 56, and 67. The field monitoring data at those wells shows that temperatures at wells 12A, 56 and 67 oscillate wildly between 50 and 150ºF. Most other wells do not exhibit this oscillation in temperatures. It almost appears that the wells were intentionally overdrawn with atmospheric air in an attempt to cool them and to keep the wells below the 145 ºF compliance temperature. Monitoring events showing diluted LFG (i.e. simultaneous drop in CH_4 and CO_2) at presence of gas flow rate supports this thought. As an example, see GEW-16R data between Dec., 2009 and Feb., 2010 (extracted from the LFG database, BL_004_0002789) presented in Appendix N. Data clearly shows that the temperature of this well was kept below the threshold by overpulling the well as gas flow rate of fluctuating between 12 and 51 standard cubic feet per minute (scfm).

8.3 Gas Well Temperature Measurements

Gas well temperature measurements have been collected monthly by Bridgeton staff and active gas extraction wells and the information has been compiled in the SCS data base. Coloured maps of well head temperatures have been plotted monthly and submitted quarterly to MDNR. LFCI has compiled the continuous record of these plots and contoured those temperatures that exceed 171 ºF. The plots are presented in Appendix C. As discussed, above, temperatures above 170 ºF are considered abnormal in MSW landfills and are not generally caused by normal methanogenic or aerobic bacterial activity.

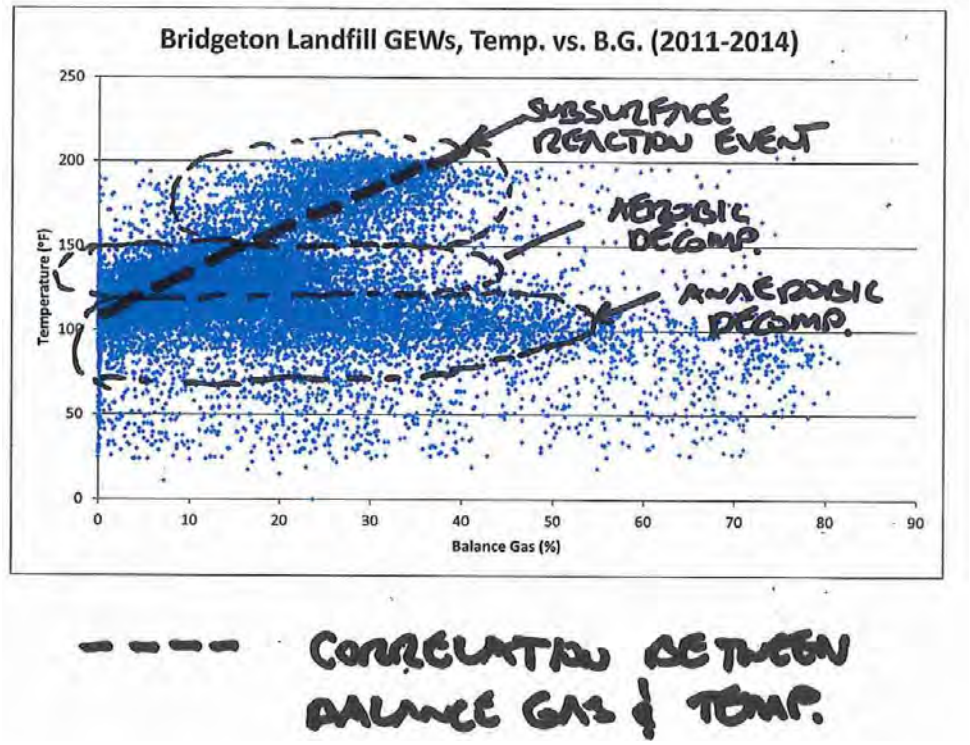
By scanning through the data set it is apparent that the high temperature zone of the SER appeared to be in the northern half of the landfill in January, 2013, to gradually expand westward toward the "amphitheatre area" by Sept. 2013, to really heat up and expand in October, 2013, to die back to the northwest corner during the winter months of January and February, 2014, to heat up and cover most of the south quarry by March and April, 2014, to be constrained in a reaction zone around the "amphitheatre" and the south slope in June, July and August, 2014. By January, 2015, the warmest areas were in the southwest face and the east corner. By May, 2015, the warm areas appear to have expanded, particularly on the southwest slope where the SER appears to be most intense. However, several wells remain above 171 ºF near the "neck".

The temperature contour charts presented in Appendix C, do not correlate well with settlement contours presented in Appendix D, or more correctly, the high temperatures seem to lag behind. For example in the settlement plots the highest settlement rates noted in our analysis were occurring in the west quadrant of the South Quarry in August to September, 2013 while the temperature profiles indicated that the north quadrant was warmest at that time. However, by May, 2015 it appears that the south quadrant was becoming the warmest whereas the settlement had already occurred in that area 18 months previously. In general, the expansion of the temperature front appears to lag behind all of the gas and settlement fronts. Also, it appears to be the parameter that decreases the slowest once the reaction has halted, which is consistent with the observation that MSW is a good insulating material. It has been LFCI's experience on several oxygen suppression fire extinguishment projects, that MSW is an excellent insulator and that it typically takes years for high temperatures in the subsurface to dissipate. Thus as the SER continues in the subsurface over months and years, temperatures continue to be maintained or to increase, long after the rapid settlement front has passed.

Although the patterns presented in the contour information from the GEW temperature measurements suggest that the temperature front is cooling and that the hot zone is shifting to the south quadrant, LFCI is not fully convinced of that conclusion. It is important to recognize that temperatures in the GEW wells are highly dynamic as a result of the large settlements that are being experienced and air incursion into some of the wells. Bridgeton is experiencing failures of many of the GEW's as a result of settlement (they are melting, corroding and being thrust upwards and crimped as the waste mass settles around them). As a result, Bridgeton is re-drilling new wells, often to much shallower depths of only 50' to 150'. Typically, near surface temperatures are much cooler due to conductive cooling from the ground surface, and possibly due to overdraw of colder atmospheric air in some wells. Therefore, LFCI expects that at depth temperatures may be much higher than indicated by the GEW measurements.

LFCI has also analyzed the temperature readings of the GEW's temporally as a scatter plot. First, Figure 8-1 presents the temperature monitoring data from the entire SCS LFG database plotted against balance gas.

Figure 8-1. Temperature Scatter Plot



There appear to be three clusters on the graph, the first between 70 and 130 ºF which is interpreted as normal anaerobic conditions, the second between 130 and 150 ºF which is interpreted as aerobic conditions or heat transfer zone and the third, above 150 ºF which is interpreted as the SER zone. Again, these zones do not align perfectly with LFCI's temperature zone divisions because temperatures in GEW's are typically lower than actual MSW temperatures.

Similar plots are generated on a year by year basis in Appendix L. Looking at the data on a year by year basis, in 2011 most of the GEW readings were in the normal anaerobic zone, with a cluster of outliers in the aerobic zone and a few outliers in the SER zone. By 2012, more wells were in the SER zone and temperatures were increasing. By 2013, it appears the only one half of the data points remained in the normal anaerobic zone, and many GEW temperatures were climbing to the steam control temperature of 212 ºF. The pattern for 2014 was similar to 2013, except that there appear to be fewer data points, probably because wells were lost.

On Figure 8-1 notice that there is a strong correlation between increasing temperature and increasing balance gas within the aerobic and SSE zones of the plot. Within the aerobic zone this trend is due to increased biological activity generating more heat, in the reaction zone it is due to increased chemical reaction activity, as indicated by increasing concentrations of H_2.

8.4 Downhole Temperature Monitoring Probe (TMP) Measurements

Bridgeton has developed a number of dedicated thermistor probes in the vicinity of the neck. These probes, labelled TMP 1 to 14 were installed in late 2012. Additional TMP's were added more recently, but LFCI has not reviewed readings from these new probes.

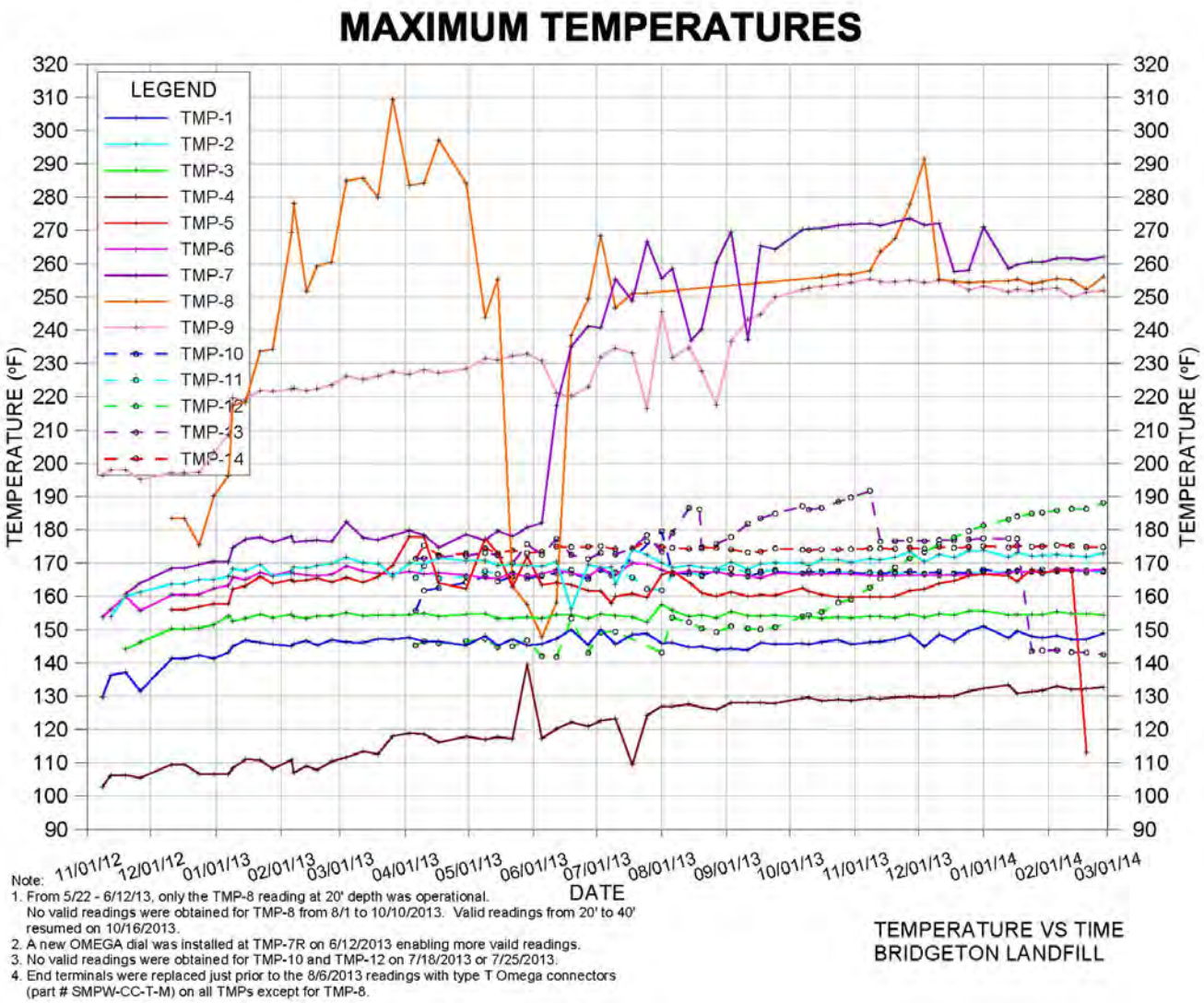
Figure 8-2 is a plot of the maximum temperatures observed in each TMP nest as a function of time. It is apparent that temperatures in most of the TMP's are trending in the 140 to 180 ºF range, well above the normal anaerobic temperature range.

However, three of the TMP's, TMP-5, 6 and 7 have spiked up to steady state temperatures of 250 to 270 ºF, and TMP 5 peaked at 310ºF. LFCI believes that these three TMP's are situated very close to an active reaction zone where all of the available water has been converted to steam and other exothermic reactions are continuing to generate heat and maintain very warm temperatures. These SSSER reactions were discussed in Chapter 5 and the effects of these reactions on the gas quality at Bridgeton is examined in the following sections of this chapter.

Unlike the GEW coloured maps that seems to suggest a cooling trend, the TMP data is showing that the MSW has reached a very high temperature in three wells (believed to be TMP 7, 8 and 9, but colours make it hard to be 100% sure), and the temperature appears to have stabilized as of Feb. 27, 2014. LFCI did not review more current TMP information.

Clearly, the zone around TMP 7, 8 and 9 is behaving differently than all of the other TMP's. LFCI suspects that TMP 7, 8, and 9 are positioned within the reaction area, whereas all of the other TMP's that are being monitored are situated to the west of the GIW line and have not been affected by the reaction as of Feb. 27, 2014, the most recent date for which the TMP information was plotted. The remaining TMP's for which plots are included in Appendix L, show stable temperature profiles, with colder base and landfill surface and core temperatures rising to about 170ºF. These temperatures are consistent with maximum biological temperatures of about 175 ºF. Some warming may also be occurring as the GIW series of wells pull hot steam from the reaction zone around TMP 7, 8 and 9. The hot steam will condense once temperatures drop below 212 ºF, releasing large amounts of heat through the phase change.

LFCI is concerned that once the pore water that appears to be cooling the waste mass reaction and keeping it below 212 ºF is depleted, much of the waste mass may heat up further to temperatures of 310 ºF or higher, as seen in TMP 7, 8 and 9. In the worst case scenario, the large increase in temperatures could lead to much warmer temperatures at surface, and could result in the loss of integrity of the existing ethylene-vinyl-alcohol (EVOH) cap which has a melting point around 324 ºF.



Project No.: LFCI PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**TMP TEMPERATURE TRENDS** **PER WEEKLY DATA SUBMITTALS MARCH 4, 2014**	Figure **8-2**

8.5 Settlement

Settlement is experienced in most municipal landfills. The primary cause of normal settlement of MSW is biological decomposition of organic waste, leading to the production of landfill gas and leachate. In LFCI's experience, settlement rates of about 2% of the total waste column annually are typical. For a waste column of 300' such as is typical of the Bridgeton quarry, normal settlement rates of about 6' per year would be expected in fresh garbage, and settlement rates lower than that, perhaps 3' per year would be expected in MSW that has been in place for 10 years or more.

Over most the South Quarry area, the SER has consumed a significant amount of the waste and resulted in a very large decrease in elevations. Figure 8-3 presents a series of photographs of the South Quarry landfill over a period of several years that illustrate the dramatic reduction in landfill height that has been experienced at the site.

P.J. Carey and Associates have been tracking settlement rates at Bridgeton since March 2013, and the settlement plots are presented in the monthly reports. Copies of those maps, with LFCI's highlighting of 1' and 2' settlement contours for clarity are presented in Appendix D. Settlement rates in excess of 1.17 ft/month or 14' per year have been used to identify areas undergoing SER. On a typical waste column thickness of about 350', this settlement rate translates to 4% per annum, more than double the typical MSW settlement rate in fresh MSW.

A review of the 27 monthly settlement plots generated by P.J. Carey Associates between March, 2013 and June 2015 indicate that the rate of settlement in the highly reactive area of the landfill has typically exceeded 2' per month, and has peaked at 3' per month. These settlements translate to annual settlement rates of 24' to 36' per annum which are much greater than normal settlements experienced at typical MSW landfills. In LFCI's experience, such large settlement rates have been observed only in areas that are experiencing a sub-surface landfill fire and areas underlain by thick deposits of compressible peat.

The settlement plots can be broken down into four distinct periods that show fairly consistent rates of settlement. From March 2013 to September, 2013 the entire crest of the South Quarry is settling at a rate in excess of 1' per month and the southern crest is settling at about 2' per month. Figure 8-4 presents a typical representation.

From September 2013 to February, 2014 there appear to be two distinct active zones, the more active one on the south side of the south quarry continuing to settle at about 2' while in the north half the settlement has slowed down to about 1.3' per month.

From February, 2014 to August, 2014 settlement continued to be more active in the southern half of the south quarry, with two zones developing and settlement rates continuing at about 1 to 2' per year.

12-24-2011



4-25-2012



2-15-2013



3-12-2013



4-28-2013



6-6-2013



8-10-2013



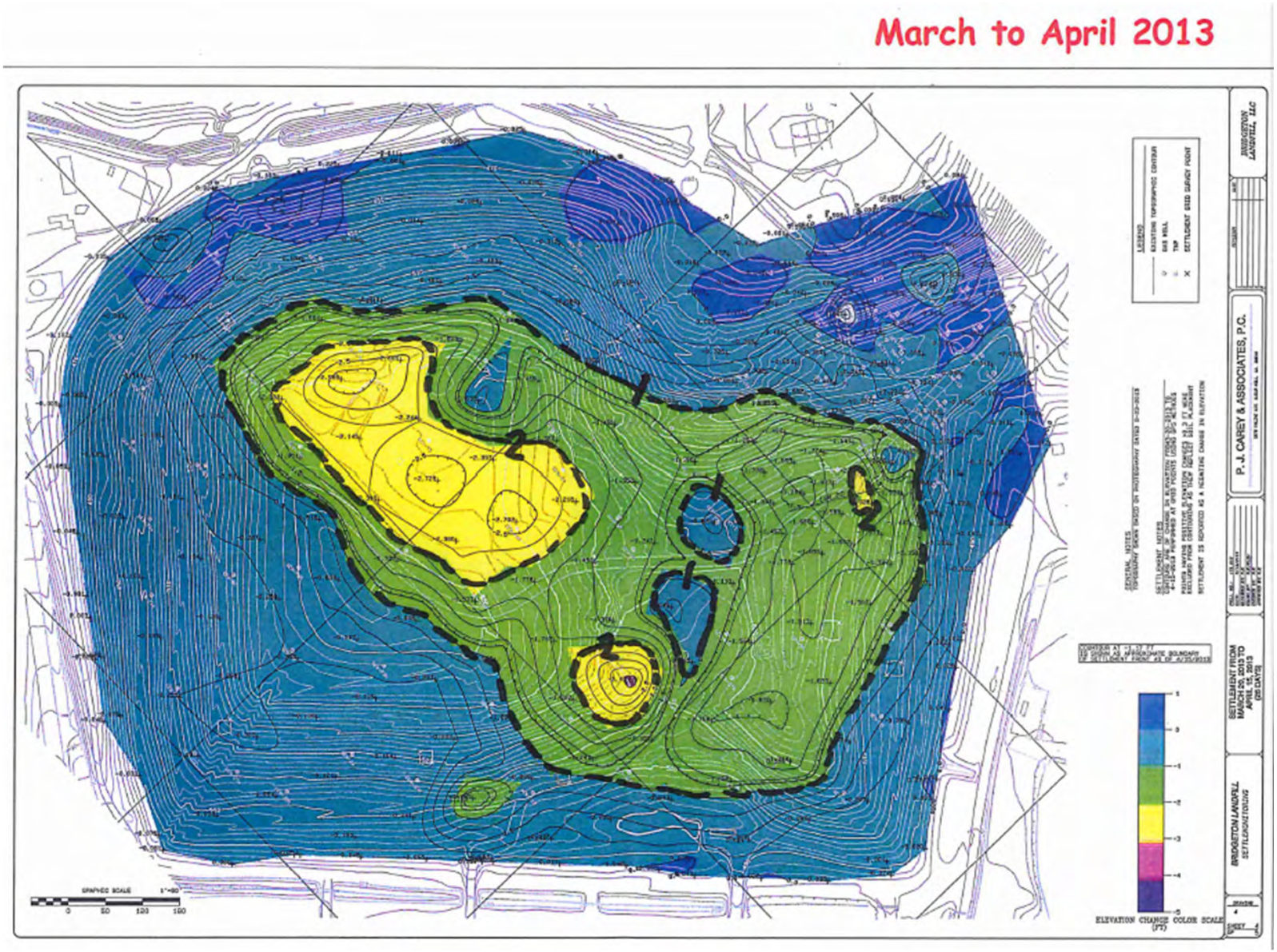
9-25-2013



7-20-2015



CLIENT: MISSOURI ATTORNEY GENERAL OFFICE	PROJECT: BRIDGETON LANDFILL FIRE INVESTIGATION	TITLE: CHRONOLOGICAL SEQUENCE OF SOUTH QUARRY PHOTOS	SCALE: N.T.S. / DATE: 2015/08/26 yyyy/mm/dd / PROJECT NO: LFCI 14010
			DRAWING NO: FIGURE 8-3
		DRAWN NL	
		CHECKED TS	



Project No.: LFCI PRJ14010 Drawn By: NL Reviewed By: TS Date: 24 AUG 2015	LANDFILLFIRE.com	**SETTLEMENT CONTOURS FOR MARCH-APRIL, 2013** **BY P.J. Carey & Associates and Civil & Environmental Consultants**	Figure **8-4**

Finally, from August, 2014 to June 2015, the greatest settlement was occurring in the southern corner of the south quarry, with settlement rates averaging about 1.6' per month and slowly decreasing.

Overall, the plots indicate that the rate of mass loss within south quarry has been decreasing over time and the most active settlement area has been shifting to the south corner of the south quarry. LFCI believes this is primarily the result of material within the north portion of the quarry being consumed at an earlier time, prior to March, 2013. Photo 8-3 shows that significant settlement on the north portion of the South Quarry had indeed already taken place by that time.

LFCI is of the opinion that should the SER move into the north quarry where the waste material is presently unconsumed, the rate of reaction could once again escalate to levels previously observed in 2012 and 2013.



Photo 8-3. Bridgeton Landfill South Quarry on March 12th, 2013, Looking Northwest

According to the law of conservation of mass, and assuming that the density of the waste mass is remaining roughly constant, one would expect that the large decrease in landfill air space would be associated with a release of total mass as landfill gas emissions and leachate releases.

LFCI notes that an analysis of settlement rate that factors the total waste column thickness would be more accurate at pinpointing rapidly reacting areas, nevertheless, since all of the south quarry has a depth of approximately 240', and the waste pyramid piled on top of the rock quarry had a maximum elevation of about 100', overall waste column thickness does not deviate greatly. In the future, if the reaction moves northward beyond the topographic step in the north quarry, then overall waste thickness should be taken into consideration.

8.6 Methane

Methane is the primary landfill gas that is tracked at all landfills that operate LFG collection systems. Normal methane concentrations in landfill gas are 50 to 60%. Methane concentrations at this landfill have been monitored and entered into the SCS data base. Prior to 2008, methane concentrations in the entire south quarry were typical of methanogenesis. A detailed analysis of methane concentration changes on a year by year basis is presented, together with the trends for CO_2.

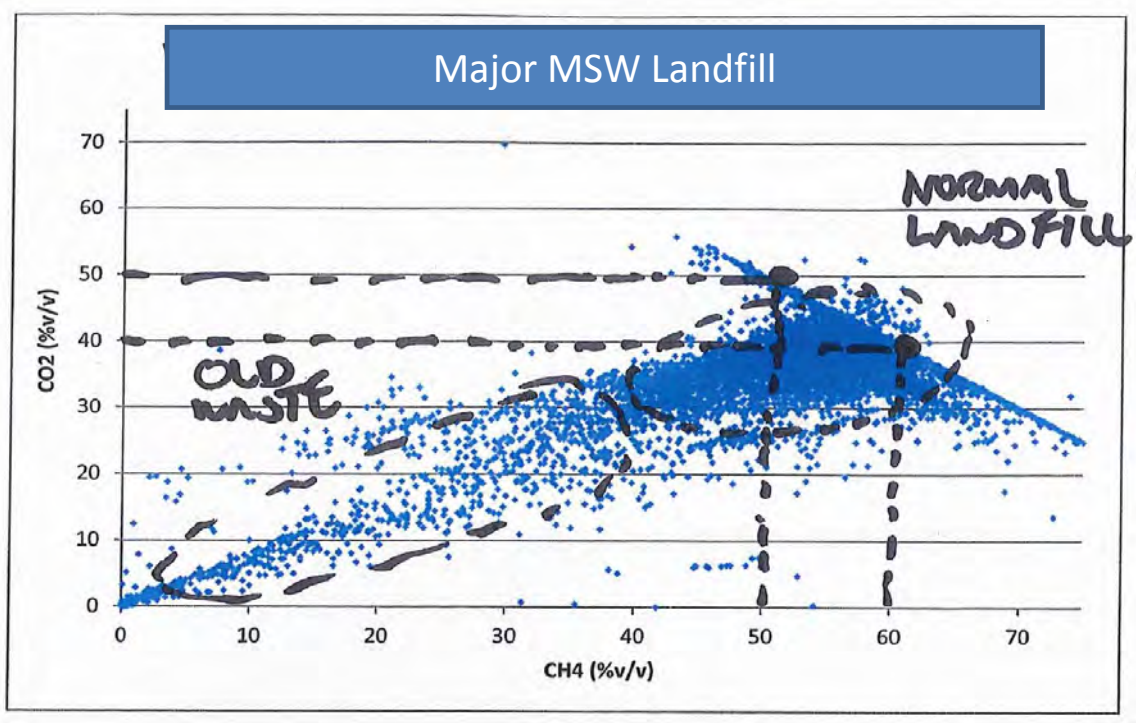
8.7 Carbon Dioxide

CO_2 is the second primary landfill gas generated during methanogenesis. Typically, CO_2 concentrations in LFG are 40 to 50%. When air incursion occurs, methane levels tend to decline and CO_2 levels tend to rise as aerobic microbes produce predominantly CO_2 gas.

8.8 Trends in Methane and CO_2 Concentrations at Bridgeton

Scatter plots of CH_4 and CO_2 provide a lot of useful insight regarding conditions inside a landfill. Figure 8-5 presents a scatter plot of gas chemistry collected from a major MSW landfill in Canada. As can be seen in that plot, most data points cluster around 50 to 60% methane and 40 to 50% CO_2 with a CH_4:CO_2 ratio of between 1 to 1.5.

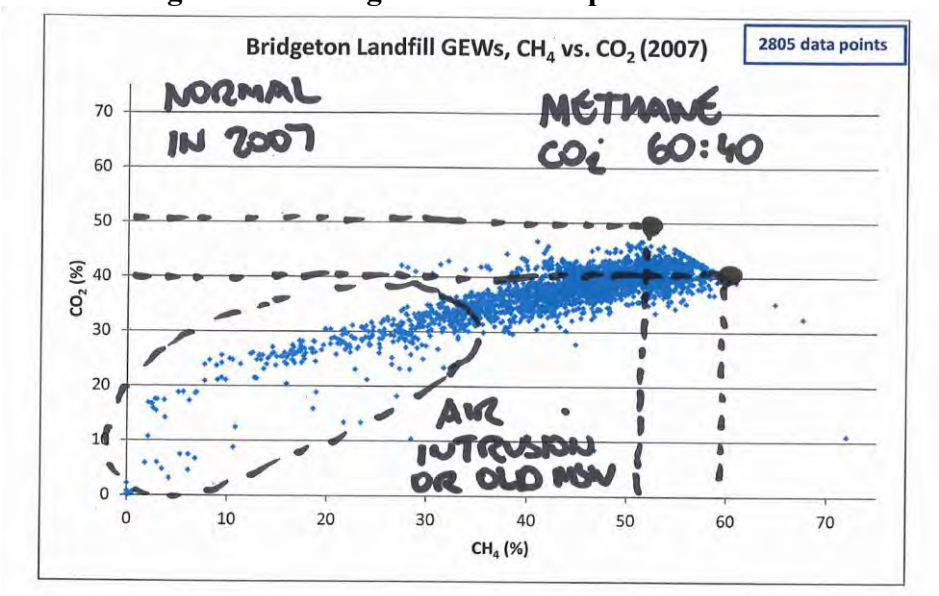
Figure 8-5. Gas Composition for Major MSW Landfill in Canada



The following figures present a series of similar gas composition plots for Bridgeton Landfill for the years 2007 to 2014. These plots are also provided in Appendix M.

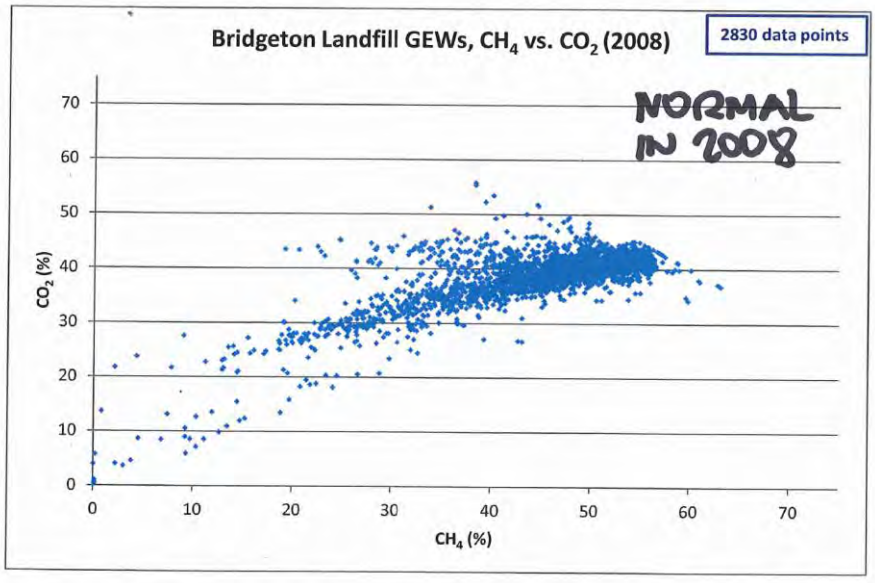
The observed changes in gas composition provide a lot of insight into the evolution of the SSSER event.

Figure 8-6. Bridgeton LFG Composition in 2007



As can be seen in comparing Figure 8-5 and 8-6, in 2007 Bridgeton gas chemistry indicated a normal, healthy MSW landfill under methanogenic conditions.

Figure 8-7. Bridgeton LFG Composition in 2008



The same pattern was replicated in 2008. Figure 8-7 shows that again, gas composition was pretty much normal, except for a cluster of two points with CO_2 at 55% and methane at 35-40%. This is the very first sign of possible aerobic decomposition due to oxygen/ air intrusion.

Figure 8-8 presents the 2009 data. On this graph, things are starting to become abnormal. A number of data points are plotting above 60% CO_2 and well outside of the normal cluster. An investigation into which wells were abnormal revealed that wells 16, 35, 36 and 37 were the source of the high CO_2 readings. A review of balance gas levels in those wells revealed numerous readings in the 10.0 to 18.9% balance gas (data extracted from database, BL_004_0001964, and provided in Appendix M). Temperatures in Well 36 were reported as high as 130ºF.

Figure 8-8 Bridgeton LFG Composition in 2009

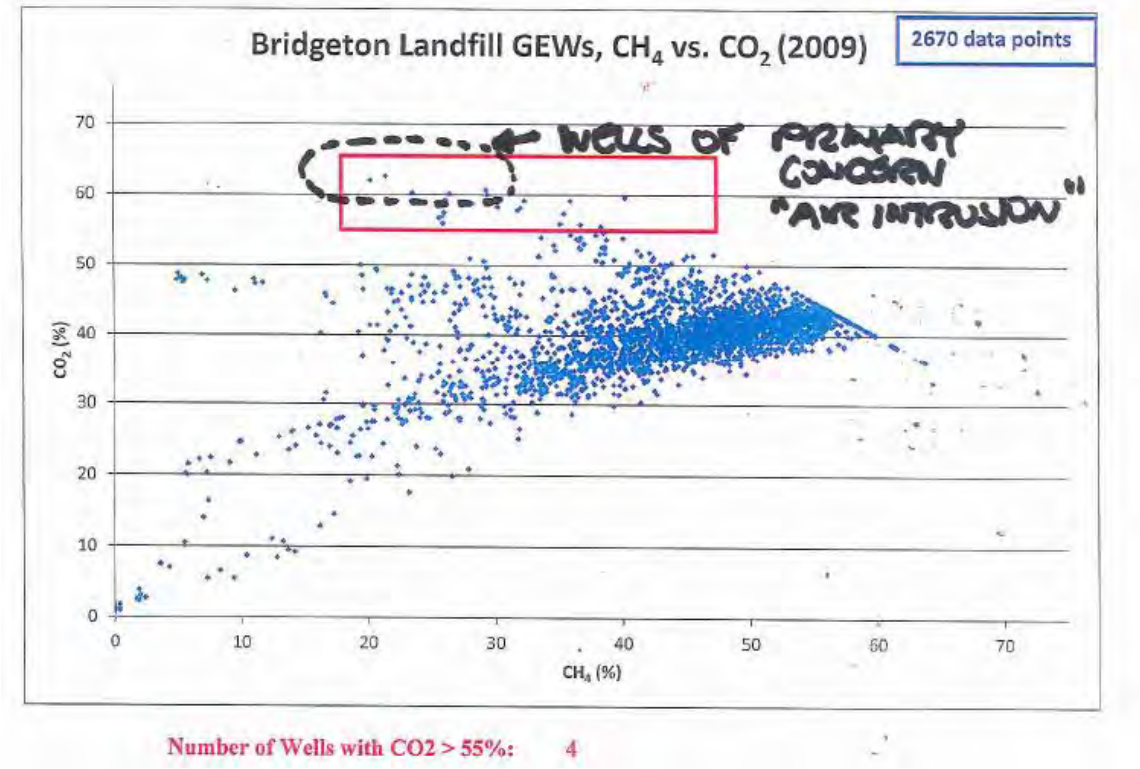


Figure 8-9 plots the locations of the wells that had elevated CO_2 levels. As shown in Figure 8-9 with blue symbols, three of the four wells were located on the northeast face of the Quarry, while well 16 was located in the middle of the northwest face.

Also shown on Figure 8-9 are the locations of the seven wells that were noted to be operating at high temperature (above 131 ºF) and for which the Saint Louis County Dept. of Health required that additional monitoring be undertaken. Of interest, all problem wells are close to the outer perimeter of the landfill, consistent with the hypothesis that air incursion is the probable starting cause of the reactions.



GAS WELLS WITH CO_2 > 55% 2009

LANDFILLFIRE.com	CLIENT: MISSOURI ATTORNEY GENERAL OFFICE	PROJECT: BRIDGETON LANDFILL FIRE INVESTIGATION	TITLE: GAS EXTRACTION WELLS [CARBON DIOXIDE]	SCALE: N.T.S.	DATE: 2015/08/26 yyyy/mm/dd
				PROJECT NO: LFCI 14010	
				DRAWING NO: FIGURE 8-9	
				DRAWN NL	
				CHECKED TS	

Figure 8-10. Bridgeton LFG Composition in 2010

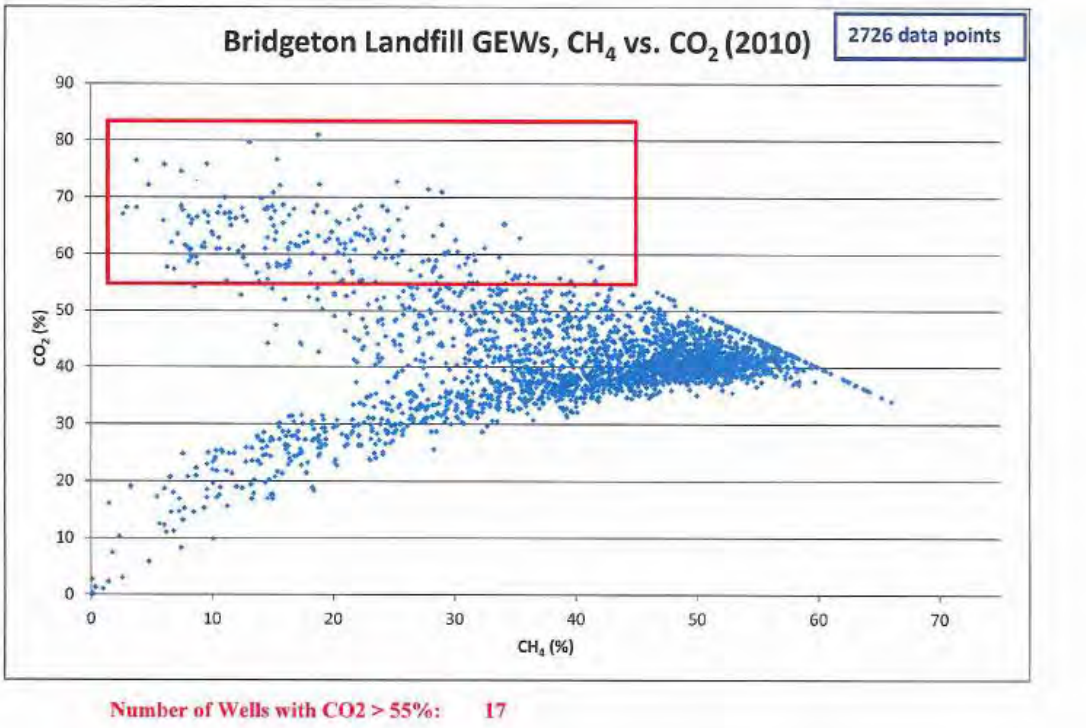


Figure 8-10 plots the gas composition in 2010. As can be seen in the red box, there are now a large number of wells with abnormally high CO_2 levels (above 55%) and low methane levels. In 2010, the number of problem wells increased to 17, including SEW/GEW-12A, GEW-14A, GEW-26R, GEW-30R, SEW-31R, GEW-33R, GEW-34, GEW-35, GEW-36, GEW-37, GEW-57R, GEW-58, GEW-59R, GEW-65, GEW-66, GEW-68 and GEW-83.

When the locations of the wells are plotted in Figure 8-11, most cluster in the northeast quadrant. Of interest, that is where the highest hydrogen clusters, CO clusters and temperature clusters are noted on the first monthly report plots prepared in January, 2013. LFCI suspects that the northeast quadrant was one of two starting reaction areas in the South Quarry where the reaction has been occurring for the longest time, resulting in the highest temperatures.

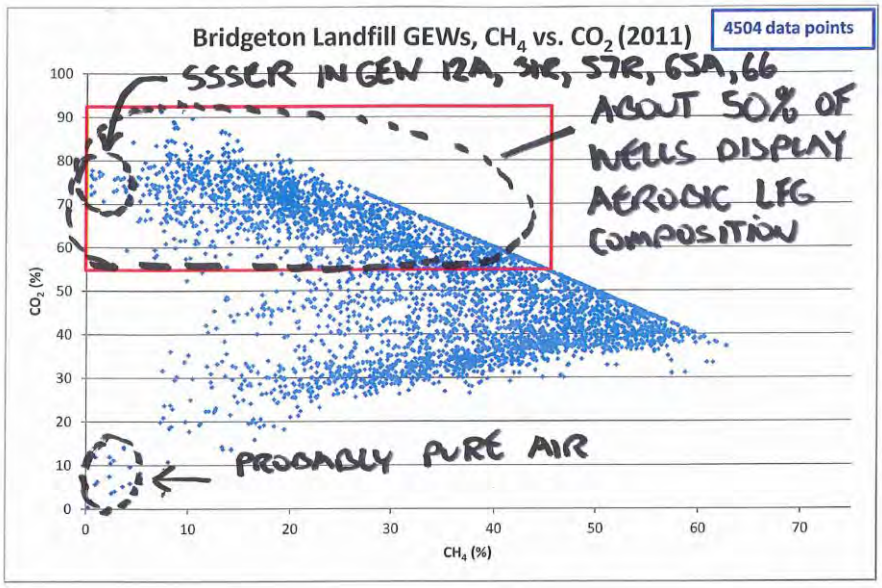


GAS WELLS WITH CO_2 > 55% 2010

LANDFILLFIRE.com	CLIENT: MISSOURI ATTORNEY GENERAL OFFICE	PROJECT: BRIDGETON LANDFILL FIRE INVESTIGATION	TITLE: GAS EXTRACTION WELLS [CARBON DIOXIDE]	SCALE: N.T.S.	DATE: 2015/08/26 yyyy/mm/dd
				PROJECT NO: LFCI 14010	
				DRAWN: NL	CHECKED: TS
				DRAWING NO: FIGURE 8-11	

Figure 8-12 shows the XY scatter graph for 2011. In this plot, it appears that more than half of the data points are plotting in the air intrusion zone with high CO_2 and low methane. There also appear two clusters of points with very low methane levels, below 5%. These are in the area where the SSSER was occurring at the time. The following section will reveal that the SSSER reaction areas are associated with very low to zero methane concentrations and high H_2 concentrations that are reflected in high balance gas. Analysis of the data reveals that a total of 34 wells produced LFG with more than 55% CO_2. Of those wells, the most concerning wells with the highest CO_2 readings included 12A, 21A, 31R, 57R, 65A, 66 and 70R.

Figure 8-12. Bridgeton LFG Composition in 2011



The locations of the high CO_2 wells for 2011 are shown in Figure 8-13. The figure shows that in 2011 most of the impacted wells were found in the northern half of the South Quarry, with some wells also impacted along the southeast and southwest toe where air incursion is known to have occurred as far back as 2010 based on Figure 4-2.



GAS WELLS WITH CO_2 > 55% 2011

LANDFILLFIRE.com	CLIENT: MISSOURI ATTORNEY GENERAL OFFICE	PROJECT: BRIDGETON LANDFILL FIRE INVESTIGATION	TITLE: GAS EXTRACTION WELLS [CARBON DIOXIDE]	SCALE: N.T.S.	DATE: 2015/08/26 yyyy/mm/dd
				PROJECT NO: LFCI 14010	
				DRAWN: NL	DRAWING NO: FIGURE 8-13
				CHECKED: TS	

Figure 8-14. Bridgeton LFG Composition in 2012

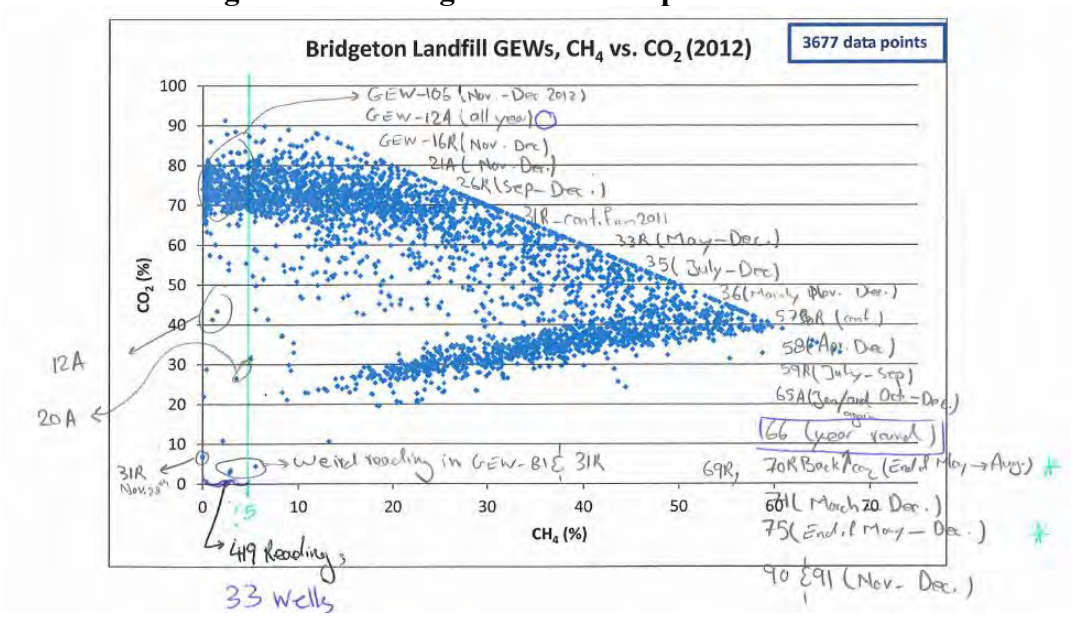
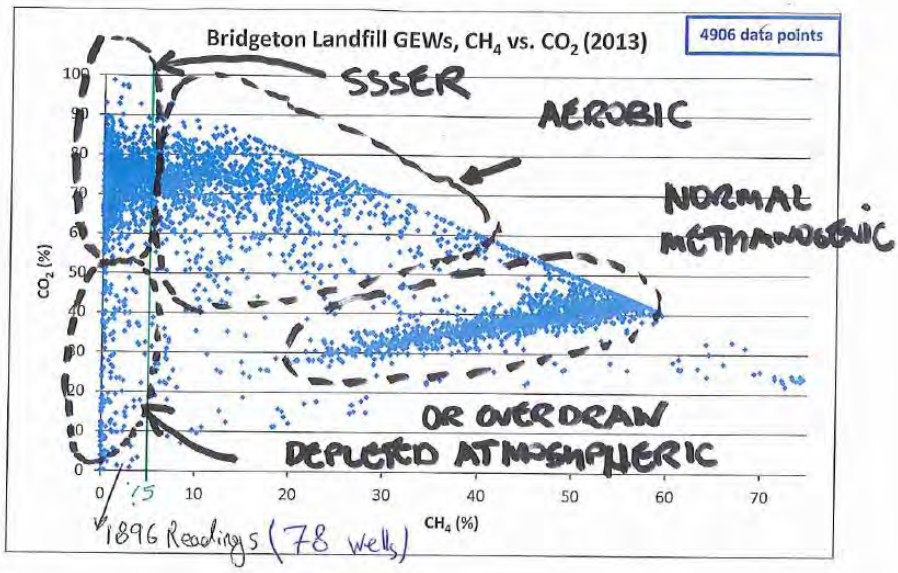


Figure 8-14, which plots the 2012 data, indicates that the landfill areas producing methane continue to shrink, with fewer data points,, the more wells are now operating as aerobic wells, and that a much larger area is now affected by the SSSER, as indicated by those wells plotting below 5% methane (i.e. left of the green line in the figure). A trend noted in this figure that may be of concern is that a few data points are plotting at very high balance gas levels, indicating significant oxygen intrusion. This condition is occurring in wells 12A and 20A in 2012.

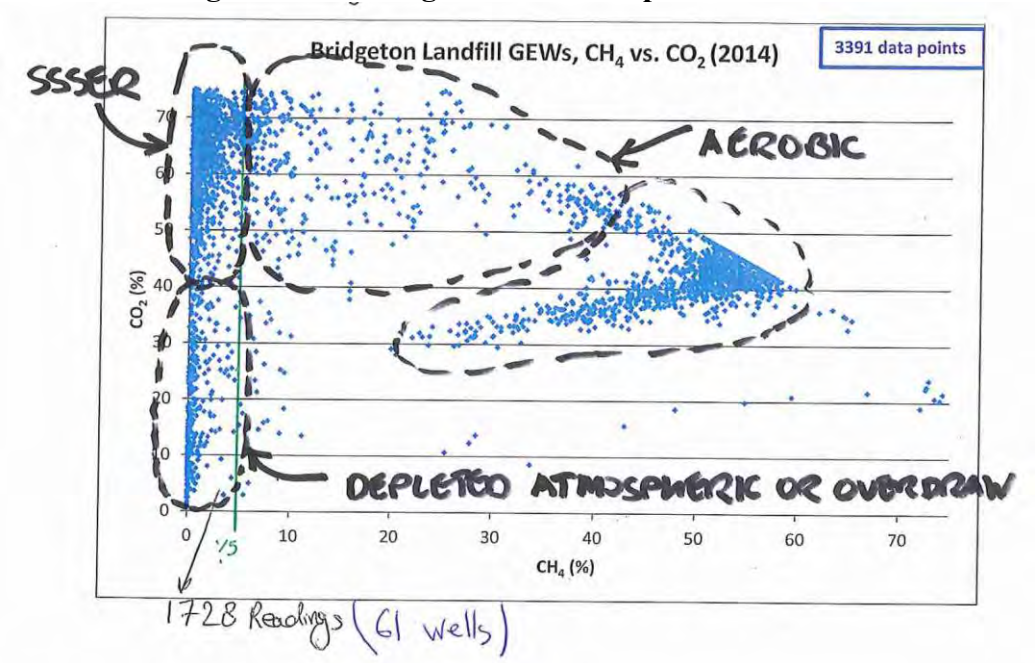
Figure 8-15. Bridgeton LFG Composition in 2013



The 2013 data set shows that the SSSER continues to expand, with the majority of data points plotting in the SSSER zone. Also, more wells appear to be in a condition of severe overdraw, with very high balance gas levels. LFCI is concerned about these data points because it is not possible to determine from these plots whether the subsurface conditions are due to gas quality returning to normal atmospheric as a result of all reactants being spent, or whether they represent conditions of high hydrogen.

The data for 2014 plotted in Figure 8-16 indicates that the SSSER chemistry continues to dominate. Very few wells remain the aerobic decomposition zone, as most have been consumed by the SSER. The wells showing normal methanogenic conditions are originating from the North Quarry. The number of wells indicating Stage 5 conditions continues to increase.

Figure 8-16. Bridgeton LFG Composition in 2014



8.9 Oxygen

Oxygen gas is found in the atmosphere at a concentration of 21%. In landfills oxygen is rapidly depleted by aerobic microbes. Landfills in an anaerobic, methanogenic state generally have less than 2% oxygen, unless the LFG extraction system is being operated aggressively. NSPS allows a maximum oxygen concentration of 5%. The Bridgeton SOP's target oxygen levels below 1% and specify a maximum oxygen level of 2%. As can be seen in Appendix E, many of the wells were aggressively pulled and experienced oxygen intrusion between 2008 and 2011, leading to the initiation of one or more SSO events in December, 2009 and subsequently, to the start of the SSSER in February and March, 2011.

8.10 Carbon Monoxide

Carbon monoxide has been recognized as a prime indicator of subsurface landfill fire by numerous landfill fire experts (Stearns, 1984, Thalhamer, 2013, Sperling, 2001). In particular, CO is generated during incomplete combustion in an oxygen deficient environment. Such conditions frequently exist in subsurface fire and subsurface smolder events (SSE). CO is also a byproduct of low temperature pyrolysis, also known as Torrefaction. LFCI uses a CO concentration of 500 ppm as an indicator of potential smoldering nearby, a level of 750 ppm as an indicator of fire or exothermic reaction likely and a level of 1,000 ppm as a strong indicator of landfill fire, smoldering or pyrolysis occurring.

Bridgeton staff have been reporting on CO concentrations in monthly landfill reports since January 2013. LFCI has compiled the coloured maps of well head CO concentrations presented in Appendix B. Concentrations of 5,000 ppm or more were initially reported in the central portion of the South Quarry in January, 2013, gradually declining over time. Elevated CO concentration started to be noted in the south corner of the South Quarry in Sept. 2013. There appears to be a strong correlation between active settlement in areas and the production of CO. As soon as production of CO ceases in an area, the accelerated rate of settlement appears to stop as well. This suggests that CO production is related to volume loss, either through pyrolysis, smoldering, or both.

8.11 Hydrogen

Hydrogen is typically not observed in LFG produced by landfills during the steady state methanogenic phase. However, at Bridgeton very high levels of hydrogen, up to 30% or more, are routinely detected in the LFG. Similar hydrogen concentrations were noted by LFCI on a landfill fire investigation in Winnipeg that was undertaken in 2014. At that time, LFCI suspected that the H_2 was being produced by a water gas shift reaction. This reaction, and other chemical reactions that may be taking place in the subsurface, were described in Chapter 5 and are explored in the context of Bridgeton Landfill in the following section.

H_2 concentration in LFG have also been reported and plotted in the monthly reports generated by SCS since January, 2013. Careful review of those plots has revealed that the hydrogen concentration patterns appear to correlate strongly with the distribution of CO. This observation further supports the theory that H_2 is being produced by the water gas shift reversible reaction. Whenever, CO is produced, some of that CO reacts with available water to produce H_2 gas and CO_2. Compiled H_2 concentration coloured maps are presented in Appendix A.

8.12 Observed Reactions Trends of SSSER

When analyzing the trends in the gas composition data compiled in the SCS database, LFCI noted that the same reaction pattern was observed in a vast majority of the 36 wells analyzed. Graphs that show historic LFG composition for CO_2, CH_4 and temperature are presented in Appendix G. Results of laboratory chemical analysis were also plotted and analyzed. These graphs showed the same reaction pattern.

Figure 8-17 presents a graph of the field based gas composition data for well GEW-12A that illustrates the typical pattern that has been identified by LFCI, as described below. Figure 8-18 presents the SUMMA laboratory sample results for the same well. Please note that LFCI used a highlighter to identify trend lines in the two figures. Some trends are defined by different colours in the field data (Figure 8-17 and Appendix G) vs. the laboratory data (Figure 8-18 and Appendix E). LFCI apologizes for this discrepancy.

Figure 8-17 Field Readings for CO2, CH4 and temperature for Well GEW-12A

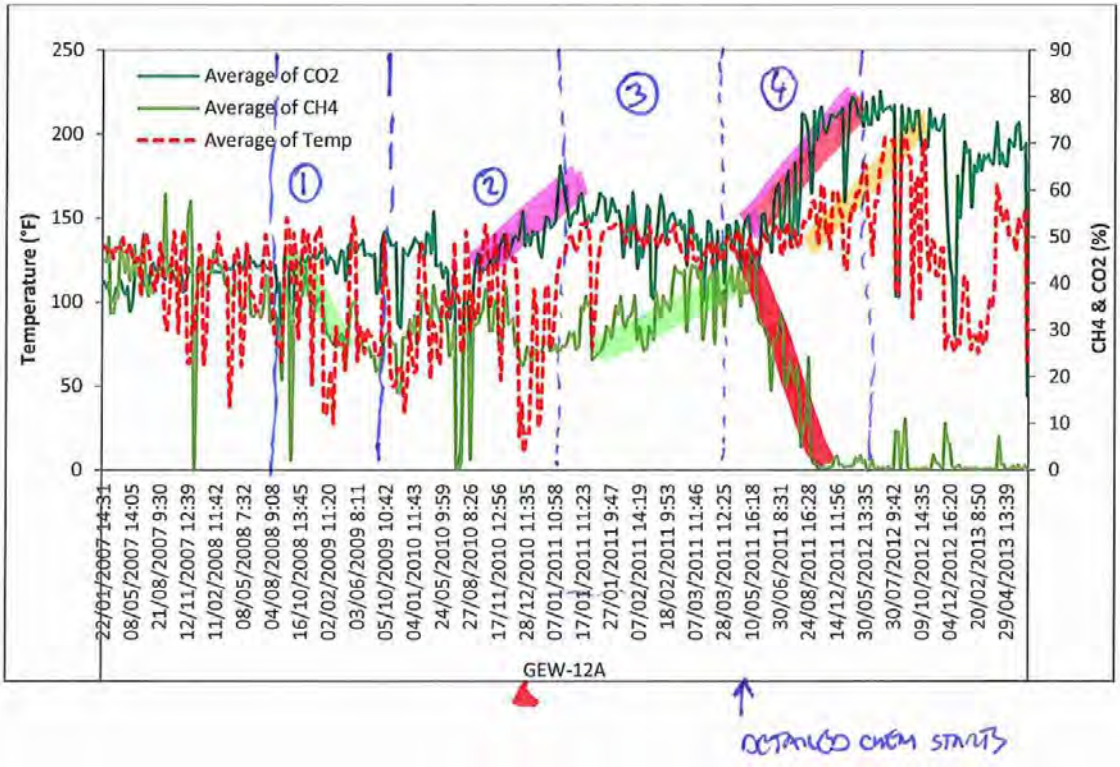
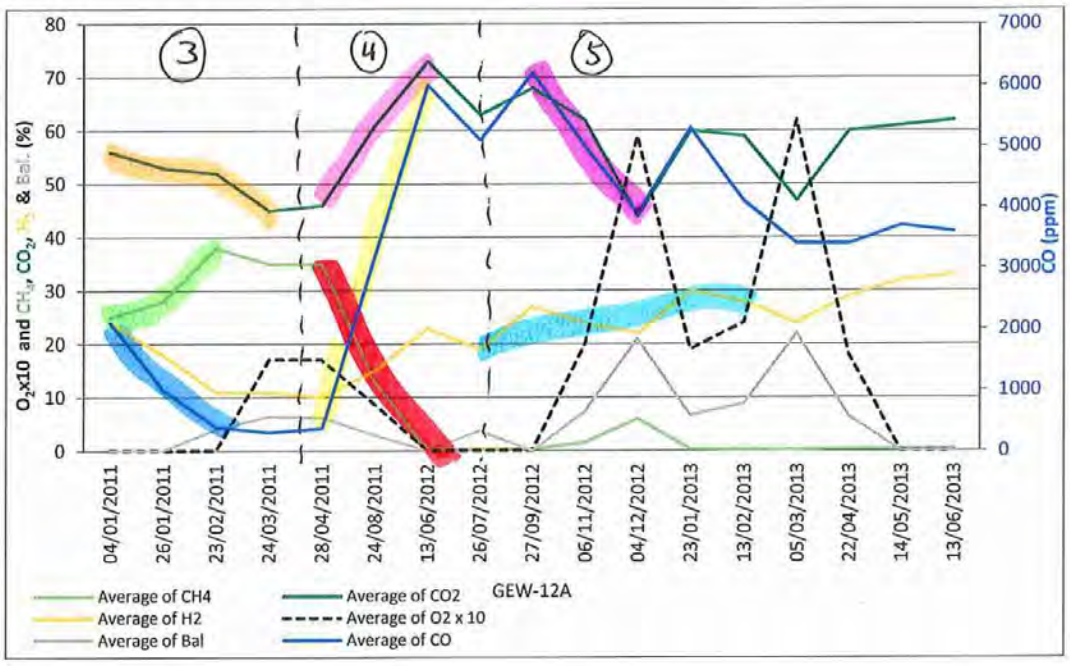


Figure 8-18. Laboratory Sample LFG Analysis for GEW-12A



Based on a qualitative review of these plots we have determined the SSSER process involves a five step multi – reaction process:

Prior to the reaction starting, gas composition is typical of methanogenic conditions, with methane levels, slightly higher than CO_2 levels. Prior to the onset of the reaction, aggressive LFG extraction from wells, as indicated by highly fluctuating LFG temperatures and declining CH_4 levels indicate that the well experienced air intrusion. Well temperatures are generally below 131ºF.

Step 1. **Overdraw Condition:** In Reaction Step 1 a significant drop in CH_4 levels is observed, highlighted with a lime green colour in Figure 8-17. In some instances, CO_2 concentrations are observed to increase as well (purple), in other wells CO_2 concentrations remain flat. LFCI interprets the data to indicate a transition from methanogenic dominant conditions to aerobic dominant conditions where the primary gas being generated is CO_2.

Step 2 Aerobic Heating Phase: In Reaction Step 2 the aerobic decomposition process becomes dominant. CO_2 concentrations typically continue to increase to between 60 and 80% (purple) and temperatures generally increase above 130ºF, which is considered the maximum methanogenic temperature but remain below 175ºF, the maximum aerobic decomposition temperature.

Step 3 Methanation Reaction: In Reaction Step 3 there is a gradual build up in methane, accompanied by a corresponding decline in CO_2. Also, as flagged by the gold line in Figure 8-18, H_2 concentrations also decrease. Based on the reaction mechanisms presented by Dr. Grace, LFCI notes

that the observed changes in gas chemistry are consistent with the onset of the two methanation reactions, whereby CO and CO_2 react with available hydrogen gas to produce methane and water. These reactions are exothermic, and are thus believed to be responsible for any heat build-up observed in Step 3.

Step 4 Torrefaction / Water Gas Shift Reaction: Reaction Step 4 is marked by a rapid drop in methane concentrations to near zero, a significant increase in CO concentrations, an increase in CO_2 and an increase in H_2. LFCI believes that Step 4 is the onset of torrefaction. At this point sufficient heat has been generated to initiate a relatively rapid breakdown of organic matter into reaction products including CO_2, CO, H_2, H_2O and CH_4. LFCI suspects that at this point the exothermic water gas and water gas shift reactions commence, explaining the increase in H_2 concentration that can be seen in Figure 8-18 (cyan highlight), and in many of the plots in Appendix E. Heat generated by the water gas and water gas shift reactions allows the continuation of the endothermic torrefaction process, resulting in a self sustaining net exothermic reaction, the SSSER.

The SSSER in Stage 4 appears to last about a year to 18 months in most of the wells, continuing until all available fuel is consumed. The large scale settlements observed in the South Quarry are indicative of the loss of mass that is occurring through this reaction, as is the very high concentration in H_2 gas.

We understand from observations and interviews with drillers undertaken by Brenda Ardrey of MDNR, that reacted material generally has the consistency of grey ash.

Step 5. Once available fuel has been consumed, the SSSER stops suddenly, as indicated by a rapid drop in CO concentrations. At the tail end Step 5, levels of CO_2, CO and H_2 appear to stabilize. Signs of air intrusion are noted in some of the wells, with increases in nitrogen and oxygen concentrations.

LFCI believes that fully understanding the reaction process will be key in order to determine the best method of controlling the reaction. LFCI recommends that Bridgeton Landfill LLC and MDNR consult with specialists in the thermal energy sector like Dr. John Grace to confirm the trends in this report and to identify the most effective control strategies to stop or reverse the SSSER reactions. Some preliminary thoughts on how the reactions could be controlled are presented in Chapter 12 of this report for consideration and more in depth analysis.

The pyrolysis process generates char as one of the reaction products. Char is a material similar to coal and charcoal briquettes. Photo 8-4 is a picture of smoldering char being exhumed from a subsurface landfill at fire at Vancouver Landfill in 2009. When the white hot material at temperature above 1,500ºF was exposed to air it burned aggressively and suppression required prolonged soaking with copious amounts of water, generating large clouds of steam (Photo 8-5).



Photo 8-4 Exhuming Char at Vancouver, 2009



Photo 8-5. White Hot Char Starting to React

LFCI is concerned about the current uncertainty regarding actual subsurface conditions because the oxidation reaction for solid carbon is highly exothermic. A review of the long term chemistry data presented in Section 8.8 and particularly Figures 8-15 and 8-16 is showing that as the SSSER is depleted, Bridgeton continues to aggressively extract LFG, despite the fact that all biological material has been consumed and methanogenic and aerobic decomposition reactions have stopped. This appears to be causing an overdraw condition to develop and incursion of air into the subsurface, as noted by an increase in balance gas concentrations in 2013 and 2014.

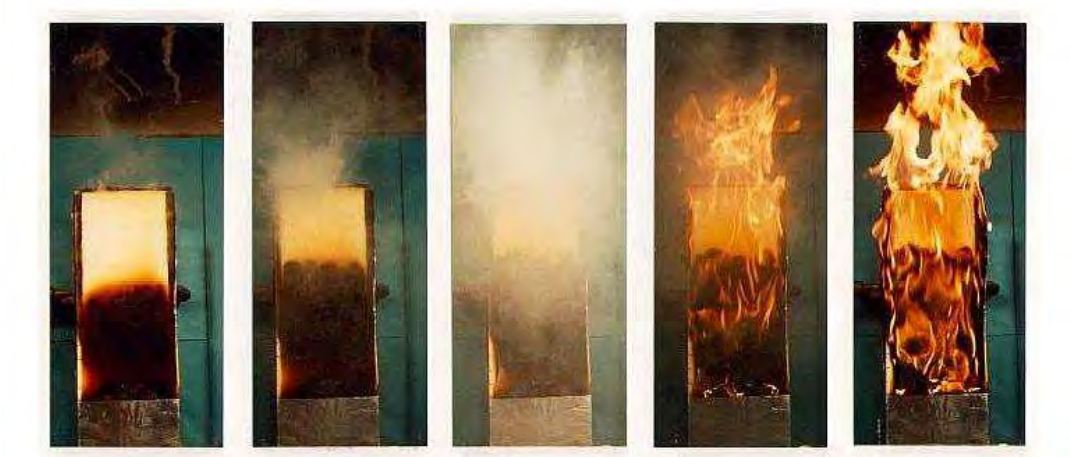
If all of the available organic carbon has been consumed and all that is left of the reacted material is inert ash, then returning to atmospheric concentrations will not be a problem. However, if there remains a significant quantity of unreacted char in the subsurface then this could pose a long term risk.

With elevated temperatures and exposure to oxygen through the observed overdraw condition, the oxidation of char could result in rapid escalation of temperatures. In LFCI's opinion this condition has the potential to result in a major subsurface fire. Combustion temperatures for char can exceed 1,500ºF. There is a strong possibility that such a fire event would result in the melting of the EVOH membrane cap. If not quickly contained, this would allow very rapid incursion of atmospheric air into

the subsurface, and potentially, a rapid escalation of the fire. At that point it may prove extremely difficult and highly dangerous to achieve control of the fire due to the risk of equipment collapse.

As a graphic example of the rapid transition from smolder to fire, Photo 8-6, extracted from a paper by Rein, illustrates that when exposed to air, escalation from smoldering to violent combustion will be very rapid if oxygen is available.

Photo 8-6. Transition from Smoldering to open flame in polyurethane (conversion from smoldering to vigorous combustion occurs in only a few seconds



A review of the available chemistry data suggests that on average the Stage 5 post reaction chemistry appears to be about 50% CO_2, 30% H_2 and the balance suspected to be nitrogen from air intrusion. A key question in LFCI's opinion revolves around the nature of the remaining solid mass post SSSER. Has all of the available material above the water table fully reacted, leaving behind inert ash residue, or has a significant percentage of the organic carbon converted to char and tar due to a lack of oxygen to complete the pyrolysis and oxidation reactions.

LFCI has received third hand information from MDNR's Brenda Ardrey that drillers reported that drill cuttings from reaction areas are mostly a grey, wet and sloppy ash like material. However, it is not clear whether some of the material converts to char, as is deposition testimony from Mr. Almanza it is mentioned that "The organic materials are consumed by the heat, and you know, they char, they break down, they reduce." (BSXL_030_0001953). Also, Ms. Ardrey communicated an on-site discussion with Mr. Jim Getting, Bridgeton's resident engineer, that the material in the landfill is like a glowing red hot charcoal briquette on a bar-b-que. Photo 8 shows some of the cuttings from a recent drilling program Jan. 22, 2015. The cuttings appear relatively dry and black, possibly indicative of char.

Photo 8-7 Drill cuttings from bucket auger drill hole, Jan. 22, 2015



Photo 8-8 shows a graphic example of what heat char looks like. LFCI has encountered similar material on several landfill fire overhaul projects. If large pockets of material like this are present in the sub-surface, and particularly in the near sub-surface area, these could pose a fire risk if exposed to abundant air.

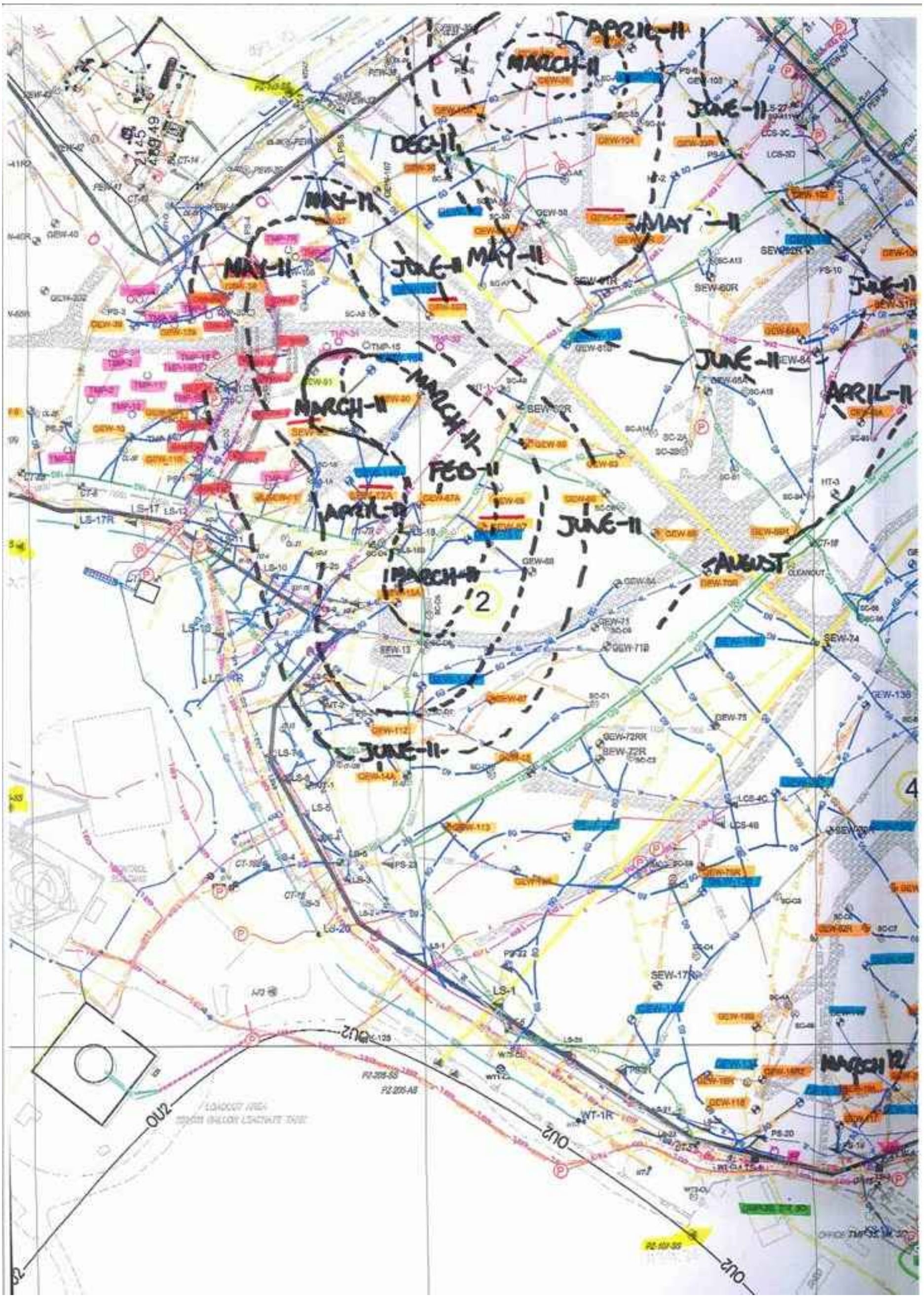
Photo 8-8 Char Reacting With Oxygen In A Controlled Experiment (Source, Rein, 2009)



In LFCI's opinion, it is absolutely critical to know whether at the completion of Stage 5, all of the reactive organic carbon has been depleted and off gassed as CO and CO_2, or whether a significant portion still remains as char. LFCI recommends that MDNR request factual information from Republic, including cores or other samples of cuttings from previous Sonic drilling programs, or that additional drilling be undertaken to establish whether a significant amount of reaction product still remains sub-surface.

8.13 Spatial Evolution of Bridgeton SSSER

To determine the starting point of the SSSER, LFCI examined the chemistry plots in Appendix G. LFCI picked off the start of Step 4 of the SSSER in each well, the true exothermic reaction. LFCI's picks were as follows: the SSSER commenced in well GEW-67A in February, 2011, and then wells GEW-63 and GEW-35, in March, 2011, GEW 12A in April, 2011, moved to GEW-58 by May, 2011, GEW-59 by June, 2011, GEW-66 by June, 2011 and GEW 57 by August, 2011. Indeed, when all of the start times for the Stage 4 reaction from the graphs in Appendix G are plotted on a map (see Figure 8-19), it becomes apparent that the SSSER commenced in February, 2011 at GEW-67A, and shortly afterwards, a second node started independently in the northeast corner of the South Quarry at GEW-35. From those two nodes, the SSSER spread at a rate of approximately 50 to 100 yards per month to the north and south, and somewhat slower to the east and west.



CLIENT:	PROJECT:	TITLE:	SCALE:	DATE:	PROJECT NO:
MISSOURI ATTORNEY GENERAL OFFICE	BRIDGETON LANDFILL FIRE INVESTIGATION	INITIATION AND SPREAD OF SSSER	N.T.S.	2015/08/26 yyyy/mm/dd	LFCI 14010
					DRAWING NO:
			DRAWN	NL	FIGURE 8-19
			CHECKED	TS	

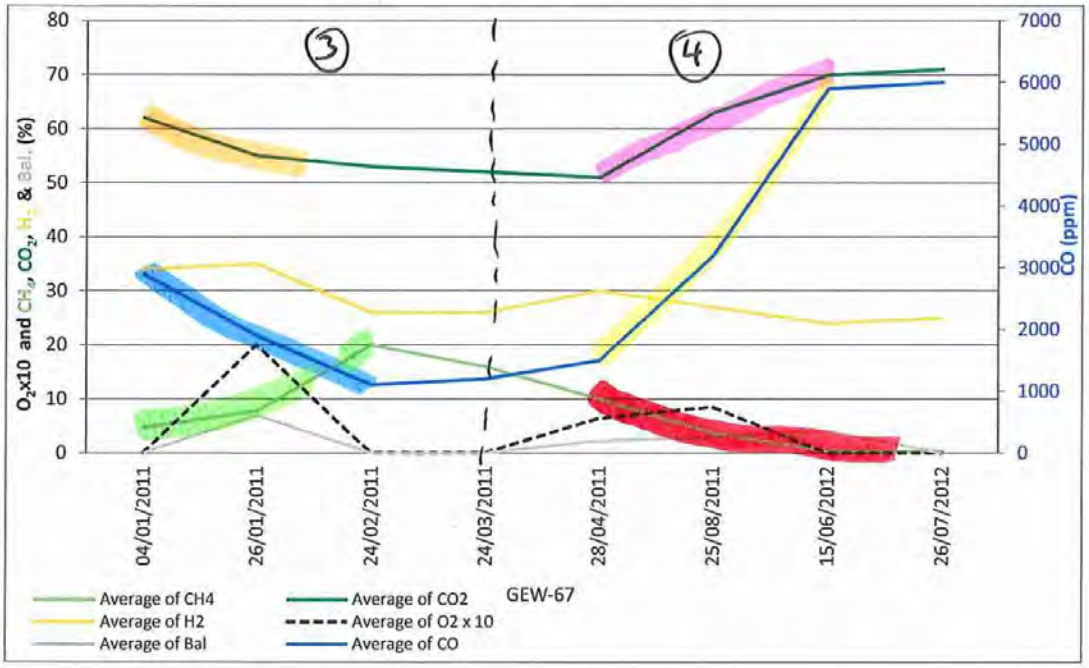
It is probably not pure coincidence that GEW-67 and GEW-34 were on the SLCDOH watch list as early as December, 2008. It is very probable that continued operation of those two wells at elevated temperatures resulted in the classic aerobic conditions, elevated temperatures and an eventual smoldering fire in February and March, 2011.

The vacuum application record for Well 67 shows that the well was pulled very hard up to May, 2007 with up to 10" of water column vacuum. This initiated an increase in temperature that exceeded the NSPS 131ºF trigger for action. Unfortunately, instead of leaving the well shut-off to re-establish normal methanogenic conditions, the well field operators chose to cycle the well between 1 and 4" of water column. This resulted in the gradual conversion of the well to aerobic conditions, and ultimately to the initiation of a subsurface fire in December, 2009 when CO of 600 ppm was detected in GEW-67 according to Michael Lambrich's deposition (BSLXL_030_0004333).

Indeed, the earliest laboratory data from GEW 67 starting in January, 2011 is already showing CO levels above 2,000 ppm, which is a strong indicator of smoldering fire. , CO levels in GEW 67 first exceeded the 500 ppm in December, 2009.

As well, gas flow diluted oxygen concentrations of 2% in late January, 2011 and balance gas concentrations of 8% indicate that sufficient oxygen was likely present to sustain a smoldering reaction in the upper portion of that well. Figure 8-20 presents the detailed SUMMA chemistry for GEW-67.

Figure 8-20 Detailed Laboratory Chemistry for GEW-67 where Smoldering Fire started



Furthermore, the propagation rates determined from Figure 8-19 translate to a propagation rate of 50 to 100 mm/hour. For comparison, Rein reports that the typical spread of a smolder front occurs at 10 to 30 mm/hr. Therefore, the observed reaction appears to spread somewhat faster than a typical smolder. However, forward smolder reactions where the burn front is pre-heated by combustion gases propagate faster, and at Bridgeton it is conceivable to assume that hot combustion gases would be drawn toward active LFG extraction wells, causing the burn front to spread faster than in a static situation. Also, given that oxygen concentrations in many of the wells are observed at levels of 2 to 4% once the Step 4 reaction is initiated, as can be seen from the plots presented in Appendix E, it is conceivable that smolder may have played, and continues to play, a significant role in the spread of the SSSER.

9. Site Observations and Testing

LFCI staff including Dr. Tony Sperling, P.Eng., and Dr. Ali Abedini conducted a two day site inspection of the Bridgeton Landfill on July 21 and 22, 2015, together with several other environmental and fire fighting specialists retained as experts by the MDNR. During Day 1 of the site visit LFCI focused on observing site conditions. During Day 2, LFCI collected LFG samples from 10 LFG extraction wells at Bridgeton, including eight wells in the South Quarry and two wells in the North Quarry.

9.1 Odours

LFCI noted the presence of the typical "burning landfill" smell immediately at an overview point on Old St. Charles Road, southeast of the southern property boundary. The odour was very faint but detectable. During sampling of wells on top of the EVOH liner, LFCI noted the same smell, but at much stronger levels. The smell permeated all of LFCI's sampling equipment such that it was distinctly noticeable in our hotel rooms at the end of the day. Around most of the property, burning smell odours were generally not noted during our site tour.

9.2 Surface Temperature Observations

LFCI relies on surface temperature measurements as an indicator of landfill fire at depth. Often, hot combustion gases will vent out of fumaroles on top of the landfill during subsurface fires. In the case of Bridgeton such conditions could not be visually observed because the entire South Quarry has been capped with an EVOH geomembrane. Nevertheless, measurements with LFCI's hand held infra-red hand held thermometer and MDNR's thermal imaging revealed a number of hot spots on the land surface that were abnormally warm. Most of these small crater-like hot spots were noted on the Southwest face of the landfill.

Photo 9-1. Hot Spot at Sink Hole on Southwest Face



Photo 9-1 is a typical thermal image of one of the hot spots. Notwithstanding that the ground temperature on the EVOH surface ranged from 110 to 140ºF on a sunny day, the hot spots ranged in temperature from 160 to 191ºF. The hot spots appeared obvious in infra-red FLIR images. As can be seen on the image, the maximum temperature in this hot spot was 170 ºF. The area was subject to a fairly high degree of vacuum because the EVOH liner was pulled tightly into the soil collapse depressions.

Photo 9-2 shows four of the depressions which are indicative of thermal activity near surface. The fact that the liner is pulled down tightly indicates that the LFG extraction system is pulling hot gases downward toward the wells. Clearly, under such conditions atmospheric air overdraw will develop through any holes in the geomembrane.

Photo 9-2. Cover Soil Collapse Areas, Southwest Face



LFCI's general guidance, as taught in our Landfill Fire Course is that subsurface fire should be expected whenever surface temperatures exceed 140ºF. Due to concerns regarding collapse features, it is imperative that workers and first responders be aware of the collapse risk. An infra-red camera provides a very valuable tool that will quickly identify potential collapse hazards.

Photo 9-3. Hot spot and potential collapse feature around well. Note ladder for safe access.



Photo 9-4. Hand Held IR Meter 183°F



Photo 9-5. Subsidence Hot Spot 142°F



9.3 Liner Integrity Inspection

During the site tour Dr. Sperling examined the EVOH liner for punctures, tears and weld separation. Photo 9-6 illustrates him carefully examining a failed weld. Numerous small defects were noted on the landfill surface, mostly associated with infrastructure that was lifting up the membrane from below due the settlement

Photo 9-6. Dr. Sperling Inspecting Liner



The liner breaches of greatest concern were located along the southeast and southwest toes. In that area a number of lines penetrated the EVOH liner without boots. One such breach is pictured in Photo 9-7. Because the perimeter gas interceptor trench is located directly beneath this liner, and reportedly this trench was excavated deep along the bedrock interface to intercept leachate, allowing air to enter into this system through holes provides an excellent conduit for oxygen into the reacting waste mass.

Another major breach of the liner was noted at a culvert where the liner separated at a boot weld. Note the high permeability gravels directly below that again provide a direct conduit for air to travel beneath the liner and into the waste mass. We trust that these major defects were promptly repaired by Bridgeton staff once located.

LFCI recommends that the liner be inspected at least once per month for major defects such as rips and tears, and that particular attention be given to the critical area at the landfill toe.

Photo 9-7 Pipe penetrating EVOH liner without a boot.



Photo 9-8 Major Weld Separation Providing Air Intrusion Pathway



9.4 Well and Header Integrity

During the reaction infrastructure is settling at a rate of several feet per month. As a result, wells are continuously coming out of the ground as shown in Photo 9-9. Maintaining boots and preventing them from tearing is a full time job for several technicians. Realigning headers in areas subject to settlement is also challenging as low spots trap condensate and reduce the ability to extract gas. A typical low spot is illustrated in Photo 9-10.

Photo 9-9. Gas well gradually rising above ground as waste mass settles



The blank portions of well casing that originally prevented air intrusion are rising close to surface due to settlement. As a result, the MSW seals between ground surface and slotted screen are being reduced and at times eliminated. This process dictates that wells need to be re-drilled over time.

Working on these wells presents an obvious fall hazard. LFCI did not observe Bridgeton staff checking on these wells, but clearly, the ladder pictured in Photo 9-9 is not long enough to do so safely. Also, is the worker on top of the ladder stabilized by another employee while doing this work or are monitoring staff working alone when adjusting wells? Given the numerous site hazards around wells LFCI recommends that monitoring staff never work alone when undertaking field investigations

in the SSSER reaction zone as the risk of collapses, well failures and blow outs of pressurized wells, trip and fall hazards at the site is high.

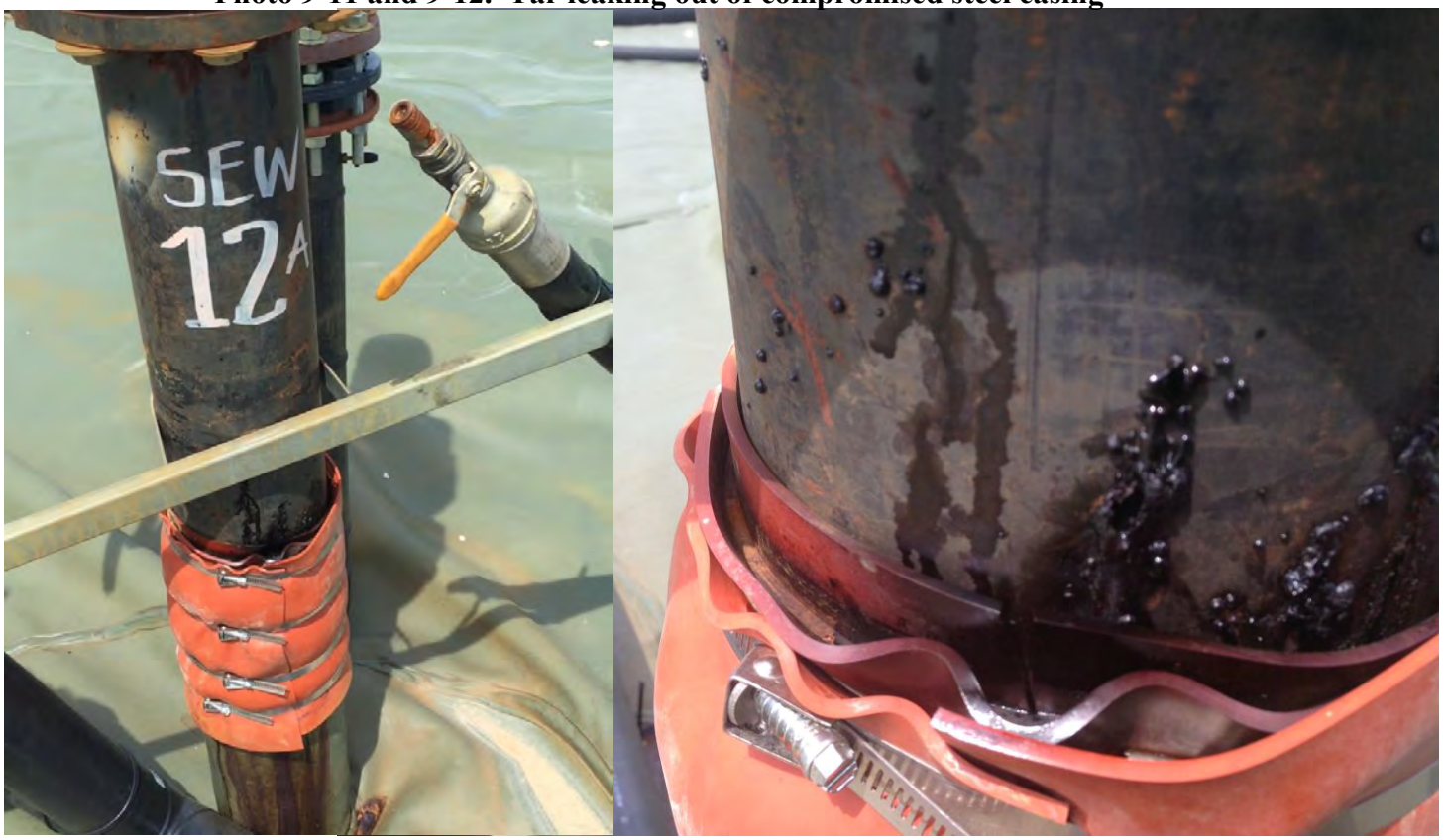
SSSER induced settlement of the MSW is causing numerous depressions such as that pictured on Photo 9-10. Condensate blockage will cause surging of the well, and indeed will render a well inoperable once the depth of the pipe belly exceeds the applied vacuum on the header.

Photo 9-10. Low Spot in Header that will trap condensate



As well, the leachate at Bridgeton has a very low pH, and condensate is also expected to be acidic due to the abundant hydrogen gas. Acidic conditions lead to corrosion of metal. This was observed at well casing SEW 12-A where tar was noted on the well casing from a leak. A small hole in the casing was also observed (see Photos 9-11 and 9-12). LFCI understands that steel casing is no longer used for this reason; however, the same corrosion problems will be experienced on pumping well infrastructure, valves and other gas control components that are made of steel. LFCI recommends that conservative estimates be made for frequent maintenance and replacement of any long term pumping infrastructure, including leachate pumping infrastructure during the entire post-closure period.

Photo 9-11 and 9-12. Tar leaking out of compromised steel casing



As pictured in Photo 9-13, the piping network at Bridgeton is very complex. It is the most complex LFG infrastructure that both Dr. Sperling and Dr. Abedini have observed to date. Maintaining such a complex network of dual phase wells, CT's, LFG extraction pipes and abstraction works, in an environment where settlement rates of several feet per month are being experienced which is causing wells to come out of the ground and buckle (see Photo 9-14), and in an environment where the LFG is corrosive, saturated with particulate materials and tars that frequently clog filters, and is hot enough to melt pipes (see Photo 9-15), is not an easy task. Given the current situation in the South Quarry, there remains a high risk of repeated failures of the system that will require continuous inspection and maintenance until the reaction is fully exhausted.

Photo 9-13. Complex Network of Piping



Photo 9-14. Dr. Abedini testing a well impacted by settlement

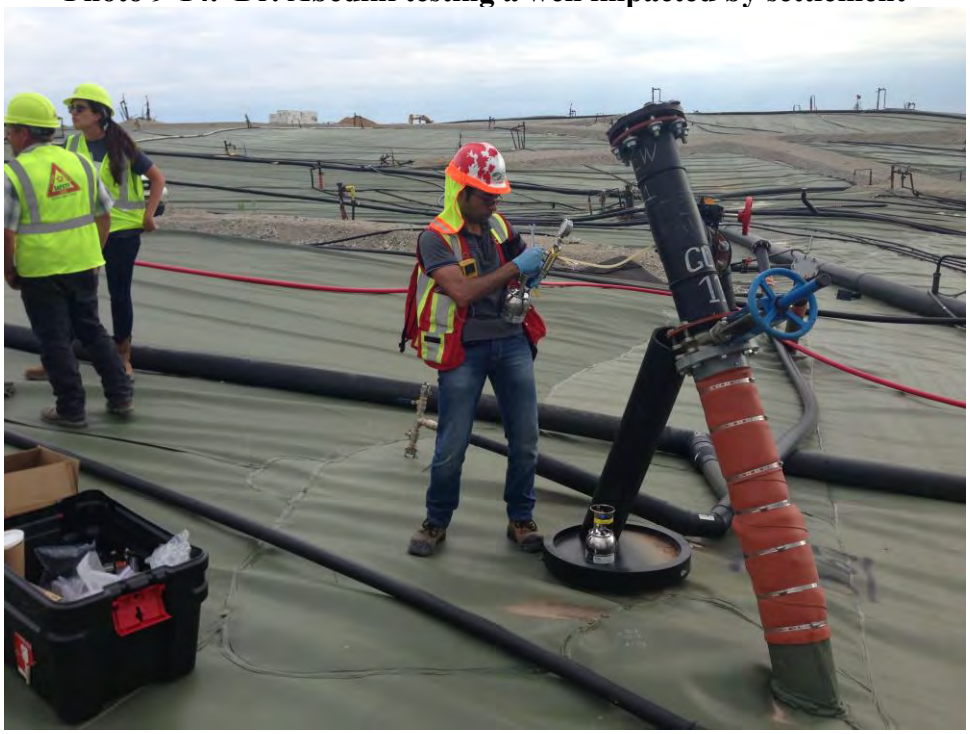


Photo 9-15. Melted End Cap



Photo 9-16. Bridgeton Staff Fixing Leaky Sampling Ports During LFCI Site Inspection



9.5 Field Sampling

On July 22nd LFCI conducted a full day of sampling at 10 LFG wells. Of those, eight were situated in the South Quarry and two in the North Quarry. The samples were replicated by Bridgeton sampling staff. Dr. Abedini collected the samples for LFCI and Mike Lambrich collected the samples for Bridgeton.

The data results are presented in Table 9-1. LFCI found excellent correspondence between the field readings with LFCI's GEM 5000 and GEM 2000+ instruments and Bridgeton's Elkins Envision analyzer. The only obvious difference was the Elkins Envision instrument consistently read the oxygen levels 1 to 2% percent lower than LFCI's GEM instrumentation.

The analysis confirmed that five of the wells tested were strongly impacted by the SSSER. These included GEW28R, GEW123, GEW140, GEW11 and GEW65. GEW124, GEW109 were moderately impacted. GEW 2, GEW 3 and GEW39 were not impacted.

A key finding of the LFCI testing was that the SSSER / smolder / settlement front has reached GEW 109. This monitoring well is situated 120 ft. north of the southerly line of GIW wells. **This result unequivocally indicates that the SSSER has passed beyond both lines of GIW wells at the "neck".** With the reaction moving closer to the North Quarry there exists only a very limited window to take further action to prevent the SSER from once again escalating out of control and causing additional hardship on the community of Bridgeton. Furthermore, allowing the reaction to move forward to the North Quarry would bring the reaction dangerously close to the OU-1 radiological area.

Excellent correlation was observed between LFCI's Gastec detector tubes and lab results for CO. For example, the tube reading at well 65A was 3,000 ppm and the lab reported 2,900 ppm. Given the excellent correlation, LFCI believes that collecting SUMMA canisters to test for CO is not necessary at every reading. LFCI recommends that consideration be given to undertaking laboratory analysis for CO only during every 5th sampling run to confirm that the correlations observed by LFCI continue to be true. If data deviates by more than 25% then SUMMA samples should be pulled and tested in the lab for CO on every sample.

More importantly, field operations staff should act IMMEDIATELY based on the results of the CO testing and turn wells off if CO levels exceed 500 ppm. Of course, this recommendation does not apply to the South Quarry where the SSSER is well established, but it does apply to all other areas of Bridgeton Landfill where the landfill remains in a methanogenic state, as well as to all other Republic Services Landfills in Missouri where methanogenic conditions dominate. Furthermore, a specialist familiar with Landfill Fires and SSSER's should be consulted promptly to conduct a detailed investigation of landfill gas composition and recommend further action.
Although the H_2 meter utilized by LFCI did not correlate as well as the Gastec tubes, the results were still sufficiently close to also recommend that field analysis for H_2 be conducted with this meter. (Our recommendation is subject to confirmation that the analyzer does not burn out after repeated use in such a high H_2 environment).

TABLE 9-1. LFCI Compilation of Field and Lab Monitoring Data Collected on July 22nd, 2015

	Well ID	Date	Time	CH_4 (%)	CO_2 (%)	O_2 (%)	Bal (%)	H_2S ppm	CO ppm	N_2 (%)	H_2 (%)	Temperature (°F)	System Pressure ("H_2O)	Static Pressure ("H_2O)
LFCI	GEW-3	22-Jul-15	10:00	53.7	39.1	1.0	5.9	58	22	-	-	120.1	-28.32	-1.06
RS1	GEW-3	22-Jul-15		56.7	37.5	0.0	5.0	-	-	-	-	118.0	-28.02	-1.04
RS2	GEW-3	22-Jul-15		54.5	39.5	0.0	6.0	-	-	-	-	119.0		
LAB	GEW-3	24-Jul-15	7:12	54.0	41.0	< 1.3	-	-	< 250	4.2	0.094	-	-	-
LFCI	GEW-2	22-Jul-15	10:30	53.6	40.0	1.1	5.3	87	16	-	-	125.6	-28.90	-0.29
RS1	GEW-2	22-Jul-15		56.0	41.3	0.1	2.6	-	-	-	-	123.2	-29.05	-0.63
RS2	GEW-2	22-Jul-15		55.9	41.5	0.1	2.5	-	-	-	-	123.4	-28.20	-0.92
LAB	GEW-2	24-Jul-15	7:26	55.0	41.0	< 1.3	-	-	< 250	2.7	< 0.025	-	-	-
LFCI	GEW-28R	22-Jul-15	11:30	0.5	47.4	6.2	45.9		2500	-	-	> 186	-15.80	-15.60
RS1	GEW-28R	22-Jul-15		0.1	45.3	7.1	47.5	-	-	-	-	184.1	-15.70	-15.30
RS2	GEW-28R	22-Jul-15						-	-	-	-			
LAB	GEW-28R	24-Jul-15	7:41	0.3	46.0	6.3	-	-	2200	23.0	23.0	-	-	-
LFCI	GEW-124	22-Jul-15	14:30	25.3	54.8	2.5	17.3	71	-	-	-	138.8		-12.23
RS1	GEW-124	22-Jul-15		20.0	61.4	0.1	18.2	-	-	-	-	141.1	-14.19	-13.31
RS2	GEW-124	22-Jul-15		19.5	62.2	0.3	18.0	-	-	-	-	142.0	-14.01	-13.34
LAB	GEW-124	24-Jul-15	7:55	19.0	64.0	< 1.4	-	-	1500	< 2.7	14.0	-	-	-
LFCI	GEW-123	22-Jul-15	15:00	13.3	61.6	2.0	20.6	-	3500		28.7	179.0	-14.29	-13.60
LFCI-STP	GEW-123	22-Jul-15		15.0	63.0	1.5	19.9	-	-	-	-	-	-	-
RS1	GEW-123	22-Jul-15		7.9	59.7	0.3	32.1	-	-	-	-	177.7	-14.74	-14.22
RS2	GEW-123	22-Jul-15		8.0	62.9	0.3	28.8	-	-	-	-			-14.19
LAB	GEW-123	24-Jul-15	8:10	6.9	63.0	< 1.3	-	-	2900	< 2.7	24.0	-	-	-
LFCI	GEW-140	22-Jul-15	15:55	19.9	55.1	1.2	23.8	-	-	-	-	184.5	-8.02	-1.92
RS1	GEW-140	22-Jul-15		11.5	60.1	0.1	28.3	-	-	-	-	183.0		
RS2	GEW-140	22-Jul-15		10.6	58.8	0.1	30.5	-	-	-	-	182.7		
LAB	GEW-140	24-Jul-15	8:25	10.0	58.0	< 1.4	-	-	2400	< 2.8	28.0	-	-	-
LFCI	GEW-11	22-Jul-15	17:20	4.8	59.6	1.7	33.9	Scrubbed	-	-	35.0	187.0	-18.60	-4.47
LFCI-STP	GEW-11	22-Jul-15		4.7	56.3	2.7	35.8	Scrubbed	2500	-	-	-	-	-
RS1	GEW-11	22-Jul-15		3.8	62.0	0.0	34.2	-	-	-	-	184.6		-4.90
RS2	GEW-11	22-Jul-15		3.5	61.8	0.0	34.7	-	-	-	-	184.6		-4.96
LAB	GEW-11	24-Jul-15	8:39	3.2	62.0	< 1.4	-	-	2300	< 2.7	31.0	-	-	-
LFCI	GEW-65A	22-Jul-15	18:00	2.3	59.6	1.2	36.9	Scrubbed	-	-	40.1	200.7	-0.66	-4.00
LFCI-STP	GEW-65A	22-Jul-15		3.6	54.5	2.4	39.5	Scrubbed	3000	-	-	89.9	-	-
RS1	GEW-65A	22-Jul-15						-	-	-	-			
RS2	GEW-65A	22-Jul-15						-	-	-	-			
LAB	GEW-65A	24-Jul-15	8:54	0.5	59.0	< 1.4	-	-	2900	< 2.8	36.0	-	-	-
LFCI	GEW-39	22-Jul-15	18:40	42.4	48.9	1.1	7.8	Scrubbed	-	-	0.1	136.3	-26.00	-0.75
LFCI-STP	GEW-39	22-Jul-15		39.2	43.4	2.7	14.7	Scrubbed	156-200	-	-	88.5		
RS1	GEW-39	22-Jul-15		38.4	55.7	0.0	5.9	-	-	-	-	133.7		-0.98
RS2	GEW-39	22-Jul-15		40.6	48.3	0.0	11.1	-	-	-	-	134.0		-1.00
LAB	GEW-39	24-Jul-15	9:08	38.0	52.0	< 1.4	-	-	260	6.2	3.3	-	-	-
LFCI	GEW-109	22-Jul-15	19:00					Scrubbed						
RS1	GEW-109	22-Jul-15		7.0	52.9	0.0	40.1	-	-	-	-	175.2	26.92	
RS2	GEW-109	22-Jul-15						-	-	-	-			
LAB	GEW-109	24-Jul-15	9:23	4.1	54.0	< 1.5	-	-	1900	8.5	32.0	-	-	-

1	GEW-3
2	GEW-2
3	GEW-28R
4	GEW-124
5	GEW-123
6	GEW-140
7	GEW-11
8	GEW-65A
9	GEW-39
10	GEW-109

LFCI: Analysis of Data:

Excellent correspondence between LFCI, Bridgeton and Lab data.
Clear evidence of SSE impacted wells: Levels as follows:
GEW28R, GEW123, GEW140, GEW11, GEW65-A strongly impacted
GEW124, GEW109 moderately impacted
GEW 2 and GEW39 not impacted

Key finding is that smoulder/settlement front is at GEW 109
This means that SSE has passed beyond both lines of GIW wells

Excellent correlation between LFCI's GasTec tubes and lab results for CO
Oxygen intrusion is indicated at GEW28R, GEW109 and GEW 39
LFCI concludes that field instrumentation is providing sufficiently accurate data to track event
Lab testing for assessing key parameters of CH4, CO2, O2, H2 is not necessary
H2 instrumentation provides comparable results to lab, this is good news.

LFCI recommends that Gastec analysis for CO become routine monitoring practice
LFCI recommends that field monitoring for H2 become routine part of program
LFCI believes expensive laboratory SUMA canister analysis is warranted only occasionally (e.g. every 6th sample round)
LFCI believes Bridgeton may be pulling too hard in neck area (further review of all wells warranted)

Above Analysis completed by:
Dr. Tony Sperling, P.Eng., July 31, 2015
LFCI notes that during sampling day access to several wells that LFCI wanted to sample was restricted

LFCI : Landfill Fire Control Inc.
RS: Republic Services
LAB: Air Technology Laboratories Inc.
STP: Standard Temperature & Pressure

Not impacted: Methane>50%, CO2<50, CO<500 ppm, H2<1%
Moderately SSE: Methane<30%, CO2>50%, CO>1500ppm, H2>10%
Strongly SSE: Methane<10%, CO2>60%, CO>2500, Temp>175F, H2>20%

LFCI concludes that field instrumentation is providing sufficiently accurate data to track the event and that lab testing for assessing key parameters of CH_4, CO_2, O_2, H_2 and CO is not necessary. As mentioned above, LFCI recommends laboratory sampling be undertaken during every fourth or fifth sampling run as a QA/QC measure to verify that all instrumentation is working effectively. Prior to implementing this recommendation, all other stakeholders should be consulted to ensure that there is no other data required from the laboratory samples (such as VOC's concentrations).

Photo 9-17. Field based CO Analysis with Gastec Detector Tubes



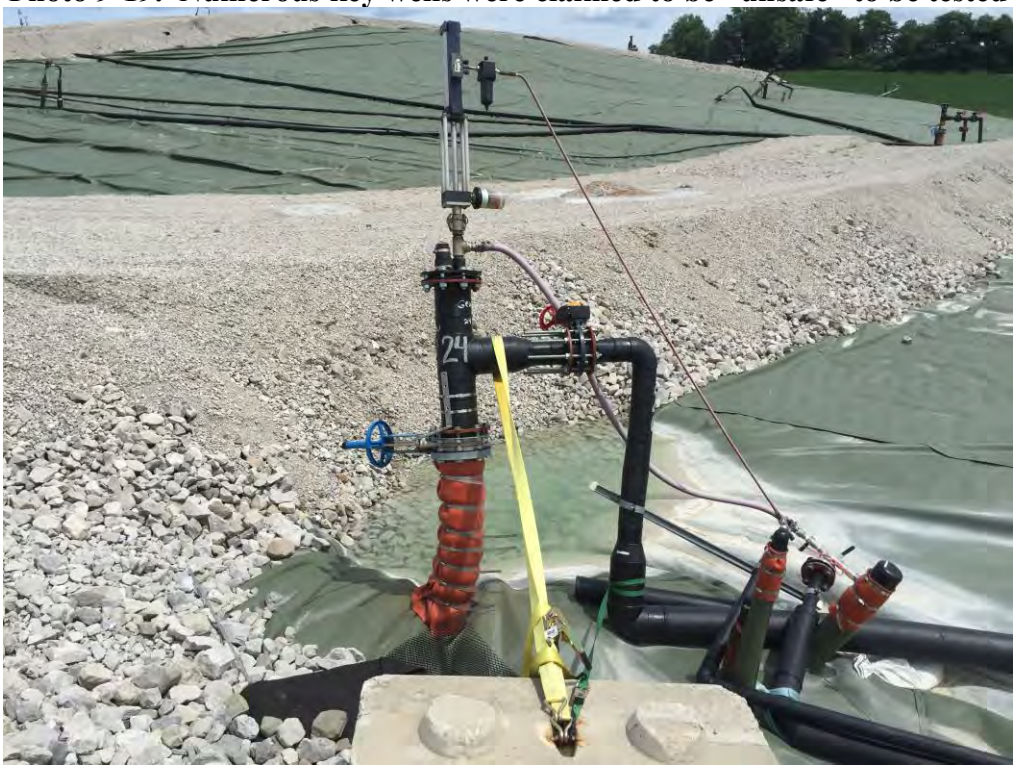
LFCI's testing results indicate that at the time samples were drawn significant oxygen intrusion was occurring at GEW28R. LFCI remains concerned about the risk of air intrusion triggering a near surface MSW fire that could compromise the EVOH geomembrane.

Finally, LFCI notes that during the sampling day access to many of the key wells that LFCI wanted to test was restricted. LFCI was informed that some of these wells were "unsafe" to be tested, and many other were tagged as "Out of Service" as pictured in Photo 9-18. This was particularly frustrating as many of the wells were sampled during Bridgeton's previous monthly sampling run and were not included on the "Do Not Sample" list provided by Brenda Ardrey.

Photo 9-18. Numerous key wells were tagged at "Out of Service"



Photo 9-19. Numerous key wells were claimed to be "unsafe" to be tested



10. Risk Factors

In completing this expert opinion and review LFCI believes it is important to document the potential risk factors that were identified during our investigation. Many of these risk factors are probably well recognized; however, LFCI will repeat them here in case some have not been previously identified by others. Recognition of these risk factors may be particularly important to First Responders that may be required to attend the site in an emergency, and to MDNR and AGO staff in accounting for potential long term liabilities associated with this incident.

Collapse: In LFCI's opinion, the biggest risk factor to human health and life is collapse. Given the large settlements that have occurred to date, and the small localized settlements and hot spots that were noted, it is LFCI's opinion that the risk of collapse features developing is significant, especially around infrastructure that is conveying hot gases to surface.

Rapid Air Entry: Currently the LFG system is placing the entire South Quarry Landfill under a state of vacuum. This vacuum is pulling air into the landfill from the outside perimeter. It is also pulling heat toward the LFG extraction wells. Should the LFG extraction system malfunction for an extended period of time, e.g. during a prolonged power outage, it is likely that pressure gradients will reverse, bringing hot gases to surface. Gases from highly reactive areas may be approaching the melting temperatures of the EVOH liner. Failure of the liner could result in rapid air intrusion into the waste mass increasing the risk of a surface fire to break out.

Hydrogen Gas Ballooning: The SSSER is generating a very large amount of reaction gas. That gas contains virtually no methane, but it does contain 20 to 30% H_2. Photo 10-1 shows the development of a large bubble beneath the membrane liner during some recent maintenance work. Photos 10-2 and 10-3 show the development and subsequent degassing of another bubble during the RCP work. LFCI questions whether sufficient attention was being paid to the potentially explosive work environment when photos 10-2 and 10-3 were taken.

It is not unreasonable to anticipate that a much larger bubble could develop beneath the EVOH liner in the event of a prolonged power failure such as was experienced in during the ice storms in Ontario a few years ago.

H_2 is a highly flammable and explosive gas. Many will recollect the explosion of the Hindenburg dirigible as a graphic reminder of the danger posed by hydrogen gas in bubbles. LFCI believes that an emergency plan needs to be developed concerning safe work procedures around these bubbles if one does not exist currently.

Photo 10-1 Gas Bubble developed during decommissioning of RSP (Source: PL1 562621)



Photo 10-2 Smaller bubble during active decommissioning of RCP



Photo 10-3. Degassing of bubble. Note presence of numerous bystanders downwind.



Settlement Induced Failures of Gas Wells: The rapid settlement of the MSW is exerting enormous downdrag forces on well casings at Bridgeton. Some of the wells are ejecting upward through the surface as the waste settles around them, others are getting pinched at depth.

Liner Meltdown: The melting point of EVOH liner is around 324°F. LFCI believes that the actual reaction temperature of the SSSER is considerably higher given that a temperature of over 300°F has been measured in TMP-7R. If the liner is exposed to hot gas from an active reaction zone, it could result in the thermal meltdown of the EVOH. This could result in a surface fire, especially if venting gases were ignited. Control of a reaction would be challenging, particularly if it occurred in the middle of the amphitheatre area in darkness.

Gas Gradient Reversal: The SSSER reaction is generating large volumes of reaction gas. The heating of water, and subsequent expansion of that water to steam, is also increasing the pressure within the South Quarry area. In the past, this pressure has overwhelmed some of the LFG wells such that they vented with positive pressure. High pressures within the landfill will lead to migration of exhaust gasses upward and toward the landfill perimeter.

The interface between MSW and the quarry wall has historically been a preferred migration pathway for both LFG and leachate. Bridgeton Landfill LLC has installed a number of lateral trench style collectors to depressurize this area. Development of positive pressures in the vents could result in gas escaping at the landfill toe and migrating through the subsurface. LFCI already noted landfill gas bubbling from the ground at a seepage location on the south side of Old St. Charles Road. Off-site

LFG migration can pose a threat of explosion. However, it is important to recognize that the composition of gas is quickly changing. Monitoring for CH_4 at property boundaries should be augmented with monitoring for H_2 gas. In LFCI's opinion, the same trigger level should be adopted for hydrogen, 0.5 of LEL concentrations.

Benzene: Because benzene is present at very high concentrations in leachate, monitoring for benzene levels should become routine for all groundwater chemistry tests, if this parameter is not already included.

Loss of Hydraulic Trap: Based on LFCI's cursory review of water levels, it appears that the critical control elevation for containment of leachate within the rock quarry is about 430' ASL. The elevation may be lower for the bedrock aquifers, but with the exception of the upper St. Louis formation which is known to be pervious due to weathering and fractures, the remaining limestone units are believed to be relatively impervious.

The development of the SSER and the water it is generating through the water gas and water gas shift reactions, as well as the loss of pumping infrastructure due to the large settlements that are being experienced may be resulting in the development of positive hydraulic heads within the quarry, and the potential for outward flow of contaminated leachate. This outward flow may be resulting of off-site migration of polluted groundwater. This polluted groundwater may be entering the Missouri River aquifer, which appears to be situated in close proximity to the western quarry wall based on geologic cross section information reviewed by LFCI.

We understand that this risk is being addressed by other qualified professionals for the AGO.

SSSER Reaching Radiological Waste: We understand that there is radiological waste present in OU-1, immediately north of the North Quarry. Furthermore, we understand that there is currently no physical separation between the waste in OU-1 and the waste in the North Quarry. Furthermore, we understand that there is a physical step or cliff present about mid-way into the quarry. The north quarry is much shallower on the north side of that step.

LFCI has determined that if the SSSER were to expand in the North Quarry at the same rate as was observed in the South Quarry, the reaction could reach OU-1 in as little as three to six months. LFCI believes that currently the advance of the SSSER northward is being retarded by the vacuum that is being applied by the two rows of GIW wells. However, once the reaction front migrates beyond the zone of influence of those wells it is not unreasonable to conclude that it may once again accelerate.

The SSSER is generating a lot of heat that converts leachate to steam. LFCI is not knowledgeable regarding the release of radioactive waste, other than the knowledge distributed by media during the recent Fukushima disaster. During that event, super-heated steam carrying radionuclides was one of the primary pathways for distribution of radiation, as was the case at Chernobyl.
Given the potential risk, LFCI is of the opinion that a physical barrier to isolate OU-1 from the threat of landfill fire should be constructed immediately.

11. Suppression Strategies

Just as in the recent fire suppression in Iqaluit and the suppression of the Cerro Patacon Landfill fire in Panama, the objectives of controlling the Bridgeton SSSER incident are:

- To prevent odour and toxic releases into community
- To prevent SER from reaching radioactive waste
- To prevent pollution of groundwater resources
- To ensure the safety of all workers, first responders and residents

The following tools are available to fire fighters, when trying to contain burning events in landfills, be they surface fires, smoldering, or SSSER.

- Cooling by water
- Oxygen Control (not effective for SSSER)
- Cooling and oxygen suppression with inert gas (N_2 or CO_2)
- Removal of fuel

The selected strategies need to achieve control of smoke, particulate release, odour release and off-site leachate discharge.

Available suppression strategies that have been evaluated included:

- Water Injection/Flooding
- Inert Gas Injection (Nitrogen/CO_2)
- Oxygen Suppression by burying with clay or containing with geomembrane
- Heated Gas Extraction
- Cooling Loop using cooling fluids
- Inert Fire Barriers (slurry walls, caissons, trenches)

Suppression strategies that have been implemented to date have included:

Oxygen Control with HDPE and EVOH geomembrane. This strategy was implemented at the landfill toe in 2012 and over all of the South Quarry in 2014. It has proven effective at controlling odours. LFCI believes that it has also proven reasonably effective at minimizing air intrusion. Maintenance of the cover is a challenge as piping continues to rise.

LFG Extraction: Aggressive dual phase extraction is being used to remove reaction gases from the SSSER, including CO_2, H_2 and leachate and water vapour. Given that the SSER appears to be constrained above the water table, LFCI questions the benefit of drawing the water table down in the waste mass. Furthermore, LFCI notes that removing liquid water from the waste mass removes a large amount of heat absorbing capacity that could be realized. Generally, dewatering and drying out any form of burning reaction is considered poor practice. For example, during the recent massive wild fires in Washington State and B.C. fire behaviour was explosive on hot dry days, and much more constrained on damp cloudy days when humidity was higher.

LFCI agrees that pressure in the waste mass needs to be controlled to limit odour releases, but we do not necessarily believe that liquid water should be removed as well. In this case, LFCI recommends that expert guidance be sought from qualified professionals who are knowledgeable in pyrolysis and the various reactions identified in Chapter 5.

Removal of water also opens up the pore spaces for migration of hot combustion gases.

Furthermore, LFCI believes that more effective extraction of LFG and the reaction gases from the SSSER could be achieved by increasing the number of wells with shallower collection zones, instead of pulling harder on the existing deep wells. Installation of condensate traps much closer to the wells could also significantly reduce the number of available vacuum loss incidents which periodically happen at Bridgeton, due to the landfill's rapid settlement events resulting in condensate blockage in the lateral pipes.

Gas Interceptor Wells: LFCI generally supports the need to depressurize the reaction to maintain control; however, we question the aggressive pumping of LFG in non-reacted areas ahead of the reaction front. In our opinion, extracting LFG from ahead of the reaction induces gas flow and heat transfer in the wrong direction, pulling the reaction northward rather than pulling it back. The GIW's may be more effective in constraining further spread now that the reaction has crossed to GEW 109.

Cooling Loop: Based on LFCI's experience with MSW fires, garbage is an excellent insulator. It has been our experience on several projects that heat from a fire takes years to dissipate back to background. Therefore we strongly suspect that any form of cooling liquid pumped through wells in the subsurface would have a very limited zone of influence. Proper heat flow analysis should be undertaken before such a measure is considered and implemented.

Raising Leachate Levels: LFCI recommends that the pros and cons of raising leachate levels to effectively flood the lower portions of the reaction area should be fully evaluated, especially in areas where the reaction has yet to be established (e.g. the neck and the north quarry). It has been LFCI's experience that soaking wet garbage simply does not burn or react until all liquid water is converted to steam. If there is a lot of water available the heat provided by the exothermic reactions is not sufficient to vapourize all available water and the reaction should be terminated.

Raising leachate levels would also minimize the depth of any containment infrastructure intended to contain the reaction in the South Quarry such as inert gas injection wells, grout filled caissons, slurry trench or the like.

Of course, raising water levels in the North Quarry must be carefully evaluated in the context of the inward hydraulic gradient needed to maintain a hydraulic trap, and in the context of the possible presence of radionuclides from OU-1 in the leachate. LFCI does not have sufficient information to comment on either of these concerns at present.

Oxygen Control With Low Permeability Soil Barrier: Soil is one of the most effective tools for landfill fire fighters. The massive Cerro Patacon fire was controlled primarily by burying the entire landfill with 3 feet of soil, thereby inhibiting oxygen entry and smothering the fire.

In the case of an SSSER soil application at surface will not be effective in controlling the reaction, but LFCI believes it would minimize the risk of EVOH geomembrane failure and collapse. LFCI believes that a 6' to 10' thick layer of soil placed below any new geomembrane cap would help to insulate the membrane from heat. The soil would also provide a means of minimizing the risk of near surface collapse features. Due to its inherent weight, the soil would have a tendency to collapse into any voids created by near surface combustion. It would also serve as a secondary barrier to limit air incursion into the waste mass should the EVOH liner system fail.

Inert Gas Barrier: LFCI is not a strong believer in the use of inert gas for fire suppression, except in very special circumstances. Once a fire is established, a lot of heat is contained in the subsurface. Although inert gas may temporarily displace oxygen, it has been LFCI's experience that the inert gas concentrations dissipate quickly, long before the waste mass can be cooled and the fire re-ignites.

In the context of Bridgeton, use of inert gas may have some merit, particularly if inert gas such as CO_2 is selected. CO_2 is a reaction product of the water gas and water gas shift reaction. By increasing concentrations of CO_2, the reaction product, it is quite possible that the reversible water gas shift reaction can be driven in the opposite direction and the water gas reaction can be stopped. Specialist input from a chemistry expert is needed to confirm LFCI's hypothesis.

Pressure Control: The same specialist should be consulted to determine whether the exothermic reactions that are driving the SSSER react faster as pressure increases. Without this knowledge, it is not clear to LFCI whether depressurization of the waste mass at depth is actually a good thing. If high pressure would slow the reaction, then a better strategy may be to allow the deep subsurface to become pressurized and to then bleed of any reacting gasses by a series of shallow wells developed near surface.

Certainly, maintaining the CO_2 and H_2 pressurized at depth would increase the concentration of the reaction products, which should theoretically slow or reverse the exothermic reactions driving flow. Again, input from a qualified chemistry professional is required to advise on this hypothesis.

12. Conclusions and Recommendations

LFCI is honored to submit this assessment report of the Bridgeton SSSER incident. Our evaluation is based on a thorough review of key data provided by the Missouri Attorney General's office, a full two day visit to Bridgeton Landfill during which both the South Quarry and North Quarry areas were inspected and sampling was conducted on 10 wells, additional research on chemical reactions, and on 17 years of practical experience in the control and extinguishment of landfill fires and SSO's by Dr. Sperling and 12 years practical LFG management experience by Dr. Abedini. Additional research was conducted by LFCI's staff during investigation.

LFCI notes that despite spending a total of 500 hours collectively by Dr. Sperling and Dr. Abedini in conducting the site investigation and preparing this report, we were unable to fully review all of the information that was provided to us by the AGO due to time constraints that were imposed by previous consulting commitments to other projects. Notwithstanding, we do believe that we have a sufficiently good understanding of issues and data to draw the following conclusions and recommendations, and that our conclusions and recommendations are based on information that is factual, unbiased and represents current state of practice in landfill gas control and landfill fire management.

12.1 Conclusions about the Cause of the SSSER

Burning of MSW is currently occurring in the South Quarry of Bridgeton Landfill. The burning is occurring through two processes. Smoldering where oxygen is available, and through self sustaining subsurface exothermic reaction (SSSER) at depth.

The burning incident at Bridgeton was first detected on December 10th, 2009 at Well 67, as indicated by CO levels in that well above 500 ppm.

Prior to the initiation of subsurface smolder, the LFG extraction system was aggressively operated by Bridgeton Landfill LLC in an attempt to control an off-site methane migration issue. From 2007 through 2010 numerous wells were operated well outside NSPS limits of 5% oxygen and 20% nitrogen and outside Republic Services Standard Operating Procedures.

This aggressive operation of the well field, combined with poor maintenance of the soil final cover cap allowed oxygen intrusion into the waste. Oxygen intrusion caused by over-extraction of LFG wells is recognized as the leading cause of subsurface fires and smolders in MSW. The bi-weekly or monthly monitoring events conducted by the field monitoring staff may not have necessarily observed elevated oxygen levels in all the over-pulled wells. Oxygen may be stripped away by the aerobic bacteria as the intruded air traveled through the waste mass, depending on the distance between the air intrusion point and the LFG collection well. LFCI is of the opinion that Bridgeton Landfill LLC was negligent in aggressively over-extracting the gas system well outside industry best practices.

The XY scatter plots for methane and CO_2 illustrate without any reasonable doubt that the well field started to be overdrawn in 2008 and was seriously overdrawn in 2009 and 2010, prior to the start of the SSSER.

Although the initiation of an SSO reaction was reported to management in July, 2009 aggressive extraction of LFG continued, and indeed extraction rates were increased by 40% in September, 2009.

Decisive action to contain the SSO and the smoldering event, including retaining expert assistance, was not initiated until Dec. 22nd, 2010, more than a full year after high CO levels were first detected. In LFCI's opinion, this delay was negligent and essentially eliminated any opportunity to contain the burning incident before it became a catastrophic event.

LFCI is of the opinion that Bridgeton Landfill LLC, and its parent company Republic Services failed to provide sufficiently experienced people to oversee the operation of their critical environmental control systems at Bridgeton, and the staff in those positions were overloaded. This observation is believed to be a key contributing factor to this unfortunate incident.

Prior to February, 2011 the subsurface heating event was a conventional biological aeration and localized smolder. However, in February, the heat build up as a result of inadequate containment efforts initiated an SSSER at well 67. A second SSSER was initiated around well 34 in March, 2011.

The SSSER spread from those two nodes at an approximate rate of 150 to 300 ft per month. Over the past four and a half years the reaction has consumed waste in about 75% of the South Quarry area.

12.2 Conclusions about the Processes Driving Burning at Bridgeton

LFCI believes that prior to February, 2011 the primary burning mechanism was smoldering initiated by overdraw of the LFG system. Since February, 2011 LFCI believes that the primary mechanism has been the SSSER reaction process. However, given observed oxygen levels in the shallow subsurface, LFCI believes that continued smoldering is also playing a key role in the reaction.

Analysis of monitoring data indicates that the SSSER involves a five step reaction process. LFCI suspects that the five reaction steps are:

Step 1. Overdraw Condition
Step 2. Aerobic Heating Phase
Step 3. Methanation Reaction
Step 4. Torrefaction / Water Gas Shift Reaction
Step 5. Recovery

Step 4 is the key step where lots of heat, gas and settlement are generated. Step 4 appears to last 12 to 18 months. Reaction Step 4 is indicated by high concentrations of H_2 gas, CO and elevated temperatures.

As indicated by the rapid rise of temperatures in TMP 7R, at the reaction front temperatures exceed 300°F. Clearly, the reaction requires temperatures above the boiling point of water. Therefore, LFCI concludes that Step. 4 of the reaction will not occur below the water table.

For this reason LFCI questions whether aggressive dewatering of leachate levels was and is a wise course of action. Removal of leachate removes one of the most efficient means of cooling which is realized during the phase change from liquid to gas. In other words, pumping leachate out of the landfill is equivalent to removing the capacity to spray an equivalent amount of water into the reaction area for cooling purposes.

LFCI believes that fully understanding the reaction process will be key in order to determine the best method of controlling the reaction.

Given that the SSSER reaction does not occur below the water table, the various strategies to contain the SSSER in the North Quarry grossly overestimated the infrastructure required to contain the reaction. At first glance, LFCI suggests that, if coupled with flooding of unreacted areas in the neck to a water level around 420' ASL (or whatever is the maximum safe water level to avoid loss of a hydraulic trap) the depth of the various containment structures may be dramatically reduced. Of course, detailed analysis of this concept is needed to ensure that it would indeed be effective and protective of the environment. In particular, the potential impact on radiological wastes has to be considered.

Based on the temperature data reviewed, LFCI does not believe that temperatures in the South Quarry waste mass are declining as rapidly as indicated by temperatures measured at the GEW wellheads. Because many of the wells are being redrilled to shallower depth, and many wells are experiencing air incursion, cooler gas is being drawn into the wells. Deeper areas of the landfill may remain hot.

The presence of radiological waste in OU-1, 1,000 ft. from the reaction front is a major concern to LFCI. Based on observed rates of SSSER spread at 150 to 300 ft. per month, high temperatures from the reaction could conceivably reach OU-1 in 3 to 6 months.

A key finding of the LFCI testing was that the SSSER / smolder / settlement front has reached GEW 109. This monitoring well is situated 120 ft. north of the southerly line of GIW wells. **This result unequivocally indicates that the SSSER has passed beyond both lines of GIW wells at the "neck".** With the reaction moving closer to the North Quarry there exists only a very limited window to take further action to prevent the SSER from once again escalating out of control and causing additional hardship on the community of Bridgeton. Furthermore, allowing the reaction to move forward to the North Quarry would bring the reaction to the OU-1 radiological area.

LFCI is concerned that reaction Step 4 may be generating char in the subsurface. If large quantities of char are present, these materials could present a risk of a very aggressive large scale fire if the char becomes exposed to the atmosphere.

12.3 Conclusions about Leachate

LFCI's review of the leachate sample collected by the AGO indicates that the leachate is highly polluted. Of particular concern, benzene concentrations exceed drinking water guidelines by a factor of 170 times. Long term containment of this very strong leachate is a technical challenge and will result in very significant long term costs.

Given the hydrogeological setting, operation of the leachate containment system may be required for centuries to ensure full containment of the toxic substances contained in the rock quarries.

LFCI believes that the SSSER is mobilizing significant quantities of soluble organics into the leachate. The presence of these organics is increasing the toxicity of the leachate, making containment more problematic, and making treatment of the leachate more difficult and much more expensive.

12.4 Conclusions about Landfill Design

In LFCI's opinion, the development of such a deep inward gradient landfill that relies on a hydraulic trap which must be maintained by pumping was ill conceived. Also, filling of the waste mass against quarry walls without an impervious barrier such as a clay wall or geomembrane liner system was ill conceived, given that the bedrock formation is weathered and fractured near surface. Off-site migration of LFG in this environment was totally predictable.

Only 120 ft. of bedrock separates the waste in the South Quarry from the gravel / sand aquifer of the Missouri River. Placing a major landfill in such close proximity to a drinking water aquifer was also ill conceived.

12.5 Recommendations re Control of SSSER

We recommend that experts in the field of torrefaction, smoldering and low temperature combustion be consulted to confirm the observed trends, confirm the reactions that are causing the trends and advise on control strategies that can be adopted to control those reactions.

LFCI recommends that MDNR request factual information from Republic, including cores or other samples of cuttings from previous Sonic drilling programs, or that additional drilling be undertaken to establish whether a significant amount of reaction product still remains sub-surface in reacted areas.

Based on a suggestion by Dr. John Grace, P.Eng., LFCI recommends that Team Bridgeton evaluate the feasibility of injecting cooled exhaust gas from the flare as an inert gas into the subsurface, depending of course on the concentration of inert gases including N_2 and CO_2 relative to O_2 in the exhaust gas stream. In particular, establishment of a positive pressure front of cold and inert gas in the "neck" may be effective in preventing migration of the SSSER into the North Quarry.

LFCI recommends that in the future Team Bridgeton re-evaluate the control strategy of installing GIW's in cold areas in front of the SSSER given the fact that the flow of hot gases, and condensation of steam are very effective heat transfer mechanisms and that forward smolder reactions (where the

smolder front moves in the same direction as gas flow) are known to travel faster than a reverse smolder.

12.6 Recommendations re Leachate Control

LFCI recommends that Bridgeton Landfill LLC give very careful consideration to the pros and cons of aggressive dewatering of leachate from gas collection wells in the north quarry. Furthermore, LFCI recommends that all existing wells be accurately sounded for the current water level. Key things to consider in that analysis are the possible presence of radiological waste in the North Quarry, the phase change conversion of liquid water vapor to steam, the large amount of heat absorbed during that phase change.

LFCI recommends that Team Bridgeton consider some form of closed loop groundwater / leachate recirculation system whereby impacted groundwater would be pumped from bedrock wells at the landfill perimeter and then injected in landfill areas to raise the water table in areas yet unaffected by the SSSER. The presence of large volumes of water may be sufficient to significantly slow, or even stop the SSSER reaction in its tracks. LFCI recommends that an energy balance be conducted by qualified professionals to confirm that LFCI's hypothesis is valid.

Given the fact that the SSSER is not occurring below the water table, LFCI recommends that Bridgeton LLC and MDNR may want to revisit the requirement to maintain the sump elevations at 30' above the base of the quarry floor given that the SSSER is occurring. LFCI recognizes that maintaining inward gradients is critical to protect groundwater resources. We believe that an engineered solution including perimeter pumping wells, grouting programs and other impervious barriers can be developed to safely achieve both objectives.

LFCI recommends that the groundwater levels between the North Quarry and the OU-1 area be carefully assessed to determine groundwater flow directions. If there is a risk of southwestward groundwater flow into the North Quarry, then given LFCI's concern that the reaction is spreading into the North Quarry (as discussed in Chapter 9), it would be prudent to establish a physical barrier between the North Quarry and OU1 that is an effective thermal barrier as well as a barrier to groundwater flow, particularly given such a project seems relatively straightforward given the shallow waste thickness in the area.

Given that in the worst case scenario, the SSSER could arrive at OU-1 in as little as three months, LFCI does not believe that delaying the construction of an effective thermal and leachate barrier between OU-1 and the North Quarry is in the best interest of Bridgeton Landfill LLC, Republic Services and its shareholders as it potentially exposes those parties to immense environmental and financial liabilities should the worst case scenario develop.

LFCI recommends that all existing wells be accurately sounded for the current water level in the landfill at least on an annual basis, if not more frequently. A proper contour map should be generated

showing current water levels. At least 75% of the readings should be taken from monitoring wells not affected by leachate pumping.

Given the high levels of pollutants, it is important that leachate from Bridgeton be properly treated before discharge to the environment. LFCI recommends that MDNR ensure that leachate is being properly treated and analyses are being undertaken to ensure that pollutants such as benzene are treated at the WWTP's prior to discharge into the environment.

12.7 Recommendations re Field Sampling

LFCI recommends that monitoring staff never work alone when undertaking field investigations in the SSSER reaction zone as the risk of collapses, well failures and blow outs of pressurized wells, trip and fall hazards at the site is high.

LFCI recommends that the temperatures being observed at Bridgeton, particularly the temperatures from the GEW's and GIW's be considered only as rough indicators of subsurface temperature, and that it be anticipated that actual subsurface temperatures in the heart of a reaction will likely be much hotter.

LFCI recommends that the liner be inspected at least once per month for major defects such as rips and tears, and that particular attention be given to the critical area at the landfill toe.

Field operations staff should act IMMEDIATELY based on the results of the CO testing and shut wells down if CO levels exceed 500 ppm. Of course, this recommendation does not apply to the South Quarry where the SSSER is well established, but it does apply to all other areas of Bridgeton Landfill where the landfill remains in a methanogenic state, as well as to all other Republic Services Landfills in Missouri. Furthermore, a specialist familiar with Landfill Fires and SSSERs should be consulted promptly to conduct a detailed investigation of landfill gas composition and recommend further action.

LFCI recommends that consideration be given to undertaking laboratory analysis for CO only during every 5th sampling run to confirm that the correlations observed by LFCI continue to be true. If data deviates by more than 25% than CO lab measurements should be resumed on every sample.

Although the H_2 meter utilized by LFCI did not correlate as well as the Gastec tubes, the results were still sufficiently close to also recommend that field analysis for H_2 be conducted with hydrogen gas detector (recommendation subject to confirmation that analyzer does not burn out after repeated use).

LFCI recommends that leachate levels be sounded in inactive LFG wells or new piezometers to establish the true leachate level within the MSW waste as was previously done by Aquaterra in 2010.

12.8 Recommendations re Long Term Mitigation Costs

LFCI recommends that conservative estimates be made for frequent maintenance and replacement of any long term pumping infrastructure, including leachate pumping infrastructure during the entire post-closure period.

Given the elevated levels of a number of pollutants, particularly benzene, LFCI recommends to the Missouri Attorney General's office that due consideration be given to the long term methods and costs of containing leachate within the rock quarry confines. Given the highly aggressive nature of the leachate and a strongly acidic pH of 5.5, resulting in rapid corrosion of steel, maintaining a pumping system operational will likely prove very costly.

13. Limitations

This report has been prepared by Landfill Fire Control Inc. (LFCI) for the Missouri Attorney General's office in accordance with generally accepted engineering practices to a level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions in British Columbia, subject to the time limits and financial and physical constraints applicable to the services.

The report, including all tables and figures and data compilation during the course of the project, is based on engineering analysis by LFCI staff. Except where specifically stated to the contrary, the information on which this study is based has been obtained from external sources. This external information has not been independently verified or otherwise examined by LFCI to determine its accuracy and completeness. Landfill Fire Control Inc. has relied in good faith on this information and does not accept responsibility for any deficiency, misstatements or inaccuracies contained in the reports as a result of omissions, misinterpretation and/or fraudulent acts of the persons interviewed or contacted, or errors or omissions in the reviewed documentation.

The report is intended solely for the use of the Missouri Attorney General's office. Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Landfill Fire Control Inc. does not accept any responsibility for other uses of the material contained herein nor for damages, if any, suffered by any third party because of decisions made or actions based on this report. Copying of this intellectual property for other purposes is not permitted.

The findings and conclusions of this report are valid only as of the date of this report. The interpretations presented in this report and the conclusions and recommendations that are drawn are based on information that was made available to LFCI during the course of this project. Should additional new data become available in the future, Landfill Fire Control Inc. should be requested to re-evaluate the findings of this report and modify the conclusions and recommendations drawn, as required.

Prepared by:
LANDFILL FIRE CONTROL INC.

Dr. Tony Sperling, P.Eng. (British Columbia)
President

Dr. Ali R. Abedini
Landfill Gas Specialist

September 2nd, 2015

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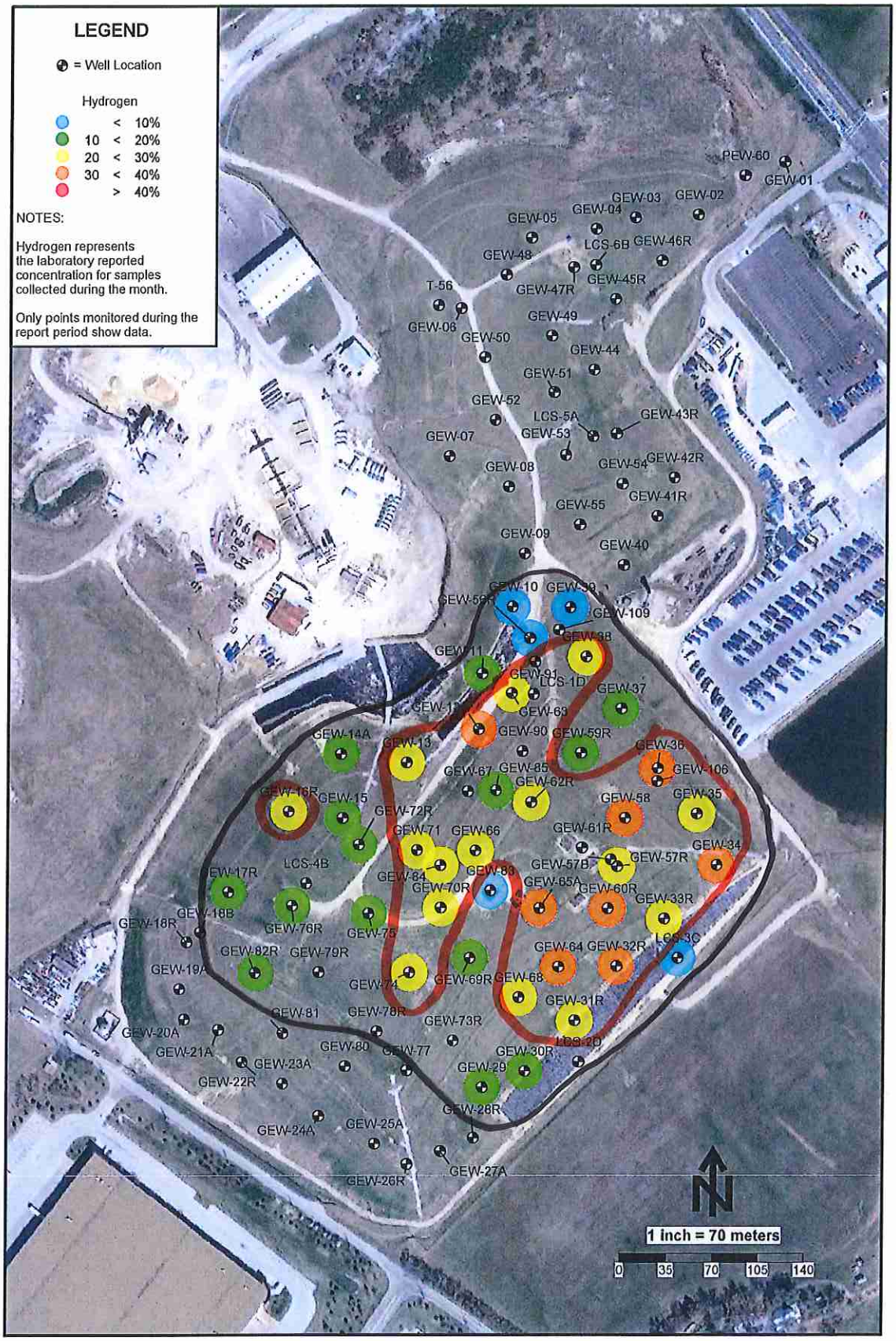
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APPENDICES

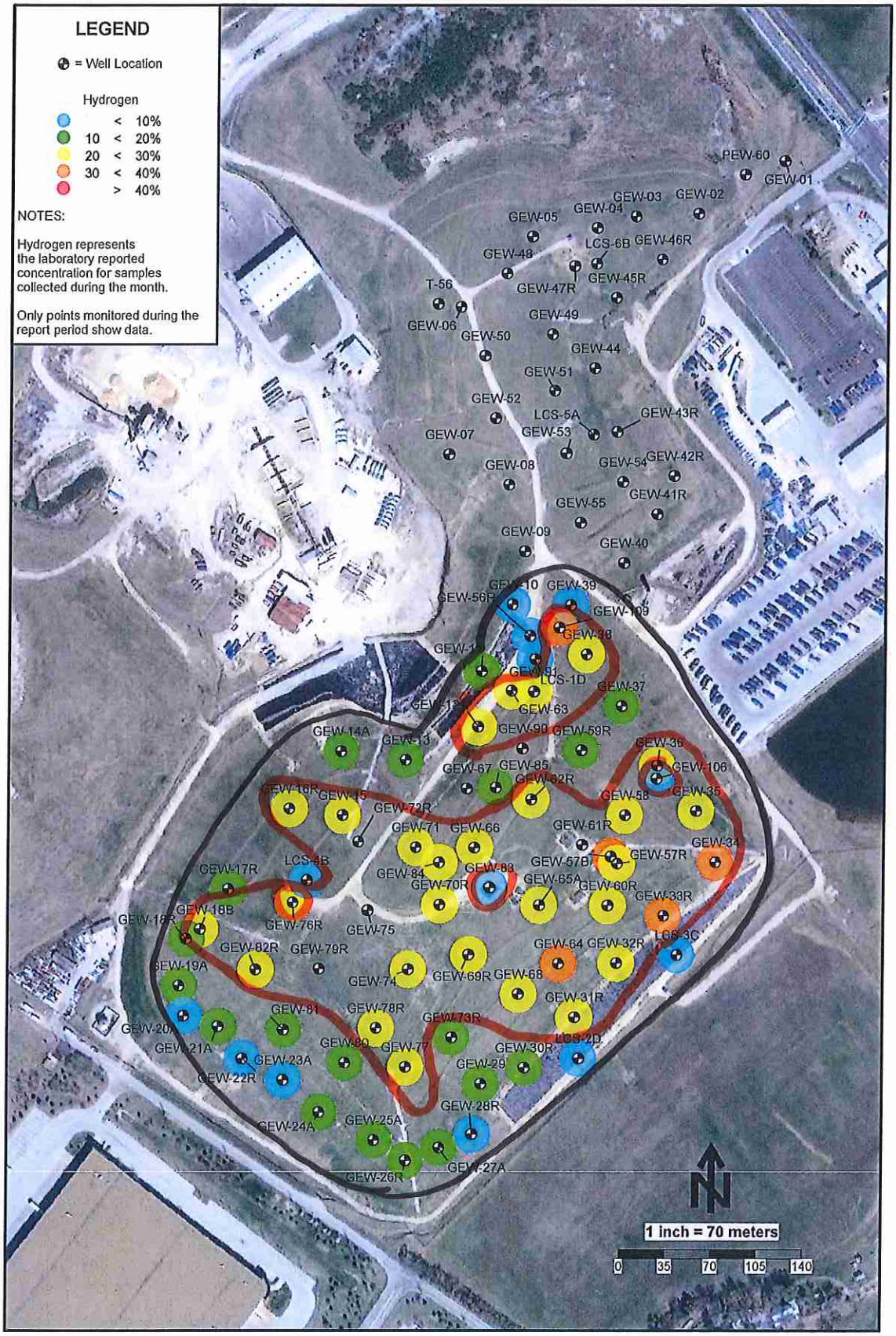
APPENDIX A
HYDROGEN MAPS



Hydrogen Data Map - January 2013 - Bridgeton Landfill

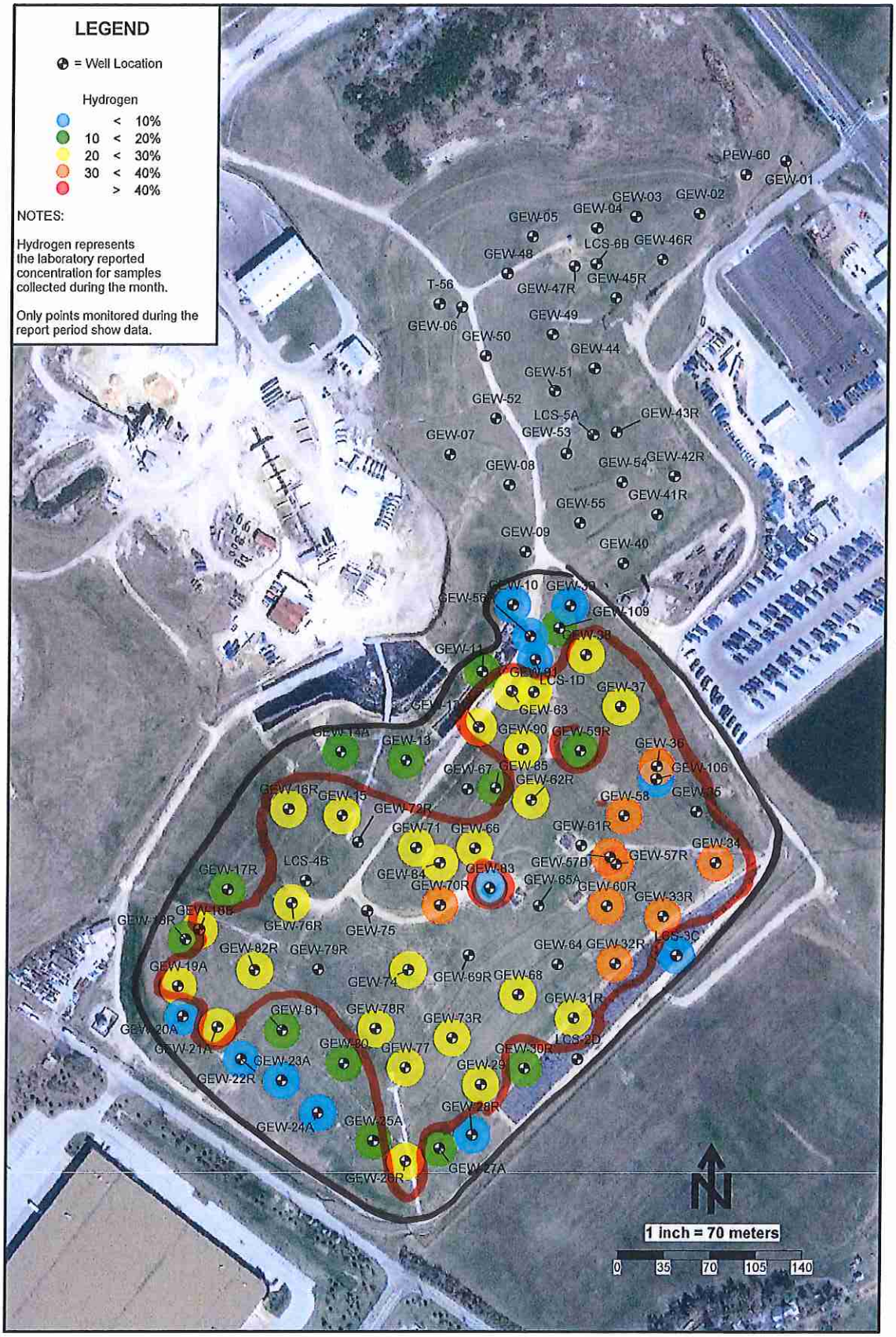
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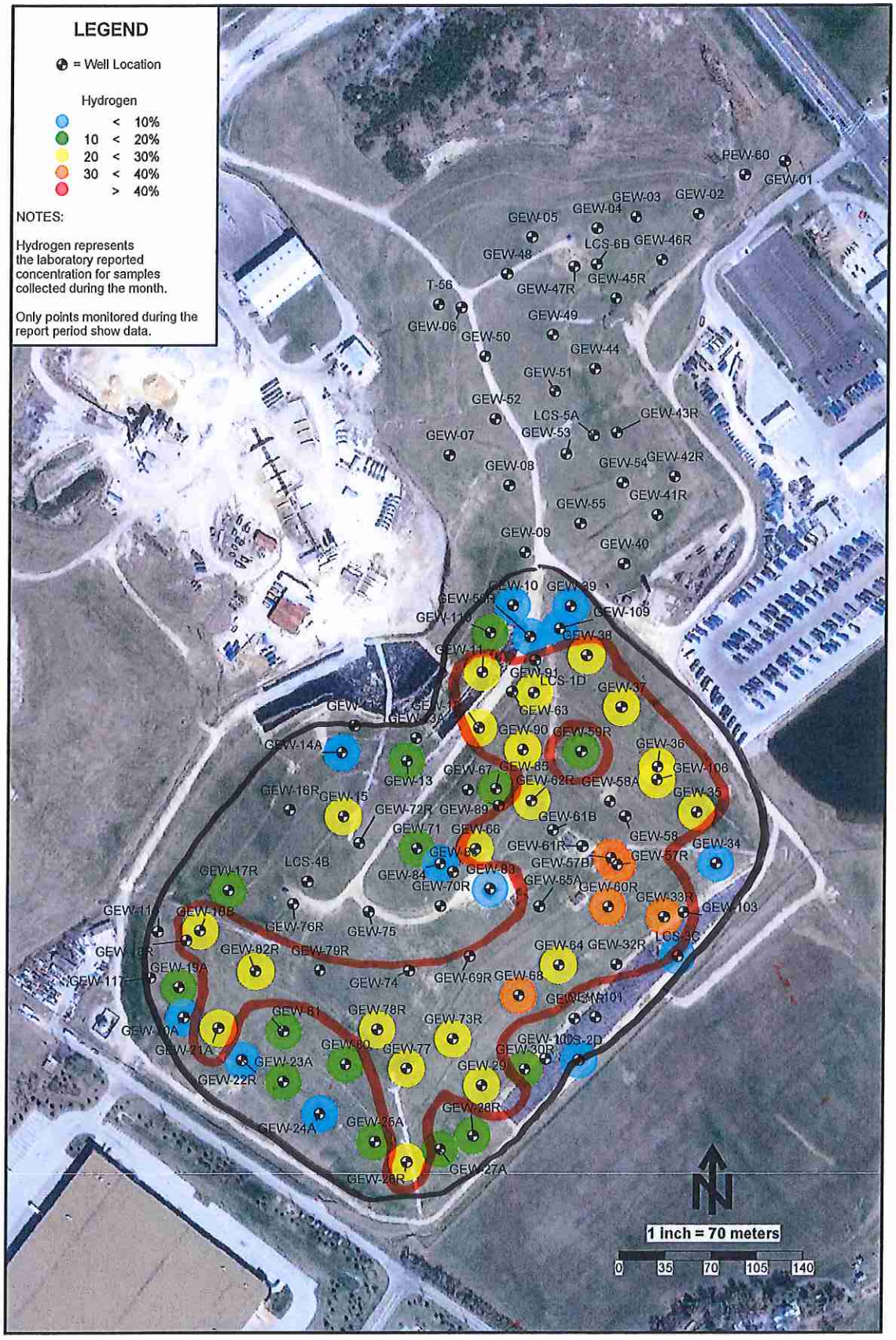
Hydrogen Data Map - February 2013 - Bridgeton Landfill

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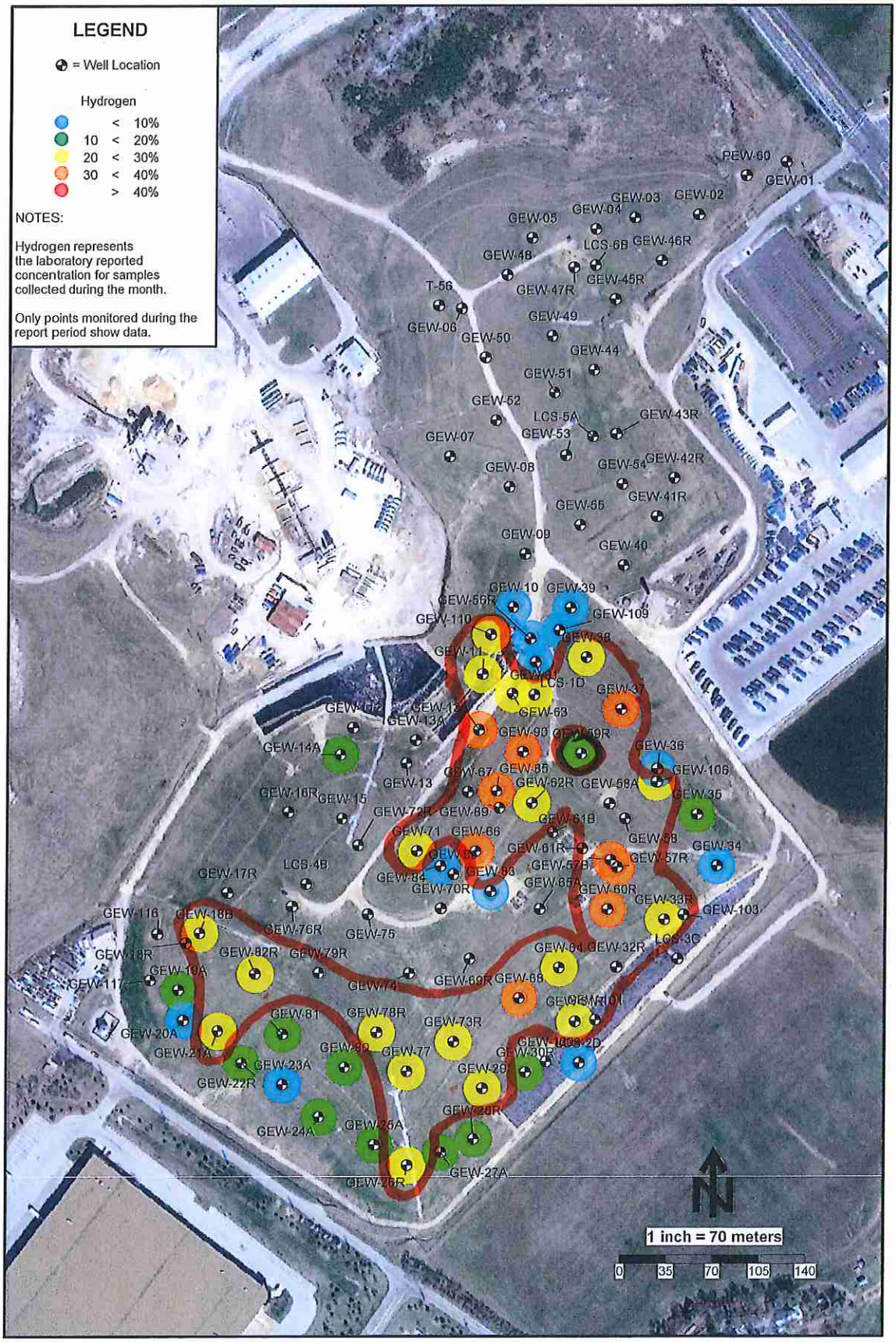
Hydrogen Data Map - March 2013 - Bridgeton Landfill

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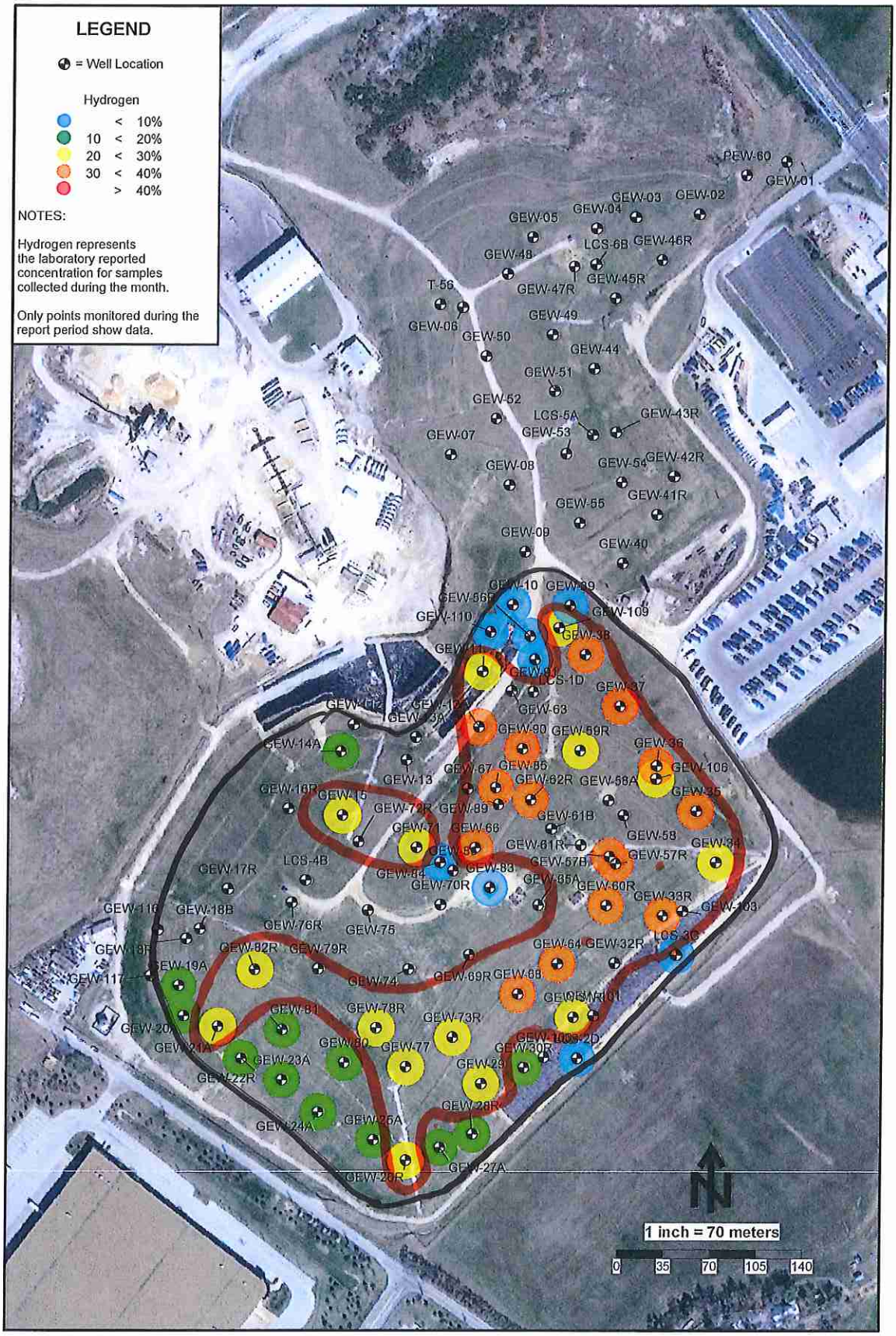
Hydrogen Data Map - April 2013 - Bridgeton Landfill

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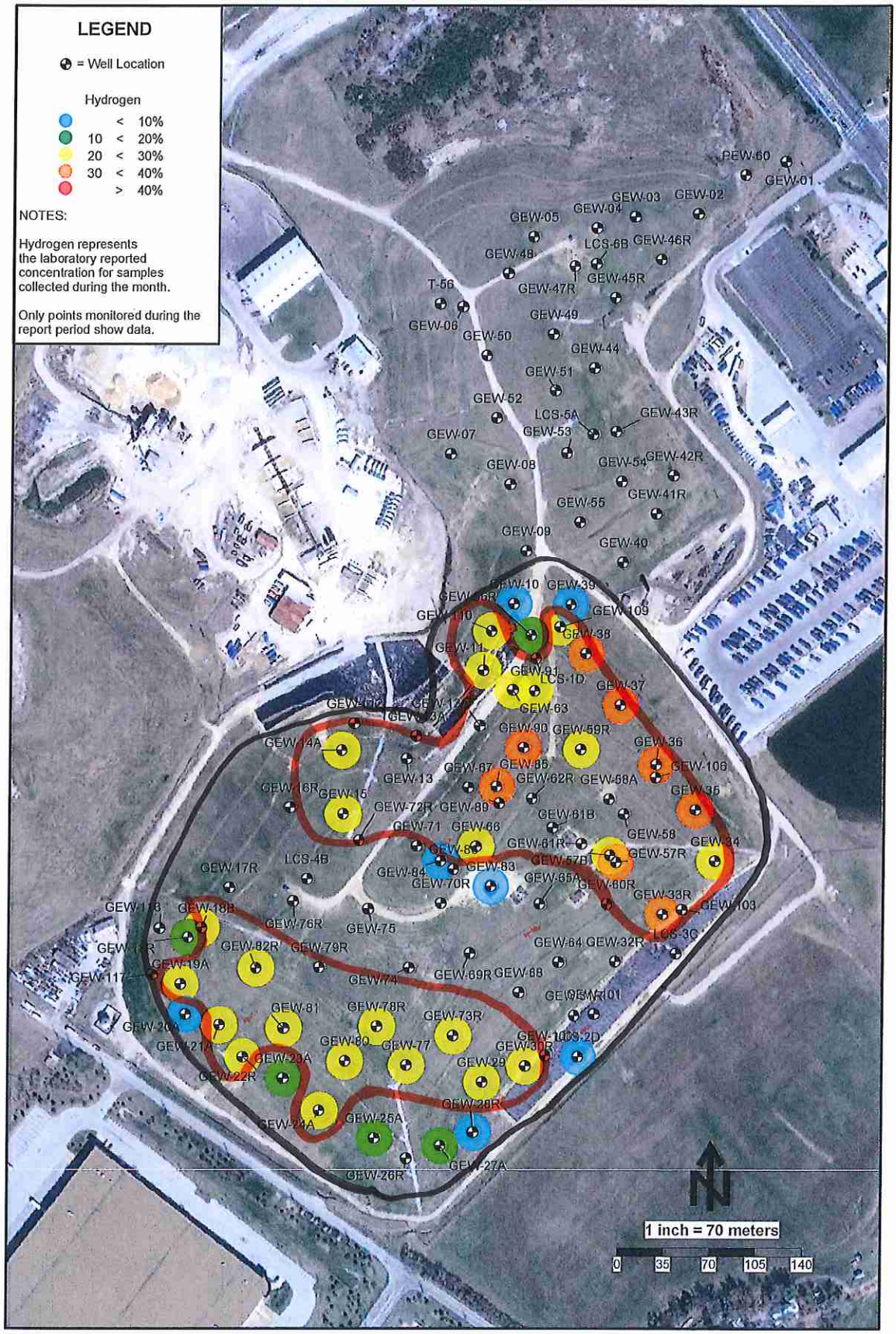
Hydrogen Data Map - May 2013 - Bridgeton Landfill

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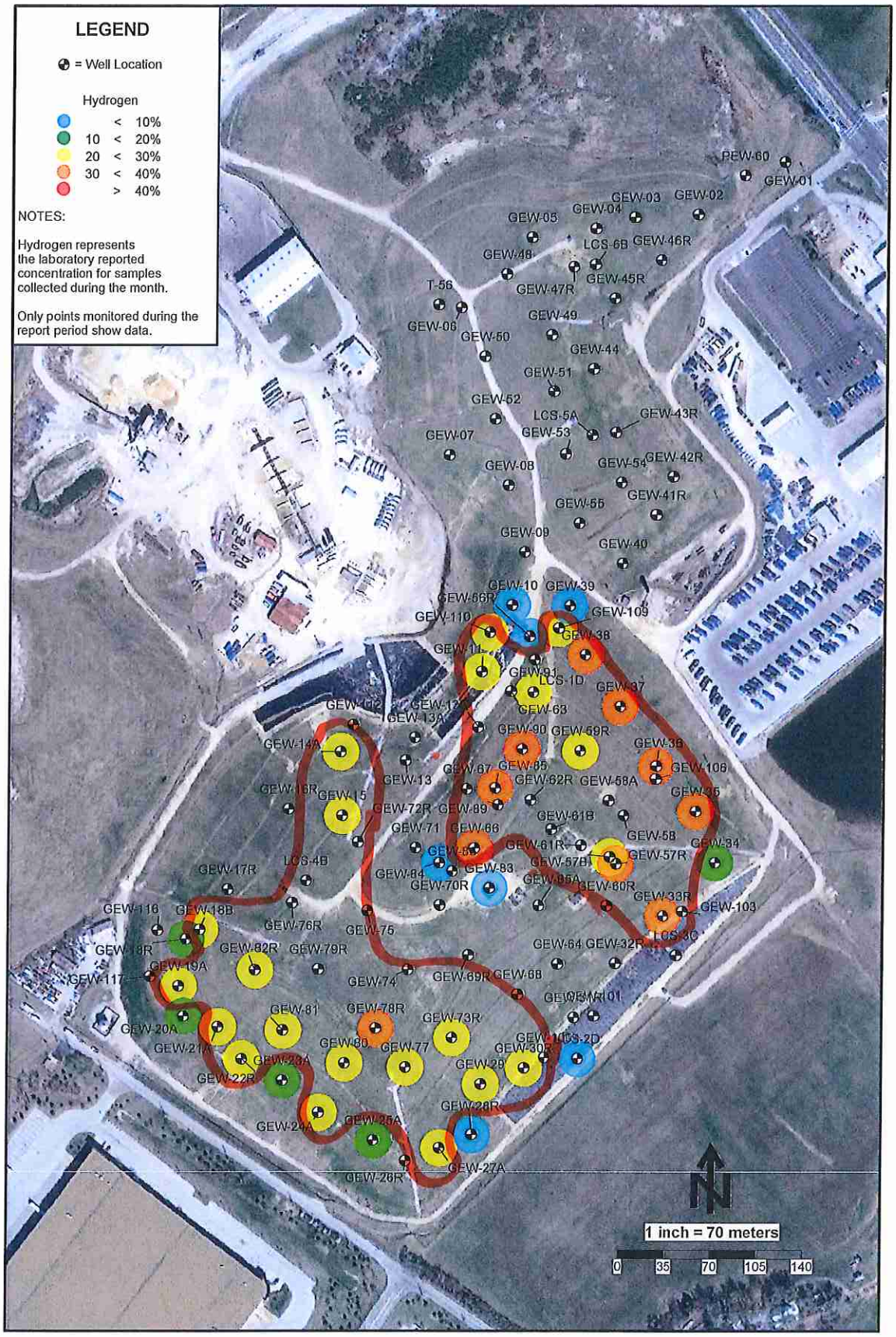
Hydrogen Data Map - June 2013 - Bridgeton Landfill

SCS ENGINEERS



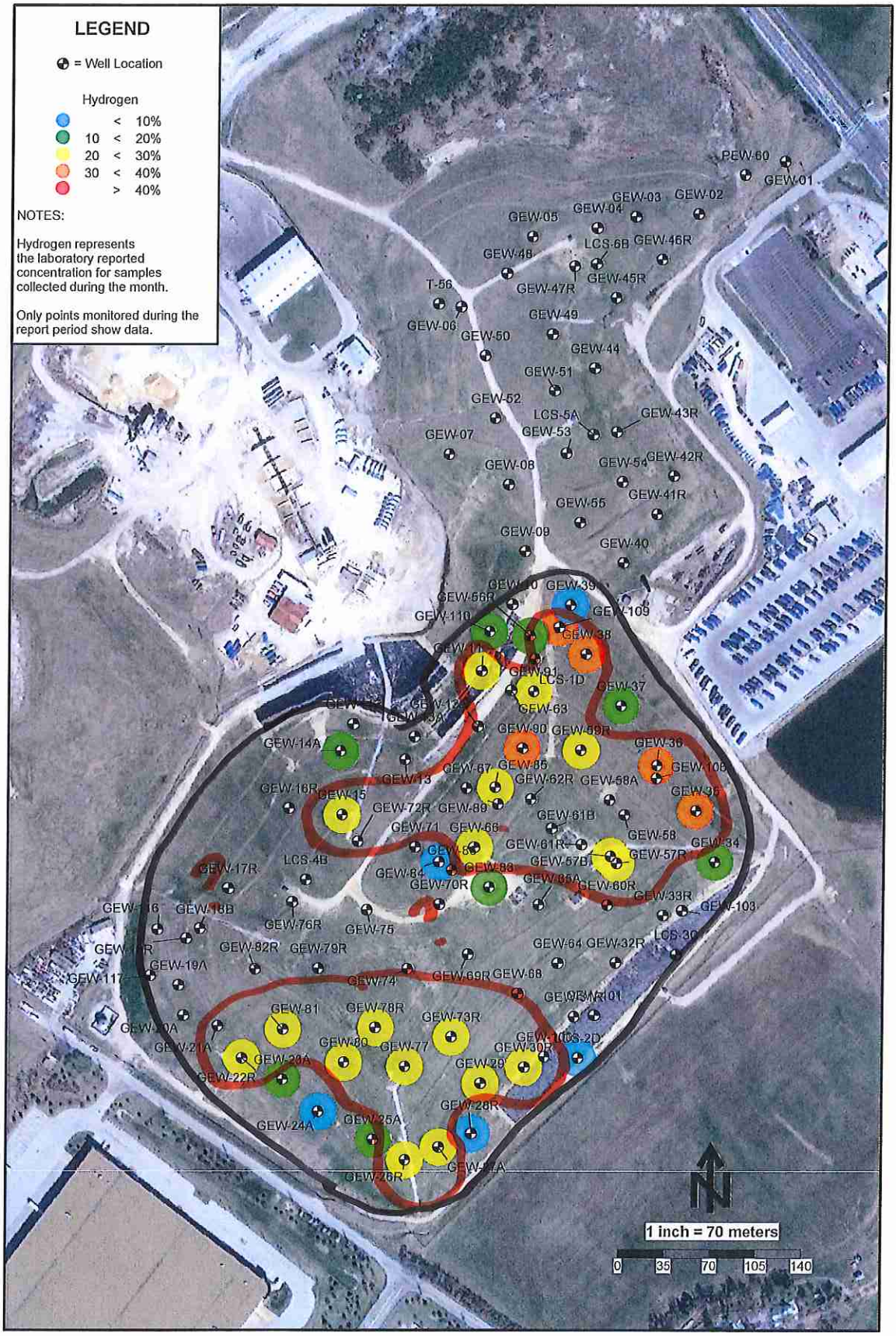
Hydrogen Data Map - July 2013 - Bridgeton Landfill

SCS ENGINEERS



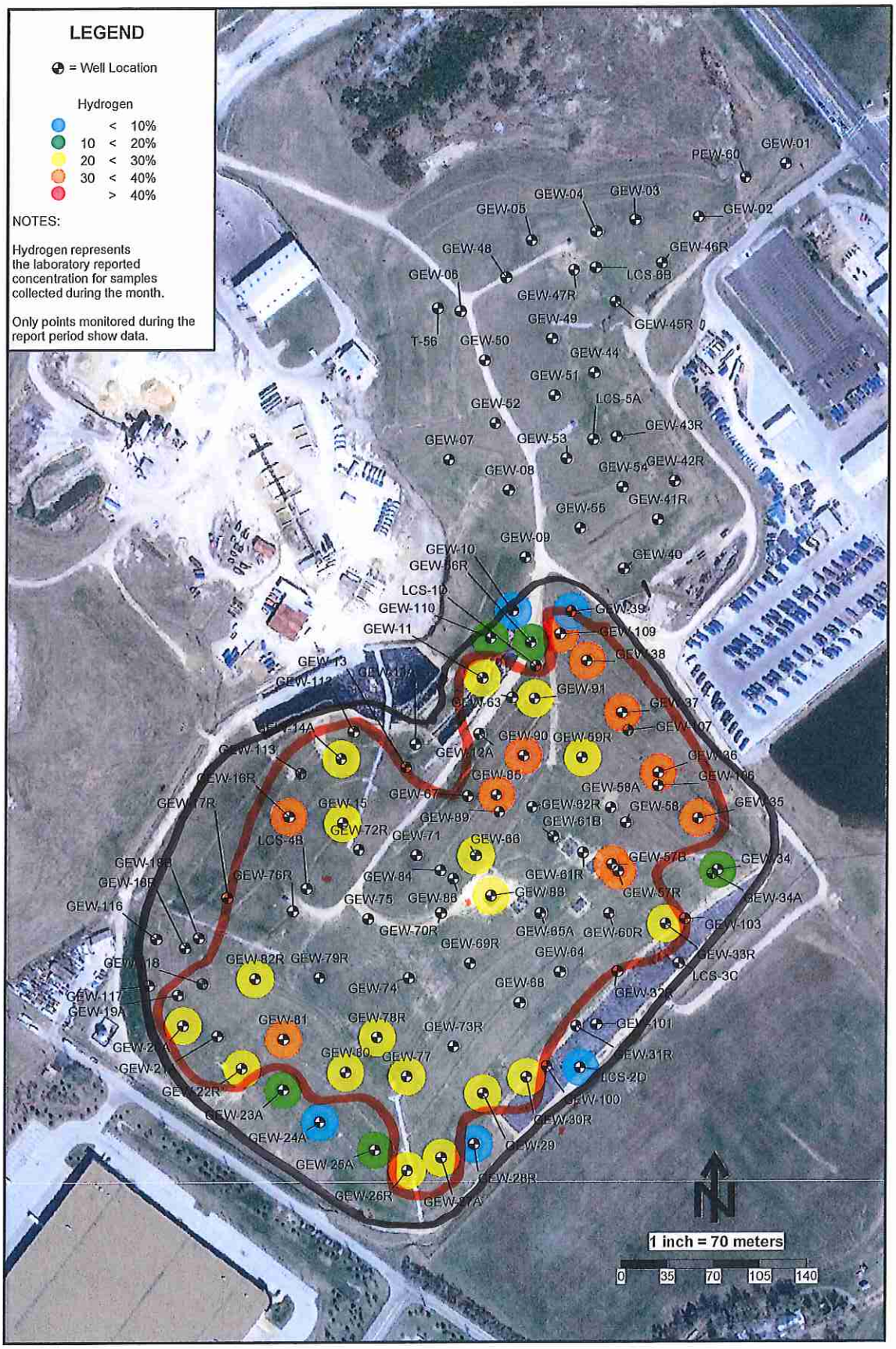
Hydrogen Data Map - August 2013 - Bridgeton Landfill

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Hydrogen Data Map - September 2013 - Bridgeton Landfill

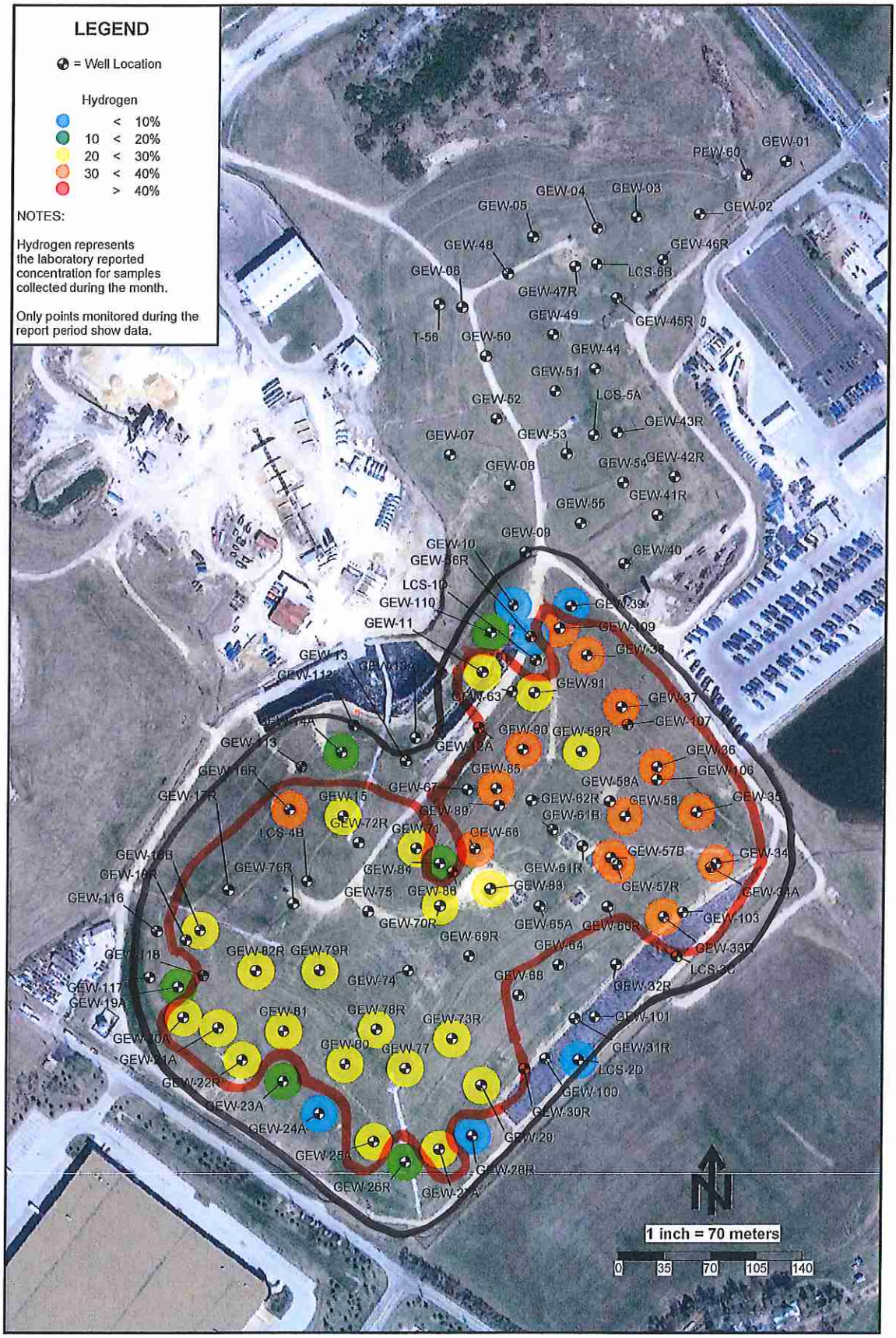
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Hydrogen Data Map - October 2013 - Bridgeton Landfill

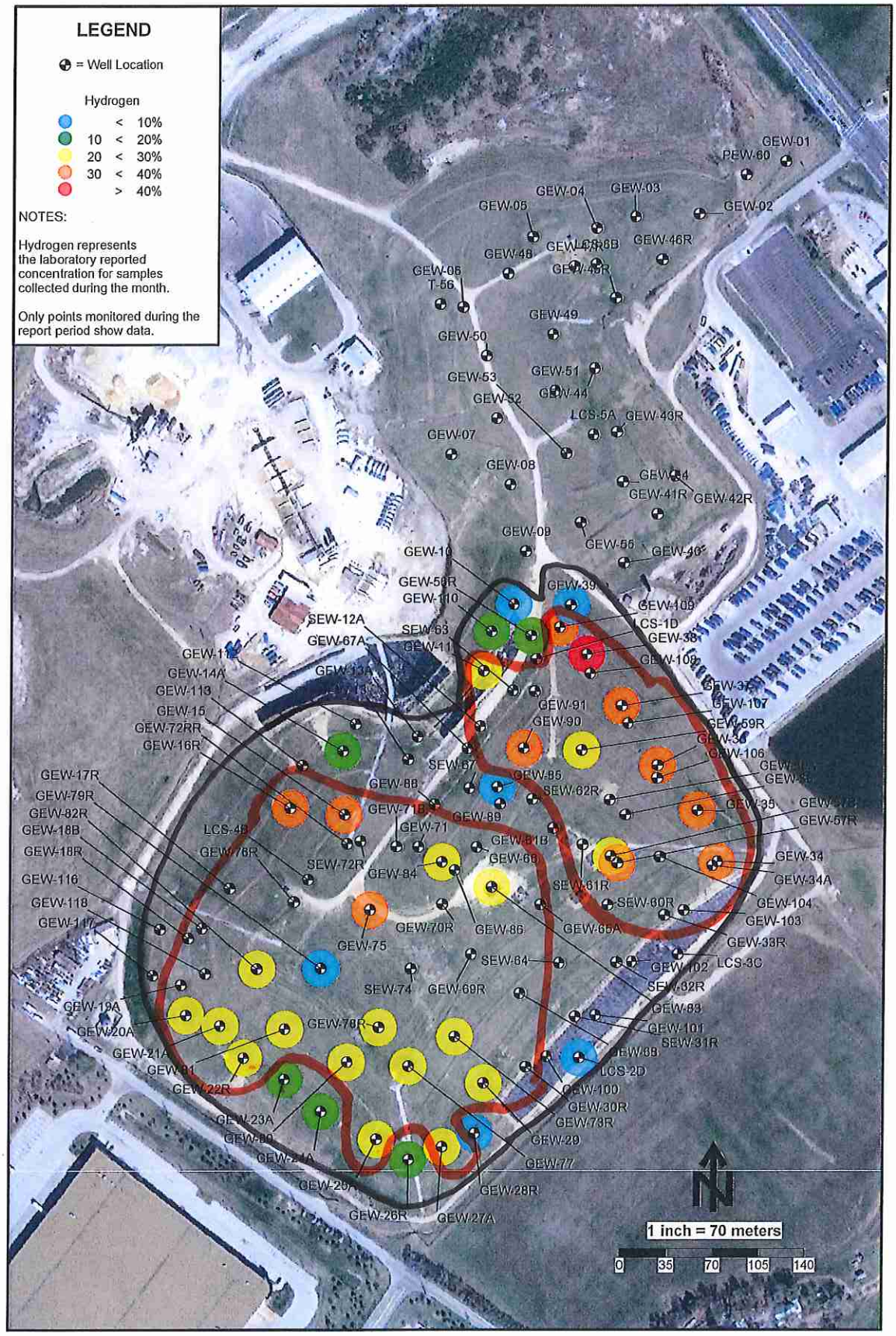
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Sperling/Abedini - 0000131



Hydrogen Data Map - November 2013 - Bridgeton Landfill

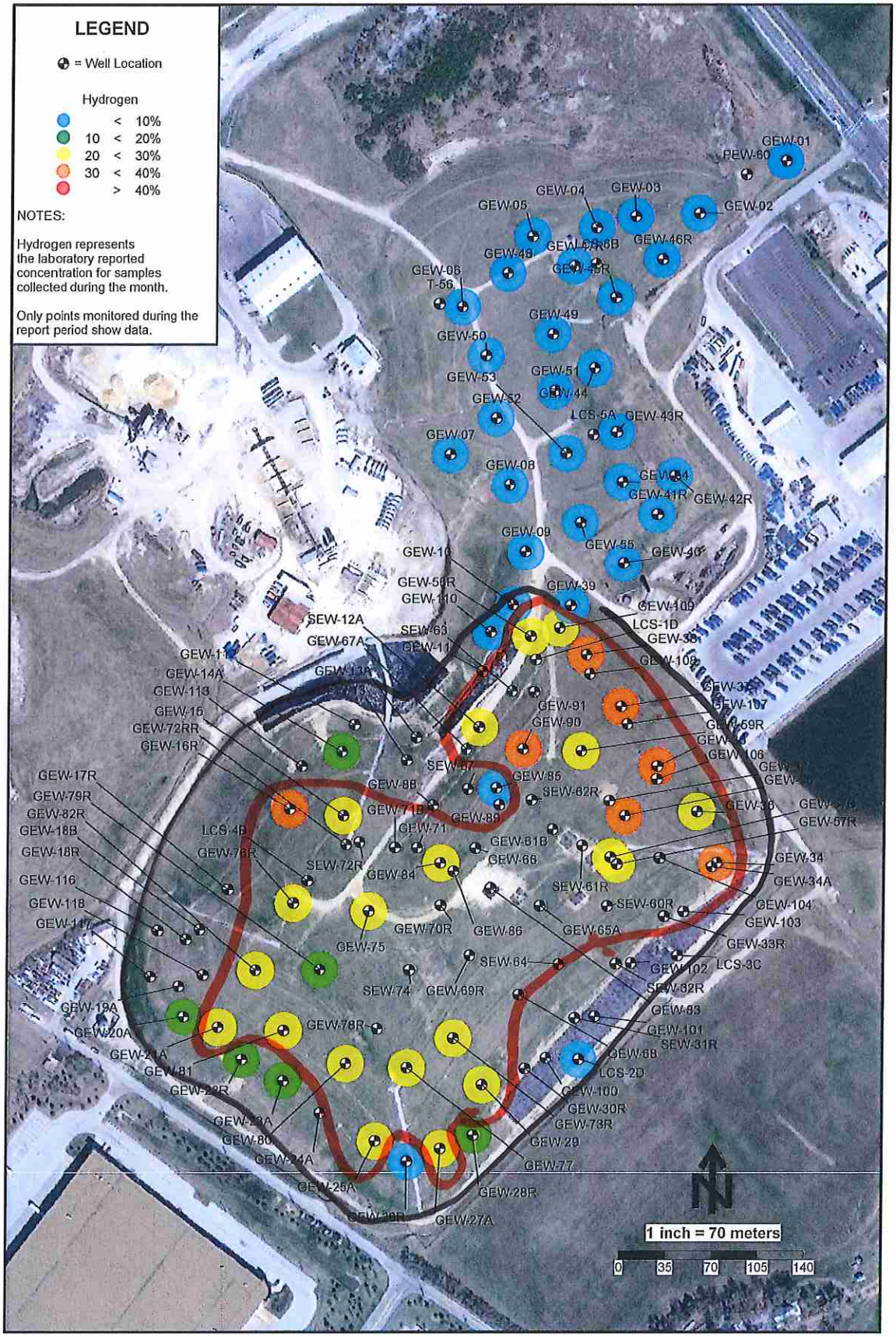
SCS ENGINEERS



Hydrogen Data Map - December 2013 - Bridgeton Landfill

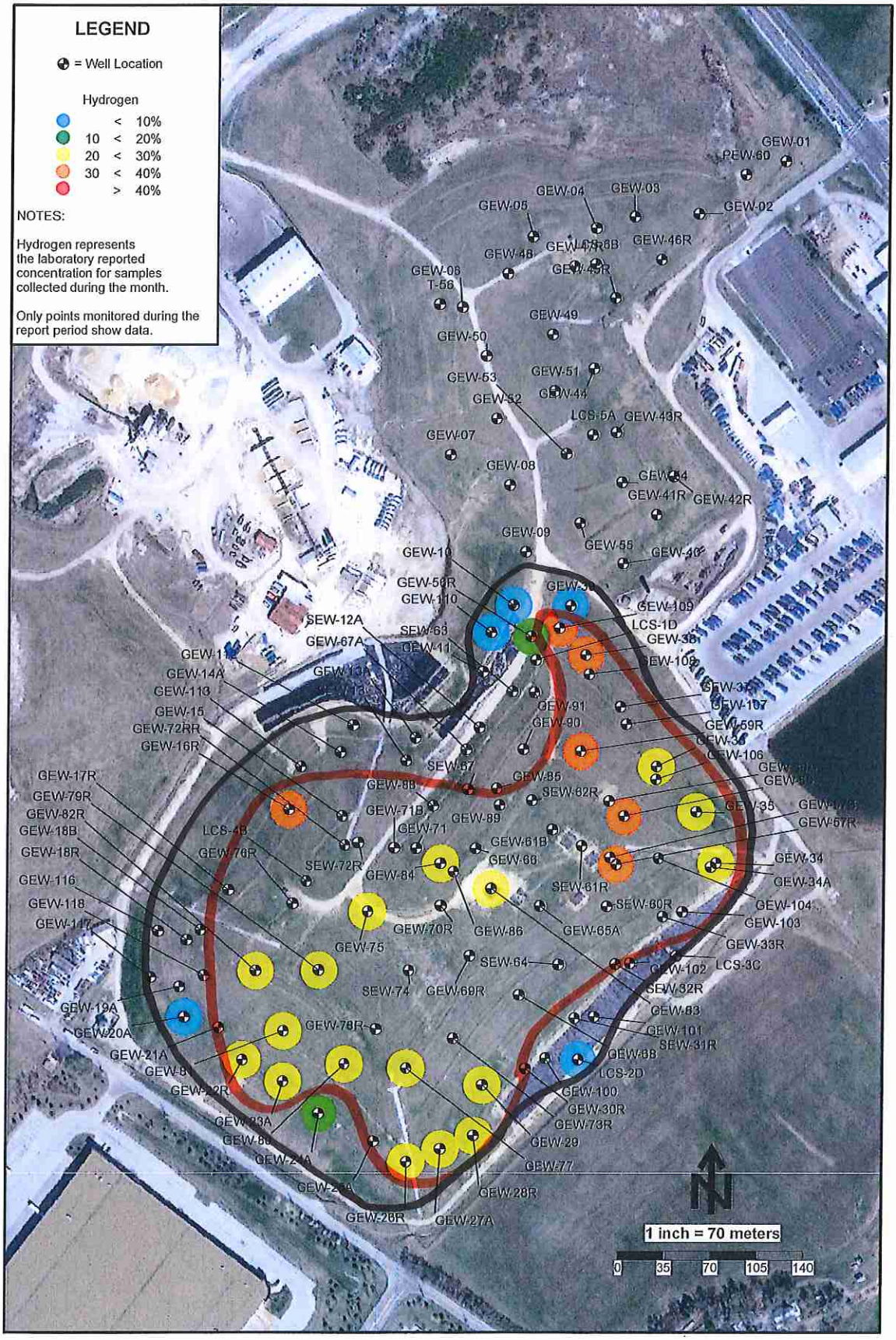
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000133



Hydrogen Data Map - January 2014 - Bridgeton Landfill

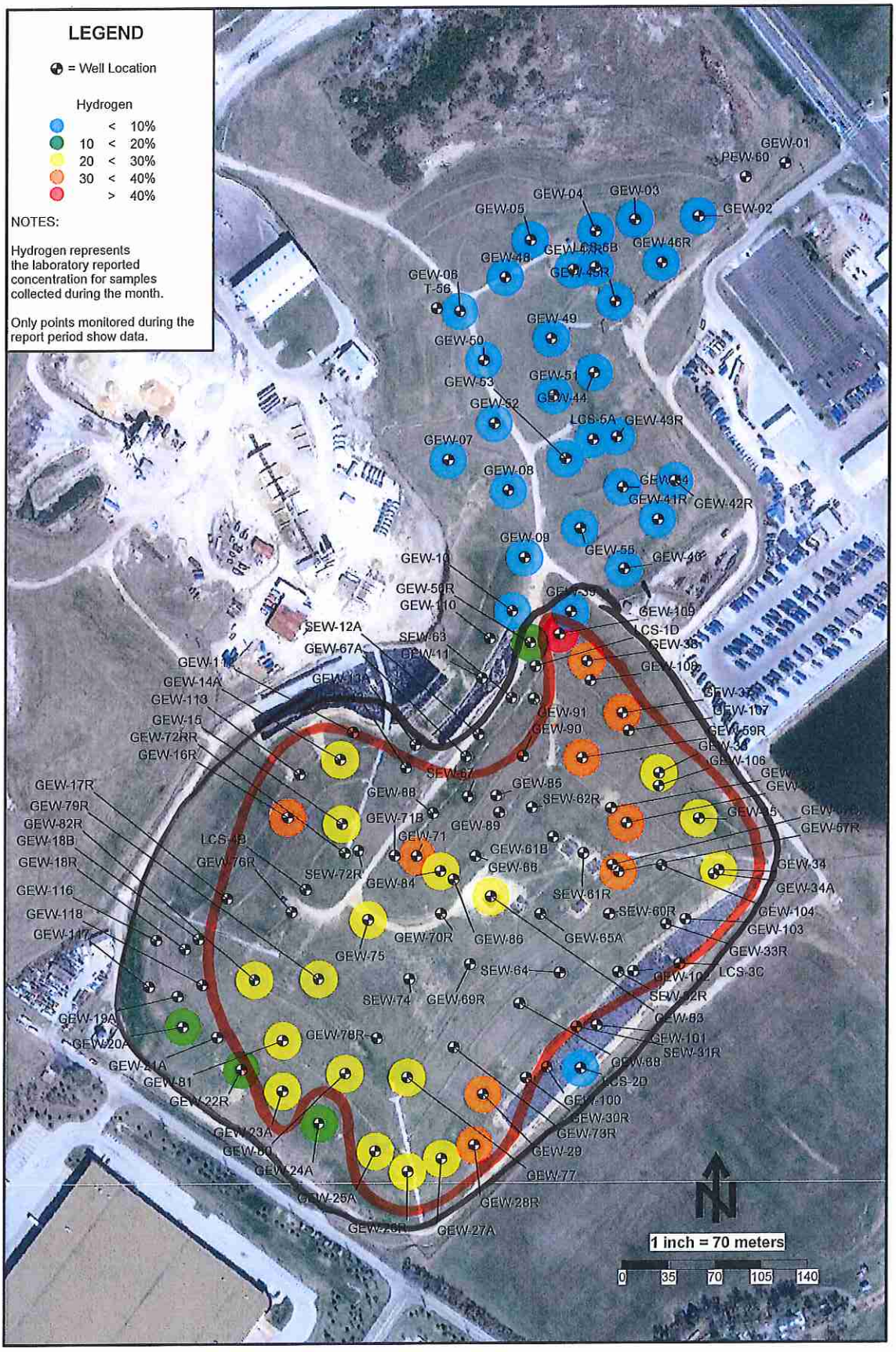
SCS ENGINEERS



Hydrogen Data Map - February 2014 - Bridgeton Landfill

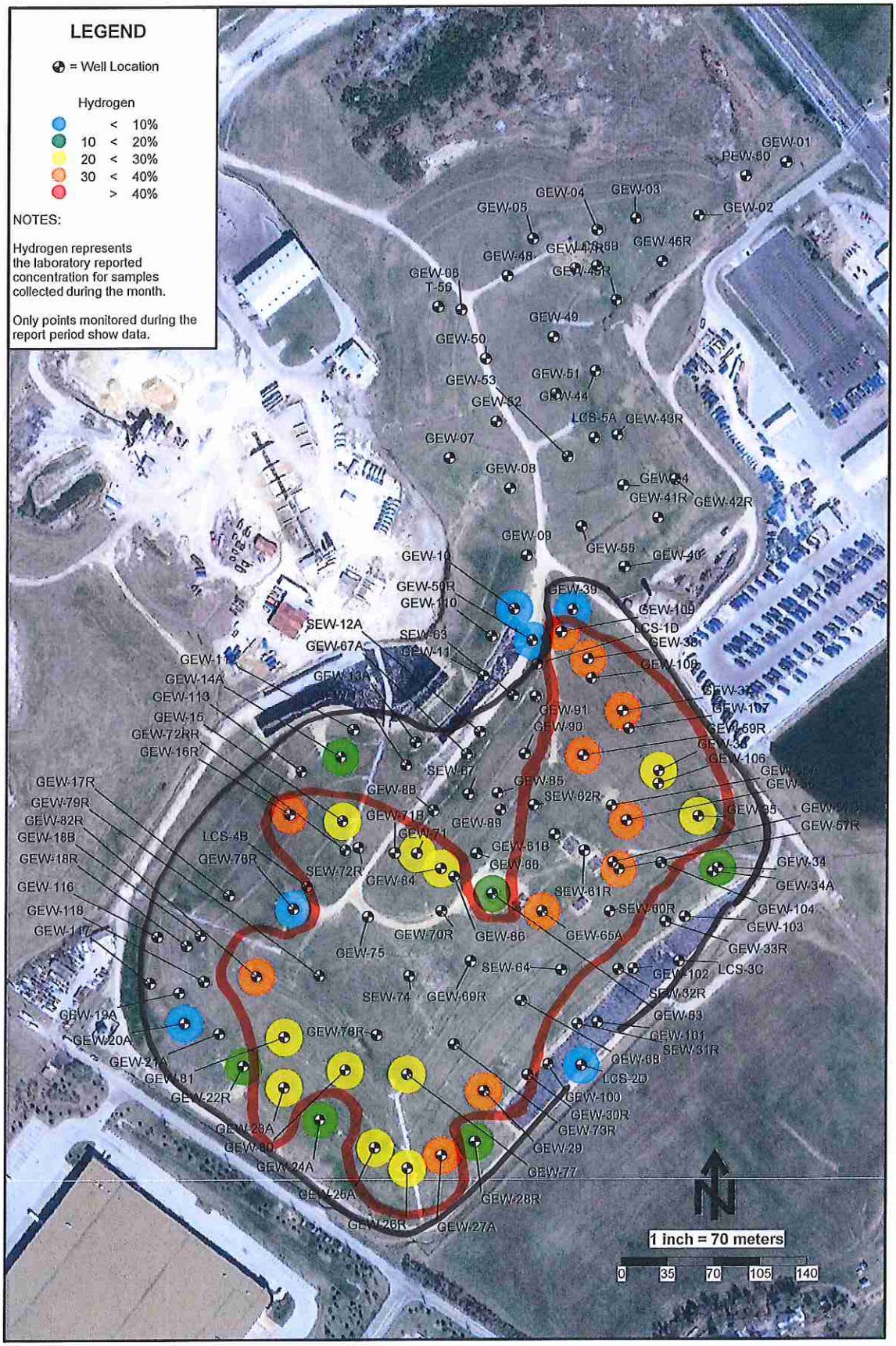
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000135



Hydrogen Data Map - March 2014 - Bridgeton Landfill

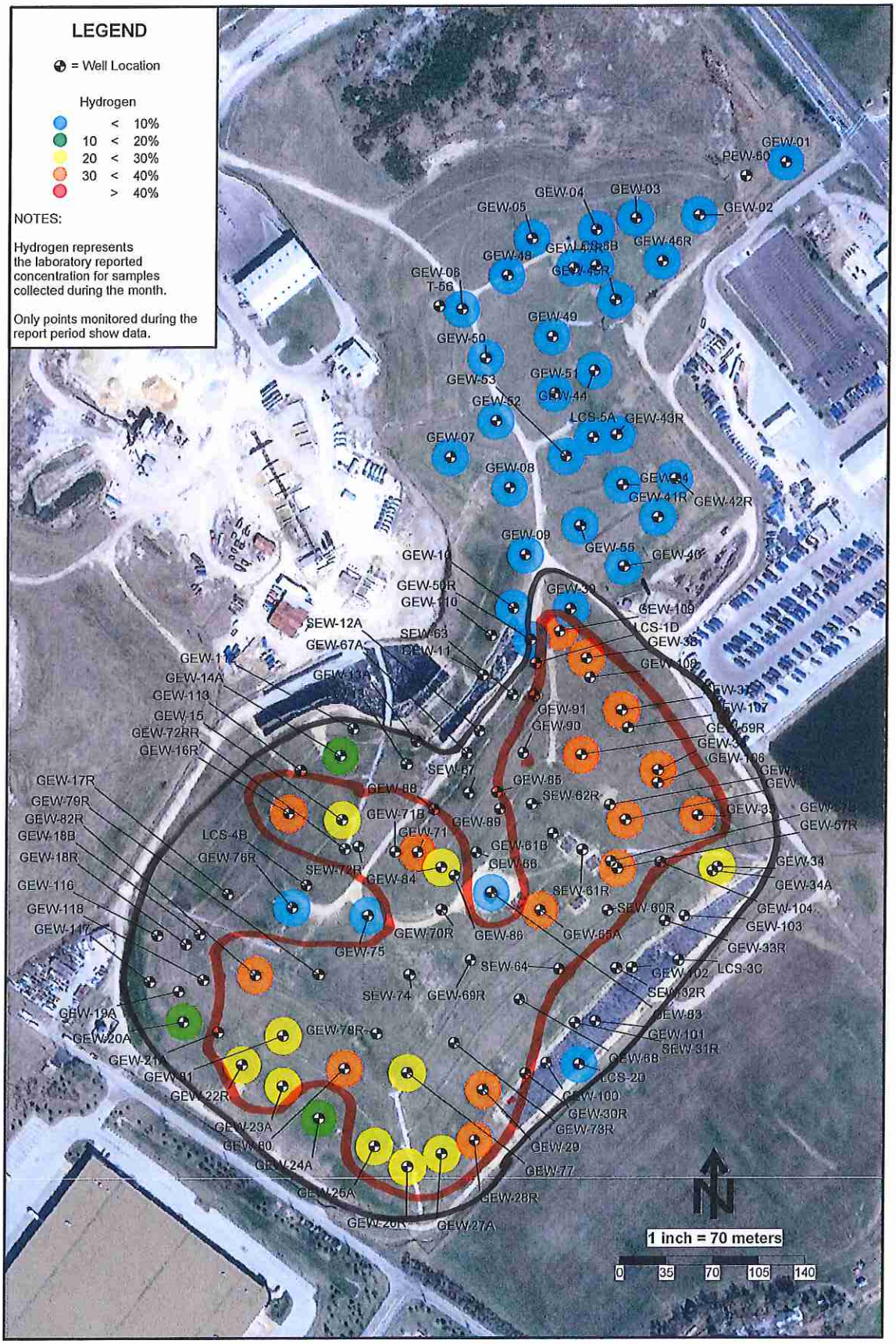
SCS ENGINEERS



Hydrogen Data Map - April 2014 - Bridgeton Landfill

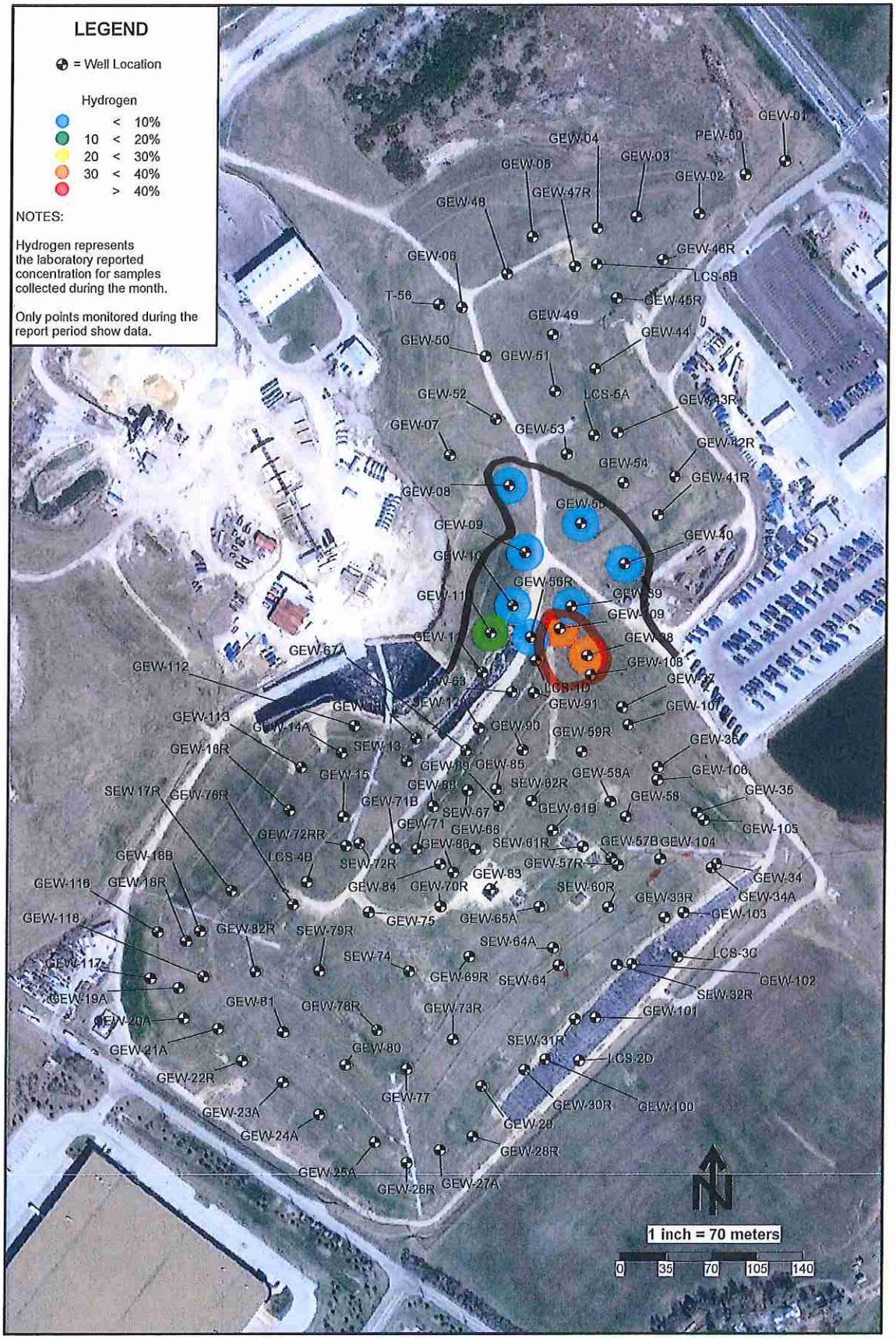
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000137



Hydrogen Data Map - May 2014 - Bridgeton Landfill

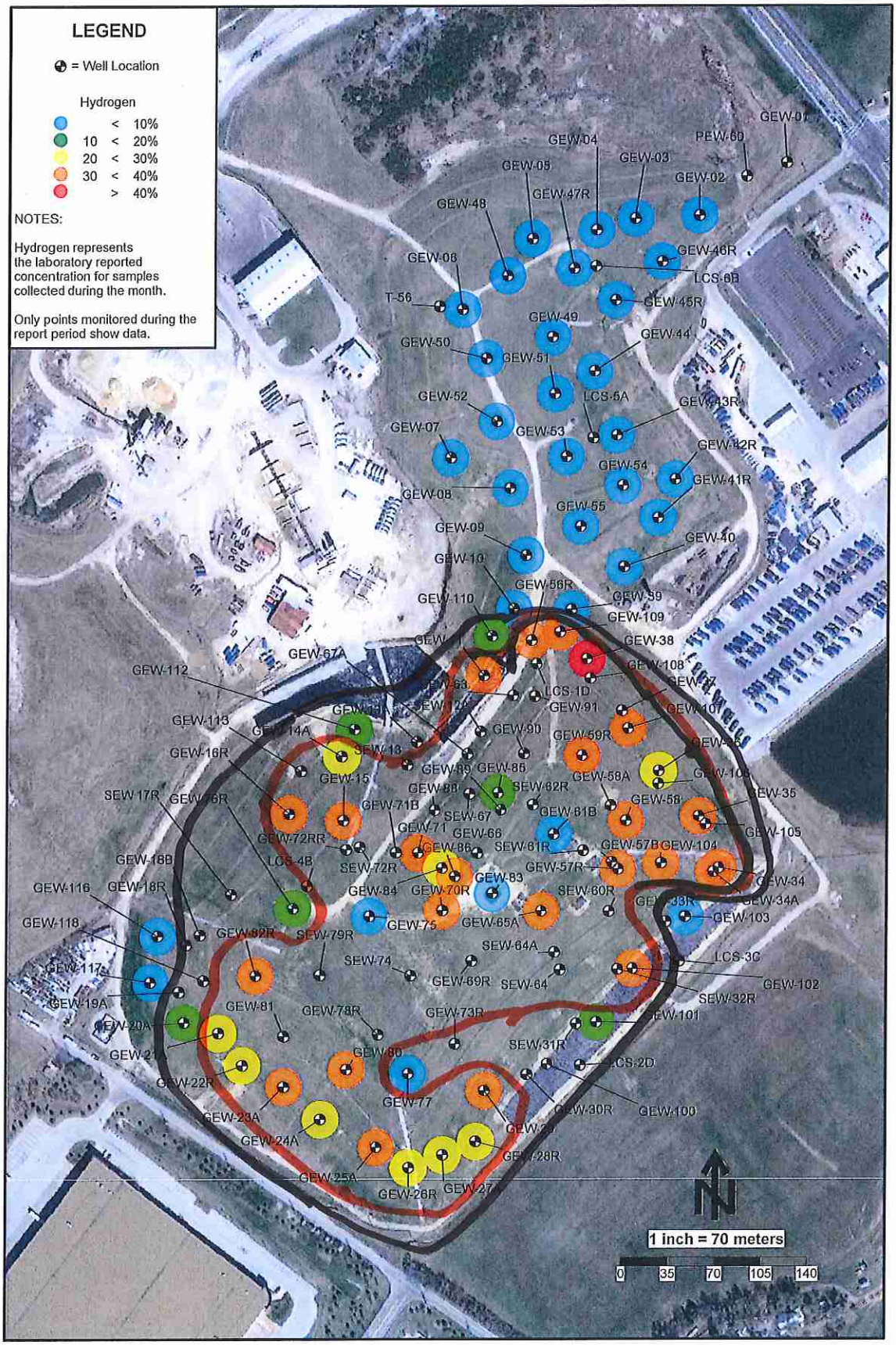
SCS ENGINEERS



Hydrogen Data Map - June 2014 - Bridgeton Landfill

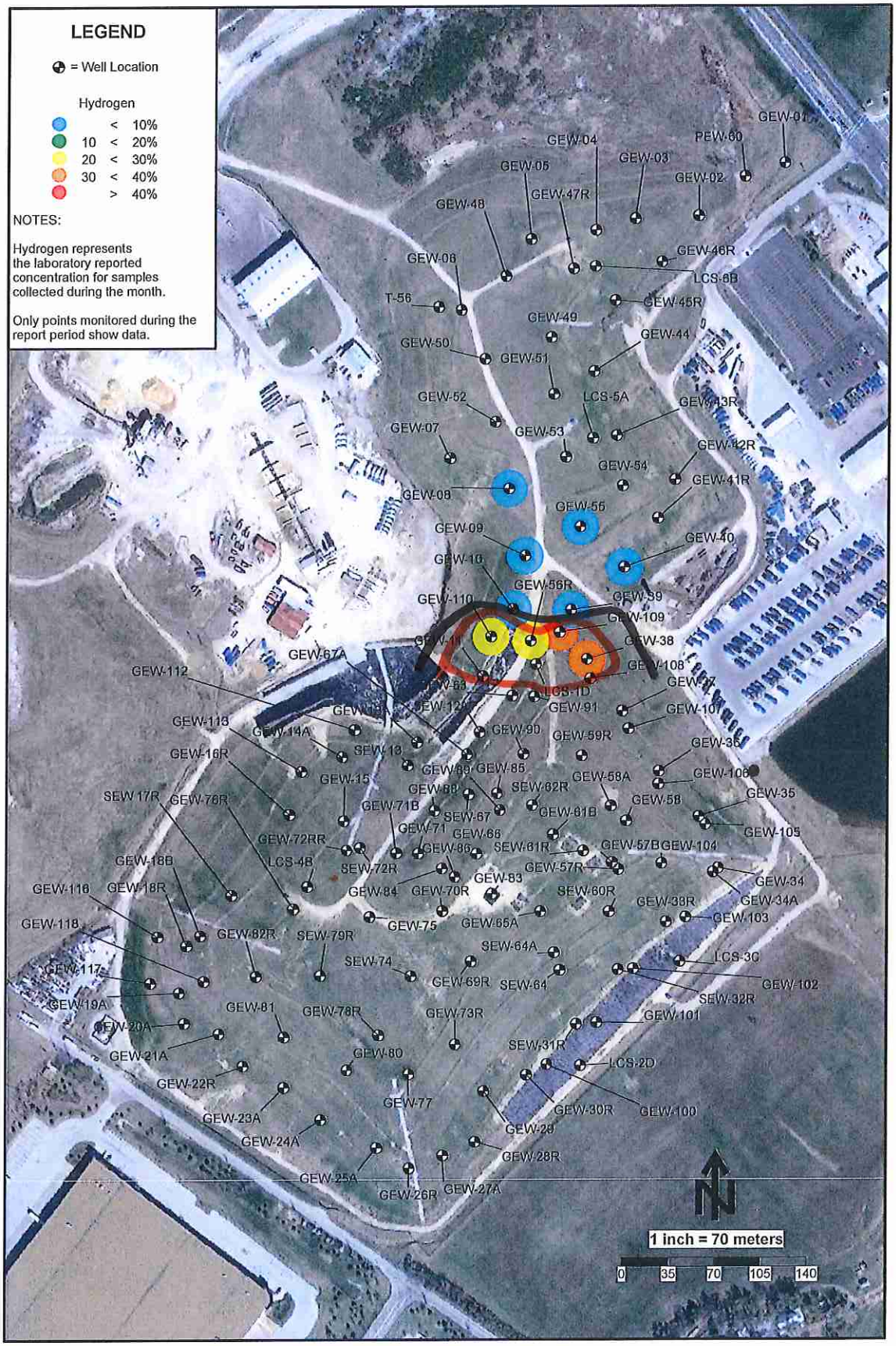
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000139



Hydrogen Data Map - July 2014 - Bridgeton Landfill

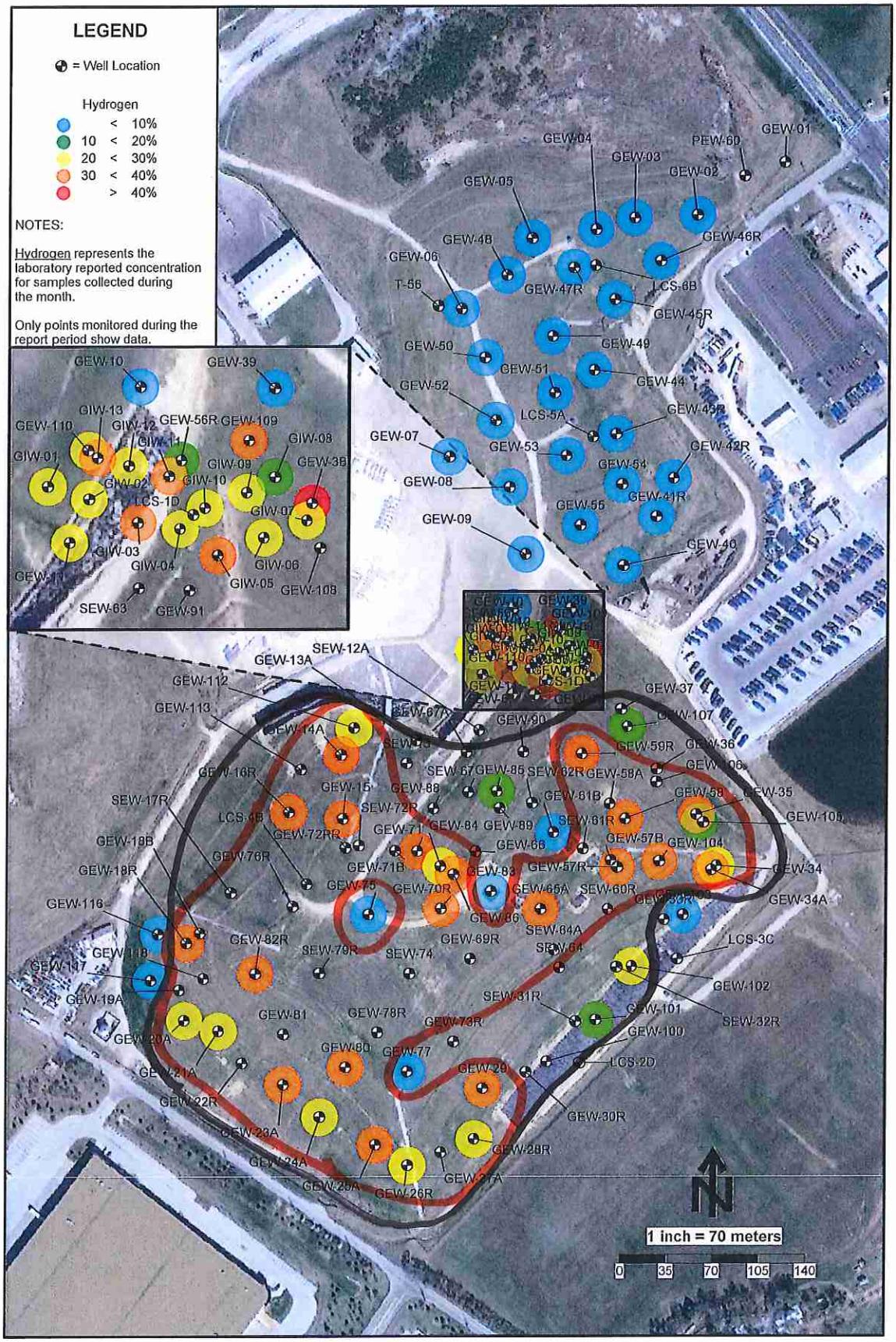
SCS ENGINEERS



Hydrogen Data Map - August 2014 - Bridgeton Landfill

SCS ENGINEERS

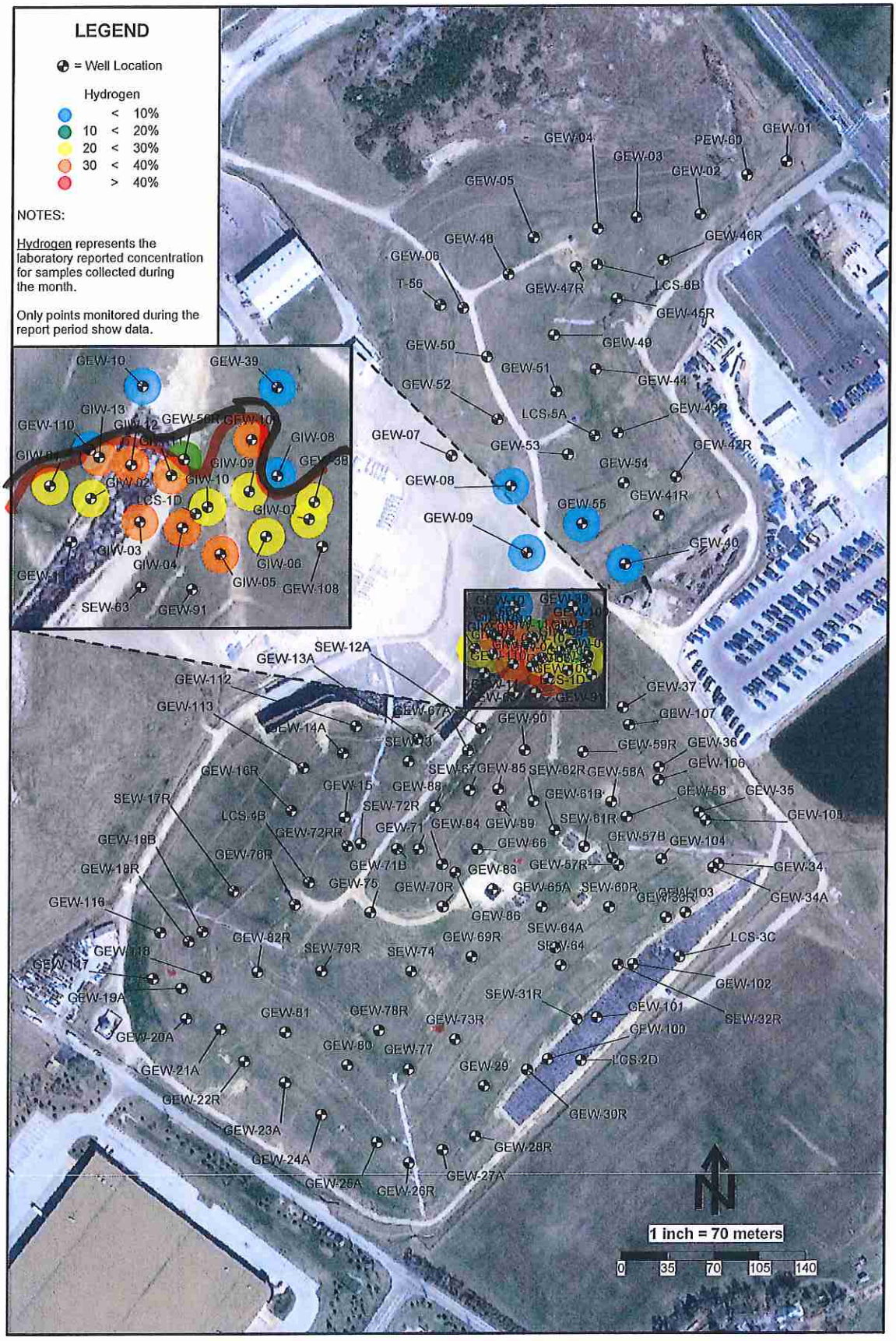
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000141



Hydrogen Data Map - September 2014 - Bridgeton Landfill

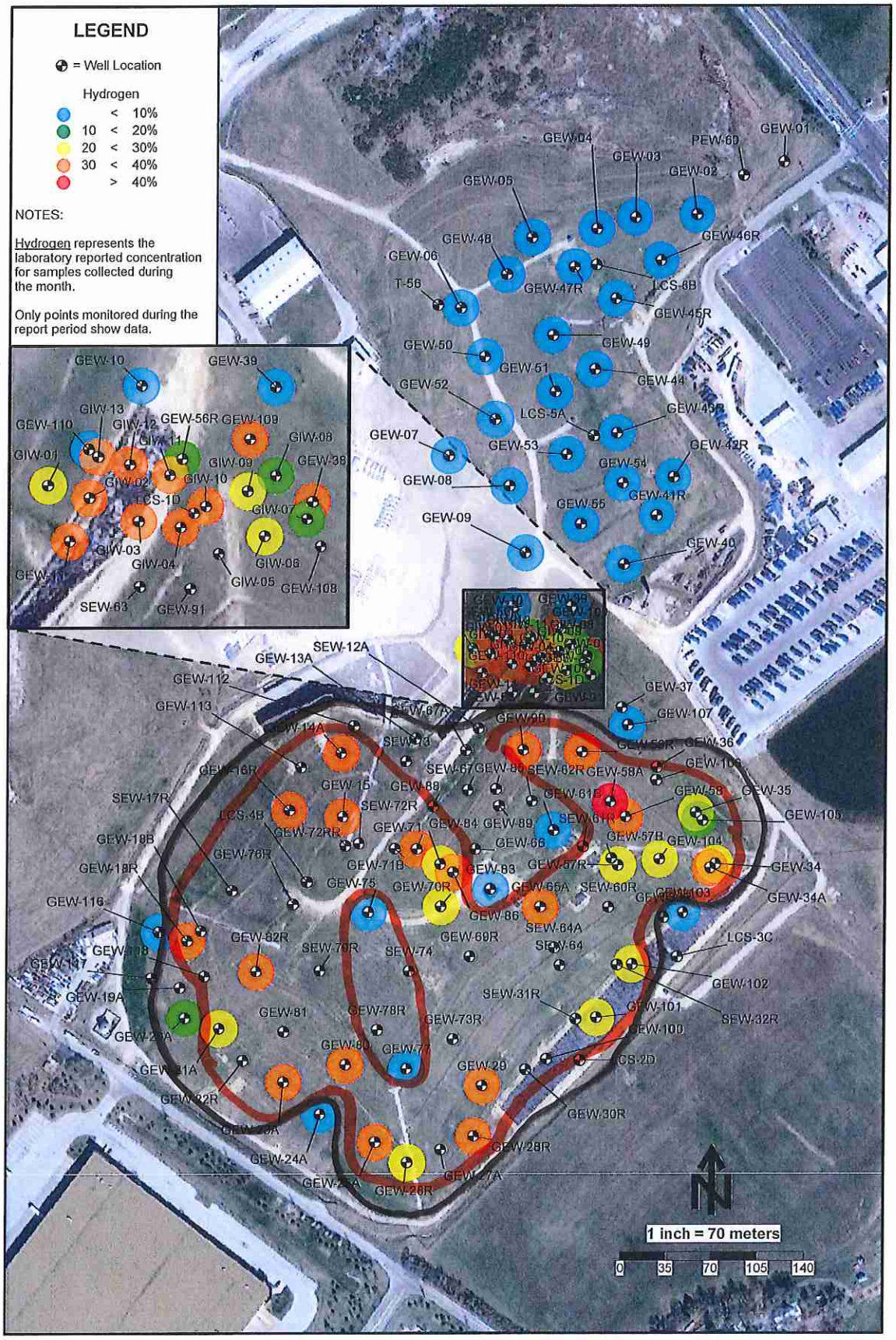
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000142



Hydrogen Data Map - October 2014 - Bridgeton Landfill

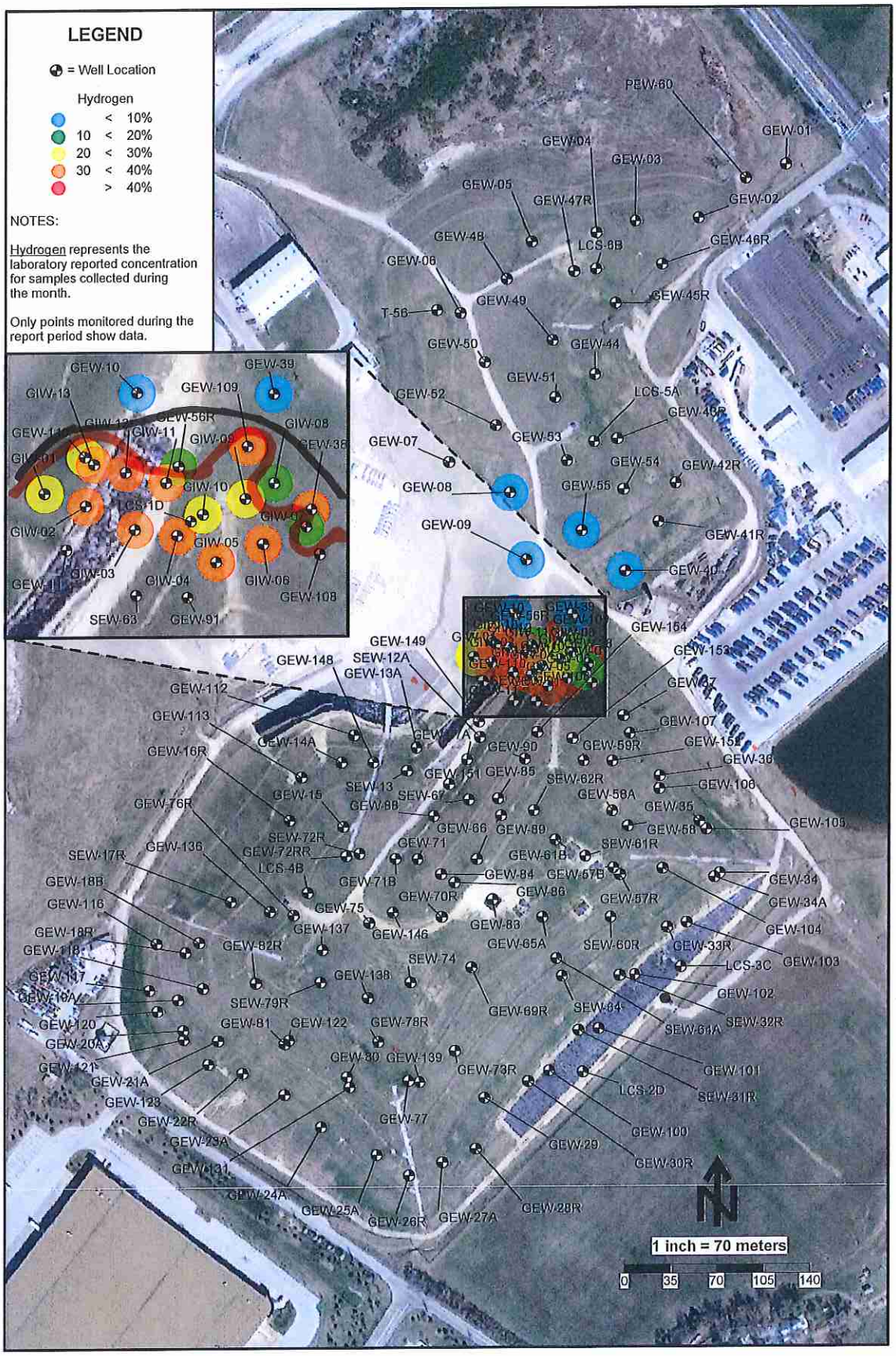
SCS ENGINEERS



Hydrogen Data Map - November 2014 - Bridgeton Landfill

SCS ENGINEERS

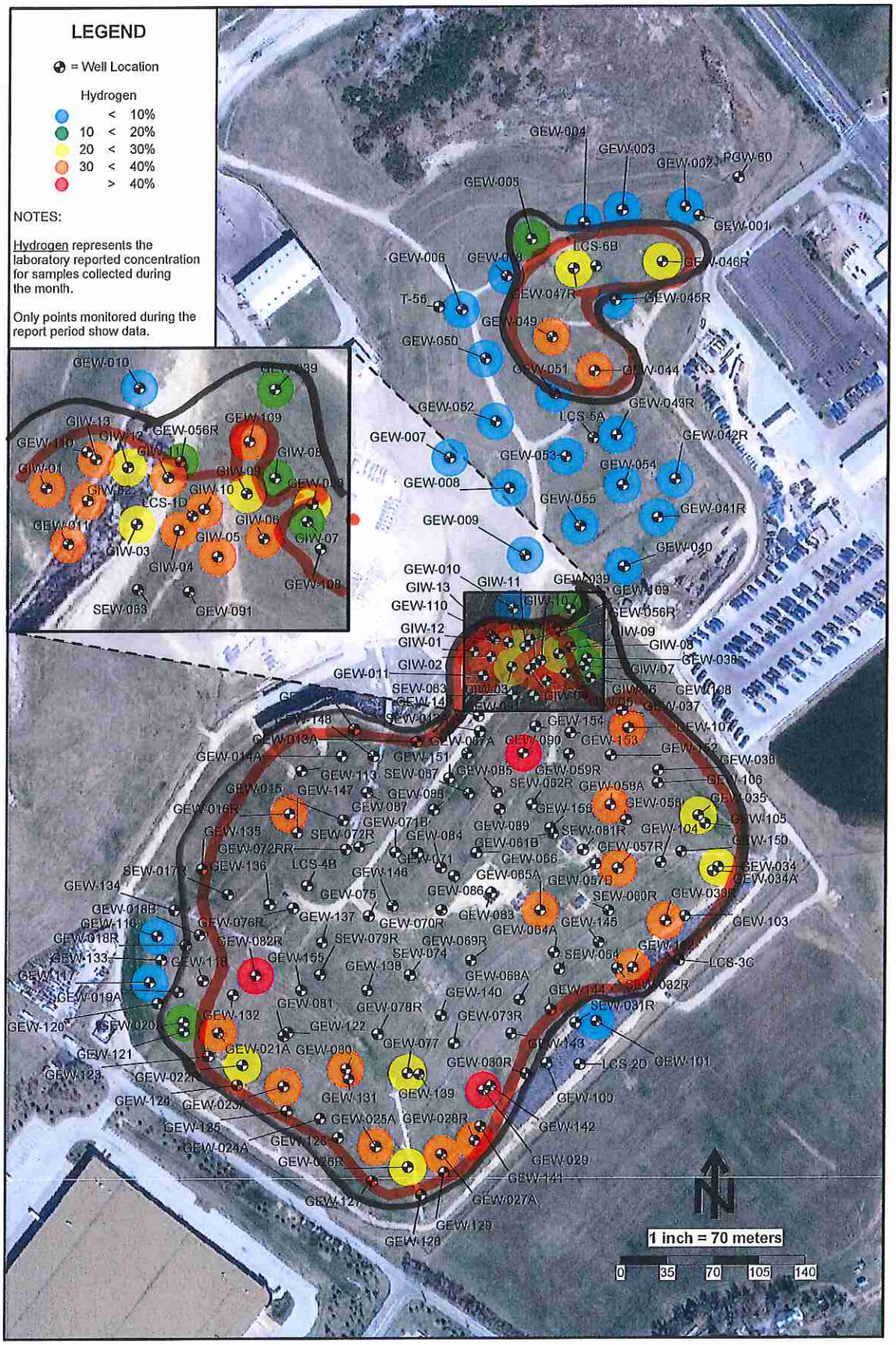
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000144



Hydrogen Data Map - December 2014 - Bridgeton Landfill

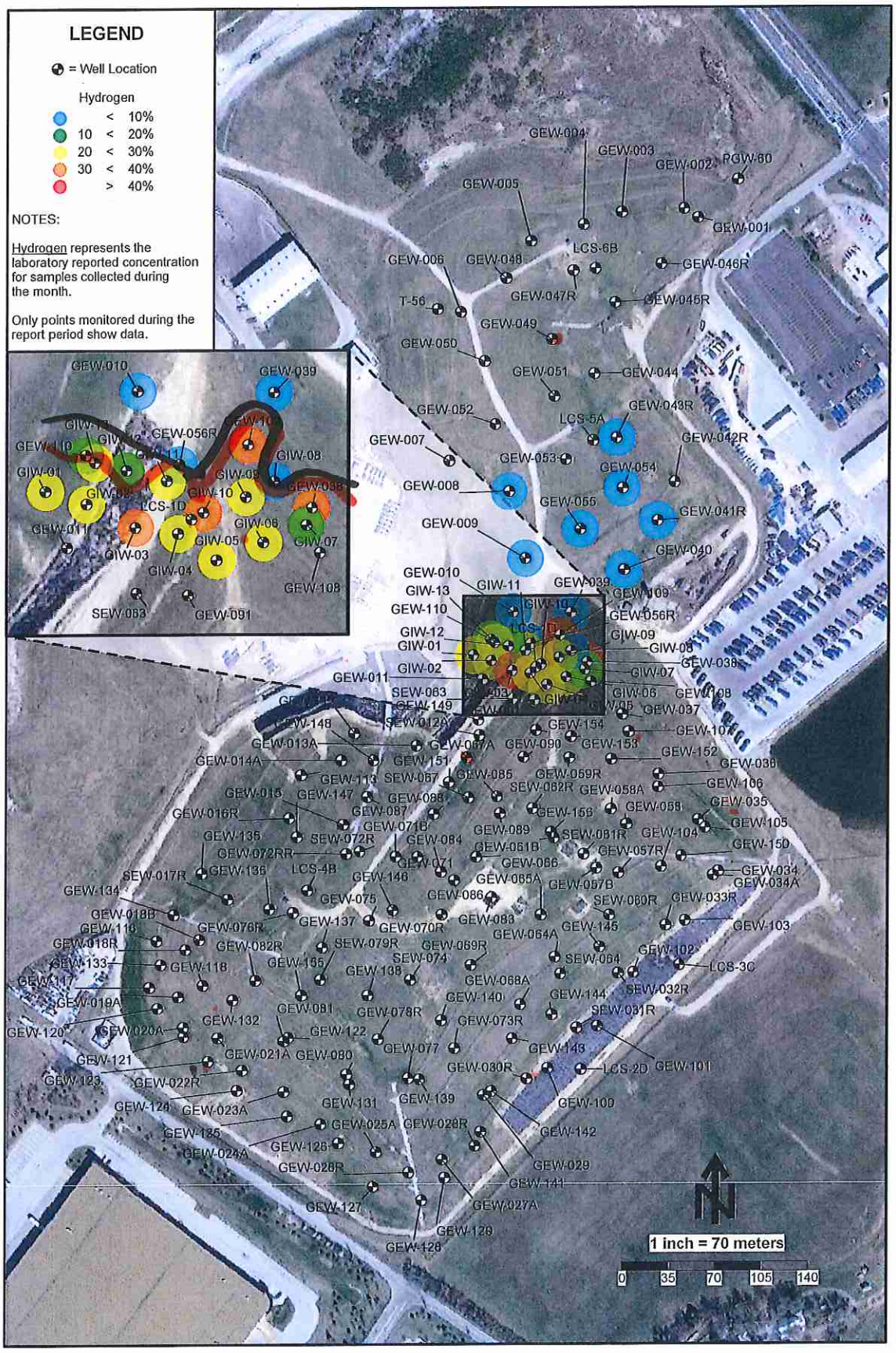
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000145



Hydrogen Data Map - January 2015 - Bridgeton Landfill

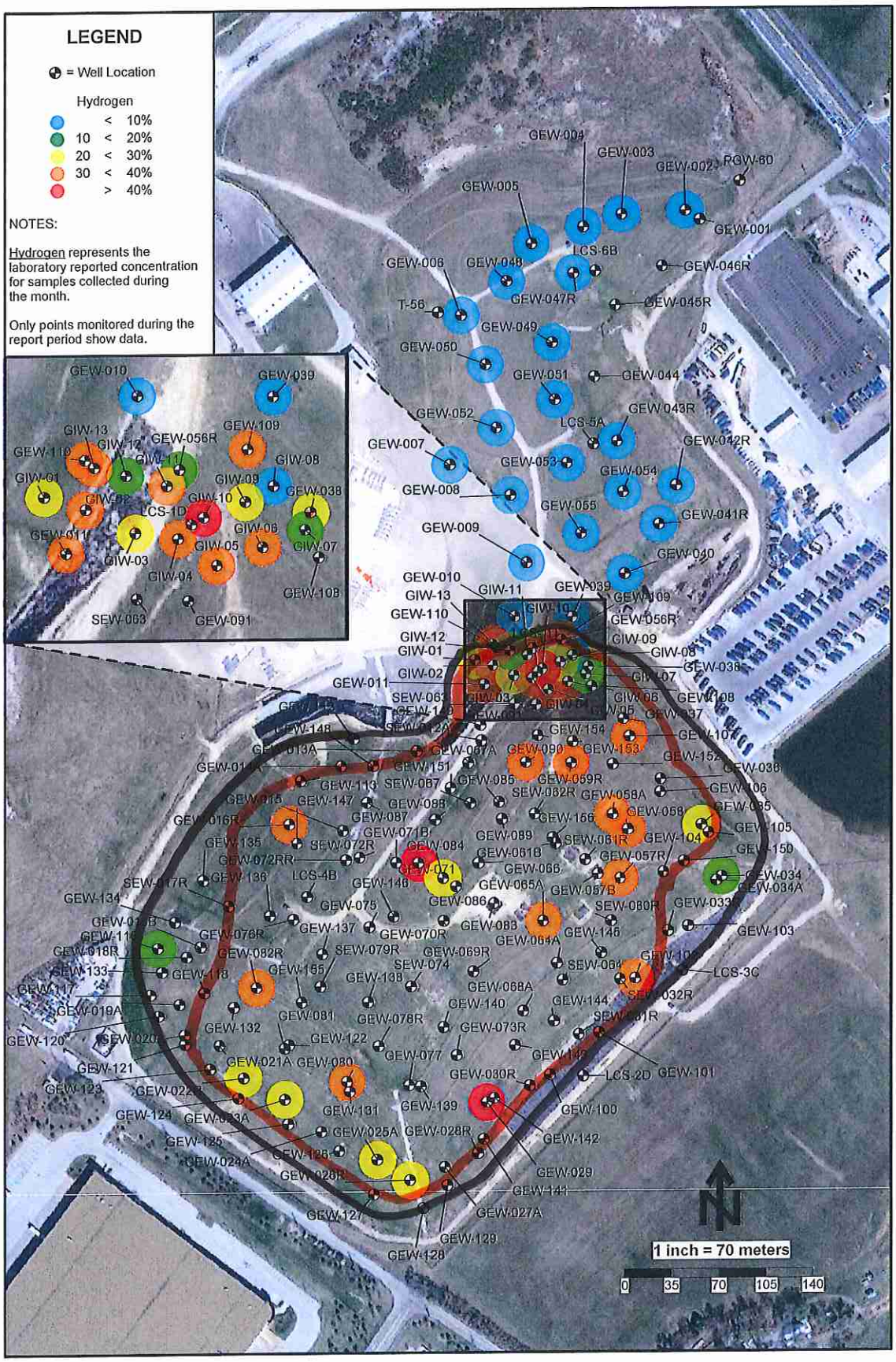
SCS ENGINEERS



Hydrogen Data Map - February 2015 - Bridgeton Landfill

SCS ENGINEERS

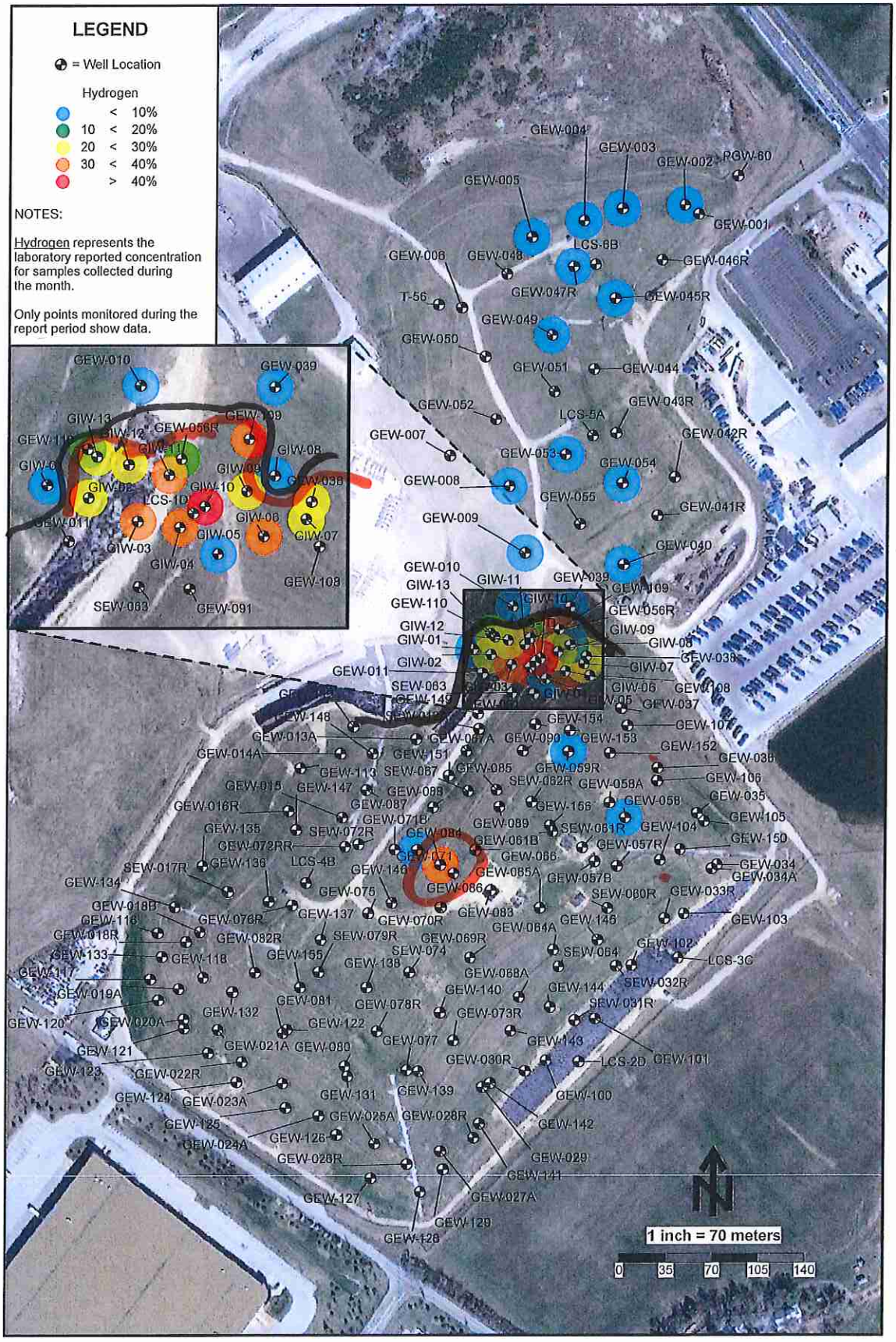
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000147



Hydrogen Data Map - March 2015 - Bridgeton Landfill

SCS ENGINEERS

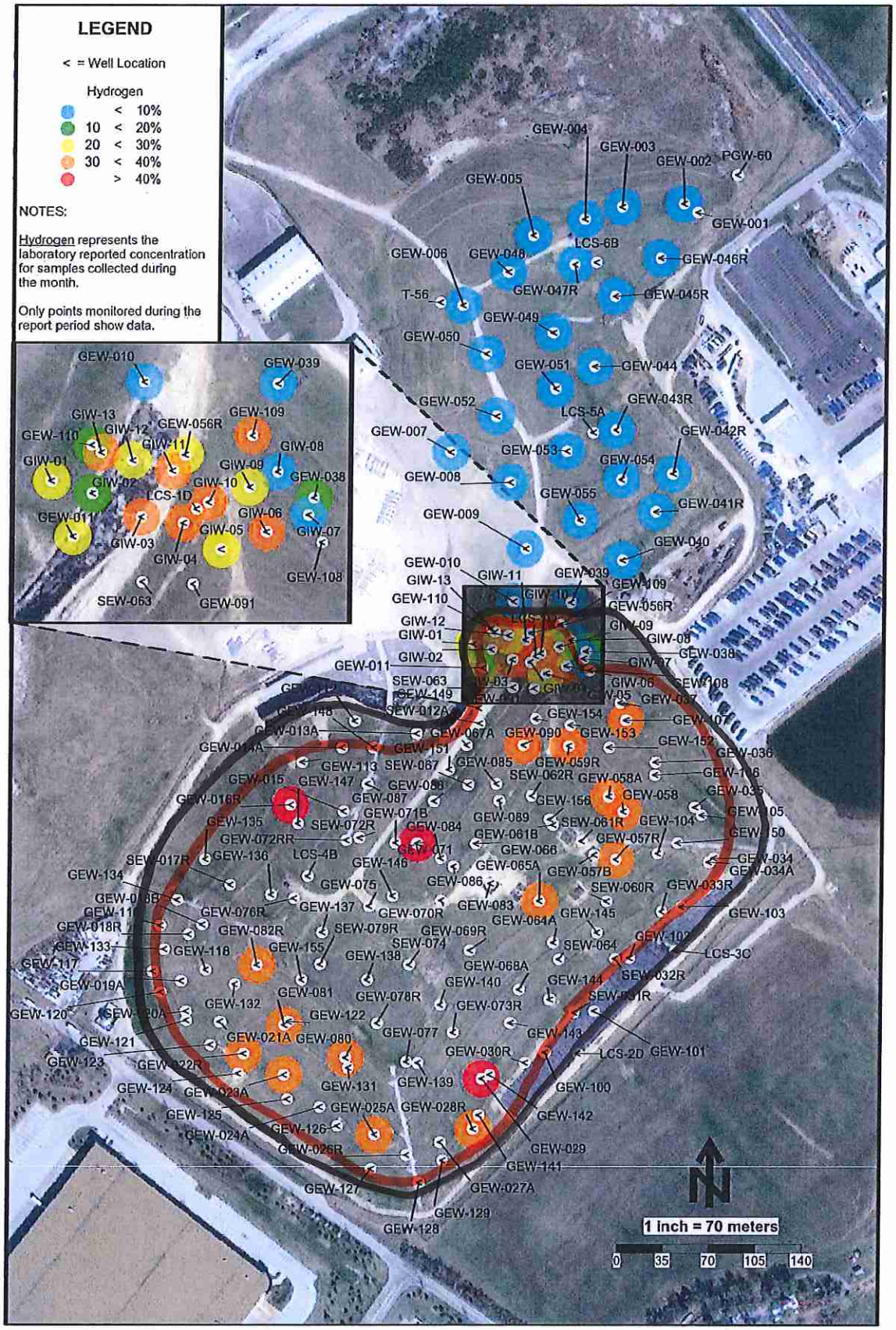
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000148



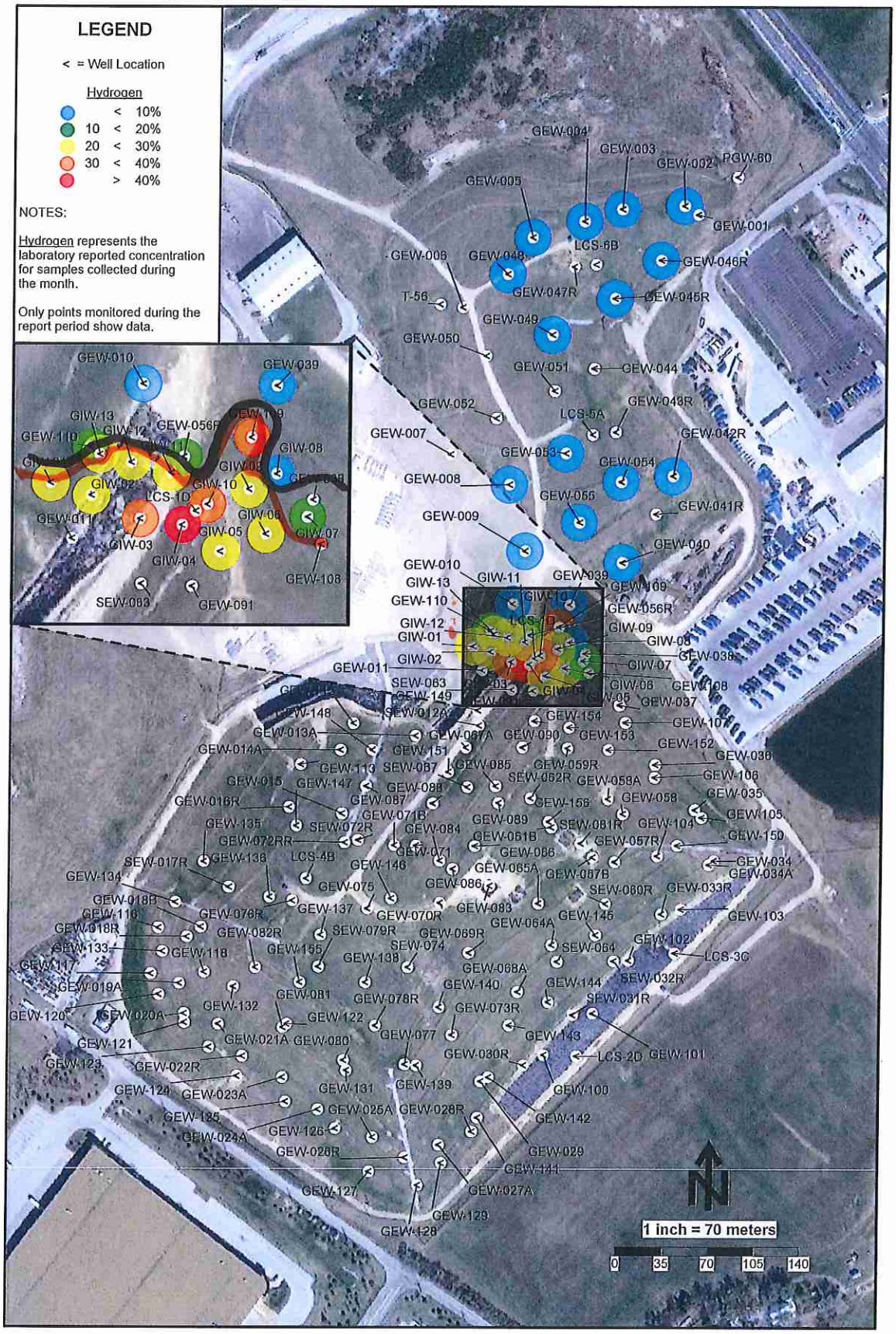
Hydrogen Data Map - April 2015 - Bridgeton Landfill

SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000149



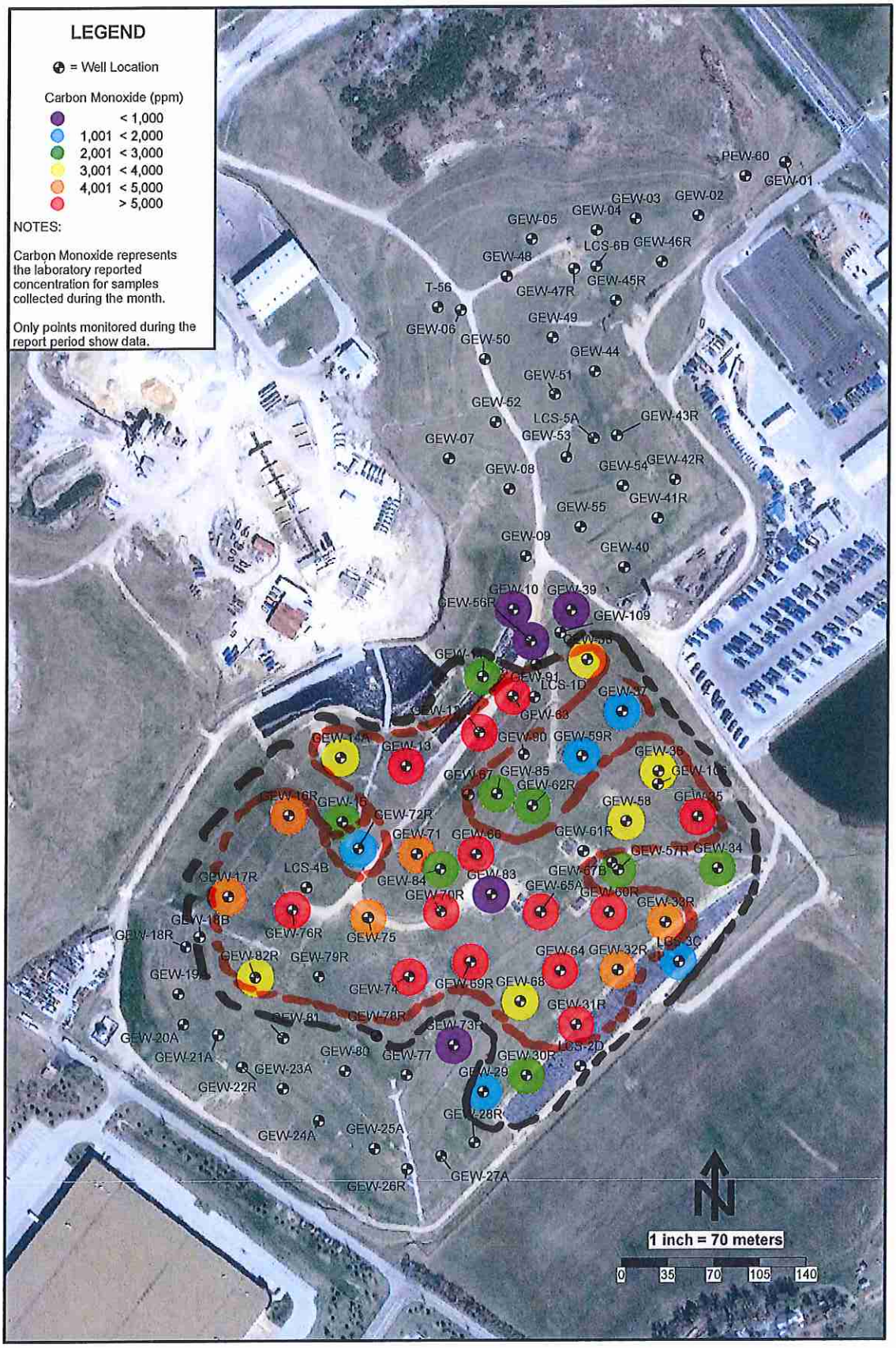
Hydrogen Data Map - May 2015 - Bridgeton Landfill



Hydrogen Data Map - June 2015 - Bridgeton Landfill

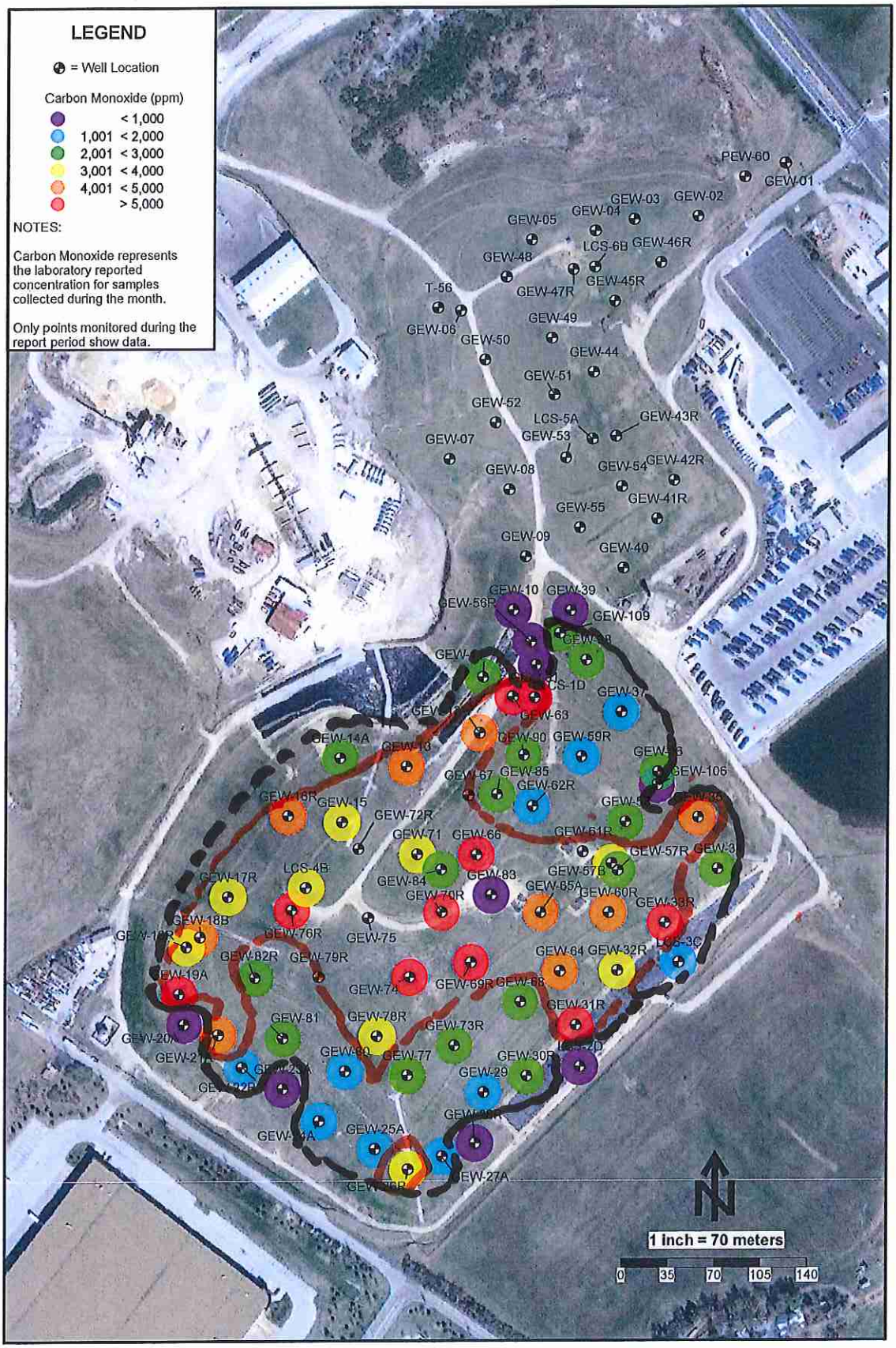
REPUBLIC SERVICES

APPENDIX B
CARBON MONOXIDE MAPS



Carbon Monoxide Data Map - January 2013 - Bridgeton Landfill

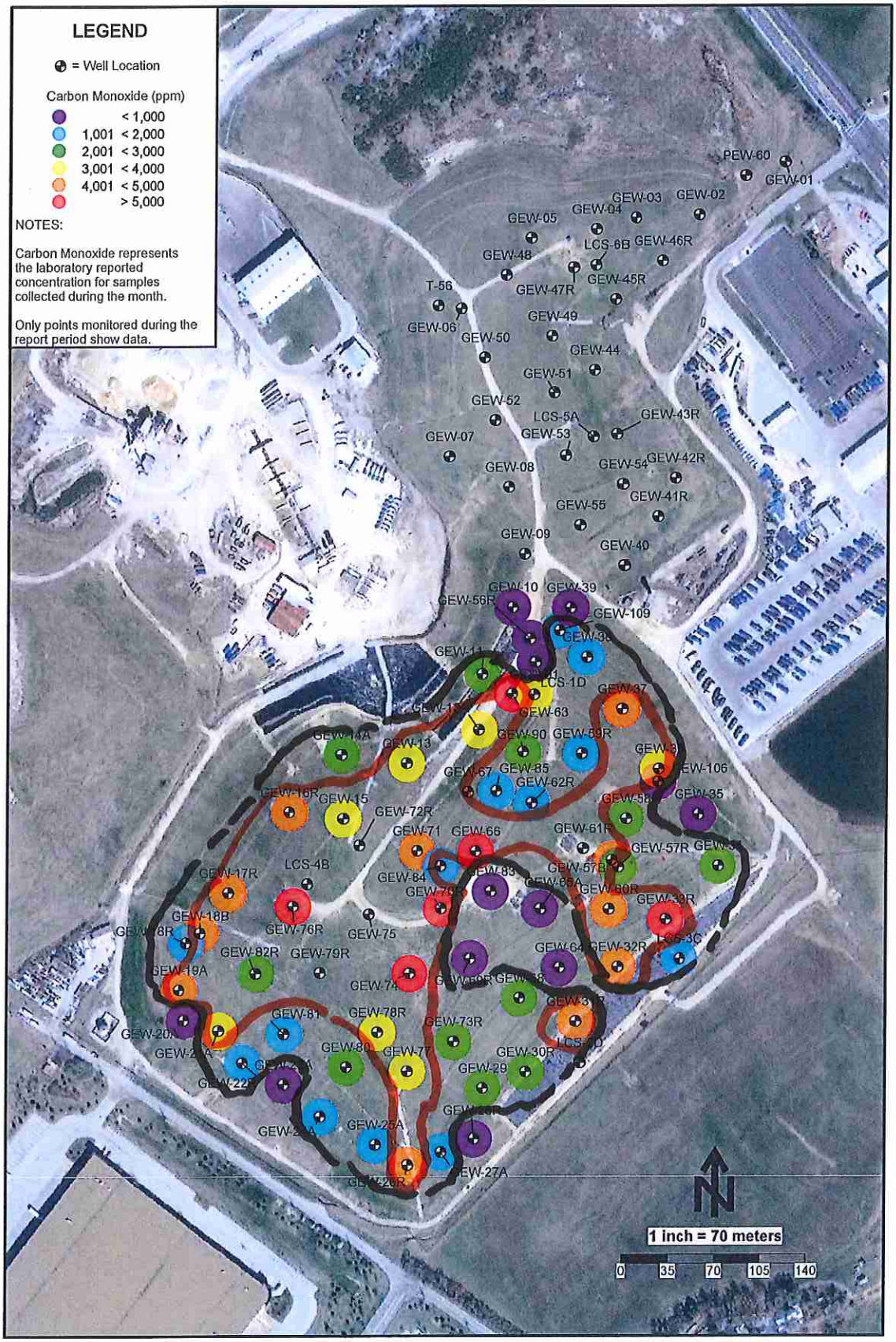
SCS ENGINEERS



Carbon Monoxide Data Map - February 2013 - Bridgeton Landfill

SCS ENGINEERS

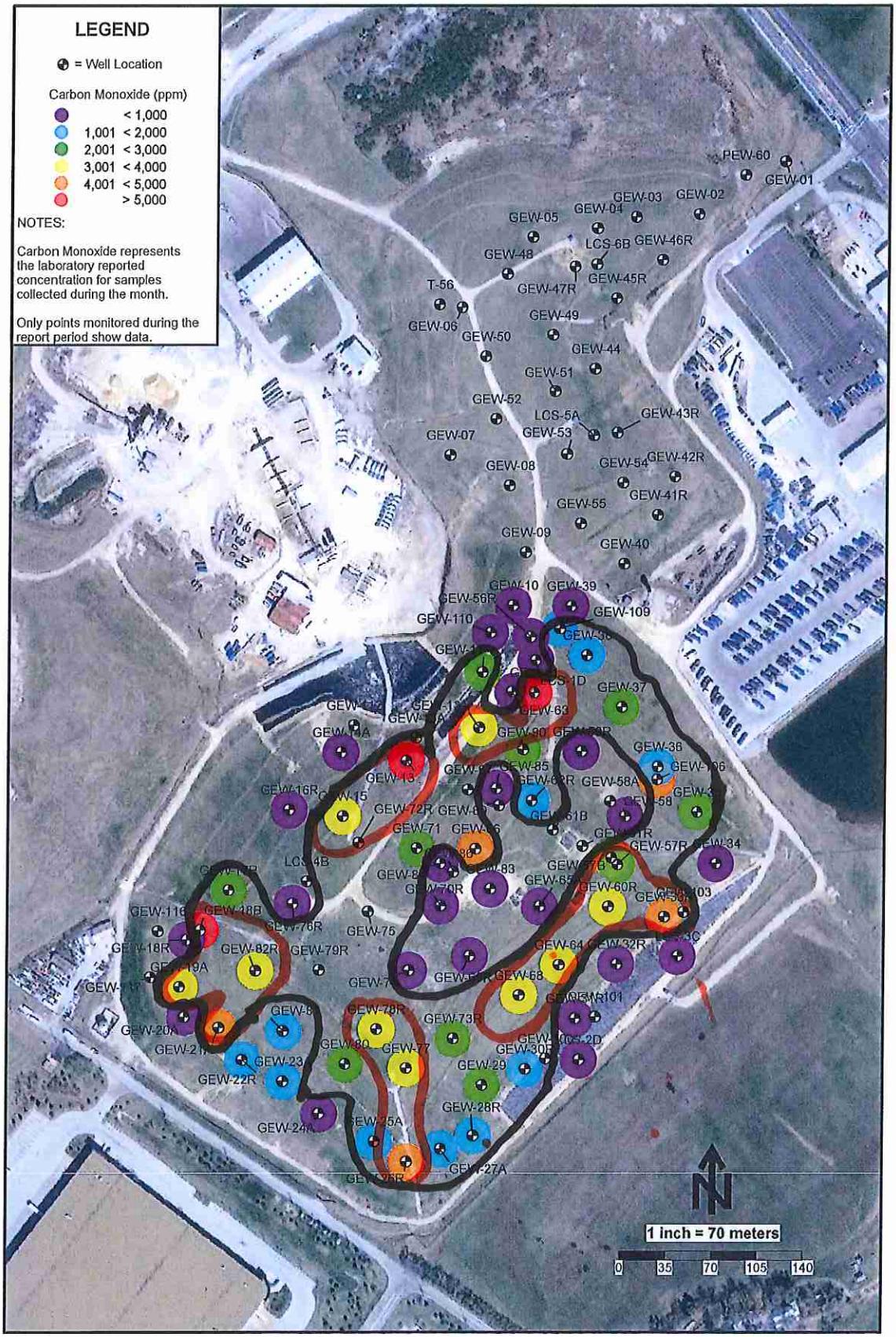
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000154



Carbon Monoxide Data Map - March 2013 - Bridgeton Landfill

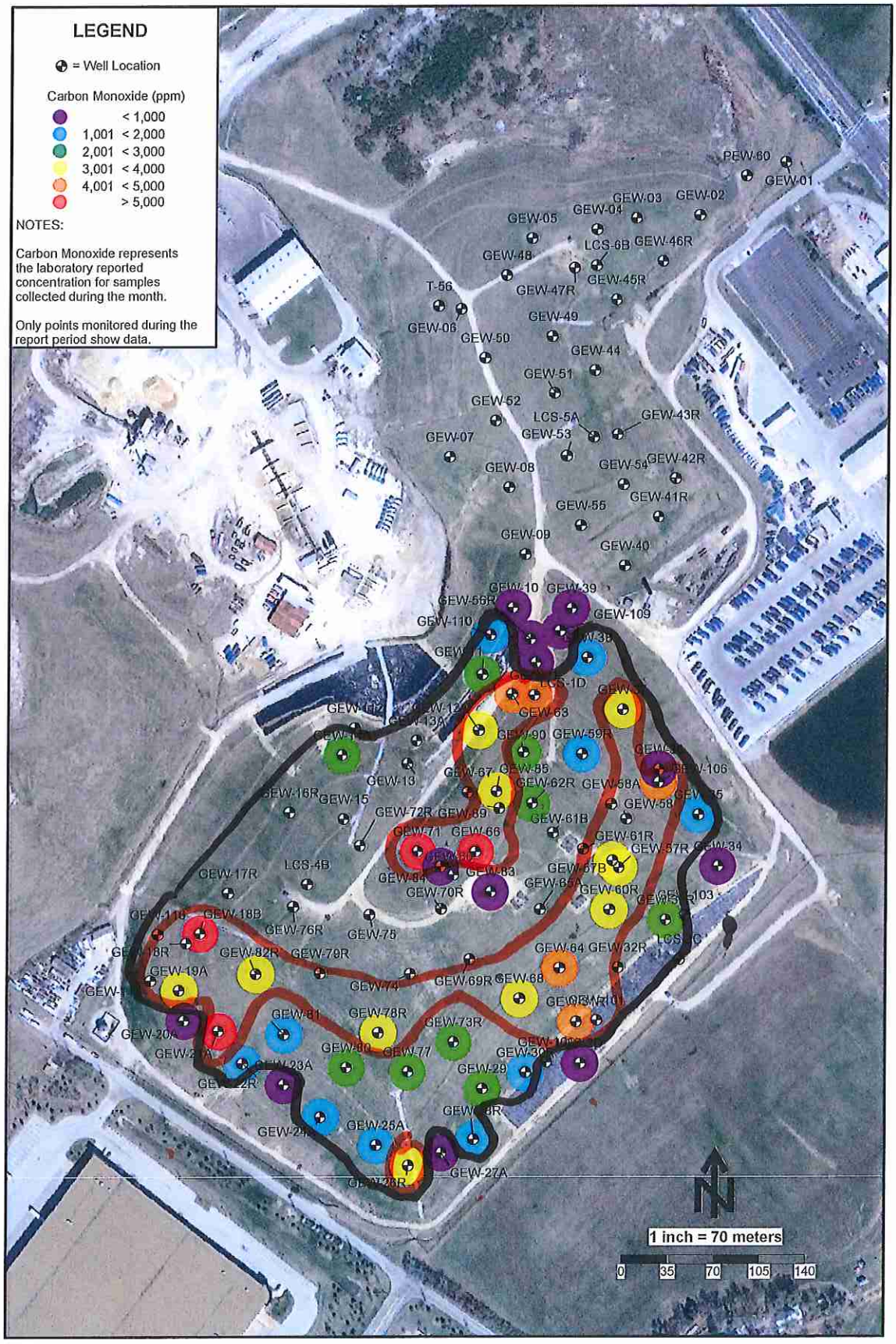
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000155



Carbon Monoxide Data Map - April 2013 - Bridgeton Landfill

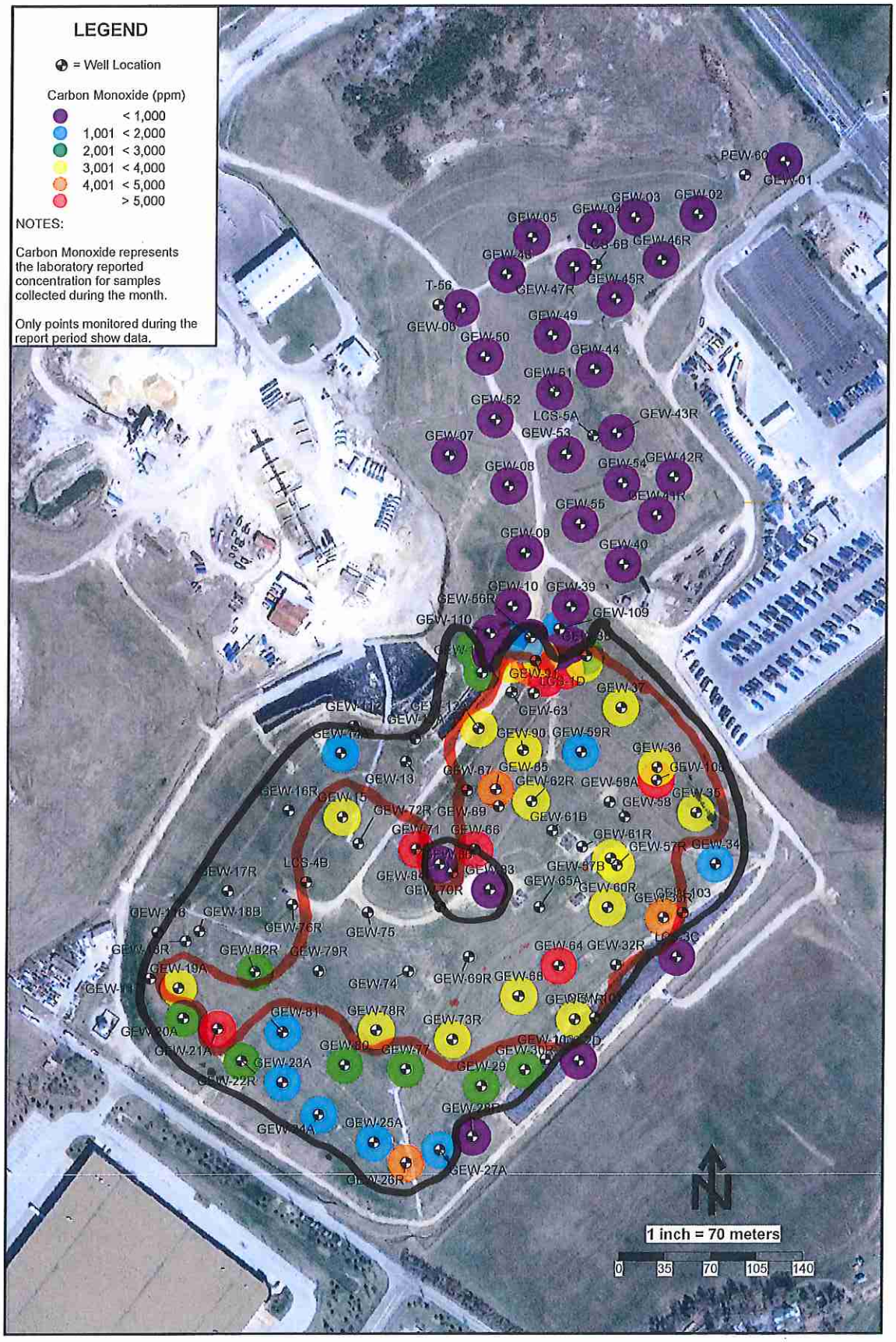
SCS ENGINEERS



Carbon Monoxide Data Map - May 2013 - Bridgeton Landfill

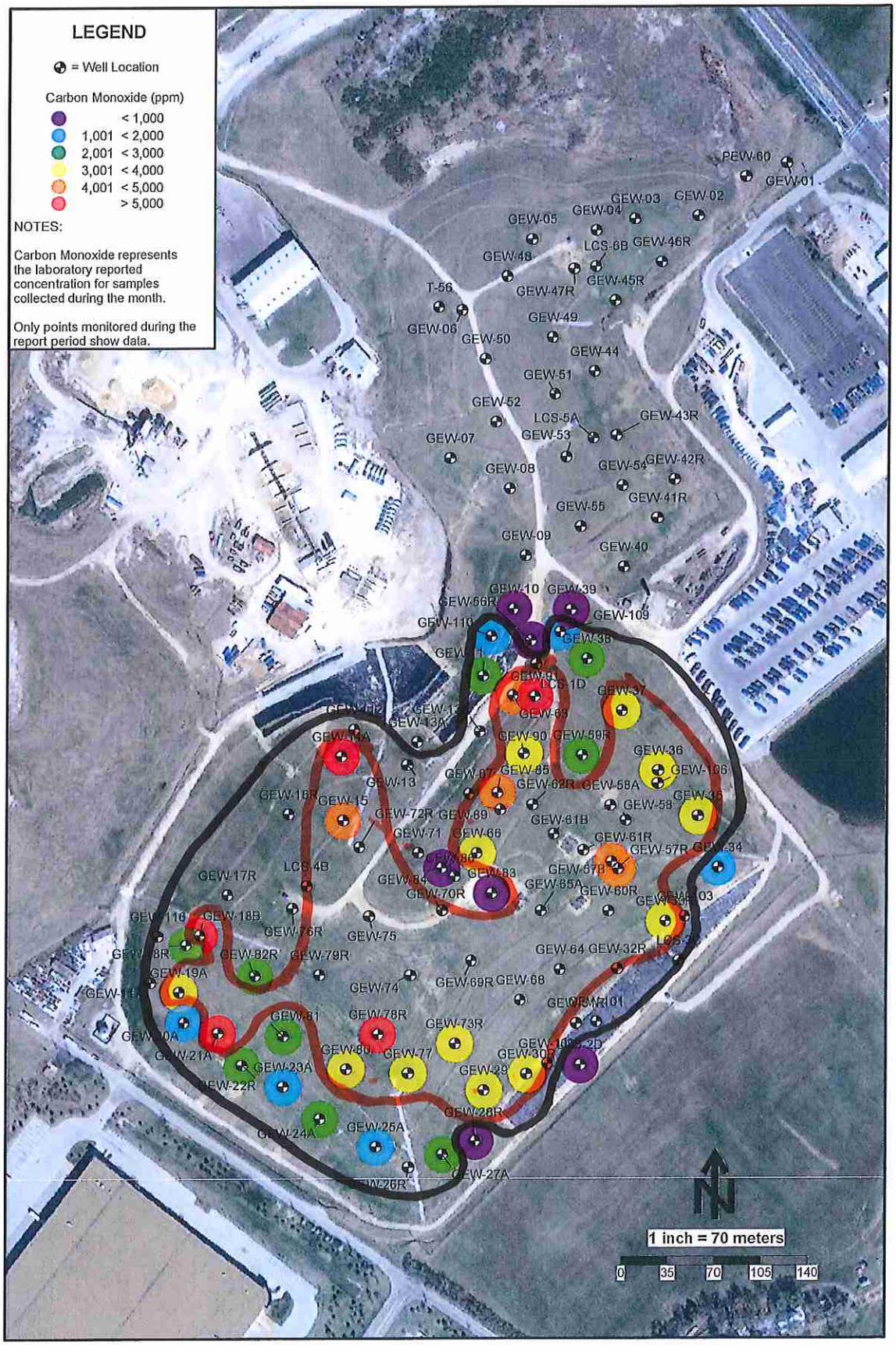
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000157



Carbon Monoxide Data Map - June 2013 - Bridgeton Landfill

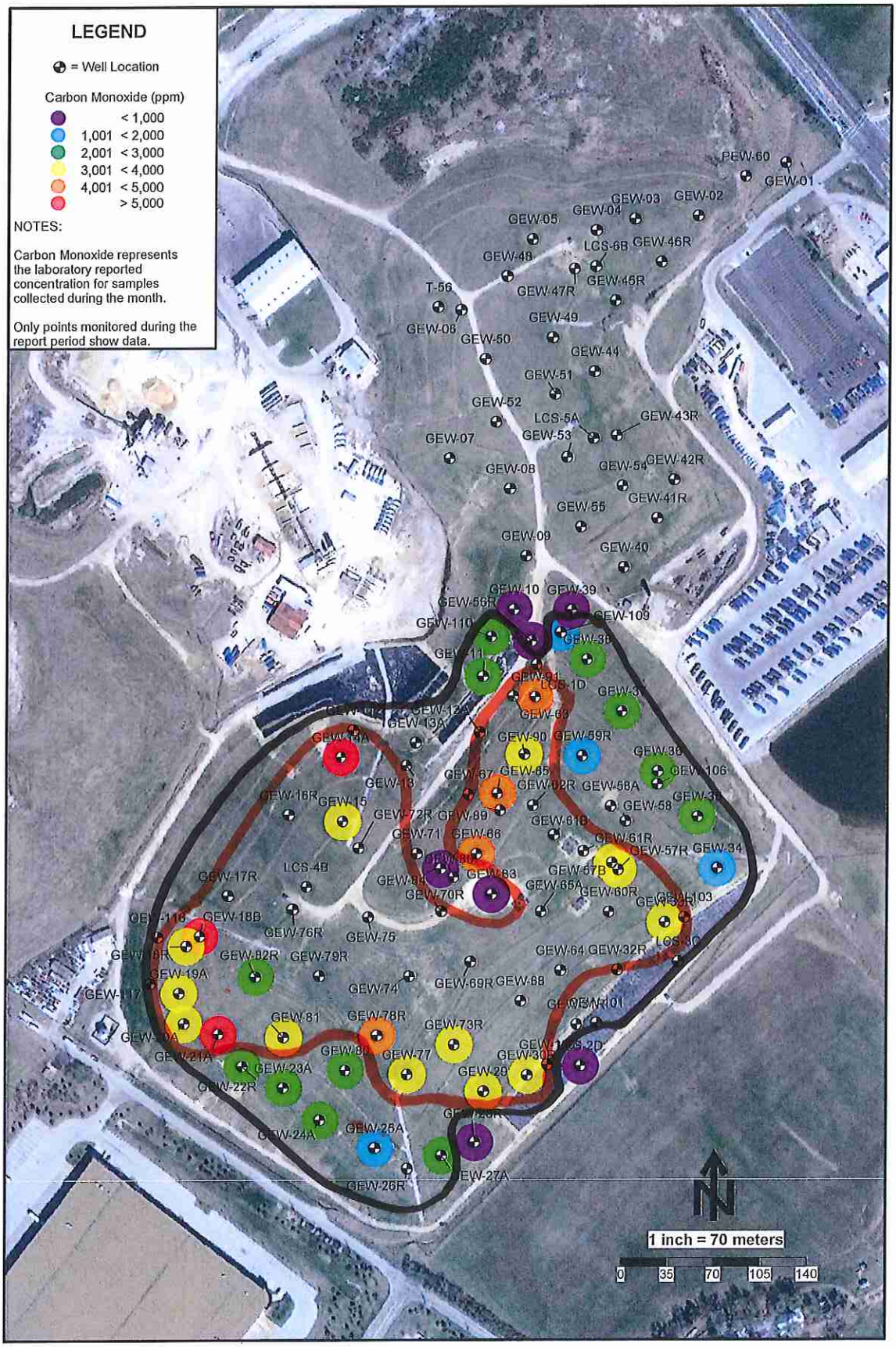
SCS ENGINEERS



Carbon Monoxide Data Map - July 2013 - Bridgeton Landfill

SCS ENGINEERS

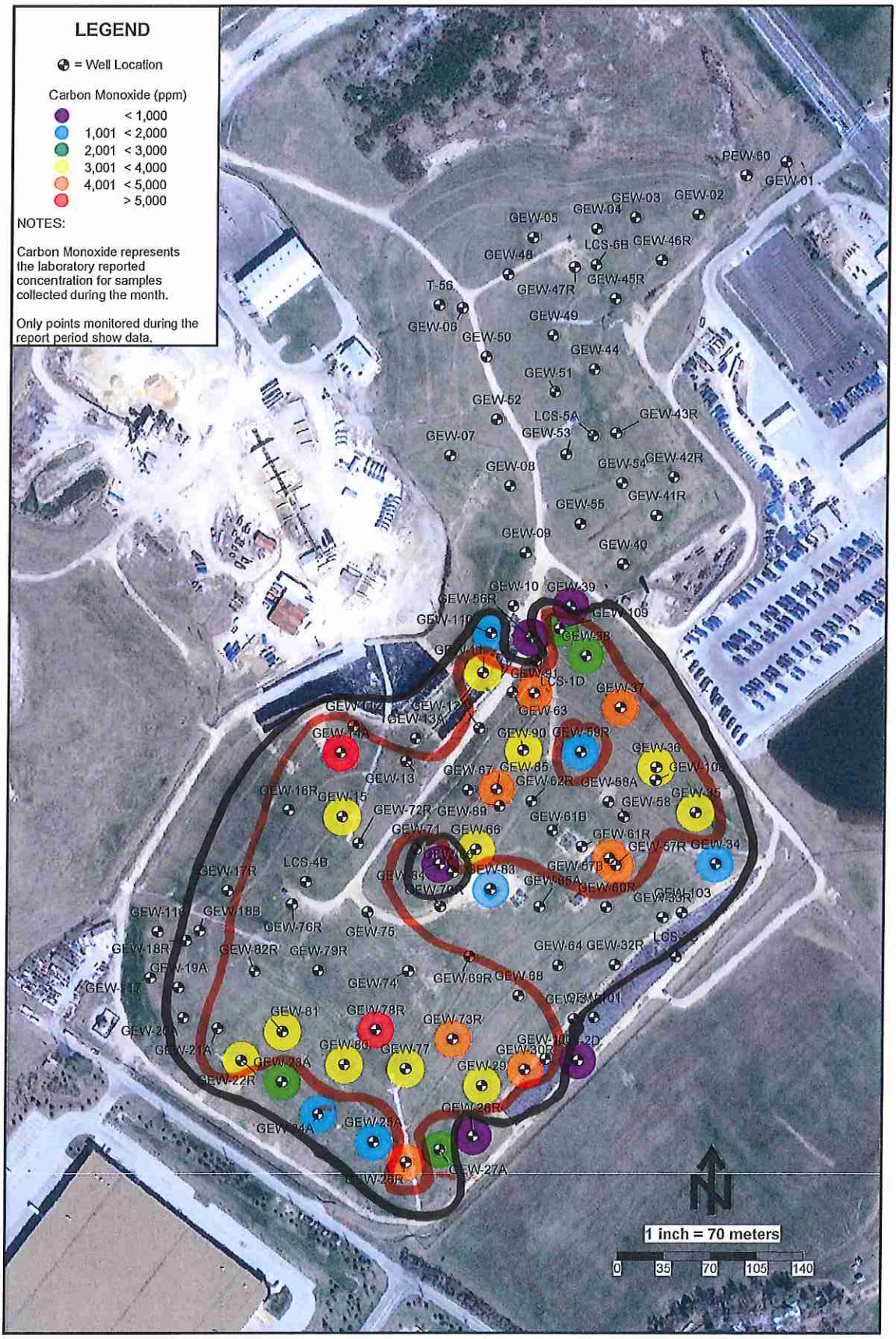
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000159



Carbon Monoxide Data Map - August 2013 - Bridgeton Landfill

SCS ENGINEERS

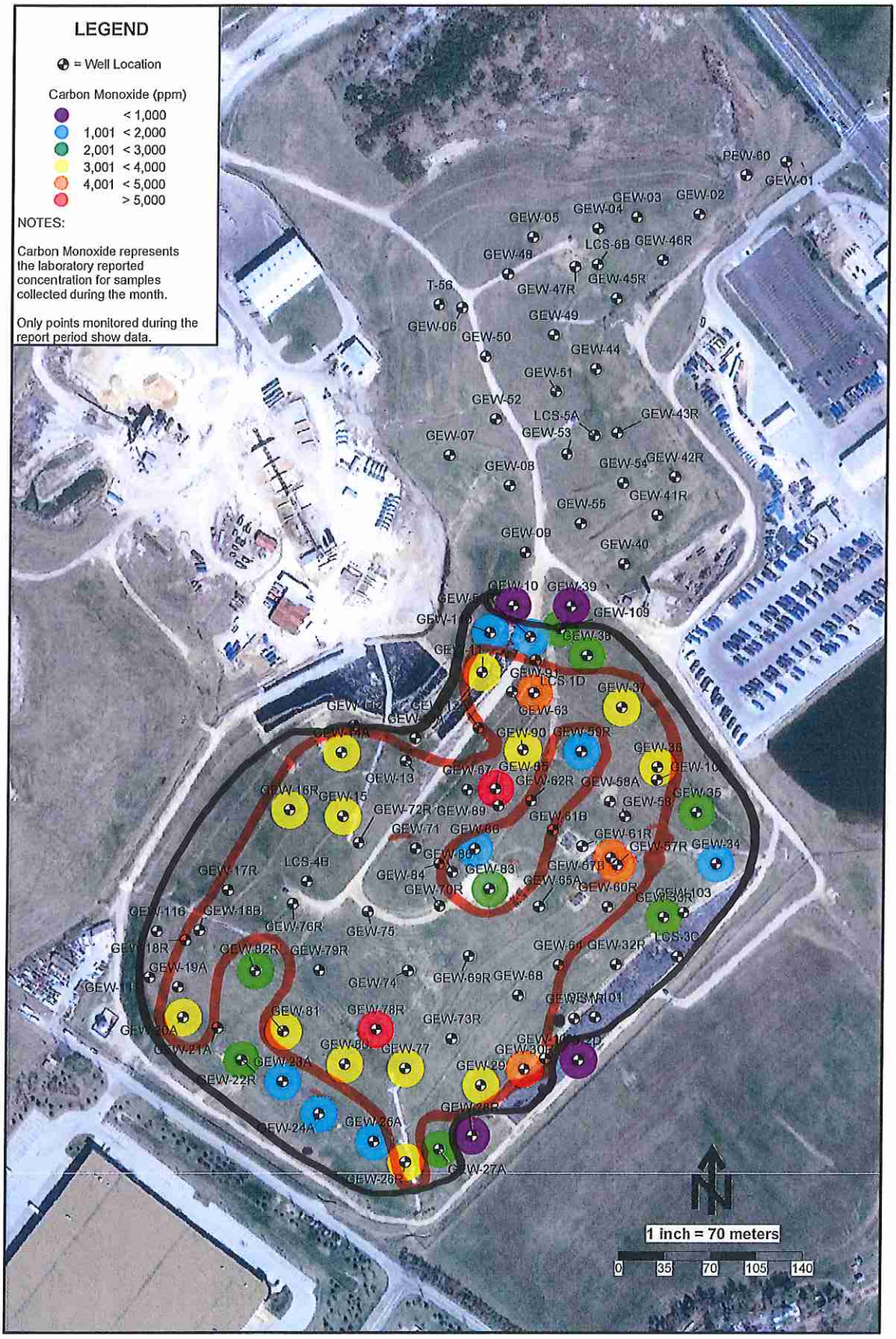
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000160



Carbon Monoxide Data Map - September 2013 - Bridgeton Landfill

SCS ENGINEERS

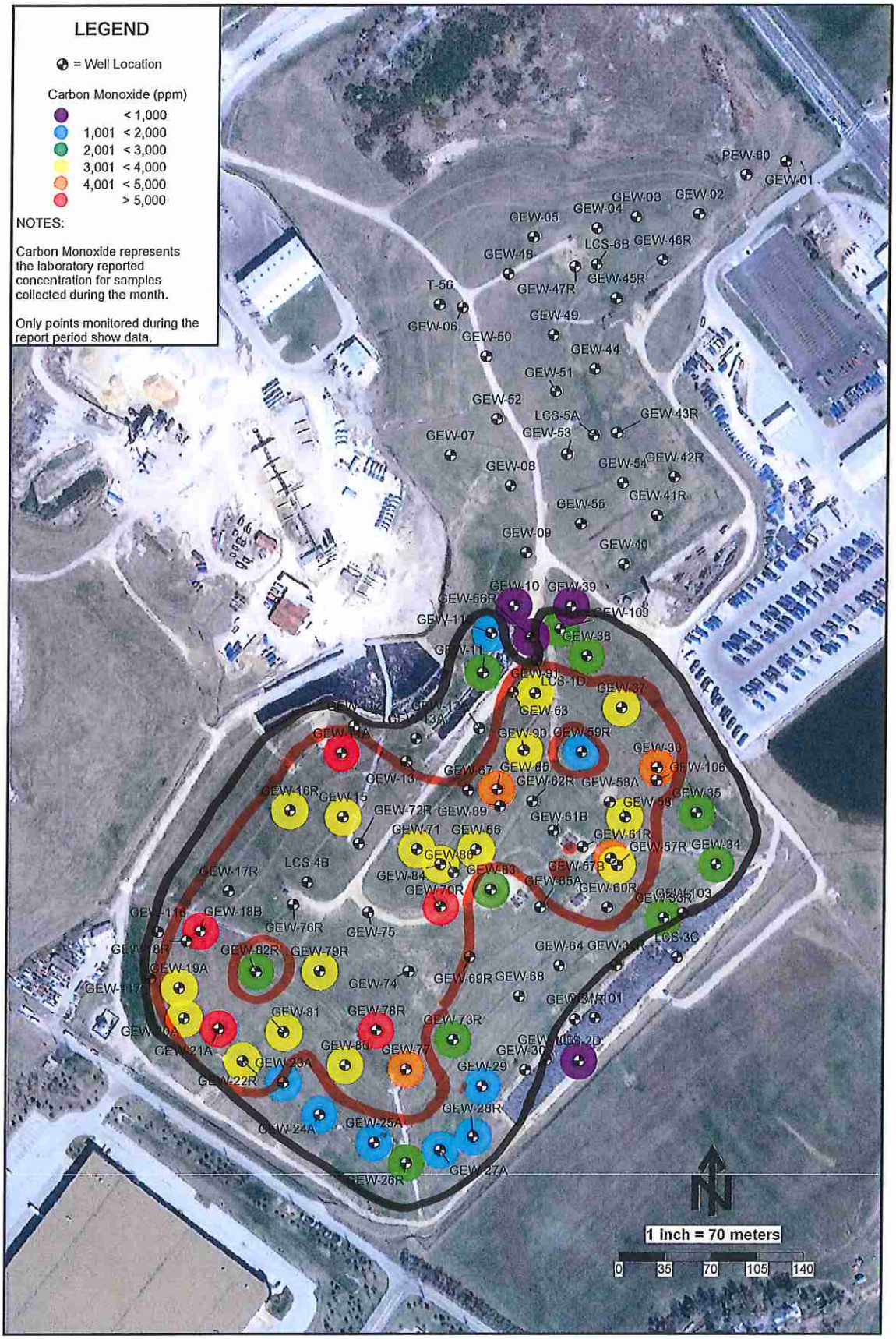
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000161



Carbon Monoxide Data Map - October 2013 - Bridgeton Landfill

SCS ENGINEERS

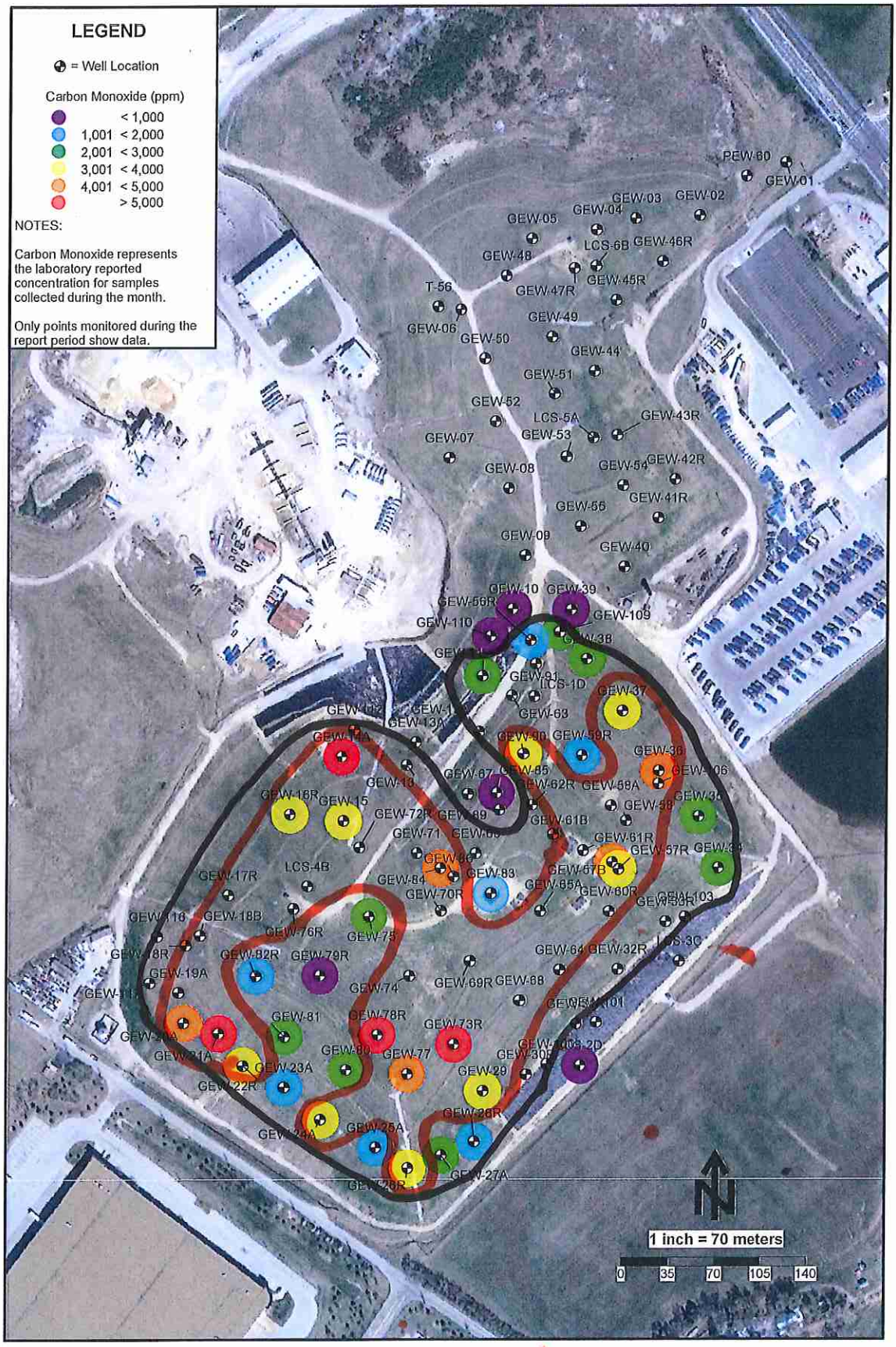
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000162



Carbon Monoxide Data Map - November 2013 - Bridgeton Landfill

SCS ENGINEERS

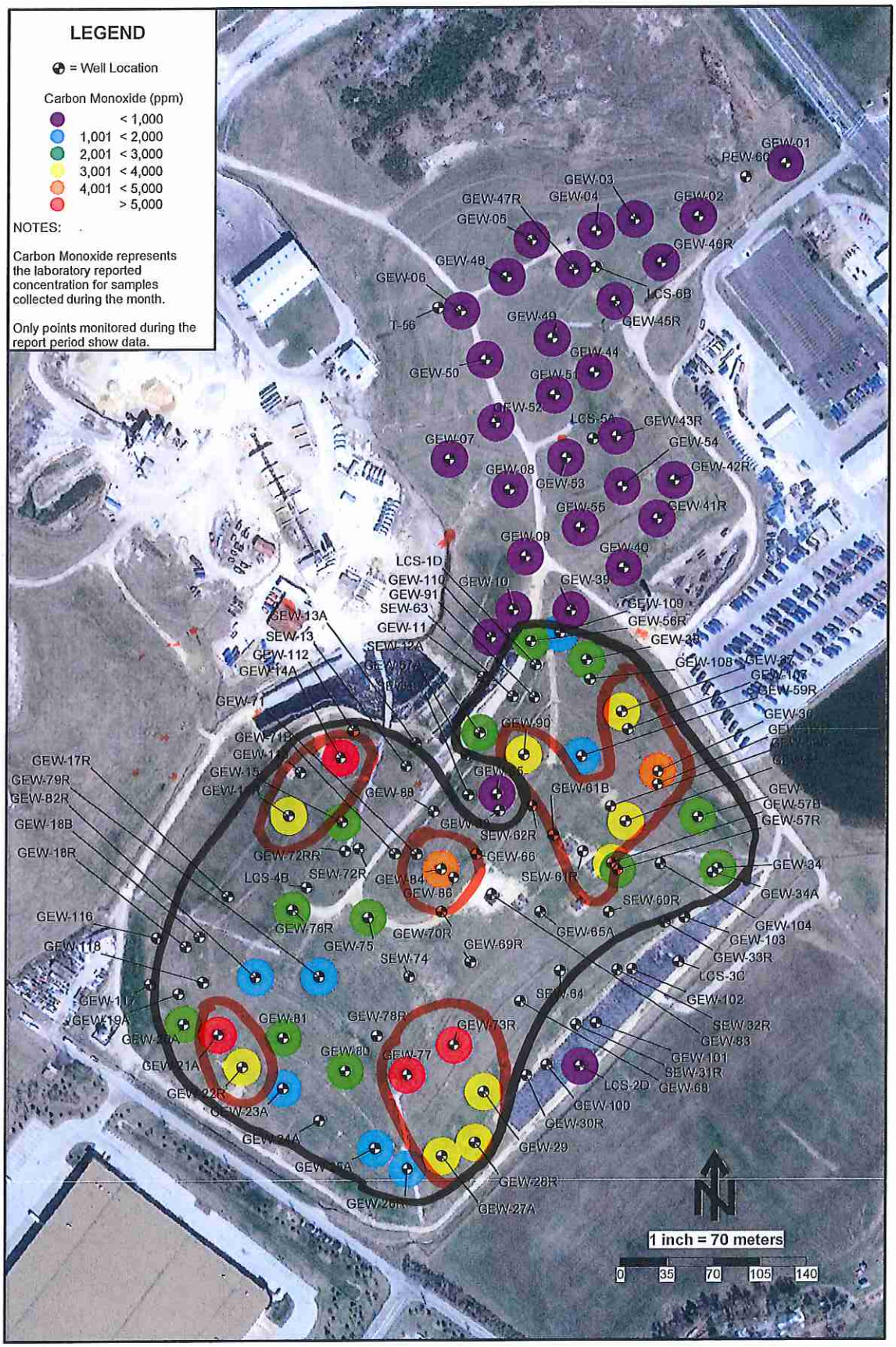
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000163



Carbon Monoxide Data Map - December 2013 - Bridgeton Landfill

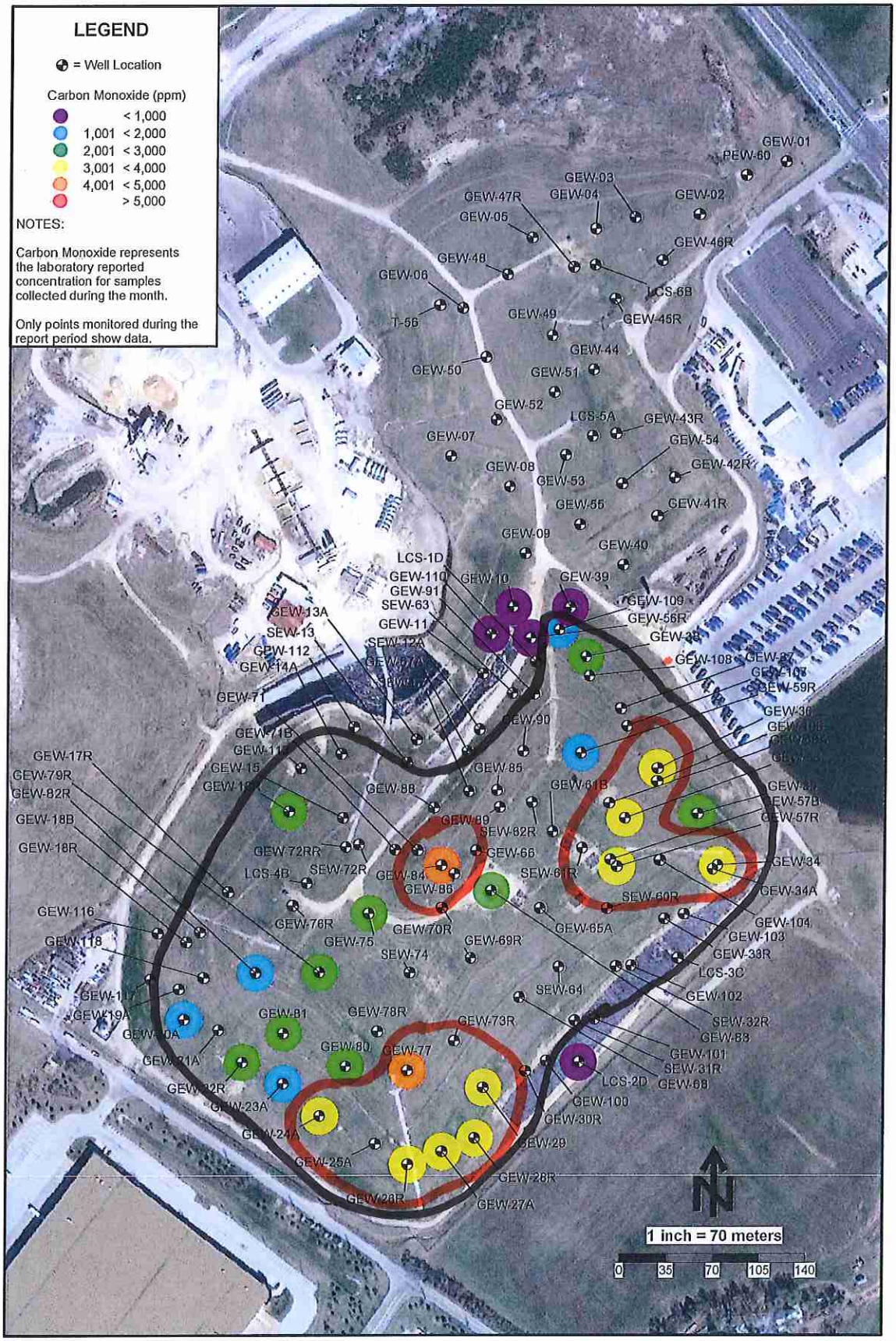
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000164



Carbon Monoxide Data Map - January 2014 - Bridgeton Landfill

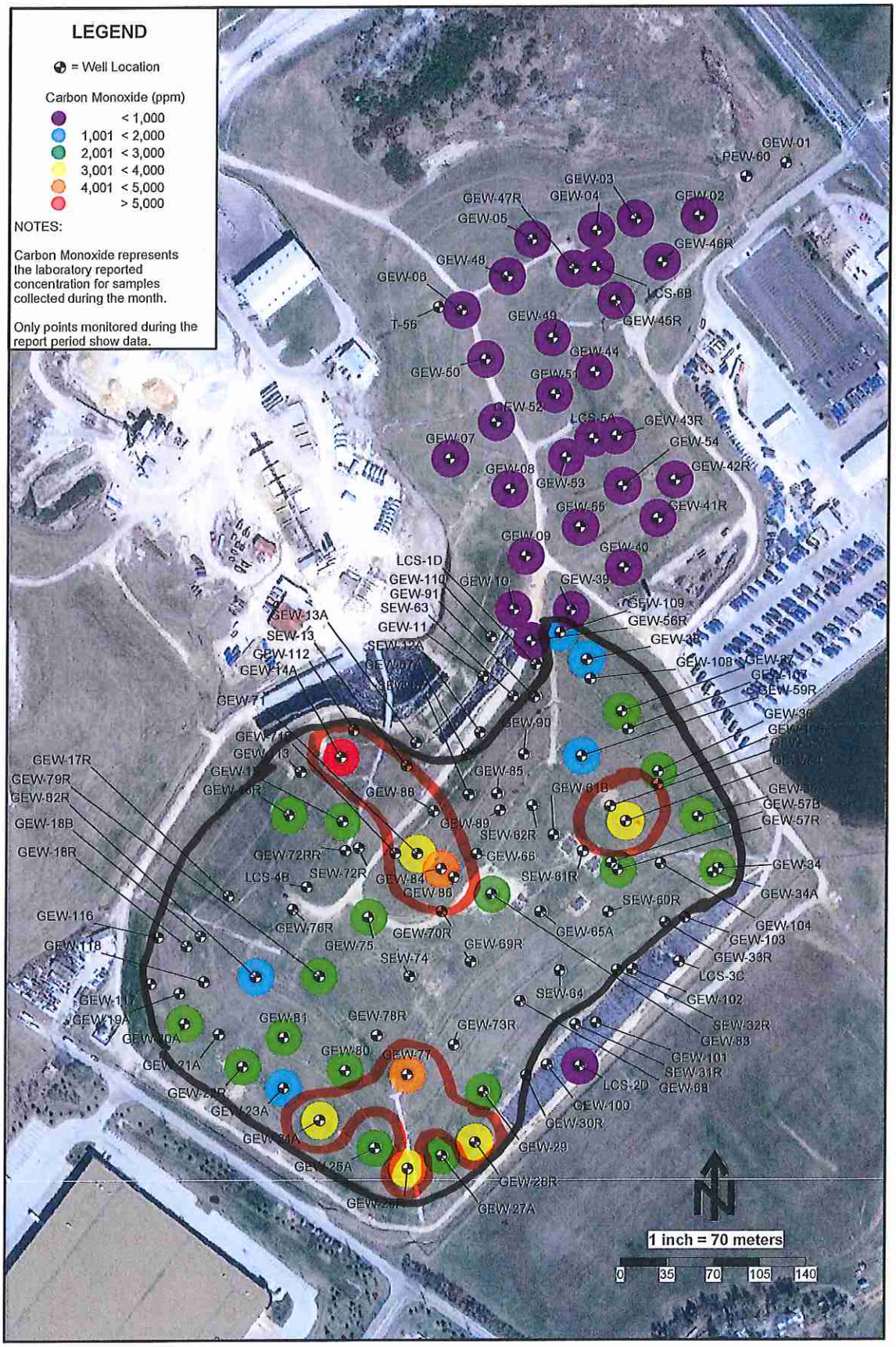
SCS ENGINEERS



Carbon Monoxide Data Map - February 2014 - Bridgeton Landfill

SCS ENGINEERS

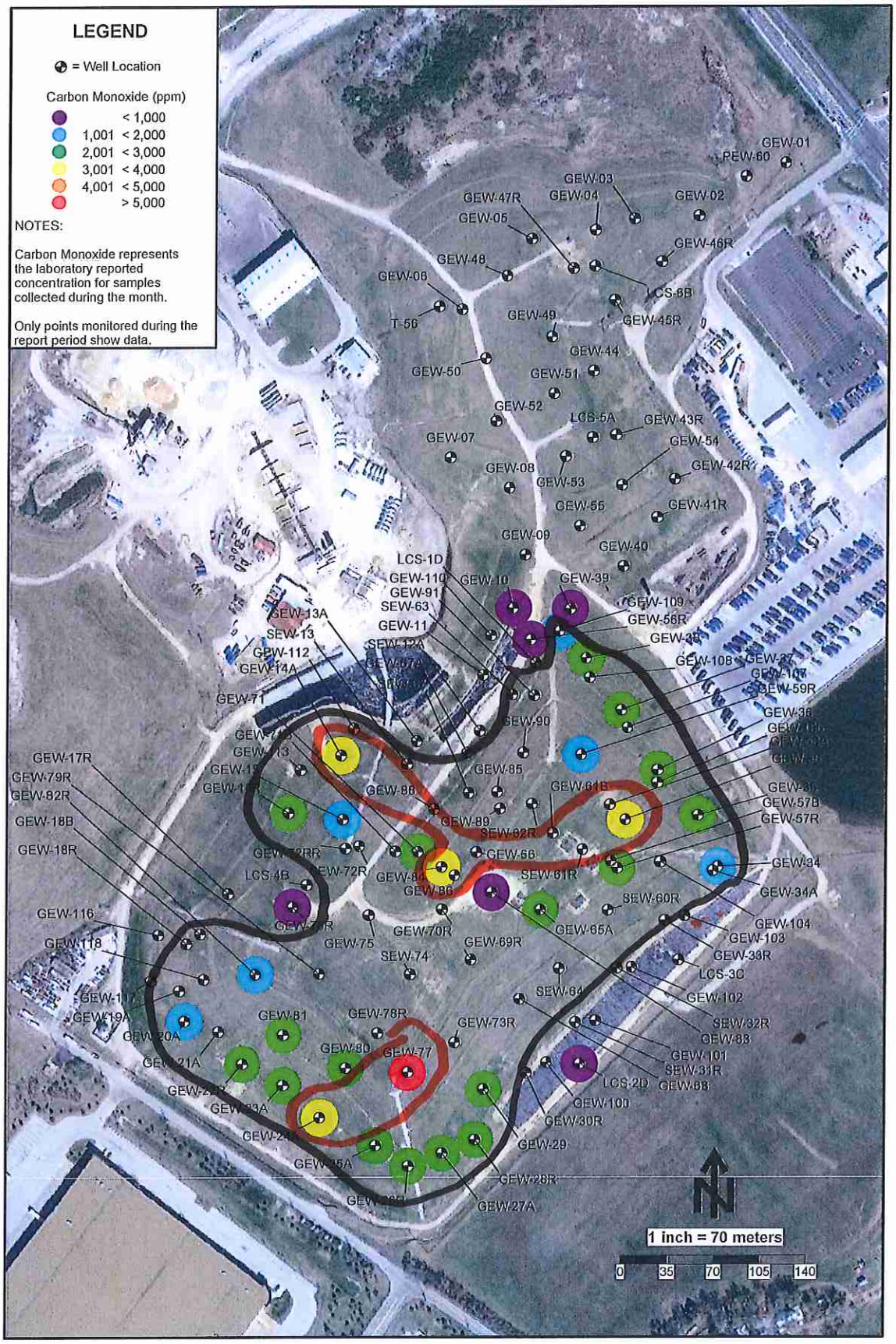
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000166



Carbon Monoxide Data Map - March 2014 - Bridgeton Landfill

SCS ENGINEERS

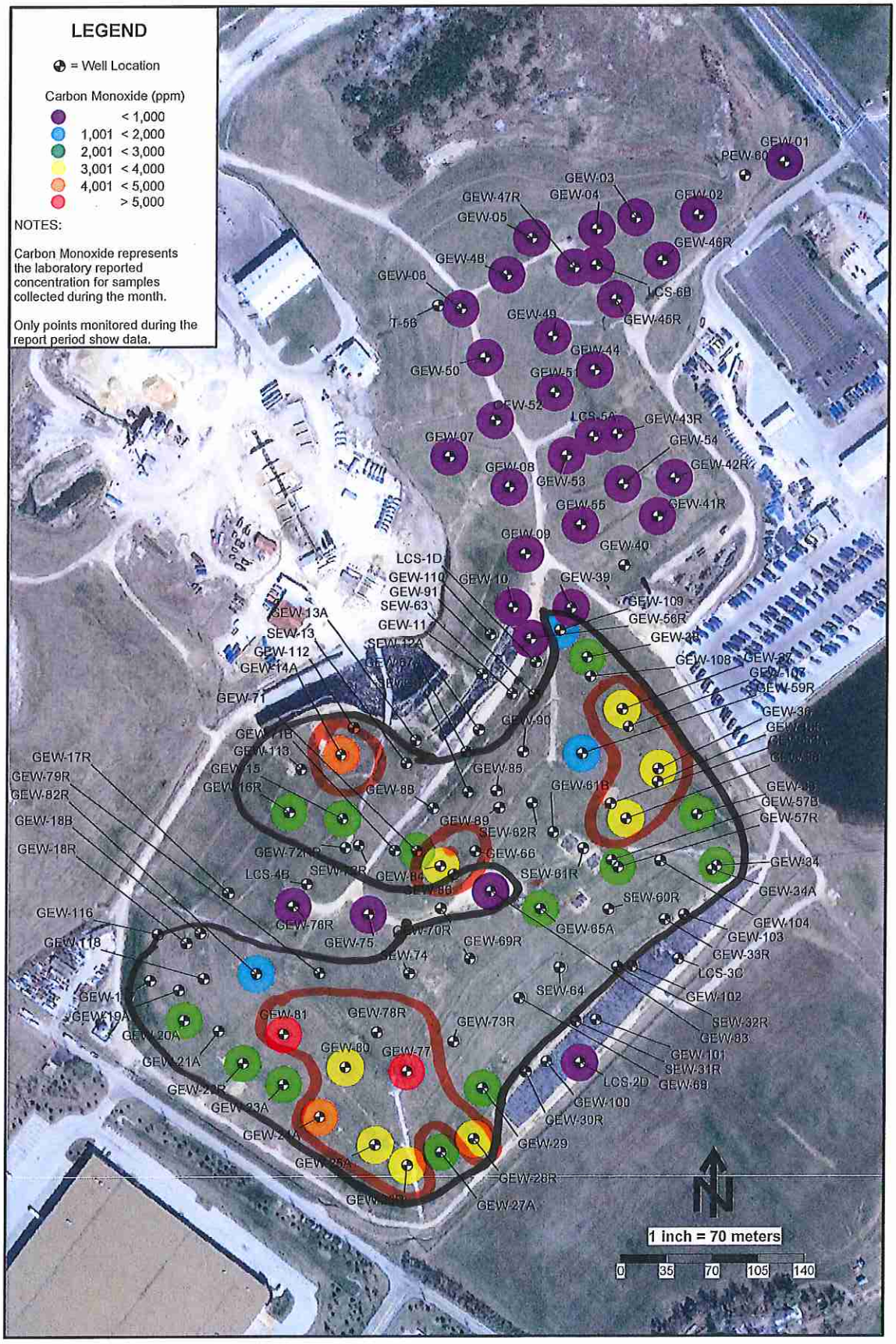
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000167



Carbon Monoxide Data Map - April 2014 - Bridgeton Landfill

SCS ENGINEERS

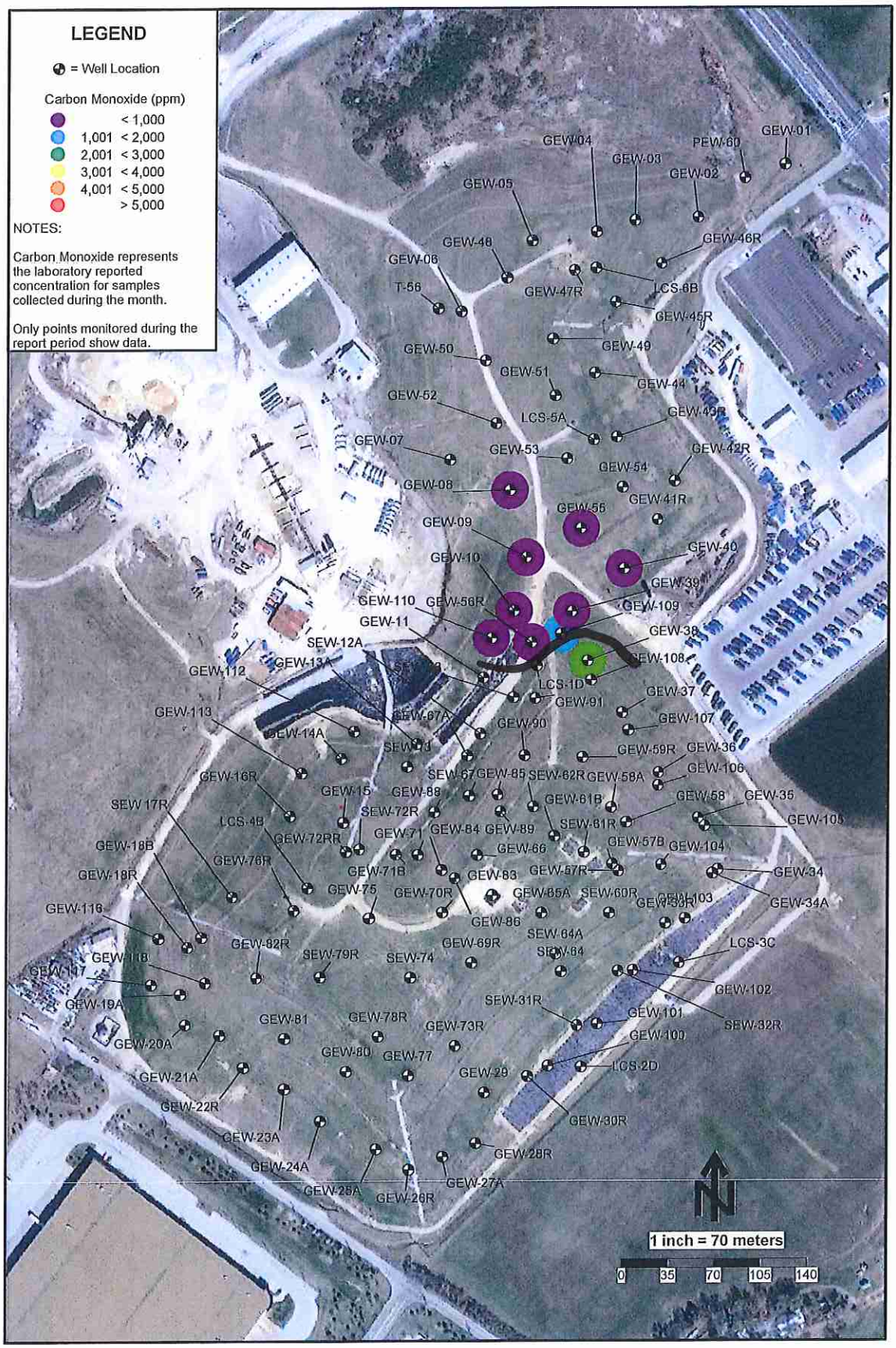
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000168



Carbon Monoxide Data Map - May 2014 - Bridgeton Landfill

SCS ENGINEERS

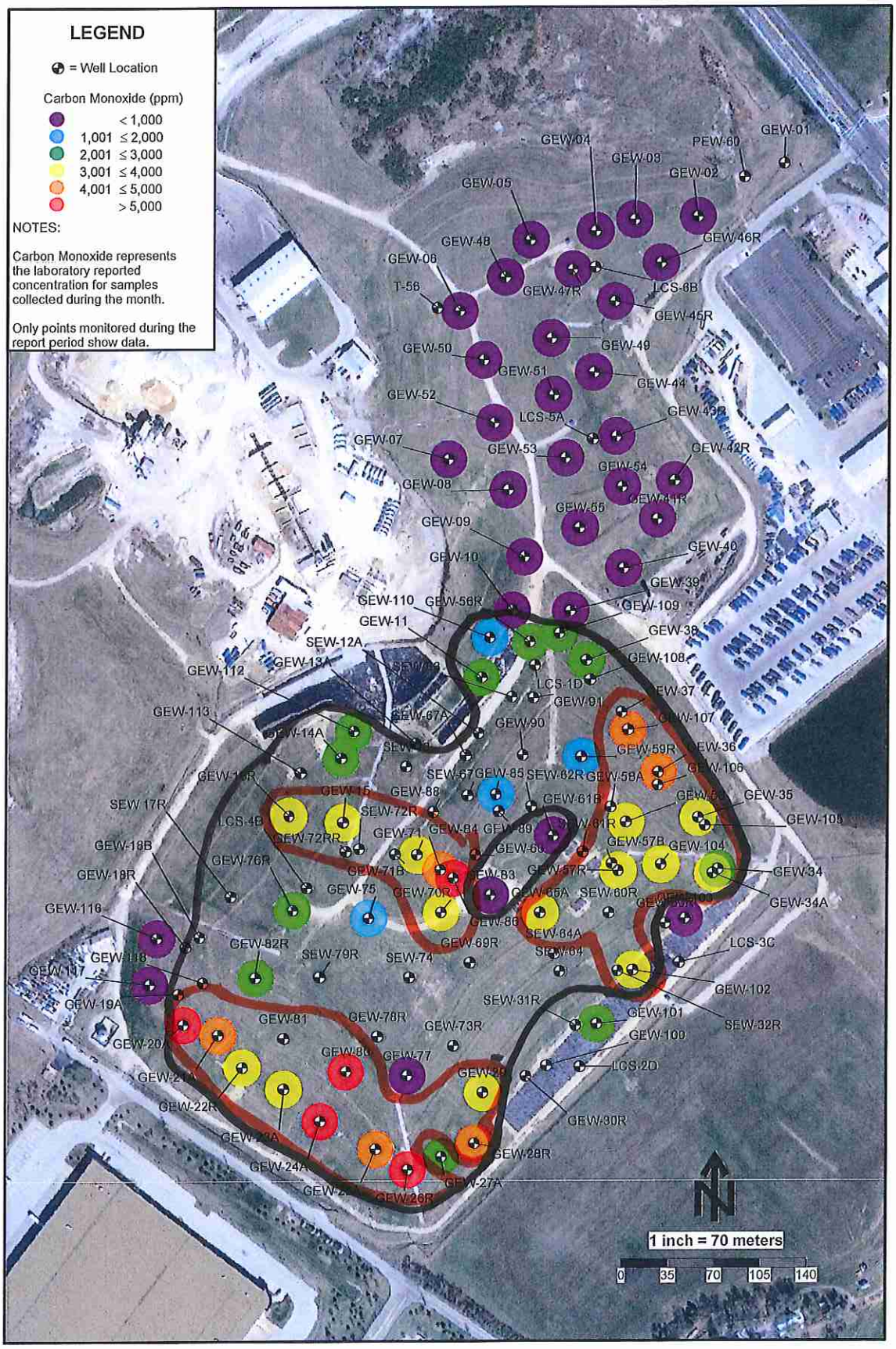
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000169



Carbon Monoxide Data Map - June 2014 - Bridgeton Landfill

SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000170



Carbon Monoxide Data Map - July 2014 - Bridgeton Landfill

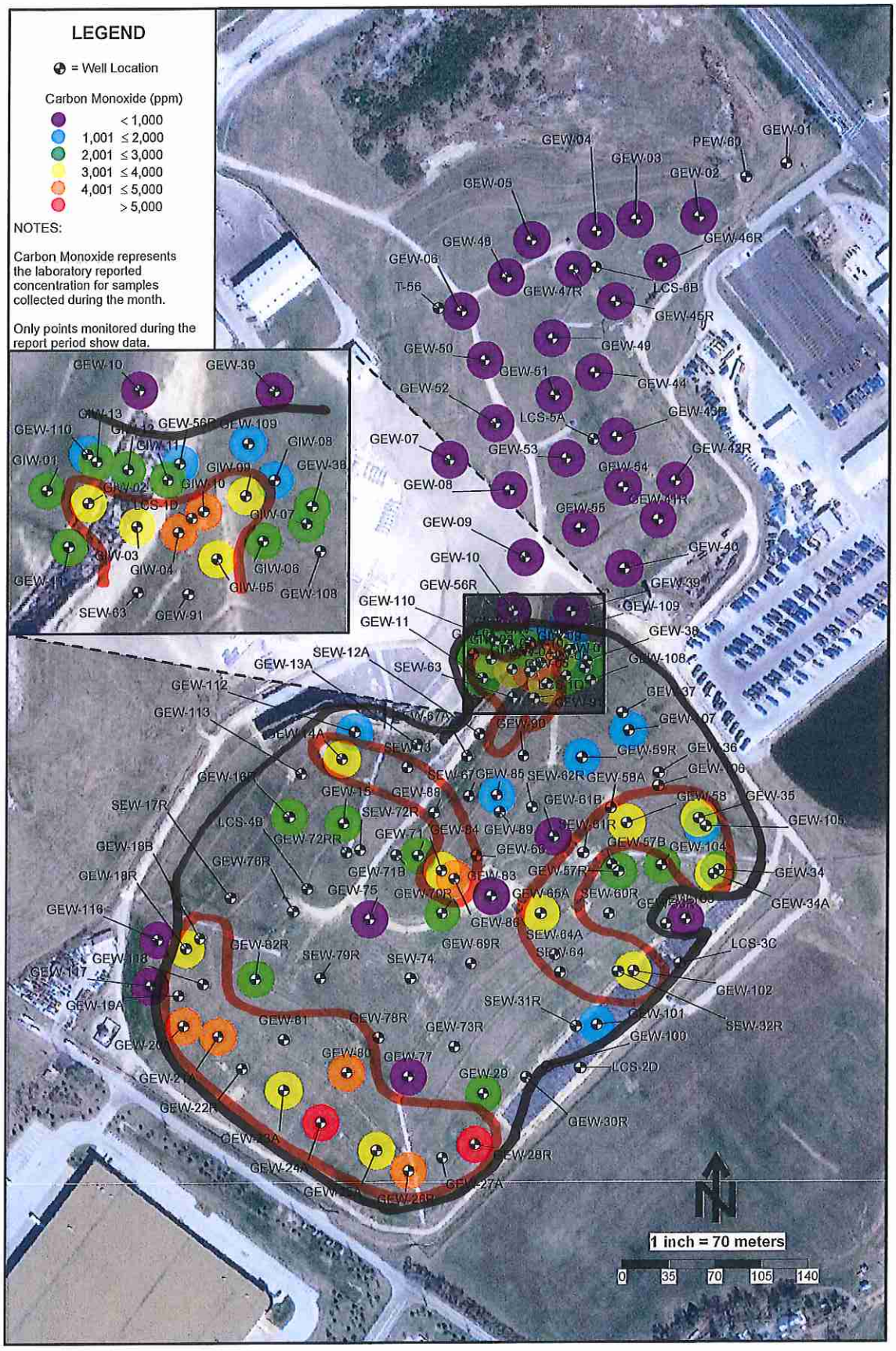
SCS ENGINEERS



Carbon Monoxide Data Map - August 2014 - Bridgeton Landfill

SCS ENGINEERS

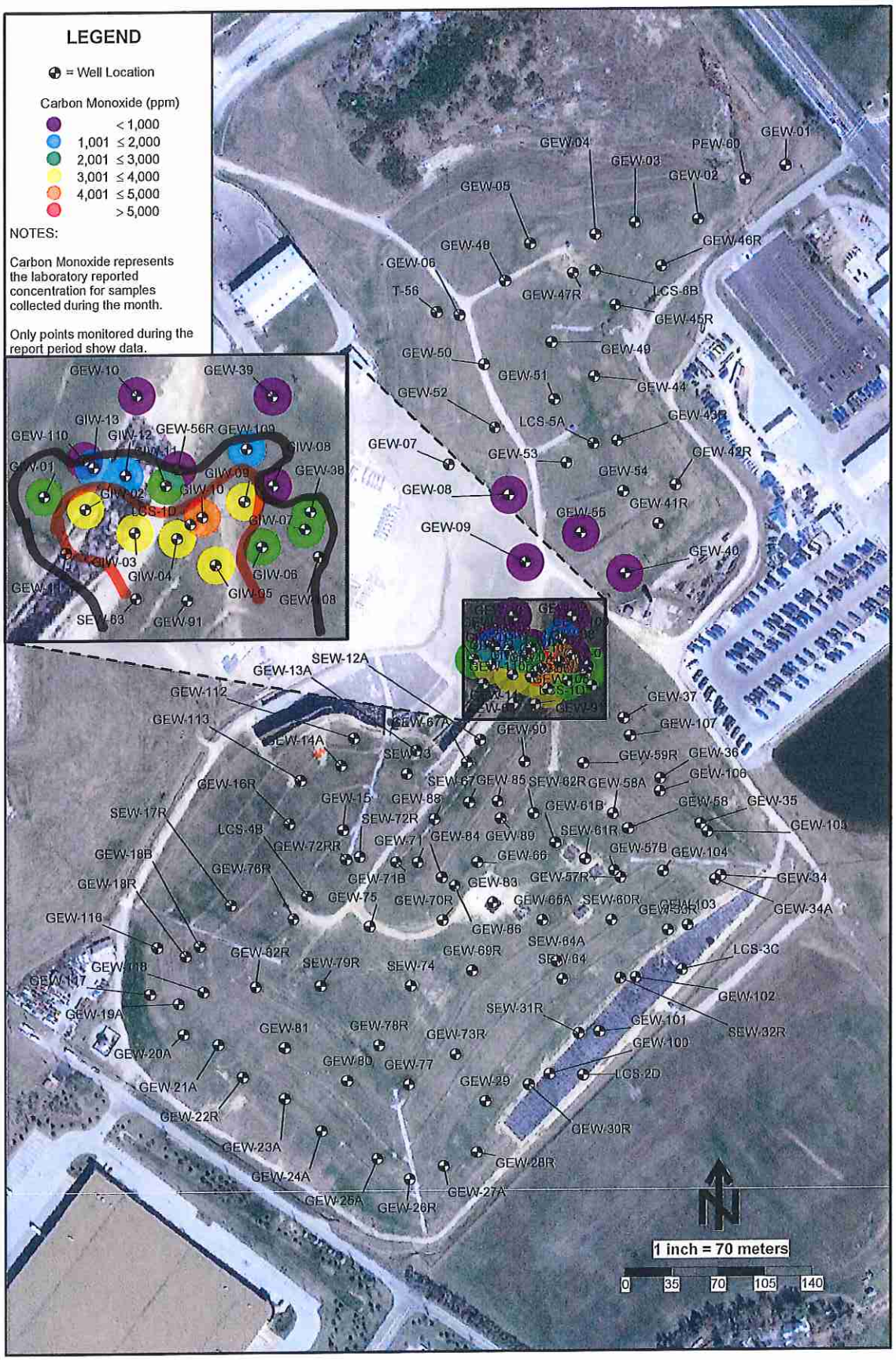
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000172



Carbon Monoxide Data Map - September 2014 - Bridgeton Landfill

SCS ENGINEERS

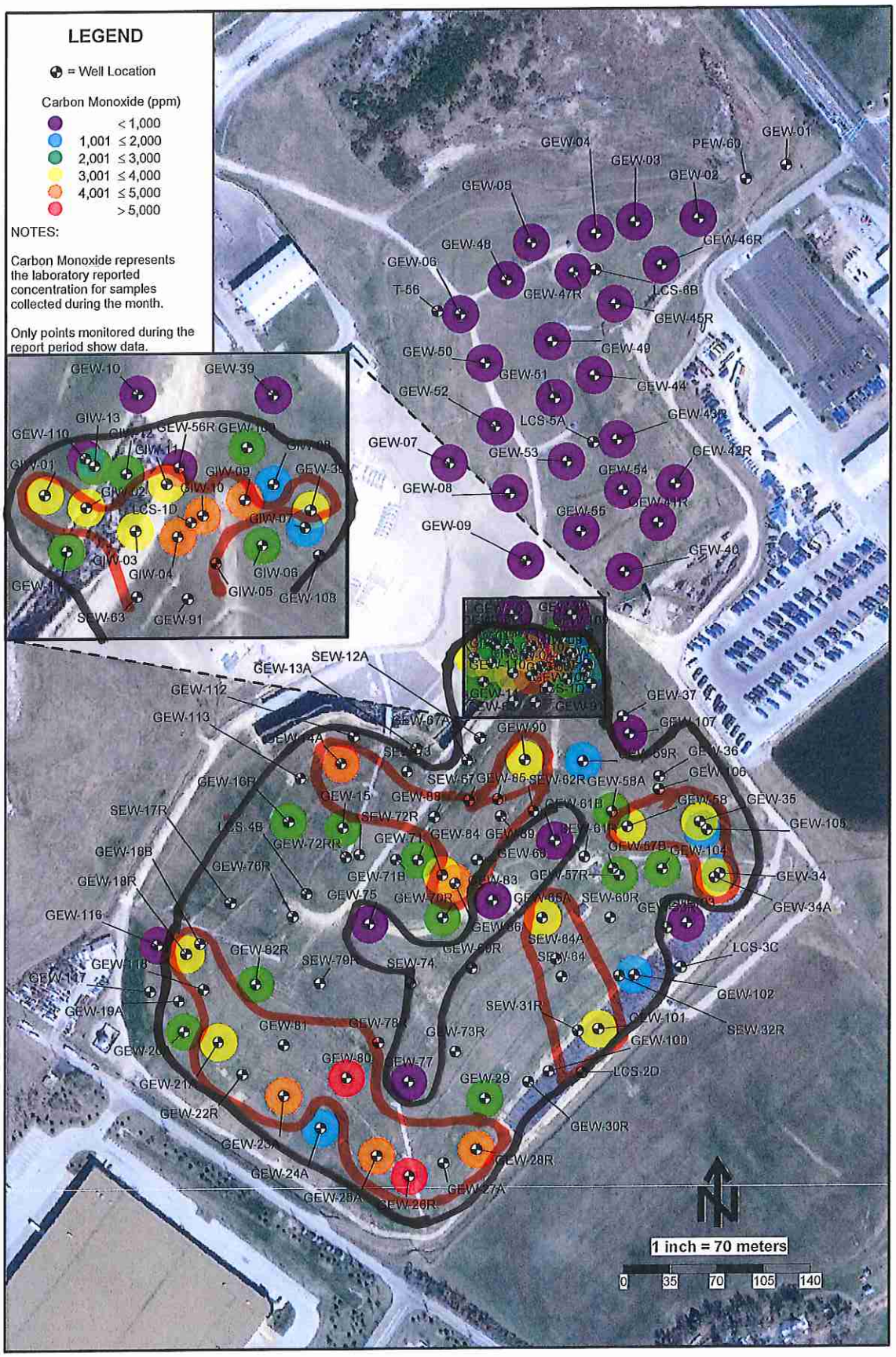
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000173



Carbon Monoxide Data Map - October 2014 - Bridgeton Landfill

SCS ENGINEERS

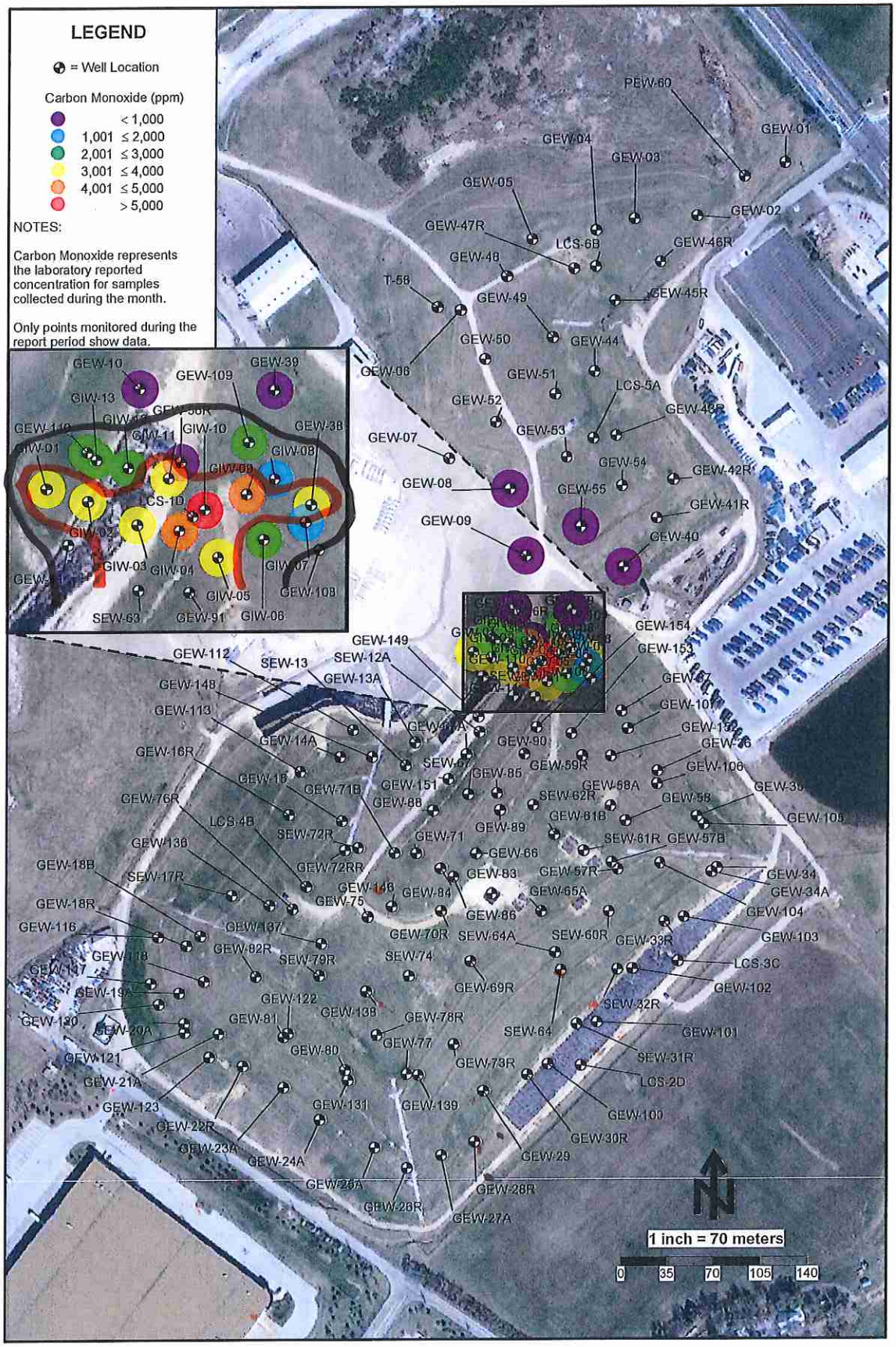
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000174



Carbon Monoxide Data Map - November 2014 - Bridgeton Landfill

SCS ENGINEERS

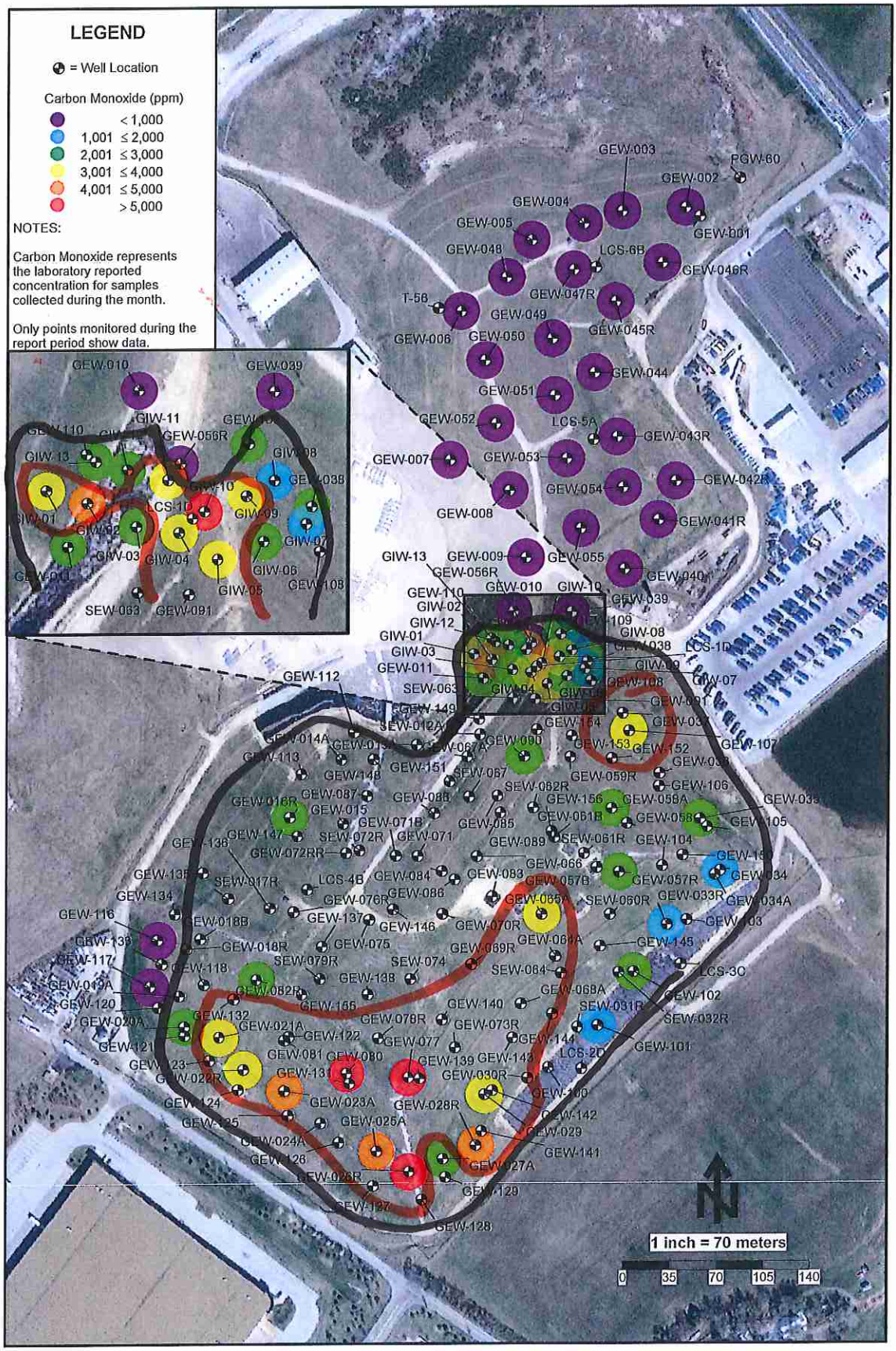
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000175



Carbon Monoxide Data Map - December 2014 - Bridgeton Landfill

SCS ENGINEERS

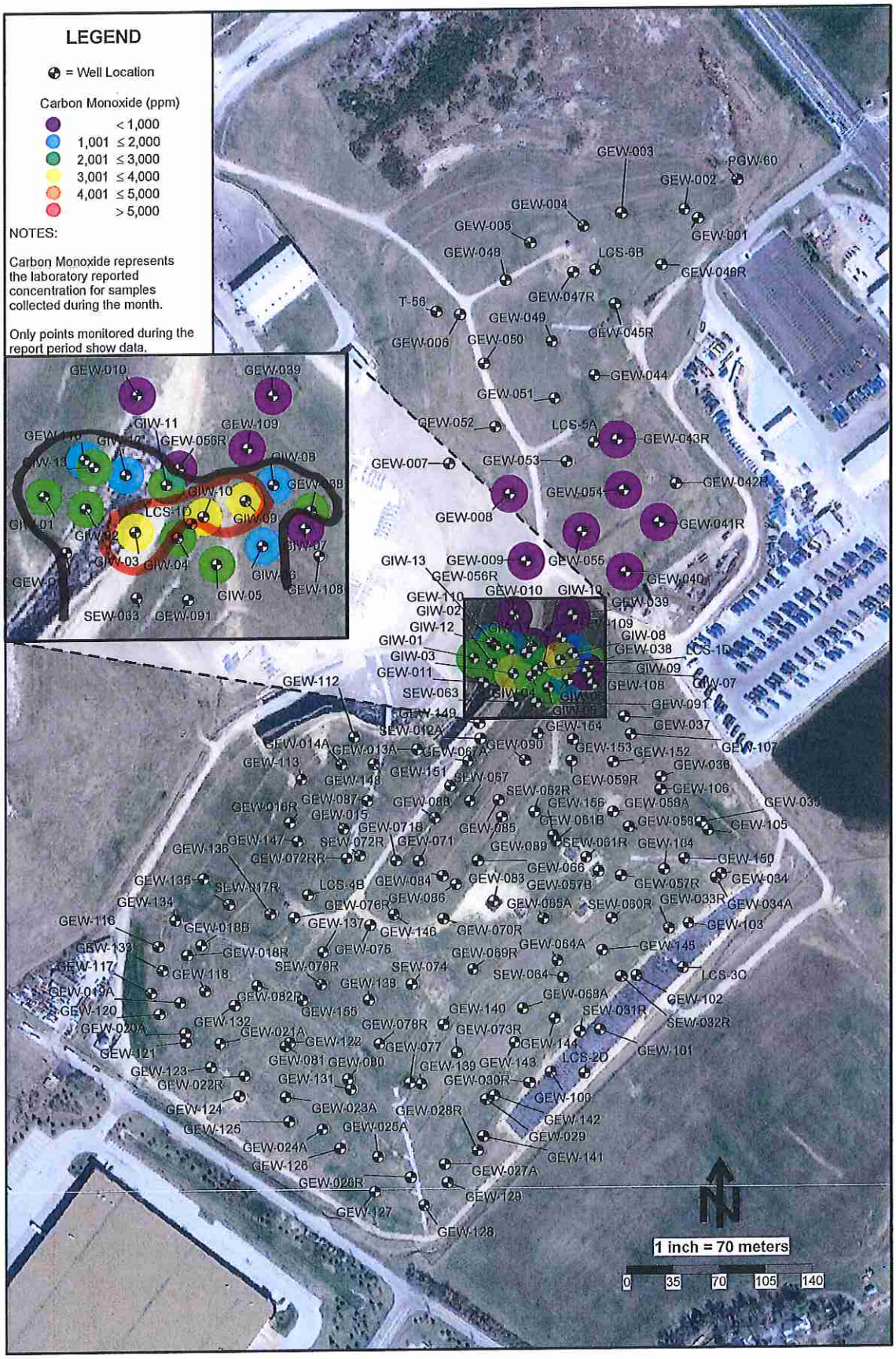
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000176



Carbon Monoxide Data Map - January 2015 - Bridgeton Landfill

SCS ENGINEERS

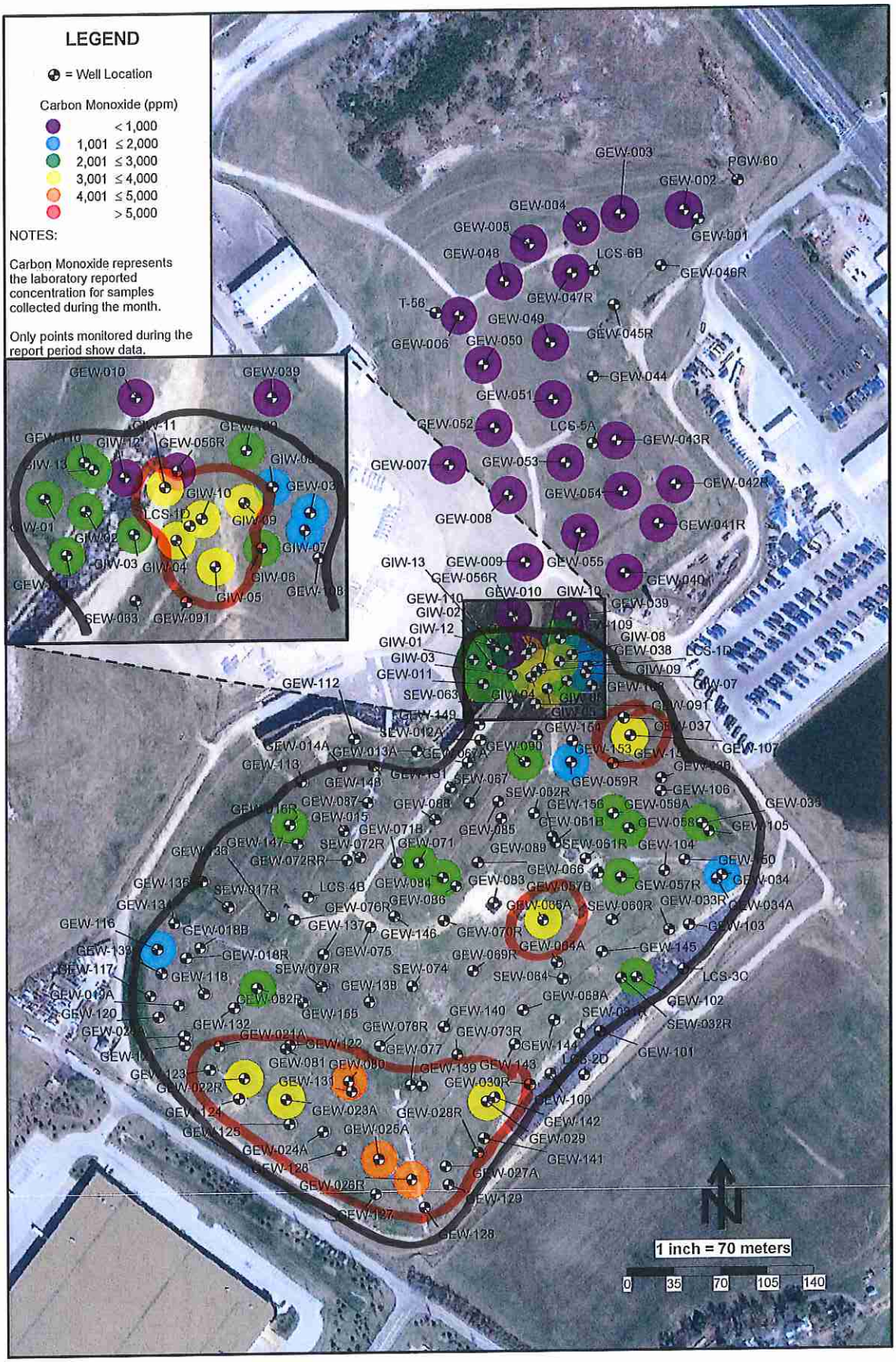
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000177



Carbon Monoxide Data Map - February 2015 - Bridgeton Landfill

SCS ENGINEERS

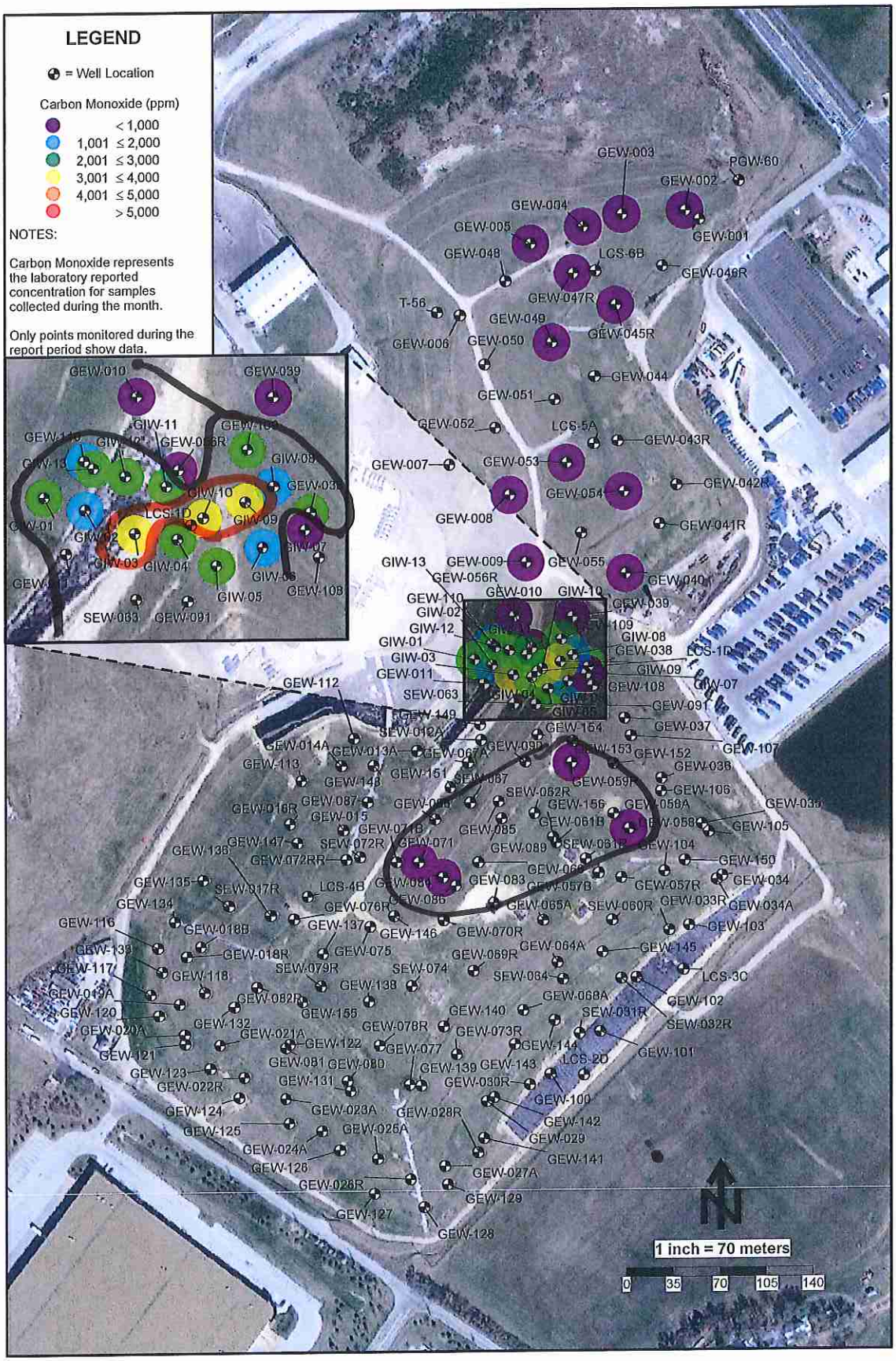
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000178



Carbon Monoxide Data Map - March 2015 - Bridgeton Landfill

SCS ENGINEERS

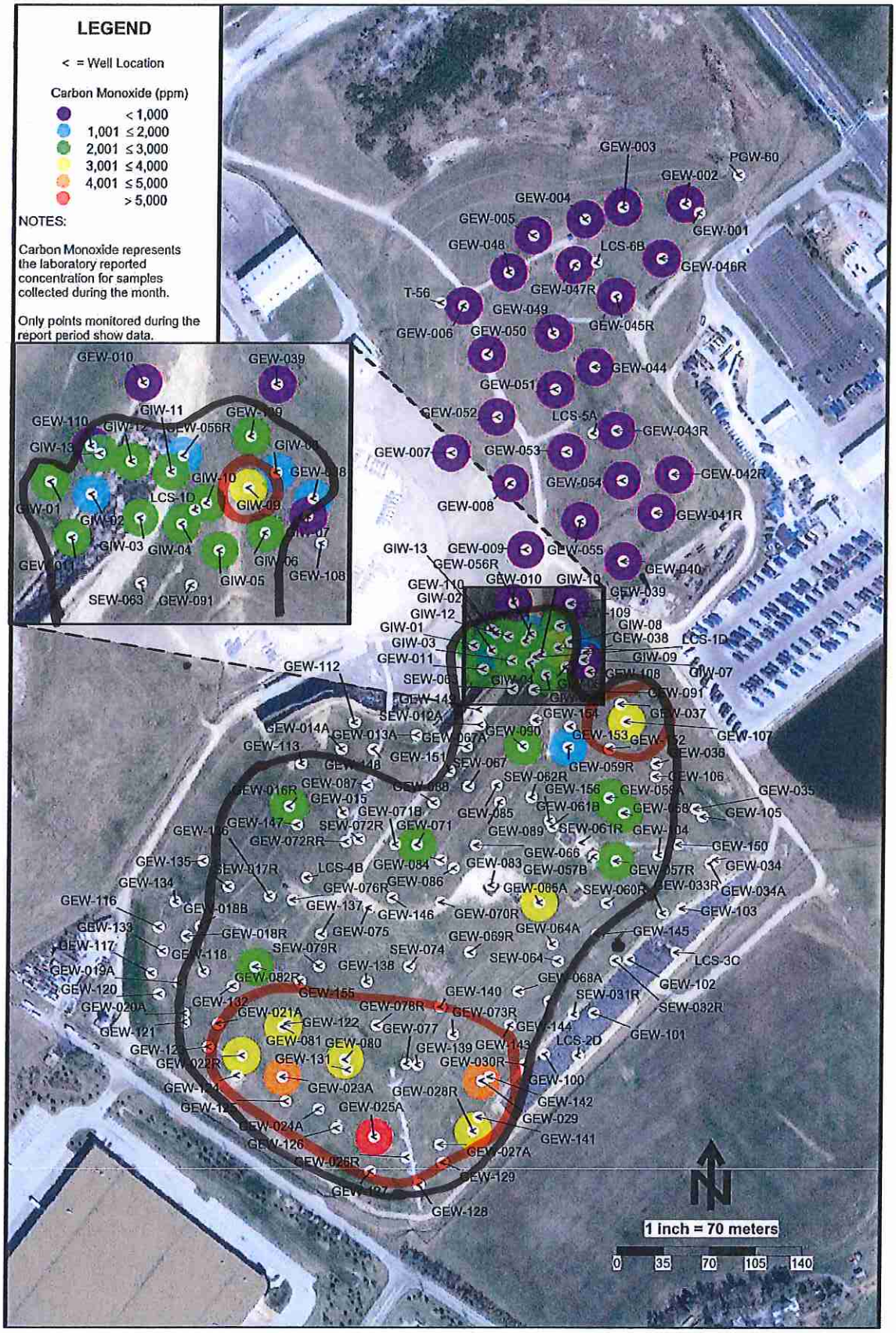
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000179



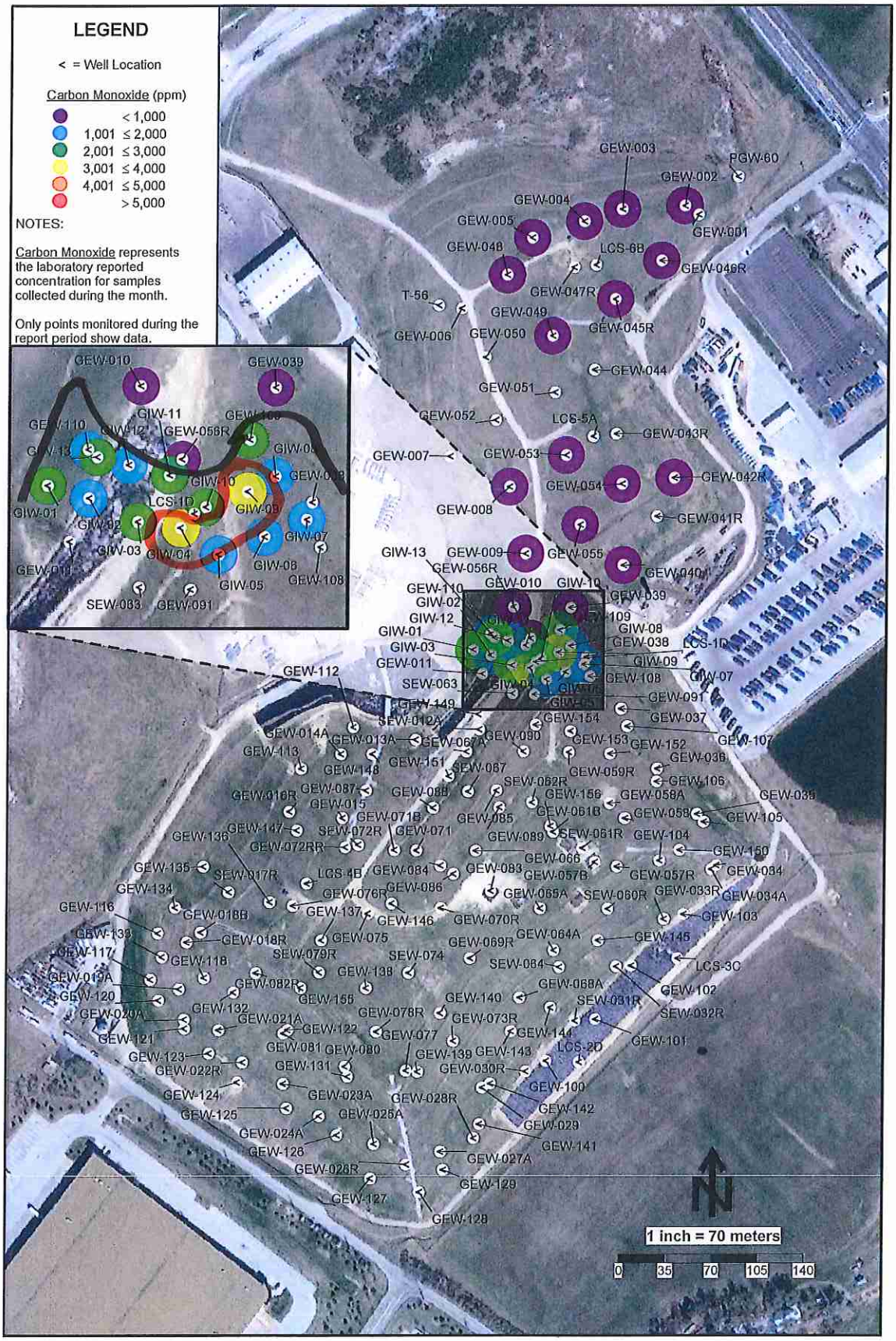
Carbon Monoxide Data Map - April 2015 - Bridgeton Landfill

SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000180



Carbon Monoxide Data Map - May 2015 - Bridgeton Landfill



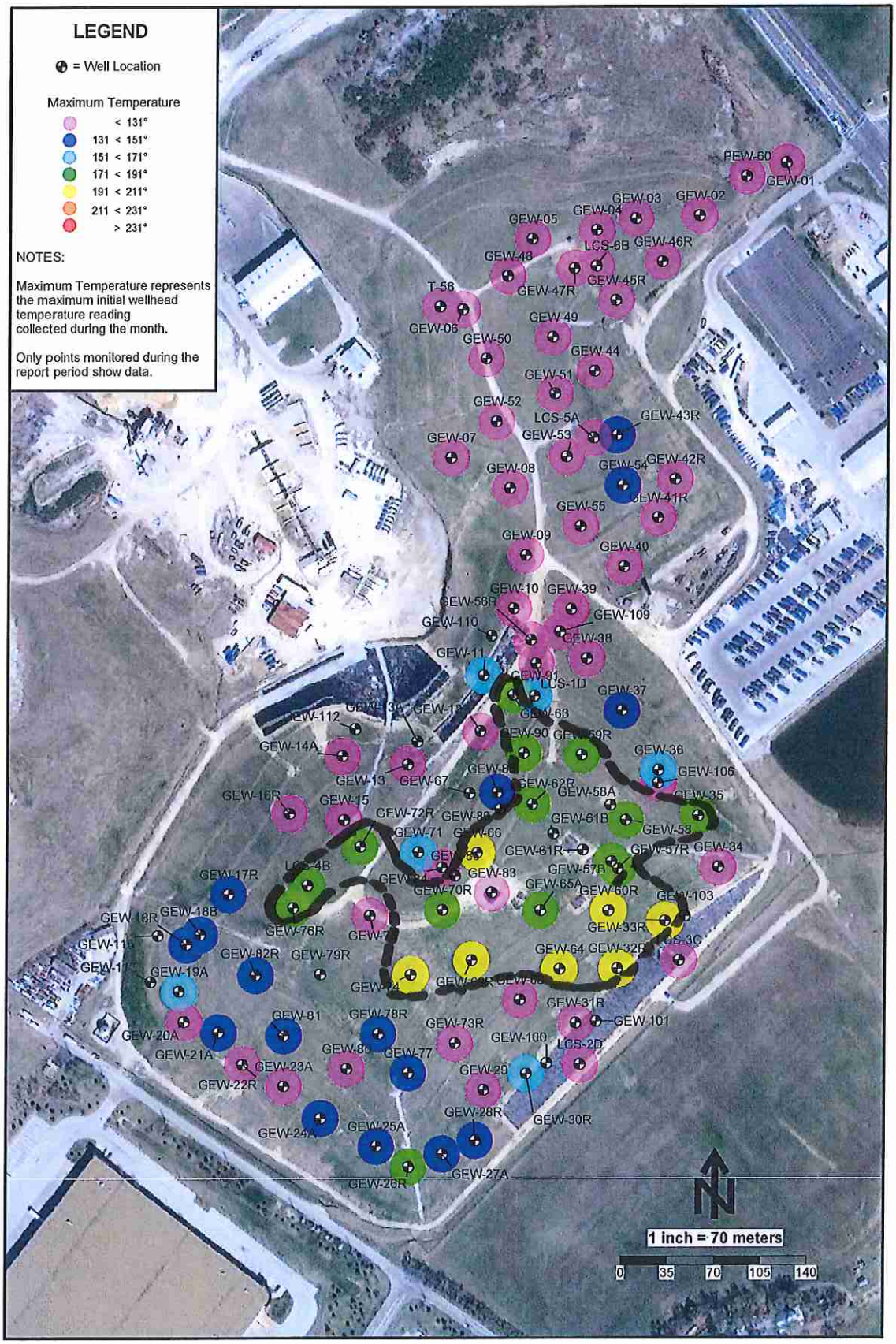
Carbon Monoxide Data Map - June 2015 - Bridgeton Landfill

REPUBLIC SERVICES

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000182

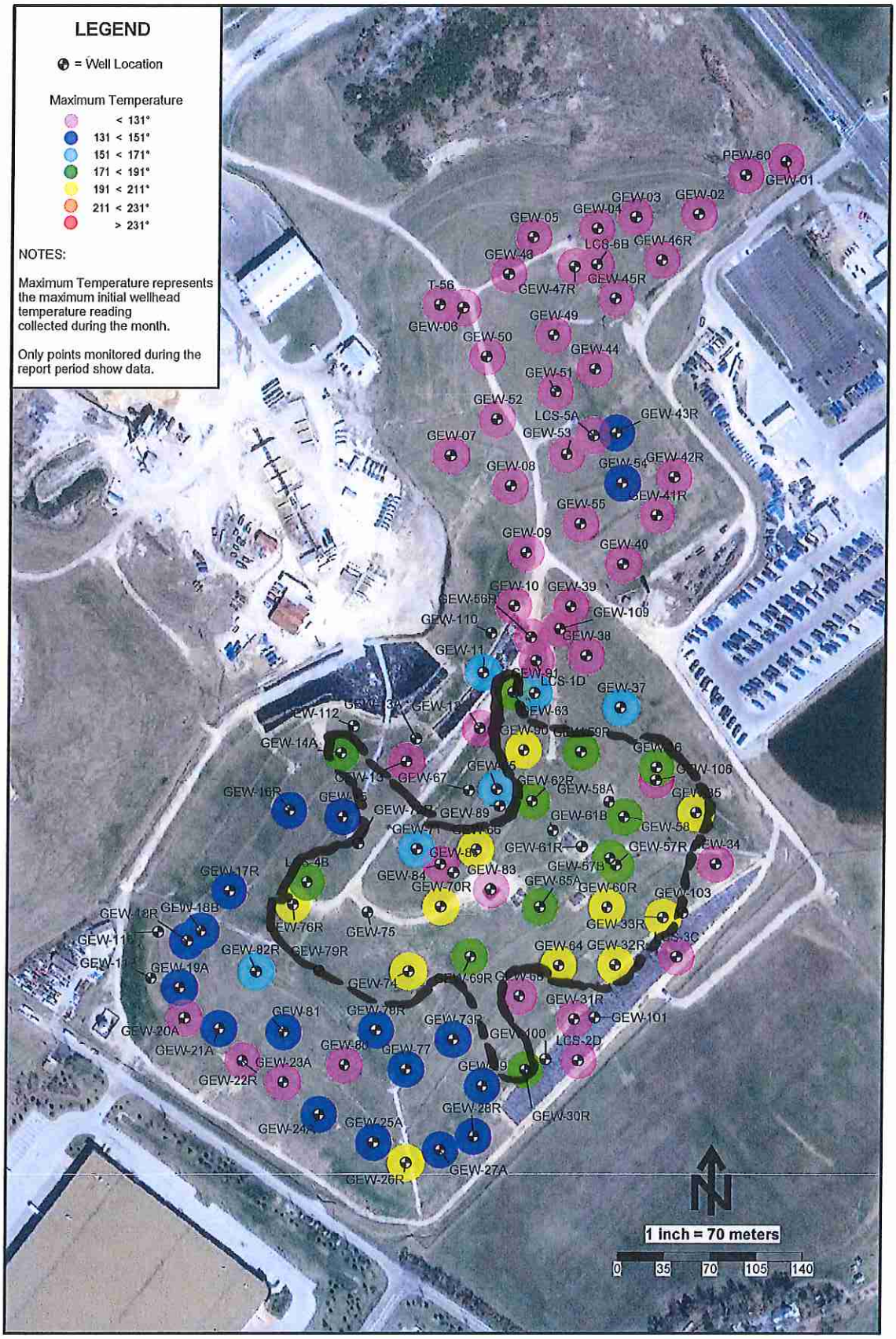
APPENDIX C

TEMPERATURE MAPS



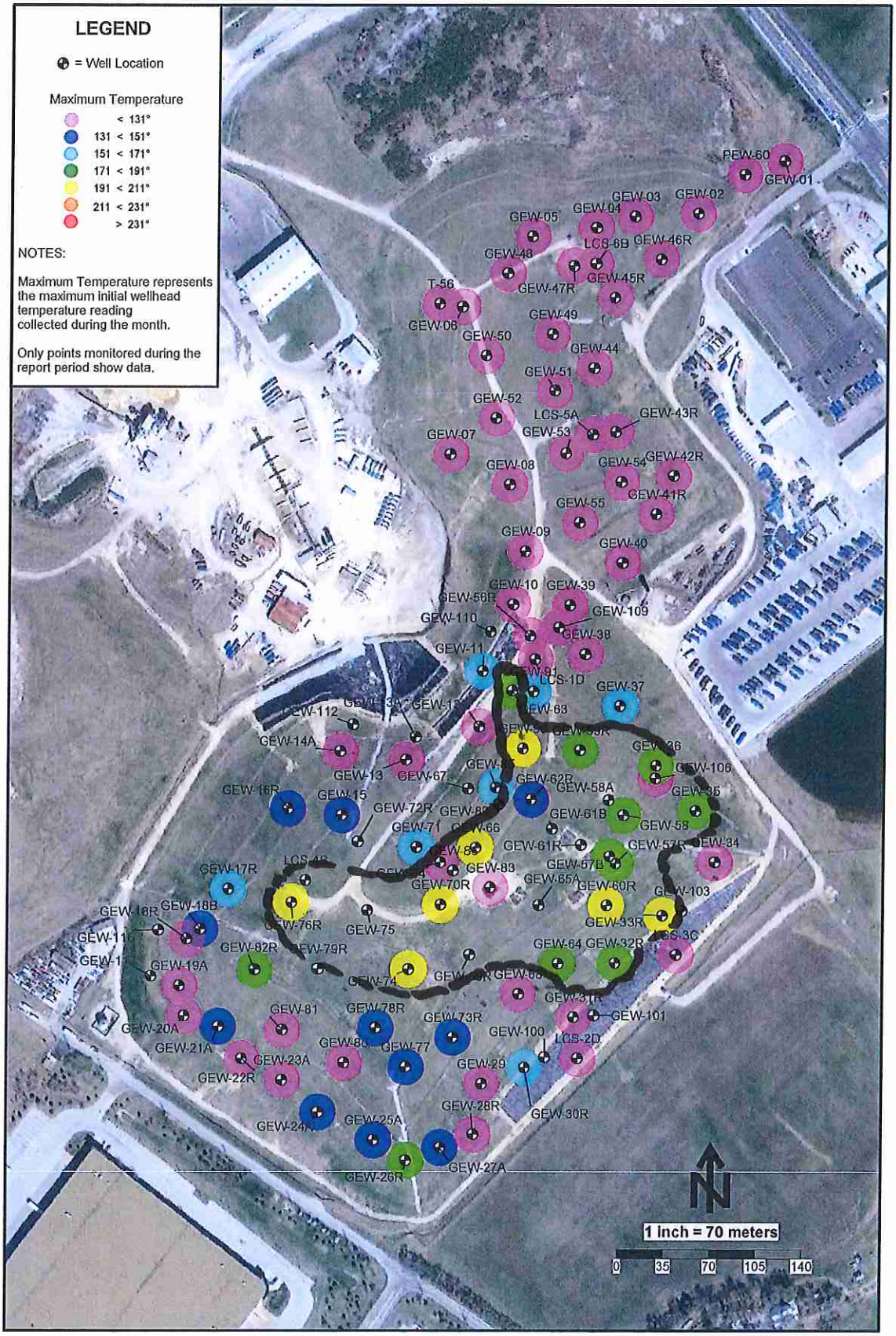
Initial Temperature Maximums - January 2013 - Bridgeton Landfill

SCS ENGINEERS



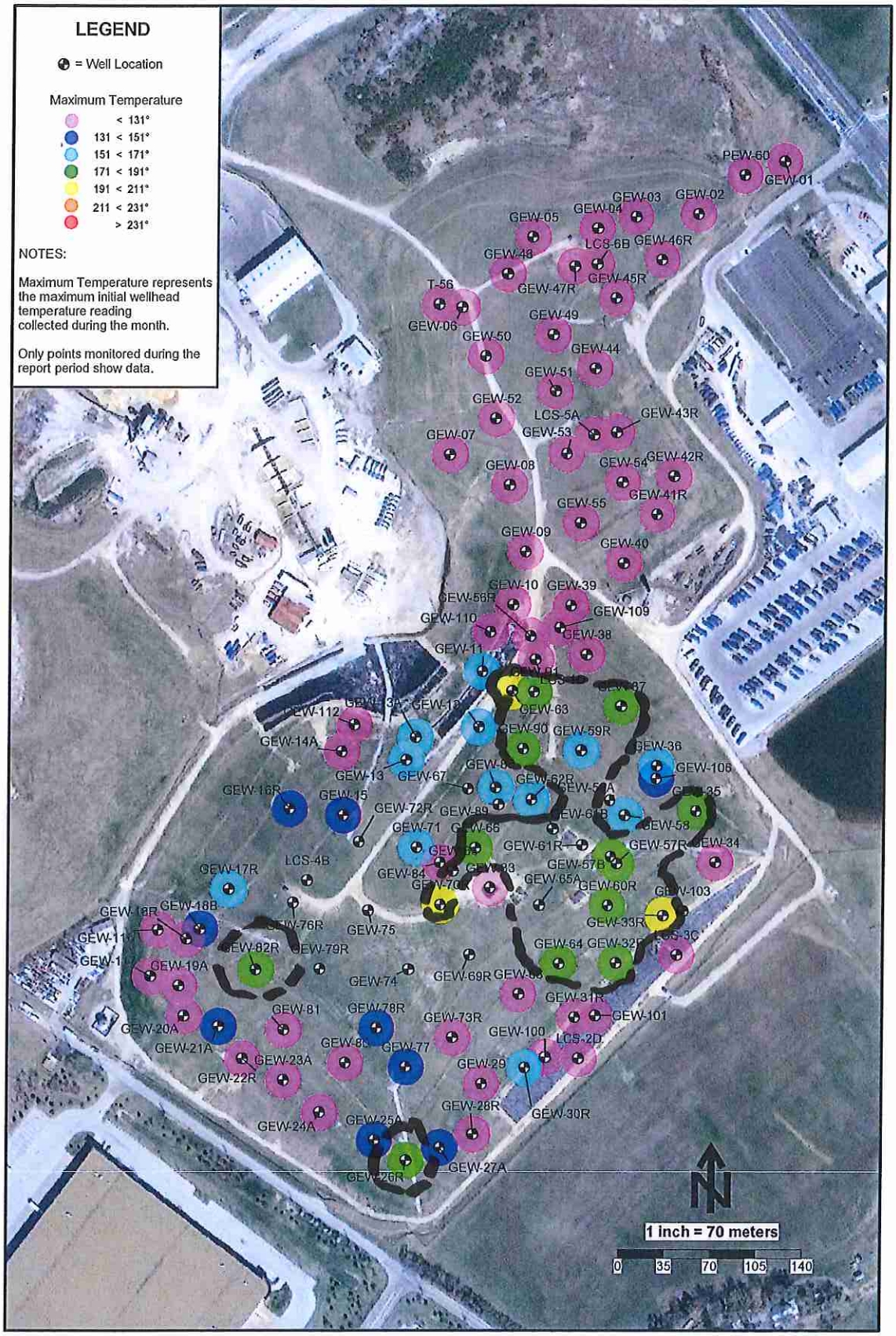
Initial Temperature Maximums - February 2013 - Bridgeton Landfill

SCS ENGINEERS



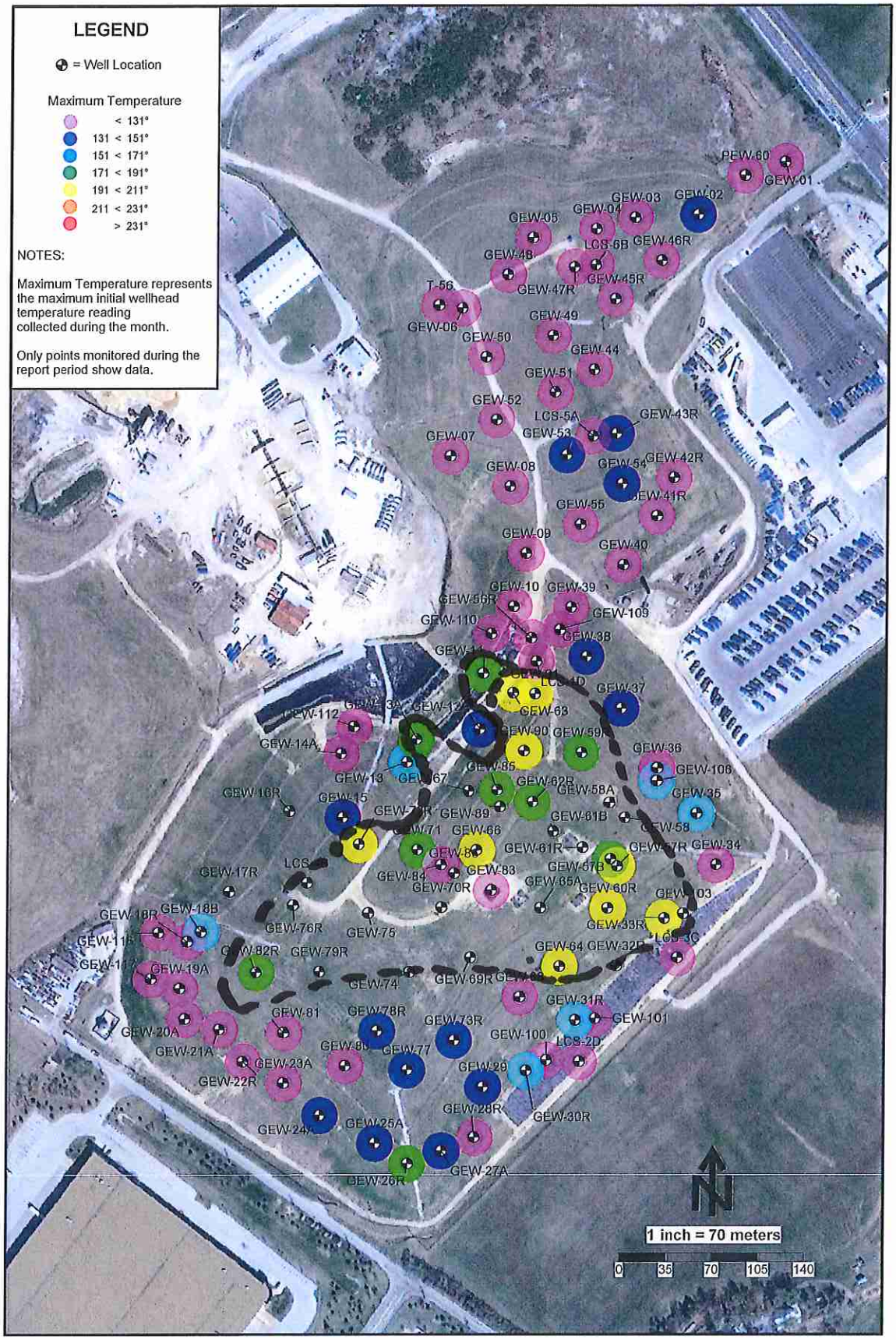
Initial Temperature Maximums - March 2013 - Bridgeton Landfill

SCS ENGINEERS



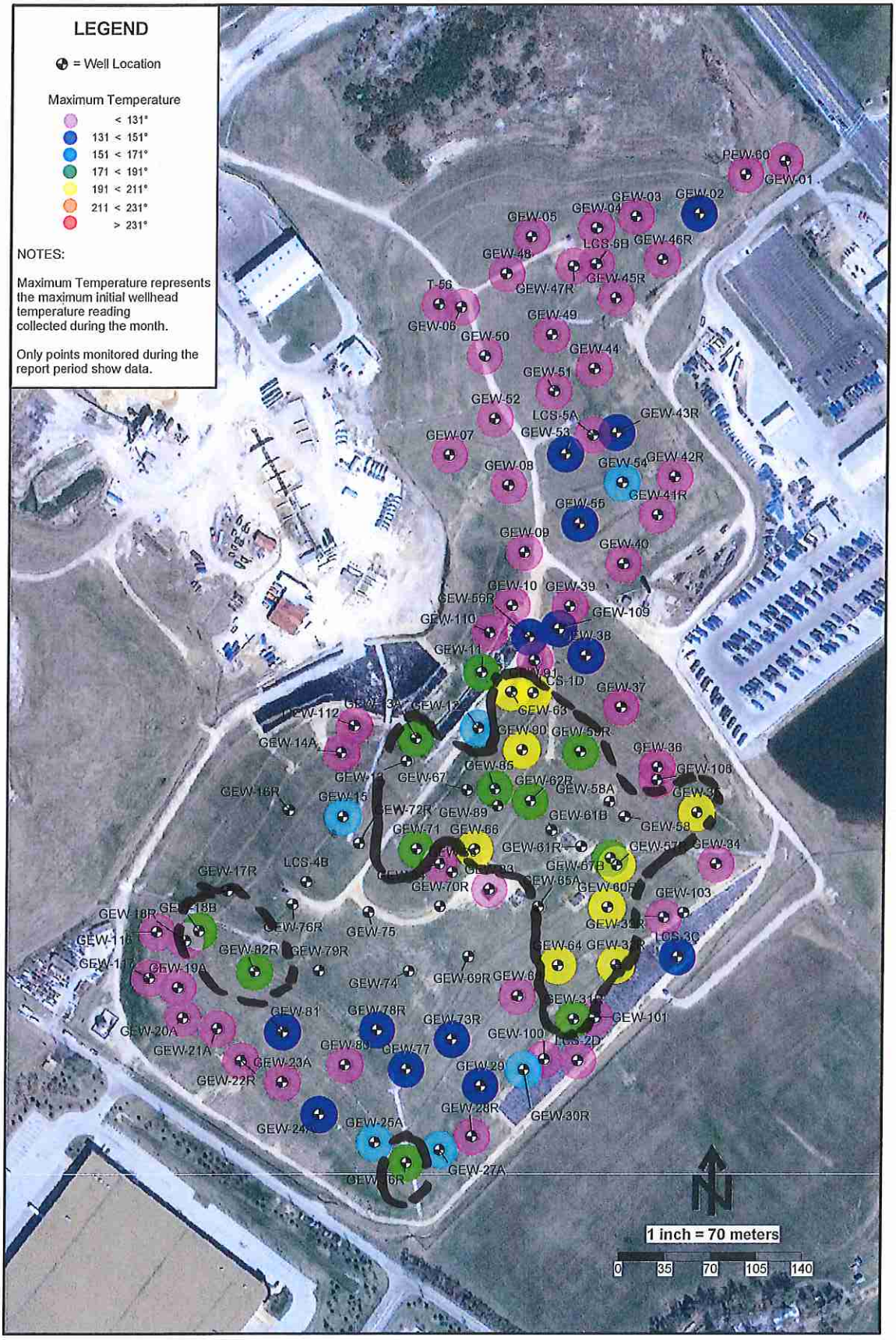
Initial Temperature Maximums - April 2013 - Bridgeton Landfill

SCS ENGINEERS



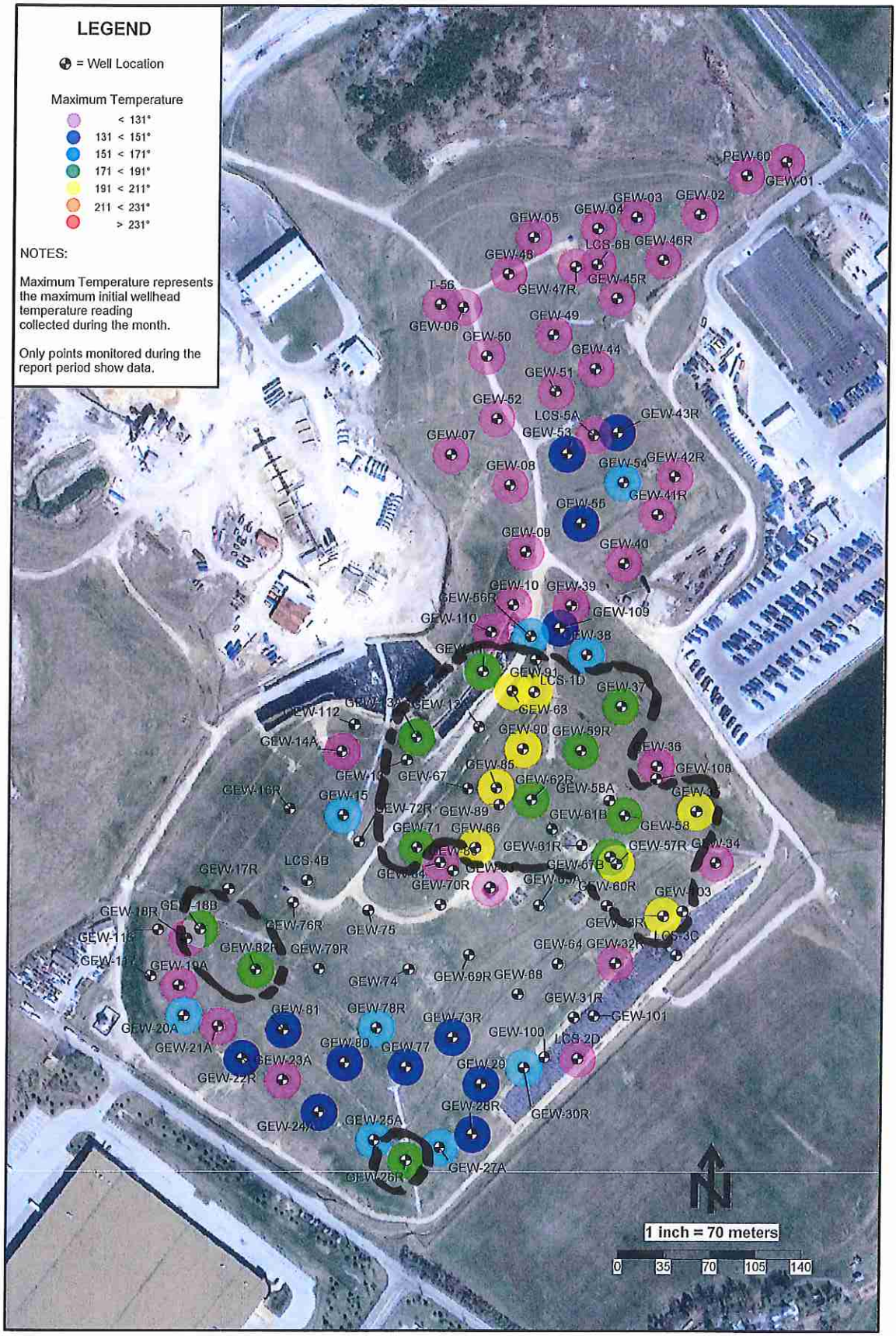
Initial Temperature Maximums - May 2013 - Bridgeton Landfill

SCS ENGINEERS



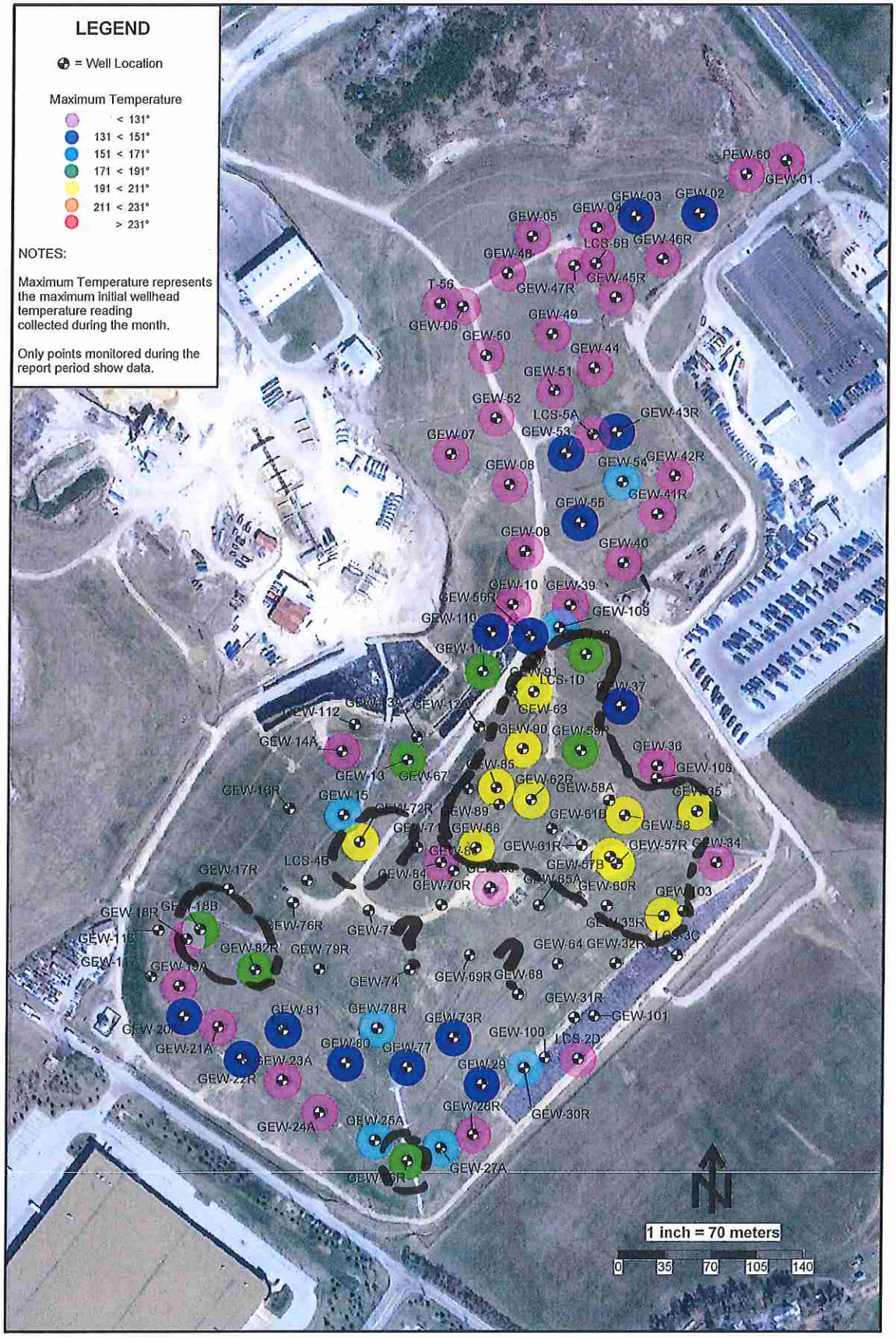
Initial Temperature Maximums - June 2013 - Bridgeton Landfill

SCS ENGINEERS



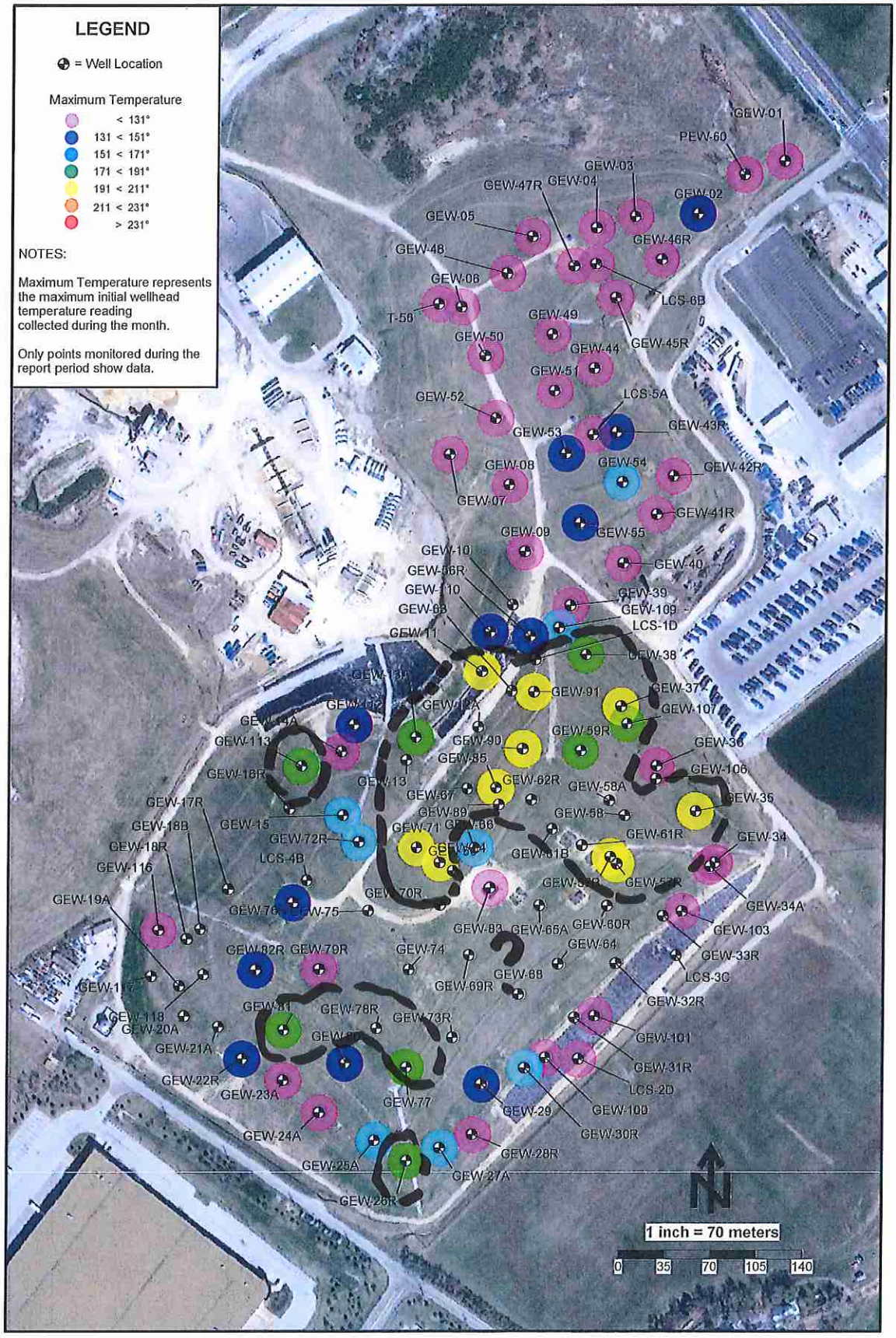
Initial Temperature Maximums - July 2013 - Bridgeton Landfill

SCS ENGINEERS



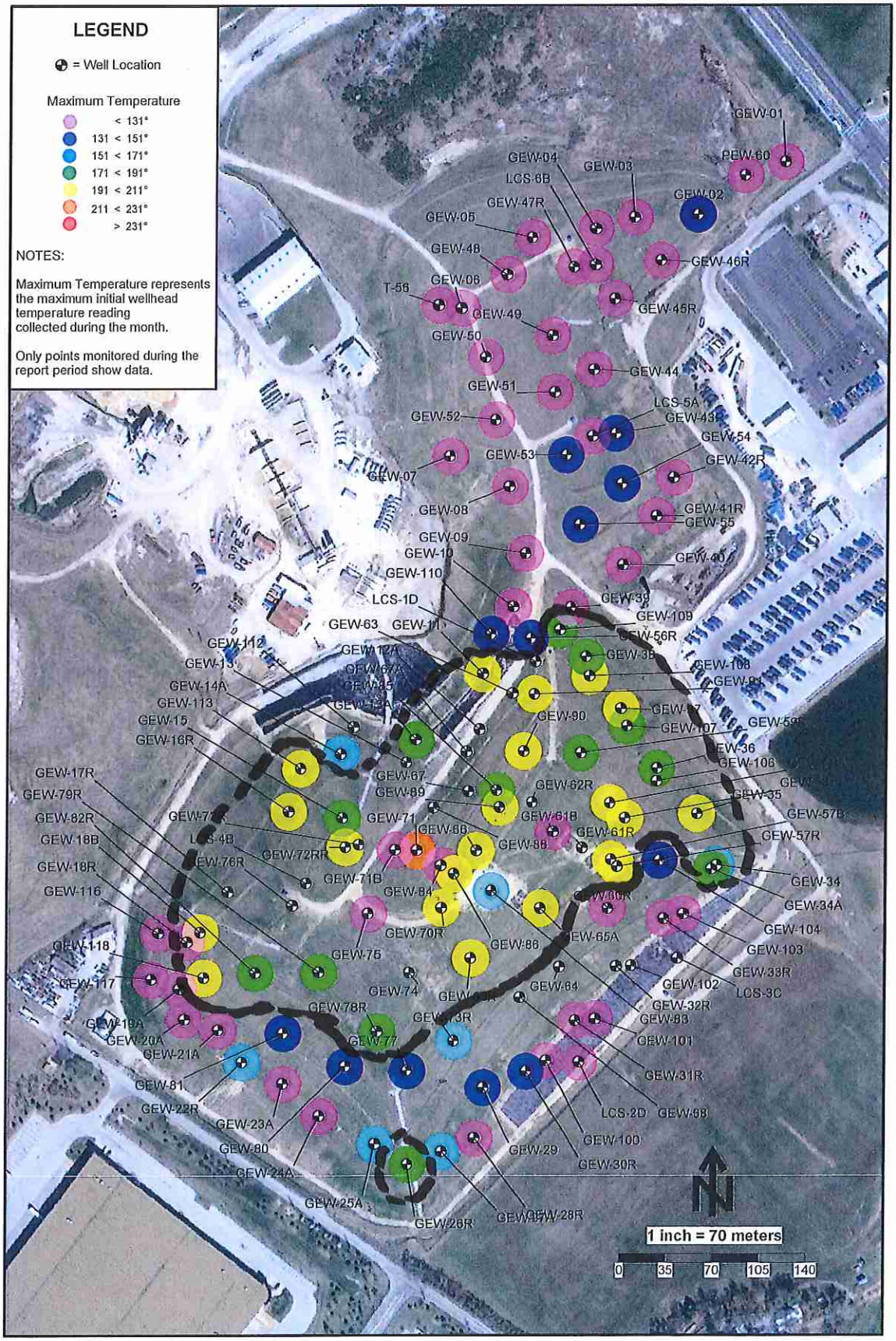
Initial Temperature Maximums - August 2013 - Bridgeton Landfill

SCS ENGINEERS



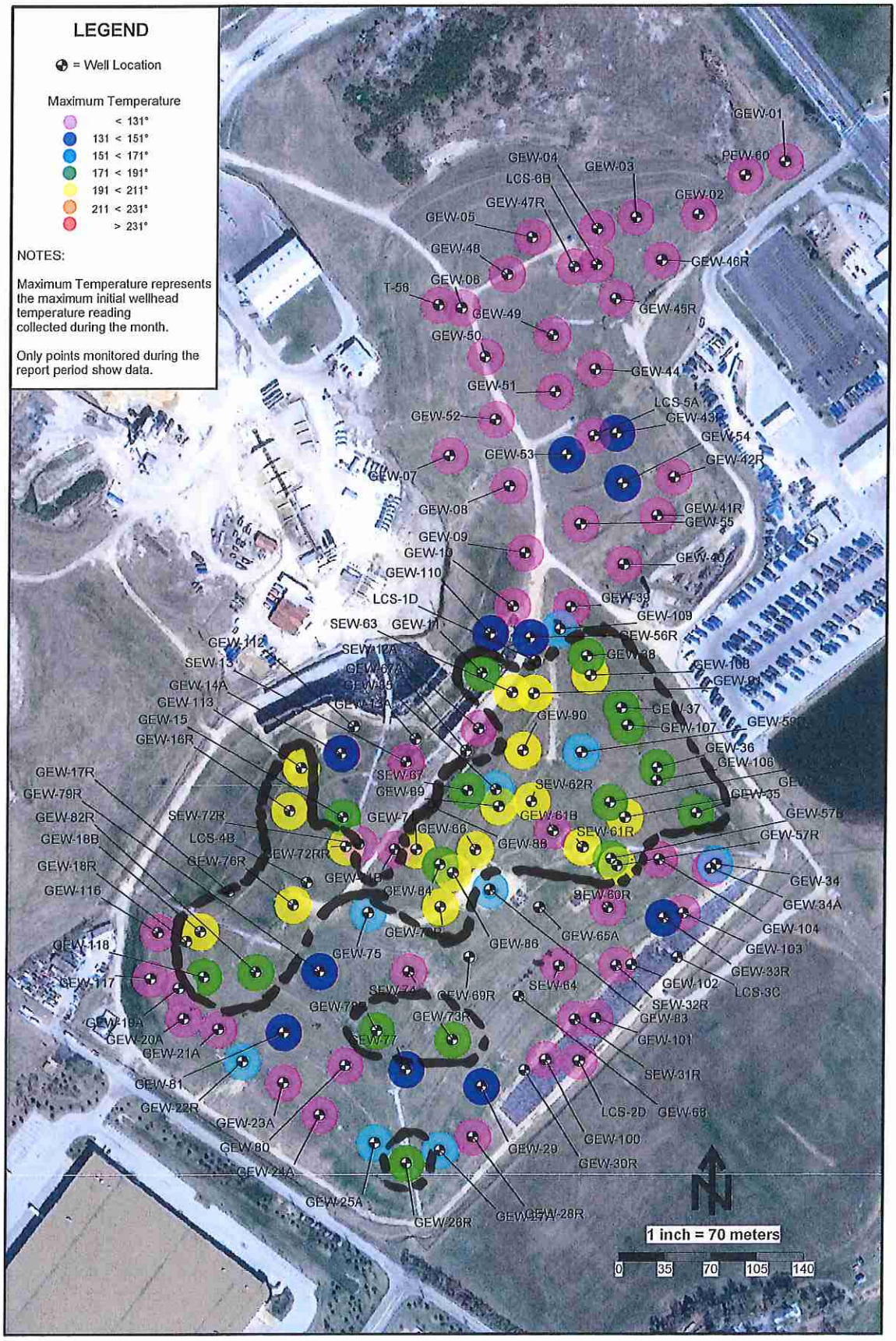
Initial Temperature Maximums - September 2013 - Bridgeton Landfill

SCS ENGINEERS



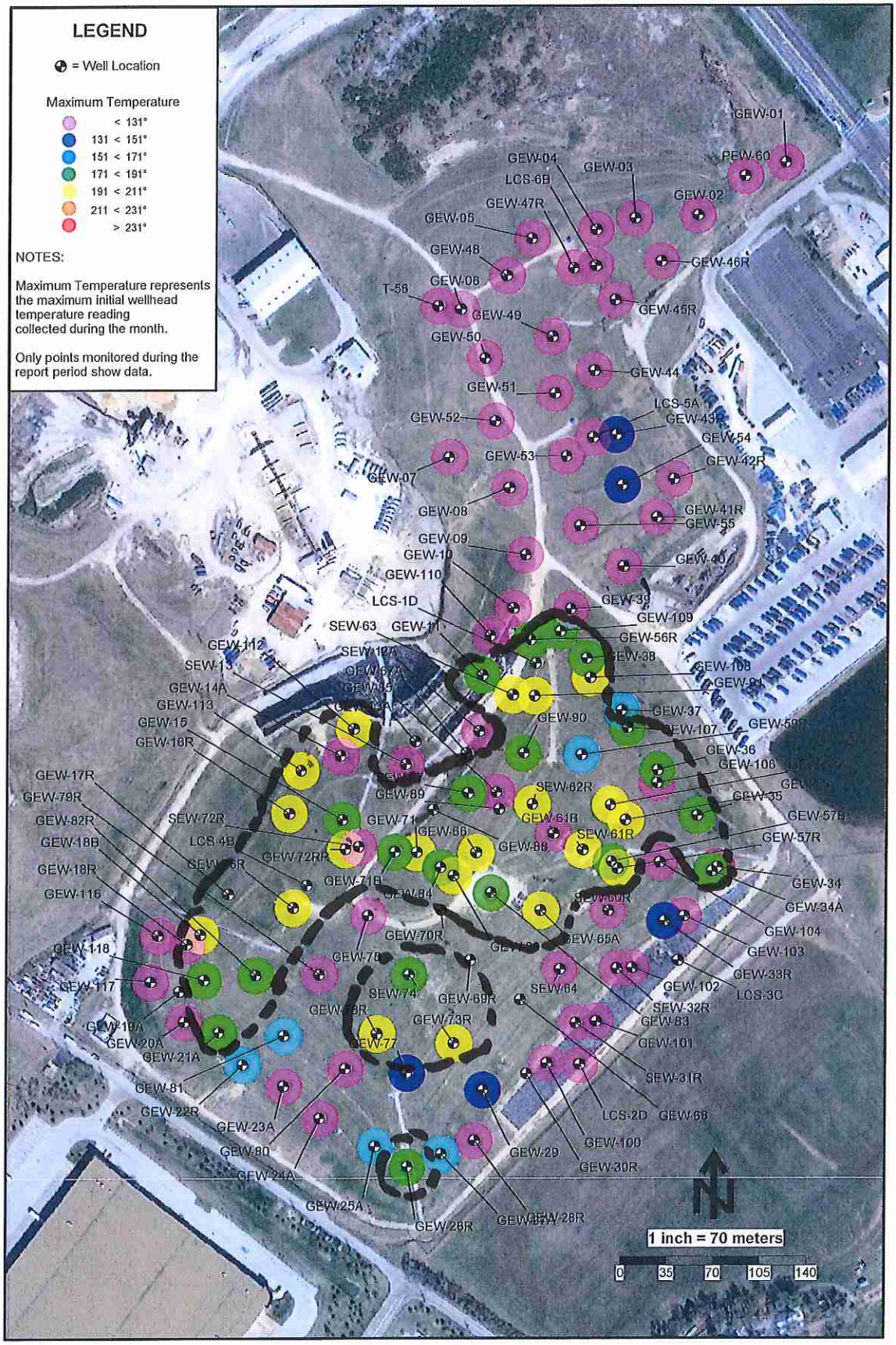
Initial Temperature Maximums - October 2013 - Bridgeton Landfill

SCS ENGINEERS



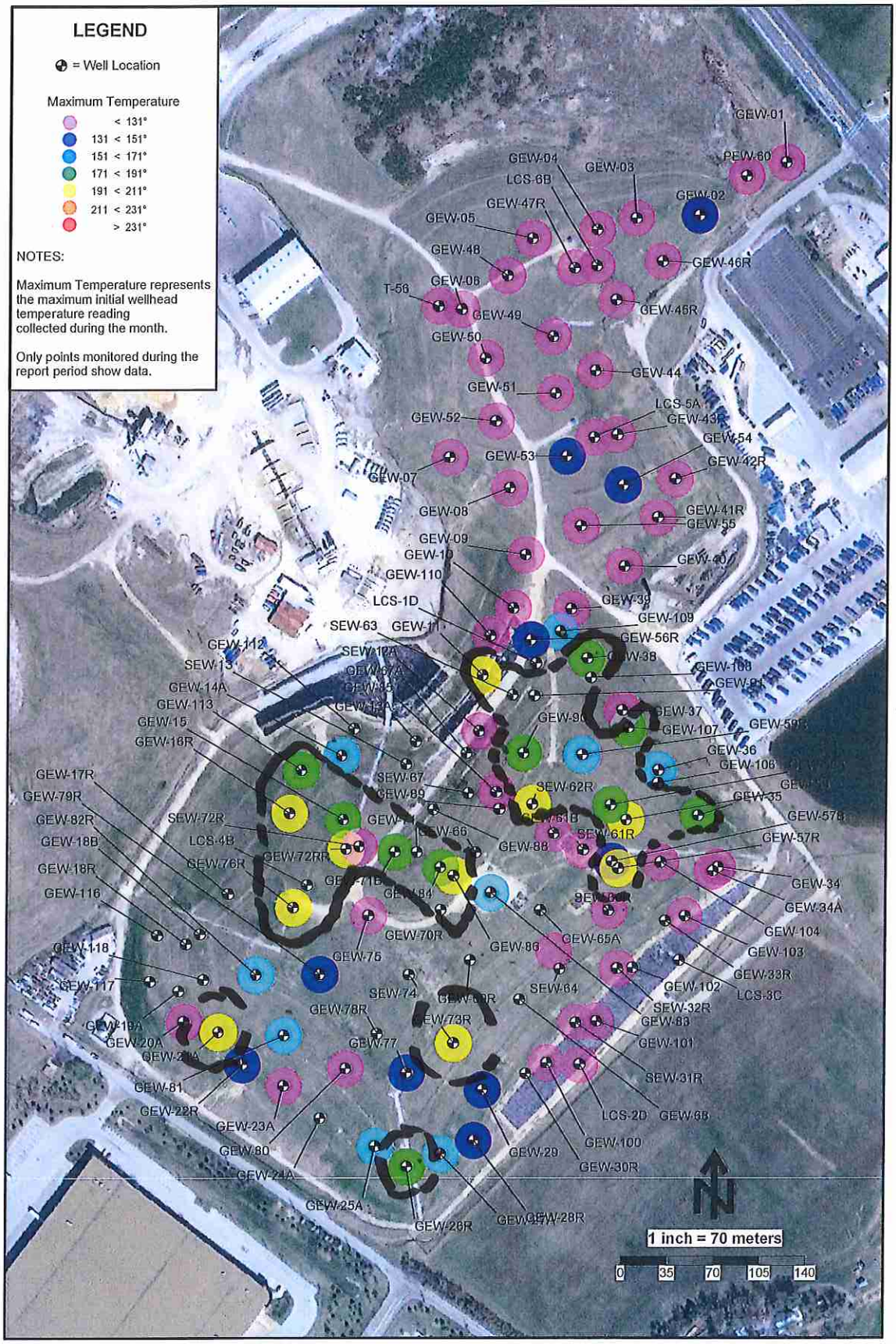
Initial Temperature Maximums - November 2013 - Bridgeton Landfill

SCS ENGINEERS



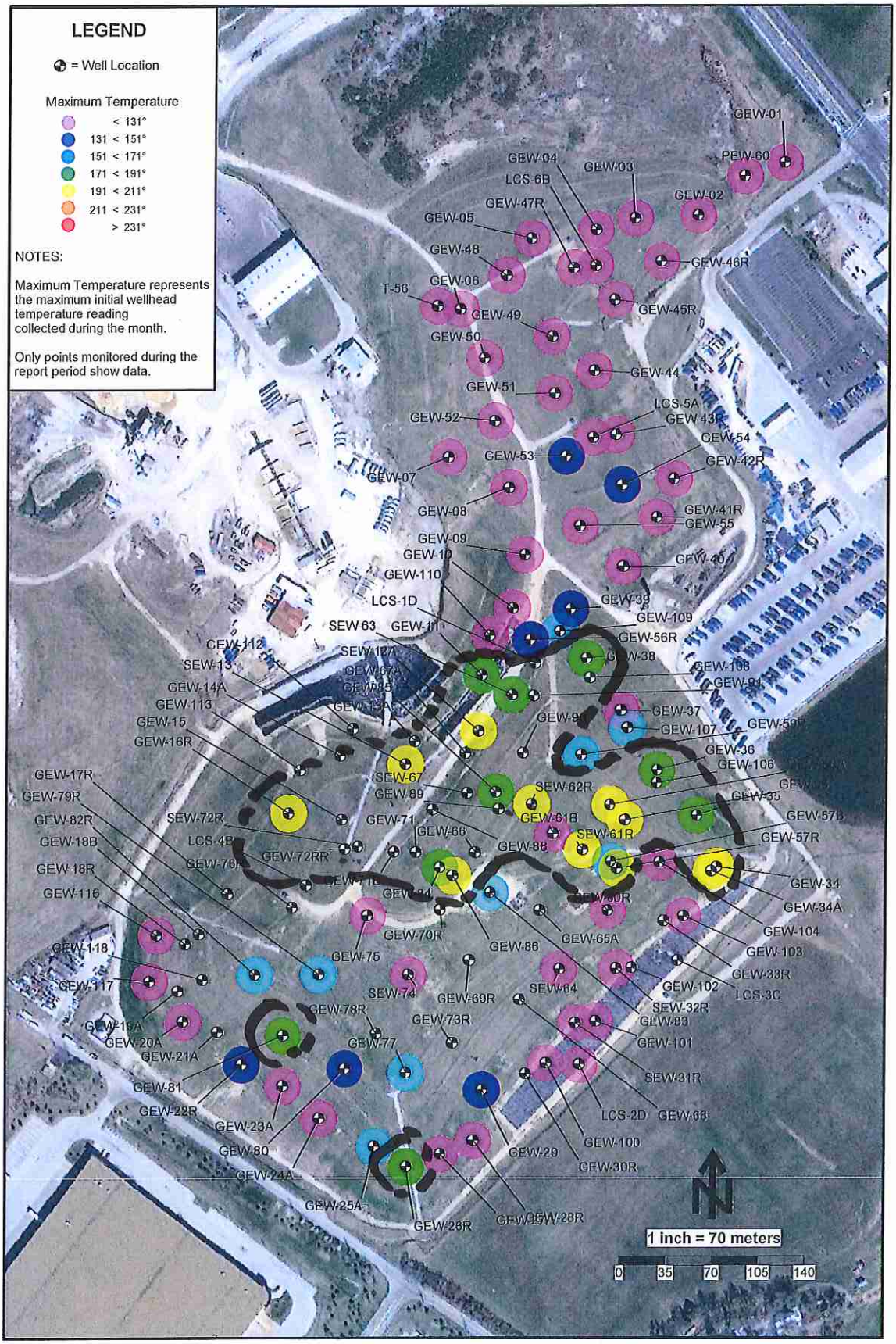
Initial Temperature Maximums - December 2013 - Bridgeton Landfill

SCS ENGINEERS



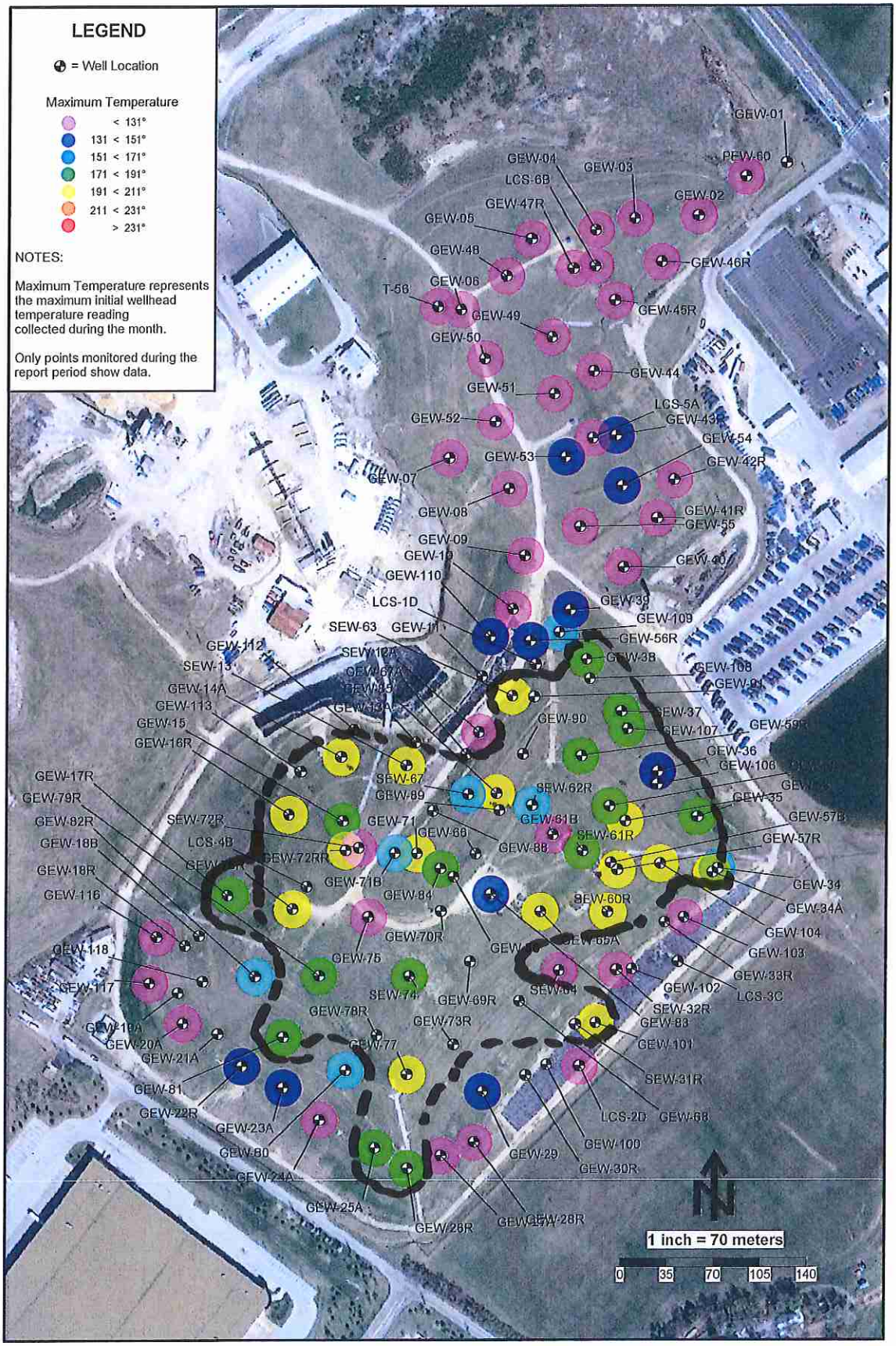
Initial Temperature Maximums - January 2014 - Bridgeton Landfill

SCS ENGINEERS



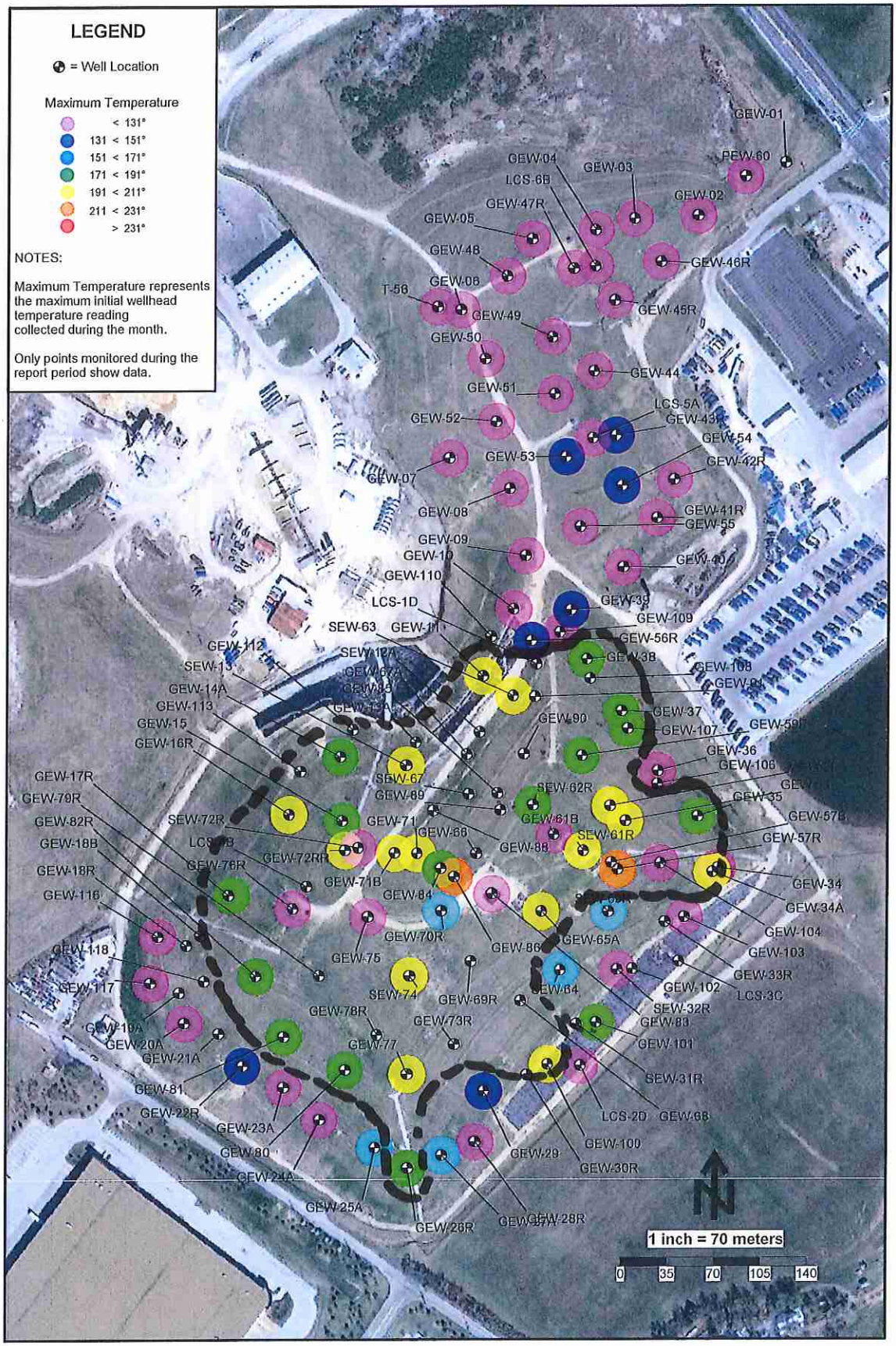
Initial Temperature Maximums - February 2014 - Bridgeton Landfill

SCS ENGINEERS



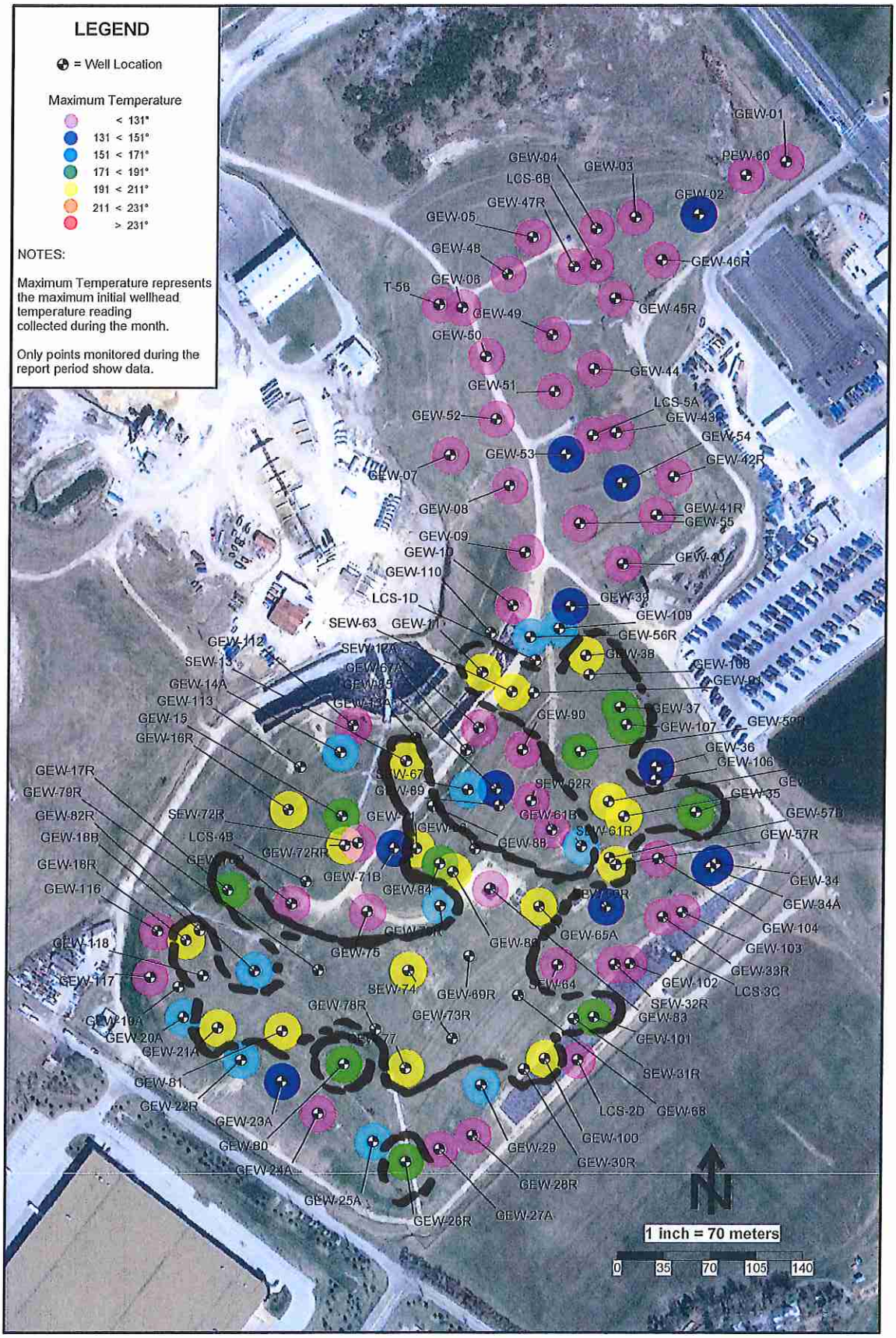
Initial Temperature Maximums - March 2014 - Bridgeton Landfill

SCS ENGINEERS



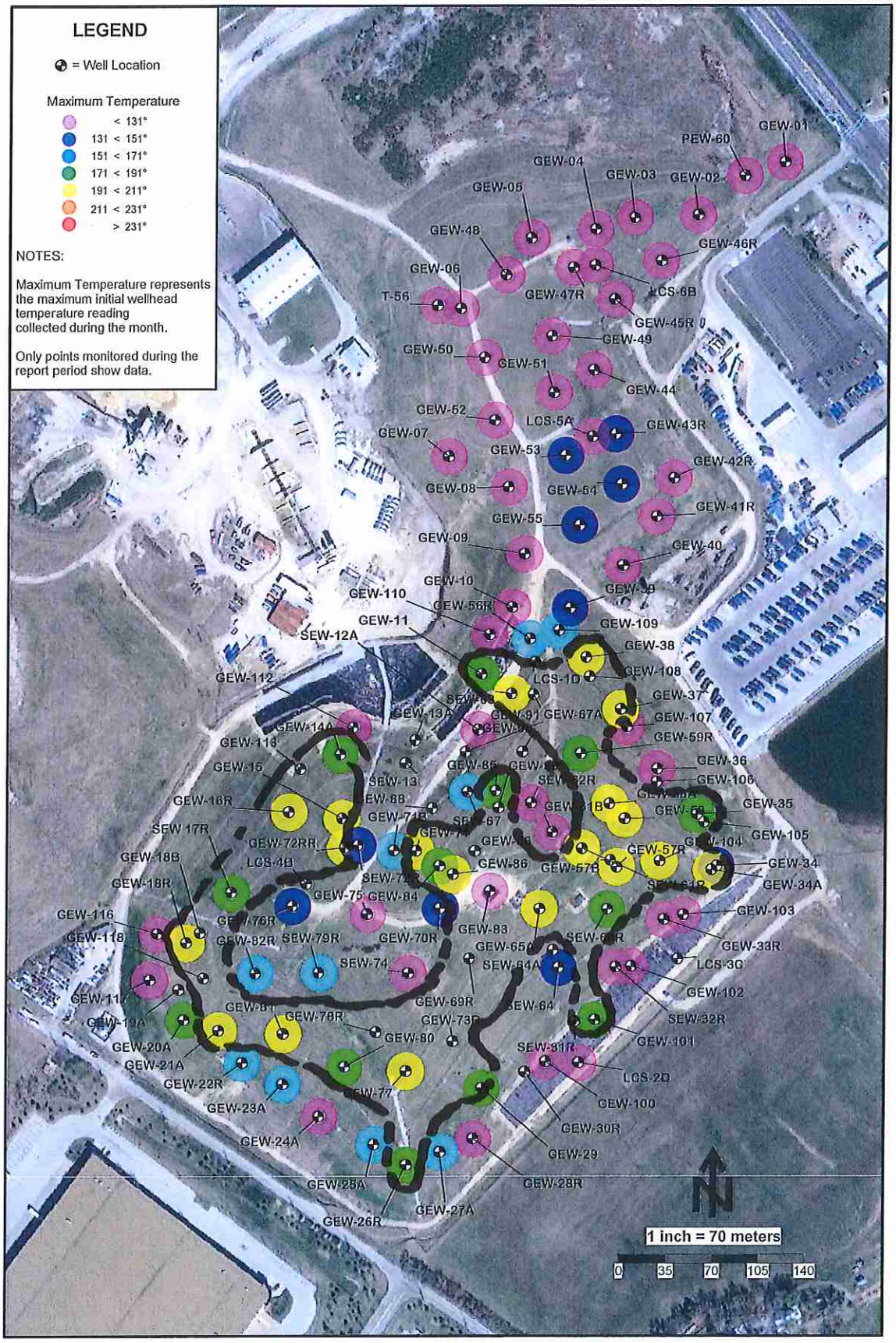
Initial Temperature Maximums - April 2014 - Bridgeton Landfill

SCS ENGINEERS



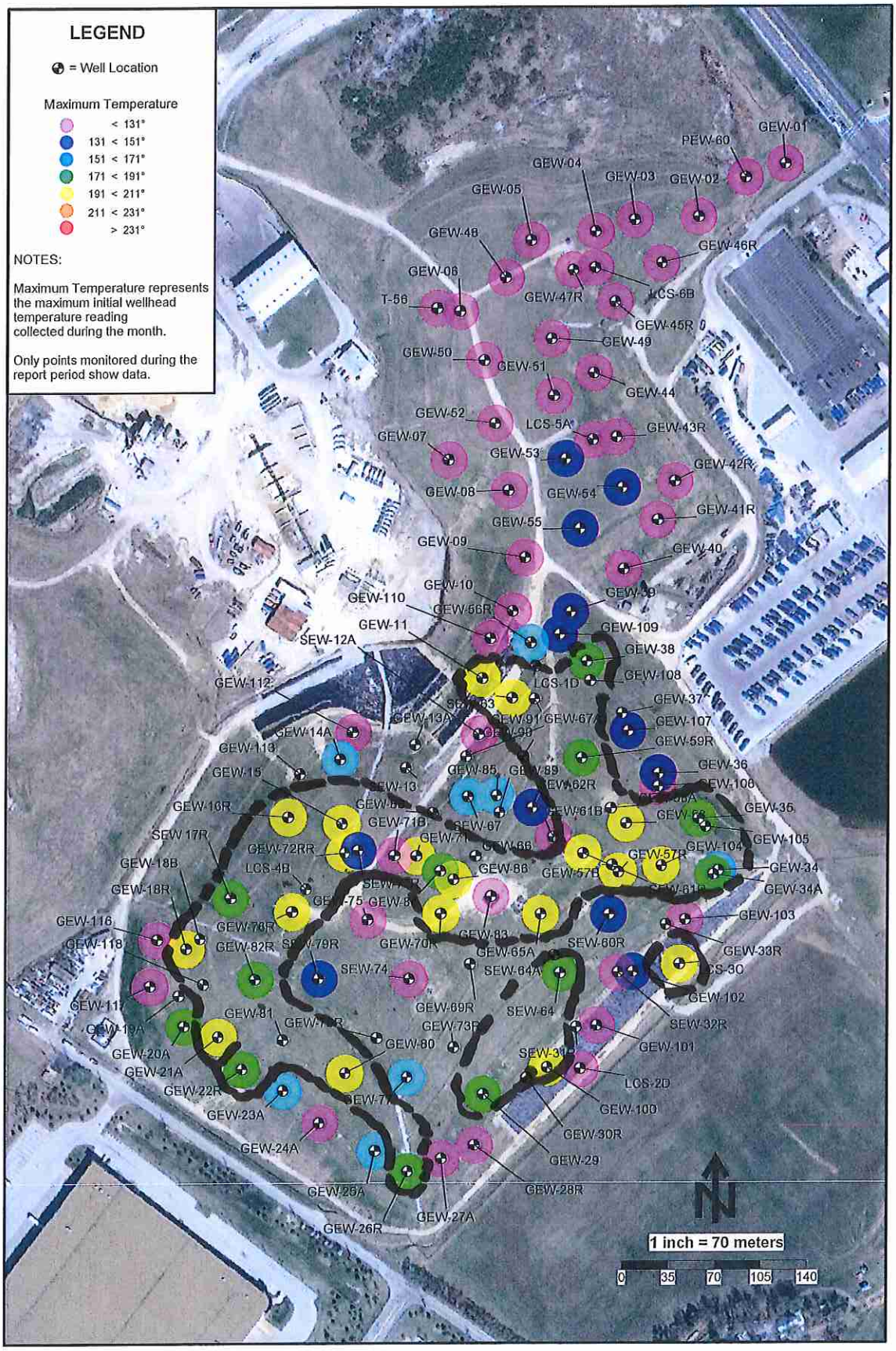
Initial Temperature Maximums - May 2014 - Bridgeton Landfill

SCS ENGINEERS



Initial Temperature Maximums - June 2014 - Bridgeton Landfill

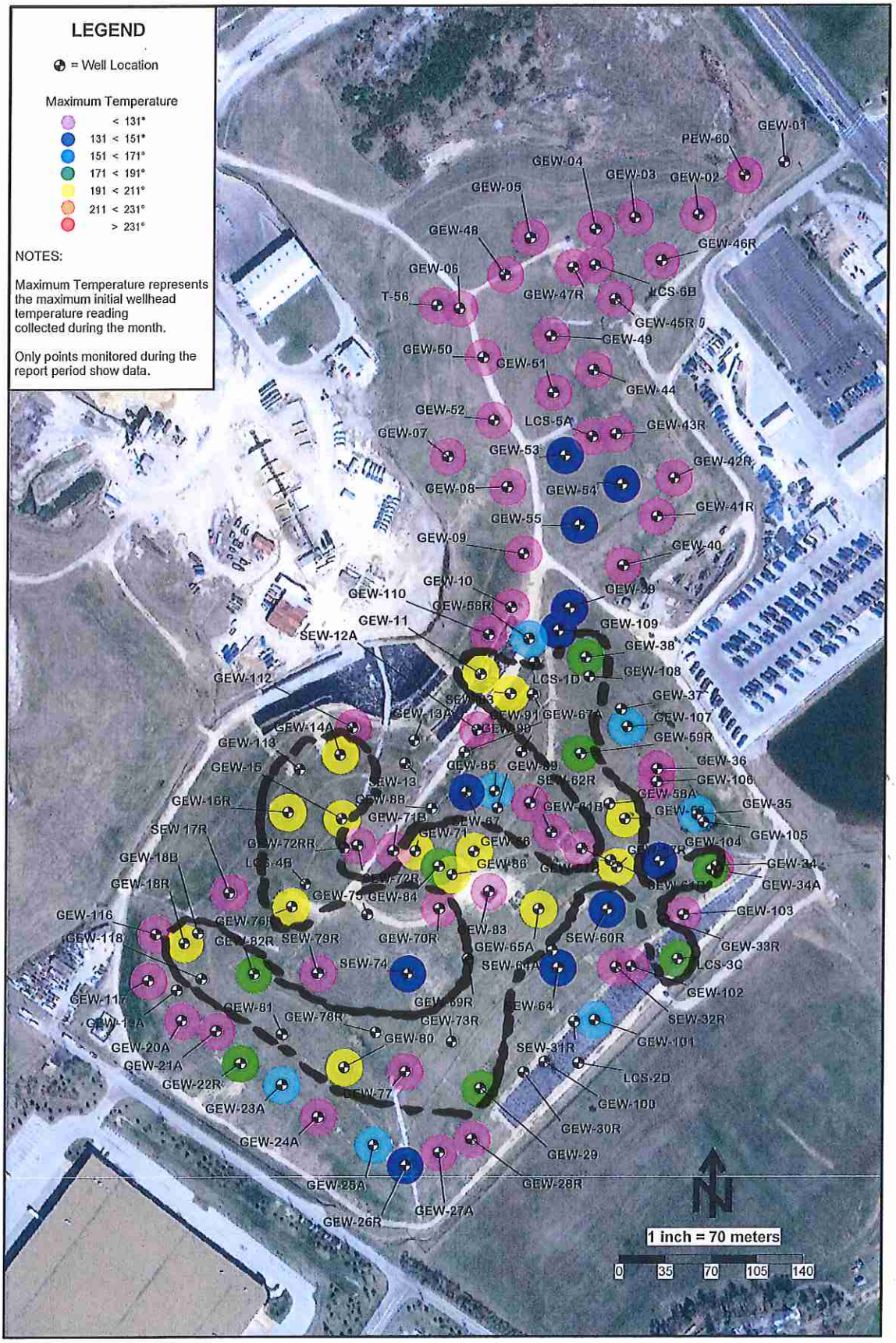
SCS ENGINEERS



Initial Temperature Maximums - July 2014 - Bridgeton Landfill

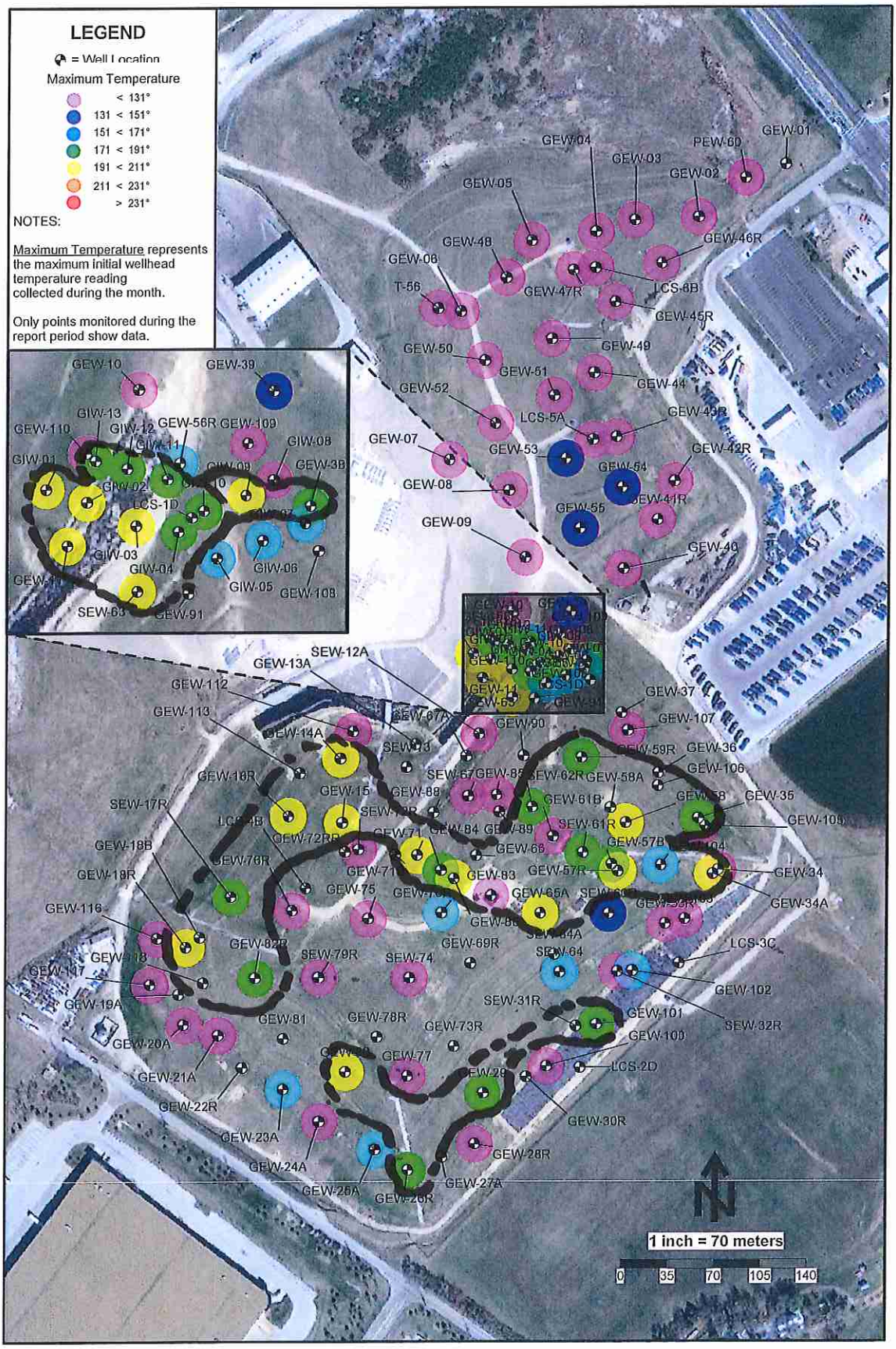
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000202



Initial Temperature Maximums - August 2014 - Bridgeton Landfill

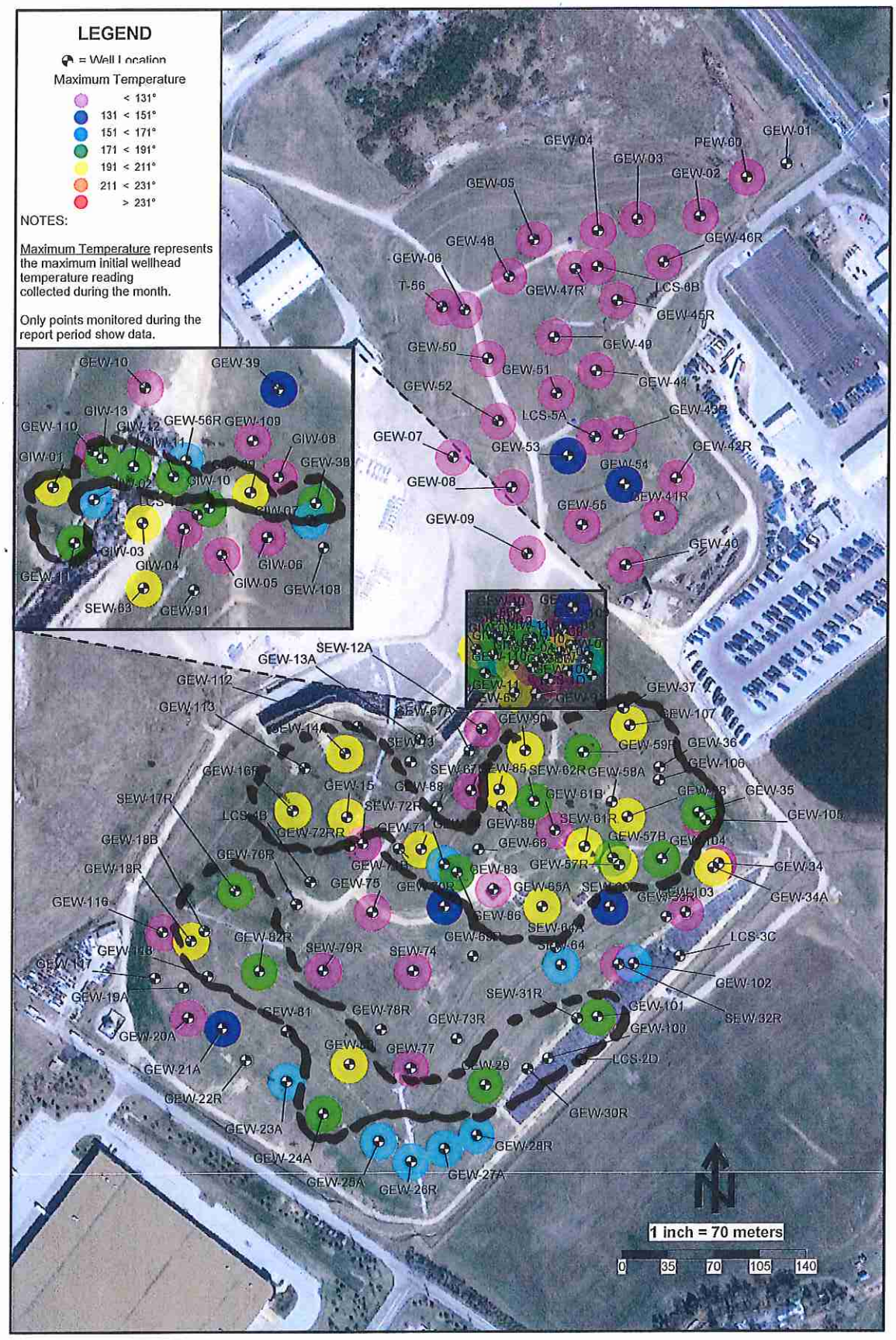
SCS ENGINEERS



Initial Temperature Maximums - September 2014 - Bridgeton Landfill

SCS ENGINEERS

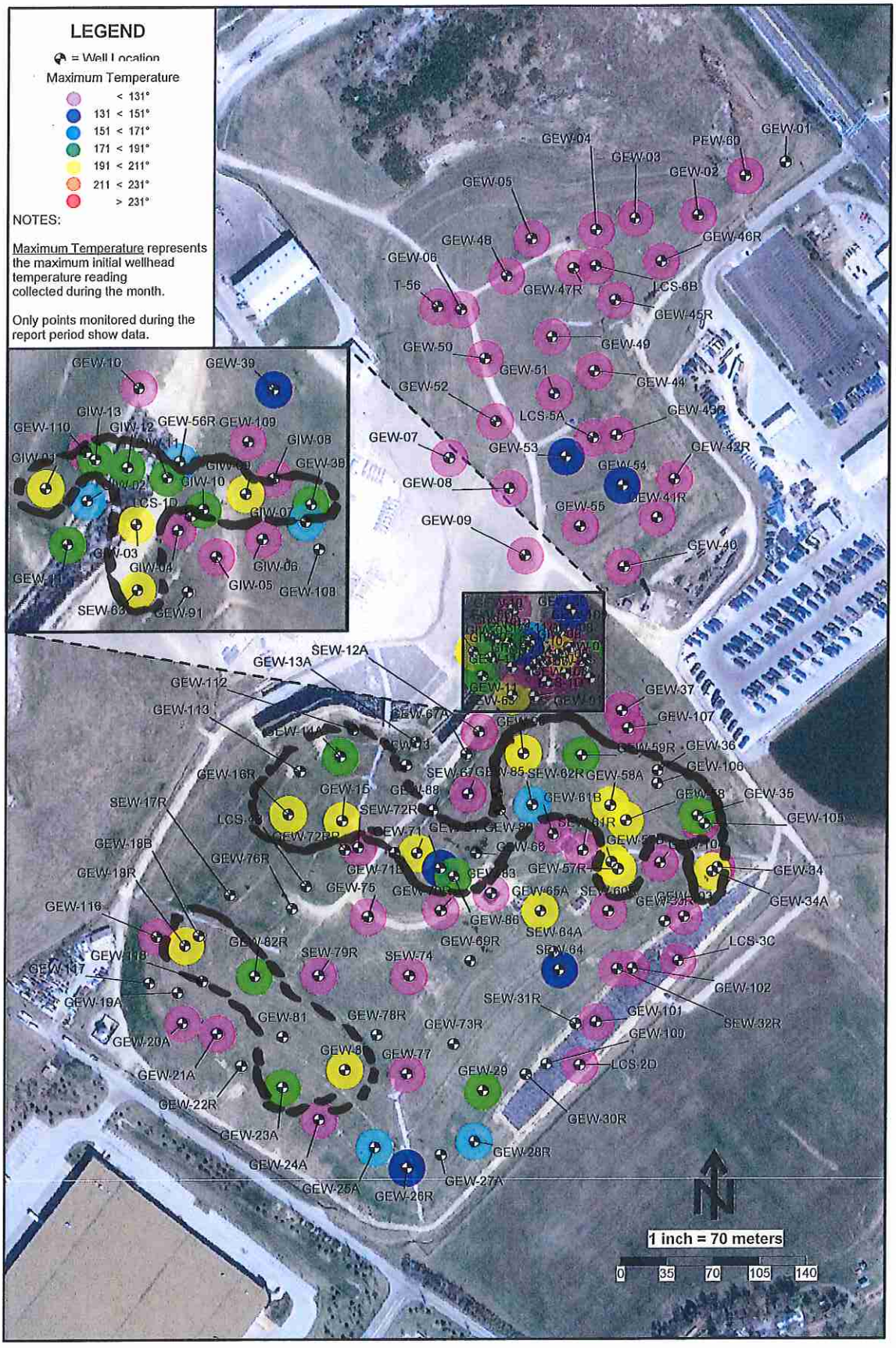
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000204



Initial Temperature Maximums - October 2014 - Bridgeton Landfill

SCS ENGINEERS

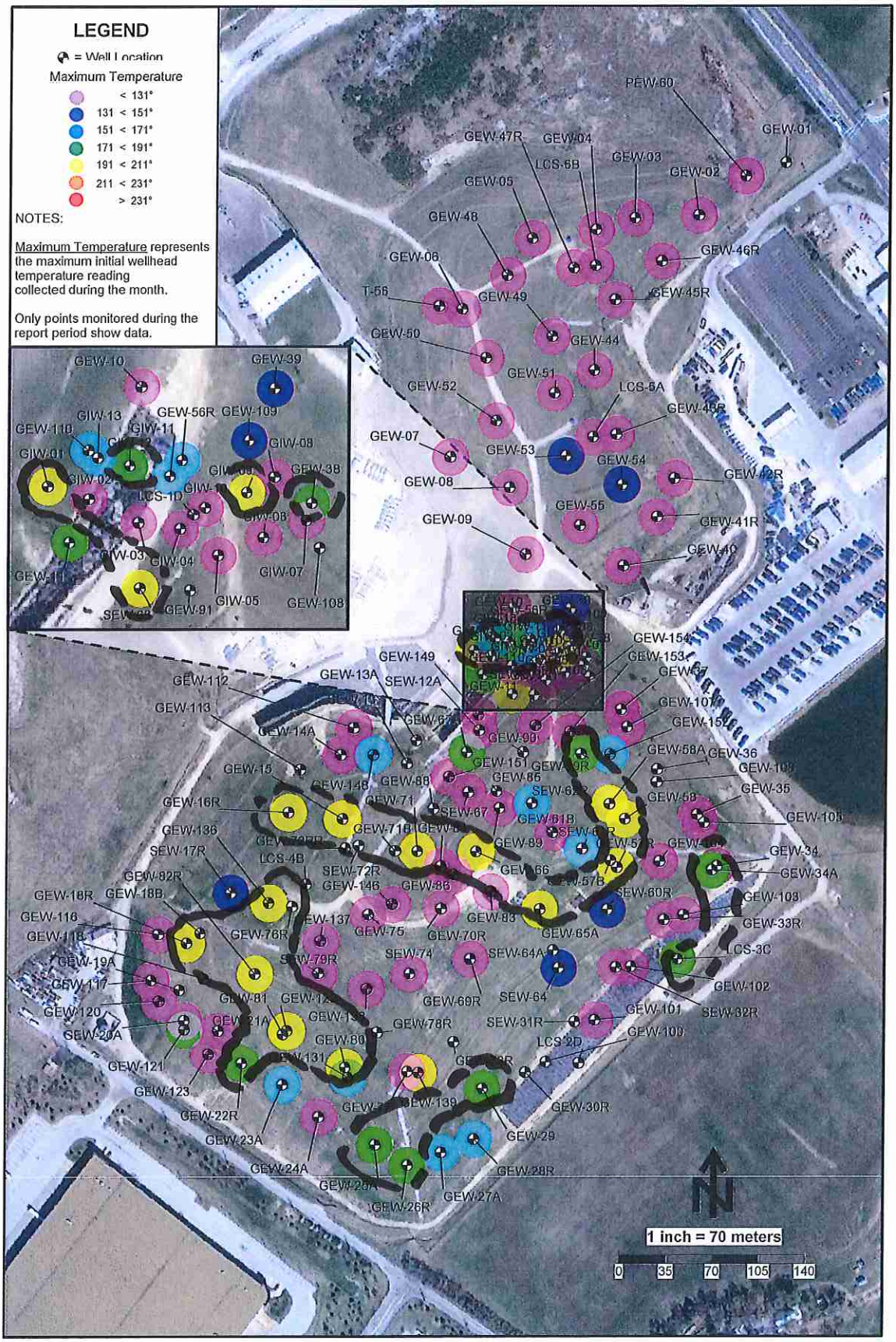
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000205



Initial Temperature Maximums - November 2014 - Bridgeton Landfill

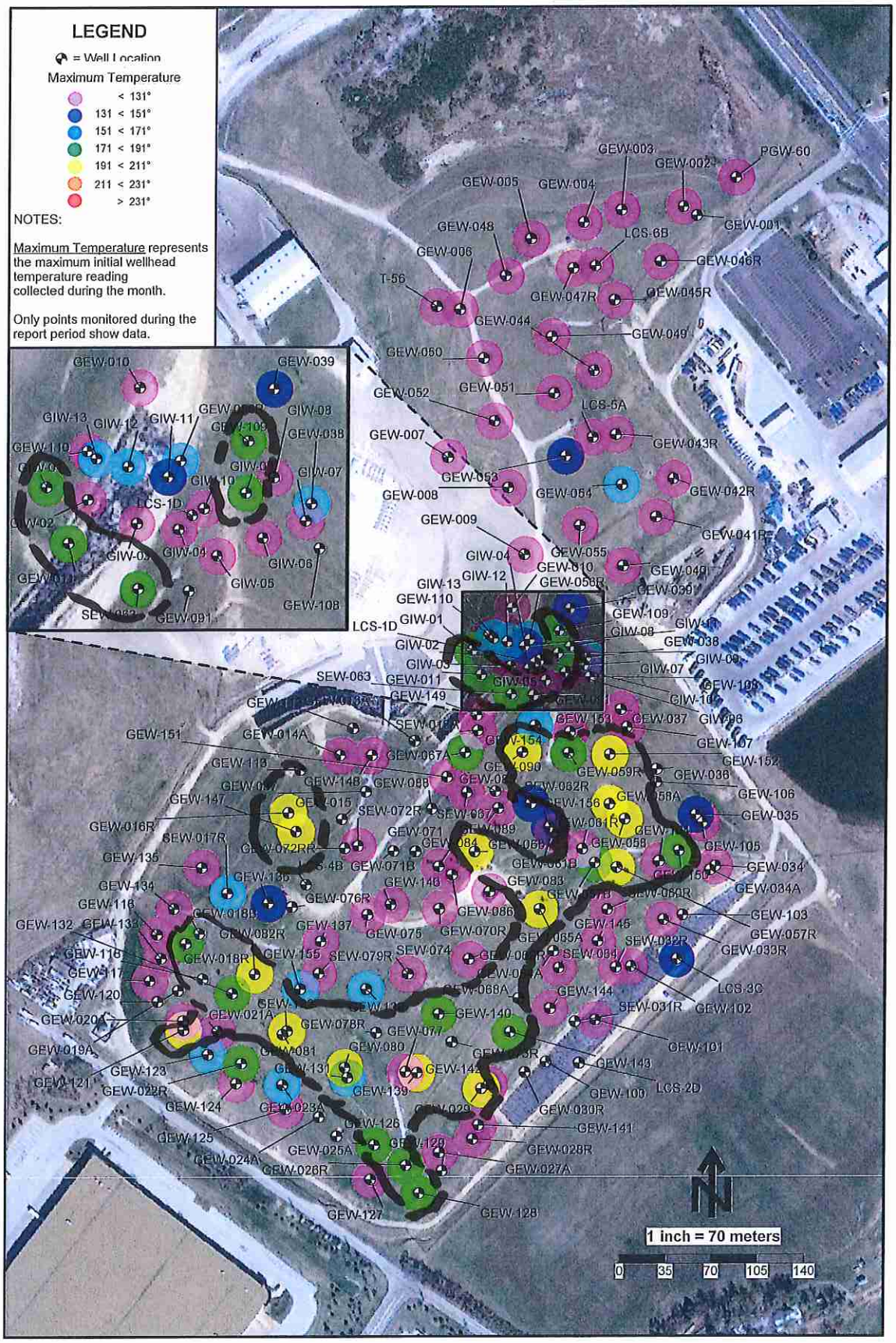
SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000206



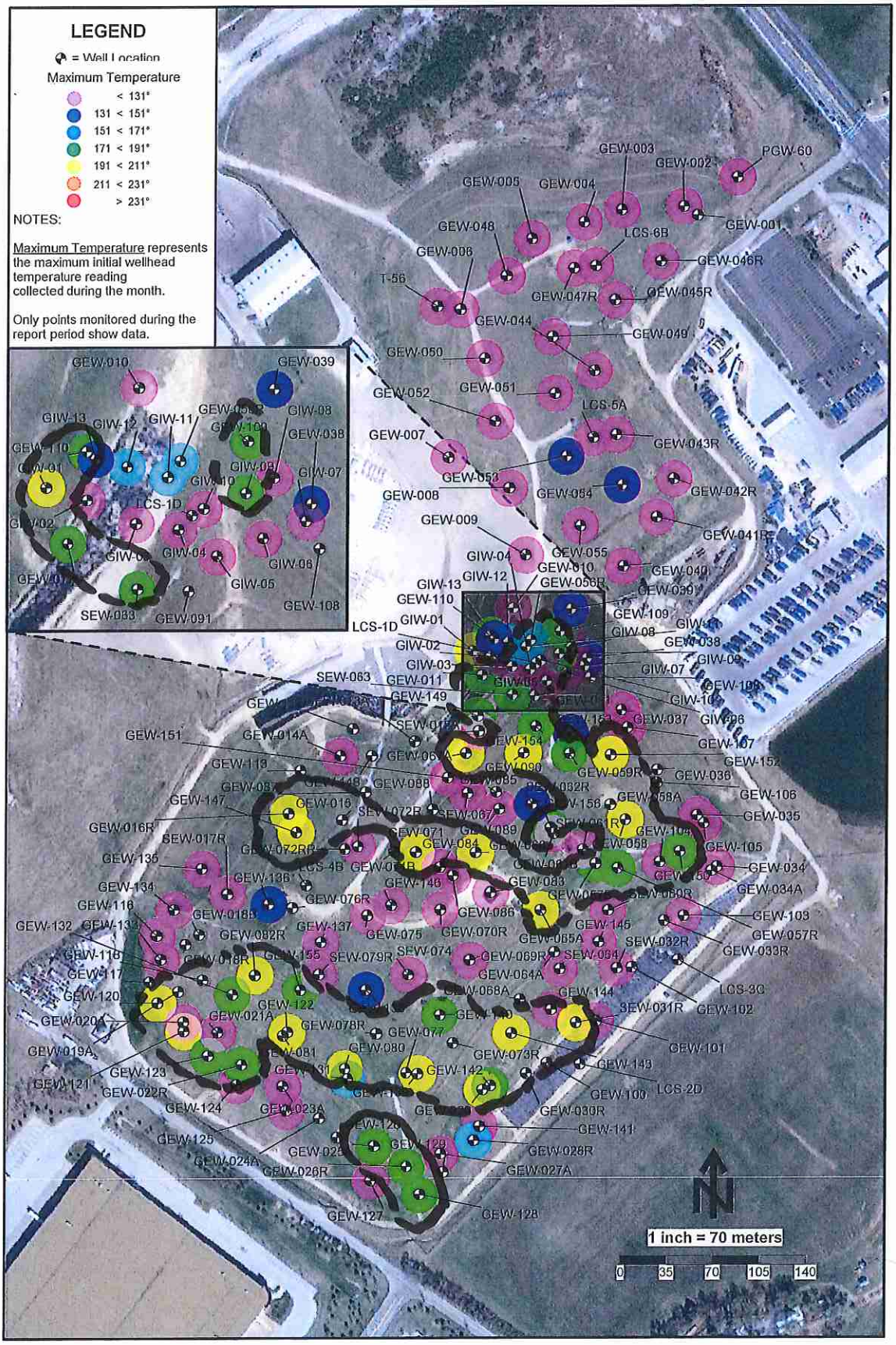
Initial Temperature Maximums - December 2014 - Bridgeton Landfill

SCS ENGINEERS



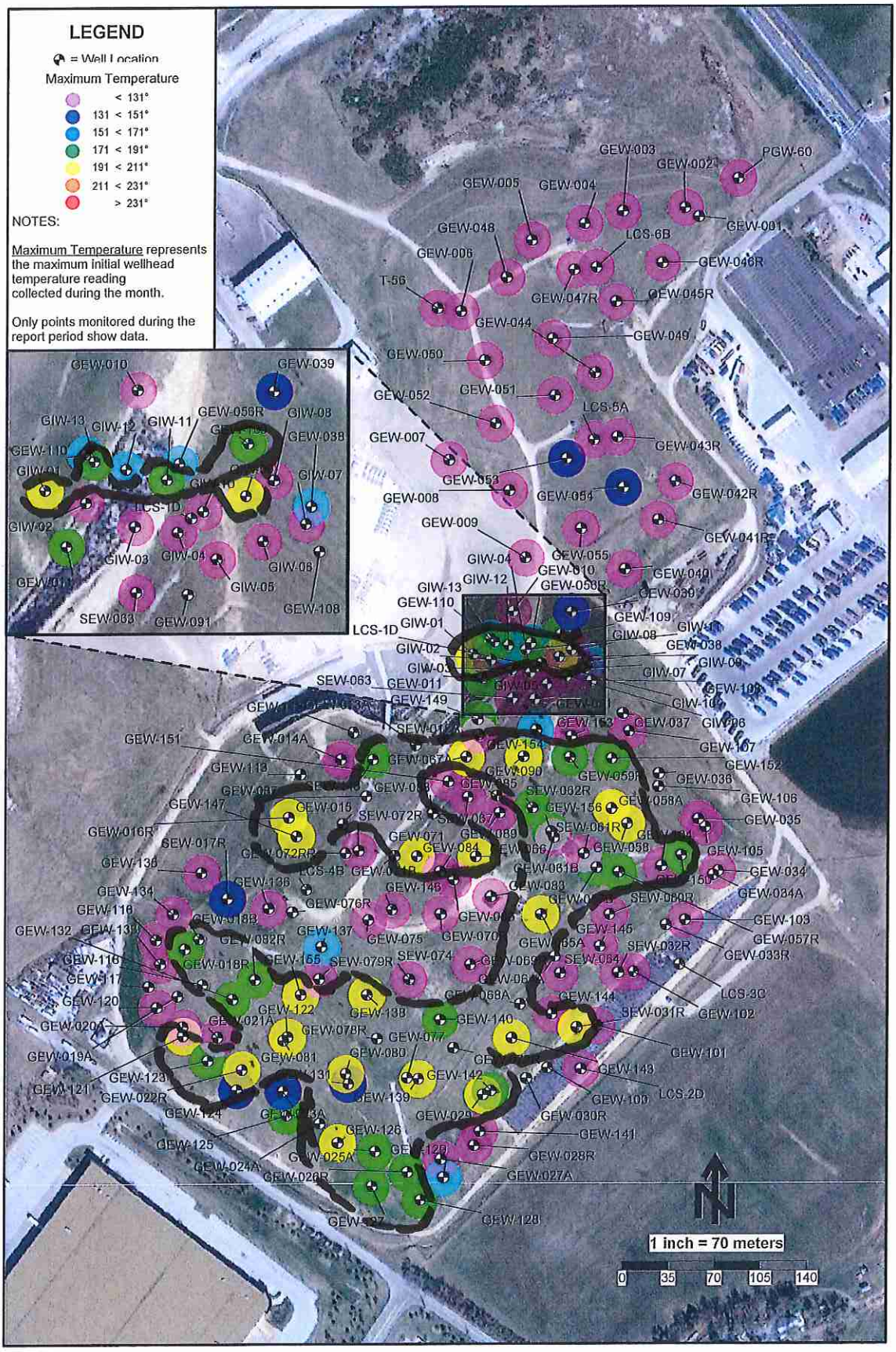
Initial Temperature Maximums - January 2015 - Bridgeton Landfill

SCS ENGINEERS



Initial Temperature Maximums - February 2015 - Bridgeton Landfill

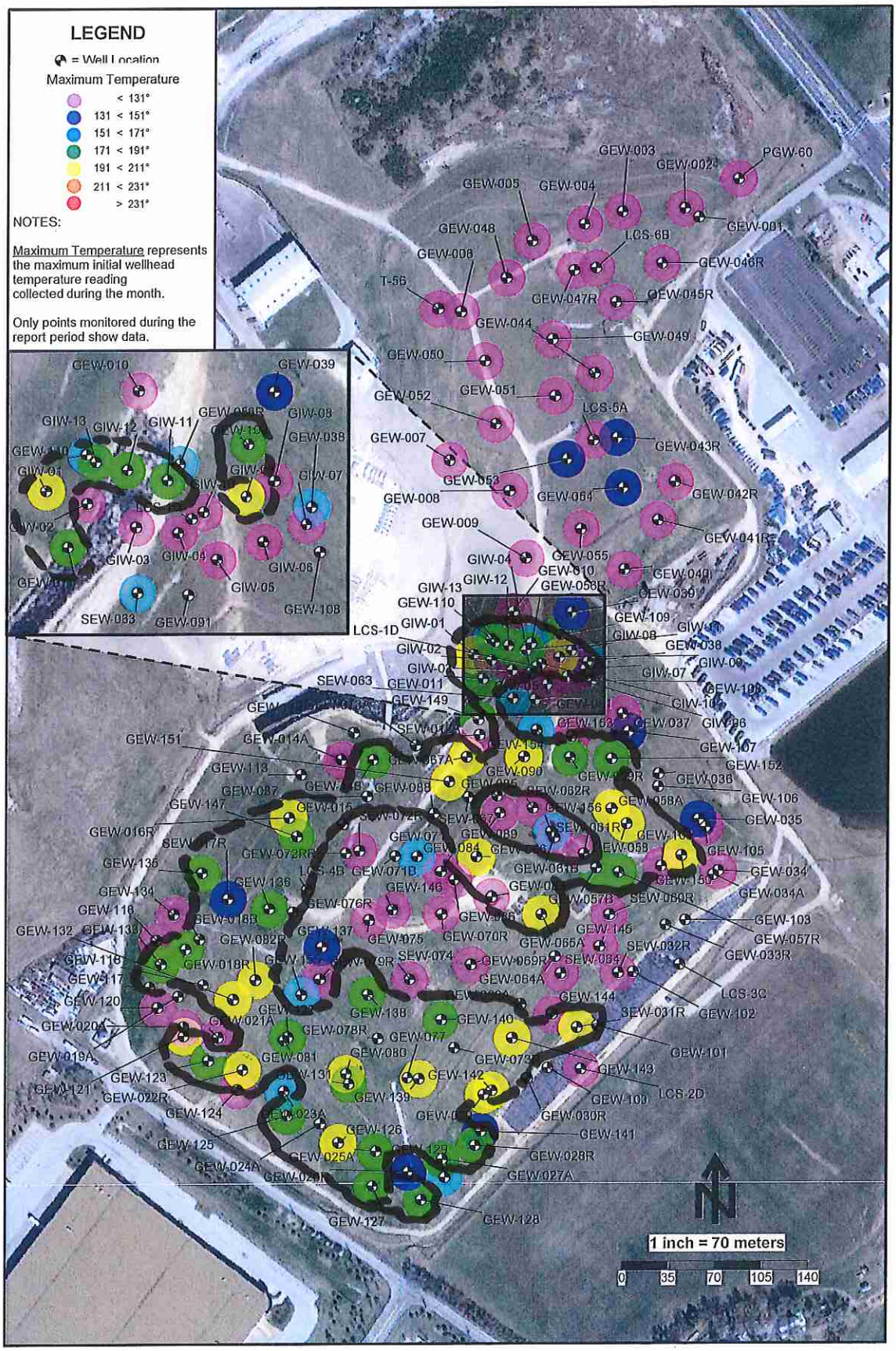
SCS ENGINEERS



Initial Temperature Maximums - March 2015 - Bridgeton Landfill

SCS ENGINEERS

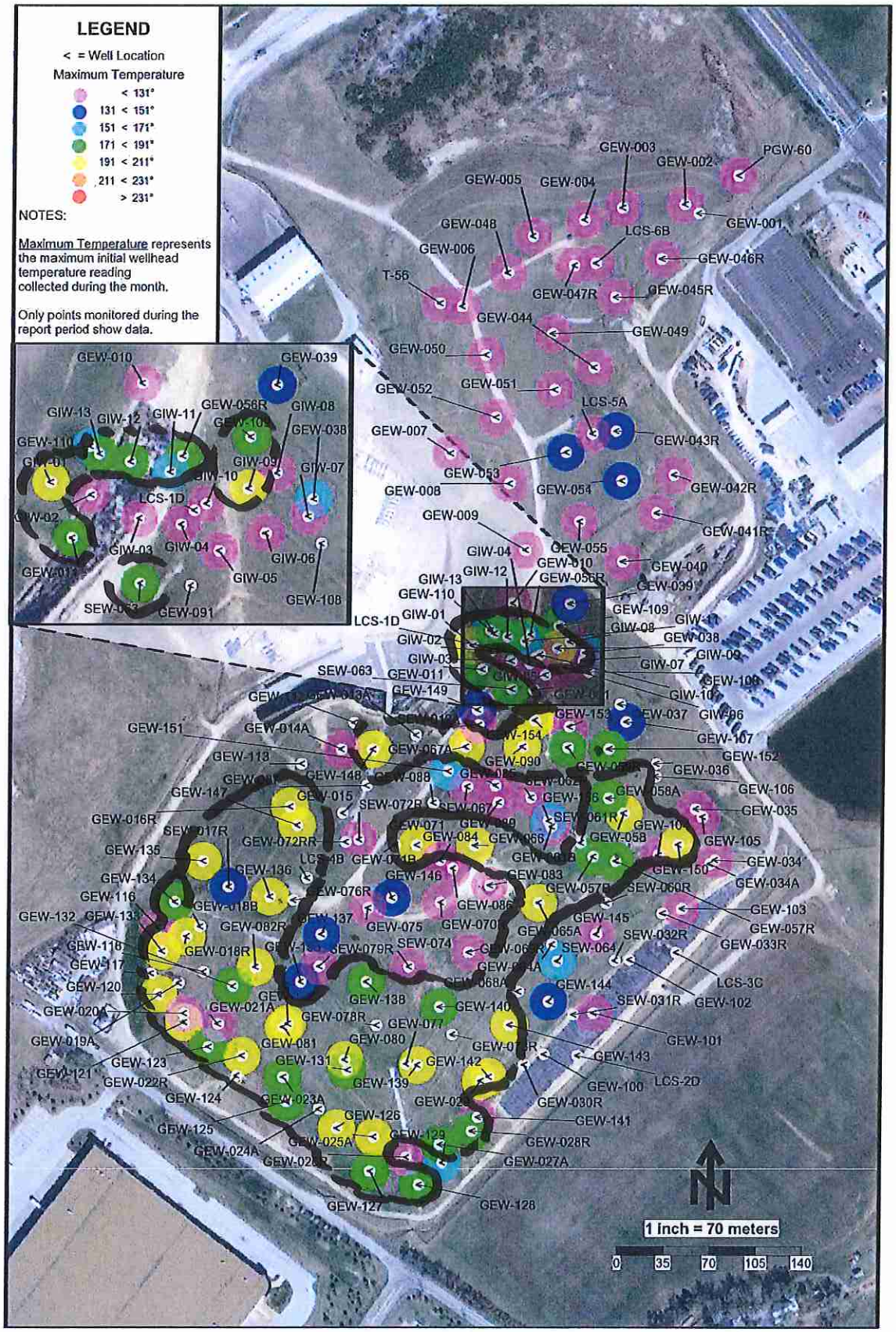
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000210

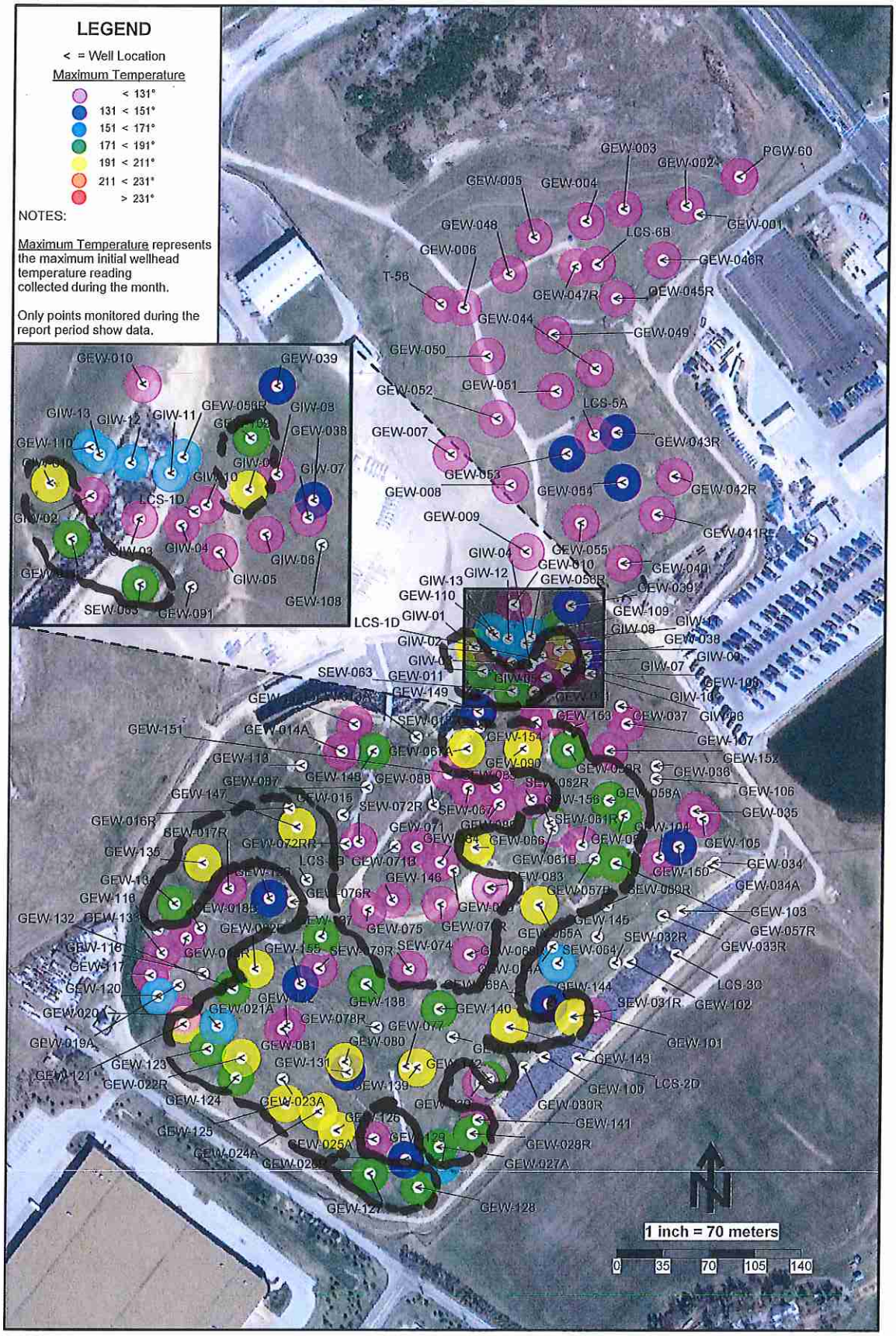


Initial Temperature Maximums - April 2015 - Bridgeton Landfill

SCS ENGINEERS

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000211


LEGEND
< = Well Location
Maximum Temperature
< 131°
131 < 151°
151 < 171°
171 < 191°
191 < 211°
211 < 231°
> 231°
NOTES:
Maximum Temperature represents the maximum initial wellhead temperature reading collected during the month.
Only points monitored during the report period show data.
GEW-003
GEW-002
PGW-60
GEW-005
GEW-004
GEW-001
GEW-048
LCS-6B
GEW-006
GEW-046R
T-56
GEW-047R
GEW-045R
GEW-044
GEW-049
GEW-050
GEW-052
GEW-051
LCS-5A
GEW-007
GEW-043R
GEW-053
GEW-008
GEW-054
GEW-042R
GEW-009
GEW-041R
GEW-055
GEW-040
GEW-039
GEW-109
GEW-038
GEW-107
GEW-152
GEW-036
GEW-106
GEW-035
GEW-105
GEW-034
GEW-034A
GEW-103
GEW-057R
GEW-033R
LCS-3C
GEW-102
GEW-101
GEW-143
LCS-2D
GEW-100
GEW-030R
GEW-141
GEW-028R
GEW-027A
GEW-128
GEW-127
GEW-125
GEW-124
GEW-123
GEW-121
GEW-022R
GEW-019A
GEW-020A
GEW-021A
GEW-078R
GEW-081
GEW-131
GEW-139
GEW-138
GEW-140
GEW-077
GEW-080
GEW-142
GEW-144
GEW-145
SEW-032R
SEW-064
SEW-031R
GEW-120
GEW-117
GEW-116
GEW-132
GEW-135
GEW-134
GEW-136
GEW-146
GEW-083
GEW-150
GEW-058
GEW-147
GEW-015
GEW-016R
GEW-017R
GEW-072RR
GEW-014A
GEW-151
GEW-113
GEW-148
GEW-149
GEW-153
GEW-154
GEW-090
GEW-084
GEW-086
GEW-070
GEW-075
GEW-137
GEW-082R
GEW-018R
GEW-018B
GEW-076R
SEW-079R
SEW-074
SEW-072R
SEW-063
GEW-011
GEW-110
GEW-013
GEW-012
GEW-091
SEW-033
GEW-108
GIW-13
GIW-12
GIW-11
GEW-056R
GIW-08
GEW-110
GIW-01
GIW-02
GIW-03
GIW-04
GIW-05
GIW-06
GIW-07
GIW-09
GIW-10
LCS-1D
GEW-010
GEW-039
GEW-038
GEW-109

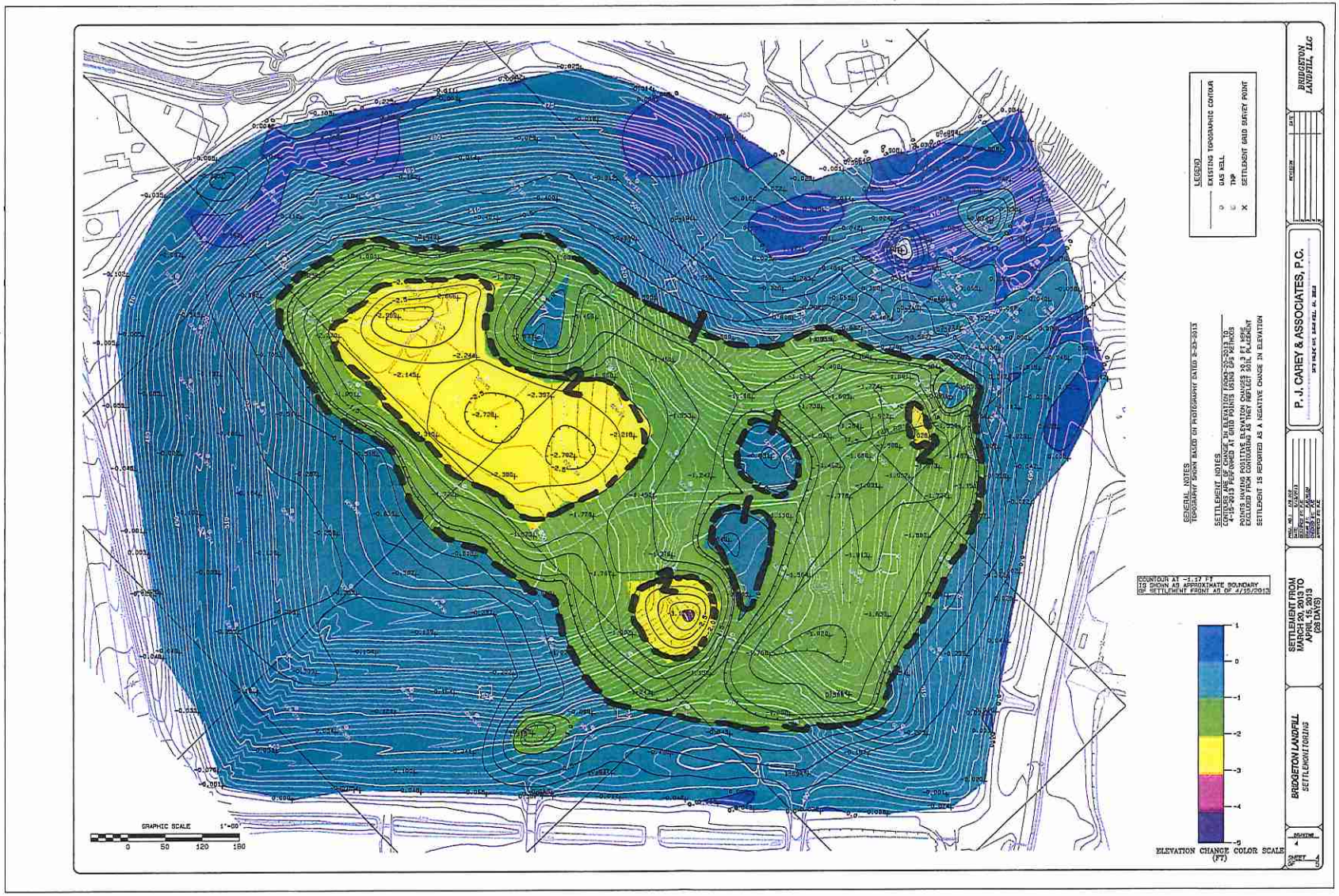


Initial Temperature Maximums - June 2015 - Bridgeton Landfill

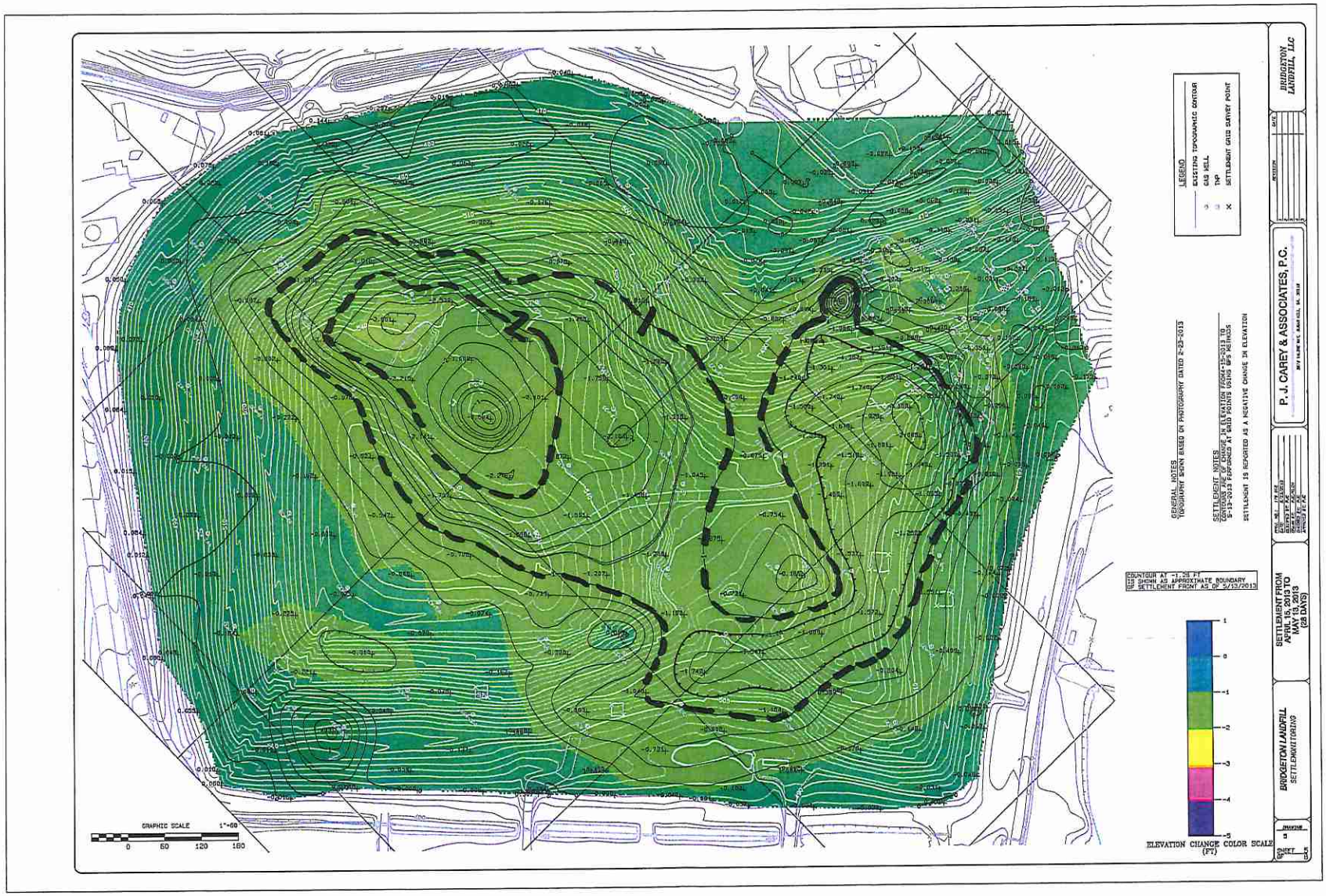
APPENDIX D

SETTLEMENT MAPS

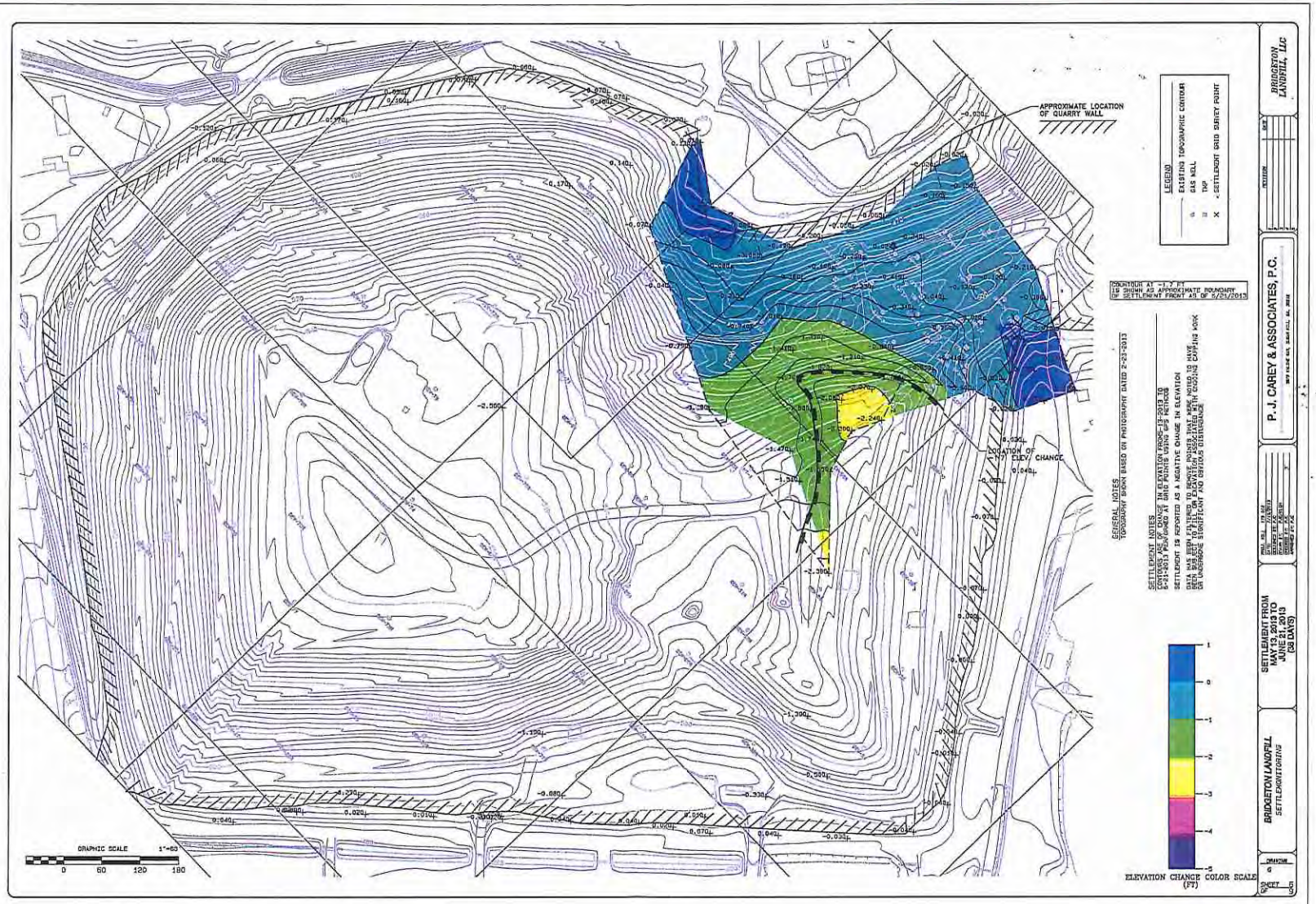
March to April 2013



April to May 2013



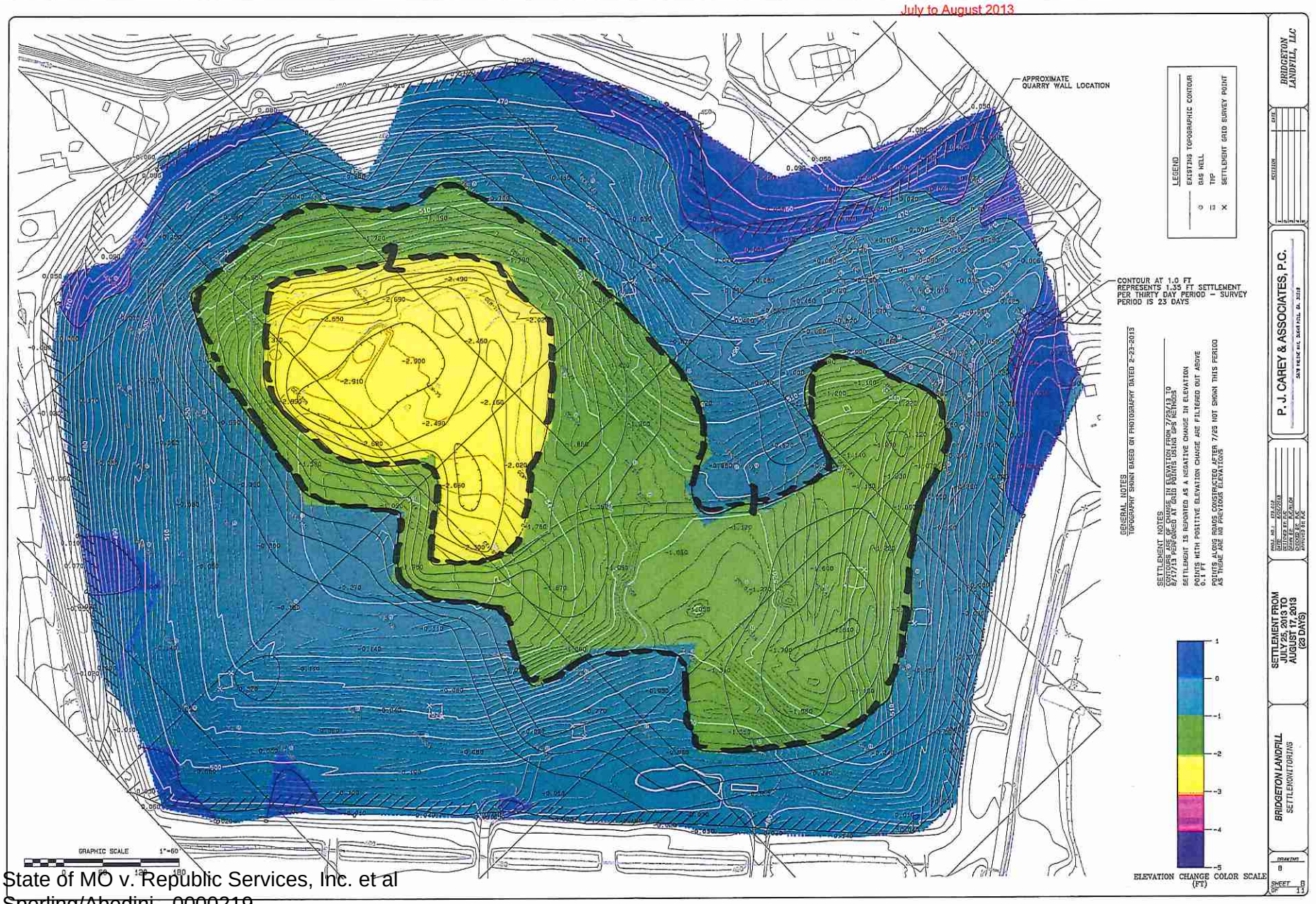
May to June 2013



State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000217

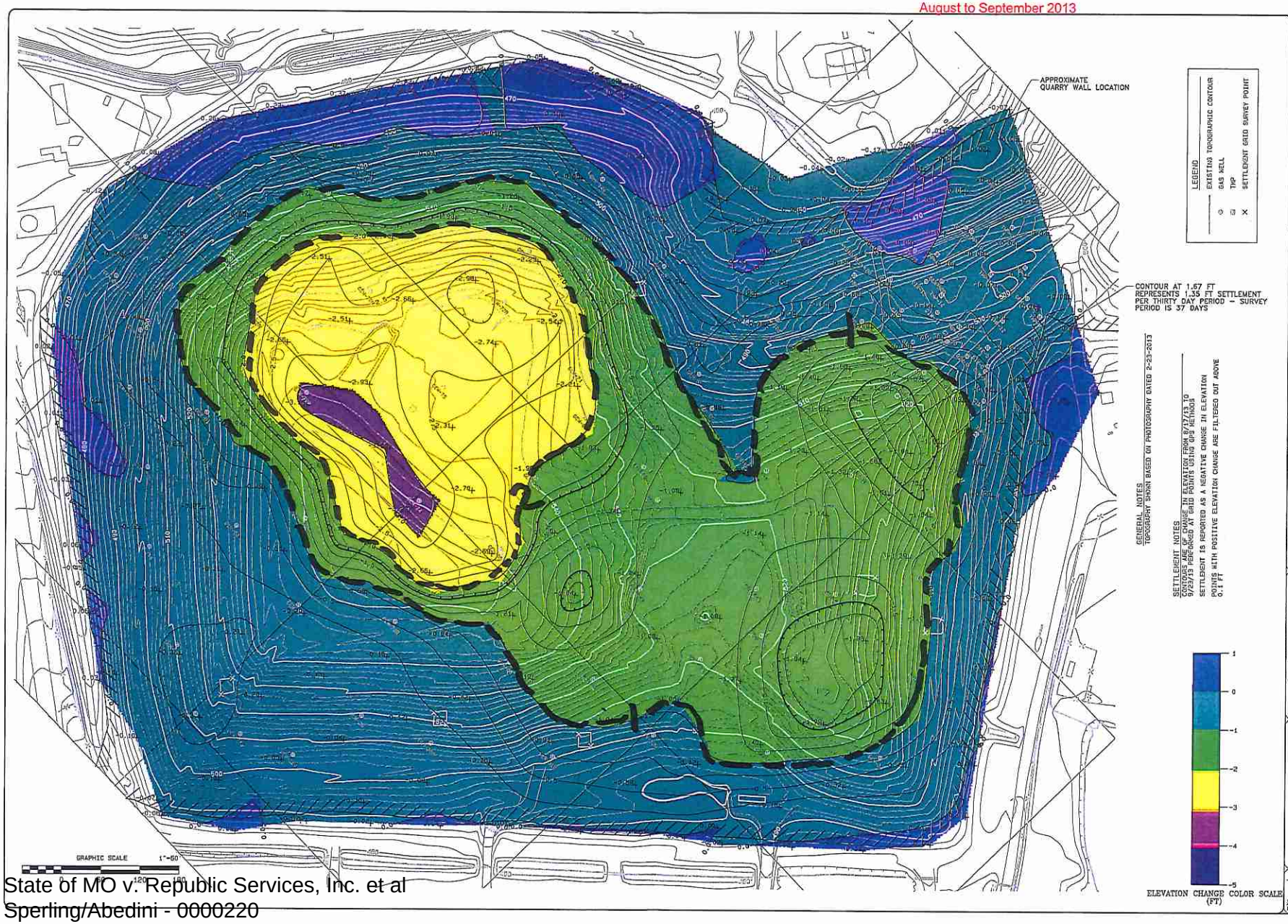
June to July 2013

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000218



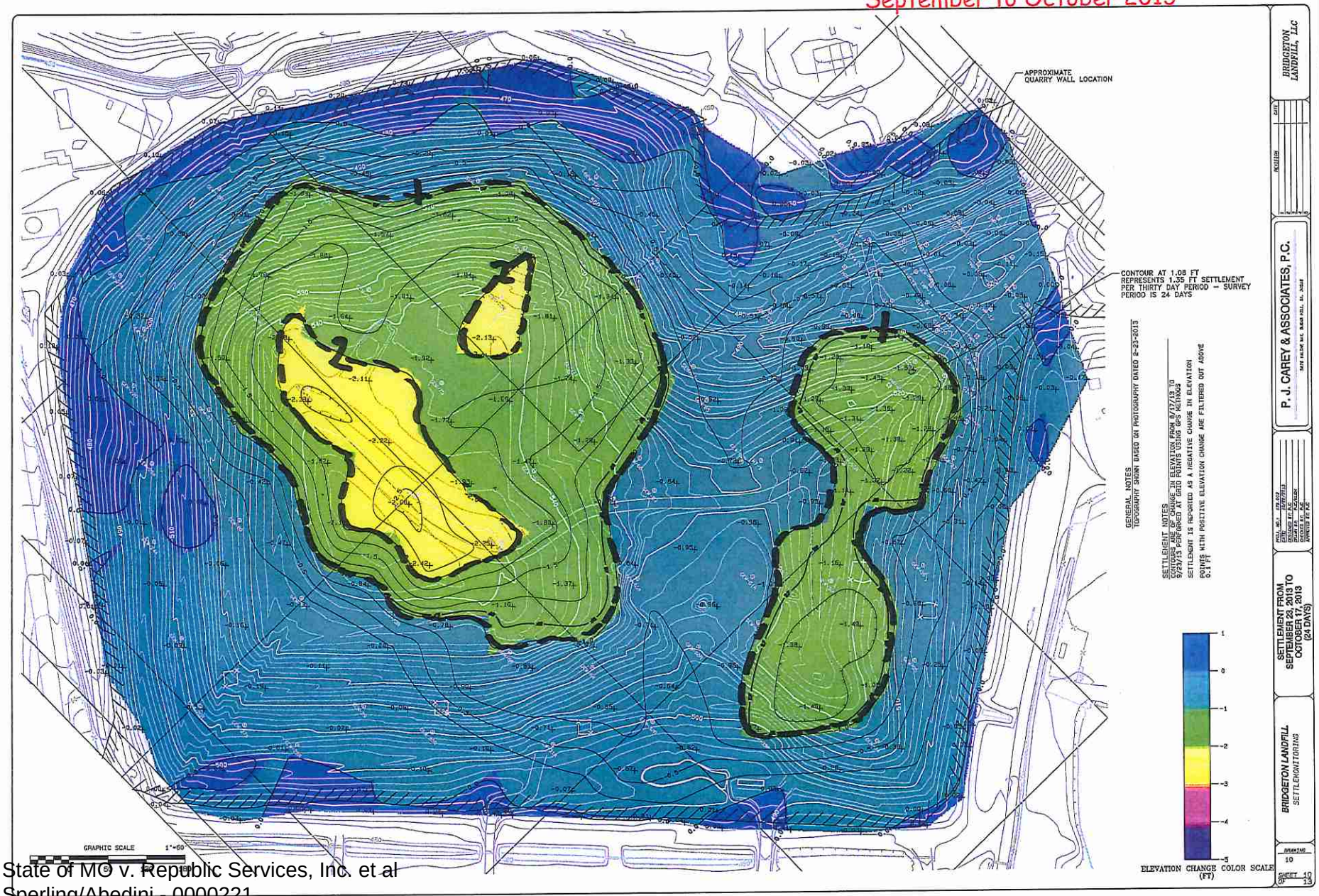
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000219

August to September 2013



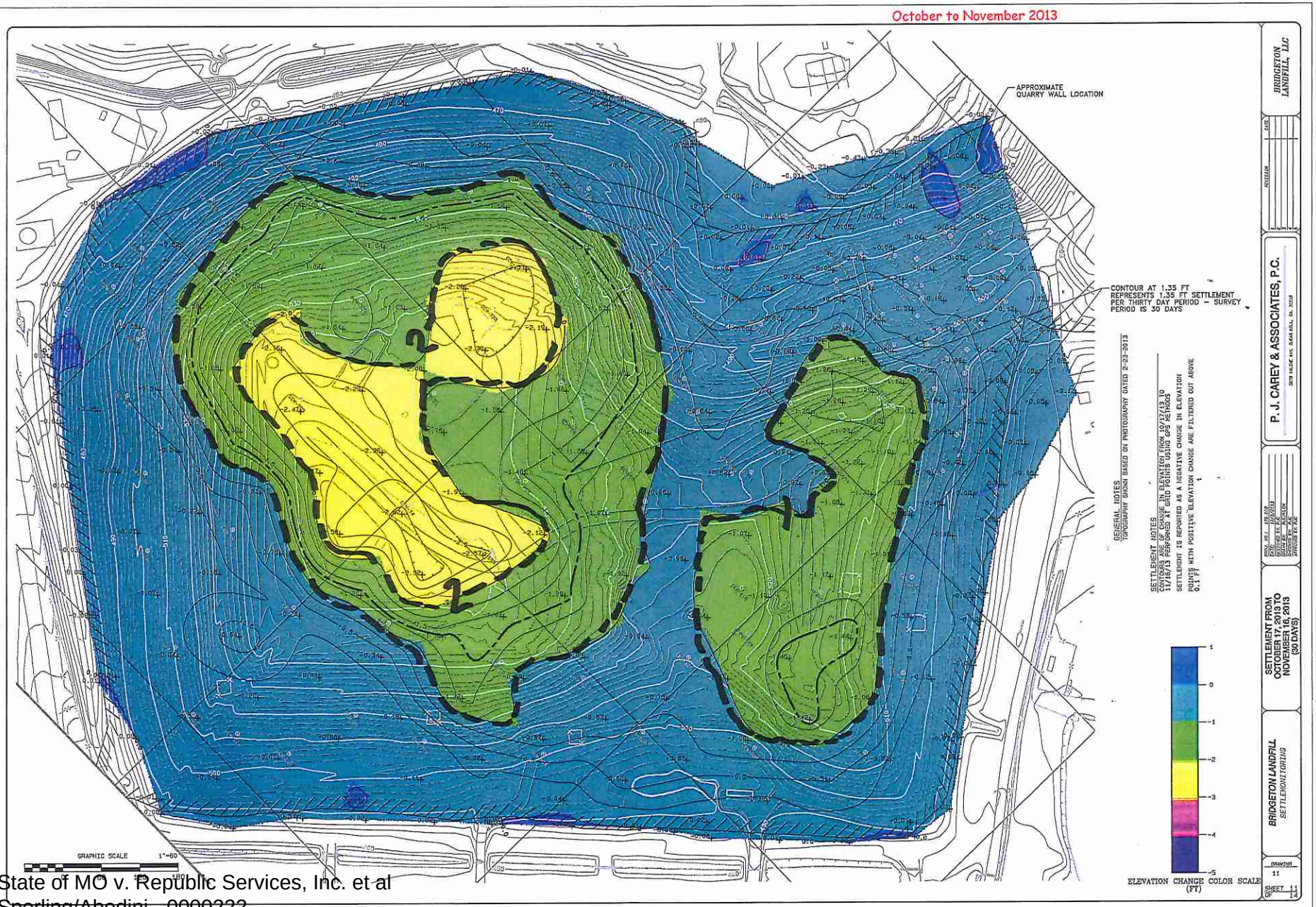
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000220

September to October 2013

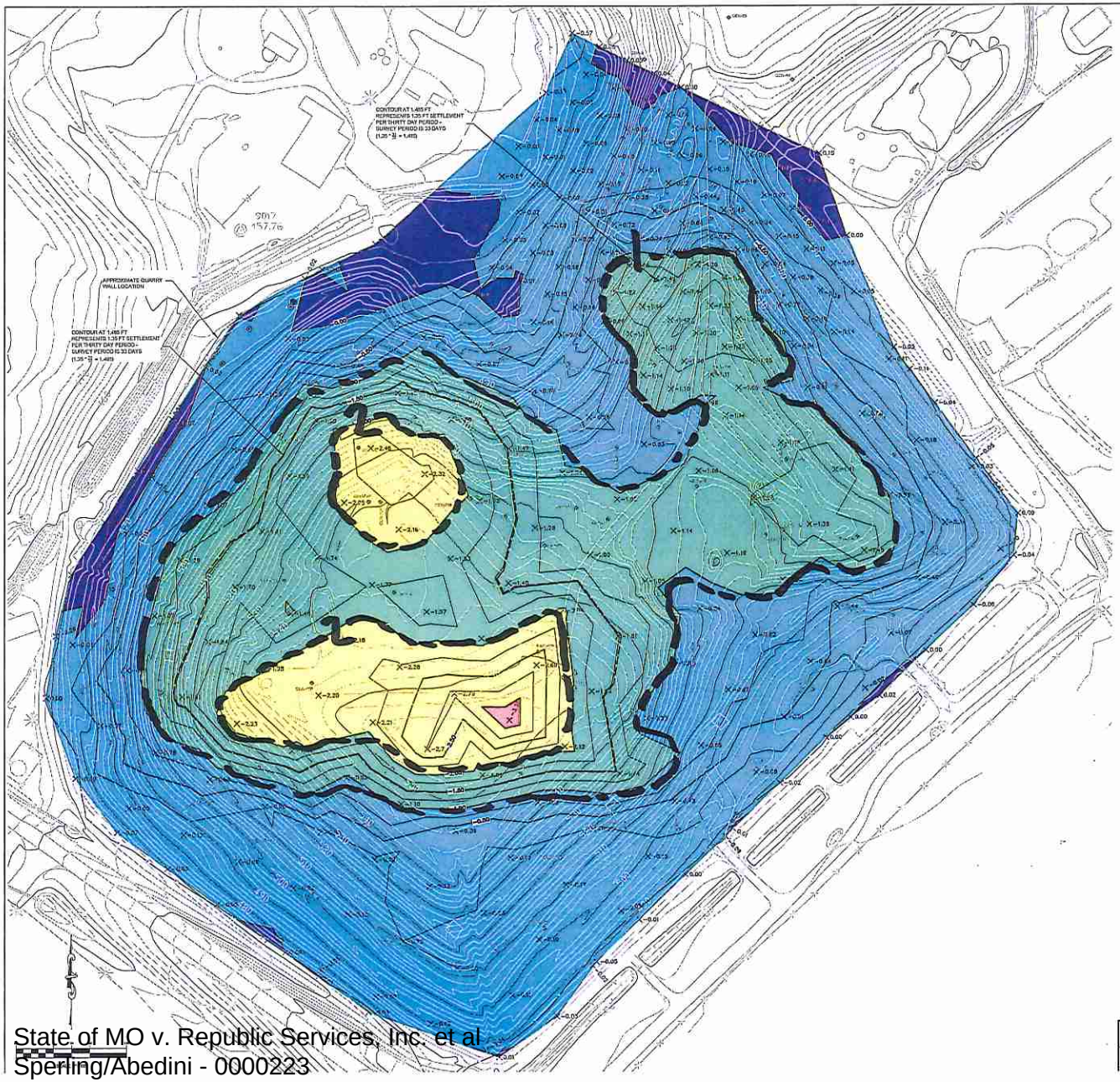


State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000221

October to November 2013



November to December 2013



LEGEND

TOPOGRAPHY (1' CONTOUR)
TOPOGRAPHY (10' CONTOUR)
ELEVATION CHANGE (0.25' CONTOUR)
ELEVATION CHANGE (1.00' CONTOUR)

GENERAL NOTES:
1.) TOPOGRAPHY SHOWN BASED ON PHOTOGRAPHY DATED 2-13-2013.

SETTLEMENT NOTES:
1.) CONTOURS ARE OF CHANGE IN ELEVATION FROM 11/16/13 TO 12/19/13 PERFORMED AT GRID POINTS USING GPS METHODS.
2.) SETTLEMENT IS REPORTED AS A NEGATIVE CHANGE IN ELEVATION.
3.) POINTS ON NEWLY CONSTRUCTED ROAD SURFACES HAVE BEEN FILTERED OUT.

ELEVATION CHANGE (FEET)

Number	Minimum Elev. Change	Maximum Elev. Change	Area (sq.ft.)	Color
1	-5.00	-4.00	0.00	
2	-4.00	-3.00	1637.46	
3	-3.00	-2.00	137794.08	
4	-2.00	-1.00	494422.11	
5	-1.00	0.00	850547.47	
6	0.00	1.00	78648.44	

BRIDGETON LANDFILL, LLC
13570 SAINT CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044

BRIDGETON LANDFILL
SETTLEMENT MONITORING

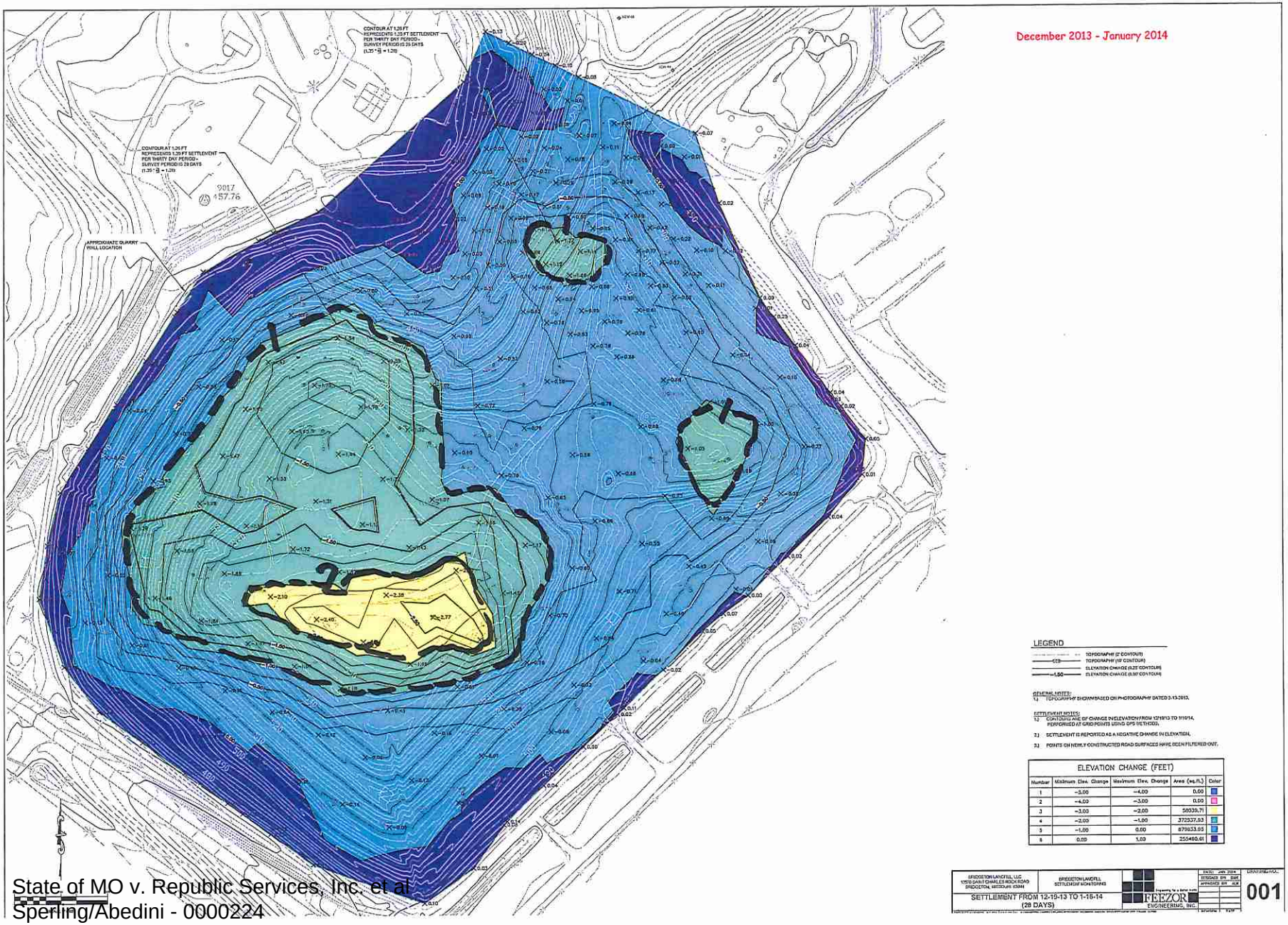
SETTLEMENT FROM 11-16-13 TO 12-19-13
(33 DAYS)

Prepared for a Better Earth
FEEZOR ENGINEERING, INC.

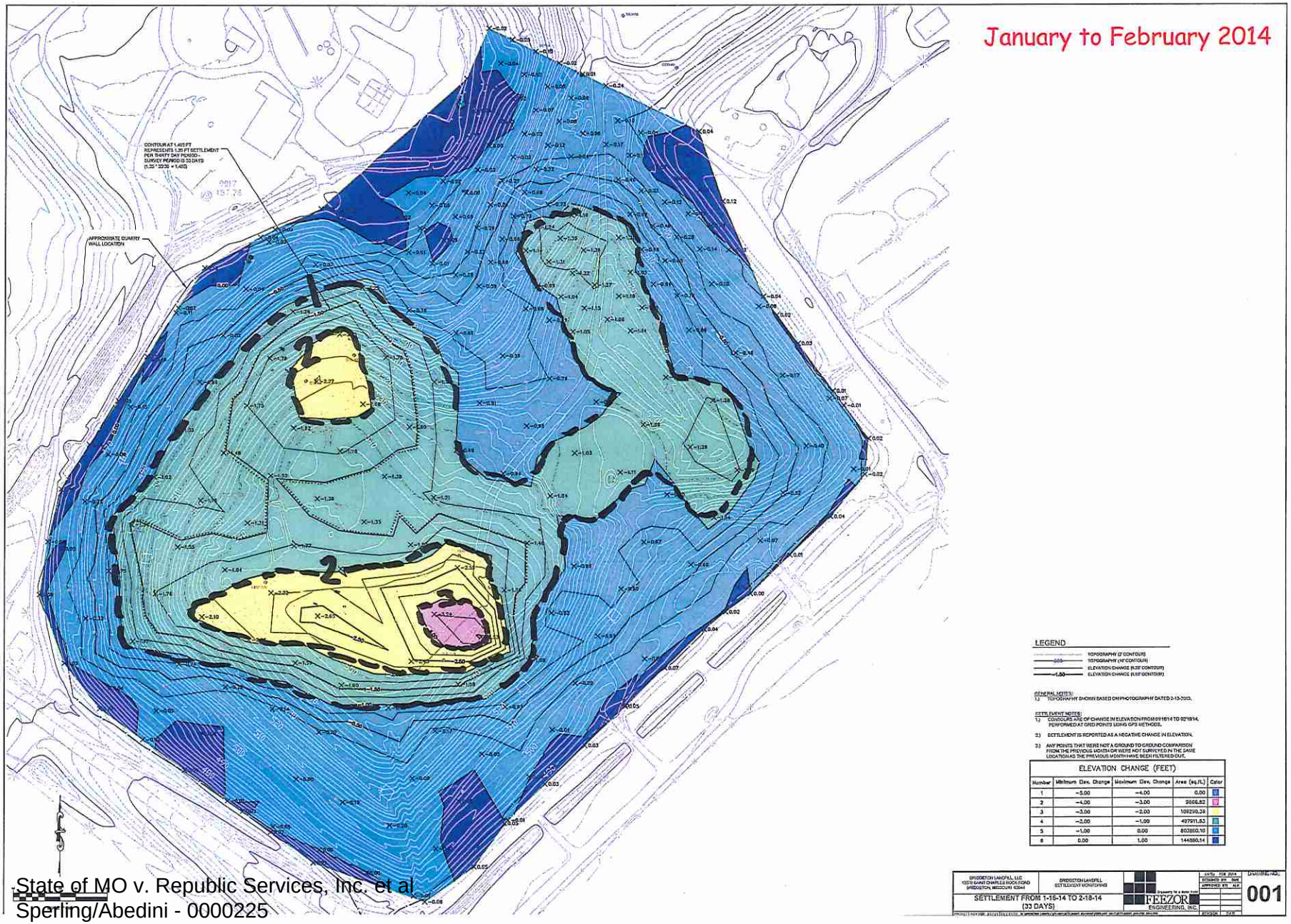
DATE: JAN 2014
DRAWN BY: BAR
APPROVED BY: AJR

DRAWING NO.
001

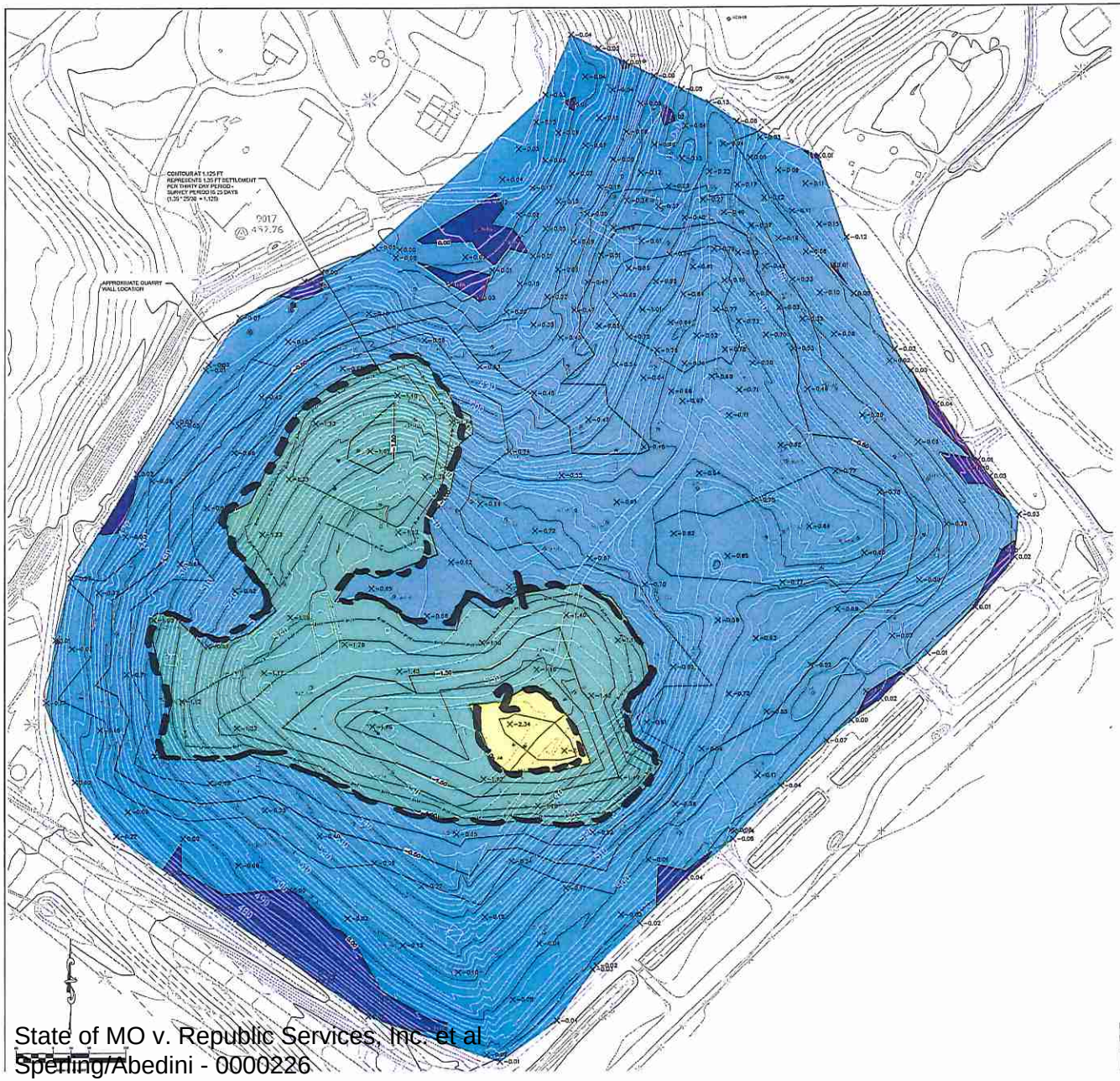
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000223



State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000224



State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000225



February to March 2014

LEGEND

TOPOGRAPHY (1' CONTOUR)
TOPOGRAPHY (10' CONTOUR)
ELEVATION CHANGE (0.25' CONTOUR)
ELEVATION CHANGE (0.50' CONTOUR)
MARCH 15, 2014 SETTLEMENT FRONT

GENERAL NOTES:
1.) TOPOGRAPHY SHOWN BASED ON PHOTOGRAPHY DATED 2-13-2013.

SETTLEMENT NOTES:
1.) CONTOURS ARE OF CHANGE IN ELEVATION FROM 02/18/14 TO 3/15/14 PERFORMED AT GRID POINTS USING GPS METHODS.
2.) SETTLEMENT IS REPORTED AS A NEGATIVE CHANGE IN ELEVATION.
3.) ANY POINTS THAT WERE NOT A GROUND TO GROUND COMPARISON FROM THE PREVIOUS MONTH OR WERE NOT SURVEYED IN THE SAME LOCATIONS AS THE PREVIOUS MONTH HAVE BEEN FILTERED OUT.

ELEVATION CHANGE (FEET)

Number	Minimum Elev. Change	Maximum Elev. Change	Area (sq.ft.)	Color
1	-5.00	-4.00	0.00	
2	-4.00	-3.00	0.00	
3	-3.00	-2.00	18573.88	
4	-2.00	-1.00	325436.85	
5	-1.00	0.00	1171975.58	
6	0.00	1.00	54638.82	

BRIDGETON LANDFILL, LLC
13570 SAINT CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044

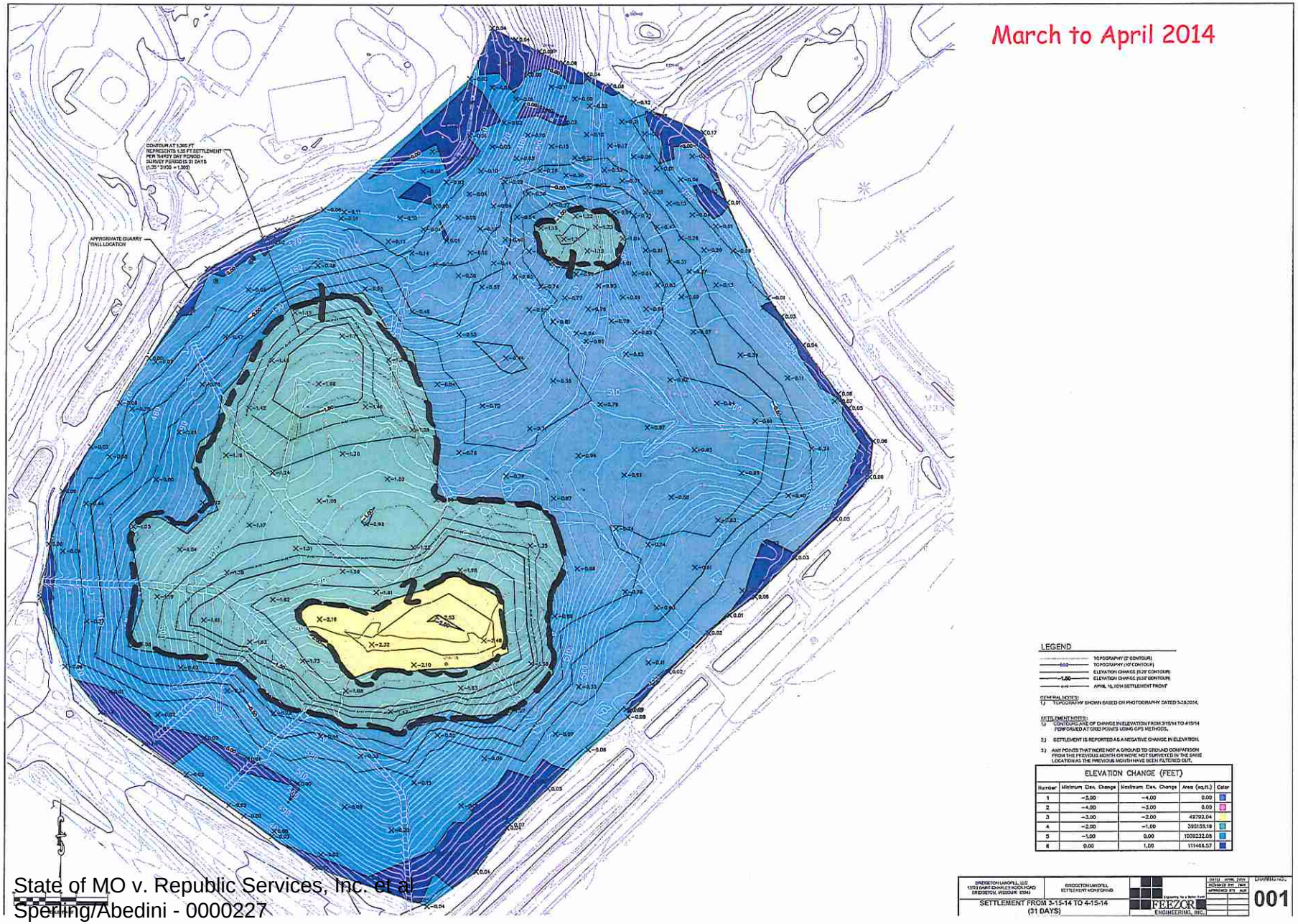
BRIDGETON LANDFILL
SETTLEMENT MONITORING

SETTLEMENT FROM 2-18-14 TO 3-15-14
(25 DAYS)

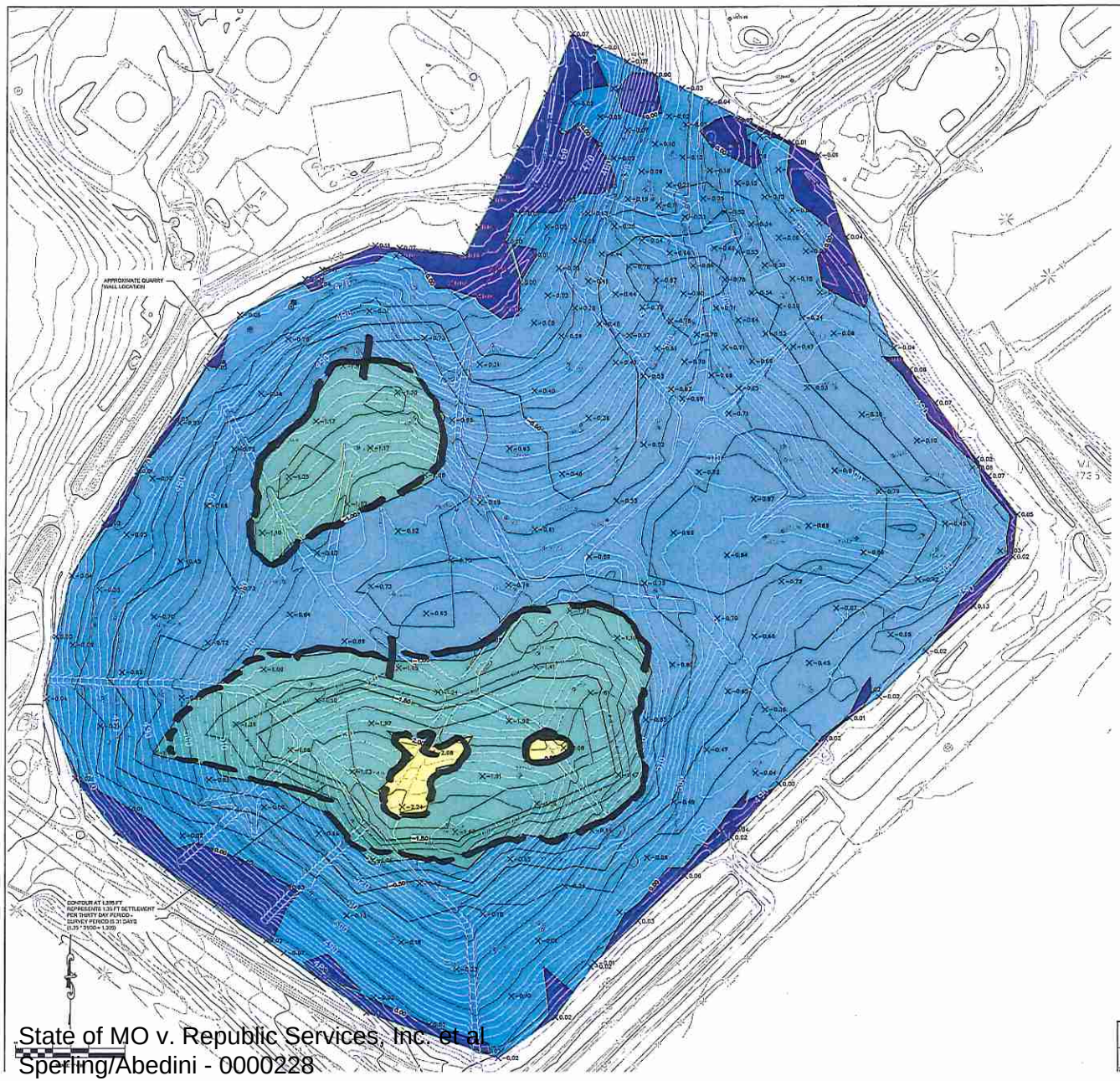
FEEZOR ENGINEERING, INC.

DRAWING NO.: 001

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000226



State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000227



May to June 2014

LEGEND

- TOPOGRAPHY (2' CONTOUR)
- TOPOGRAPHY (10' CONTOUR)
- ELEVATION CHANGE (0.25' CONTOUR)
- ELEVATION CHANGE (0.50' CONTOUR)
- JUNE '15, 2014 SETTLEMENT FRONT

GENERAL NOTES:
1) TOPOGRAPHY SHOWN BASED ON PHOTOGRAPHY DATED 3/26/2014.

SETTLEMENT NOTES:
1) CONTOURS ARE OF CHANGE IN ELEVATION FROM 5/15/14 TO 6/15/14 PERFORMED AT GRID POINTS USING GPS METHODS.
2) SETTLEMENT IS REPORTED AS A NEGATIVE CHANGE IN ELEVATION.
3) ANY POINTS THAT WERE NOT A GROUND TO GROUND COMPARISON FROM THE PREVIOUS MONTH OR WERE NOT SURVEYED IN THE SAME LOCATION AS THE PREVIOUS MONTH HAVE BEEN FILTERED OUT.

ELEVATION CHANGE (FEET)

Number	Minimum Elev. Change	Maximum Elev. Change	Area (sq.ft.)	Color
1	-5.00	-4.00	0.00	
2	-4.00	-3.00	0.00	
3	-3.00	-2.00	117018.48	
4	-2.00	-1.00	370275.61	
5	-1.00	0.00	1141033.64	
6	0.00	1.00	1431610.61	

BRIDGETON LANDFILL, LLC
13570 SAINT CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044

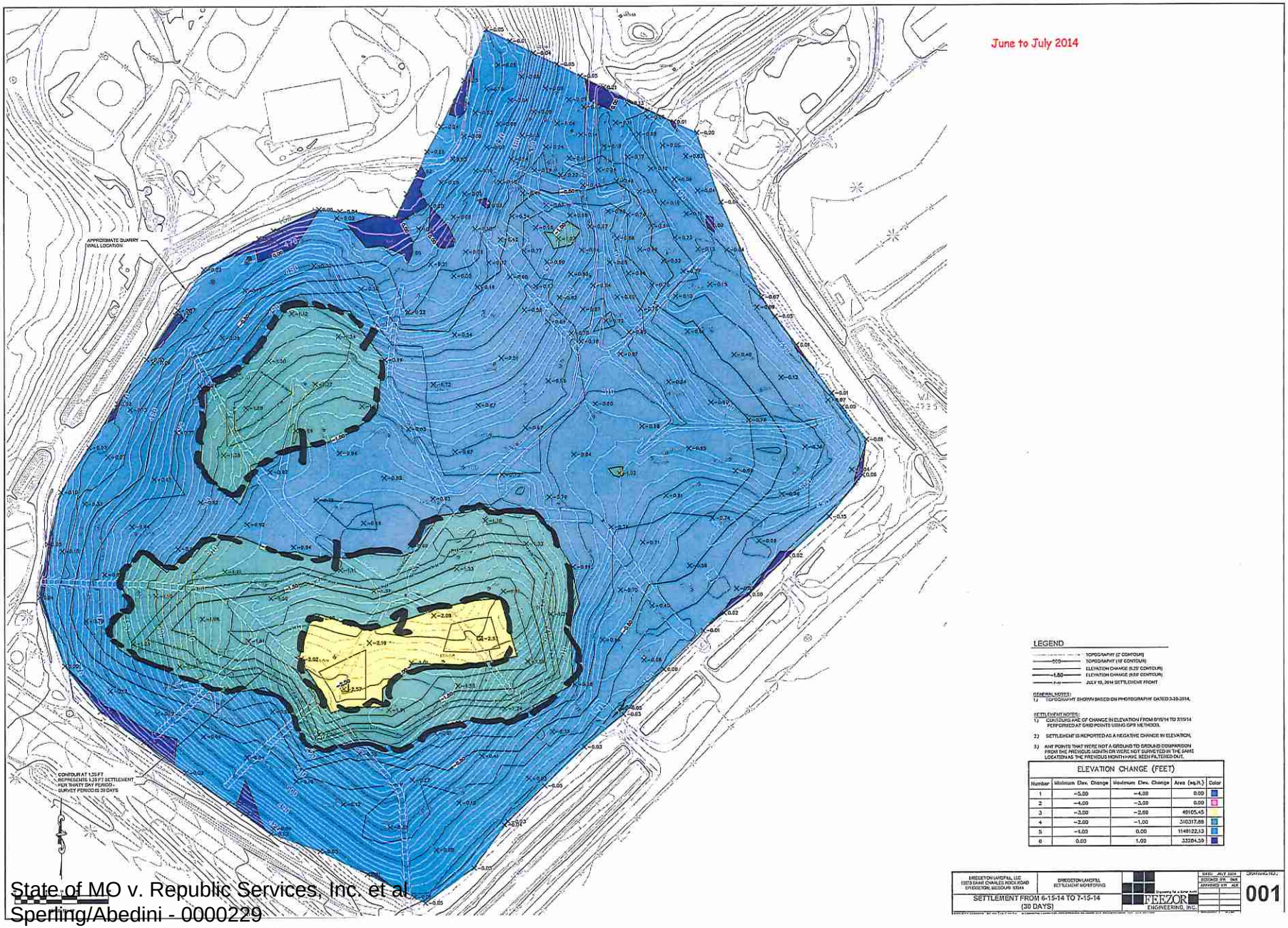
BRIDGETON LANDFILL
SETTLEMENT MONITORING

SETTLEMENT FROM 5-15-14 TO 6-15-14
(31 DAYS)

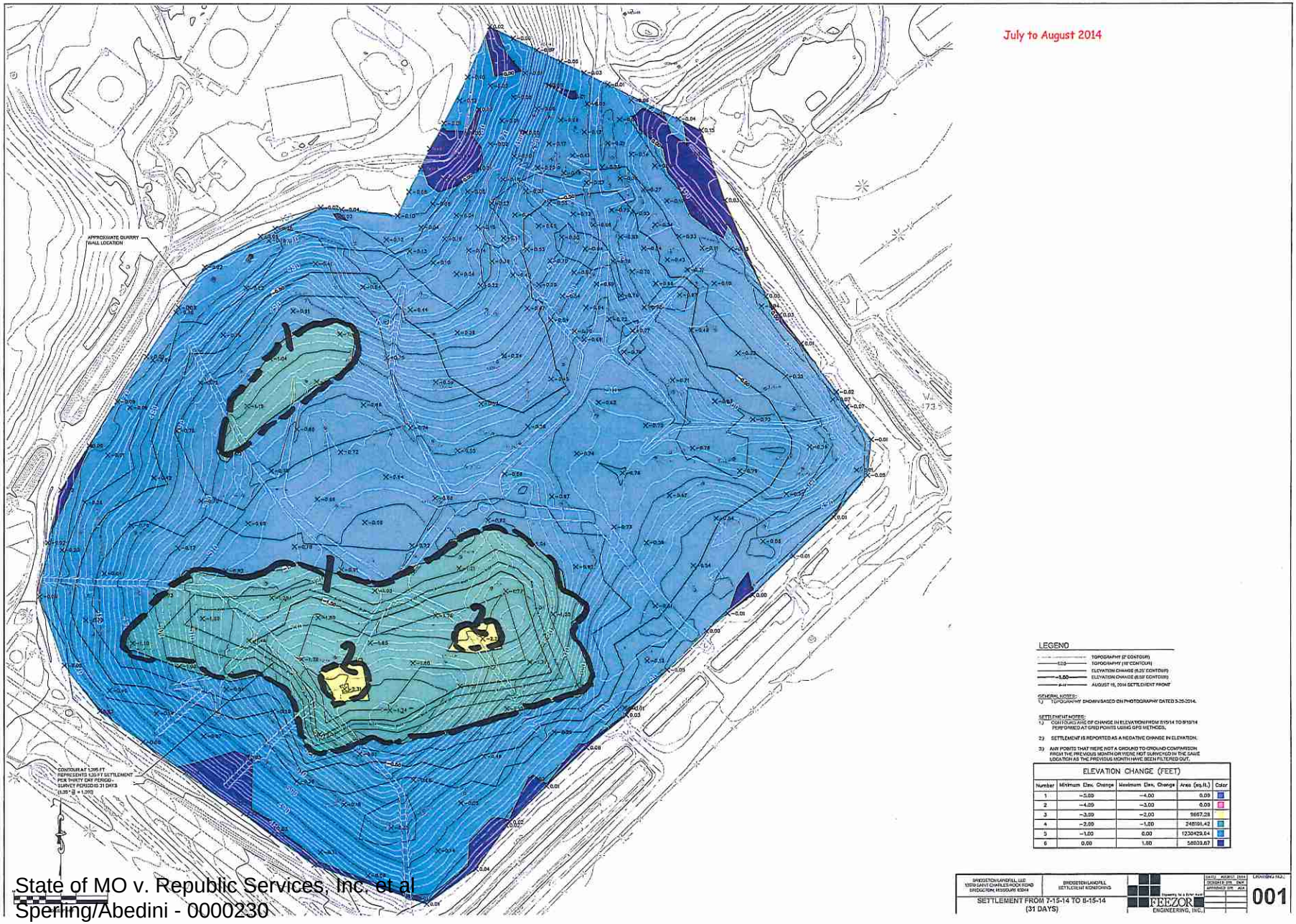
FEEZOR ENGINEERING, INC.

DRAWING NO.: 001

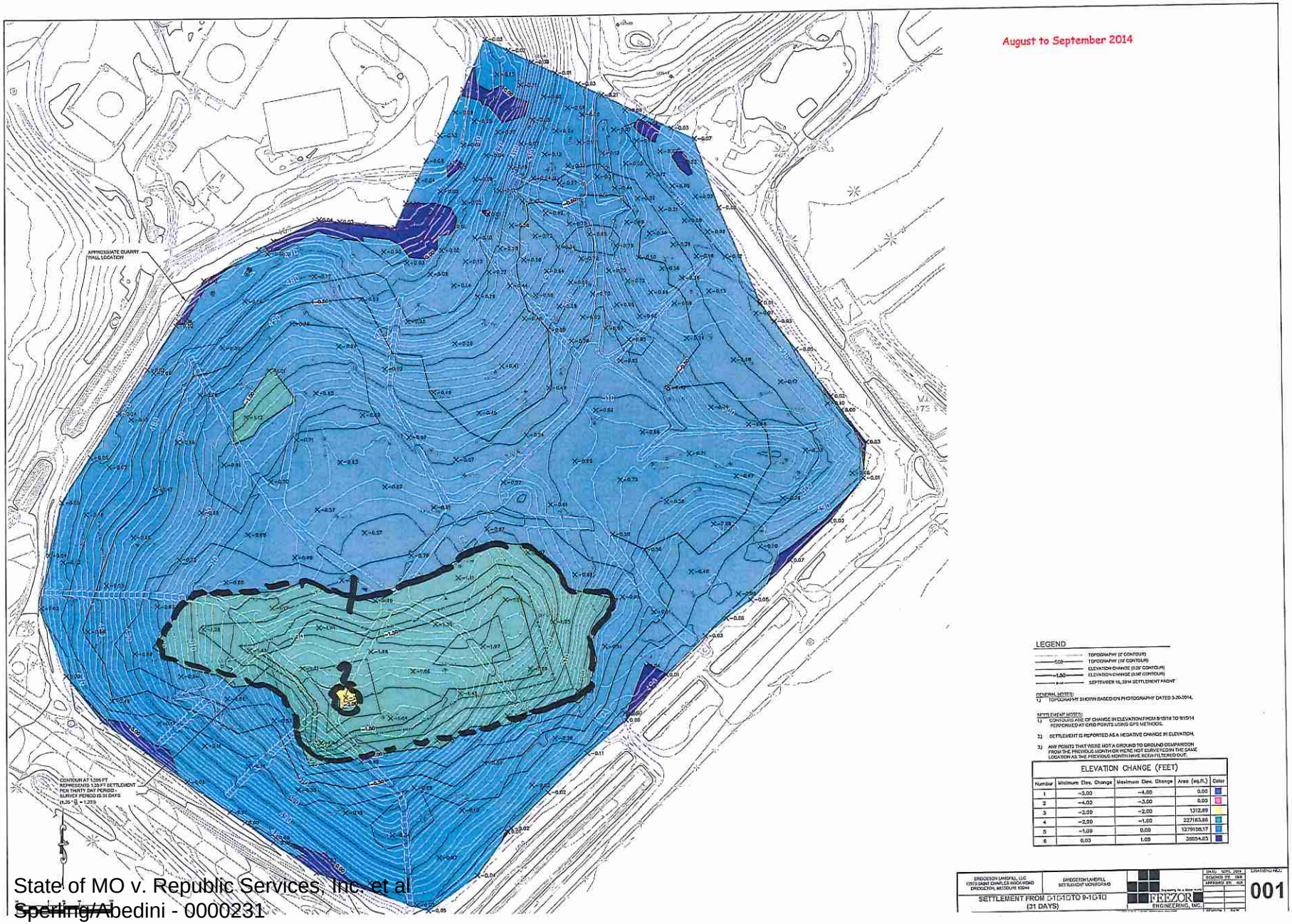
State of MO v. Republic Services, Inc. et al.
Sperling/Abedini - 0000228



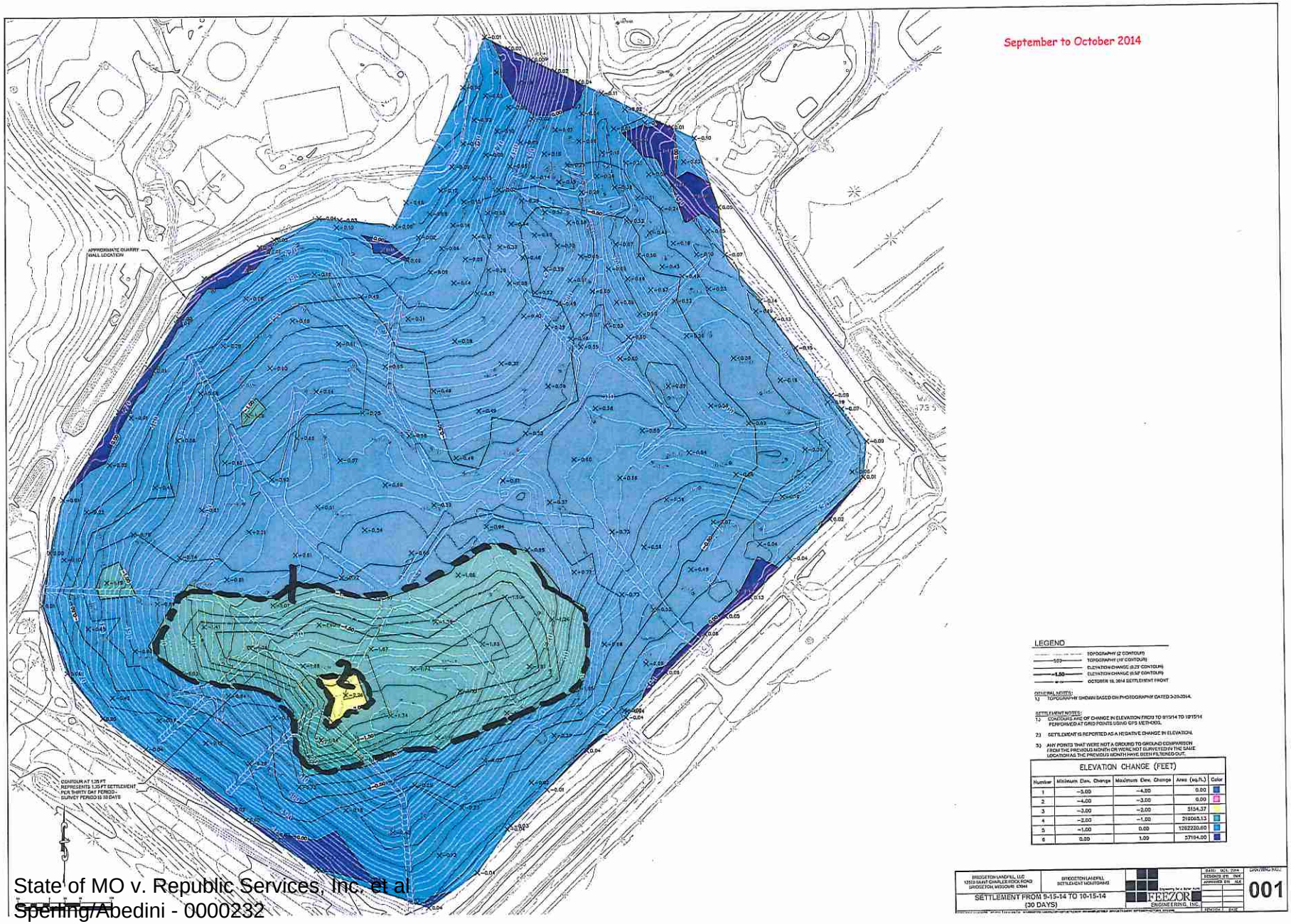
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000229



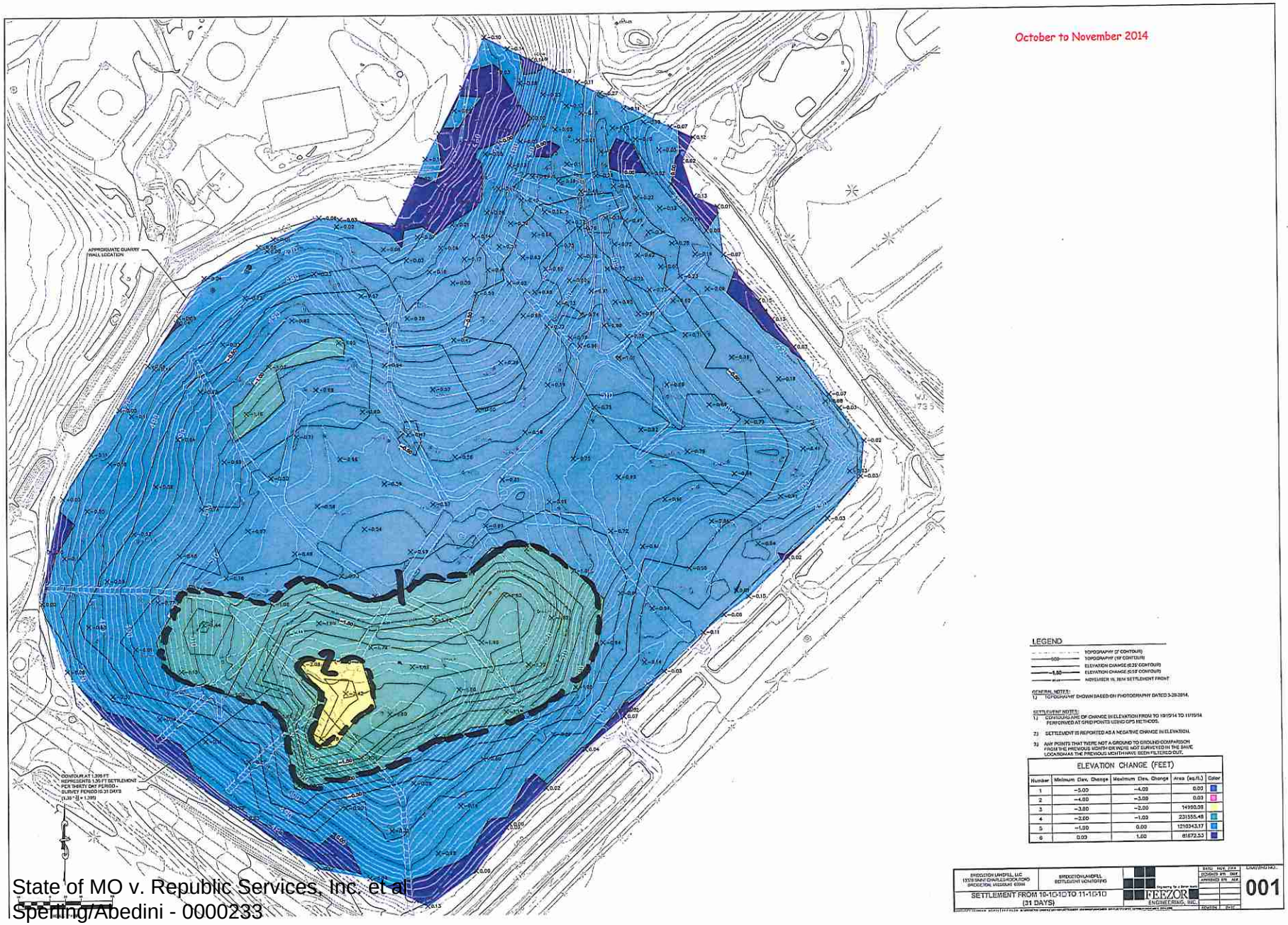
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000230



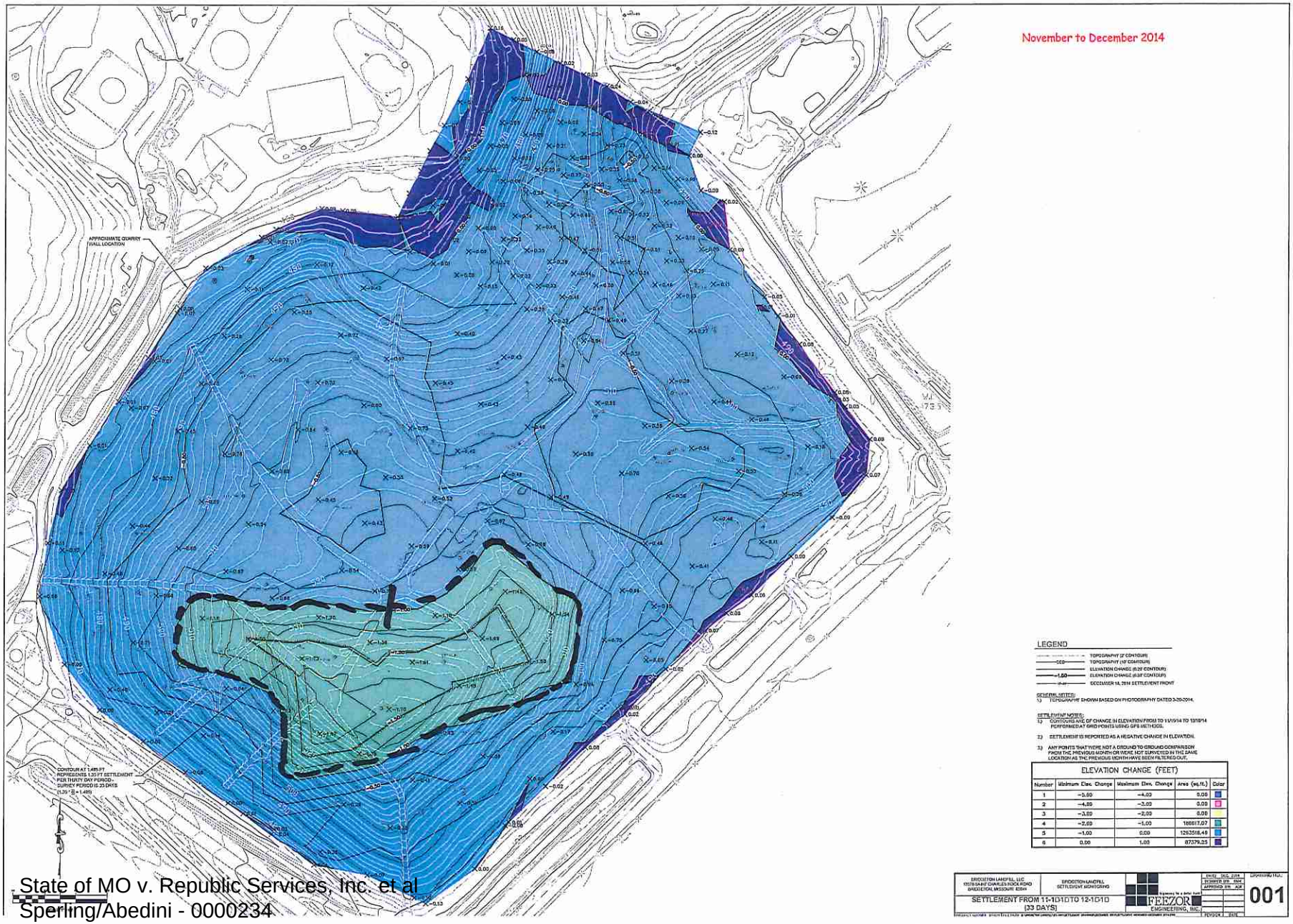
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000231



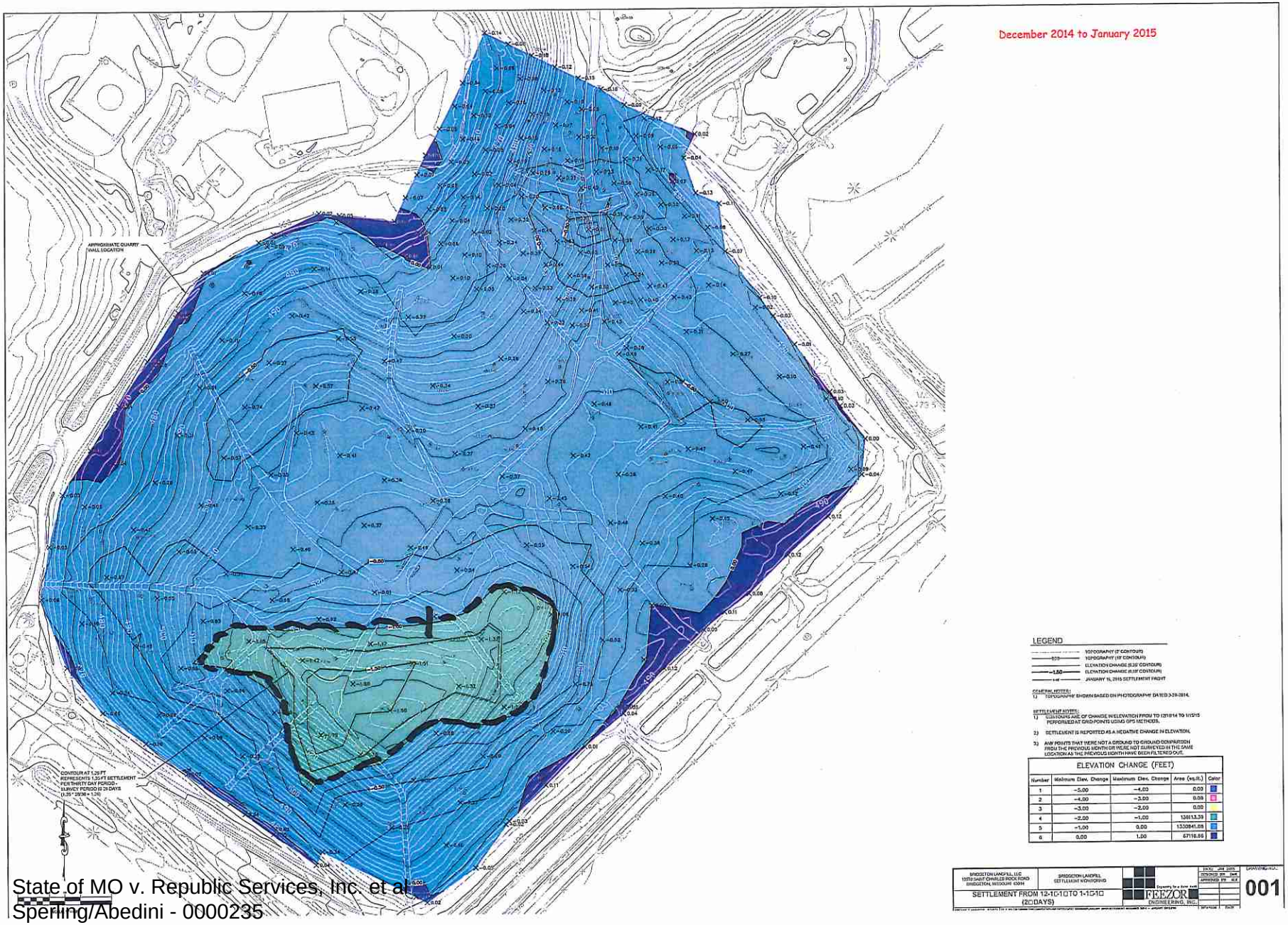
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000232



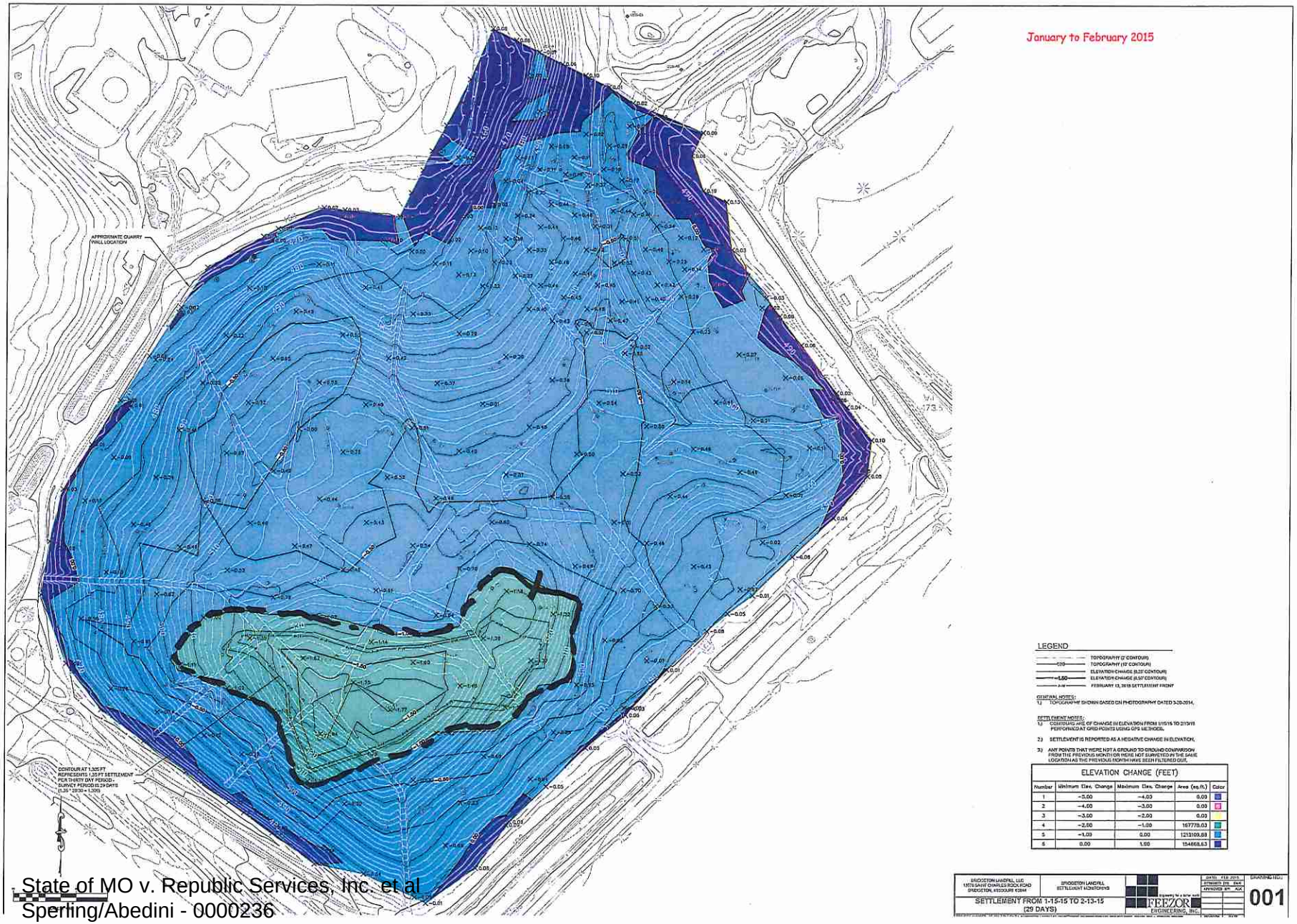
State of MO v. Republic Services, Inc. et al
Spelling/Abedini - 0000233



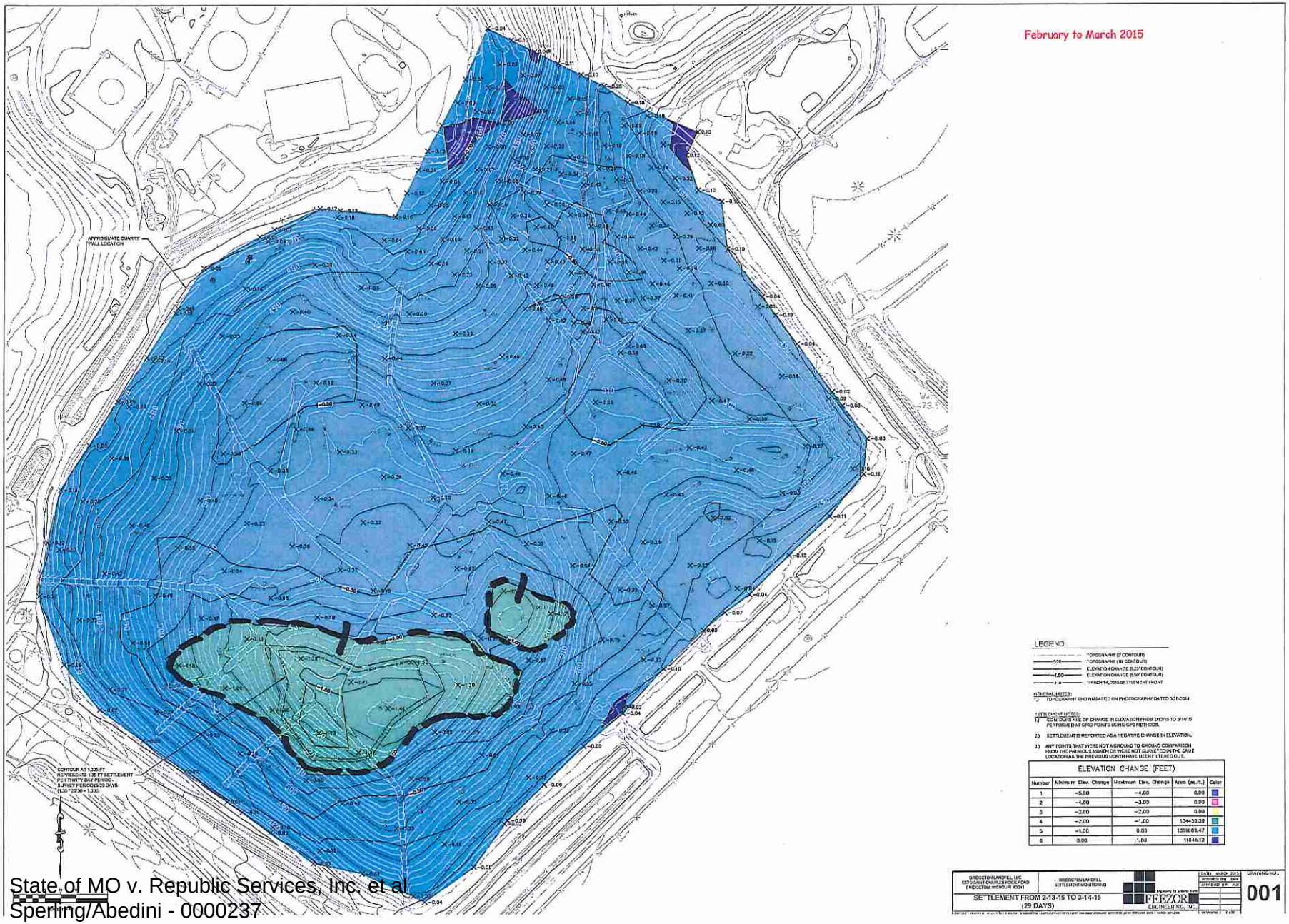
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000234



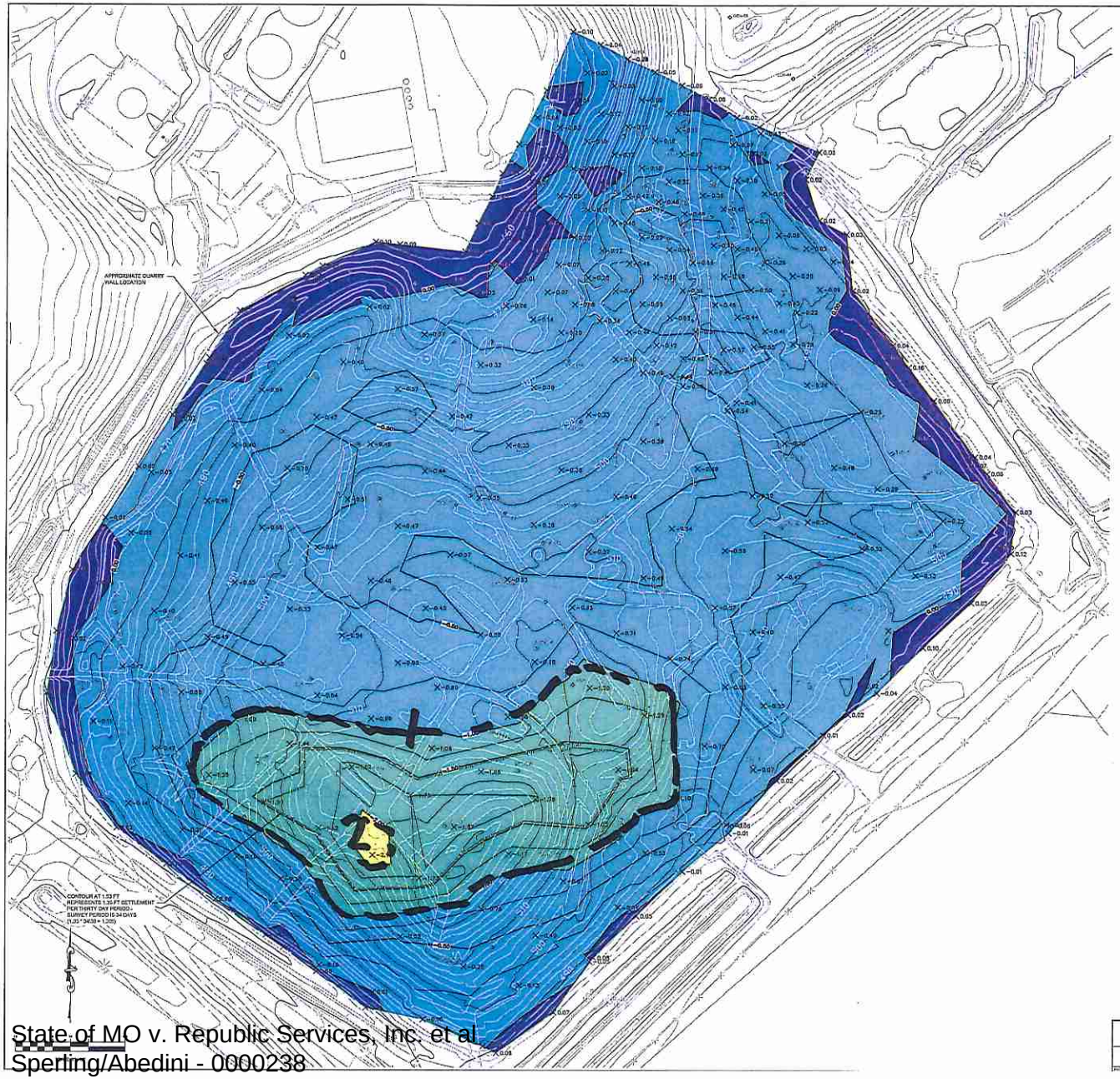
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000235



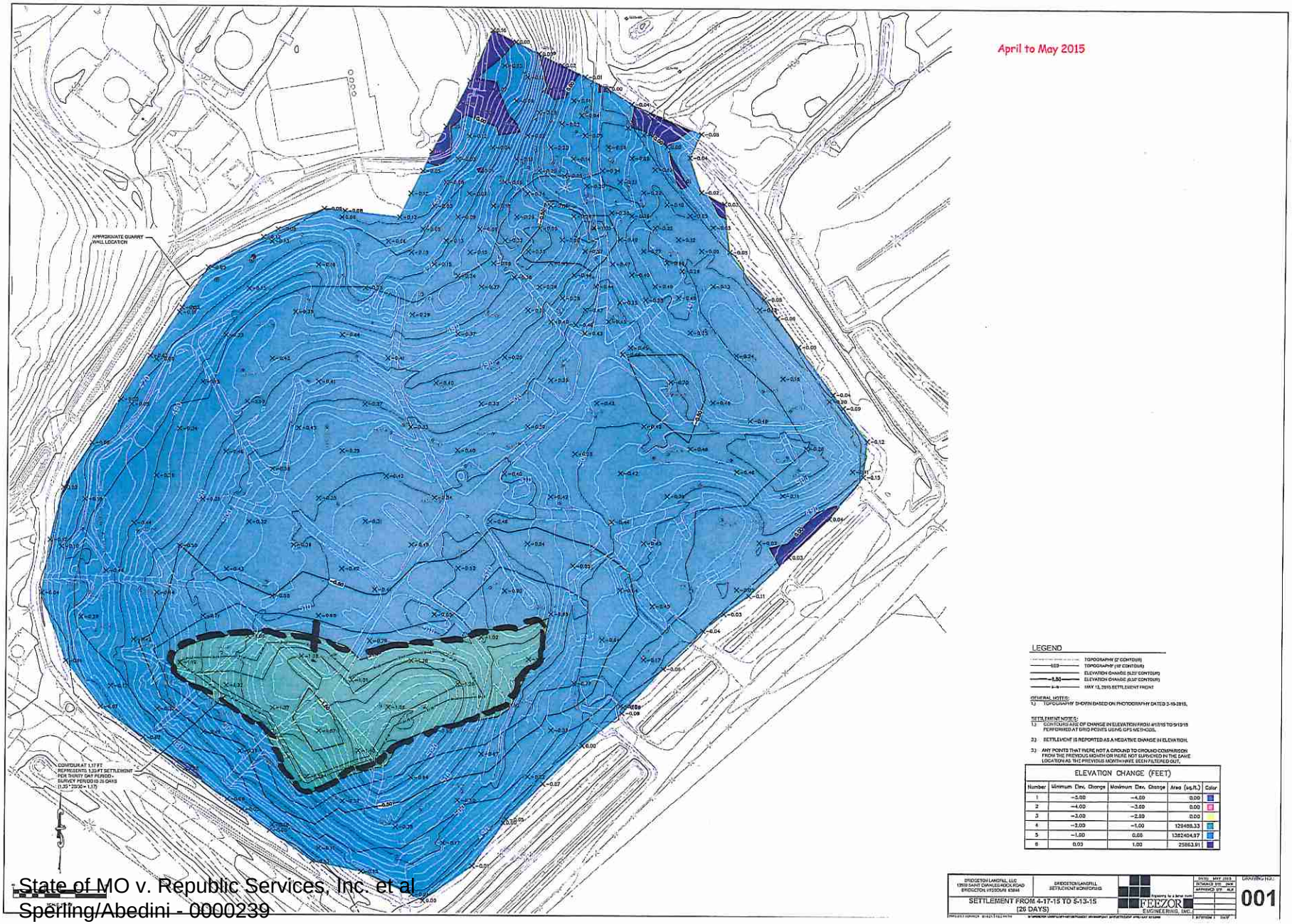
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000236



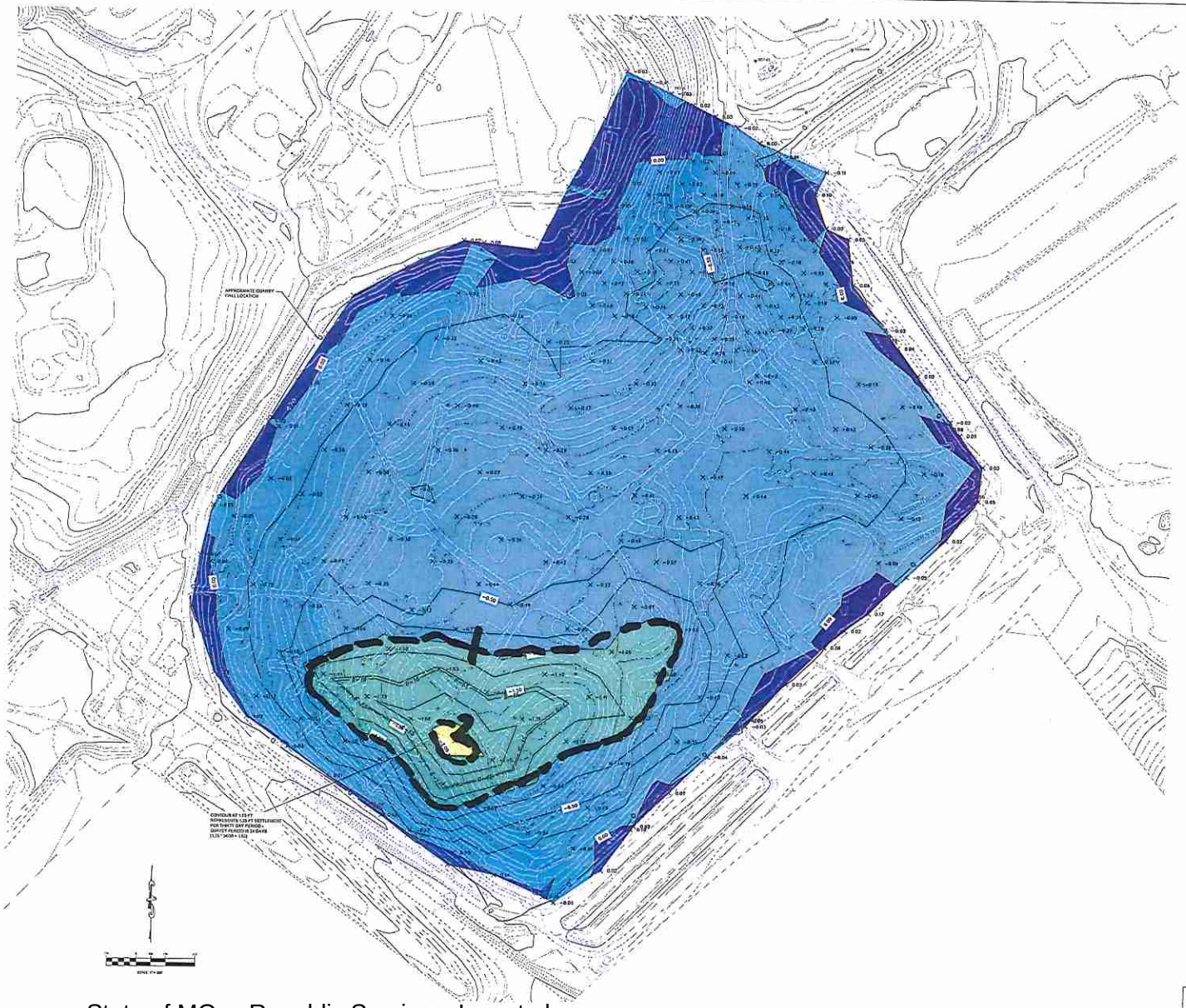
State of MO v. Republic Services, Inc. et al.
Sperling/Abedini - 0000237



State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000238



State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000239



May to June 2015

LEGEND

- TOPOGRAPHY (2' CONTOUR)
- 500 — TOPOGRAPHY (10' CONTOUR)
- ELEVATION CHANGE (0.25' CONTOUR)
- −1.50 — ELEVATION CHANGE (0.50' CONTOUR)
- JUNE 16, 2015 SETTLEMENT FRONT

GENERAL NOTES:

1.) TOPOGRAPHY SHOWN BASED ON PHOTOGRAPHY DATED 2-10-2015.

SETTLEMENT NOTES:

1.) CONTOURS ARE OF CHANGE IN ELEVATION FROM 5/13/15 TO 6/16/15 PERFORMED AT GRID POINTS USING GPS METHODS.

2.) SETTLEMENT IS REPORTED AS A NEGATIVE CHANGE IN ELEVATION.

3.) ANY POINTS THAT WERE NOT A GROUND TO GROUND COMPARISON FROM THE PREVIOUS MONTH OR WERE NOT SURVEYED IN THE SAME LOCATION AS THE PREVIOUS MONTH HAVE BEEN FILTERED OUT.

ELEVATION CHANGE (FEET)

Number	Minimum Elev. Change	Maximum Elev. Change	Area (sq.ft.)	Color
1	−5.00	−4.00	0.00	
2	−4.00	−3.00	0.00	
3	−3.00	−2.00	4101.53	
4	−2.00	−1.00	160331.99	
5	−1.00	0.00	1217383.20	
6	0.00	1.00	155933.04	

BRIDGETON LANDFILL, LLC
13570 SAINT CHARLES ROCK RD
BRIDGETON, MO 63044

BRIDGETON LANDFILL
SETTLEMENT MONITORING

SETTLEMENT FROM 5-13-15 TO 6-16-15

FEEZOR ENGINEERING

DATE: JUNE 2015
DESIGNED BY: DMK
APPROVED BY: MK

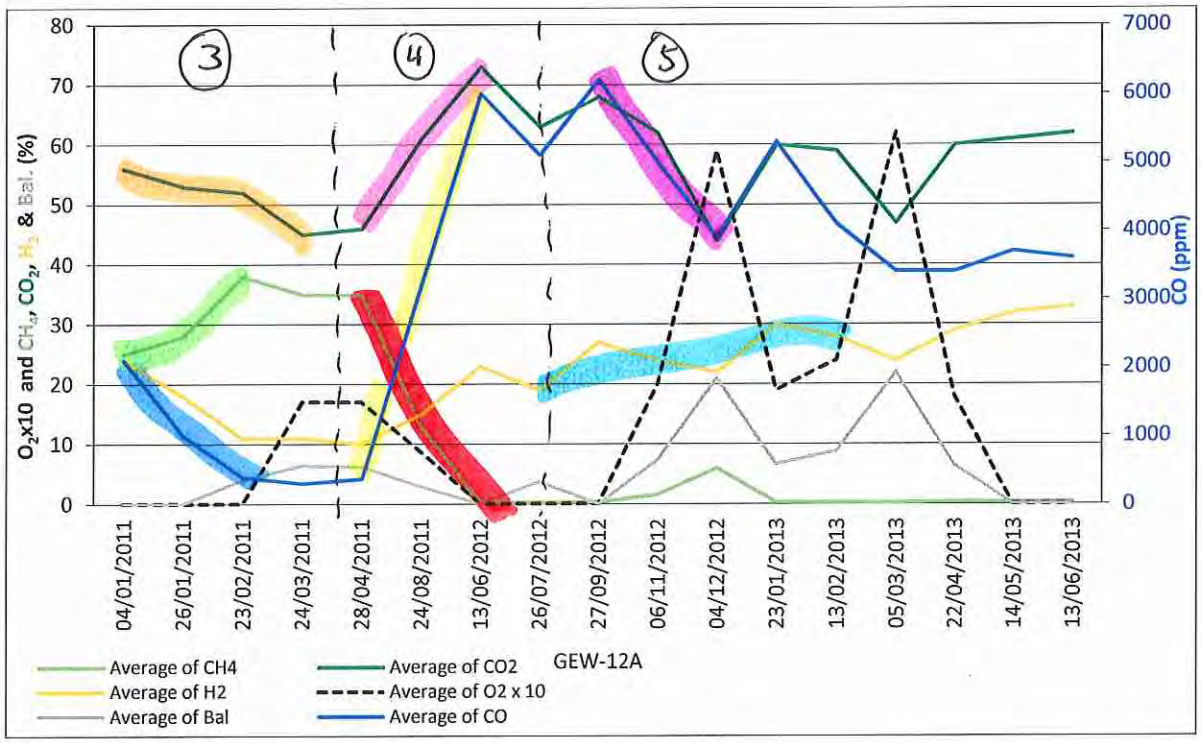
DRAWING NO.:
001

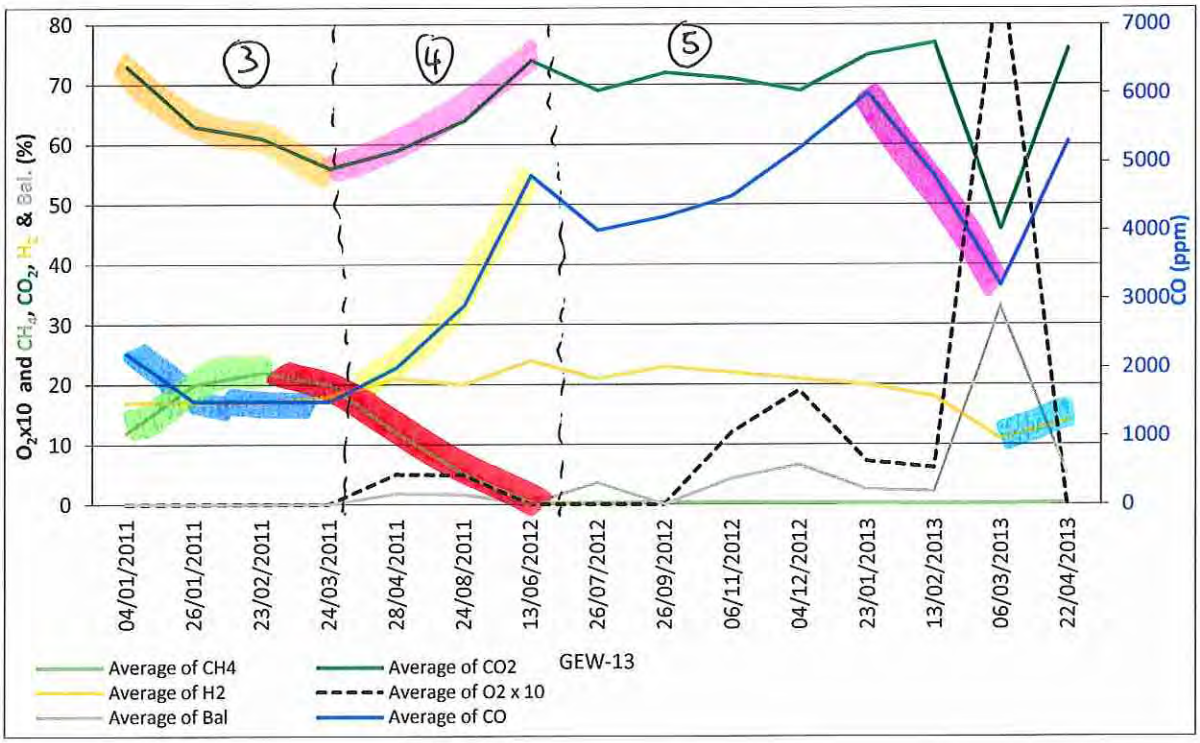
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000240

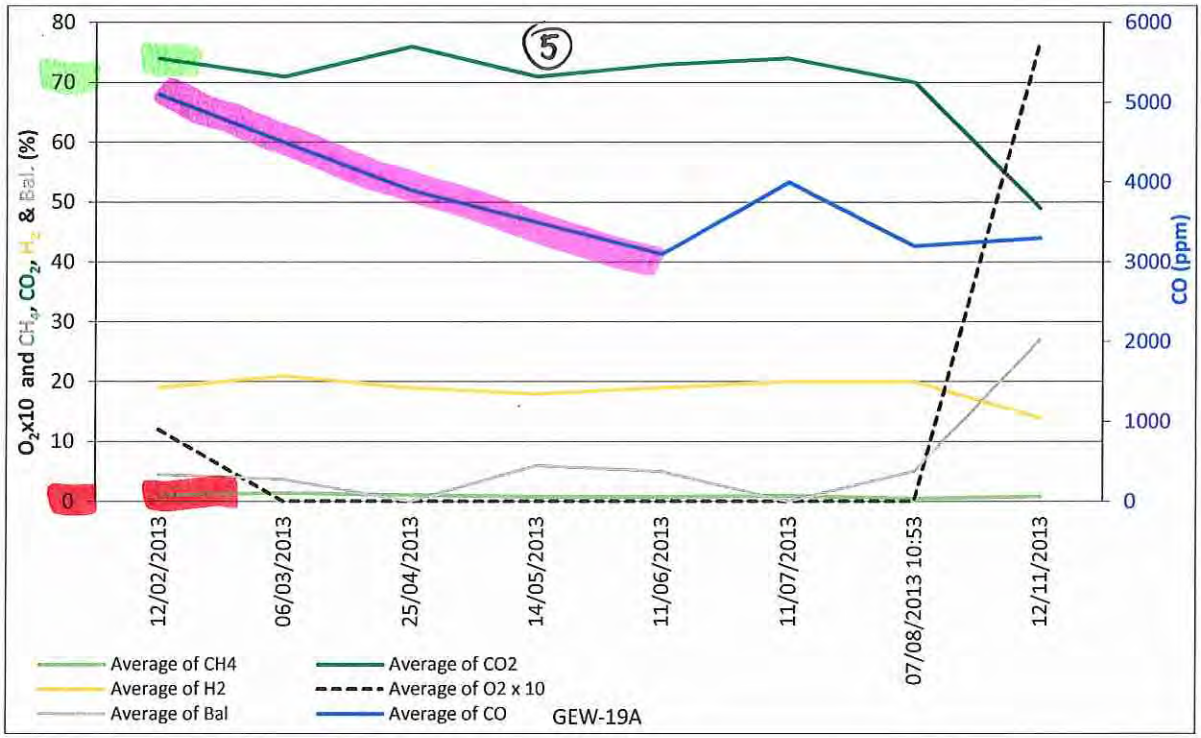
State of MO v. Republic Services, Inc. et al

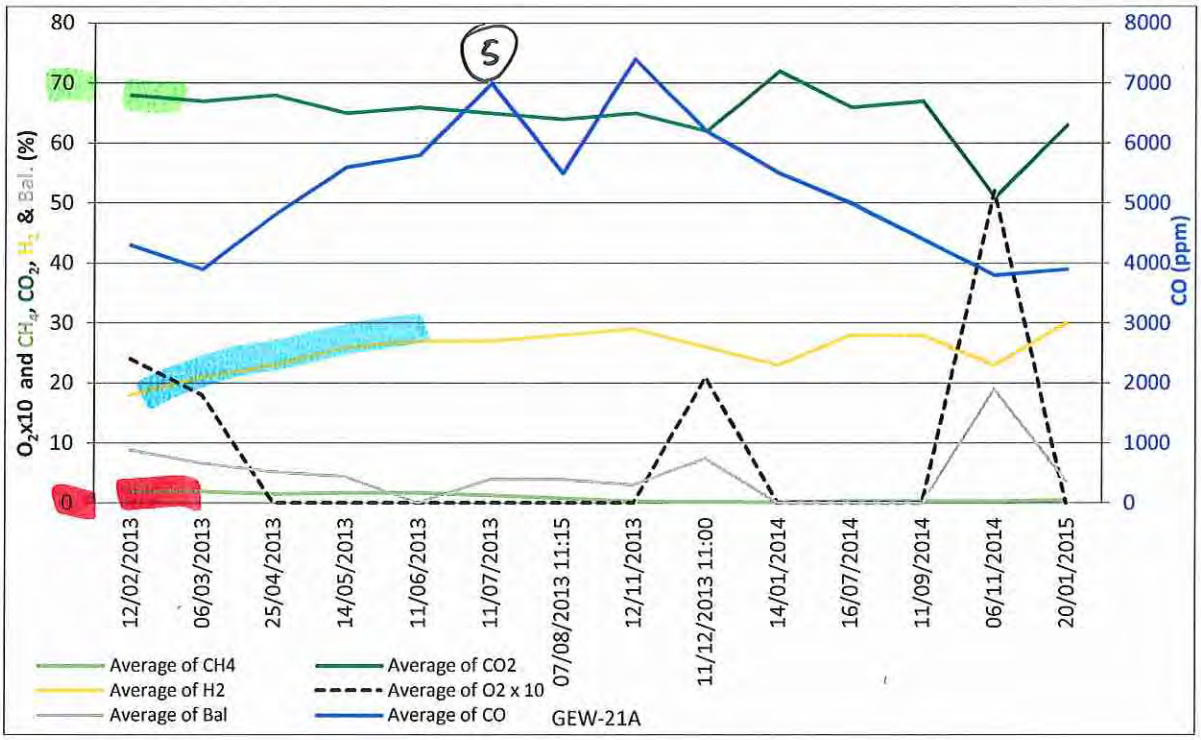
APPENDIX E

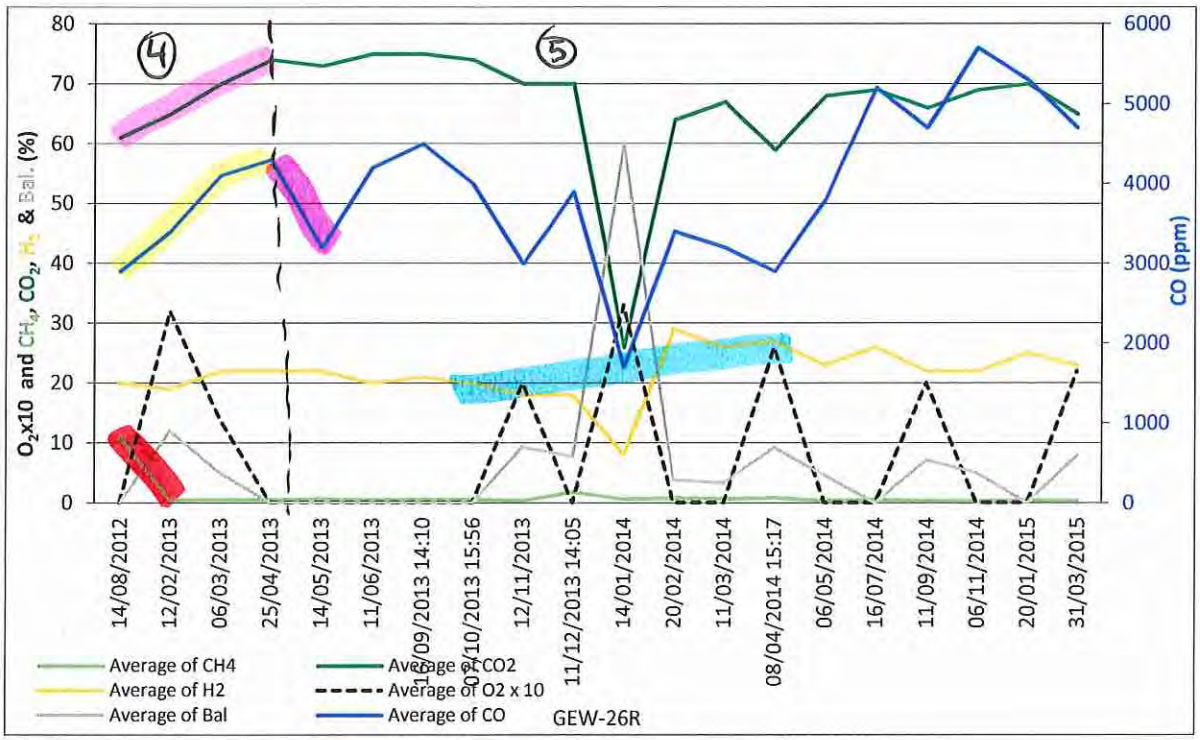
LABORATORY GAS ANALYSIS

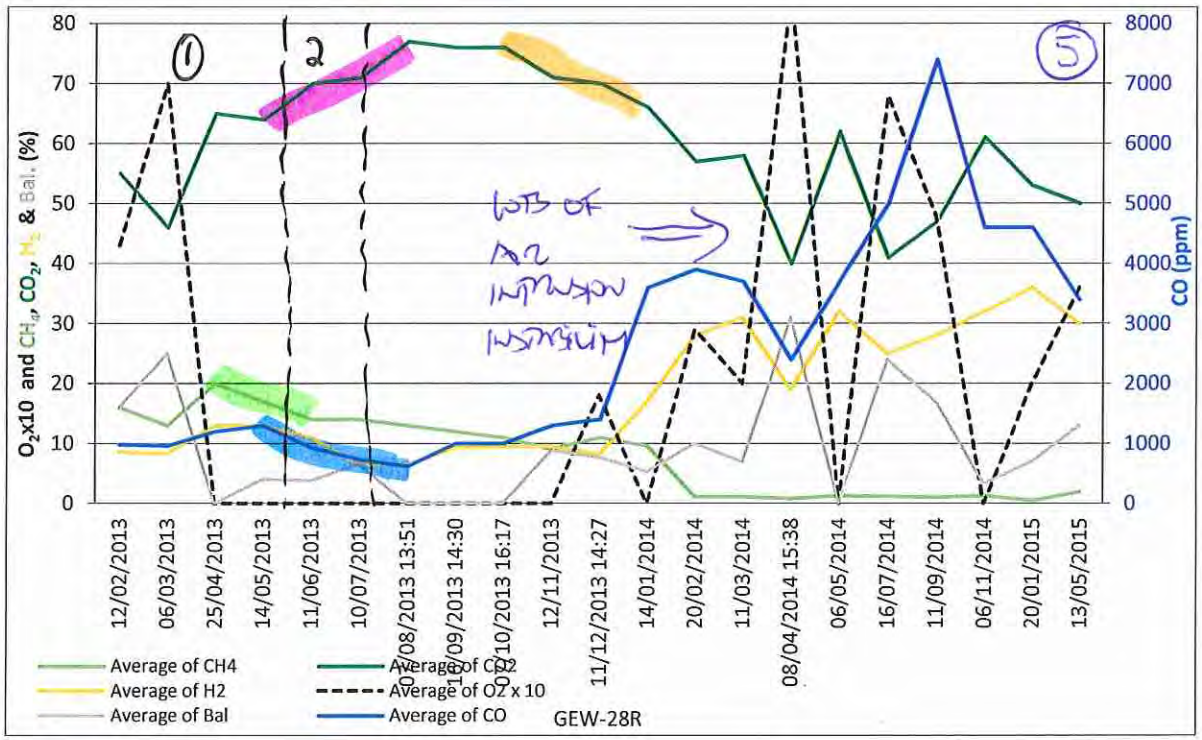

3
4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
26/01/2011
23/02/2011
24/03/2011
28/04/2011
24/08/2011
13/06/2012
26/07/2012
27/09/2012
06/11/2012
04/12/2012
23/01/2013
13/02/2013
05/03/2013
22/04/2013
14/05/2013
13/06/2013
GEW-12A
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO


3
4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
26/01/2011
23/02/2011
24/03/2011
28/04/2011
24/08/2011
13/06/2012
26/07/2012
26/09/2012
06/11/2012
04/12/2012
23/01/2013
13/02/2013
06/03/2013
22/04/2013
GEW-13
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO

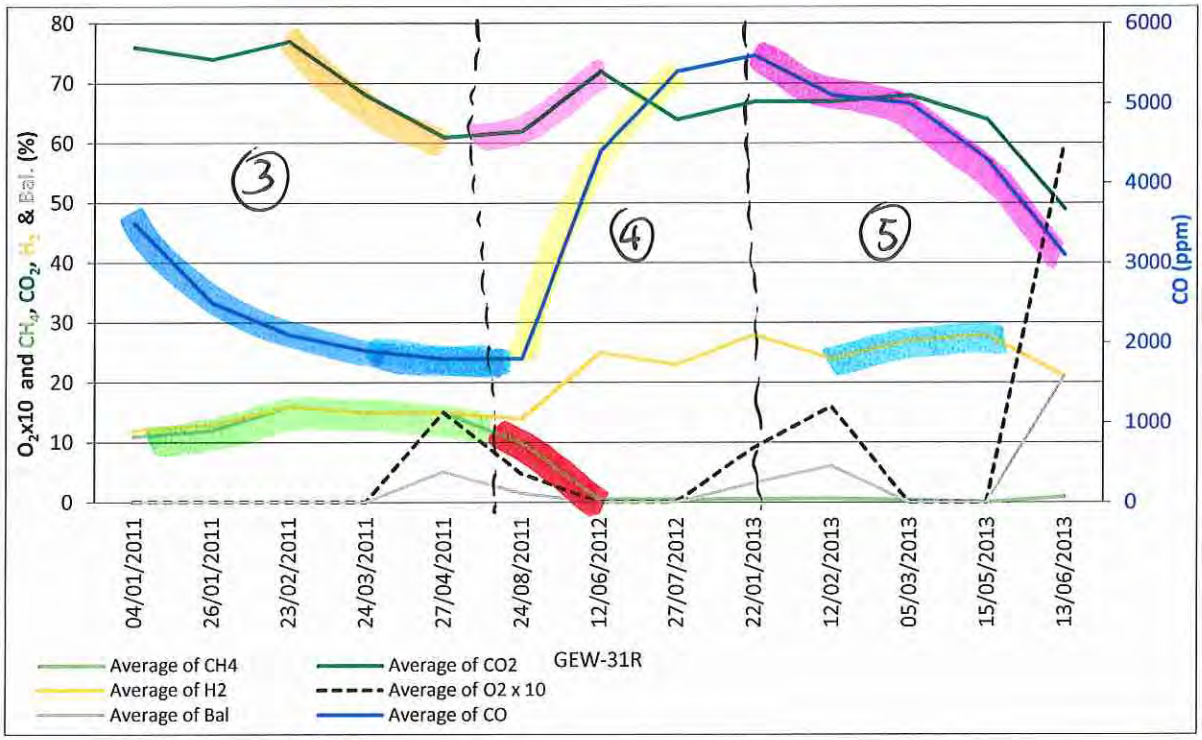

5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
12/02/2013
06/03/2013
25/04/2013
14/05/2013
11/06/2013
11/07/2013
07/08/2013 10:53
12/11/2013
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO
GEW-19A

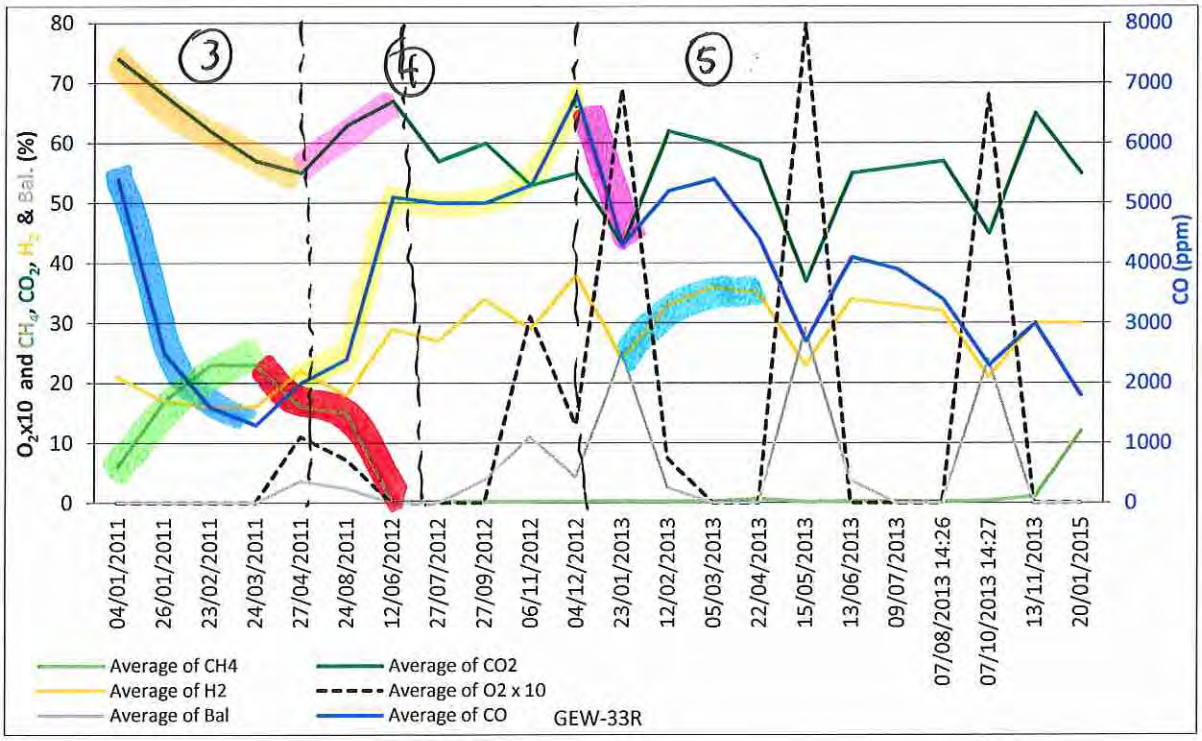

5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
12/02/2013
06/03/2013
25/04/2013
14/05/2013
11/06/2013
11/07/2013
07/08/2013 11:15
12/11/2013
11/12/2013 11:00
14/01/2014
16/07/2014
11/09/2014
06/11/2014
20/01/2015
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO
GEW-21A

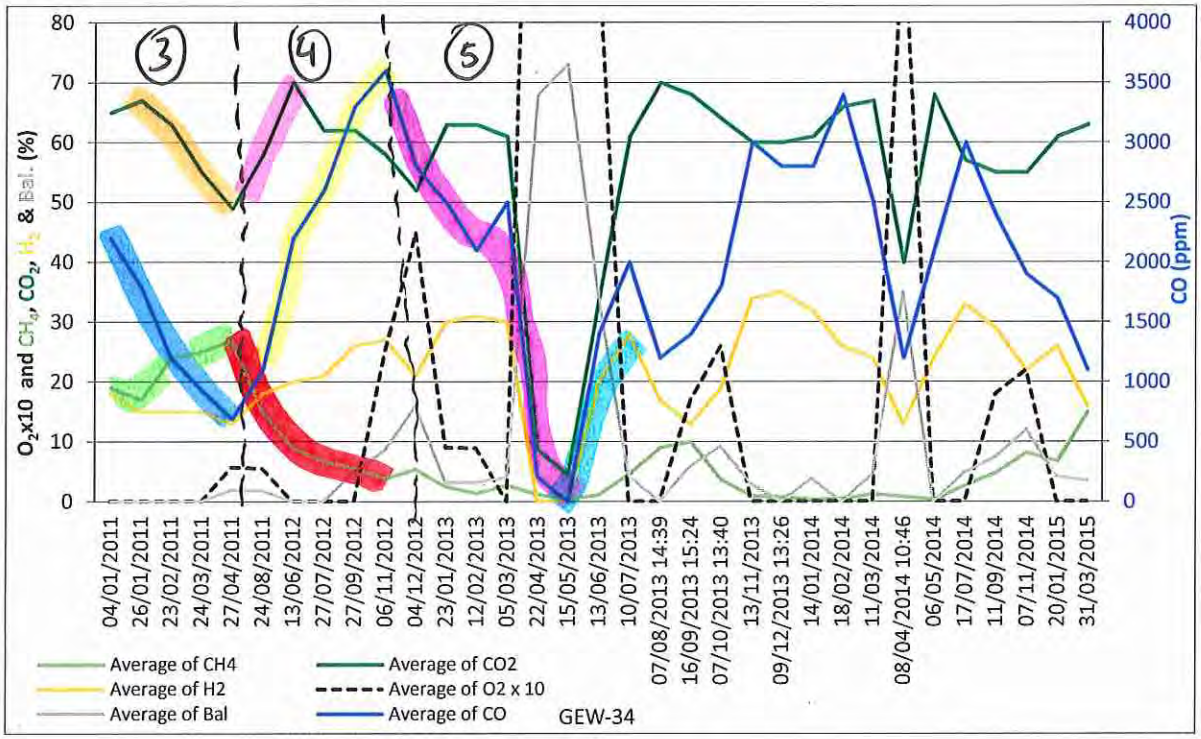

4
5
O_2x10 and CH_4, CO_2, H_2 & Bal. (%)
CO (ppm)
14/08/2012
12/02/2013
06/03/2013
25/04/2013
14/05/2013
11/06/2013
09/2013 14:10
10/2013 15:56
12/11/2013
11/12/2013 14:05
14/01/2014
20/02/2014
11/03/2014
08/04/2014 15:17
06/05/2014
16/07/2014
11/09/2014
06/11/2014
20/01/2015
31/03/2015
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO
GEW-26R

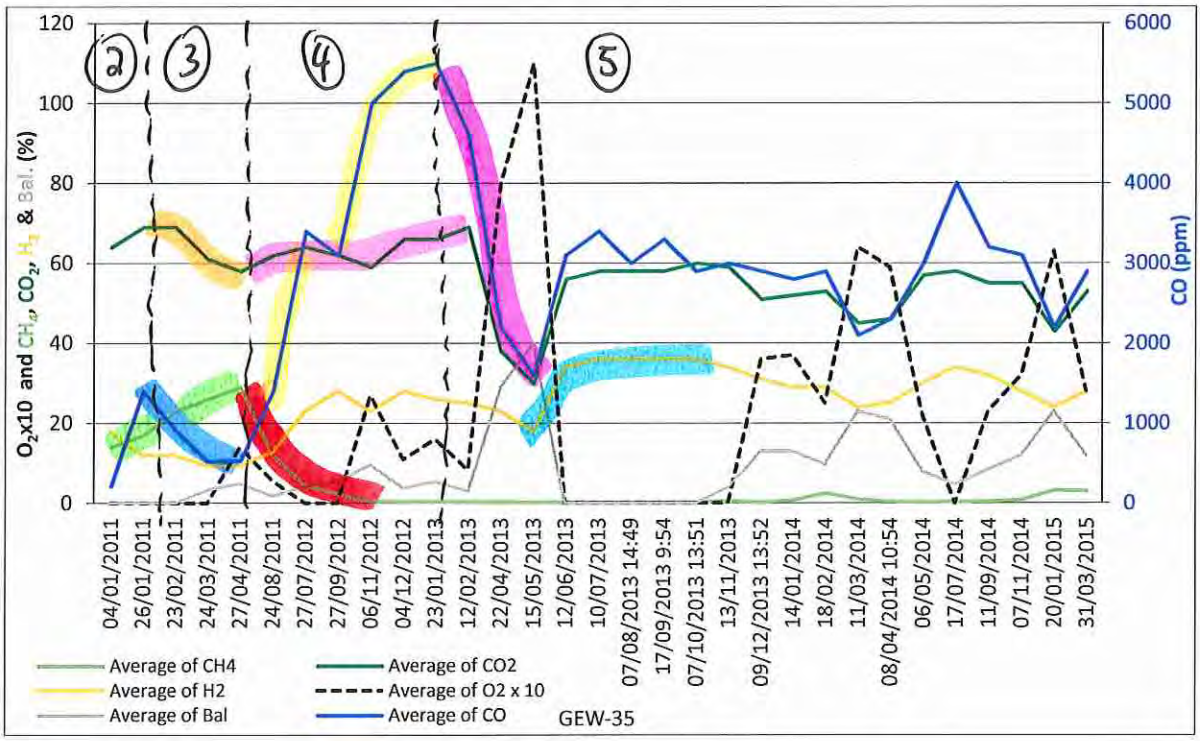

1
2
5
LOTS OF
AIR
INTRUSION
O_2x10 and CH_4, CO_2, H_2 & Bal. (%)
CO (ppm)
12/02/2013
06/03/2013
25/04/2013
14/05/2013
11/06/2013
10/07/2013
08/2013 13:51
09/2013 14:30
10/2013 16:17
12/11/2013
11/12/2013 14:27
14/01/2014
20/02/2014
11/03/2014
08/04/2014 15:38
06/05/2014
16/07/2014
11/09/2014
06/11/2014
20/01/2015
13/05/2015
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO
GEW-28R

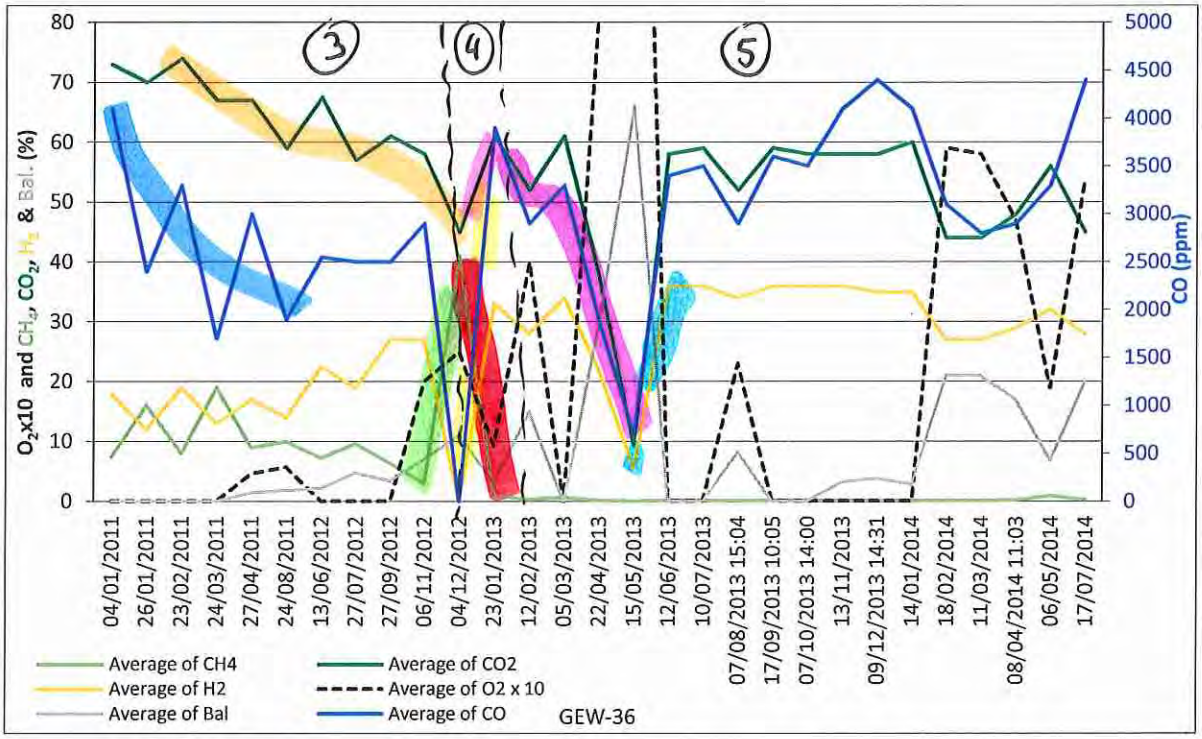
Source: BL_004_0002789 Lab Data

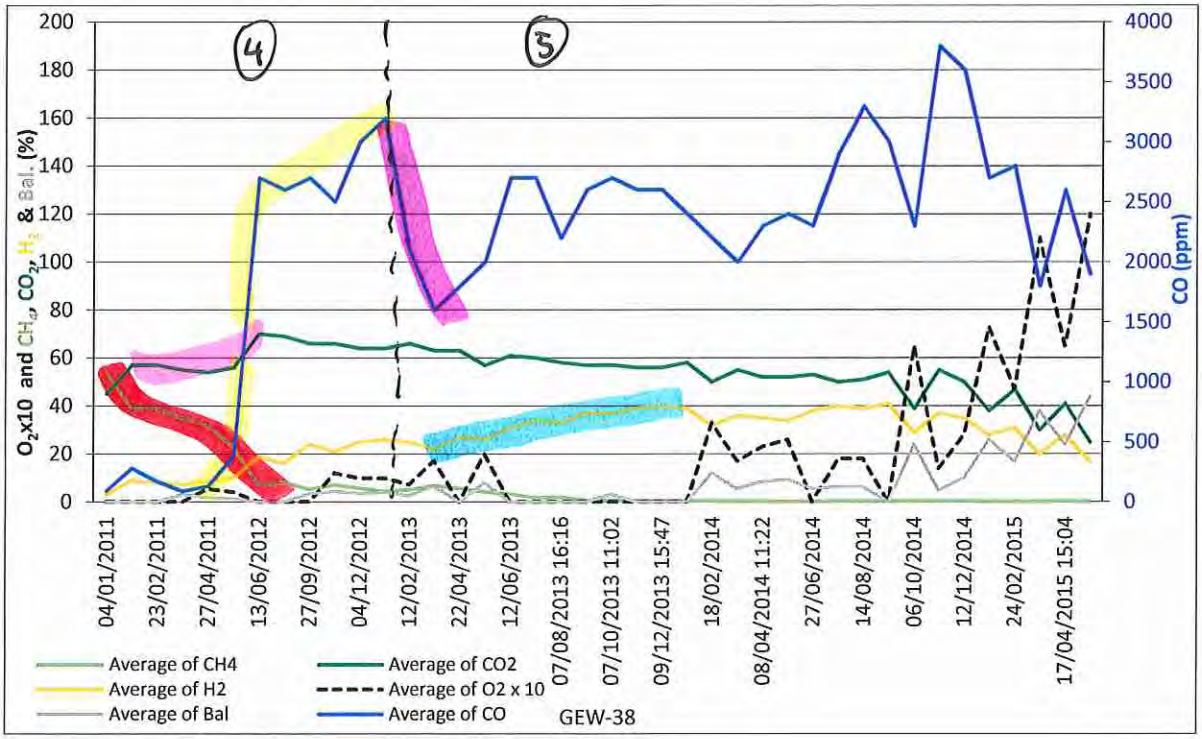





3
4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
Average of CH4
Average of H2
Average of Bal
Average of CO2
Average of O2 x 10
Average of CO
GEW-34

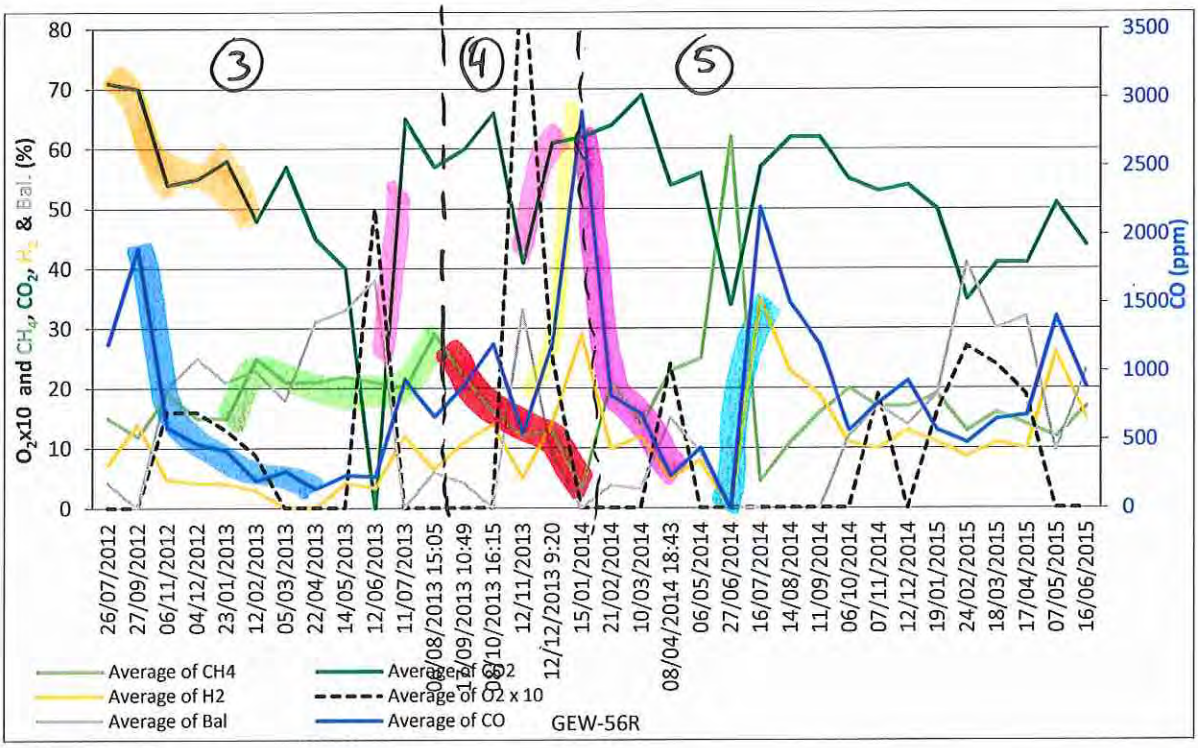

2
3
4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
Average of CH4
Average of H2
Average of Bal
Average of CO2
Average of O2 x 10
Average of CO
GEW-35

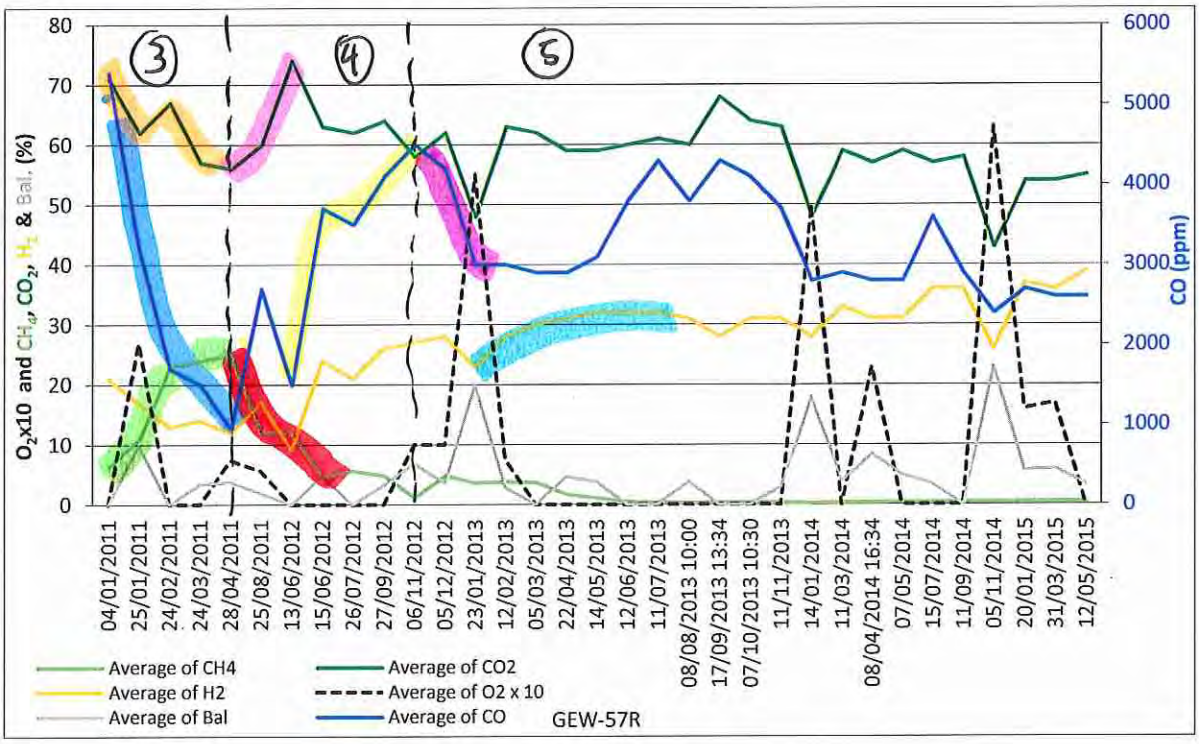

3
4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
26/01/2011
23/02/2011
24/03/2011
27/04/2011
24/08/2011
13/06/2012
27/07/2012
27/09/2012
06/11/2012
04/12/2012
23/01/2013
12/02/2013
05/03/2013
22/04/2013
15/05/2013
12/06/2013
10/07/2013
07/08/2013 15:04
17/09/2013 10:05
07/10/2013 14:00
13/11/2013
09/12/2013 14:31
14/01/2014
18/02/2014
11/03/2014
08/04/2014 11:03
06/05/2014
17/07/2014
Average of CH4
Average of H2
Average of Bal
Average of CO2
Average of O2 x 10
Average of CO
GEW-36

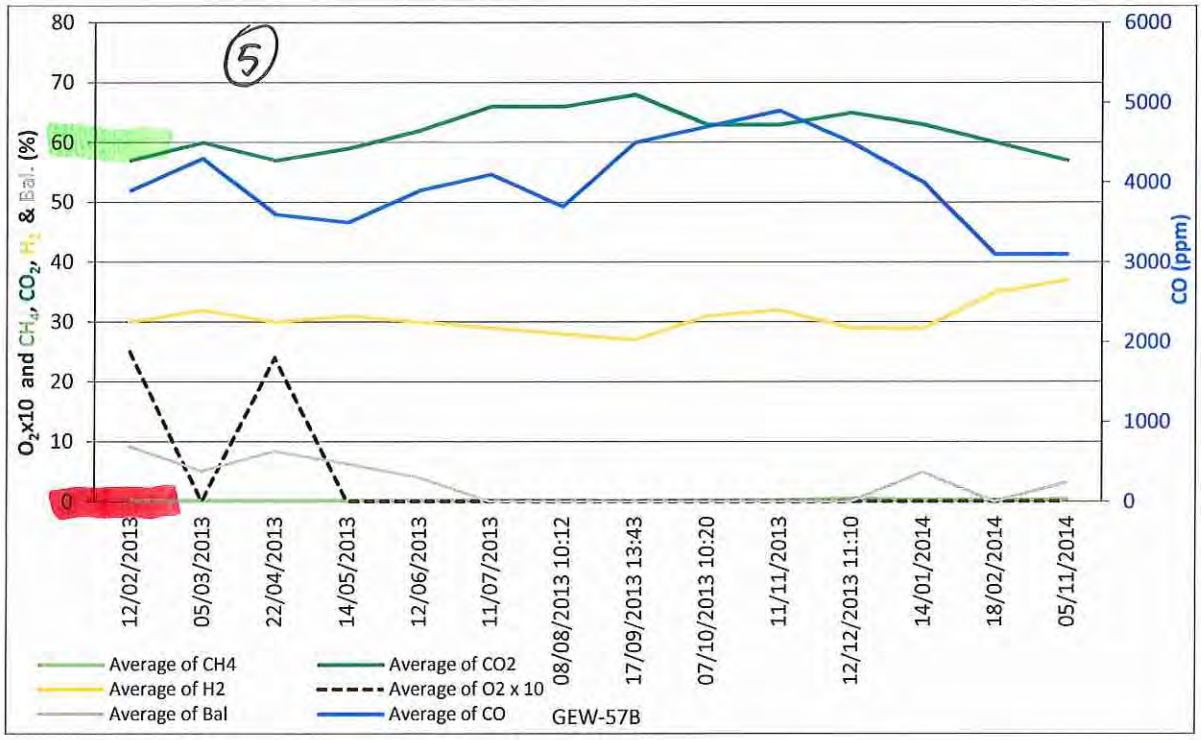

4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
23/02/2011
27/04/2011
13/06/2012
27/09/2012
04/12/2012
12/02/2013
22/04/2013
12/06/2013
07/08/2013 16:16
07/10/2013 11:02
09/12/2013 15:47
18/02/2014
08/04/2014 11:22
27/06/2014
14/08/2014
06/10/2014
12/12/2014
24/02/2015
17/04/2015 15:04
Average of CH4
Average of H2
Average of Bal
Average of CO2
Average of O2 x 10
Average of CO
GEW-38

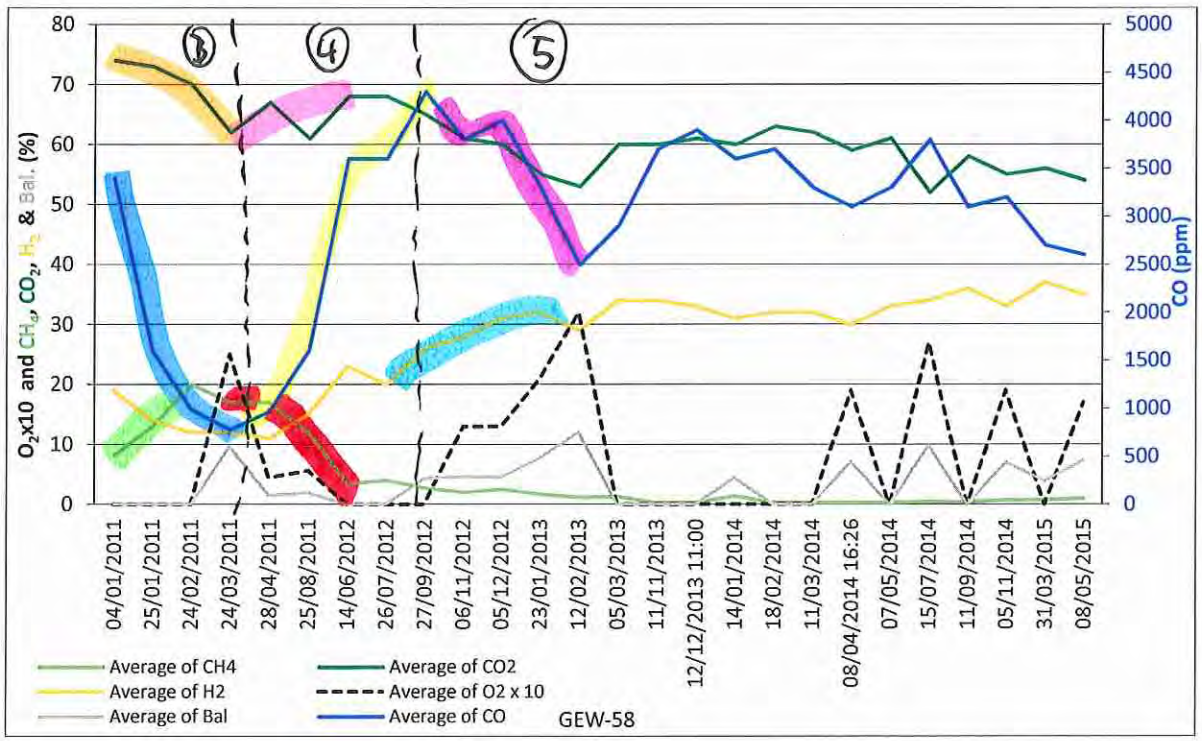
Source: BL_004_0002789

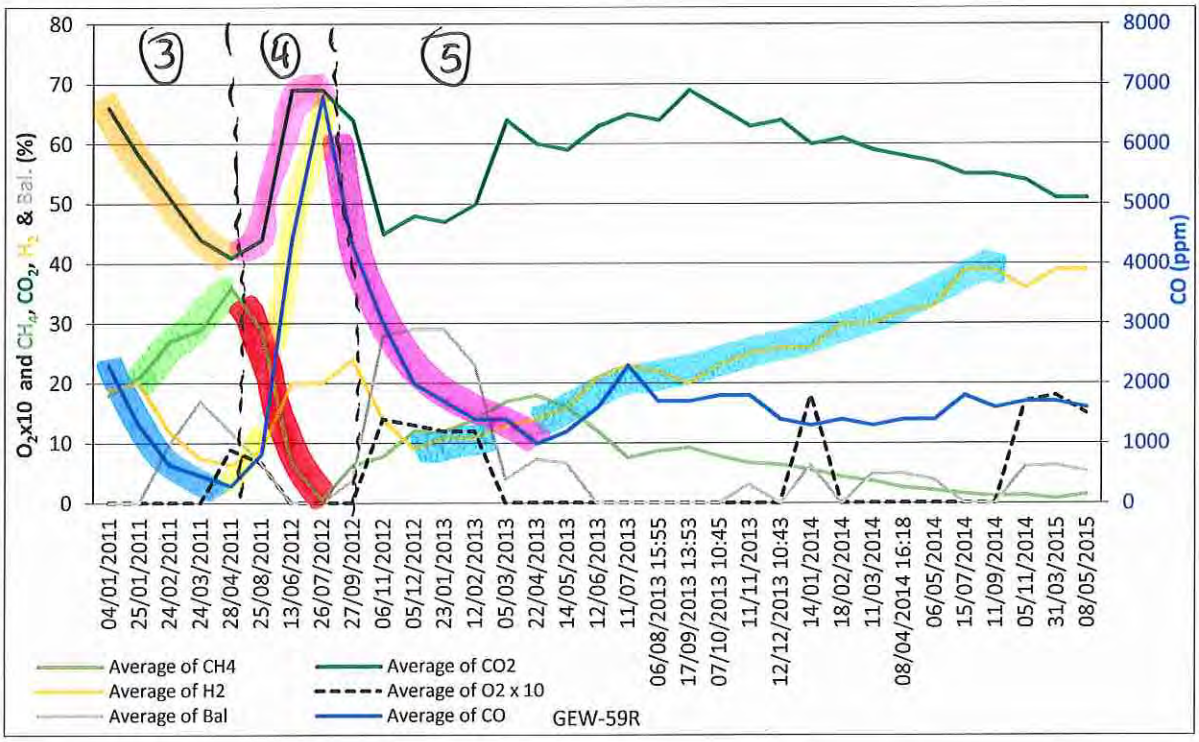
Lab Data

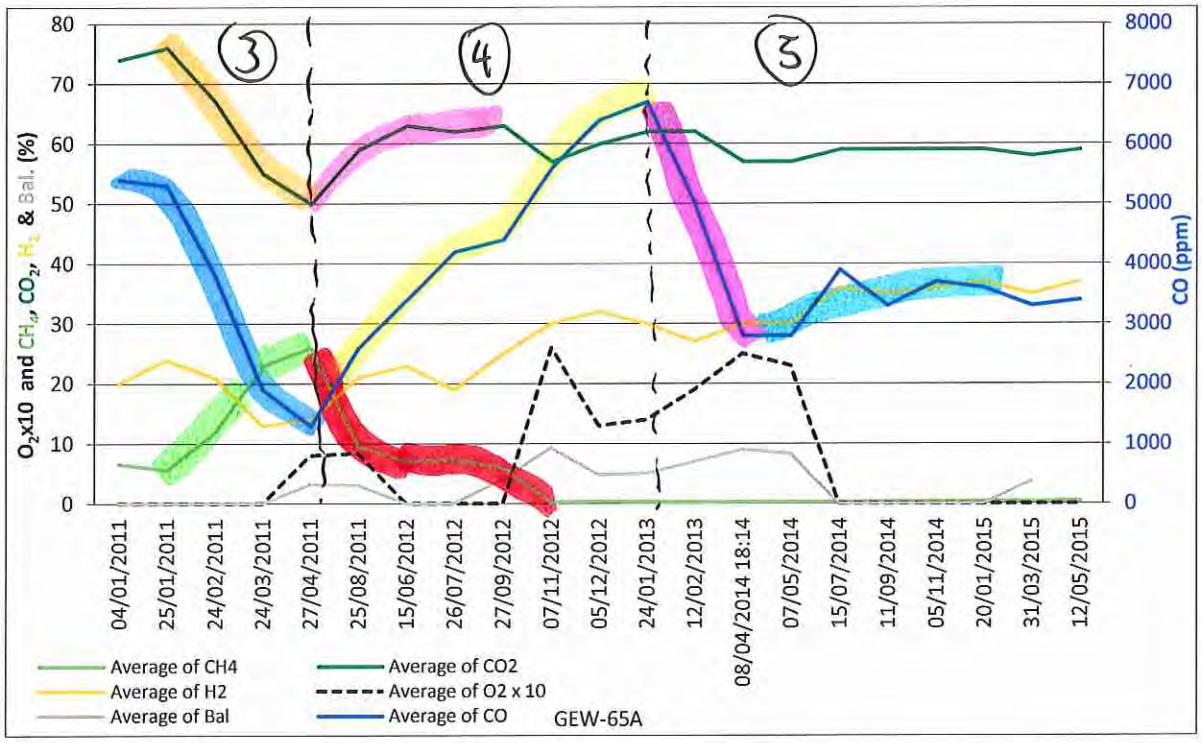


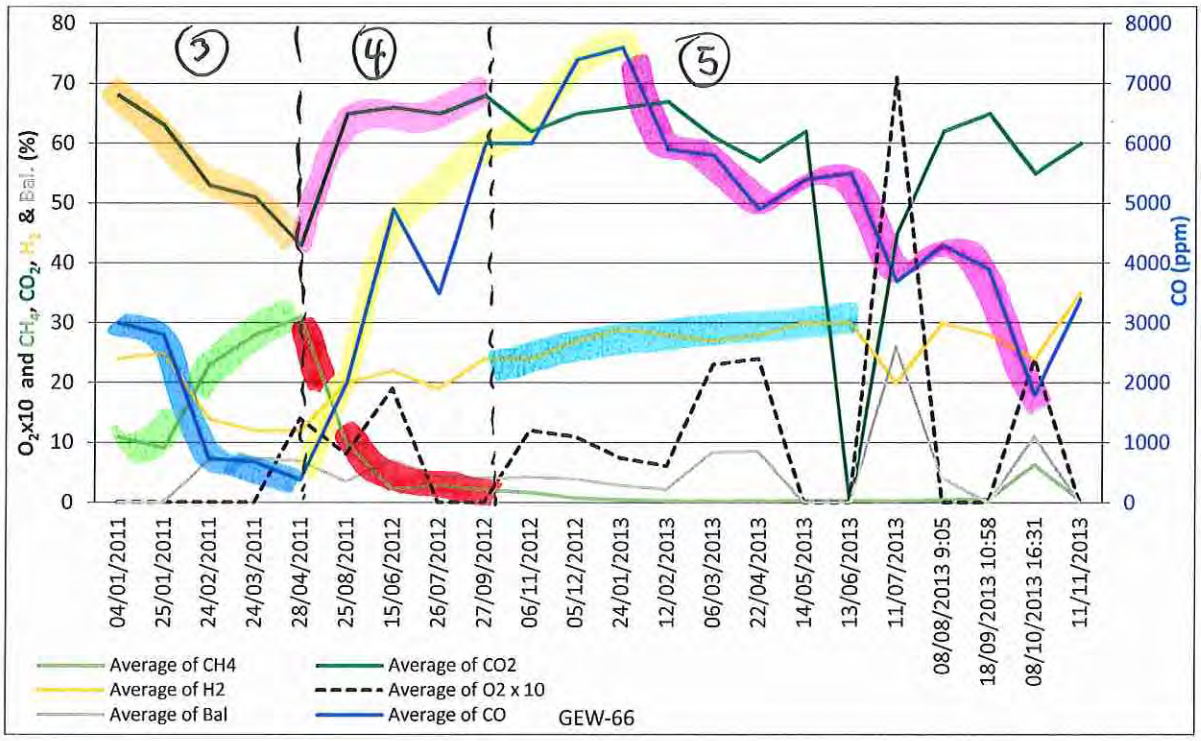


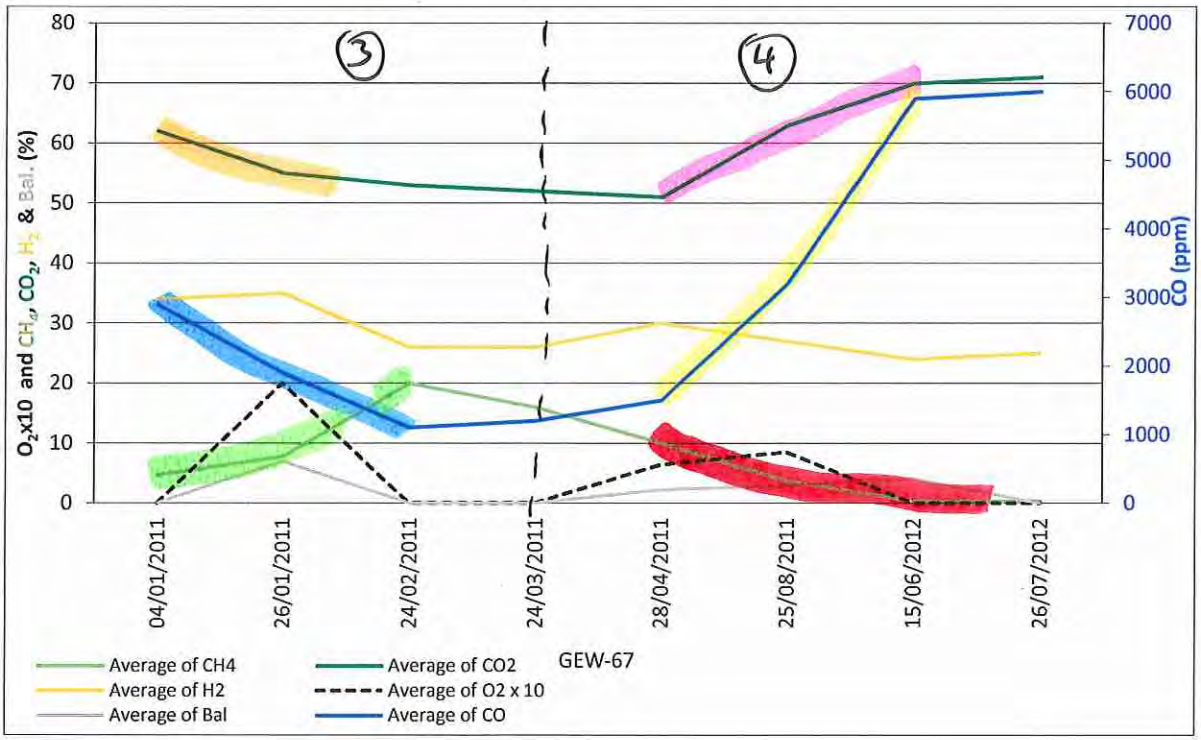

5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
12/02/2013
05/03/2013
22/04/2013
14/05/2013
12/06/2013
11/07/2013
08/08/2013 10:12
17/09/2013 13:43
07/10/2013 10:20
11/11/2013
12/12/2013 11:10
14/01/2014
18/02/2014
05/11/2014
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO
GEW-57B

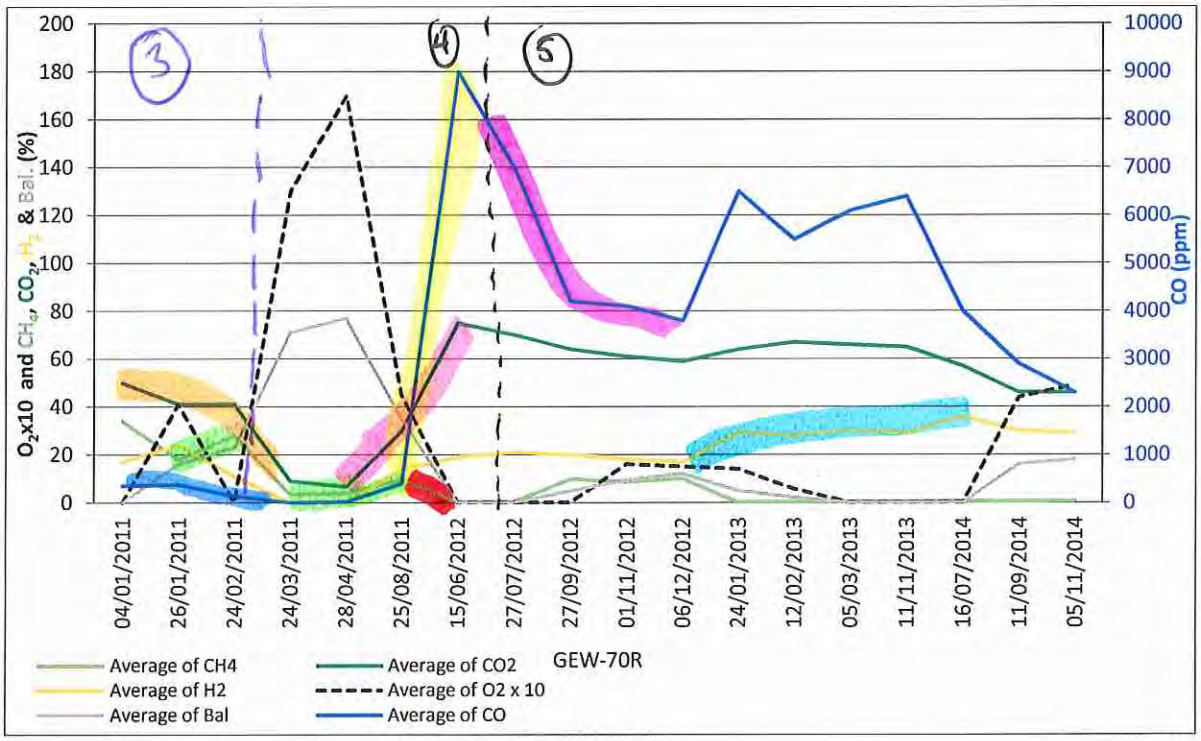

3
4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
25/01/2011
24/02/2011
24/03/2011
28/04/2011
25/08/2011
14/06/2012
26/07/2012
27/09/2012
06/11/2012
05/12/2012
23/01/2013
12/02/2013
05/03/2013
11/11/2013
12/12/2013 11:00
14/01/2014
18/02/2014
11/03/2014
08/04/2014 16:26
07/05/2014
15/07/2014
11/09/2014
05/11/2014
31/03/2015
08/05/2015
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO
GEW-58

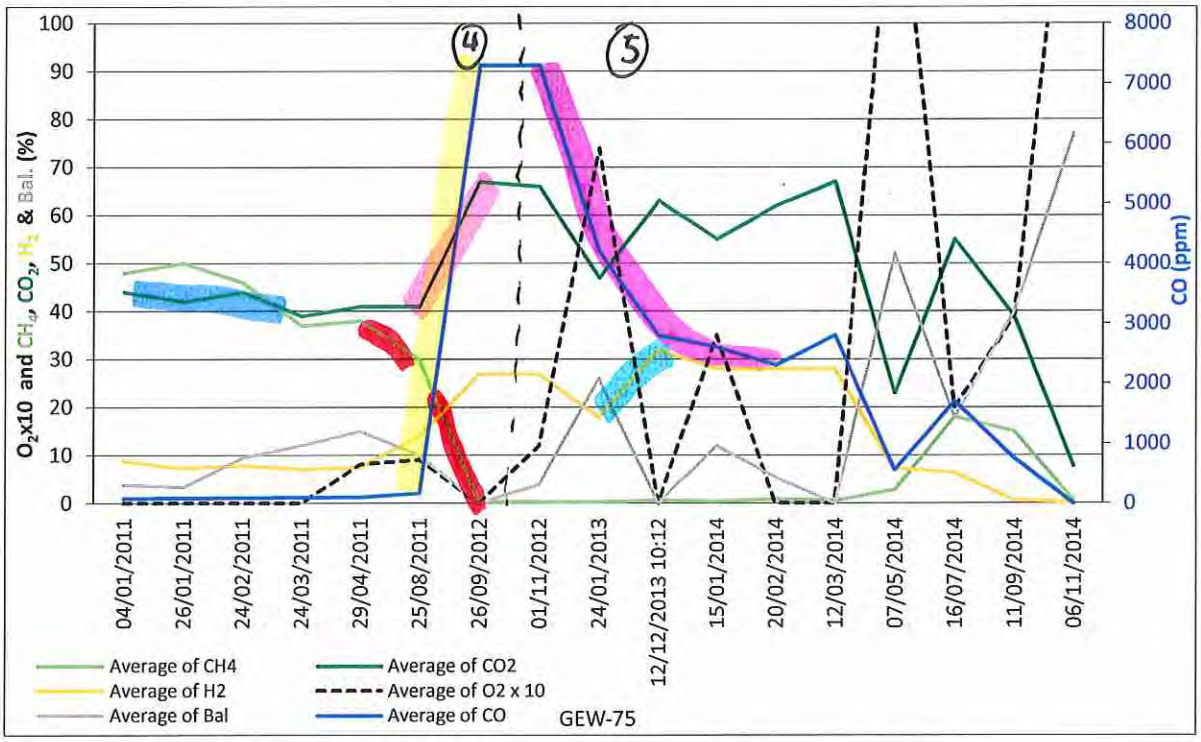

3
4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
25/01/2011
24/02/2011
24/03/2011
28/04/2011
25/08/2011
13/06/2012
26/07/2012
27/09/2012
06/11/2012
05/12/2012
23/01/2013
12/02/2013
05/03/2013
22/04/2013
14/05/2013
12/06/2013
11/07/2013
06/08/2013 15:55
17/09/2013 13:53
07/10/2013 10:45
11/11/2013
12/12/2013 10:43
14/01/2014
18/02/2014
11/03/2014
08/04/2014 16:18
06/05/2014
15/07/2014
11/09/2014
05/11/2014
31/03/2015
08/05/2015
Average of CH4
Average of H2
Average of Bal
Average of CO2
Average of O2 x 10
Average of CO
GEW-59R

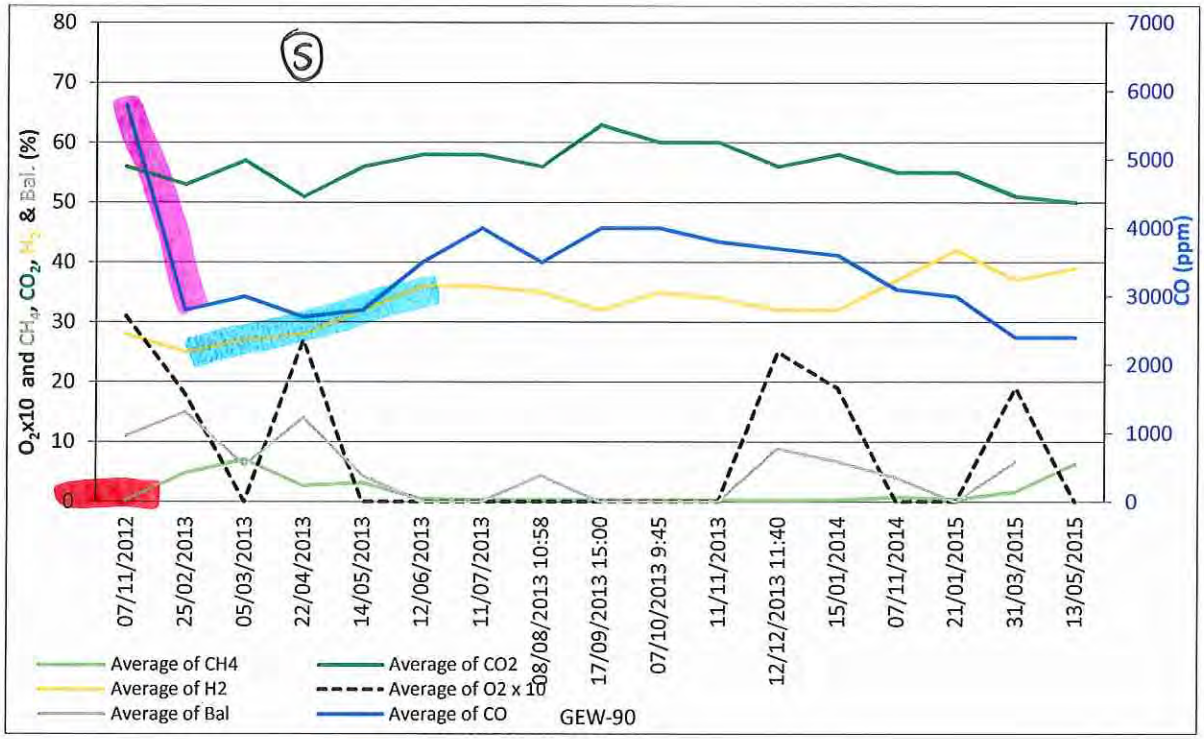

3
4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
25/01/2011
24/02/2011
24/03/2011
27/04/2011
25/08/2011
15/06/2012
26/07/2012
27/09/2012
07/11/2012
05/12/2012
24/01/2013
12/02/2013
08/04/2014 18:14
07/05/2014
15/07/2014
11/09/2014
05/11/2014
20/01/2015
31/03/2015
12/05/2015
Average of CH4
Average of H2
Average of Bal
Average of CO2
Average of O2 x 10
Average of CO
GEW-65A

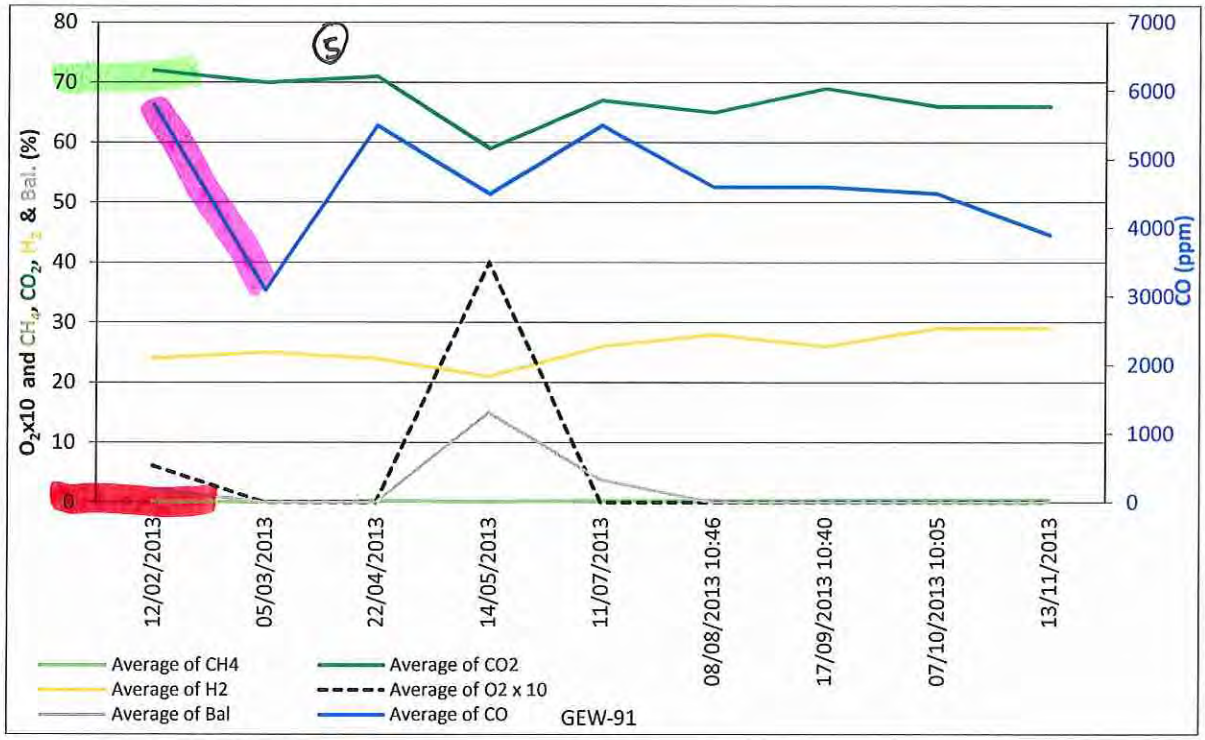

3
4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
25/01/2011
24/02/2011
24/03/2011
28/04/2011
25/08/2011
15/06/2012
26/07/2012
27/09/2012
06/11/2012
05/12/2012
24/01/2013
12/02/2013
06/03/2013
22/04/2013
14/05/2013
13/06/2013
11/07/2013
08/08/2013 9:05
18/09/2013 10:58
08/10/2013 16:31
11/11/2013
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO
GEW-66

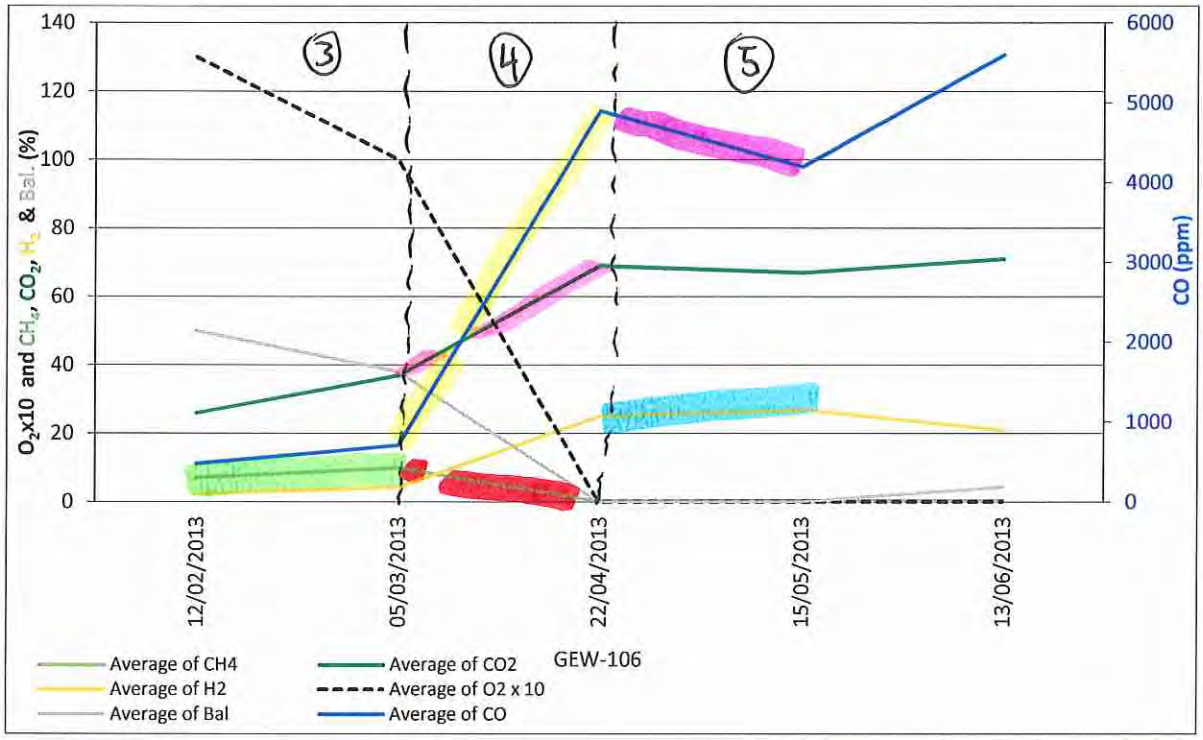

3
4
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
26/01/2011
24/02/2011
24/03/2011
28/04/2011
25/08/2011
15/06/2012
26/07/2012
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO
GEW-67

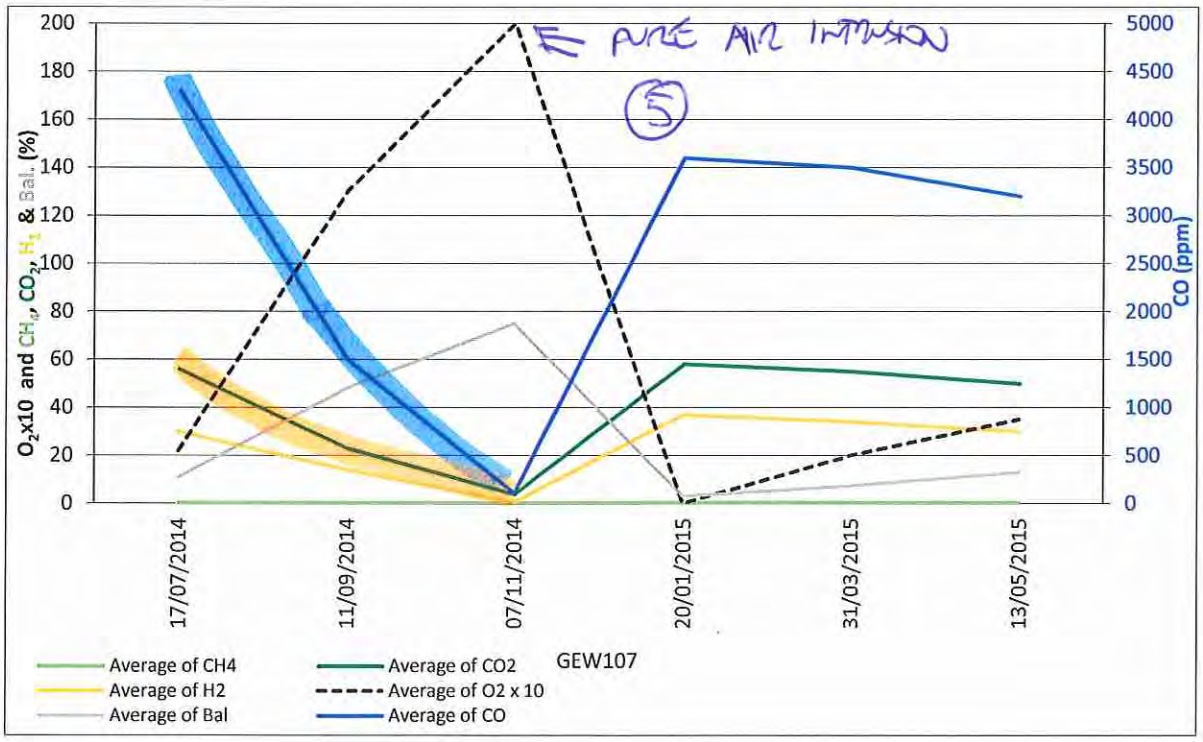

3
4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
26/01/2011
24/02/2011
24/03/2011
28/04/2011
25/08/2011
15/06/2012
27/07/2012
27/09/2012
01/11/2012
06/12/2012
24/01/2013
12/02/2013
05/03/2013
11/11/2013
16/07/2014
11/09/2014
05/11/2014
GEW-70R
Average of CH4
Average of H2
Average of Bal
Average of CO2
Average of O2 x 10
Average of CO

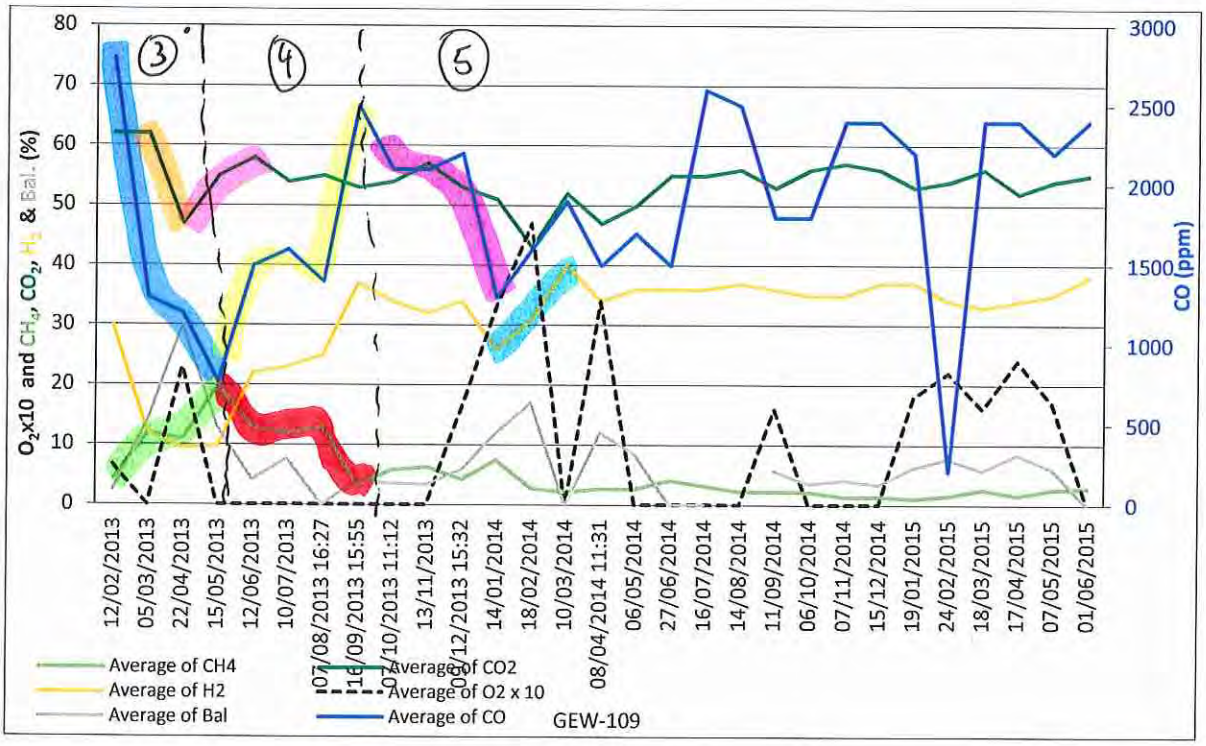

4
5
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
04/01/2011
26/01/2011
24/02/2011
24/03/2011
29/04/2011
25/08/2011
26/09/2012
01/11/2012
24/01/2013
12/12/2013 10:12
15/01/2014
20/02/2014
12/03/2014
07/05/2014
16/07/2014
11/09/2014
06/11/2014
GEW-75
Average of CH4
Average of H2
Average of Bal
Average of CO2
Average of O2 x 10
Average of CO

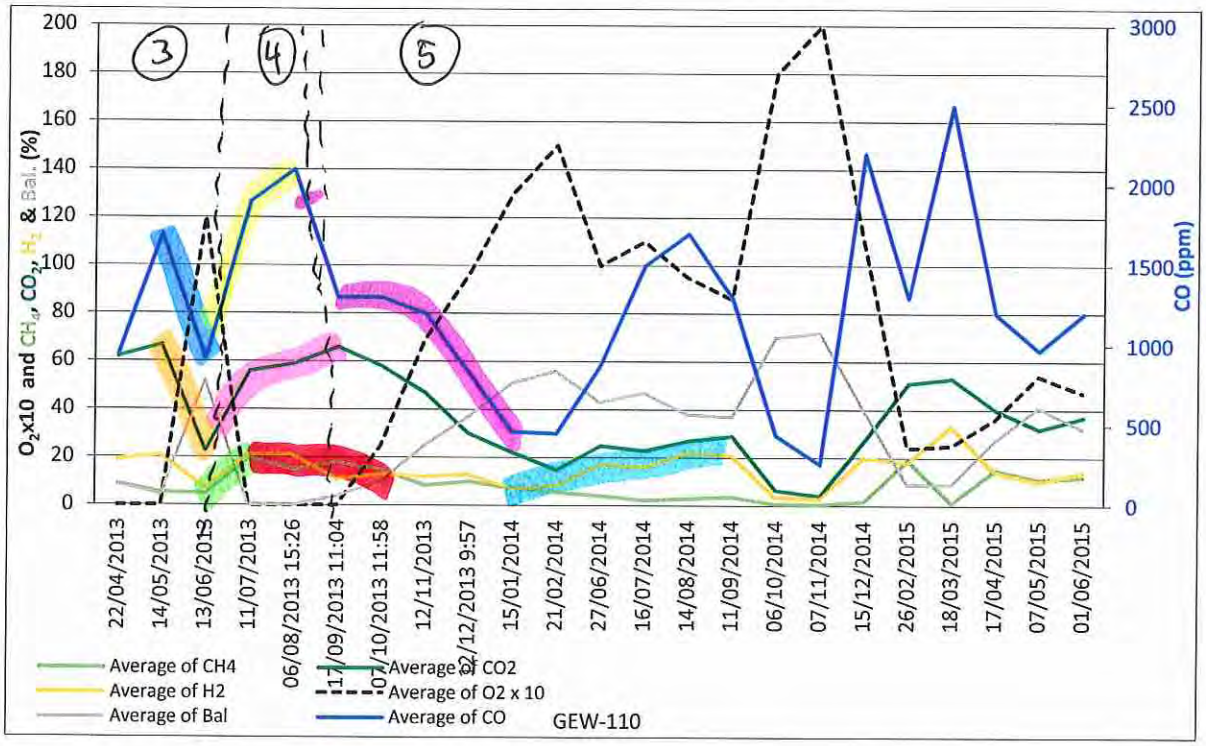

O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
07/11/2012
25/02/2013
05/03/2013
22/04/2013
14/05/2013
12/06/2013
11/07/2013
08/08/2013 10:58
17/09/2013 15:00
07/10/2013 9:45
11/11/2013
12/12/2013 11:40
15/01/2014
07/11/2014
21/01/2015
31/03/2015
13/05/2015
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO
GEW-90


O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
12/02/2013
05/03/2013
22/04/2013
14/05/2013
11/07/2013
08/08/2013 10:46
17/09/2013 10:40
07/10/2013 10:05
13/11/2013
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO
GEW-91


3
4
5
140
120
100
80
60
40
20
0
6000
5000
4000
3000
2000
1000
0
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
12/02/2013
05/03/2013
22/04/2013
15/05/2013
13/06/2013
GEW-106
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO

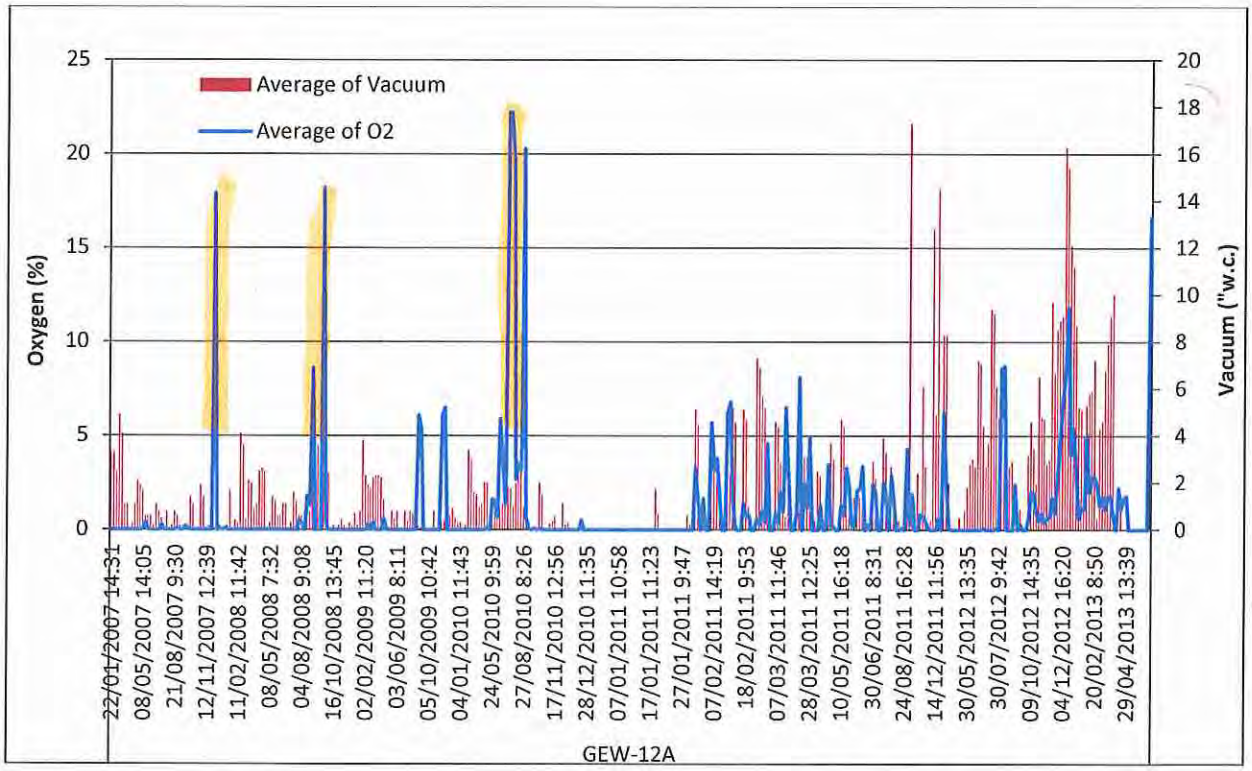

E AIR INTRUSION
5
200
180
160
140
120
100
80
60
40
20
0
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
17/07/2014
11/09/2014
07/11/2014
20/01/2015
31/03/2015
13/05/2015
GEW107
Average of CH4
Average of CO2
Average of H2
Average of O2 x 10
Average of Bal
Average of CO

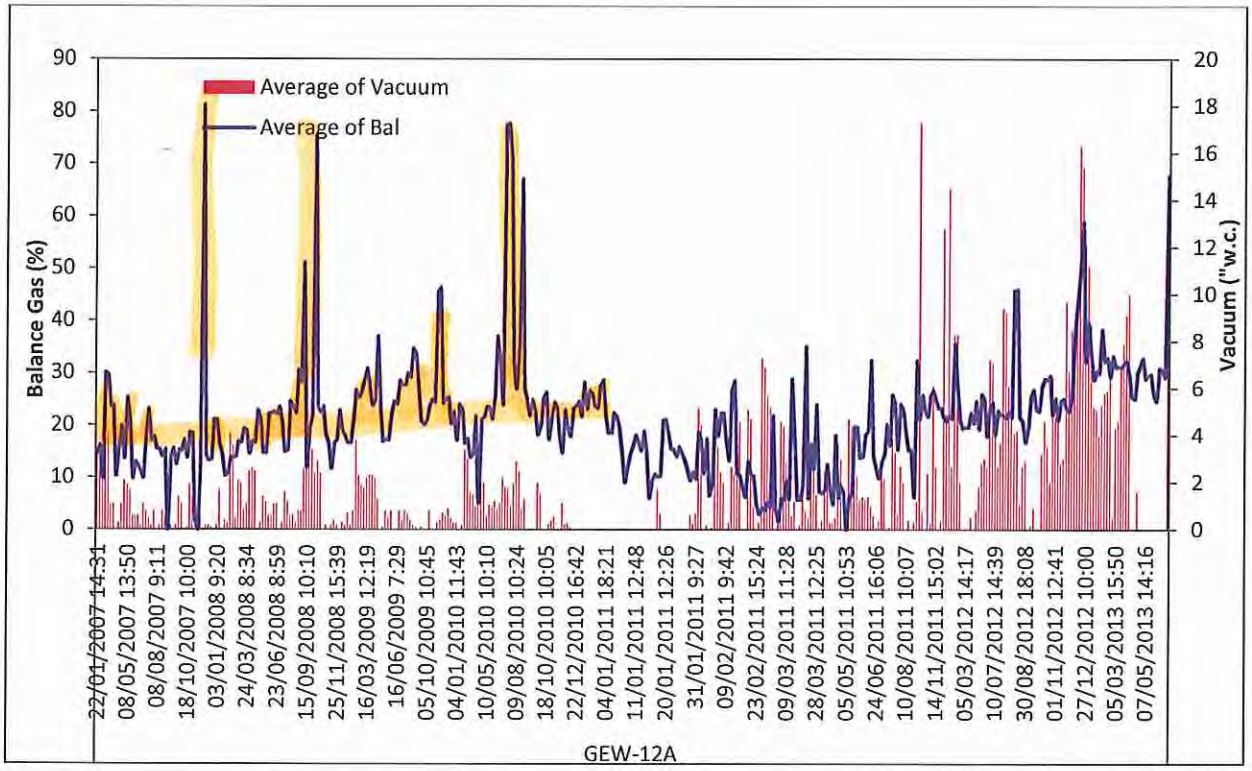

O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
3
4
5
12/02/2013
05/03/2013
22/04/2013
15/05/2013
12/06/2013
10/07/2013
07/08/2013 16:27
10/09/2013 15:55
07/10/2013 11:12
13/11/2013
02/12/2013 15:32
14/01/2014
18/02/2014
10/03/2014
08/04/2014 11:31
06/05/2014
27/06/2014
16/07/2014
14/08/2014
11/09/2014
06/10/2014
07/11/2014
15/12/2014
19/01/2015
24/02/2015
18/03/2015
17/04/2015
07/05/2015
01/06/2015
Average of CH4
Average of H2
Average of Bal
Average of CO2
Average of O2 x 10
Average of CO
GEW-109

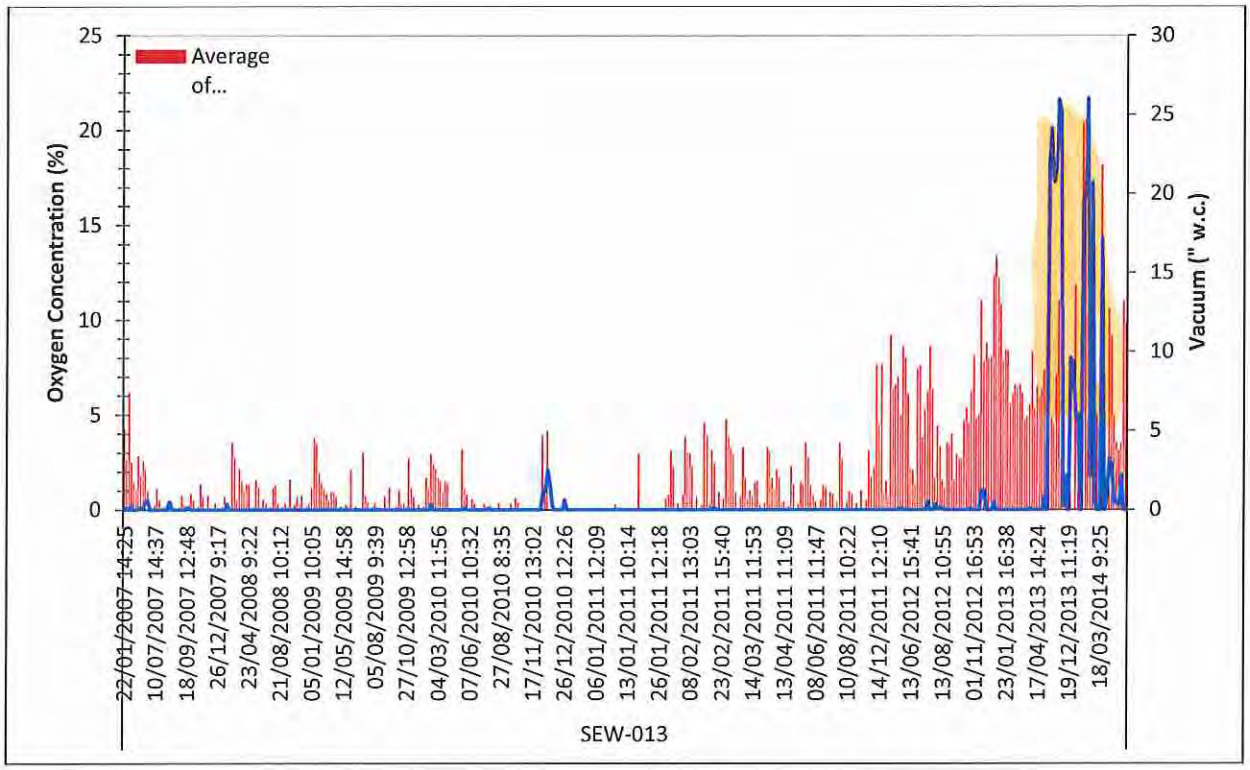

O2x10 and CH4, CO2, H2 & Bal. (%)
CO (ppm)
3
4
5
22/04/2013
14/05/2013
13/06/2013
11/07/2013
06/08/2013 15:26
11/09/2013 11:04
07/10/2013 11:58
12/11/2013
02/12/2013 9:57
15/01/2014
21/02/2014
27/06/2014
16/07/2014
14/08/2014
11/09/2014
06/10/2014
07/11/2014
15/12/2014
26/02/2015
18/03/2015
17/04/2015
07/05/2015
01/06/2015
Average of CH4
Average of H2
Average of Bal
Average of CO2
Average of O2 x 10
Average of CO
GEW-110

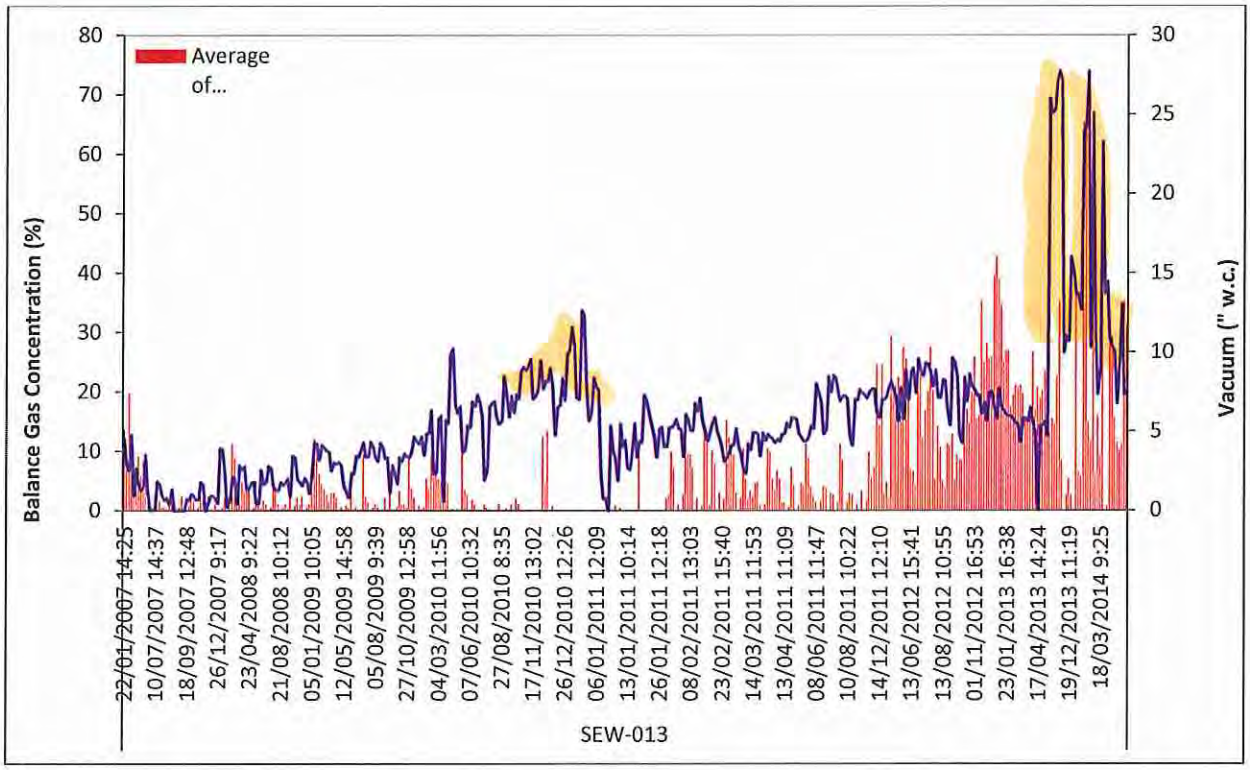
APPENDIX F

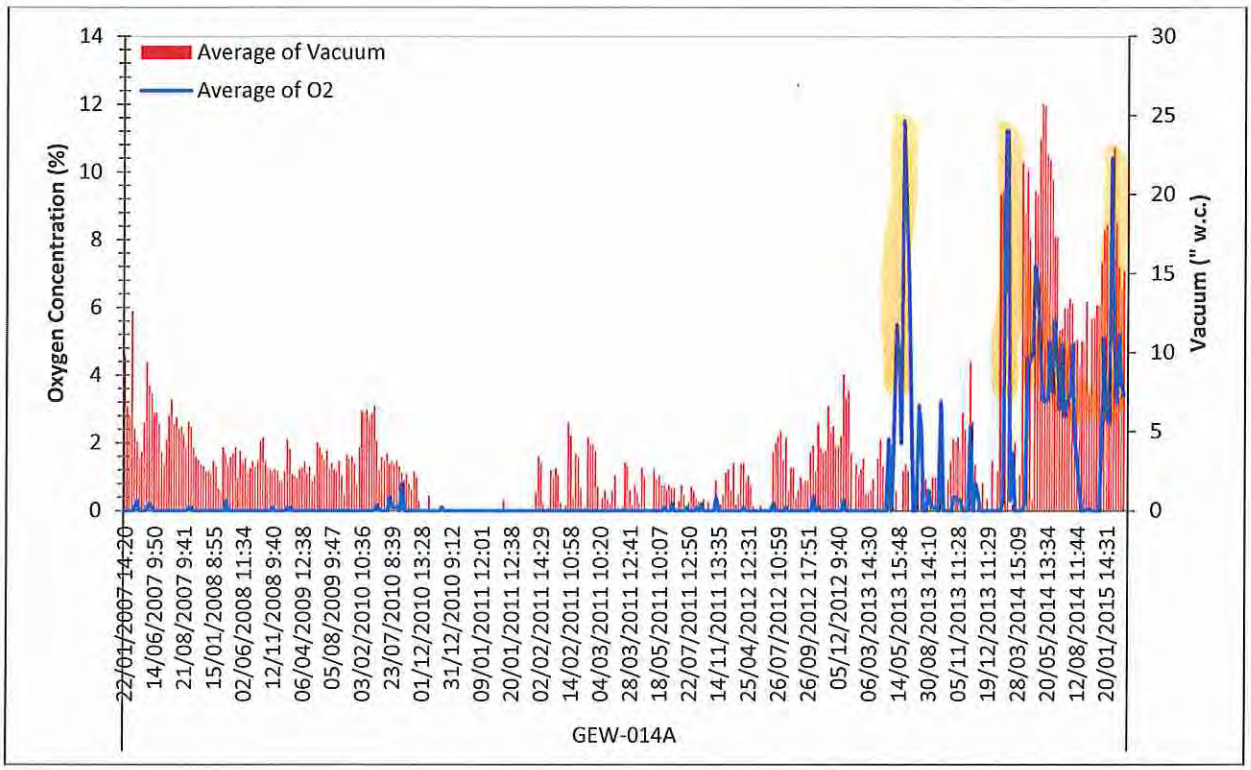
OXYGEN AND BALANCE GAS GRAPHS

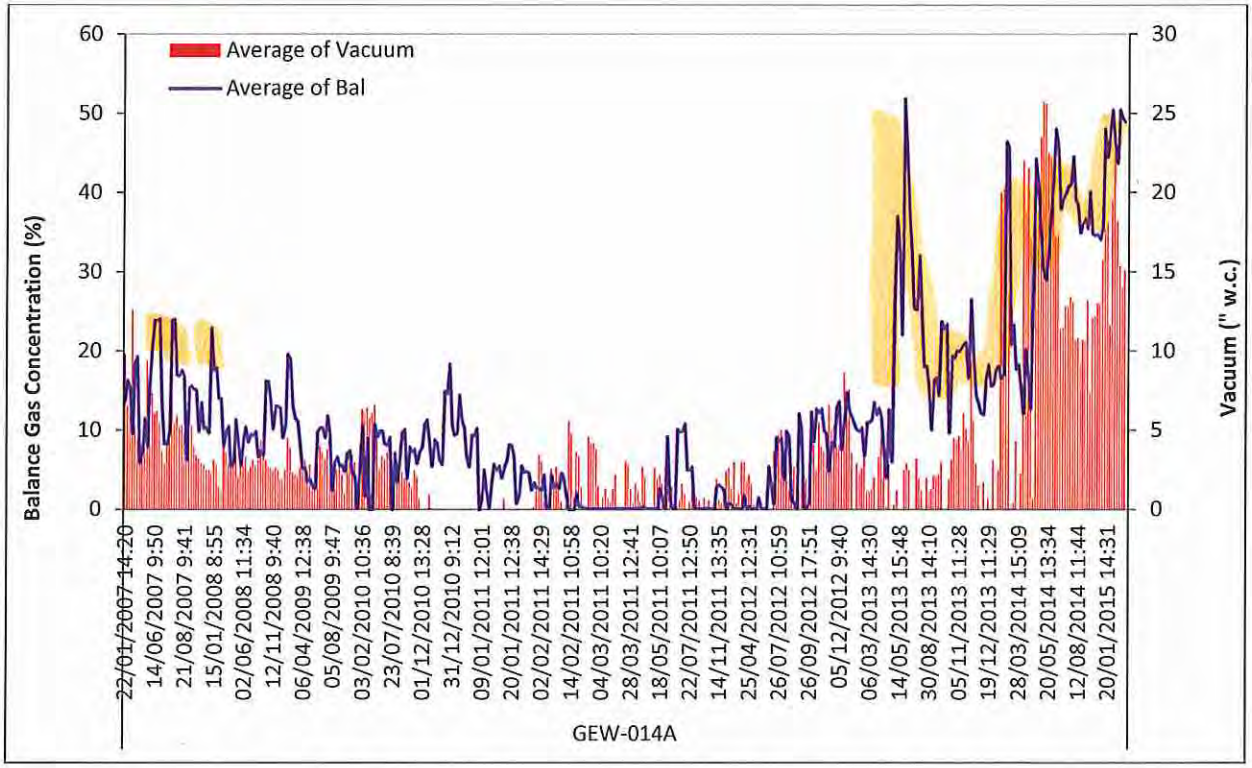

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-12A

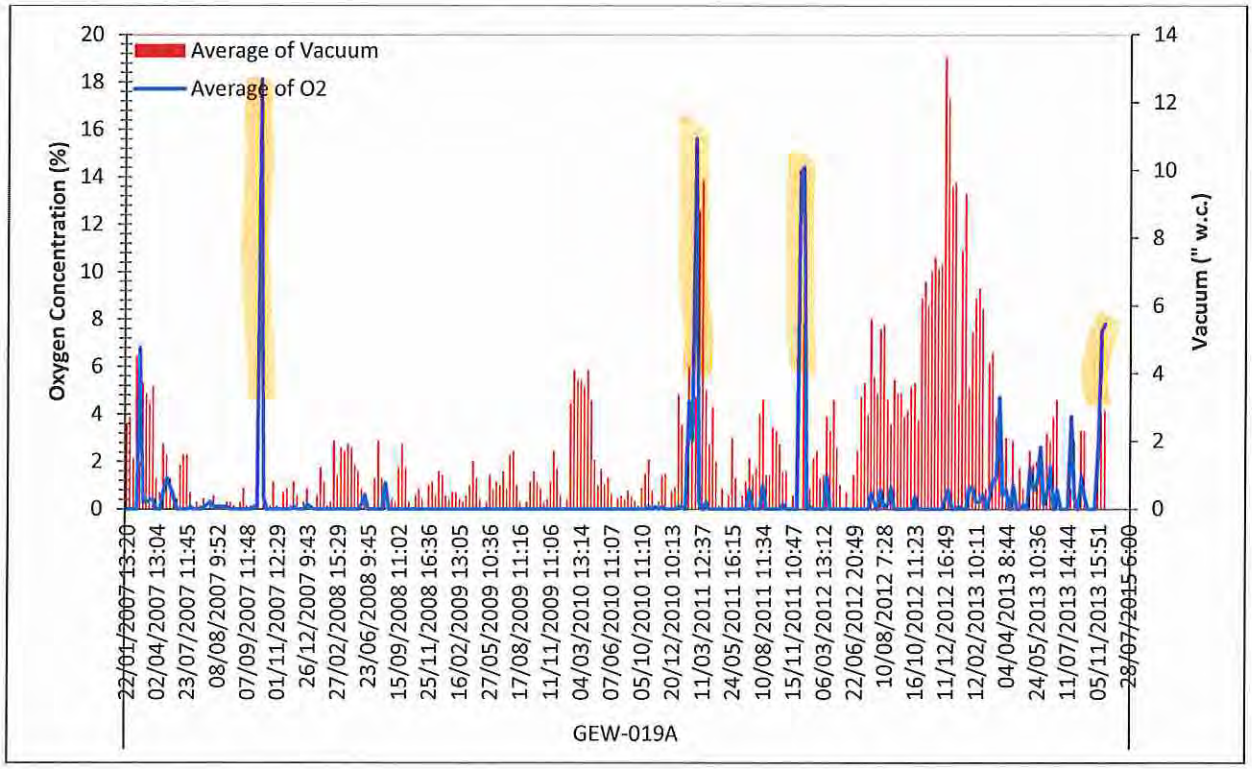

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-12A

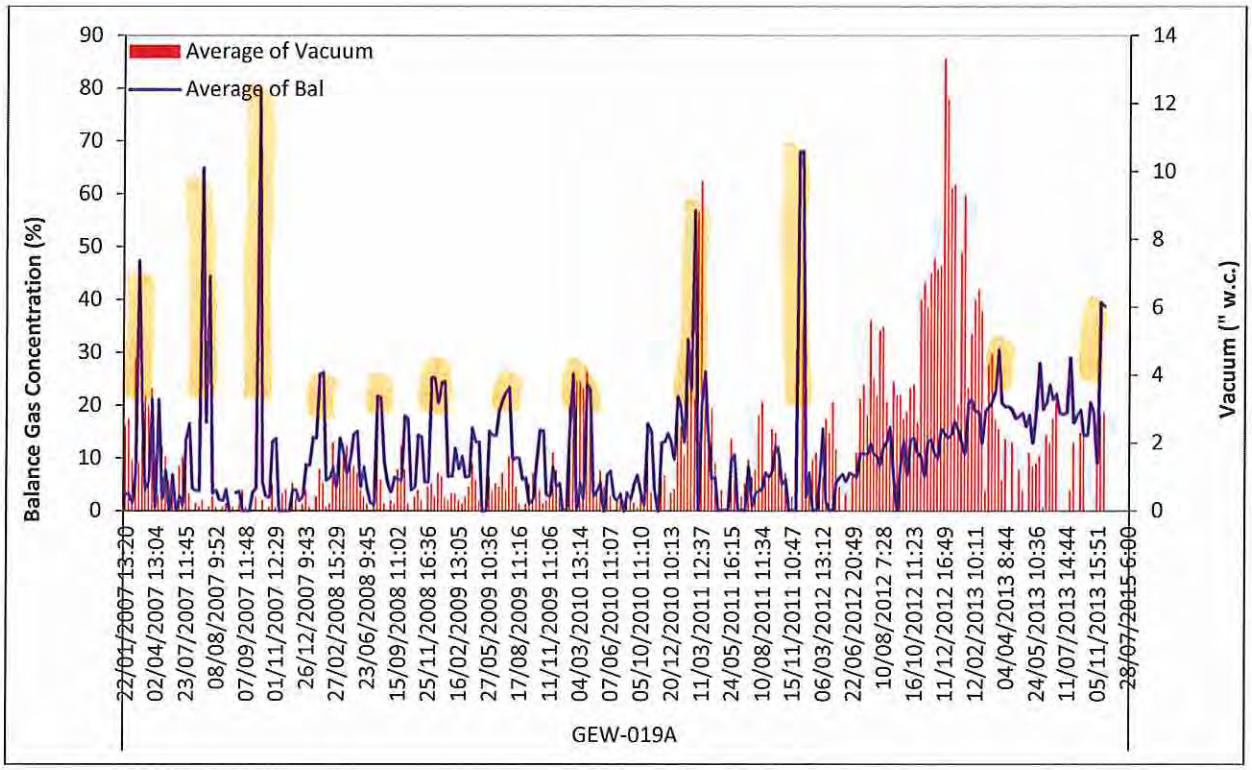

Average of...
Oxygen Concentration (%)
Vacuum (" w.c.)
0
5
10
15
20
25
30
22/01/2007 14:25
10/07/2007 14:37
18/09/2007 12:48
26/12/2007 9:17
23/04/2008 9:22
21/08/2008 10:12
05/01/2009 10:05
12/05/2009 14:58
05/08/2009 9:39
27/10/2009 12:58
04/03/2010 11:56
07/06/2010 10:32
27/08/2010 8:35
17/11/2010 13:02
26/12/2010 12:26
06/01/2011 12:09
13/01/2011 10:14
26/01/2011 12:18
08/02/2011 13:03
23/02/2011 15:40
14/03/2011 11:53
13/04/2011 11:09
08/06/2011 11:47
10/08/2011 10:22
14/12/2011 12:10
13/06/2012 15:41
13/08/2012 10:55
01/11/2012 16:53
23/01/2013 16:38
17/04/2013 14:24
19/12/2013 11:19
18/03/2014 9:25
SEW-013

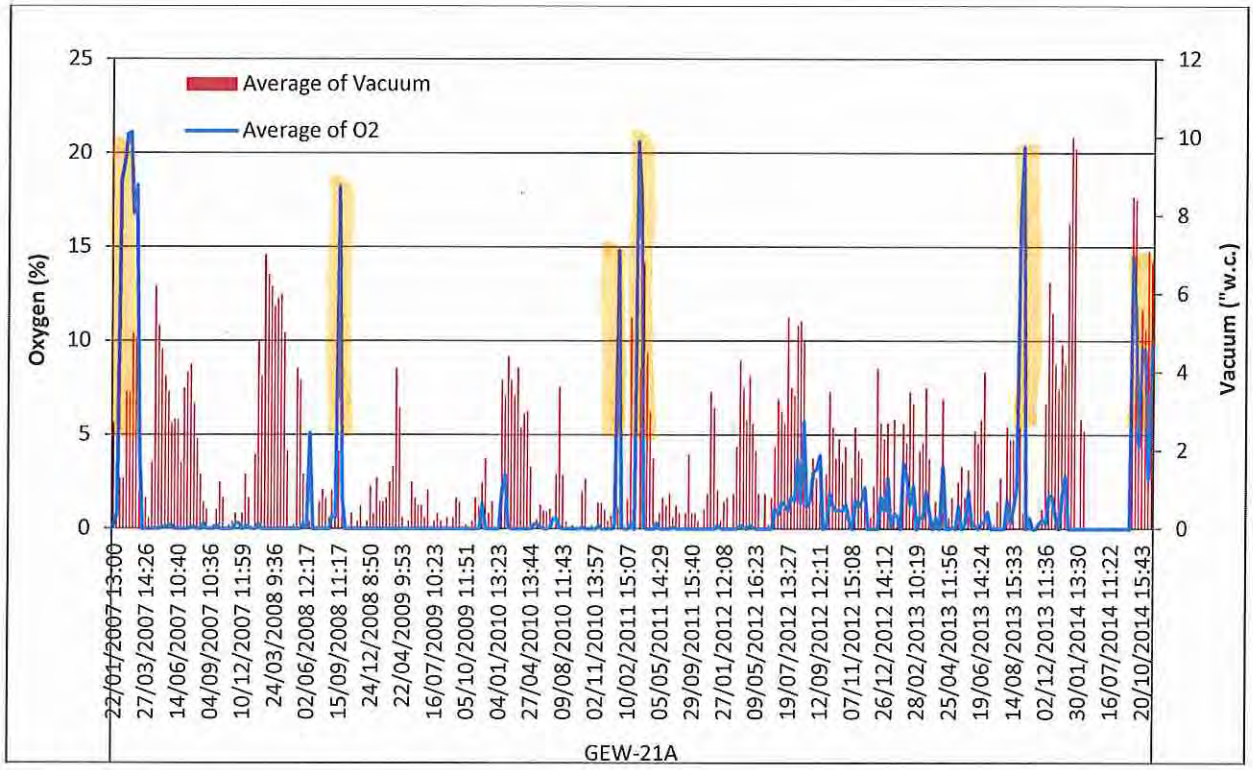

Average of...
Balance Gas Concentration (%)
Vacuum (" w.c.)
0
10
20
30
40
50
60
70
80
0
5
10
15
20
25
30
22/01/2007 14:25
10/07/2007 14:37
18/09/2007 12:48
26/12/2007 9:17
23/04/2008 9:22
21/08/2008 10:12
05/01/2009 10:05
12/05/2009 14:58
05/08/2009 9:39
27/10/2009 12:58
04/03/2010 11:56
07/06/2010 10:32
27/08/2010 8:35
17/11/2010 13:02
26/12/2010 12:26
06/01/2011 12:09
13/01/2011 10:14
26/01/2011 12:18
08/02/2011 13:03
23/02/2011 15:40
14/03/2011 11:53
13/04/2011 11:09
08/06/2011 11:47
10/08/2011 10:22
14/12/2011 12:10
13/06/2012 15:41
13/08/2012 10:55
01/11/2012 16:53
23/01/2013 16:38
17/04/2013 14:24
19/12/2013 11:19
18/03/2014 9:25
SEW-013

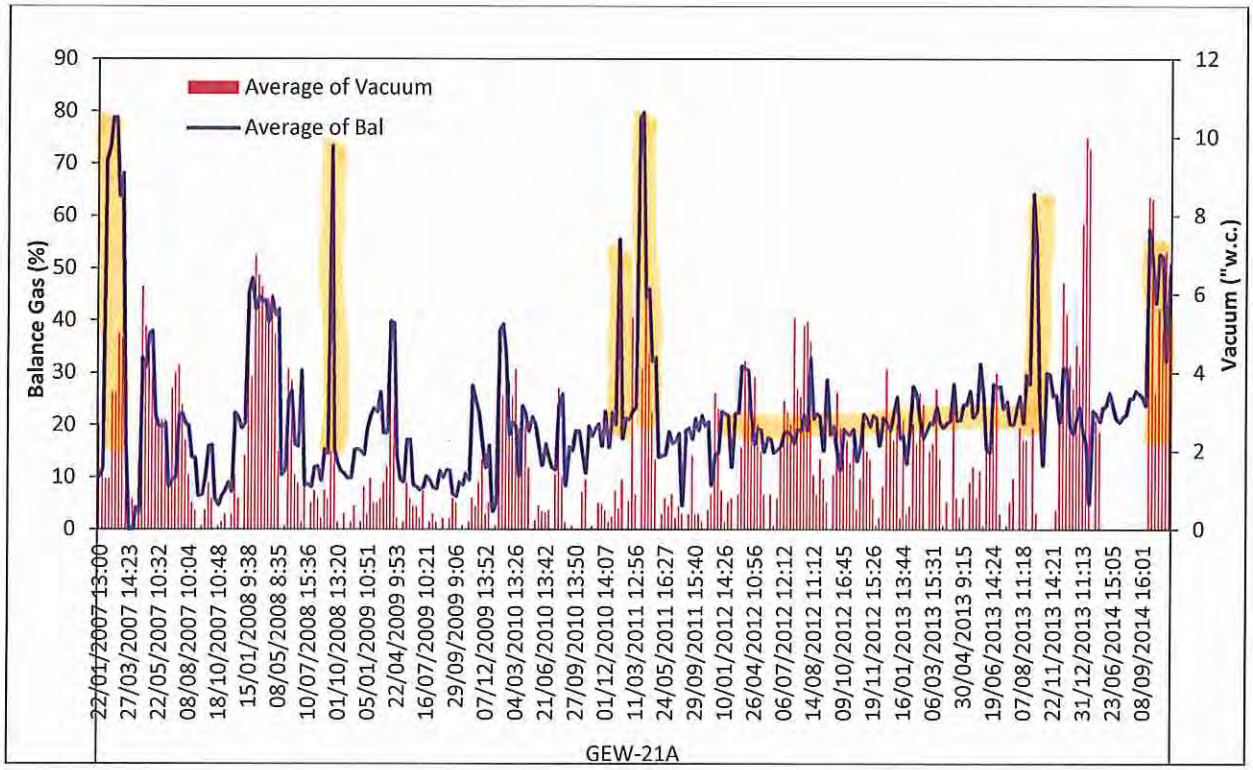

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
0
2
4
6
8
10
12
14
0
5
10
15
20
25
30
22/01/2007 14:20
14/06/2007 9:50
21/08/2007 9:41
15/01/2008 8:55
02/06/2008 11:34
12/11/2008 9:40
06/04/2009 12:38
05/08/2009 9:47
03/02/2010 10:36
23/07/2010 8:39
01/12/2010 13:28
31/12/2010 9:12
09/01/2011 12:01
20/01/2011 12:38
02/02/2011 14:29
14/02/2011 10:58
04/03/2011 10:20
28/03/2011 12:41
18/05/2011 10:07
22/07/2011 12:50
14/11/2011 13:35
25/04/2012 12:31
26/07/2012 10:59
26/09/2012 17:51
05/12/2012 9:40
06/03/2013 14:30
14/05/2013 15:48
30/08/2013 14:10
05/11/2013 11:28
19/12/2013 11:29
28/03/2014 15:09
20/05/2014 13:34
12/08/2014 11:44
20/01/2015 14:31
GEW-014A

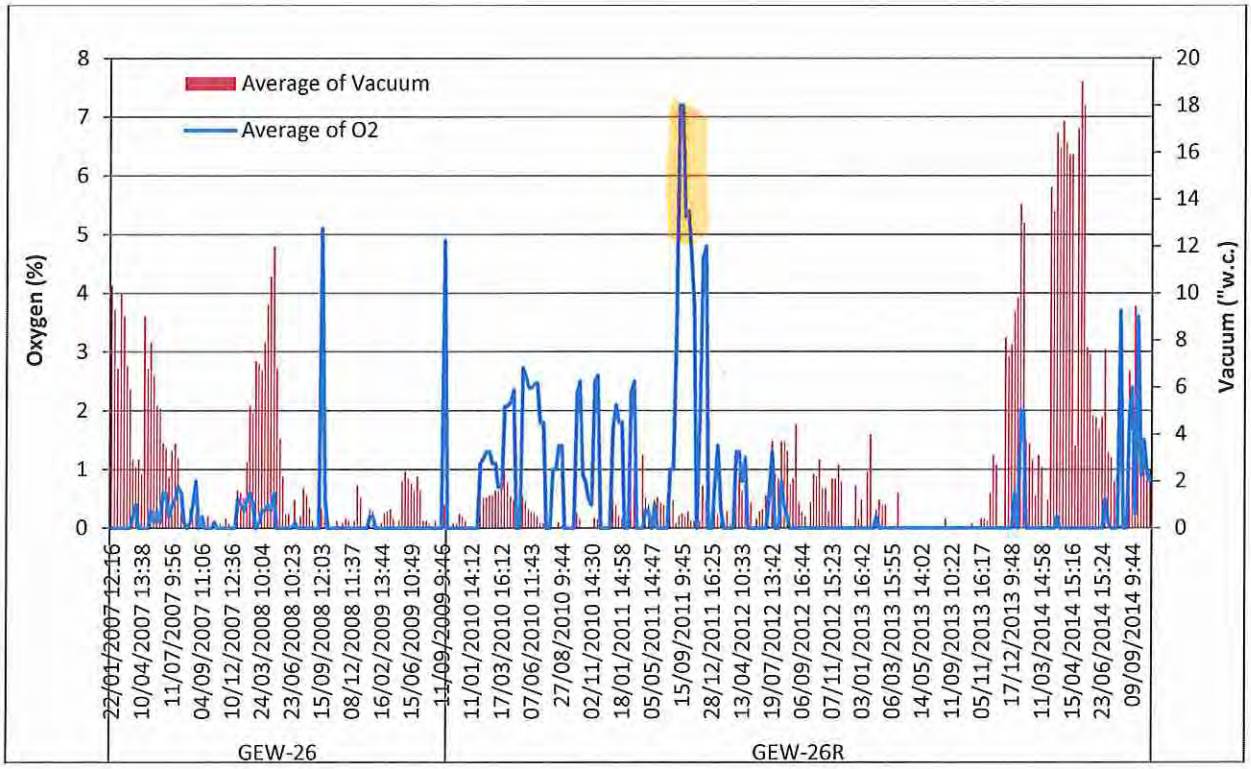

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
0
10
20
30
40
50
60
0
5
10
15
20
25
30
22/01/2007 14:20
14/06/2007 9:50
21/08/2007 9:41
15/01/2008 8:55
02/06/2008 11:34
12/11/2008 9:40
06/04/2009 12:38
05/08/2009 9:47
03/02/2010 10:36
23/07/2010 8:39
01/12/2010 13:28
31/12/2010 9:12
09/01/2011 12:01
20/01/2011 12:38
02/02/2011 14:29
14/02/2011 10:58
04/03/2011 10:20
28/03/2011 12:41
18/05/2011 10:07
22/07/2011 12:50
14/11/2011 13:35
25/04/2012 12:31
26/07/2012 10:59
26/09/2012 17:51
05/12/2012 9:40
06/03/2013 14:30
14/05/2013 15:48
30/08/2013 14:10
05/11/2013 11:28
19/12/2013 11:29
28/03/2014 15:09
20/05/2014 13:34
12/08/2014 11:44
20/01/2015 14:31
GEW-014A

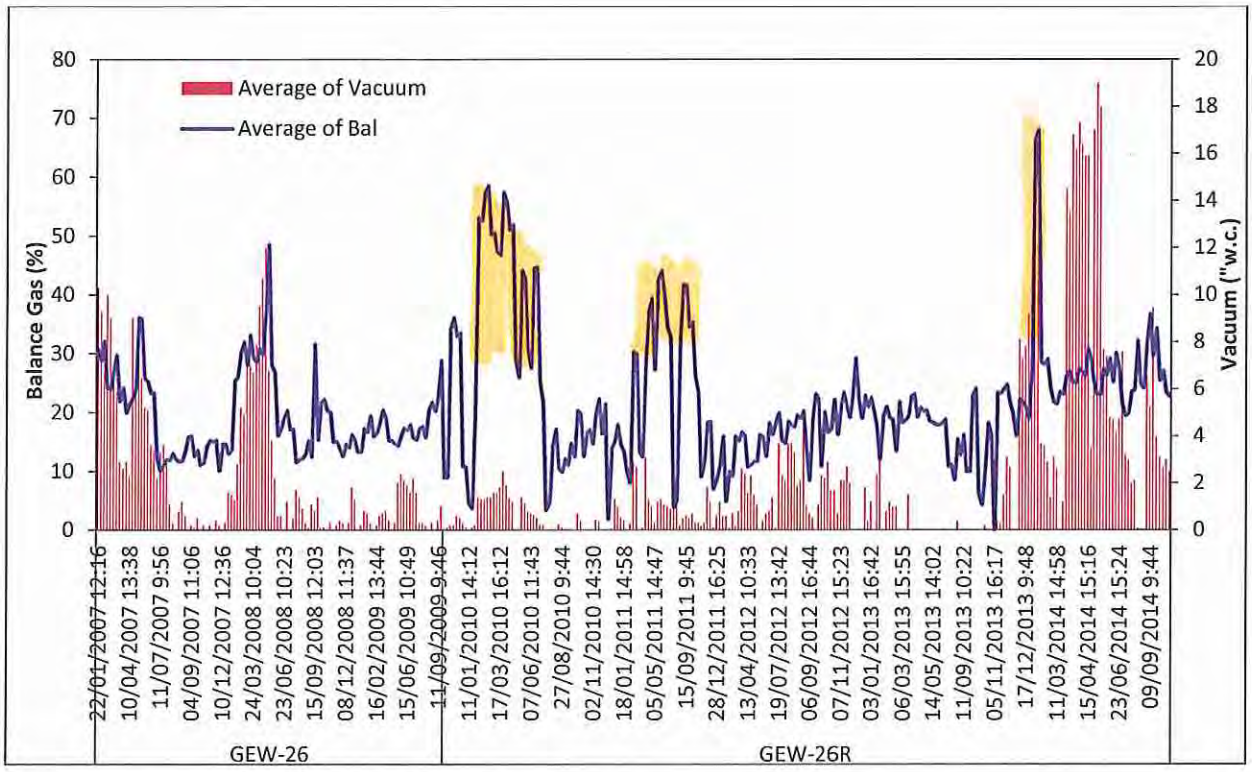

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
GEW-019A

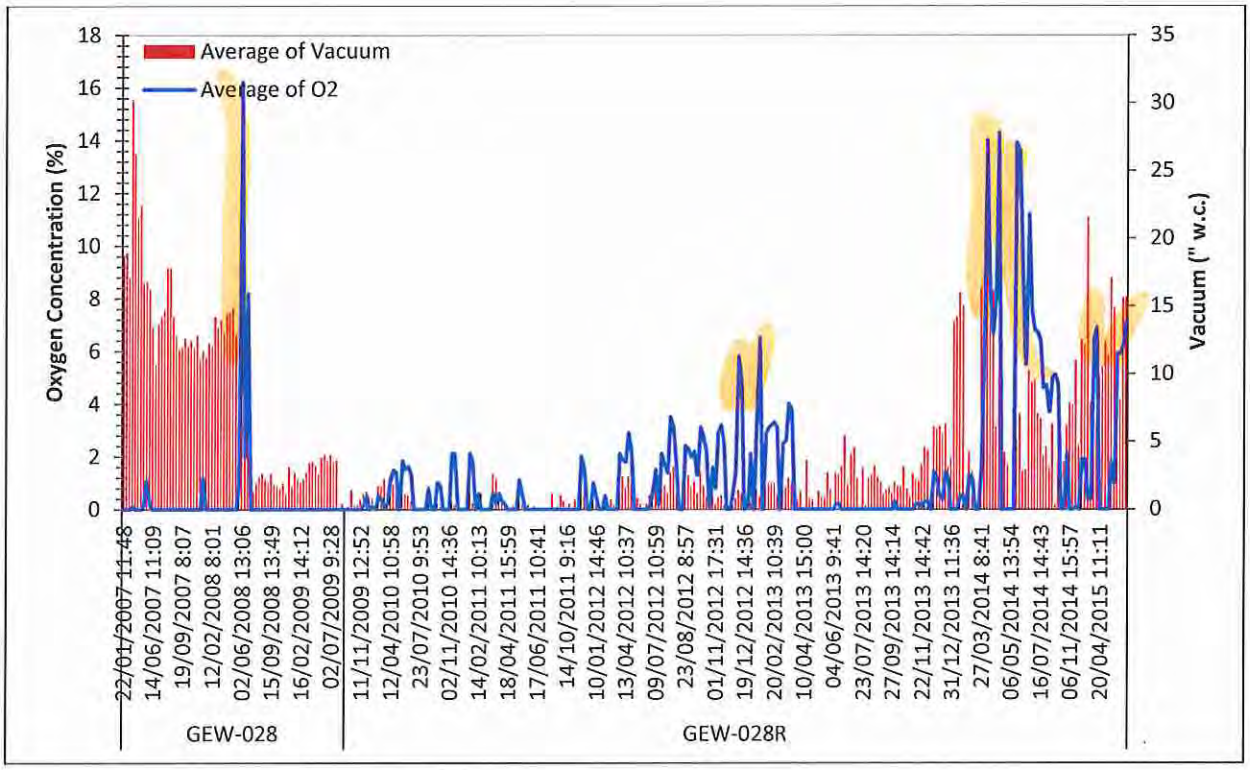

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
GEW-019A

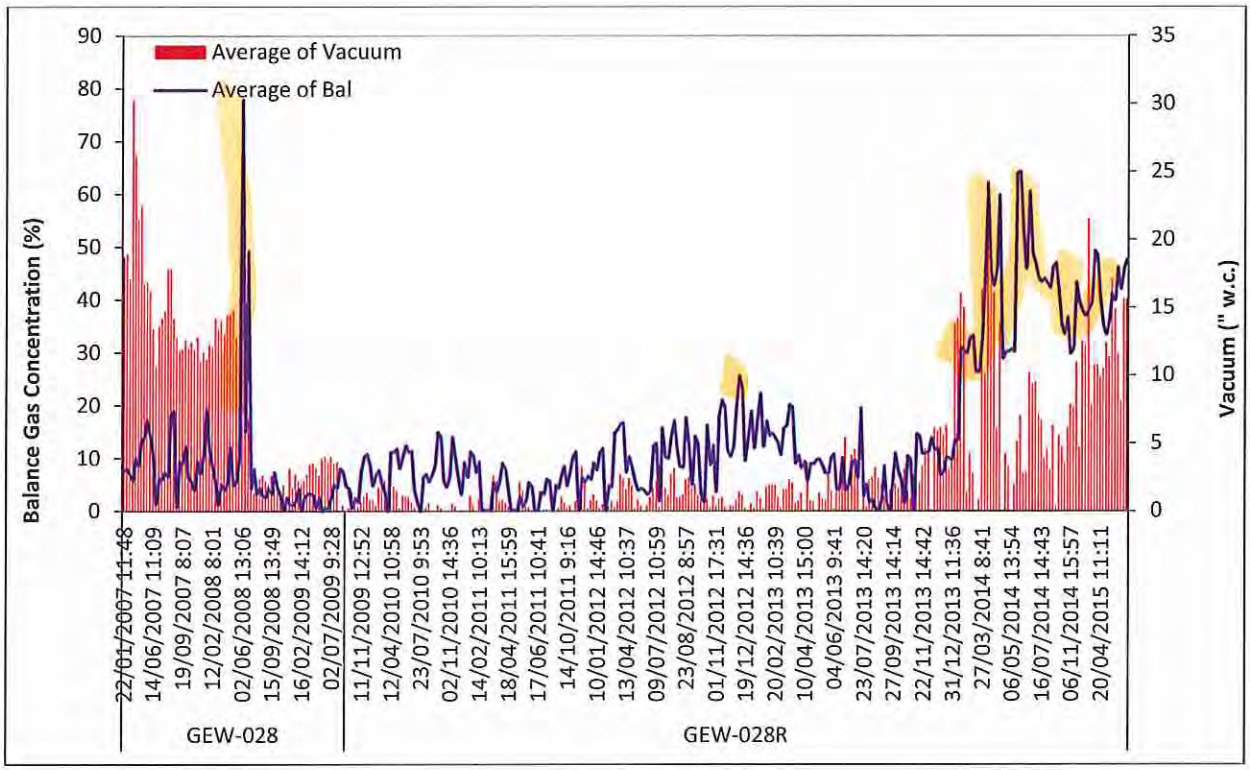

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-21A

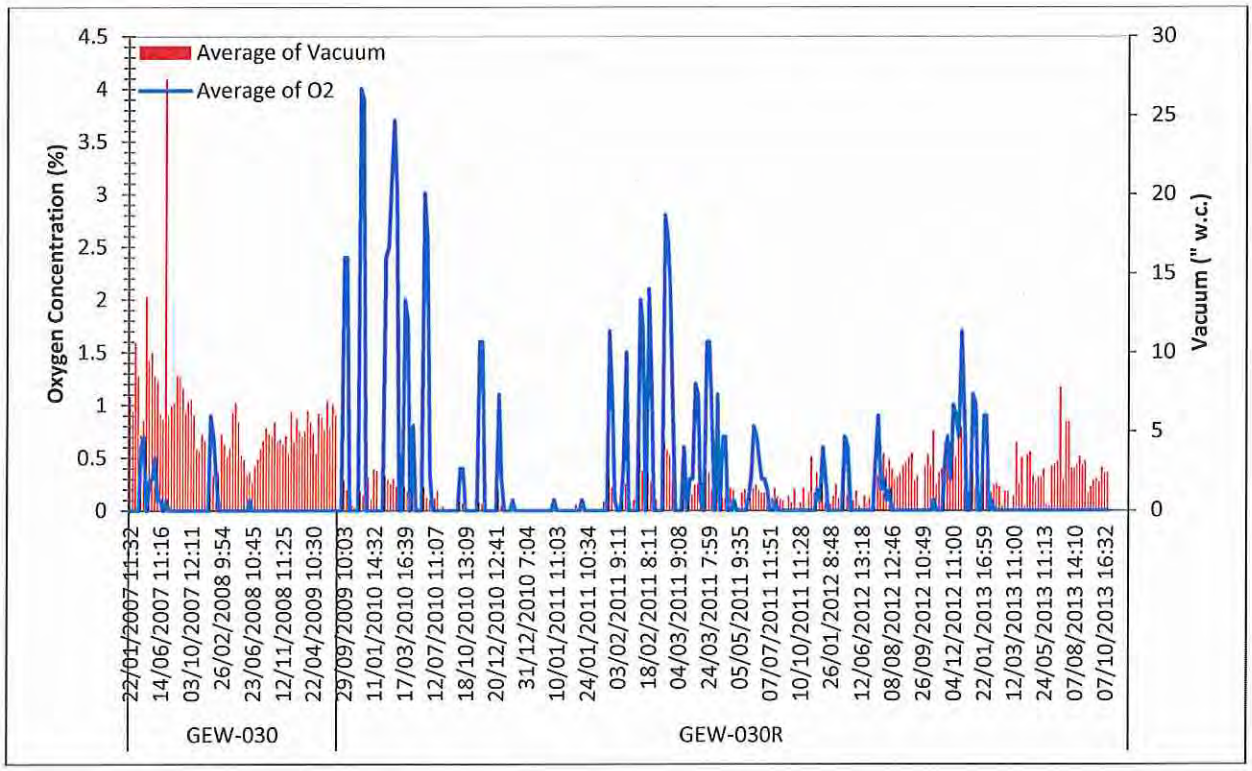

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-21A

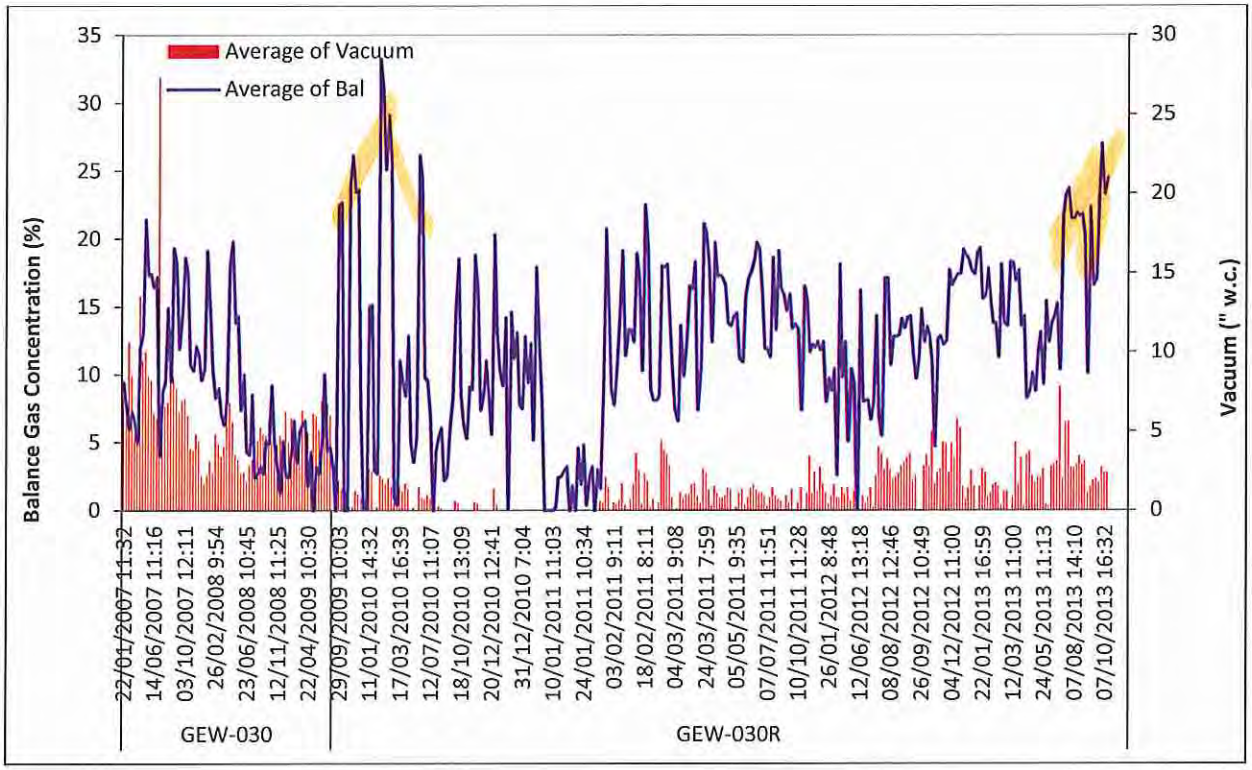

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-26
GEW-26R

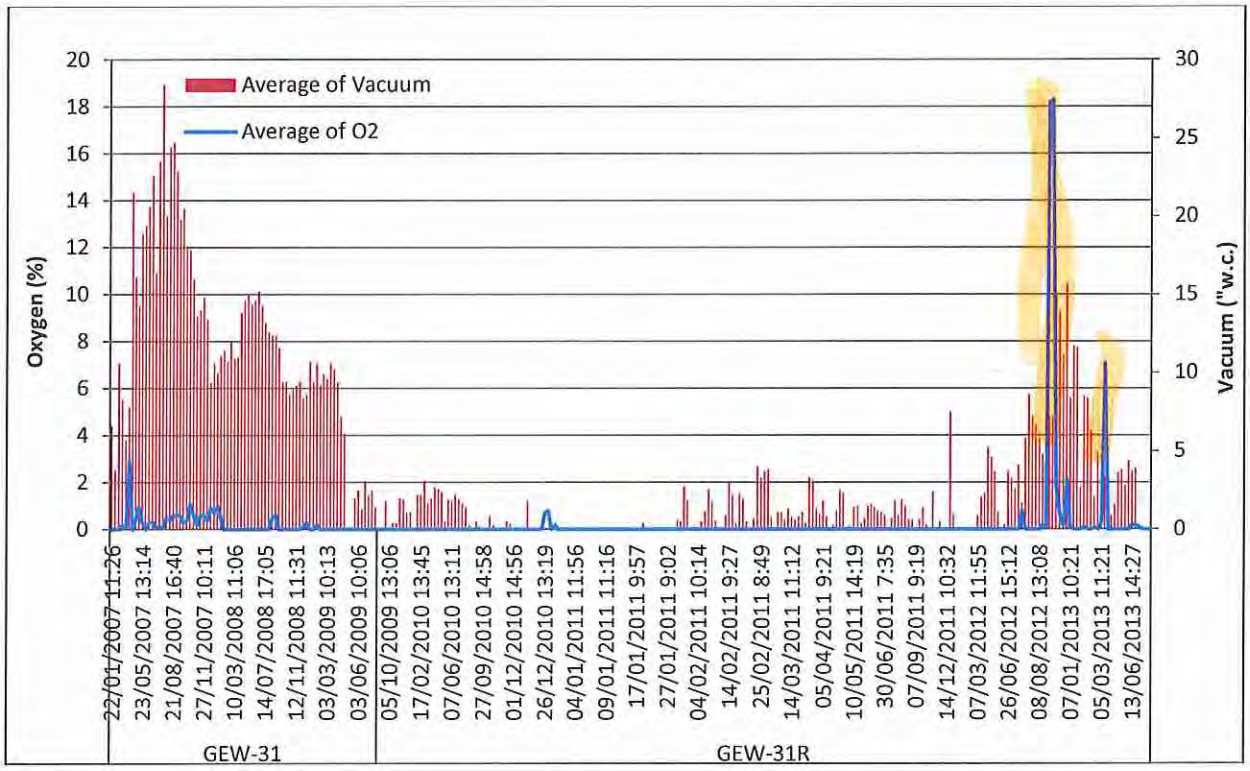

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-26
GEW-26R

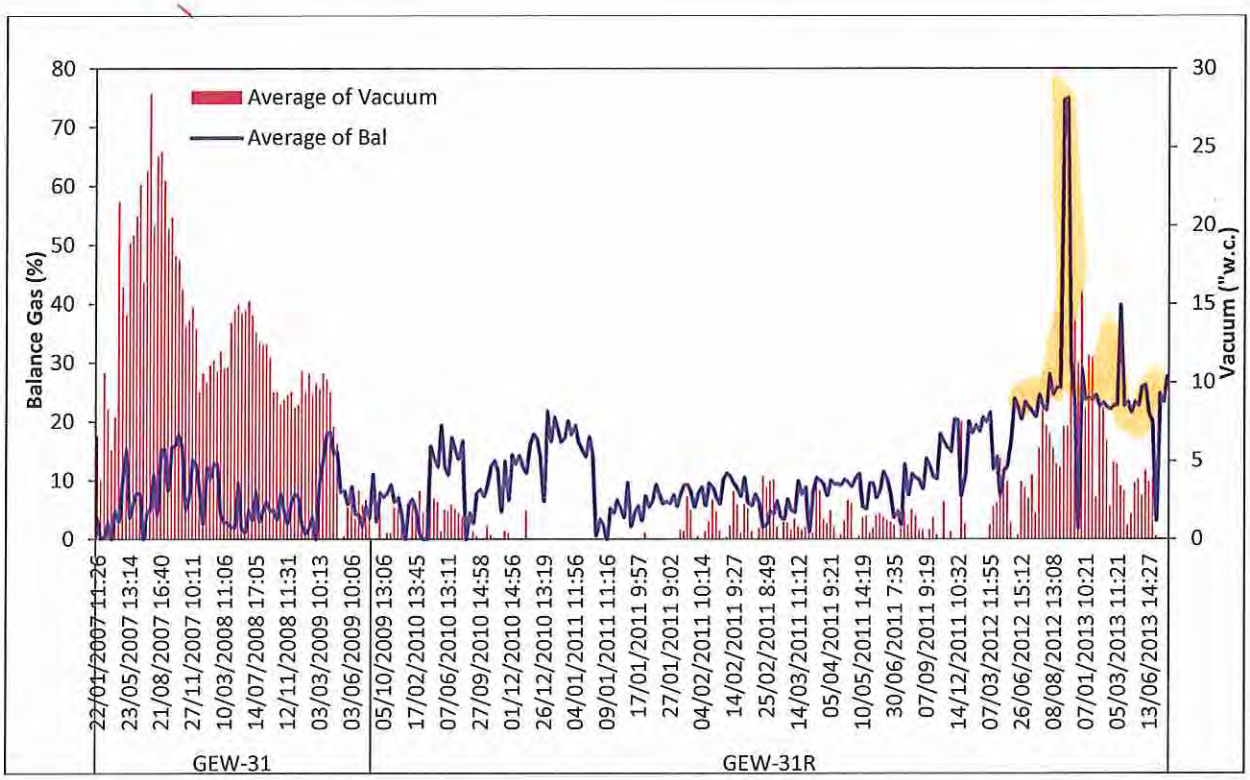

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
0
2
4
6
8
10
12
14
16
18
0
5
10
15
20
25
30
35
22/01/2007 11:48
14/06/2007 11:09
19/09/2007 8:07
12/02/2008 8:01
02/06/2008 13:06
15/09/2008 13:49
16/02/2009 14:12
02/07/2009 9:28
11/11/2009 12:52
12/04/2010 10:58
23/07/2010 9:53
02/11/2010 14:36
14/02/2011 10:13
18/04/2011 15:59
17/06/2011 10:41
14/10/2011 9:16
10/01/2012 14:46
13/04/2012 10:37
09/07/2012 10:59
23/08/2012 8:57
01/11/2012 17:31
19/12/2012 14:36
20/02/2013 10:39
10/04/2013 15:00
04/06/2013 9:41
23/07/2013 14:20
27/09/2013 14:14
22/11/2013 14:42
31/12/2013 11:36
27/03/2014 8:41
06/05/2014 13:54
16/07/2014 14:43
06/11/2014 15:57
20/04/2015 11:11
GEW-028
GEW-028R

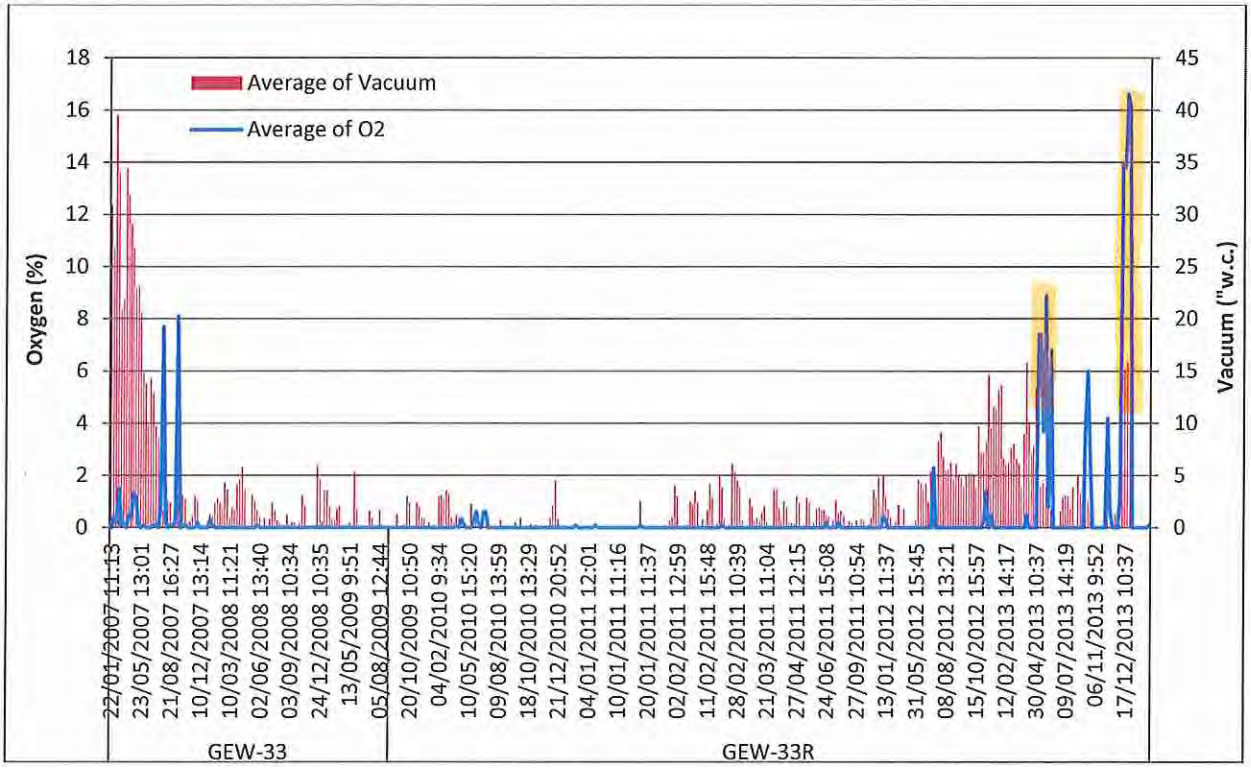

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
0
10
20
30
40
50
60
70
80
90
0
5
10
15
20
25
30
35
22/01/2007 11:48
14/06/2007 11:09
19/09/2007 8:07
12/02/2008 8:01
02/06/2008 13:06
15/09/2008 13:49
16/02/2009 14:12
02/07/2009 9:28
11/11/2009 12:52
12/04/2010 10:58
23/07/2010 9:53
02/11/2010 14:36
14/02/2011 10:13
18/04/2011 15:59
17/06/2011 10:41
14/10/2011 9:16
10/01/2012 14:46
13/04/2012 10:37
09/07/2012 10:59
23/08/2012 8:57
01/11/2012 17:31
19/12/2012 14:36
20/02/2013 10:39
10/04/2013 15:00
04/06/2013 9:41
23/07/2013 14:20
27/09/2013 14:14
22/11/2013 14:42
31/12/2013 11:36
27/03/2014 8:41
06/05/2014 13:54
16/07/2014 14:43
06/11/2014 15:57
20/04/2015 11:11
GEW-028
GEW-028R

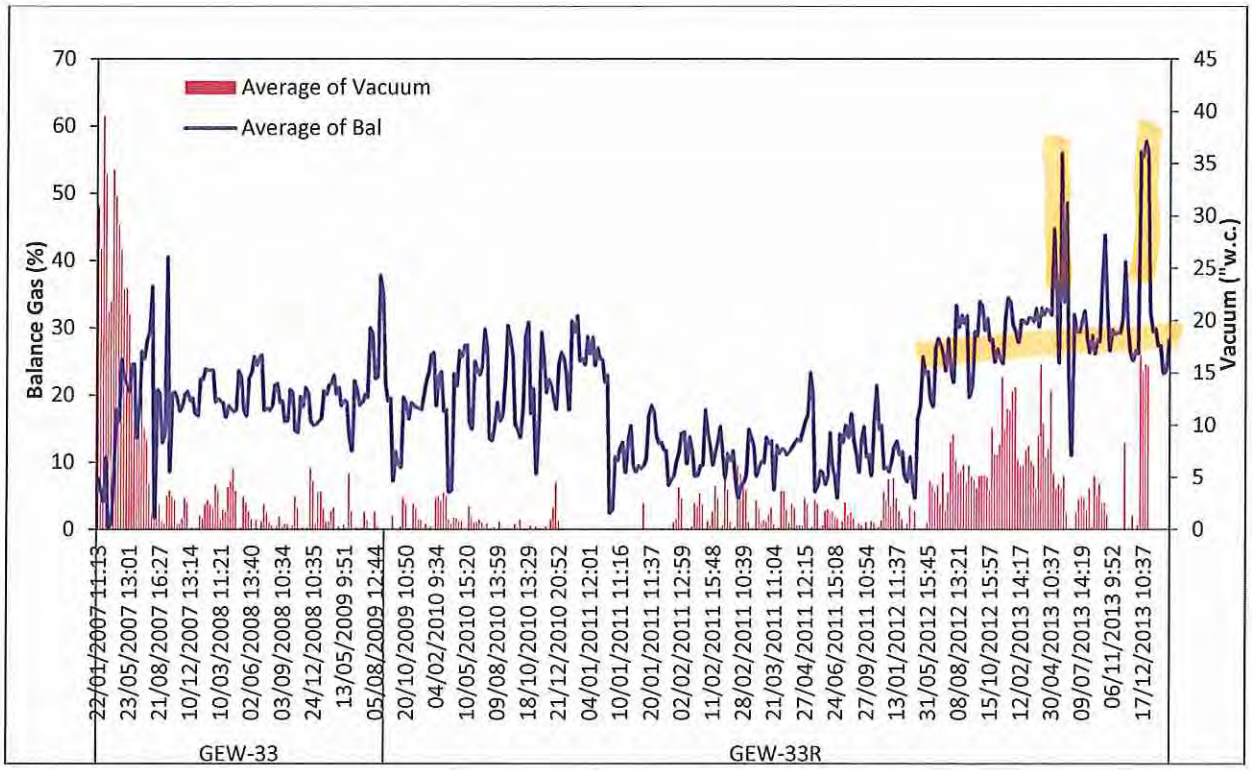

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
30
25
20
15
10
5
0
22/01/2007 11:32
14/06/2007 11:16
03/10/2007 12:11
26/02/2008 9:54
23/06/2008 10:45
12/11/2008 11:25
22/04/2009 10:30
29/09/2009 10:03
11/01/2010 14:32
17/03/2010 16:39
12/07/2010 11:07
18/10/2010 13:09
20/12/2010 12:41
31/12/2010 7:04
10/01/2011 11:03
24/01/2011 10:34
03/02/2011 9:11
18/02/2011 8:11
04/03/2011 9:08
24/03/2011 7:59
05/05/2011 9:35
07/07/2011 11:51
10/10/2011 11:28
26/01/2012 8:48
12/06/2012 13:18
08/08/2012 12:46
26/09/2012 10:49
04/12/2012 11:00
22/01/2013 16:59
12/03/2013 11:00
24/05/2013 11:13
07/08/2013 14:10
07/10/2013 16:32
GEW-030
GEW-030R

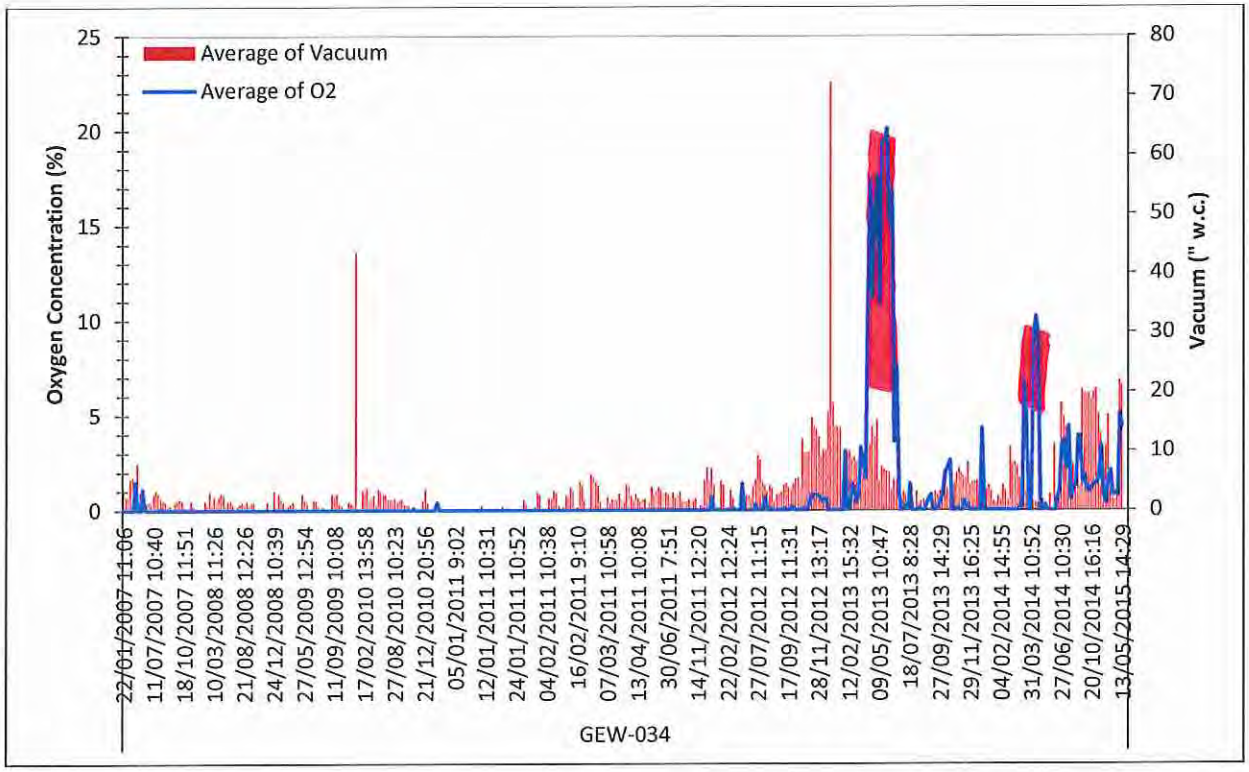

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
35
30
25
20
15
10
5
0
30
25
20
15
10
5
0
22/01/2007 11:32
14/06/2007 11:16
03/10/2007 12:11
26/02/2008 9:54
23/06/2008 10:45
12/11/2008 11:25
22/04/2009 10:30
29/09/2009 10:03
11/01/2010 14:32
17/03/2010 16:39
12/07/2010 11:07
18/10/2010 13:09
20/12/2010 12:41
31/12/2010 7:04
10/01/2011 11:03
24/01/2011 10:34
03/02/2011 9:11
18/02/2011 8:11
04/03/2011 9:08
24/03/2011 7:59
05/05/2011 9:35
07/07/2011 11:51
10/10/2011 11:28
26/01/2012 8:48
12/06/2012 13:18
08/08/2012 12:46
26/09/2012 10:49
04/12/2012 11:00
22/01/2013 16:59
12/03/2013 11:00
24/05/2013 11:13
07/08/2013 14:10
07/10/2013 16:32
GEW-030
GEW-030R

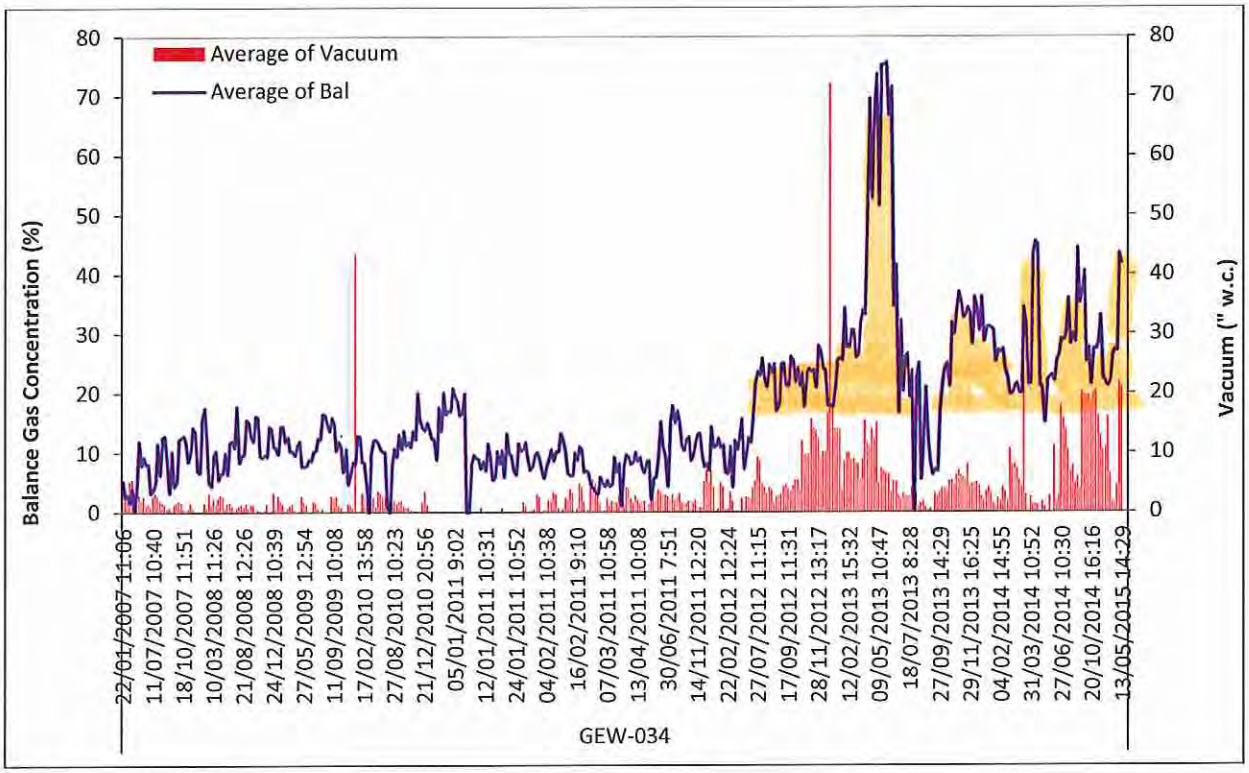

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
0
2
4
6
8
10
12
14
16
18
20
0
5
10
15
20
25
30
22/01/2007 11:26
23/05/2007 13:14
21/08/2007 16:40
27/11/2007 10:11
10/03/2008 11:06
14/07/2008 17:05
12/11/2008 11:31
03/03/2009 10:13
03/06/2009 10:06
05/10/2009 13:06
17/02/2010 13:45
07/06/2010 13:11
27/09/2010 14:58
01/12/2010 14:56
26/12/2010 13:19
04/01/2011 11:56
09/01/2011 11:16
17/01/2011 9:57
27/01/2011 9:02
04/02/2011 10:14
14/02/2011 9:27
25/02/2011 8:49
14/03/2011 11:12
05/04/2011 9:21
10/05/2011 14:19
30/06/2011 7:35
07/09/2011 9:19
14/12/2011 10:32
07/03/2012 11:55
26/06/2012 15:12
08/08/2012 13:08
07/01/2013 10:21
05/03/2013 11:21
13/06/2013 14:27
GEW-31
GEW-31R

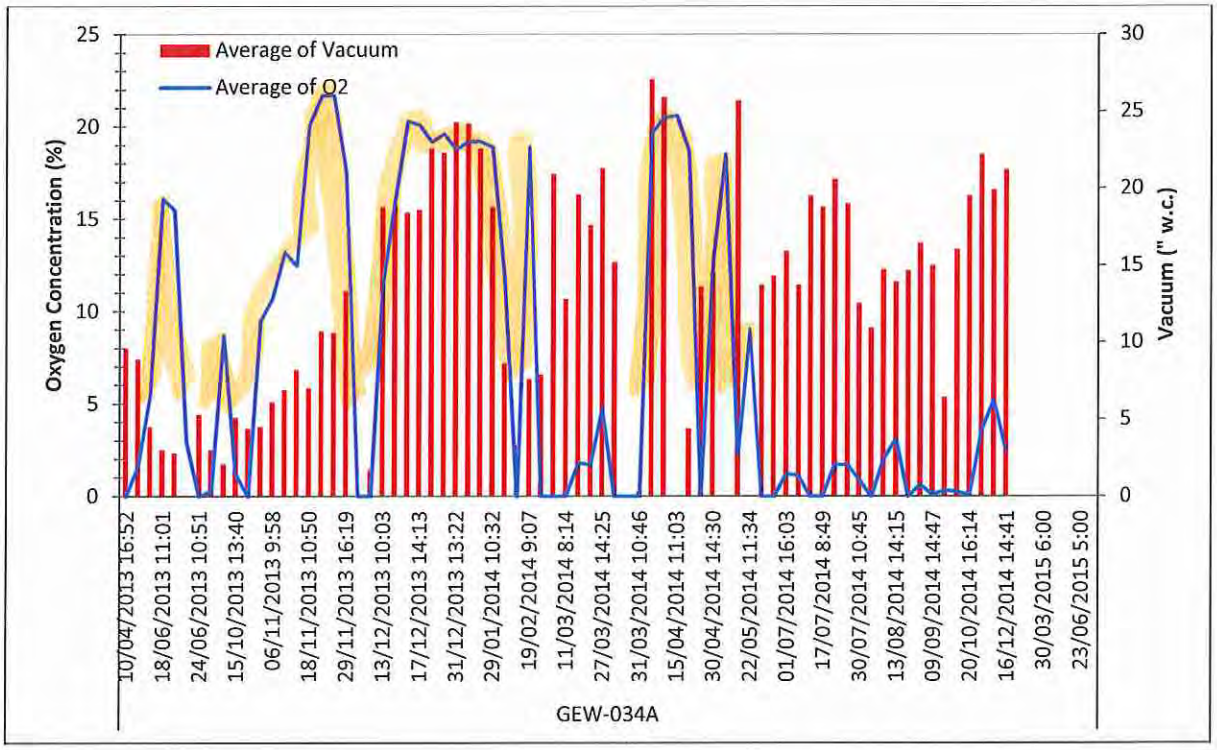

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
0
10
20
30
40
50
60
70
80
0
5
10
15
20
25
30
22/01/2007 11:26
23/05/2007 13:14
21/08/2007 16:40
27/11/2007 10:11
10/03/2008 11:06
14/07/2008 17:05
12/11/2008 11:31
03/03/2009 10:13
03/06/2009 10:06
05/10/2009 13:06
17/02/2010 13:45
07/06/2010 13:11
27/09/2010 14:58
01/12/2010 14:56
26/12/2010 13:19
04/01/2011 11:56
09/01/2011 11:16
17/01/2011 9:57
27/01/2011 9:02
04/02/2011 10:14
14/02/2011 9:27
25/02/2011 8:49
14/03/2011 11:12
05/04/2011 9:21
10/05/2011 14:19
30/06/2011 7:35
07/09/2011 9:19
14/12/2011 10:32
07/03/2012 11:55
26/06/2012 15:12
08/08/2012 13:08
07/01/2013 10:21
05/03/2013 11:21
13/06/2013 14:27
GEW-31
GEW-31R

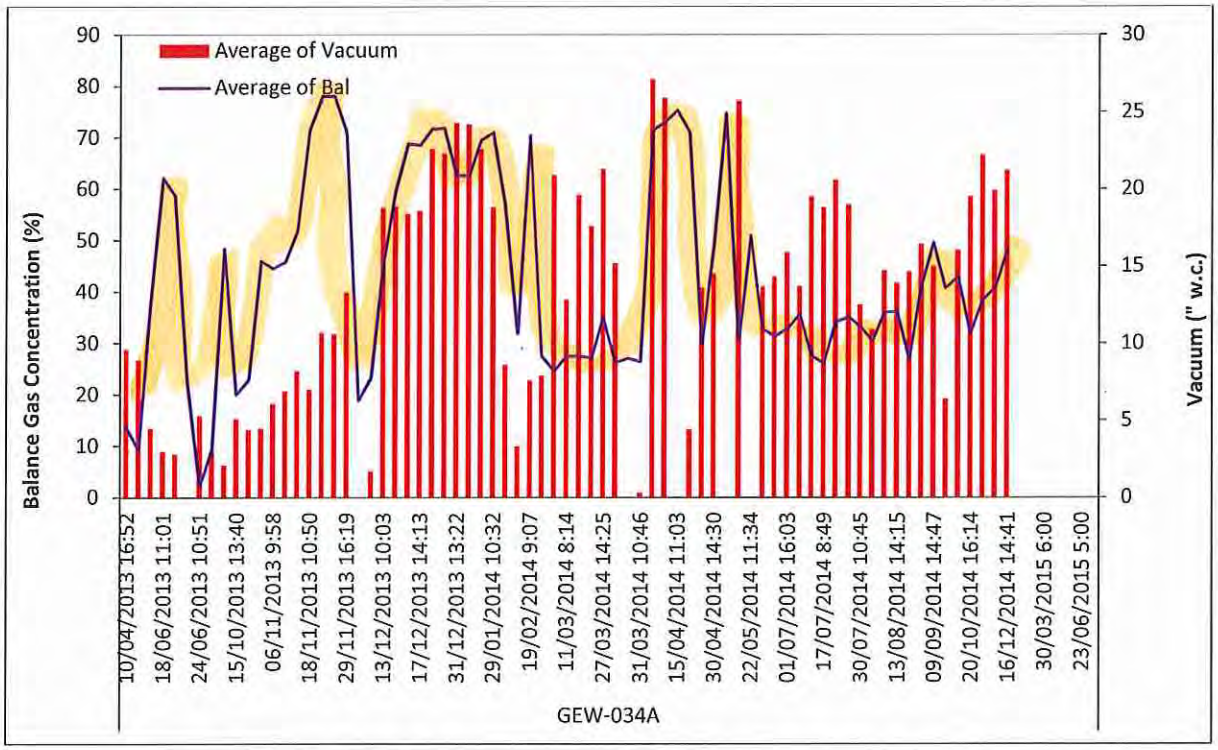

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-33
GEW-33R

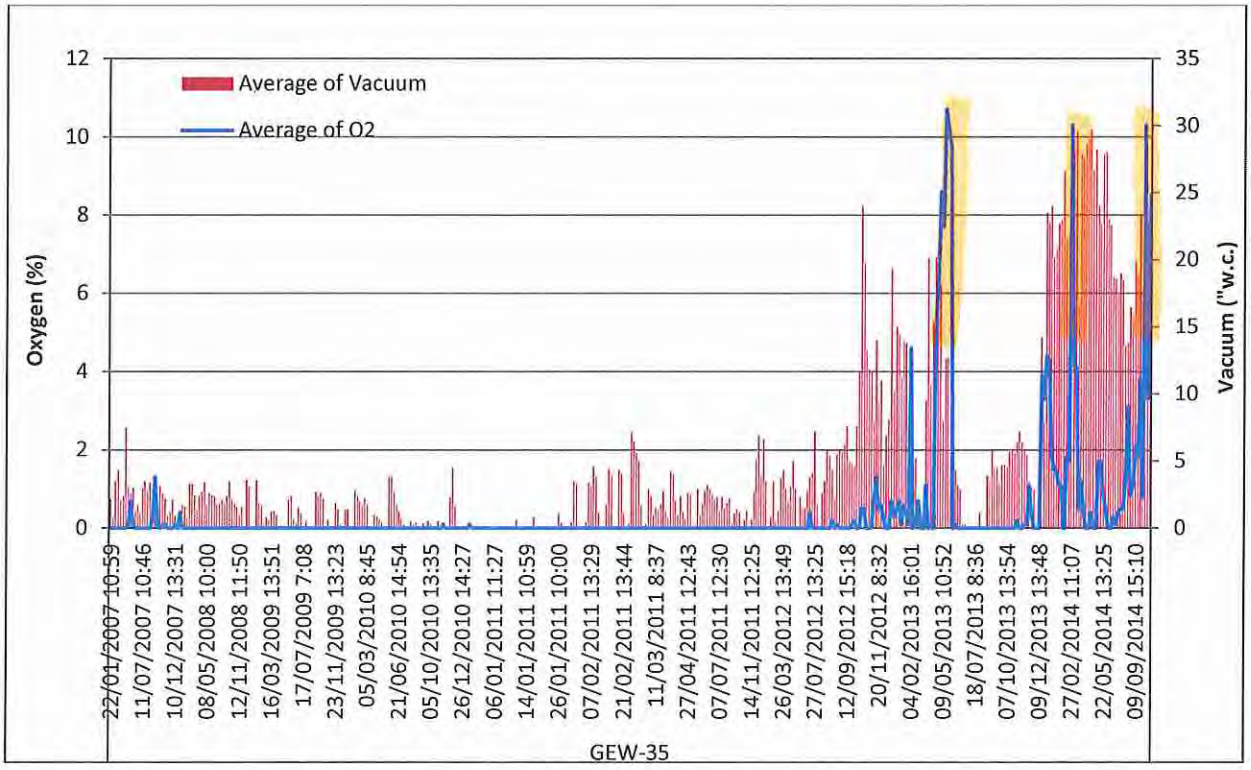

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-33
GEW-33R

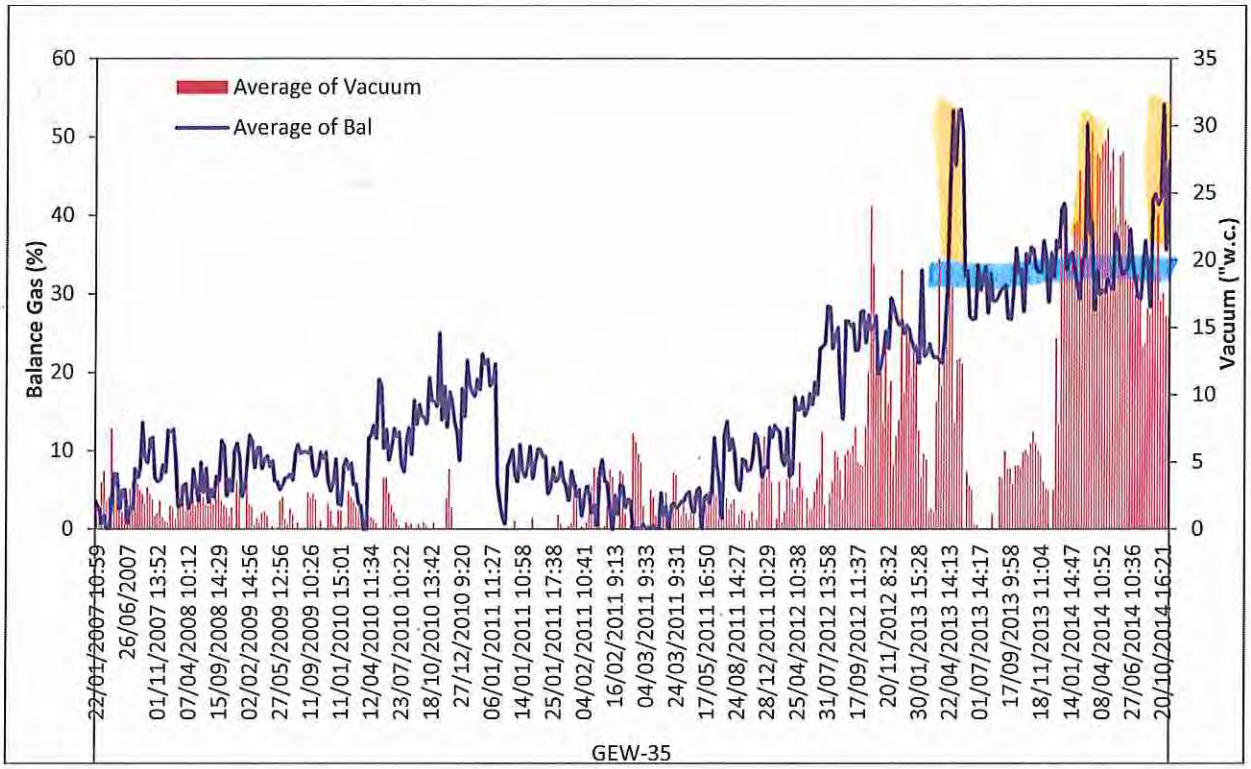

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
GEW-034

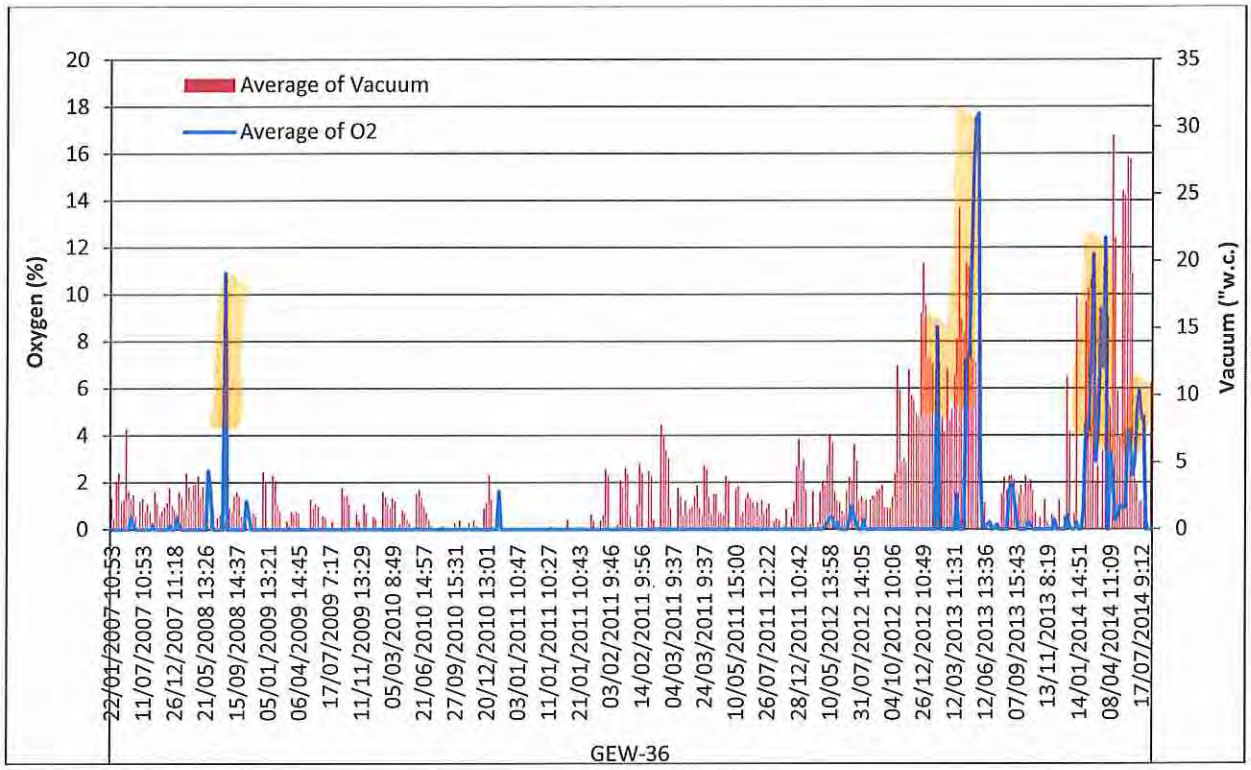

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
GEW-034

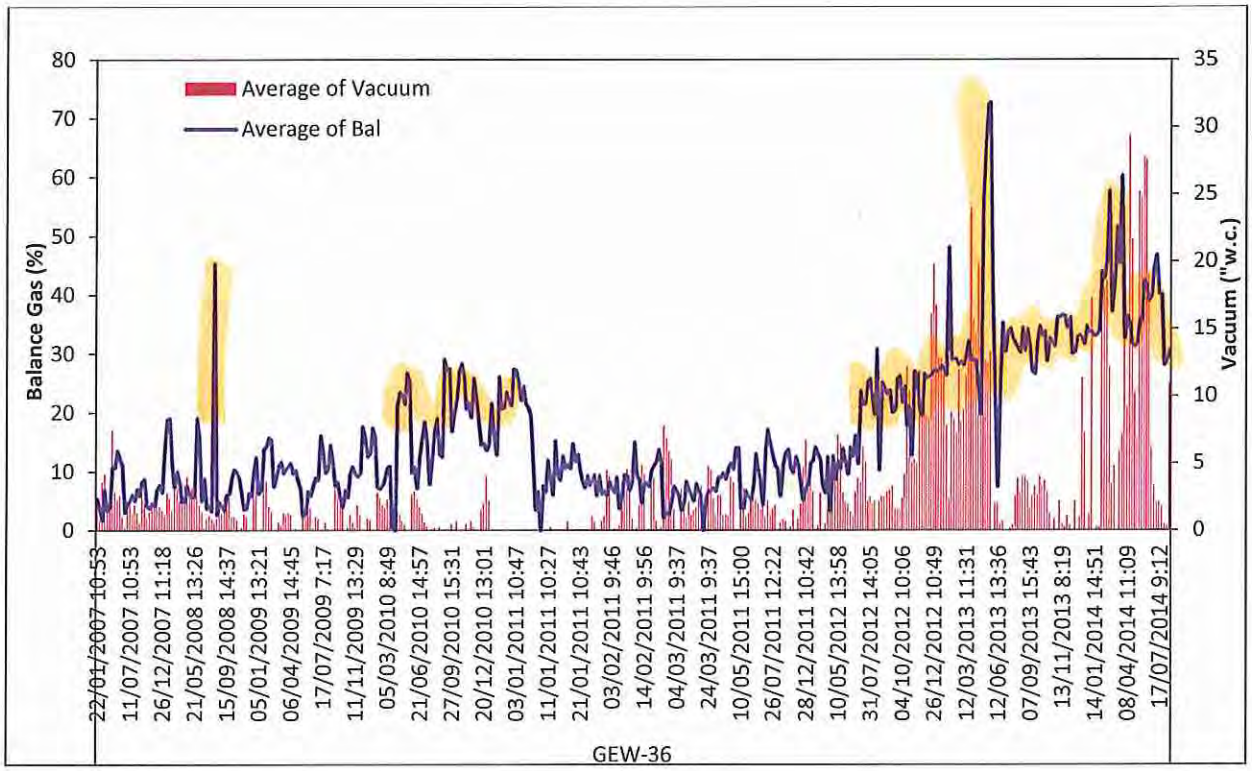

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
0
5
10
15
20
25
30
10/04/2013 16:52
18/06/2013 11:01
24/06/2013 10:51
15/10/2013 13:40
06/11/2013 9:58
18/11/2013 10:50
29/11/2013 16:19
13/12/2013 10:03
17/12/2013 14:13
31/12/2013 13:22
29/01/2014 10:32
19/02/2014 9:07
11/03/2014 8:14
27/03/2014 14:25
31/03/2014 10:46
15/04/2014 11:03
30/04/2014 14:30
22/05/2014 11:34
01/07/2014 16:03
17/07/2014 8:49
30/07/2014 10:45
13/08/2014 14:15
09/09/2014 14:47
20/10/2014 16:14
16/12/2014 14:41
30/03/2015 6:00
23/06/2015 5:00
GEW-034A

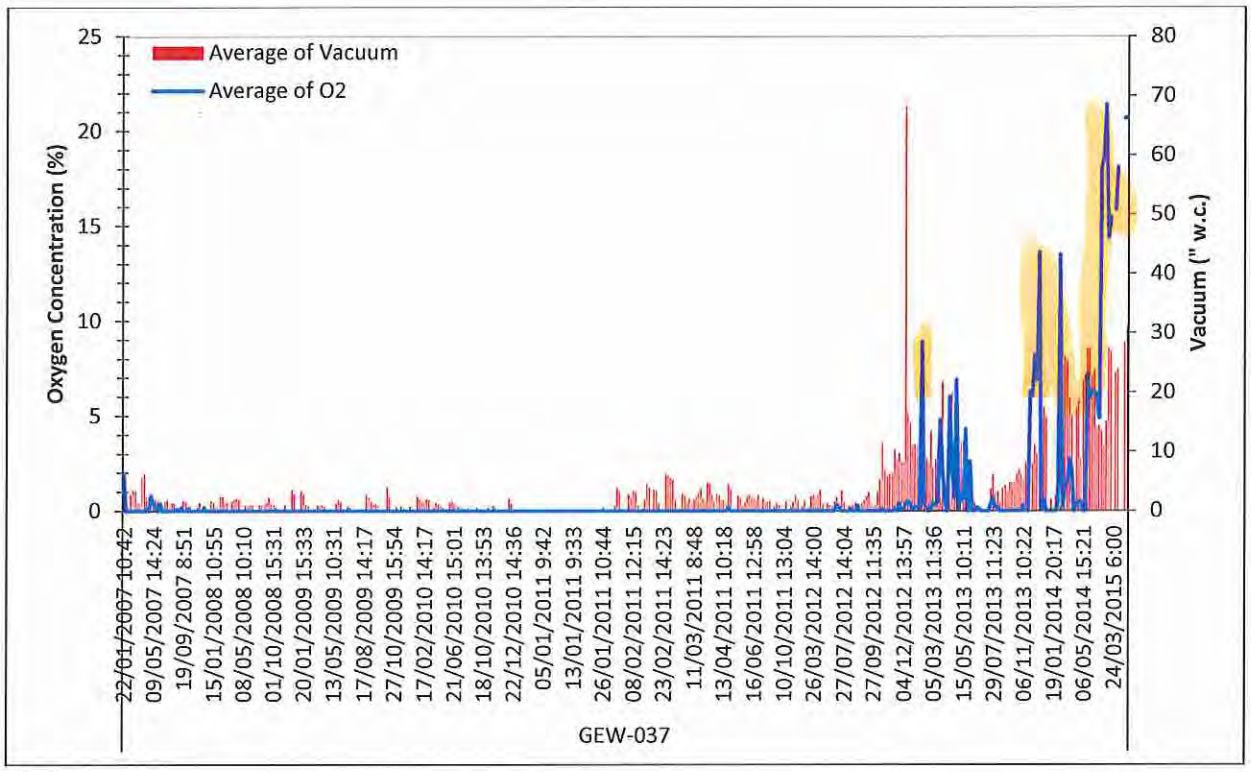

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
0
10
20
30
40
50
60
70
80
90
0
5
10
15
20
25
30
10/04/2013 16:52
18/06/2013 11:01
24/06/2013 10:51
15/10/2013 13:40
06/11/2013 9:58
18/11/2013 10:50
29/11/2013 16:19
13/12/2013 10:03
17/12/2013 14:13
31/12/2013 13:22
29/01/2014 10:32
19/02/2014 9:07
11/03/2014 8:14
27/03/2014 14:25
31/03/2014 10:46
15/04/2014 11:03
30/04/2014 14:30
22/05/2014 11:34
01/07/2014 16:03
17/07/2014 8:49
30/07/2014 10:45
13/08/2014 14:15
09/09/2014 14:47
20/10/2014 16:14
16/12/2014 14:41
30/03/2015 6:00
23/06/2015 5:00
GEW-034A

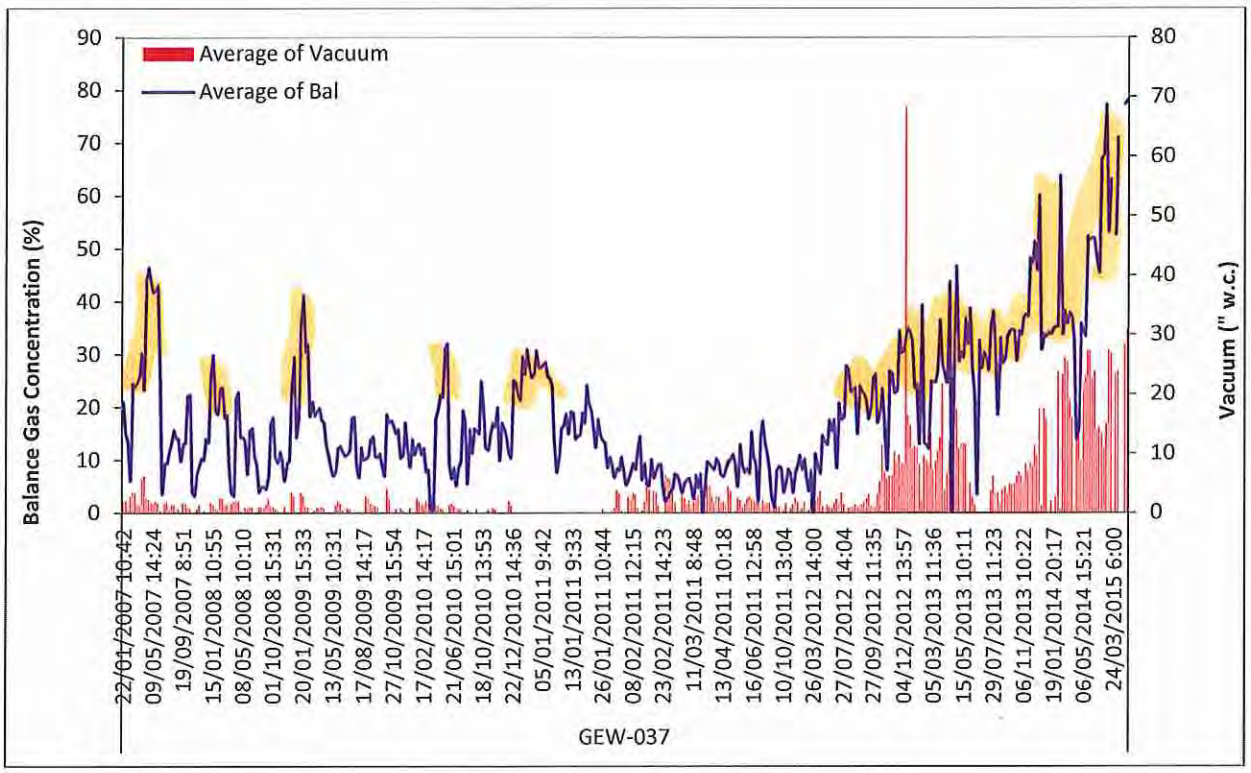

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-35

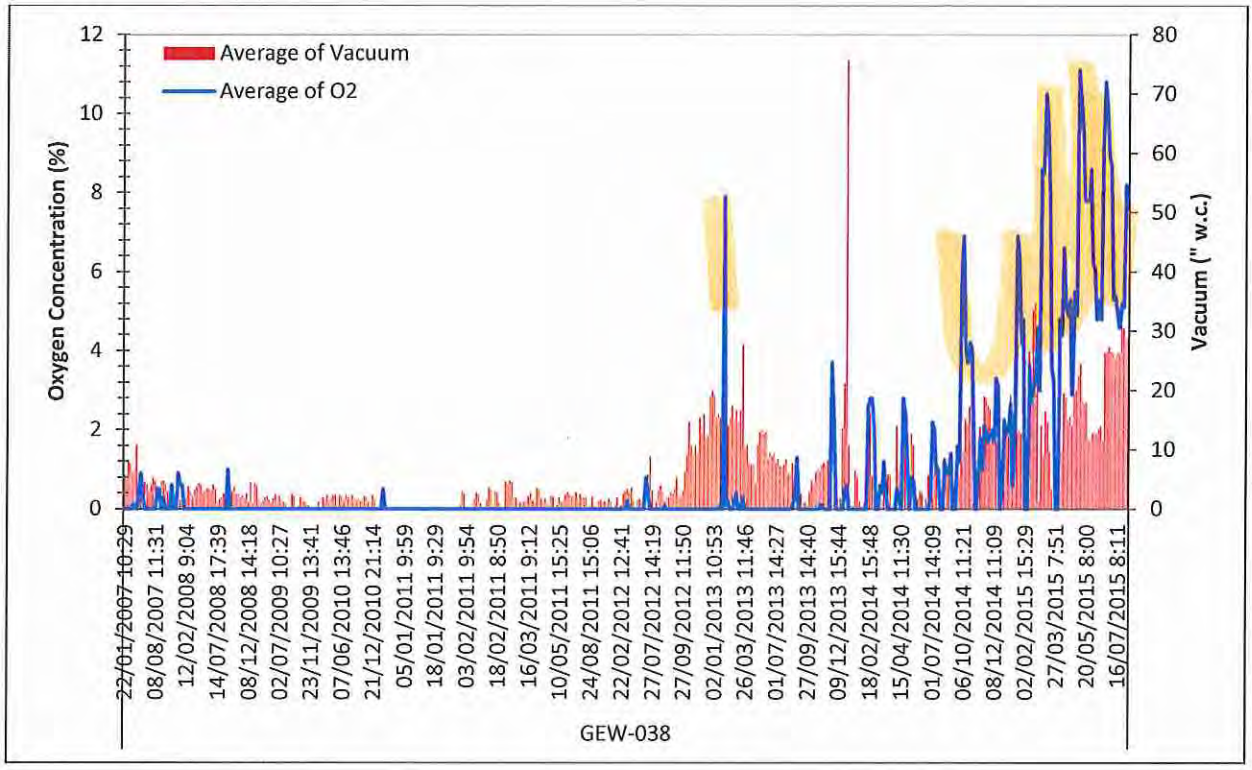

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-35

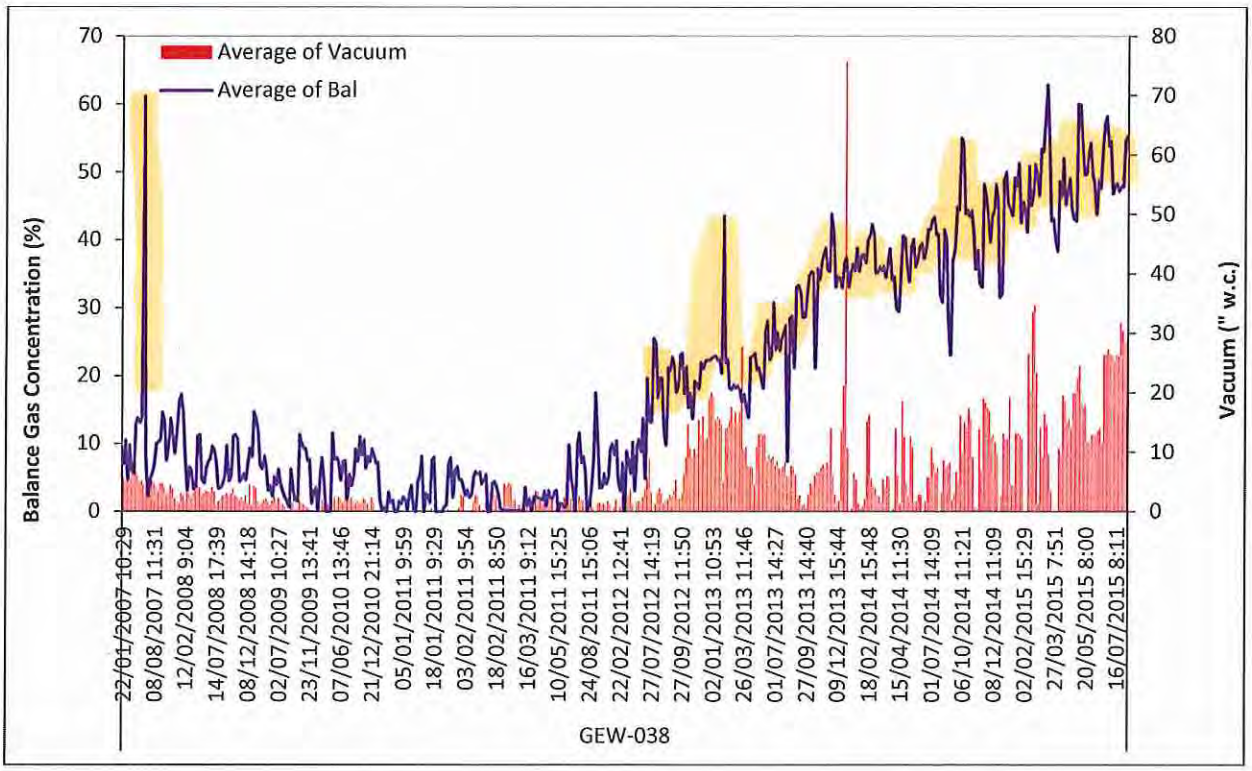

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
0
2
4
6
8
10
12
14
16
18
20
0
5
10
15
20
25
30
35
22/01/2007 10:53
11/07/2007 10:53
26/12/2007 11:18
21/05/2008 13:26
15/09/2008 14:37
05/01/2009 13:21
06/04/2009 14:45
17/07/2009 7:17
11/11/2009 13:29
05/03/2010 8:49
21/06/2010 14:57
27/09/2010 15:31
20/12/2010 13:01
03/01/2011 10:47
11/01/2011 10:27
21/01/2011 10:43
03/02/2011 9:46
14/02/2011 9:56
04/03/2011 9:37
24/03/2011 9:37
10/05/2011 15:00
26/07/2011 12:22
28/12/2011 10:42
10/05/2012 13:58
31/07/2012 14:05
04/10/2012 10:06
26/12/2012 10:49
12/03/2013 11:31
12/06/2013 13:36
07/09/2013 15:43
13/11/2013 8:19
14/01/2014 14:51
08/04/2014 11:09
17/07/2014 9:12
GEW-36


Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
0
10
20
30
40
50
60
70
80
0
5
10
15
20
25
30
35
22/01/2007 10:53
11/07/2007 10:53
26/12/2007 11:18
21/05/2008 13:26
15/09/2008 14:37
05/01/2009 13:21
06/04/2009 14:45
17/07/2009 7:17
11/11/2009 13:29
05/03/2010 8:49
21/06/2010 14:57
27/09/2010 15:31
20/12/2010 13:01
03/01/2011 10:47
11/01/2011 10:27
21/01/2011 10:43
03/02/2011 9:46
14/02/2011 9:56
04/03/2011 9:37
24/03/2011 9:37
10/05/2011 15:00
26/07/2011 12:22
28/12/2011 10:42
10/05/2012 13:58
31/07/2012 14:05
04/10/2012 10:06
26/12/2012 10:49
12/03/2013 11:31
12/06/2013 13:36
07/09/2013 15:43
13/11/2013 8:19
14/01/2014 14:51
08/04/2014 11:09
17/07/2014 9:12
GEW-36


Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
0
5
10
15
20
25
0
10
20
30
40
50
60
70
80
22/01/2007 10:42
09/05/2007 14:24
19/09/2007 8:51
15/01/2008 10:55
08/05/2008 10:10
01/10/2008 15:31
20/01/2009 15:33
13/05/2009 10:31
17/08/2009 14:17
27/10/2009 15:54
17/02/2010 14:17
21/06/2010 15:01
18/10/2010 13:53
22/12/2010 14:36
05/01/2011 9:42
13/01/2011 9:33
26/01/2011 10:44
08/02/2011 12:15
23/02/2011 14:23
11/03/2011 8:48
13/04/2011 10:18
16/06/2011 12:58
10/10/2011 13:04
26/03/2012 14:00
27/07/2012 14:04
27/09/2012 11:35
04/12/2012 13:57
05/03/2013 11:36
15/05/2013 10:11
29/07/2013 11:23
06/11/2013 10:22
19/01/2014 20:17
06/05/2014 15:21
24/03/2015 6:00
GEW-037

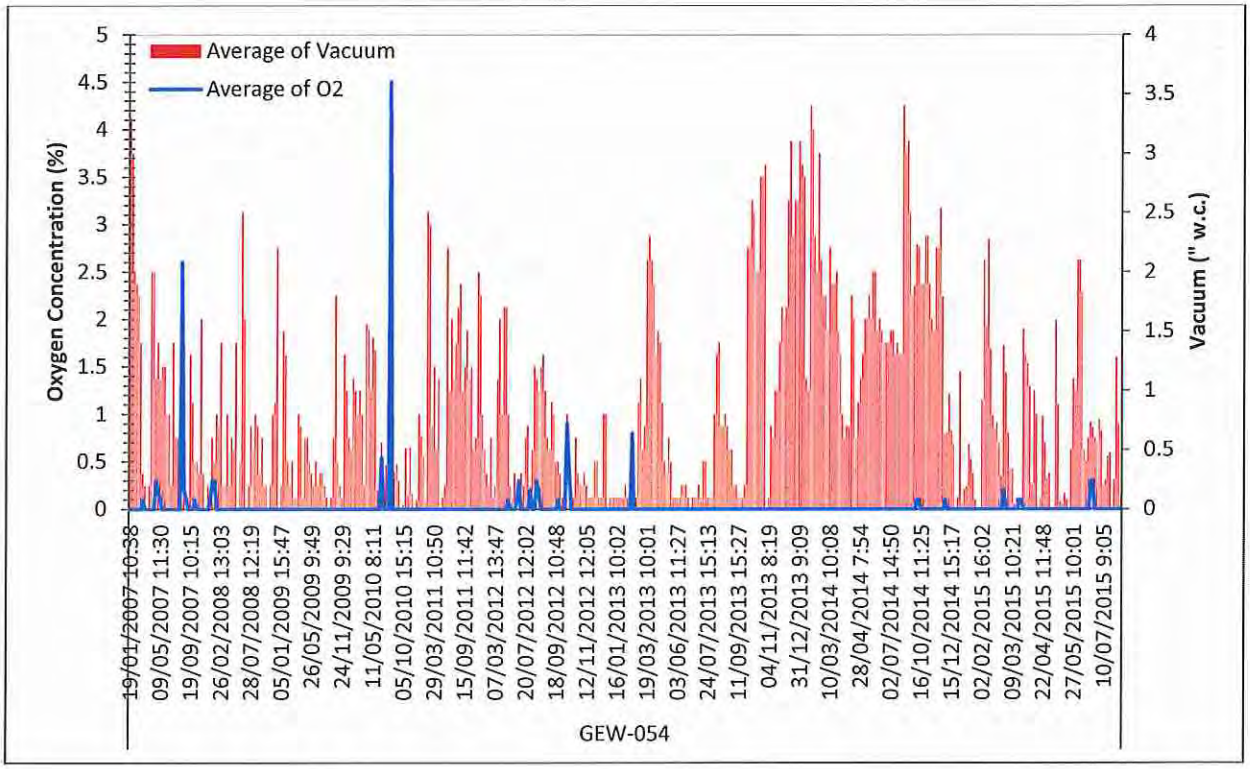

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
0
10
20
30
40
50
60
70
80
90
0
10
20
30
40
50
60
70
80
22/01/2007 10:42
09/05/2007 14:24
19/09/2007 8:51
15/01/2008 10:55
08/05/2008 10:10
01/10/2008 15:31
20/01/2009 15:33
13/05/2009 10:31
17/08/2009 14:17
27/10/2009 15:54
17/02/2010 14:17
21/06/2010 15:01
18/10/2010 13:53
22/12/2010 14:36
05/01/2011 9:42
13/01/2011 9:33
26/01/2011 10:44
08/02/2011 12:15
23/02/2011 14:23
11/03/2011 8:48
13/04/2011 10:18
16/06/2011 12:58
10/10/2011 13:04
26/03/2012 14:00
27/07/2012 14:04
27/09/2012 11:35
04/12/2012 13:57
05/03/2013 11:36
15/05/2013 10:11
29/07/2013 11:23
06/11/2013 10:22
19/01/2014 20:17
06/05/2014 15:21
24/03/2015 6:00
GEW-037

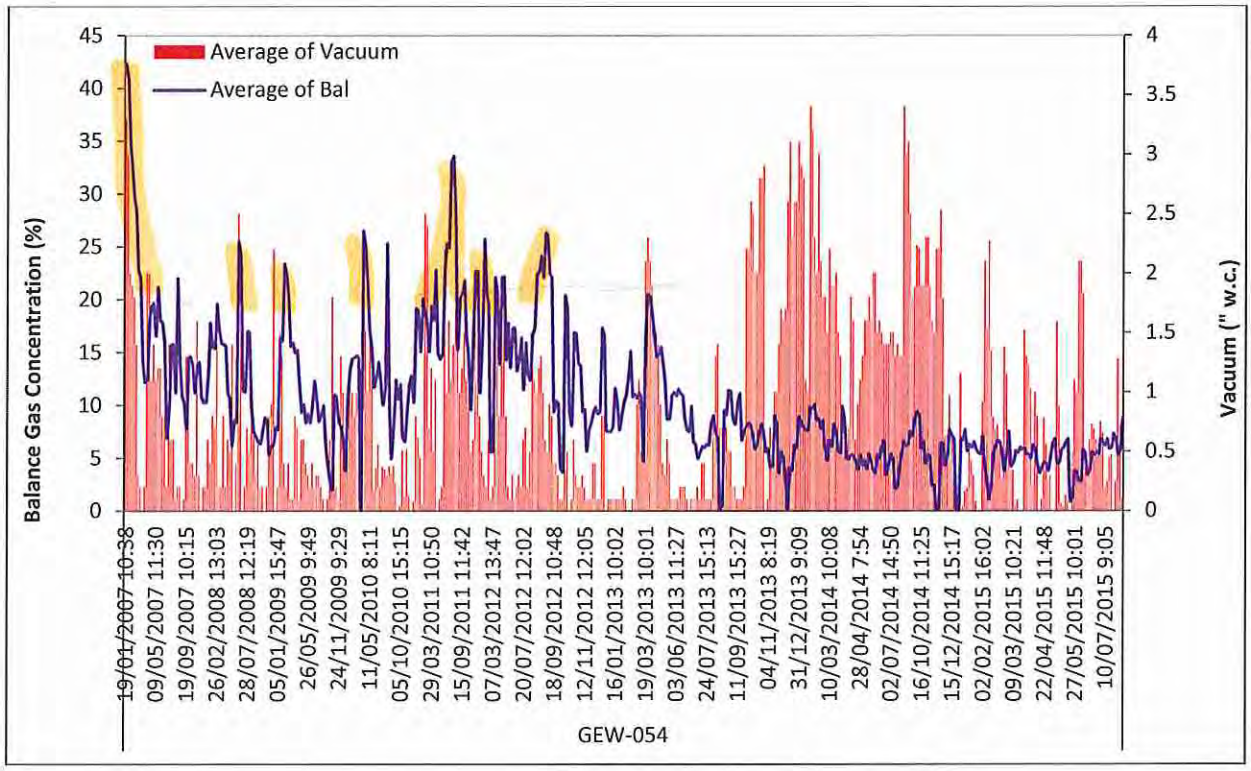

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
0
2
4
6
8
10
12
0
10
20
30
40
50
60
70
80
22/01/2007 10:29
08/08/2007 11:31
12/02/2008 9:04
14/07/2008 17:39
08/12/2008 14:18
02/07/2009 10:27
23/11/2009 13:41
07/06/2010 13:46
21/12/2010 21:14
05/01/2011 9:59
18/01/2011 9:29
03/02/2011 9:54
18/02/2011 8:50
16/03/2011 9:12
10/05/2011 15:25
24/08/2011 15:06
22/02/2012 12:41
27/07/2012 14:19
27/09/2012 11:50
02/01/2013 10:53
26/03/2013 11:46
01/07/2013 14:27
27/09/2013 14:40
09/12/2013 15:44
18/02/2014 15:48
15/04/2014 11:30
01/07/2014 14:09
06/10/2014 11:21
08/12/2014 11:09
02/02/2015 15:29
27/03/2015 7:51
20/05/2015 8:00
16/07/2015 8:11
GEW-038

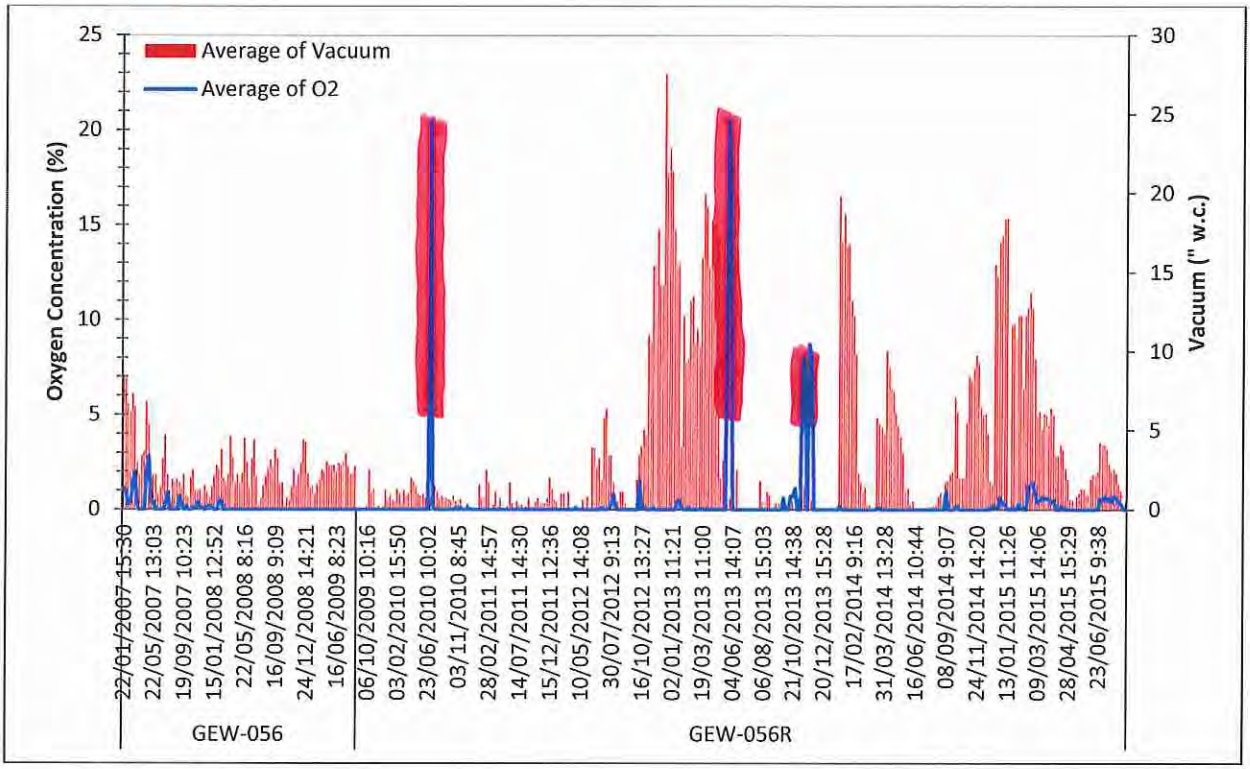

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
0
10
20
30
40
50
60
70
0
10
20
30
40
50
60
70
80
22/01/2007 10:29
08/08/2007 11:31
12/02/2008 9:04
14/07/2008 17:39
08/12/2008 14:18
02/07/2009 10:27
23/11/2009 13:41
07/06/2010 13:46
21/12/2010 21:14
05/01/2011 9:59
18/01/2011 9:29
03/02/2011 9:54
18/02/2011 8:50
16/03/2011 9:12
10/05/2011 15:25
24/08/2011 15:06
22/02/2012 12:41
27/07/2012 14:19
27/09/2012 11:50
02/01/2013 10:53
26/03/2013 11:46
01/07/2013 14:27
27/09/2013 14:40
09/12/2013 15:44
18/02/2014 15:48
15/04/2014 11:30
01/07/2014 14:09
06/10/2014 11:21
08/12/2014 11:09
02/02/2015 15:29
27/03/2015 7:51
20/05/2015 8:00
16/07/2015 8:11
GEW-038

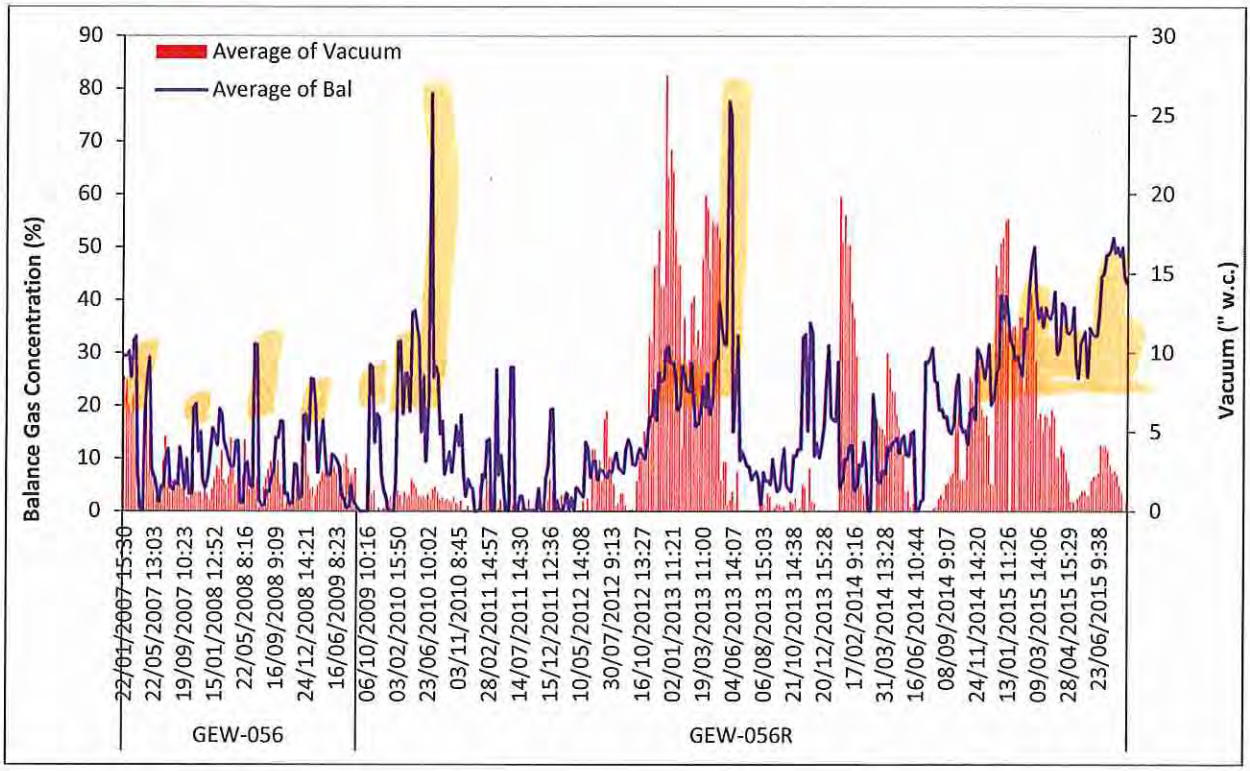
NORTH QUARRY HOTSPOT.

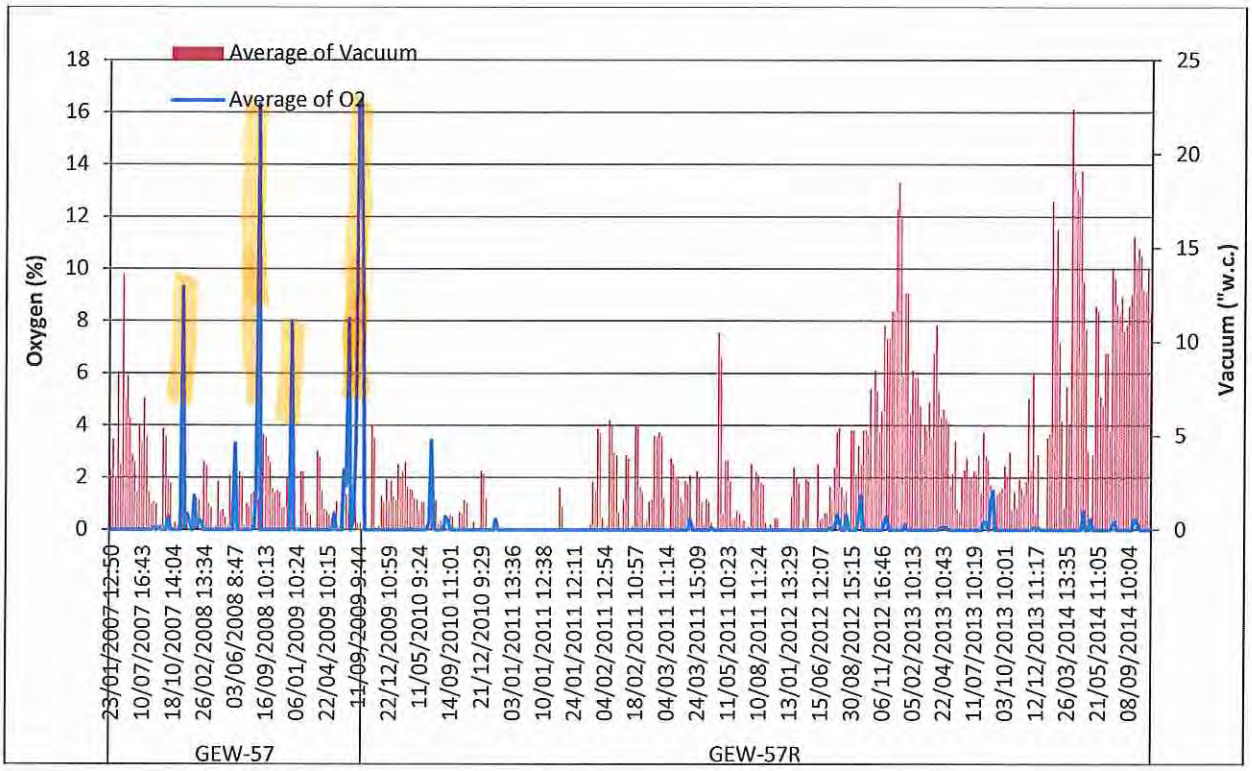
Source: BL_004_0002789 **GEW-54** LFG Database

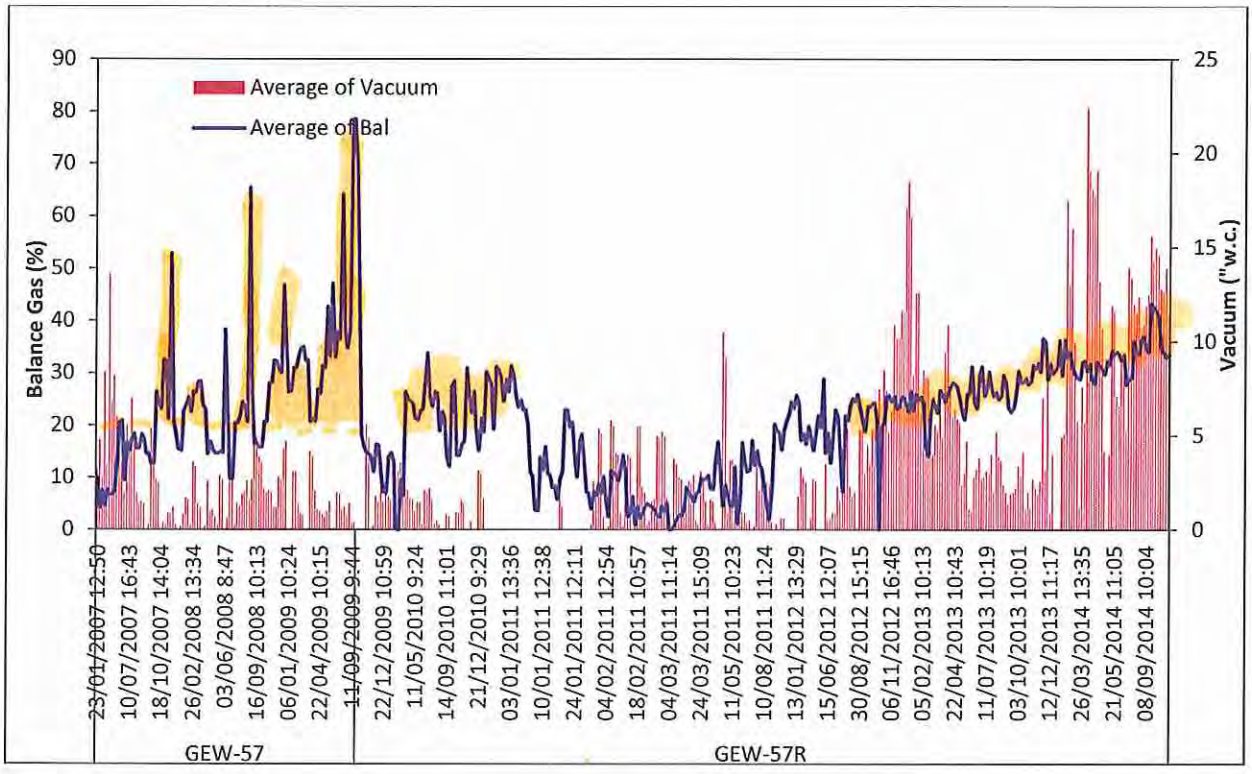


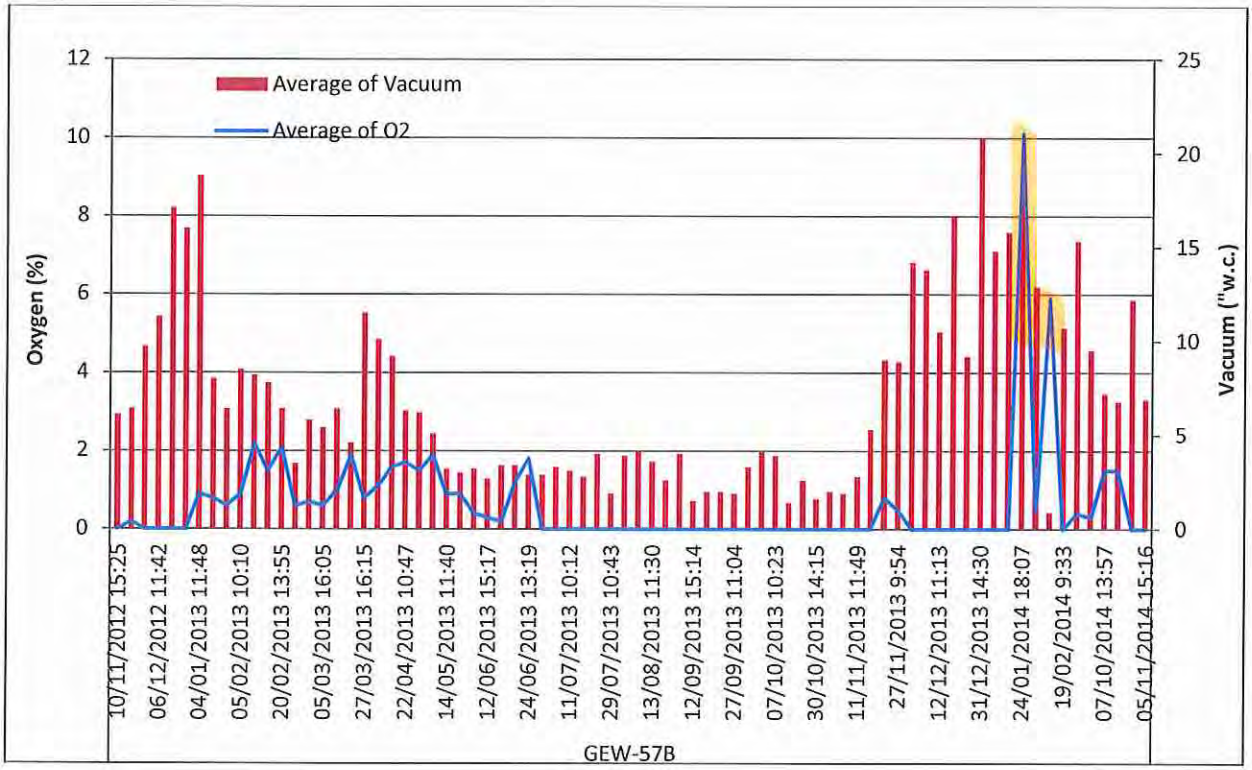


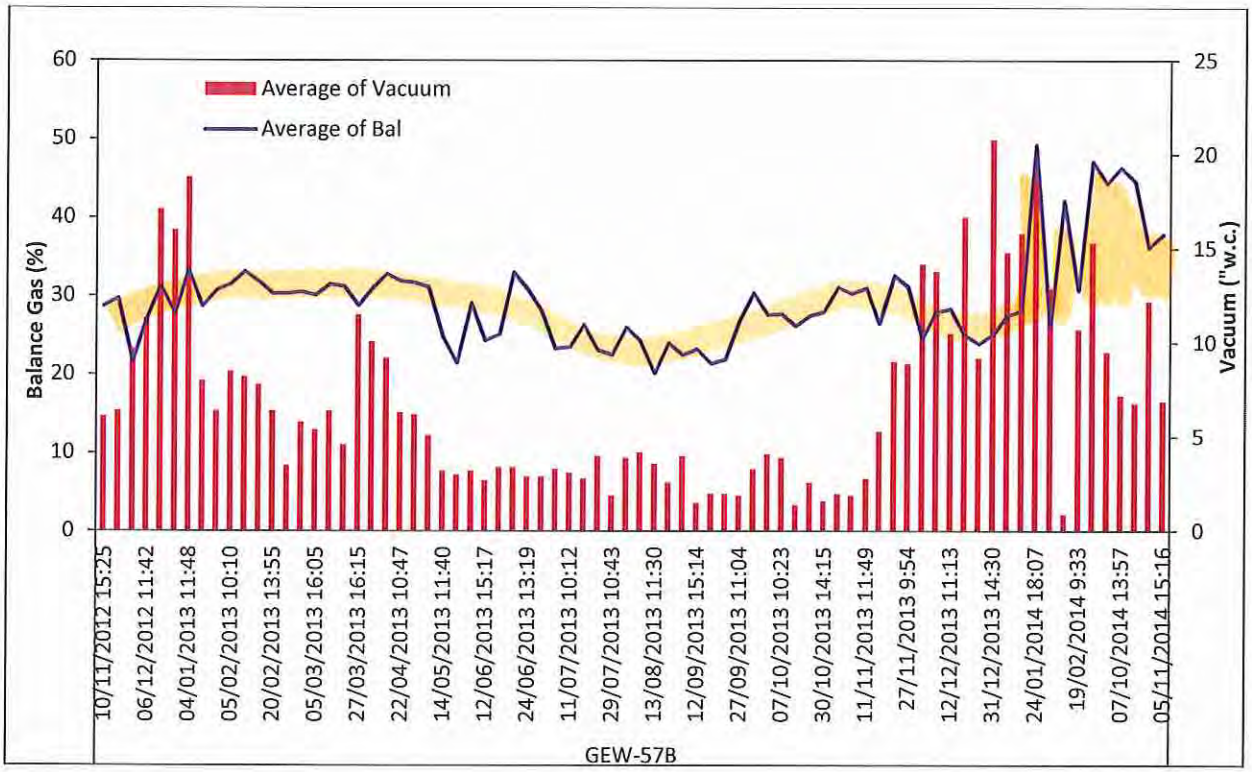

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
0
5
10
15
20
25
30
22/01/2007 15:30
22/05/2007 13:03
19/09/2007 10:23
15/01/2008 12:52
22/05/2008 8:16
16/09/2008 9:09
24/12/2008 14:21
16/06/2009 8:23
06/10/2009 10:16
03/02/2010 15:50
23/06/2010 10:02
03/11/2010 8:45
28/02/2011 14:57
14/07/2011 14:30
15/12/2011 12:36
10/05/2012 14:08
30/07/2012 9:13
16/10/2012 13:27
02/01/2013 11:21
19/03/2013 11:00
04/06/2013 14:07
06/08/2013 15:03
21/10/2013 14:38
20/12/2013 15:28
17/02/2014 9:16
31/03/2014 13:28
16/06/2014 10:44
08/09/2014 9:07
24/11/2014 14:20
13/01/2015 11:26
09/03/2015 14:06
28/04/2015 15:29
23/06/2015 9:38
GEW-056
GEW-056R

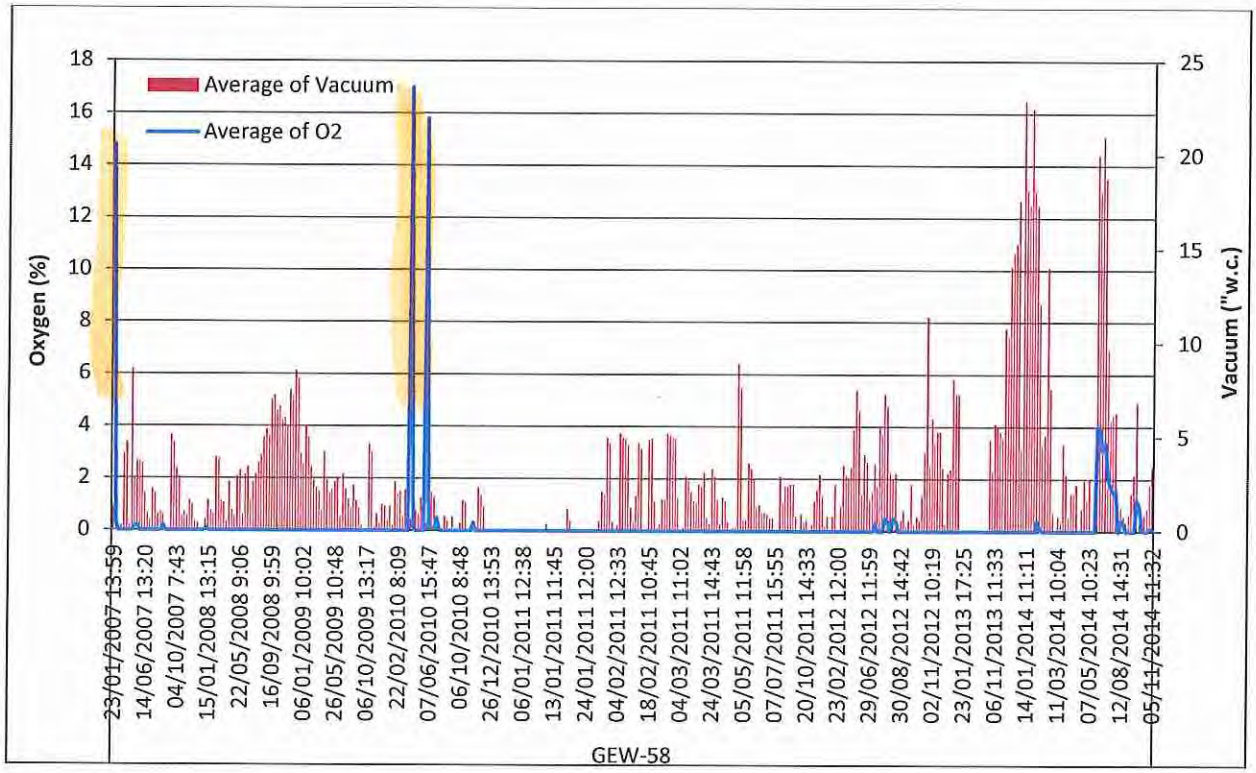

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
0
10
20
30
40
50
60
70
80
90
0
5
10
15
20
25
30
22/01/2007 15:30
22/05/2007 13:03
19/09/2007 10:23
15/01/2008 12:52
22/05/2008 8:16
16/09/2008 9:09
24/12/2008 14:21
16/06/2009 8:23
06/10/2009 10:16
03/02/2010 15:50
23/06/2010 10:02
03/11/2010 8:45
28/02/2011 14:57
14/07/2011 14:30
15/12/2011 12:36
10/05/2012 14:08
30/07/2012 9:13
16/10/2012 13:27
02/01/2013 11:21
19/03/2013 11:00
04/06/2013 14:07
06/08/2013 15:03
21/10/2013 14:38
20/12/2013 15:28
17/02/2014 9:16
31/03/2014 13:28
16/06/2014 10:44
08/09/2014 9:07
24/11/2014 14:20
13/01/2015 11:26
09/03/2015 14:06
28/04/2015 15:29
23/06/2015 9:38
GEW-056
GEW-056R

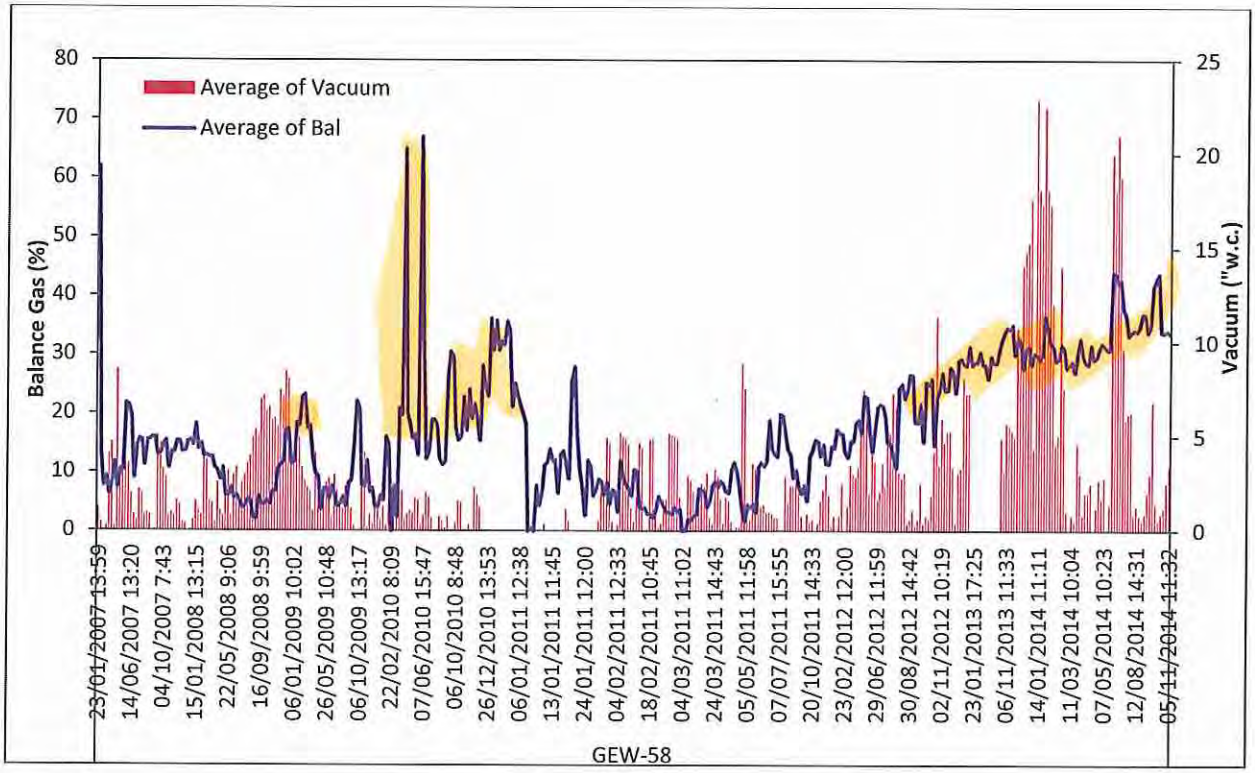

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-57
GEW-57R

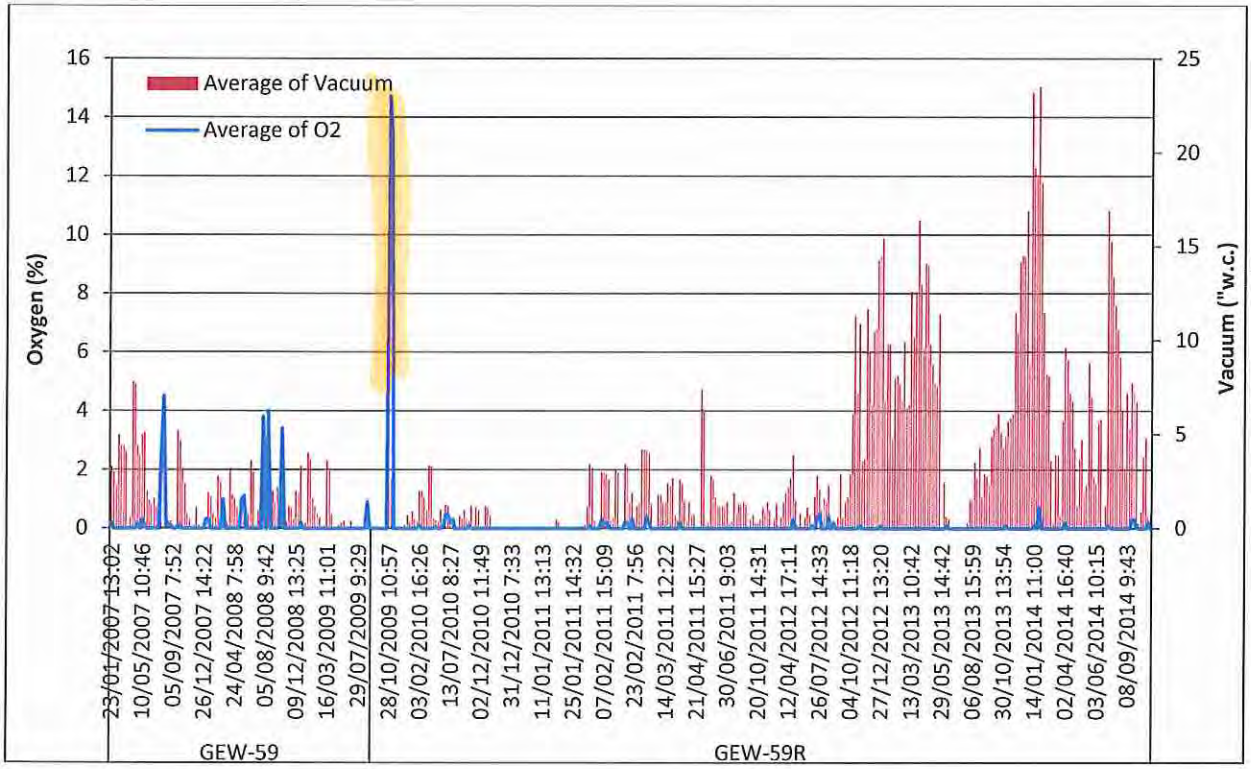

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-57
GEW-57R

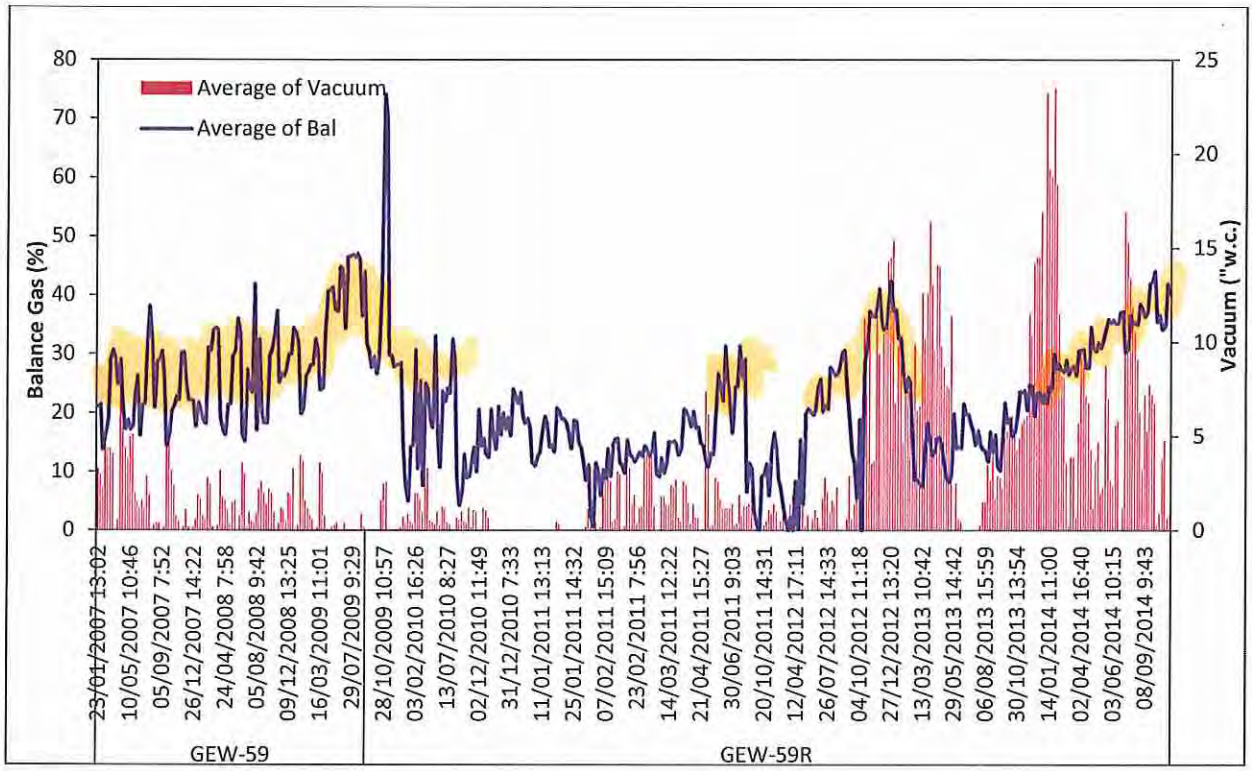

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
0
2
4
6
8
10
12
0
5
10
15
20
25
10/11/2012 15:25
06/12/2012 11:42
04/01/2013 11:48
05/02/2013 10:10
20/02/2013 13:55
05/03/2013 16:05
27/03/2013 16:15
22/04/2013 10:47
14/05/2013 11:40
12/06/2013 15:17
24/06/2013 13:19
11/07/2013 10:12
29/07/2013 10:43
13/08/2013 11:30
12/09/2013 15:14
27/09/2013 11:04
07/10/2013 10:23
30/10/2013 14:15
11/11/2013 11:49
27/11/2013 9:54
12/12/2013 11:13
31/12/2013 14:30
24/01/2014 18:07
19/02/2014 9:33
07/10/2014 13:57
05/11/2014 15:16
GEW-57B

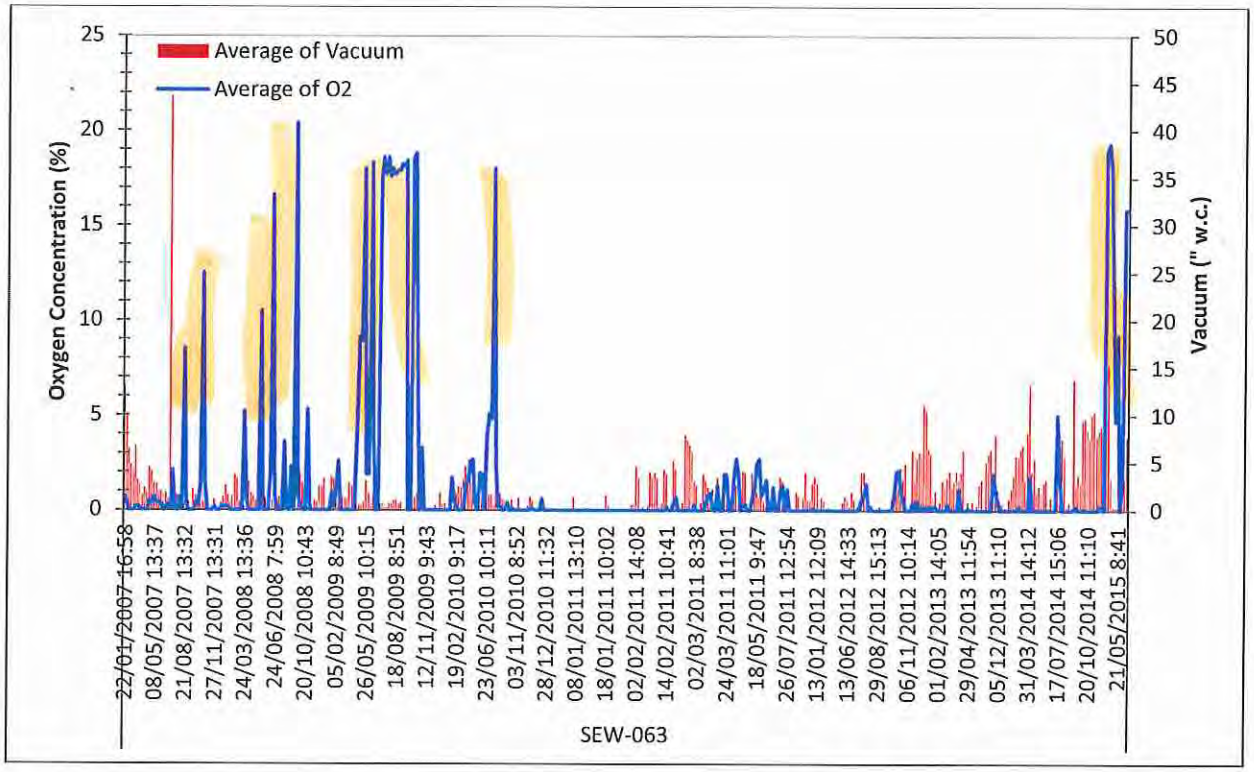

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
0
10
20
30
40
50
60
0
5
10
15
20
25
10/11/2012 15:25
06/12/2012 11:42
04/01/2013 11:48
05/02/2013 10:10
20/02/2013 13:55
05/03/2013 16:05
27/03/2013 16:15
22/04/2013 10:47
14/05/2013 11:40
12/06/2013 15:17
24/06/2013 13:19
11/07/2013 10:12
29/07/2013 10:43
13/08/2013 11:30
12/09/2013 15:14
27/09/2013 11:04
07/10/2013 10:23
30/10/2013 14:15
11/11/2013 11:49
27/11/2013 9:54
12/12/2013 11:13
31/12/2013 14:30
24/01/2014 18:07
19/02/2014 9:33
07/10/2014 13:57
05/11/2014 15:16
GEW-57B

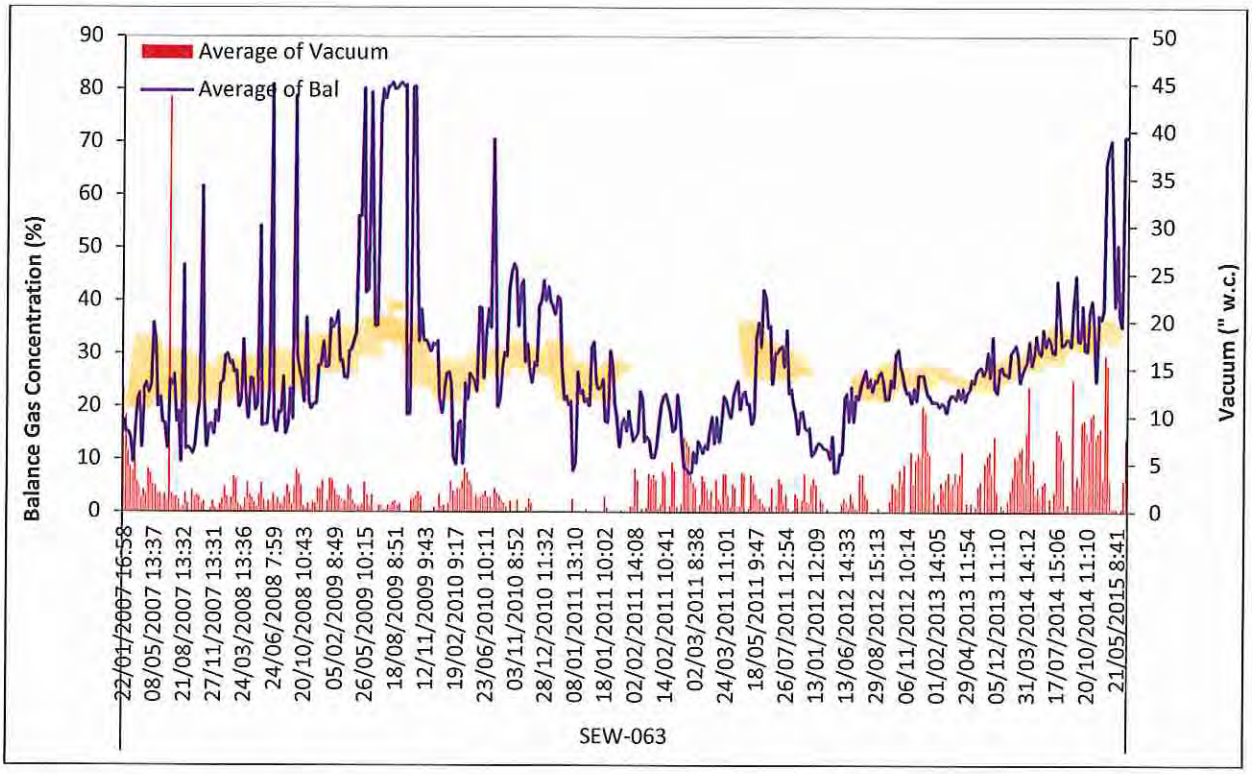

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-58

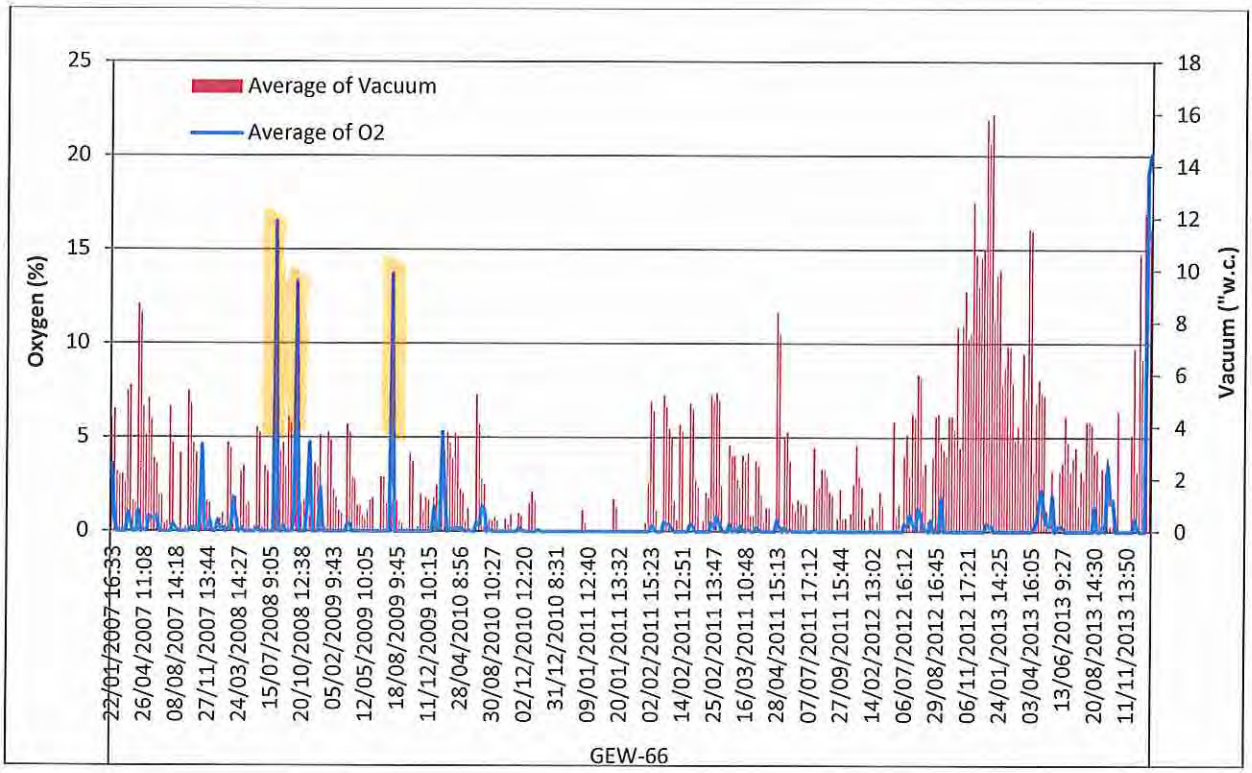

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-58

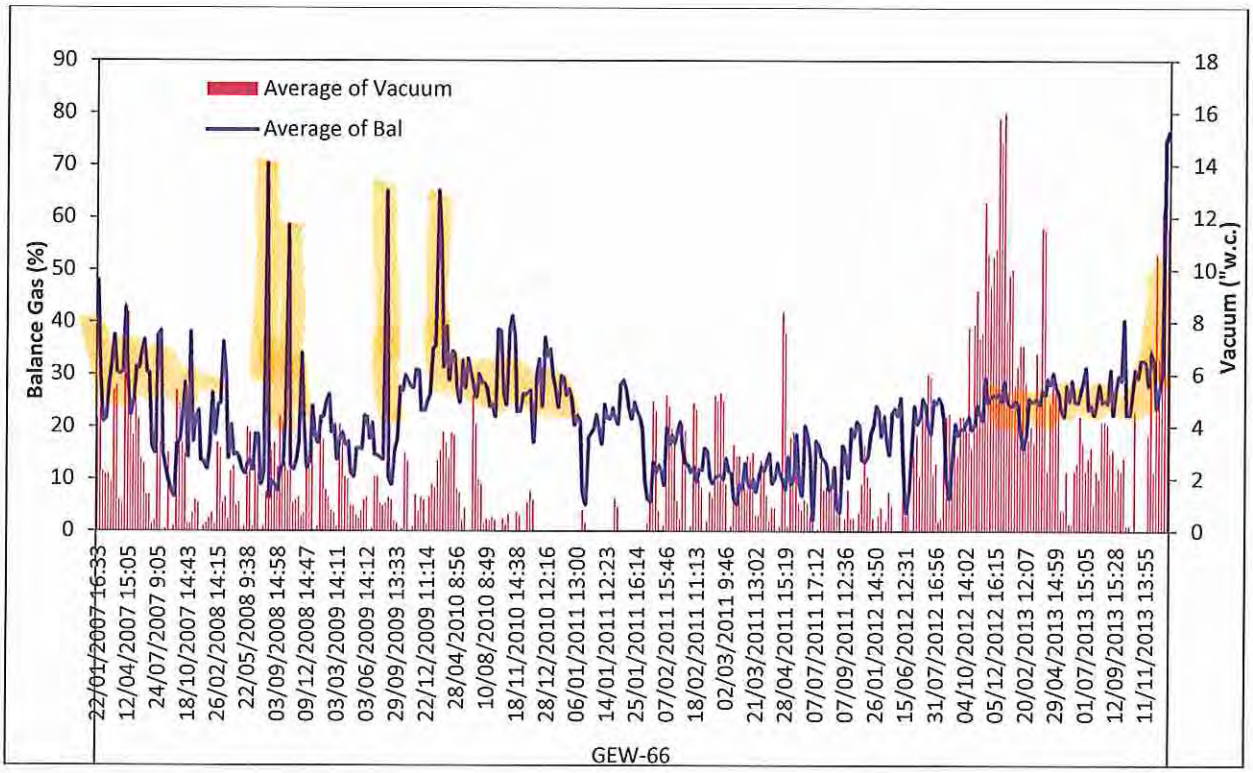

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-59
GEW-59R

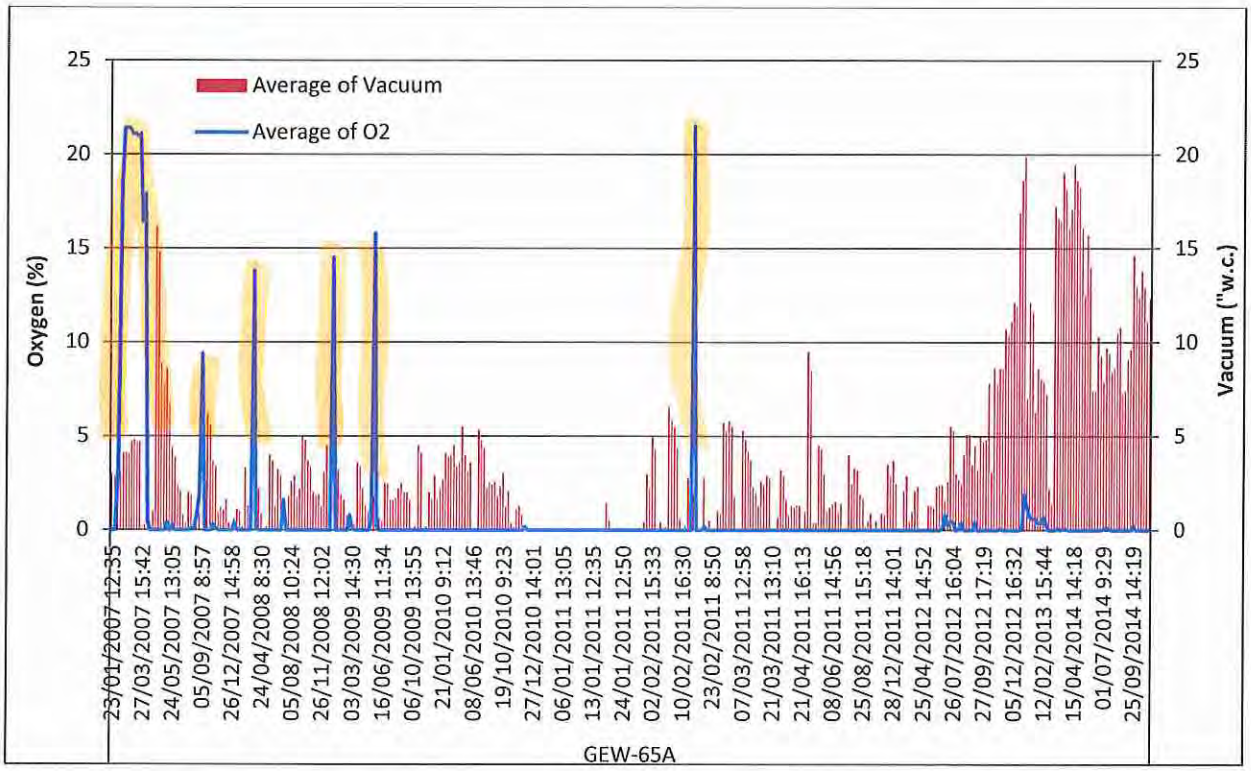

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-59
GEW-59R

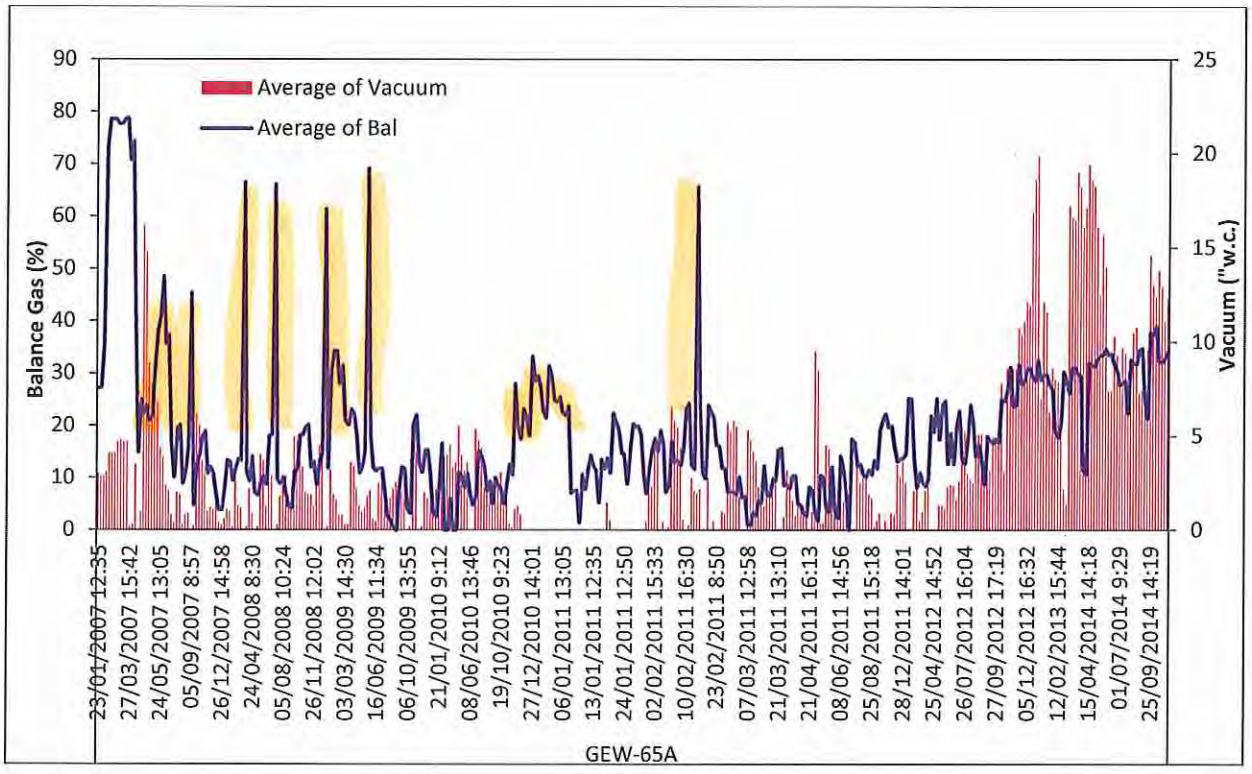

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
SEW-063

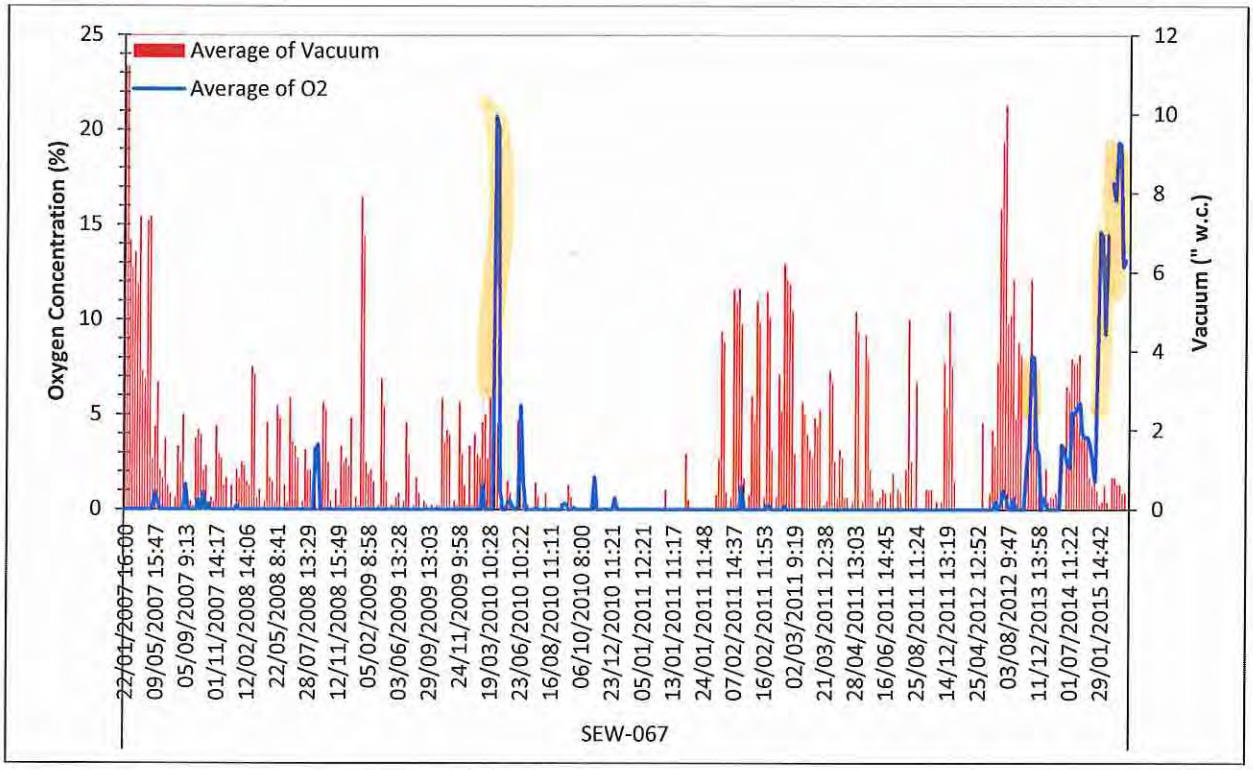

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
SEW-063

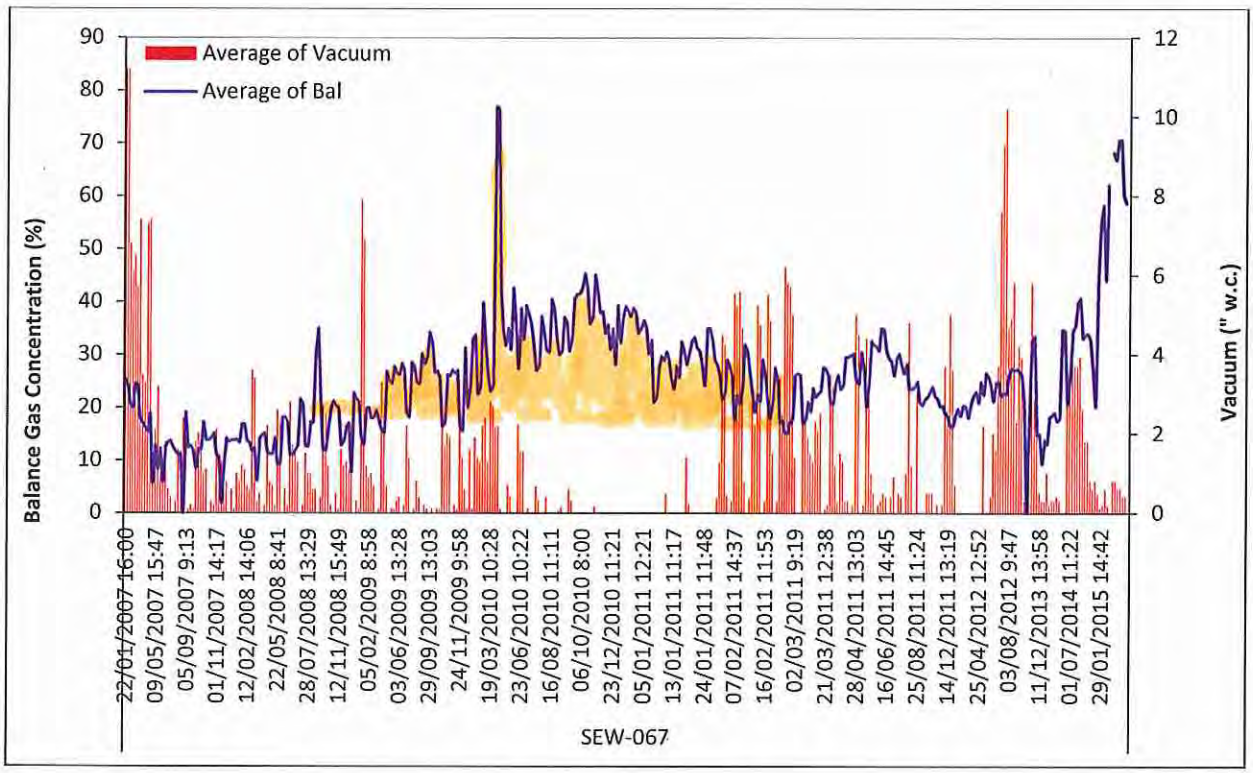

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-66

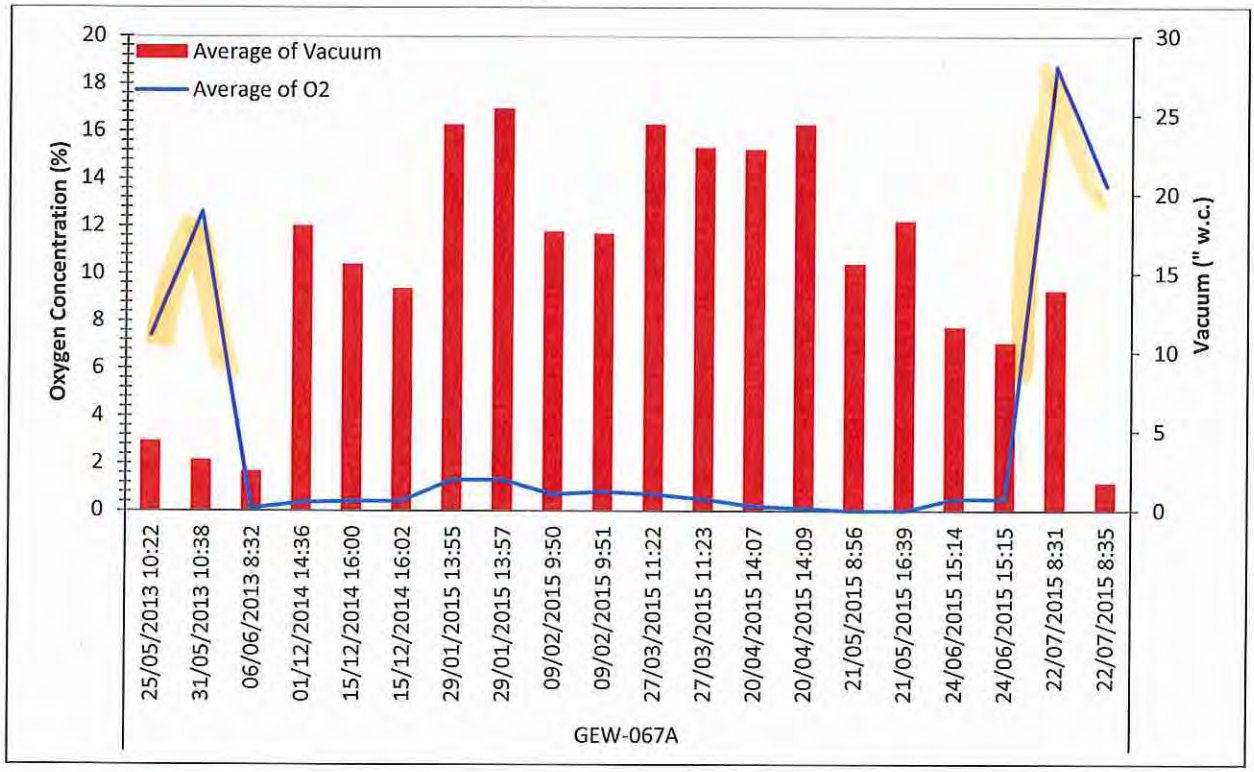

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-66

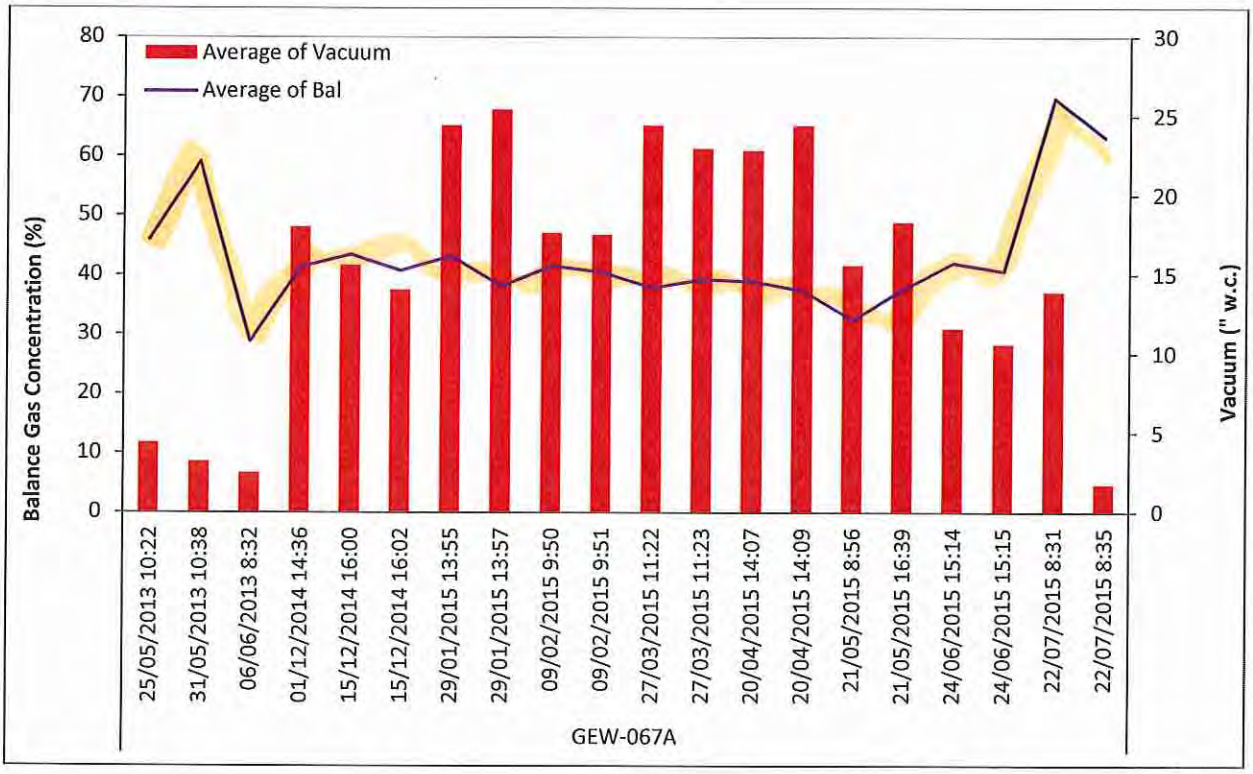

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
0
5
10
15
20
25
23/01/2007 12:35
27/03/2007 15:42
24/05/2007 13:05
05/09/2007 8:57
26/12/2007 14:58
24/04/2008 8:30
05/08/2008 10:24
26/11/2008 12:02
03/03/2009 14:30
16/06/2009 11:34
06/10/2009 13:55
21/01/2010 9:12
08/06/2010 13:46
19/10/2010 9:23
27/12/2010 14:01
06/01/2011 13:05
13/01/2011 12:35
24/01/2011 12:50
02/02/2011 15:33
10/02/2011 16:30
23/02/2011 8:50
07/03/2011 12:58
21/03/2011 13:10
21/04/2011 16:13
08/06/2011 14:56
25/08/2011 15:18
28/12/2011 14:01
25/04/2012 14:52
26/07/2012 16:04
27/09/2012 17:19
05/12/2012 16:32
12/02/2013 15:44
15/04/2014 14:18
01/07/2014 9:29
25/09/2014 14:19
GEW-65A

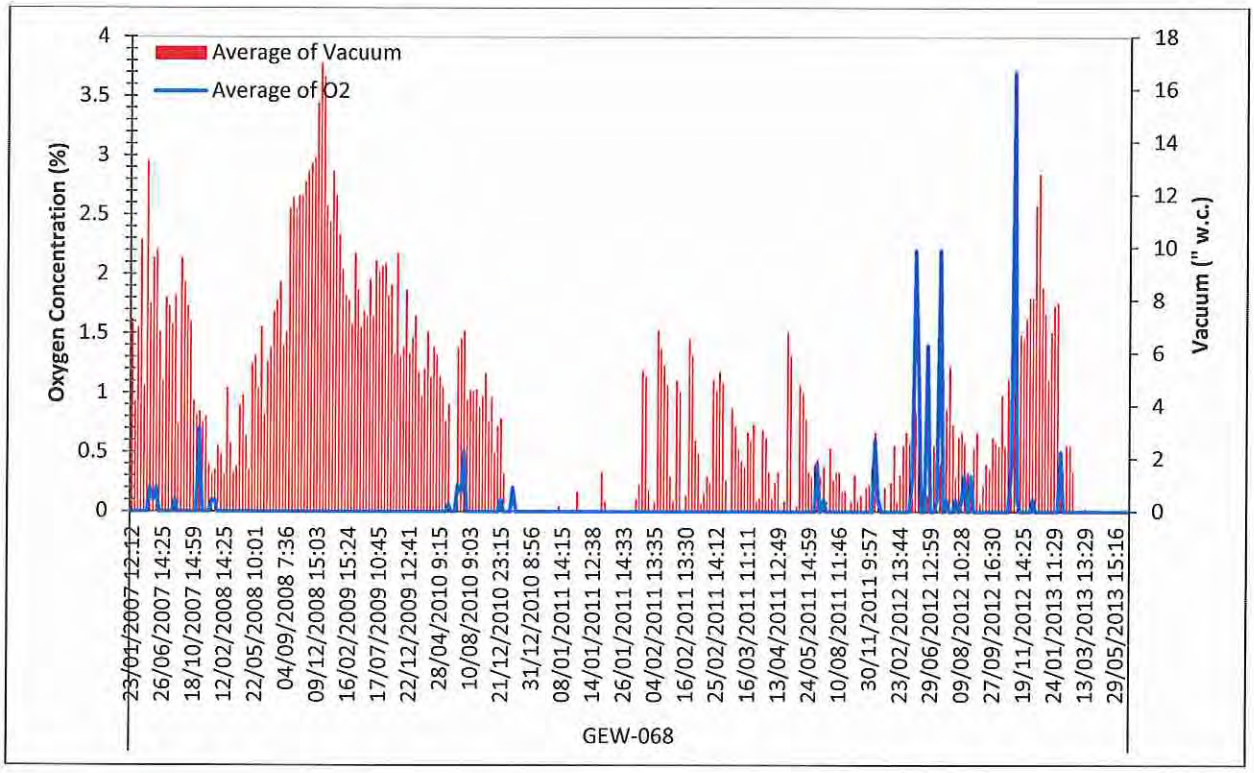

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
0
10
20
30
40
50
60
70
80
90
0
5
10
15
20
25
23/01/2007 12:35
27/03/2007 15:42
24/05/2007 13:05
05/09/2007 8:57
26/12/2007 14:58
24/04/2008 8:30
05/08/2008 10:24
26/11/2008 12:02
03/03/2009 14:30
16/06/2009 11:34
06/10/2009 13:55
21/01/2010 9:12
08/06/2010 13:46
19/10/2010 9:23
27/12/2010 14:01
06/01/2011 13:05
13/01/2011 12:35
24/01/2011 12:50
02/02/2011 15:33
10/02/2011 16:30
23/02/2011 8:50
07/03/2011 12:58
21/03/2011 13:10
21/04/2011 16:13
08/06/2011 14:56
25/08/2011 15:18
28/12/2011 14:01
25/04/2012 14:52
26/07/2012 16:04
27/09/2012 17:19
05/12/2012 16:32
12/02/2013 15:44
15/04/2014 14:18
01/07/2014 9:29
25/09/2014 14:19
GEW-65A

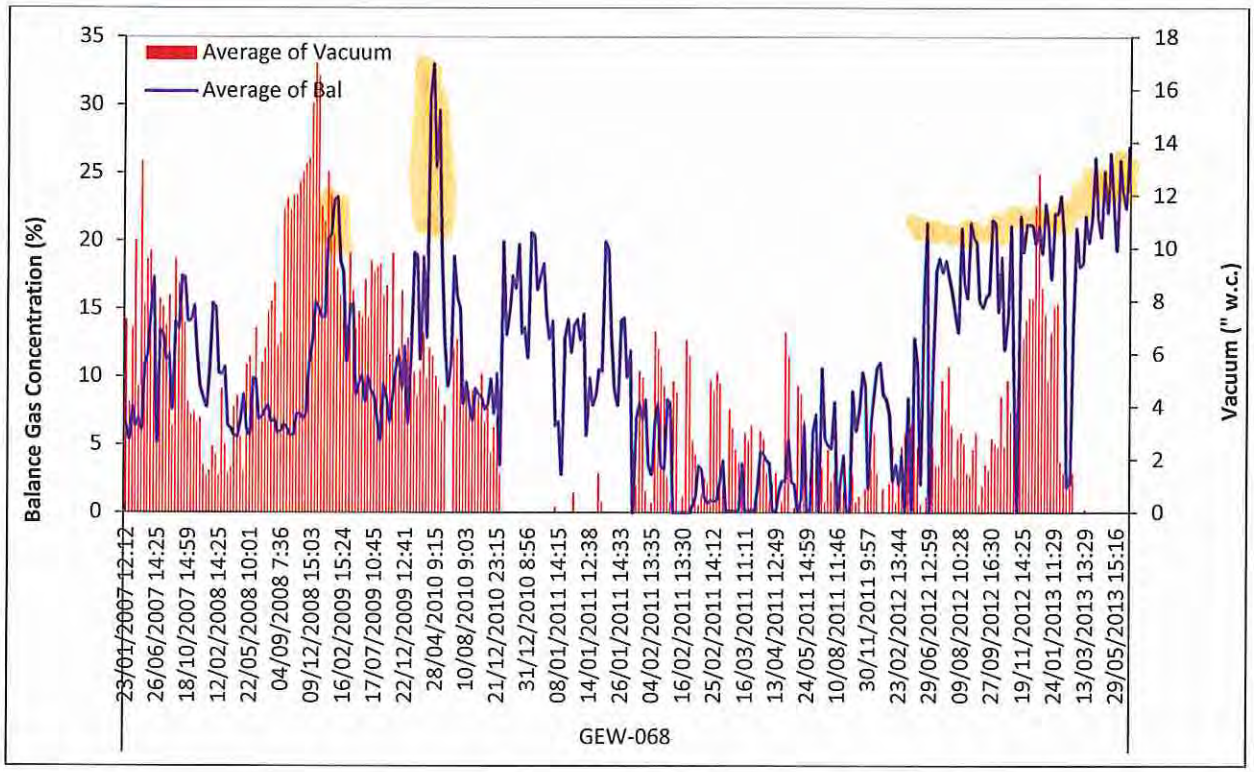

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
0
5
10
15
20
25
0
2
4
6
8
10
12
22/01/2007 16:00
09/05/2007 15:47
05/09/2007 9:13
01/11/2007 14:17
12/02/2008 14:06
22/05/2008 8:41
28/07/2008 13:29
12/11/2008 15:49
05/02/2009 8:58
03/06/2009 13:28
29/09/2009 13:03
24/11/2009 9:58
19/03/2010 10:28
23/06/2010 10:22
16/08/2010 11:11
06/10/2010 8:00
23/12/2010 11:21
05/01/2011 12:21
13/01/2011 11:17
24/01/2011 11:48
07/02/2011 14:37
16/02/2011 11:53
02/03/2011 9:19
21/03/2011 12:38
28/04/2011 13:03
16/06/2011 14:45
25/08/2011 11:24
14/12/2011 13:19
25/04/2012 12:52
03/08/2012 9:47
11/12/2013 13:58
01/07/2014 11:22
29/01/2015 14:42
SEW-067

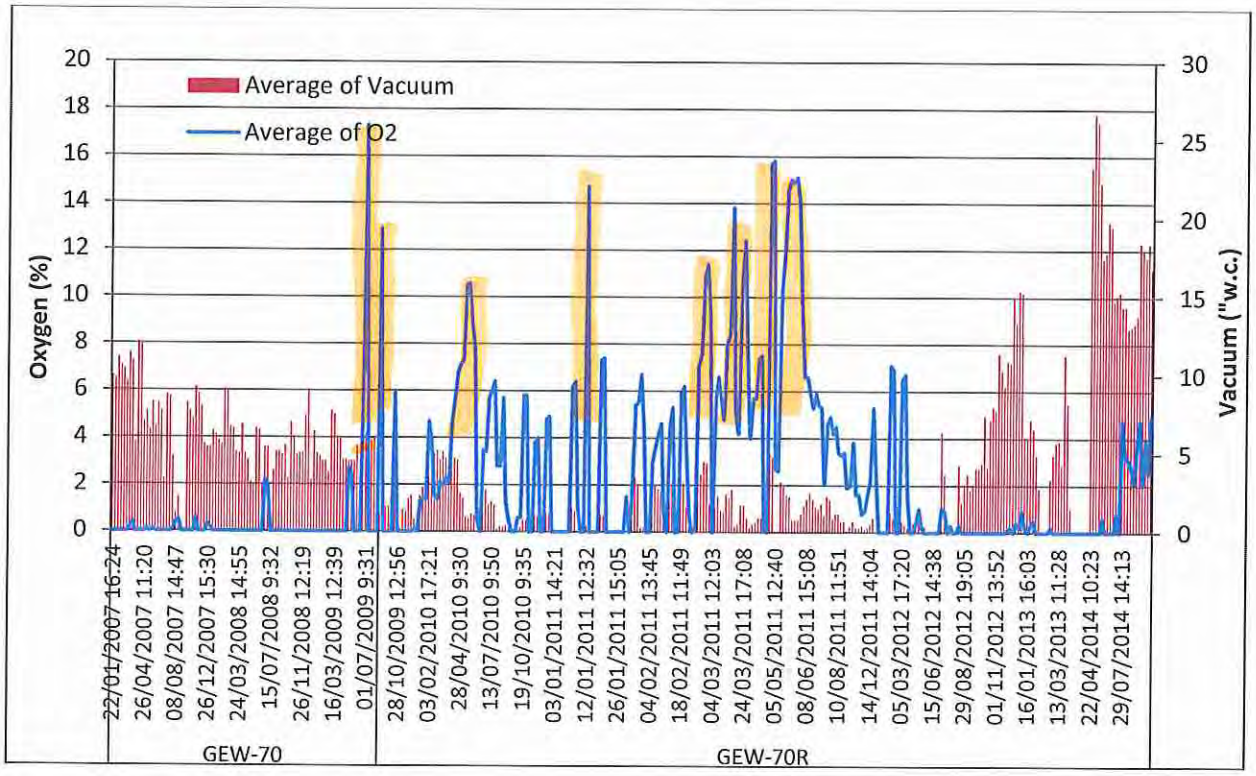

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
0
10
20
30
40
50
60
70
80
90
0
2
4
6
8
10
12
22/01/2007 16:00
09/05/2007 15:47
05/09/2007 9:13
01/11/2007 14:17
12/02/2008 14:06
22/05/2008 8:41
28/07/2008 13:29
12/11/2008 15:49
05/02/2009 8:58
03/06/2009 13:28
29/09/2009 13:03
24/11/2009 9:58
19/03/2010 10:28
23/06/2010 10:22
16/08/2010 11:11
06/10/2010 8:00
23/12/2010 11:21
05/01/2011 12:21
13/01/2011 11:17
24/01/2011 11:48
07/02/2011 14:37
16/02/2011 11:53
02/03/2011 9:19
21/03/2011 12:38
28/04/2011 13:03
16/06/2011 14:45
25/08/2011 11:24
14/12/2011 13:19
25/04/2012 12:52
03/08/2012 9:47
11/12/2013 13:58
01/07/2014 11:22
29/01/2015 14:42
SEW-067

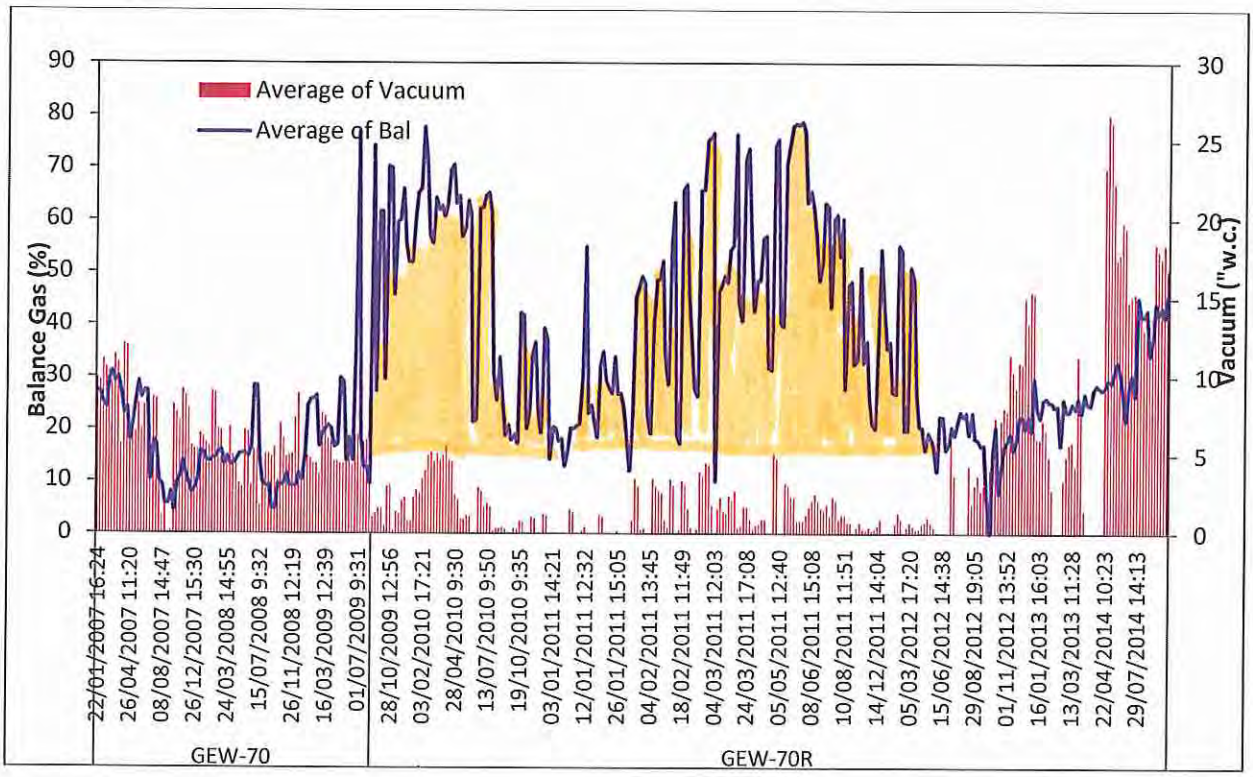

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
0
2
4
6
8
10
12
14
16
18
20
0
5
10
15
20
25
30
25/05/2013 10:22
31/05/2013 10:38
06/06/2013 8:32
01/12/2014 14:36
15/12/2014 16:00
15/12/2014 16:02
29/01/2015 13:55
29/01/2015 13:57
09/02/2015 9:50
09/02/2015 9:51
27/03/2015 11:22
27/03/2015 11:23
20/04/2015 14:07
20/04/2015 14:09
21/05/2015 8:56
21/05/2015 16:39
24/06/2015 15:14
24/06/2015 15:15
22/07/2015 8:31
22/07/2015 8:35
GEW-067A

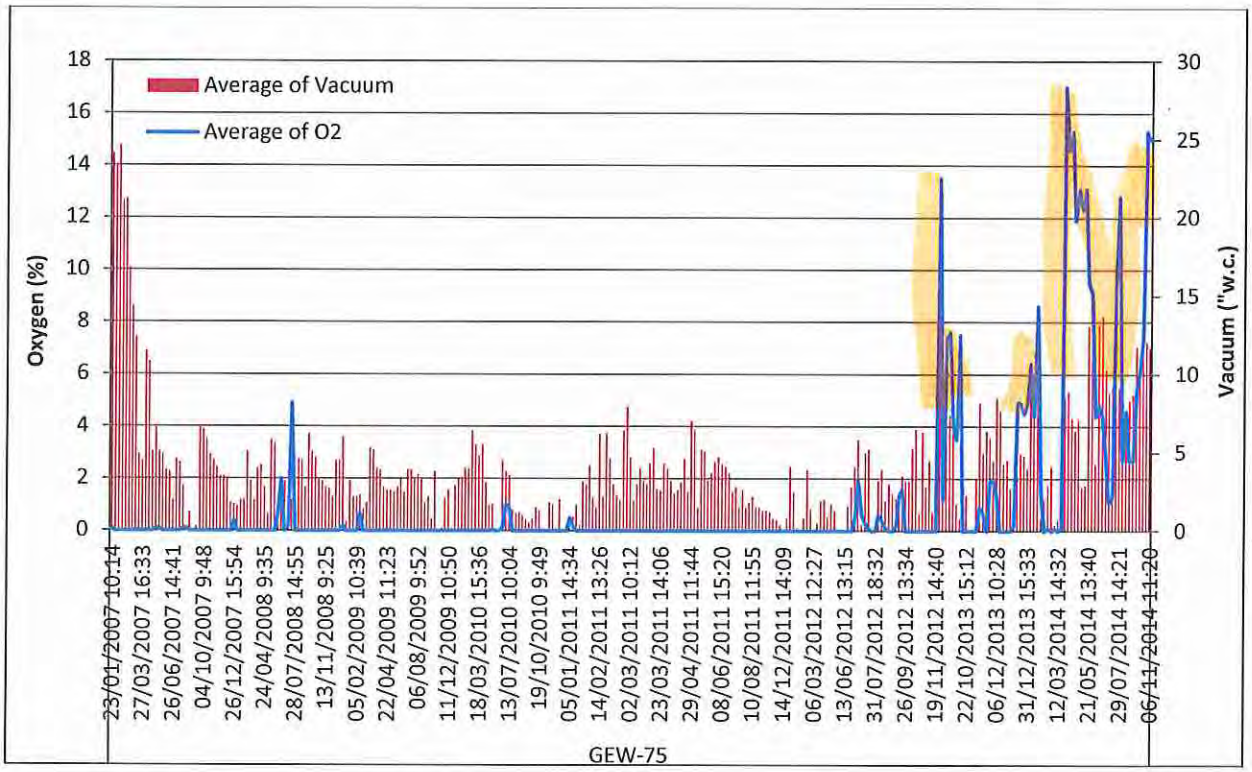

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
0
10
20
30
40
50
60
70
80
0
5
10
15
20
25
30
25/05/2013 10:22
31/05/2013 10:38
06/06/2013 8:32
01/12/2014 14:36
15/12/2014 16:00
15/12/2014 16:02
29/01/2015 13:55
29/01/2015 13:57
09/02/2015 9:50
09/02/2015 9:51
27/03/2015 11:22
27/03/2015 11:23
20/04/2015 14:07
20/04/2015 14:09
21/05/2015 8:56
21/05/2015 16:39
24/06/2015 15:14
24/06/2015 15:15
22/07/2015 8:31
22/07/2015 8:35
GEW-067A

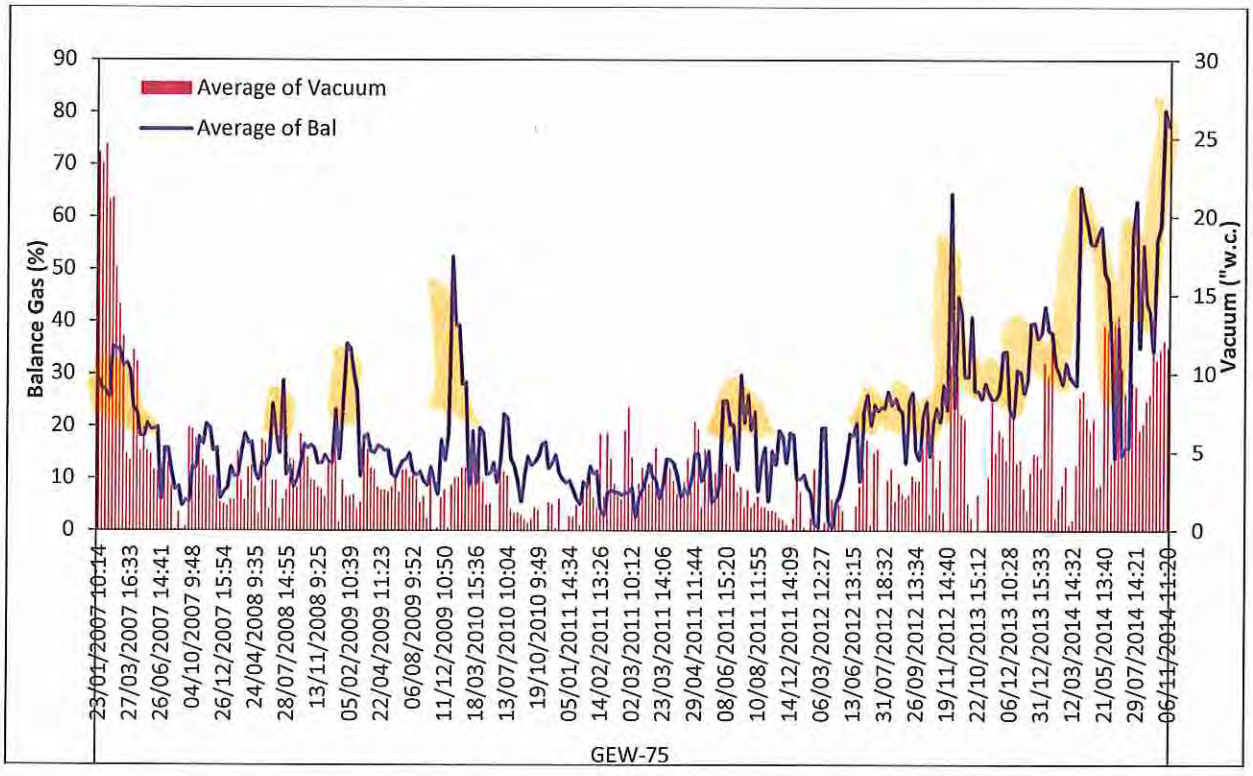

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
GEW-068

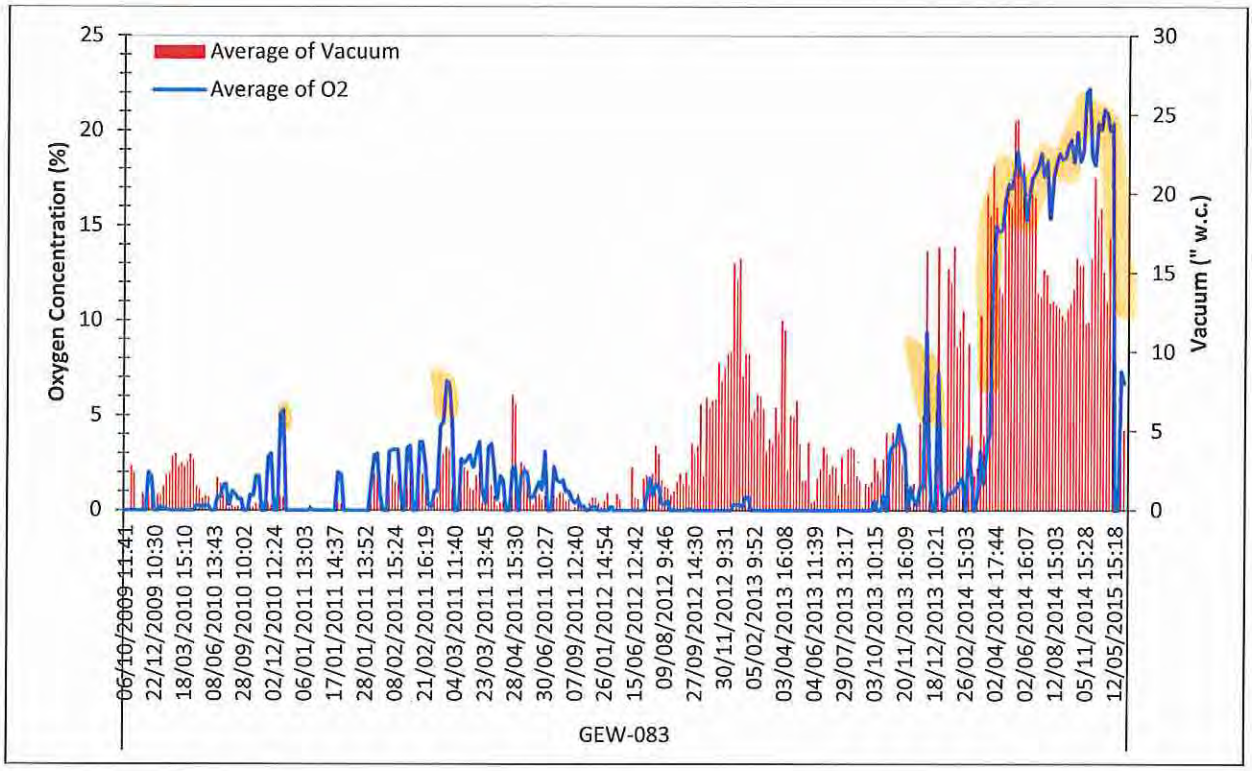

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
GEW-068

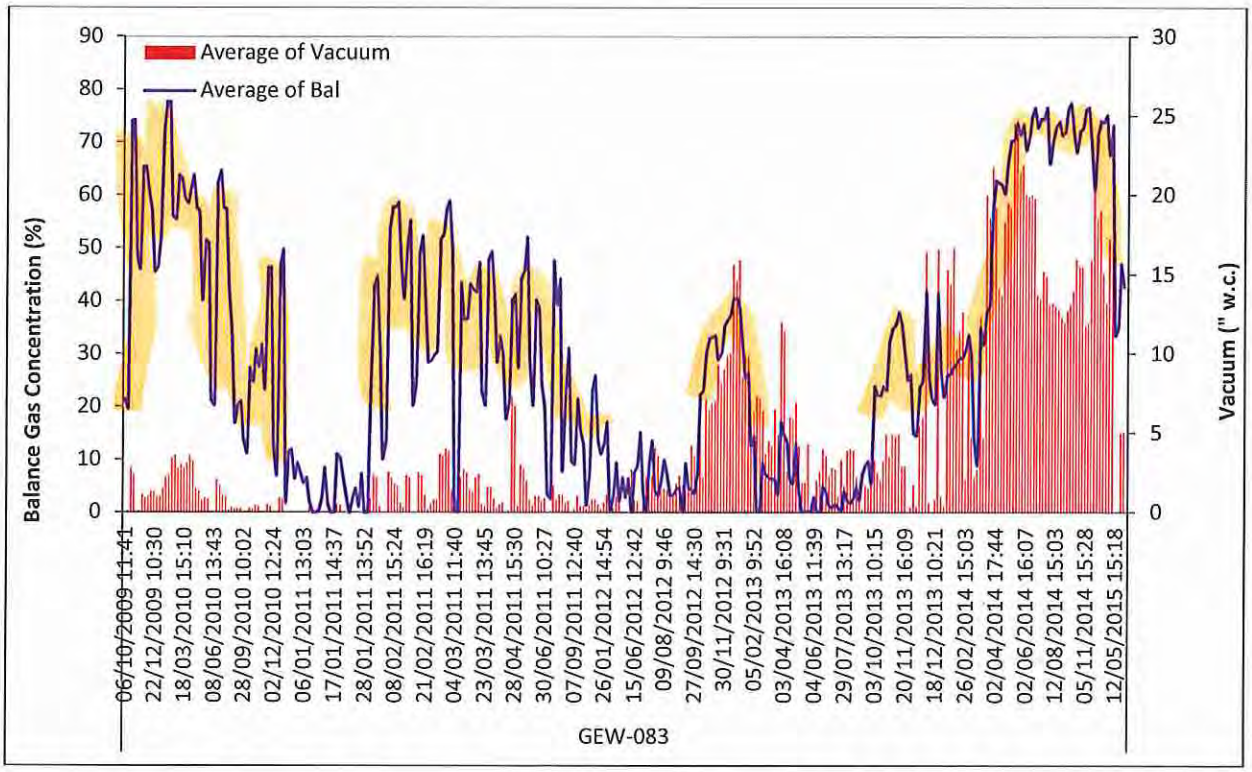

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-70
GEW-70R

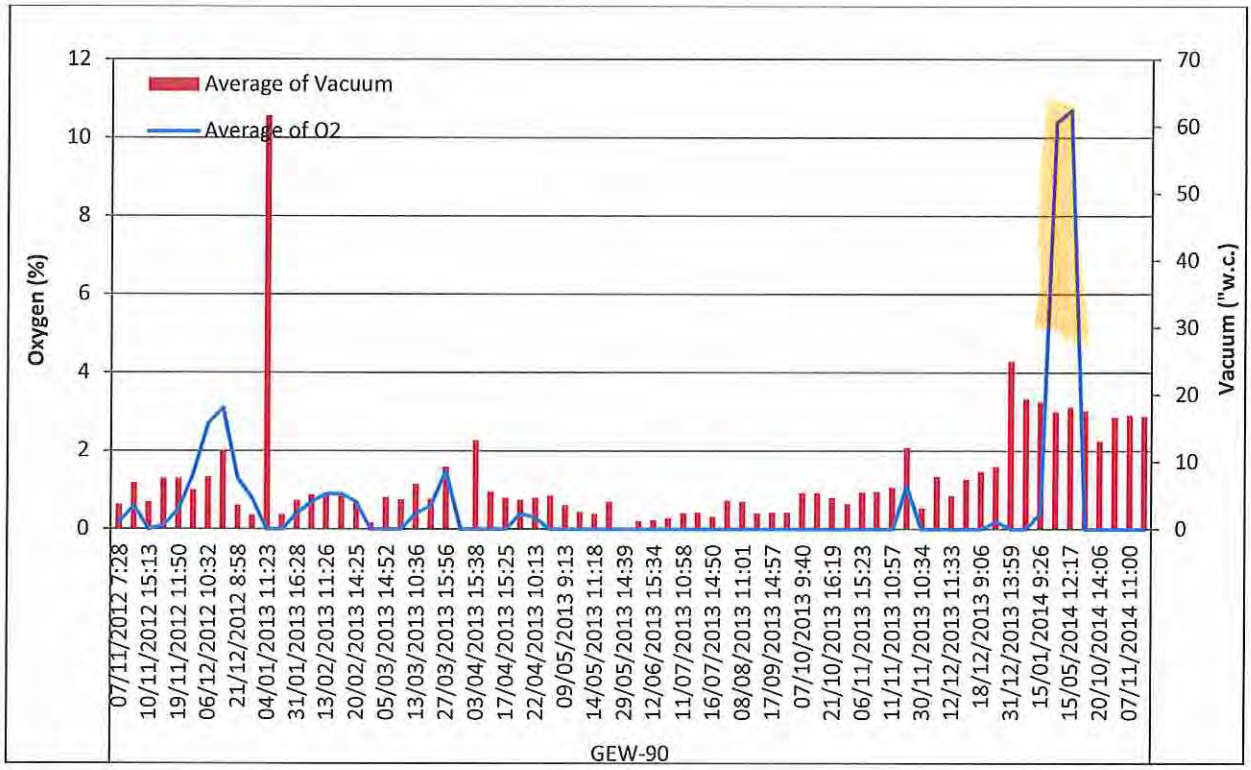

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-70
GEW-70R

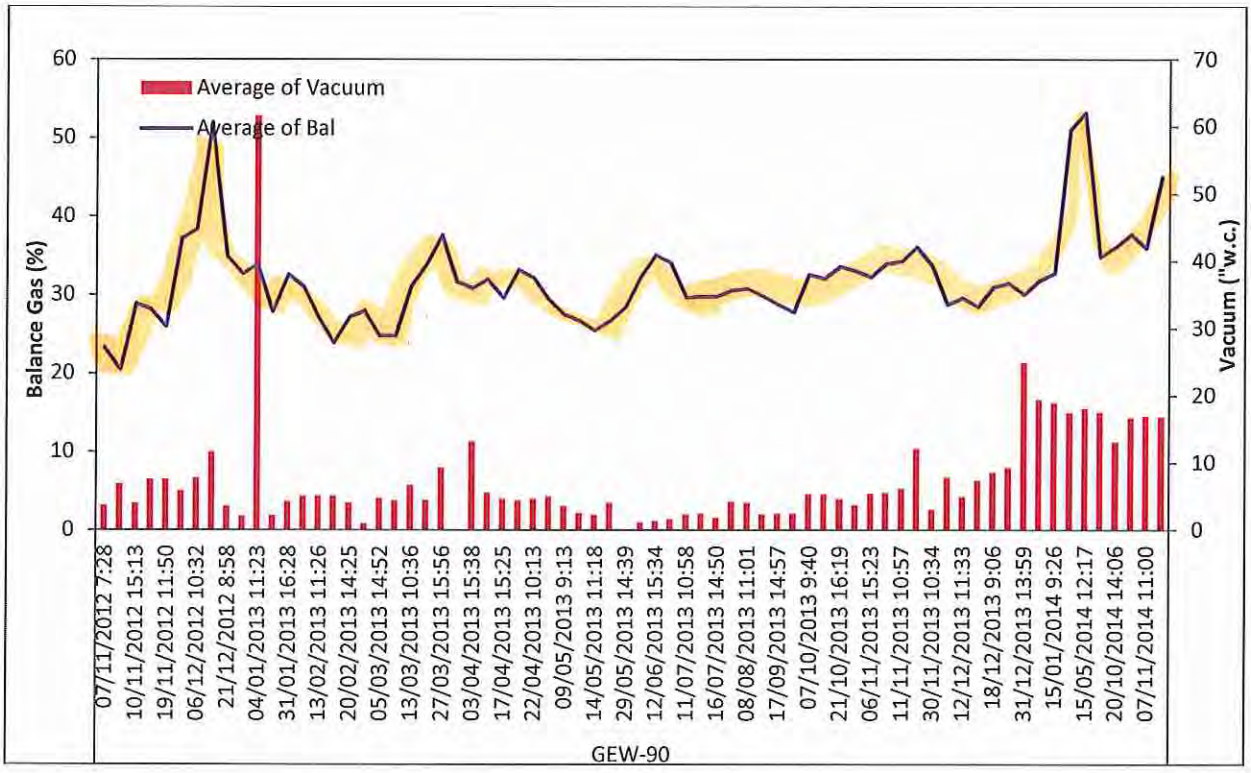

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
GEW-75

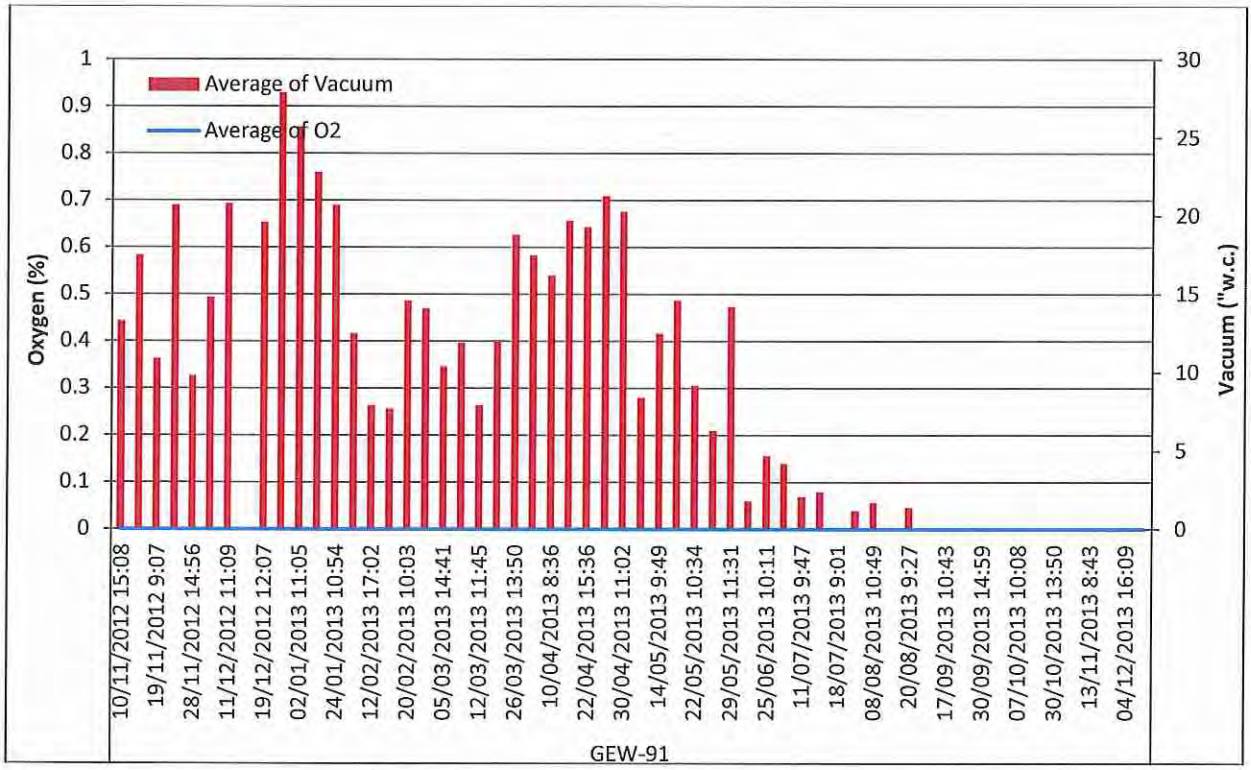

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
GEW-75

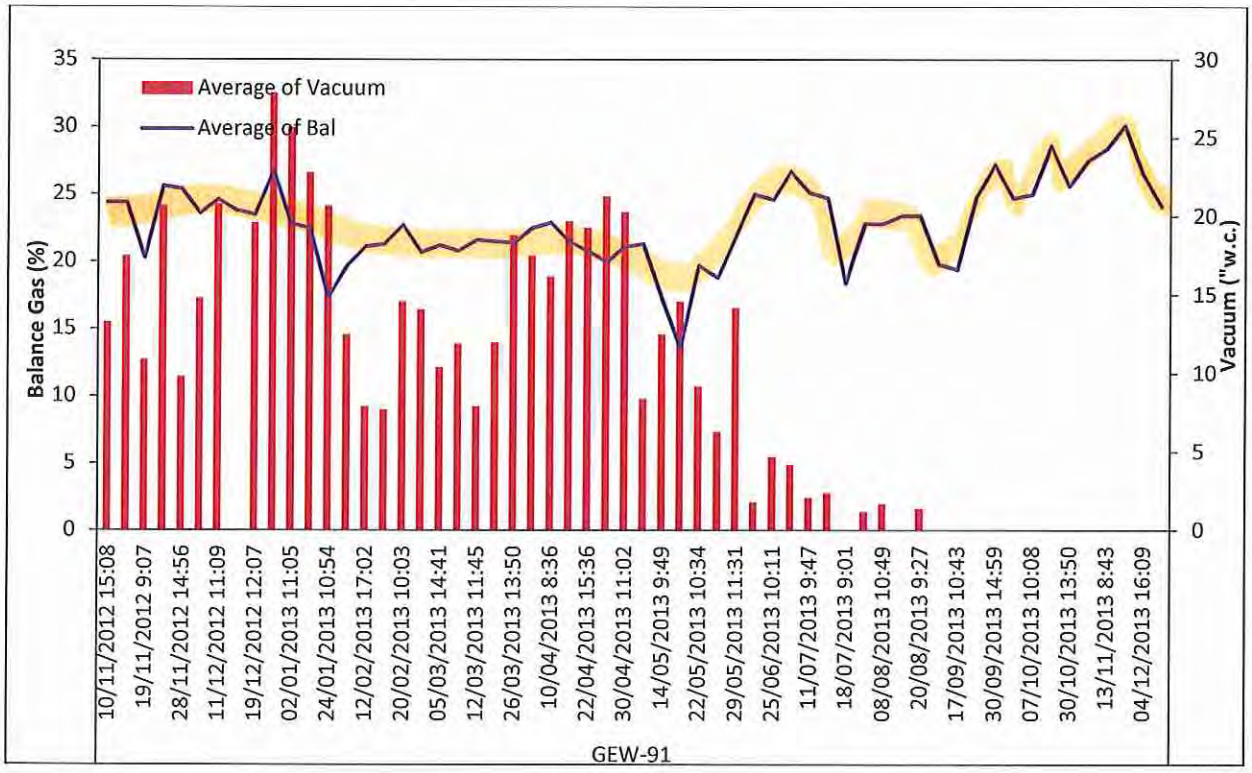

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
GEW-083

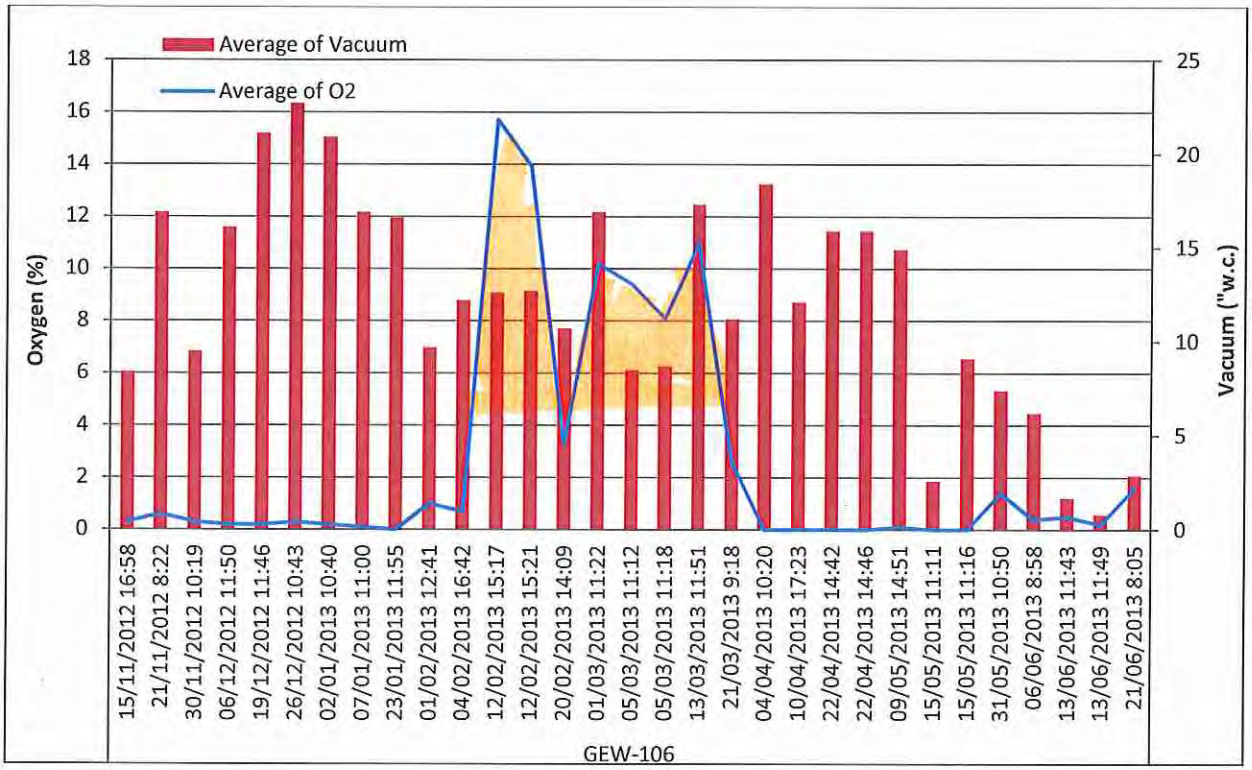

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
GEW-083

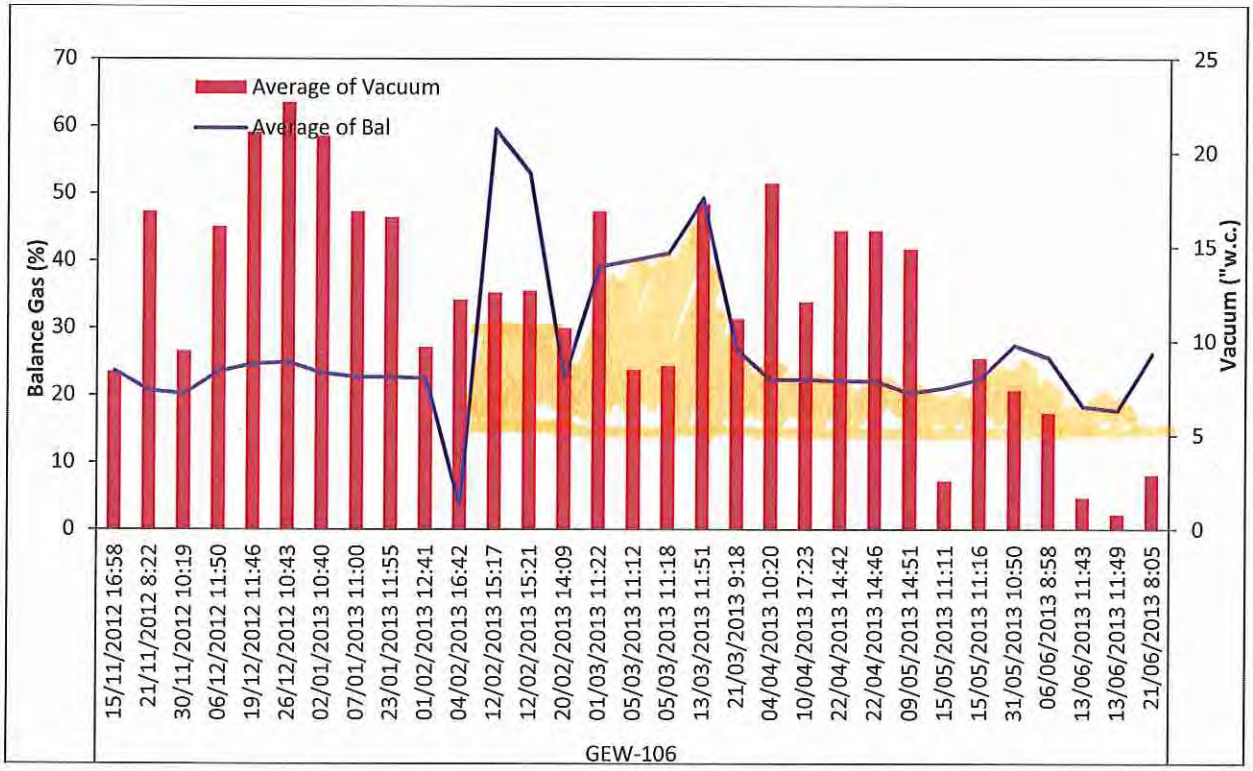

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
0
2
4
6
8
10
12
0
10
20
30
40
50
60
70
07/11/2012 7:28
10/11/2012 15:13
19/11/2012 11:50
06/12/2012 10:32
21/12/2012 8:58
04/01/2013 11:23
31/01/2013 16:28
13/02/2013 11:26
20/02/2013 14:25
05/03/2013 14:52
13/03/2013 10:36
27/03/2013 15:56
03/04/2013 15:38
17/04/2013 15:25
22/04/2013 10:13
09/05/2013 9:13
14/05/2013 11:18
29/05/2013 14:39
12/06/2013 15:34
11/07/2013 10:58
16/07/2013 14:50
08/08/2013 11:01
17/09/2013 14:57
07/10/2013 9:40
21/10/2013 16:19
06/11/2013 15:23
11/11/2013 10:57
30/11/2013 10:34
12/12/2013 11:33
18/12/2013 9:06
31/12/2013 13:59
15/01/2014 9:26
15/05/2014 12:17
20/10/2014 14:06
07/11/2014 11:00
GEW-90

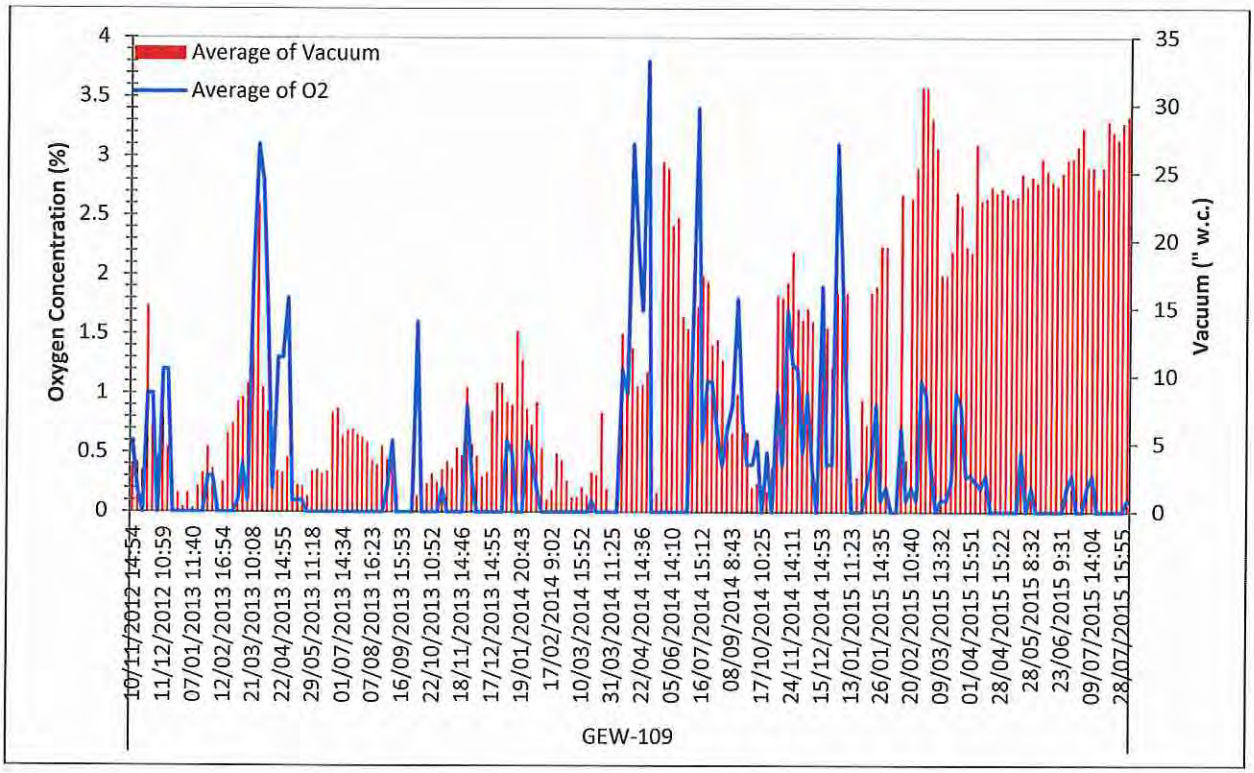

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
0
10
20
30
40
50
60
0
10
20
30
40
50
60
70
07/11/2012 7:28
10/11/2012 15:13
19/11/2012 11:50
06/12/2012 10:32
21/12/2012 8:58
04/01/2013 11:23
31/01/2013 16:28
13/02/2013 11:26
20/02/2013 14:25
05/03/2013 14:52
13/03/2013 10:36
27/03/2013 15:56
03/04/2013 15:38
17/04/2013 15:25
22/04/2013 10:13
09/05/2013 9:13
14/05/2013 11:18
29/05/2013 14:39
12/06/2013 15:34
11/07/2013 10:58
16/07/2013 14:50
08/08/2013 11:01
17/09/2013 14:57
07/10/2013 9:40
21/10/2013 16:19
06/11/2013 15:23
11/11/2013 10:57
30/11/2013 10:34
12/12/2013 11:33
18/12/2013 9:06
31/12/2013 13:59
15/01/2014 9:26
15/05/2014 12:17
20/10/2014 14:06
07/11/2014 11:00
GEW-90

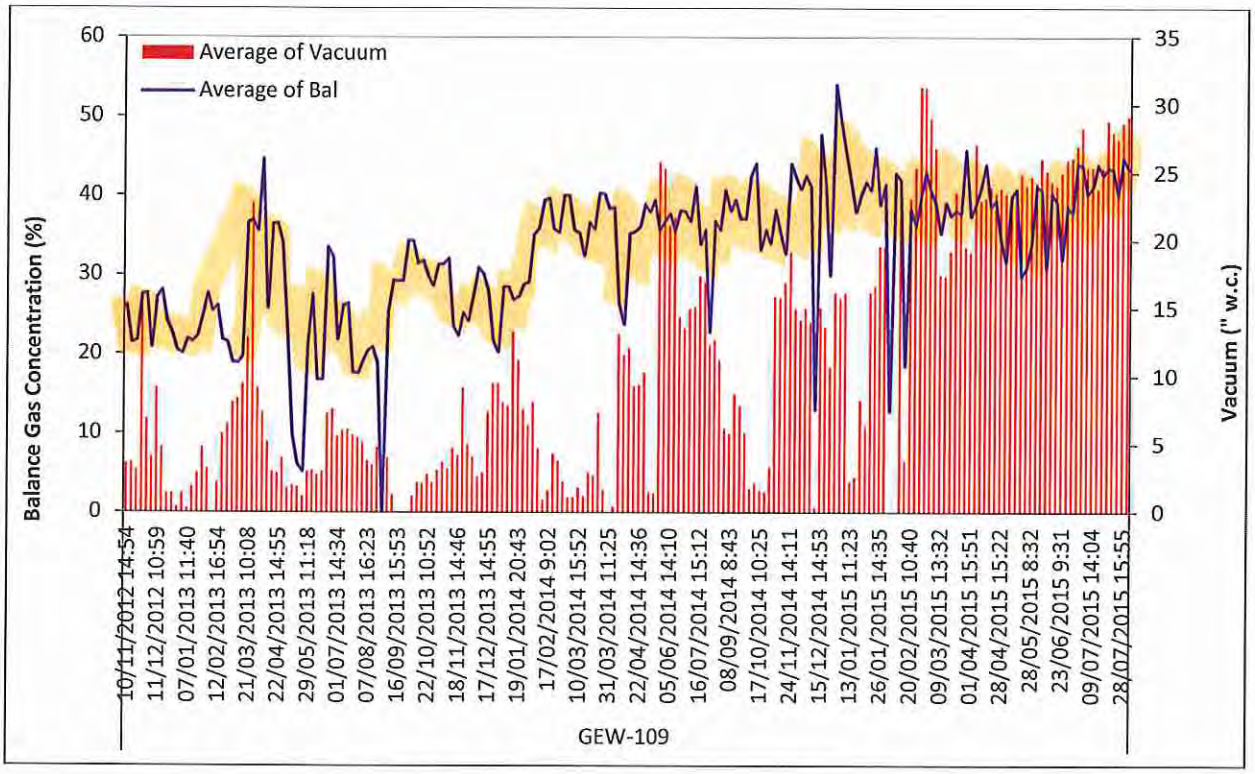

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
30
25
20
15
10
5
0
10/11/2012 15:08
19/11/2012 9:07
28/11/2012 14:56
11/12/2012 11:09
19/12/2012 12:07
02/01/2013 11:05
24/01/2013 10:54
12/02/2013 17:02
20/02/2013 10:03
05/03/2013 14:41
12/03/2013 11:45
26/03/2013 13:50
10/04/2013 8:36
22/04/2013 15:36
30/04/2013 11:02
14/05/2013 9:49
22/05/2013 10:34
29/05/2013 11:31
25/06/2013 10:11
11/07/2013 9:47
18/07/2013 9:01
08/08/2013 10:49
20/08/2013 9:27
17/09/2013 10:43
30/09/2013 14:59
07/10/2013 10:08
30/10/2013 13:50
13/11/2013 8:43
04/12/2013 16:09
GEW-91

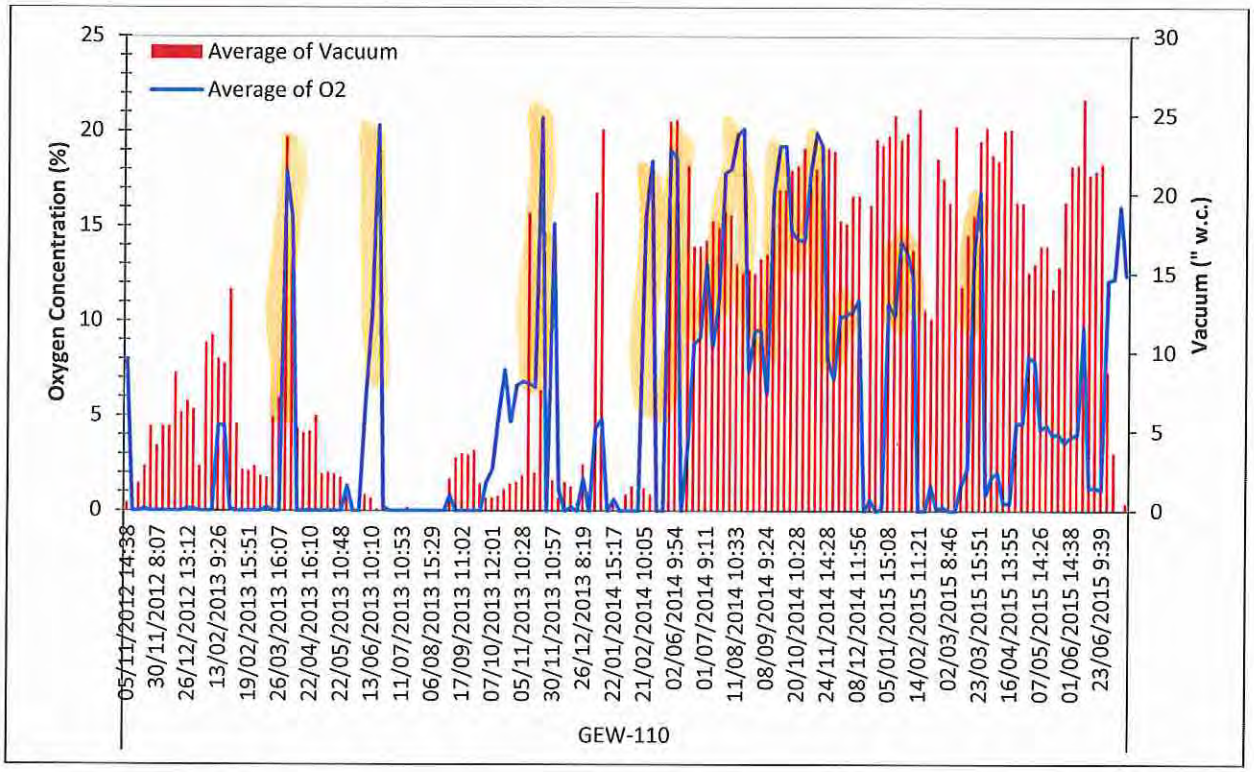

Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
35
30
25
20
15
10
5
0
30
25
20
15
10
5
0
10/11/2012 15:08
19/11/2012 9:07
28/11/2012 14:56
11/12/2012 11:09
19/12/2012 12:07
02/01/2013 11:05
24/01/2013 10:54
12/02/2013 17:02
20/02/2013 10:03
05/03/2013 14:41
12/03/2013 11:45
26/03/2013 13:50
10/04/2013 8:36
22/04/2013 15:36
30/04/2013 11:02
14/05/2013 9:49
22/05/2013 10:34
29/05/2013 11:31
25/06/2013 10:11
11/07/2013 9:47
18/07/2013 9:01
08/08/2013 10:49
20/08/2013 9:27
17/09/2013 10:43
30/09/2013 14:59
07/10/2013 10:08
30/10/2013 13:50
13/11/2013 8:43
04/12/2013 16:09
GEW-91

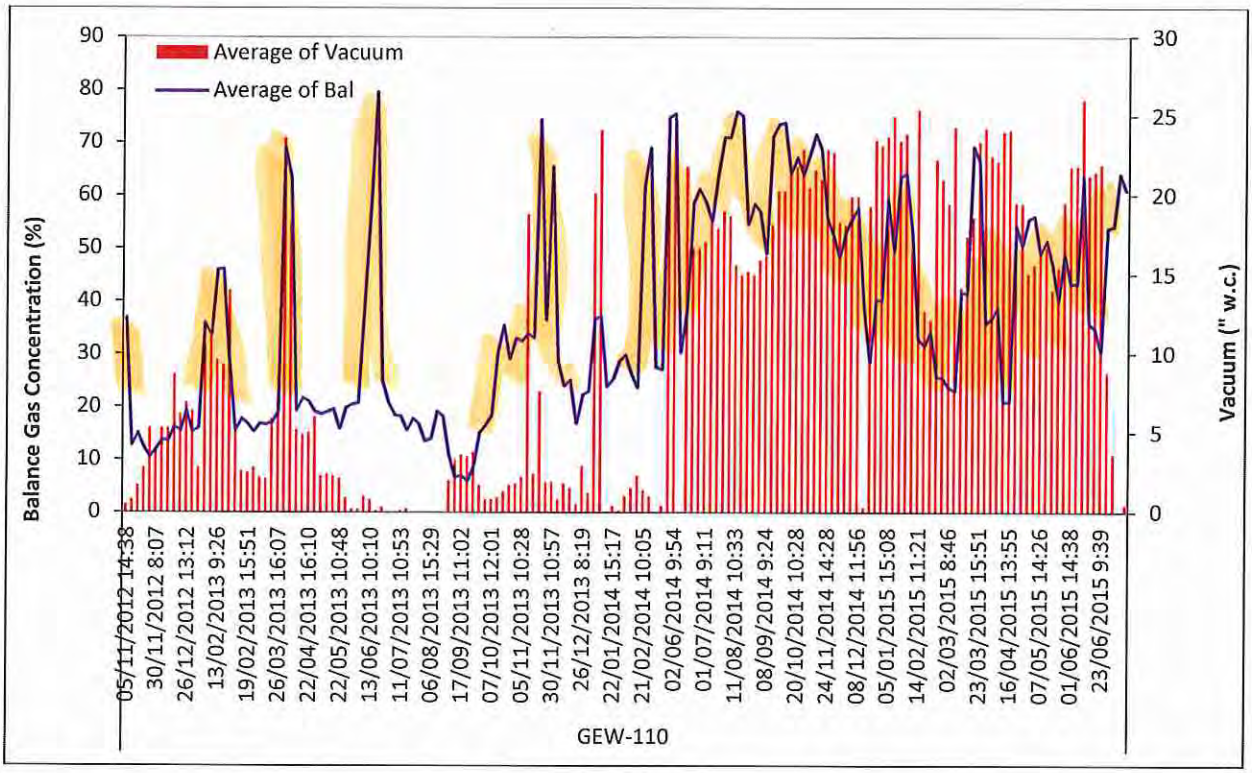

Average of Vacuum
Average of O2
Oxygen (%)
Vacuum ("w.c.)
0
2
4
6
8
10
12
14
16
18
0
5
10
15
20
25
15/11/2012 16:58
21/11/2012 8:22
30/11/2012 10:19
06/12/2012 11:50
19/12/2012 11:46
26/12/2012 10:43
02/01/2013 10:40
07/01/2013 11:00
23/01/2013 11:55
01/02/2013 12:41
04/02/2013 16:42
12/02/2013 15:17
12/02/2013 15:21
20/02/2013 14:09
01/03/2013 11:22
05/03/2013 11:12
05/03/2013 11:18
13/03/2013 11:51
21/03/2013 9:18
04/04/2013 10:20
10/04/2013 17:23
22/04/2013 14:42
22/04/2013 14:46
09/05/2013 14:51
15/05/2013 11:11
15/05/2013 11:16
31/05/2013 10:50
06/06/2013 8:58
13/06/2013 11:43
13/06/2013 11:49
21/06/2013 8:05
GEW-106


Average of Vacuum
Average of Bal
Balance Gas (%)
Vacuum ("w.c.)
0
10
20
30
40
50
60
70
0
5
10
15
20
25
15/11/2012 16:58
21/11/2012 8:22
30/11/2012 10:19
06/12/2012 11:50
19/12/2012 11:46
26/12/2012 10:43
02/01/2013 10:40
07/01/2013 11:00
23/01/2013 11:55
01/02/2013 12:41
04/02/2013 16:42
12/02/2013 15:17
12/02/2013 15:21
20/02/2013 14:09
01/03/2013 11:22
05/03/2013 11:12
05/03/2013 11:18
13/03/2013 11:51
21/03/2013 9:18
04/04/2013 10:20
10/04/2013 17:23
22/04/2013 14:42
22/04/2013 14:46
09/05/2013 14:51
15/05/2013 11:11
15/05/2013 11:16
31/05/2013 10:50
06/06/2013 8:58
13/06/2013 11:43
13/06/2013 11:49
21/06/2013 8:05
GEW-106


Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
GEW-109

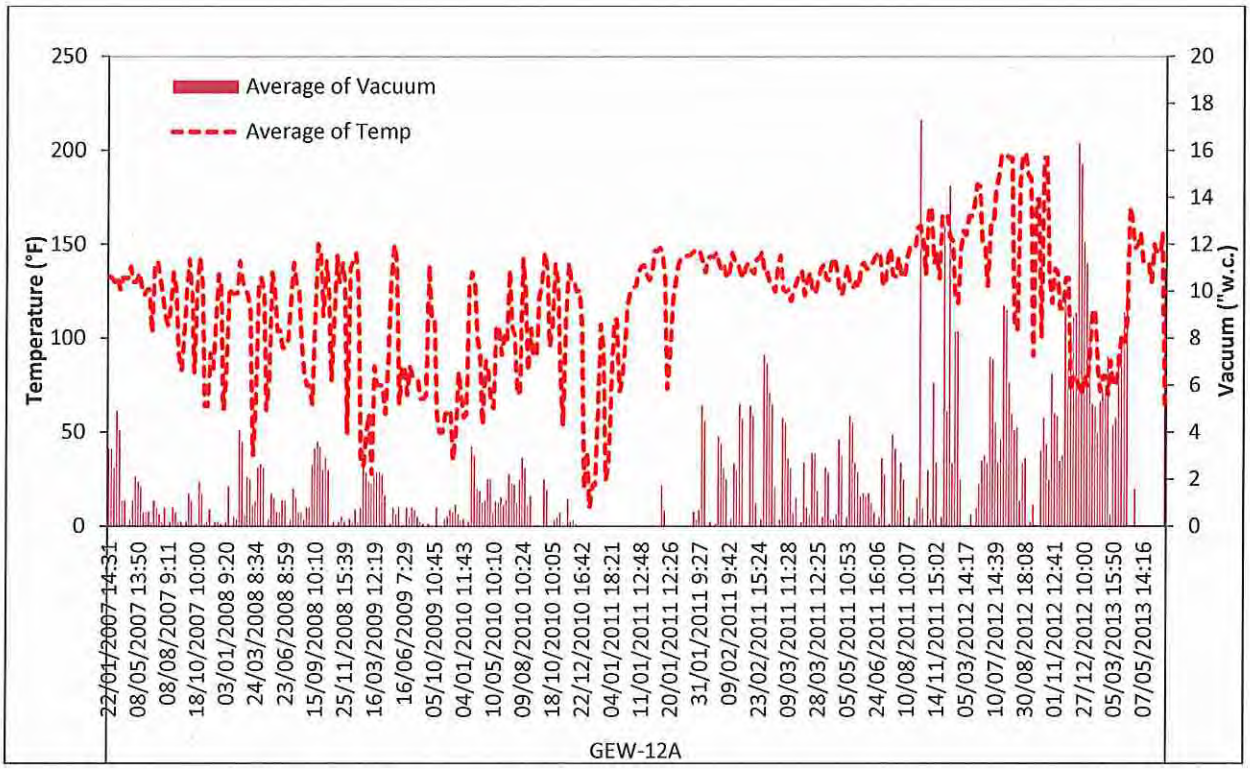

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
GEW-109

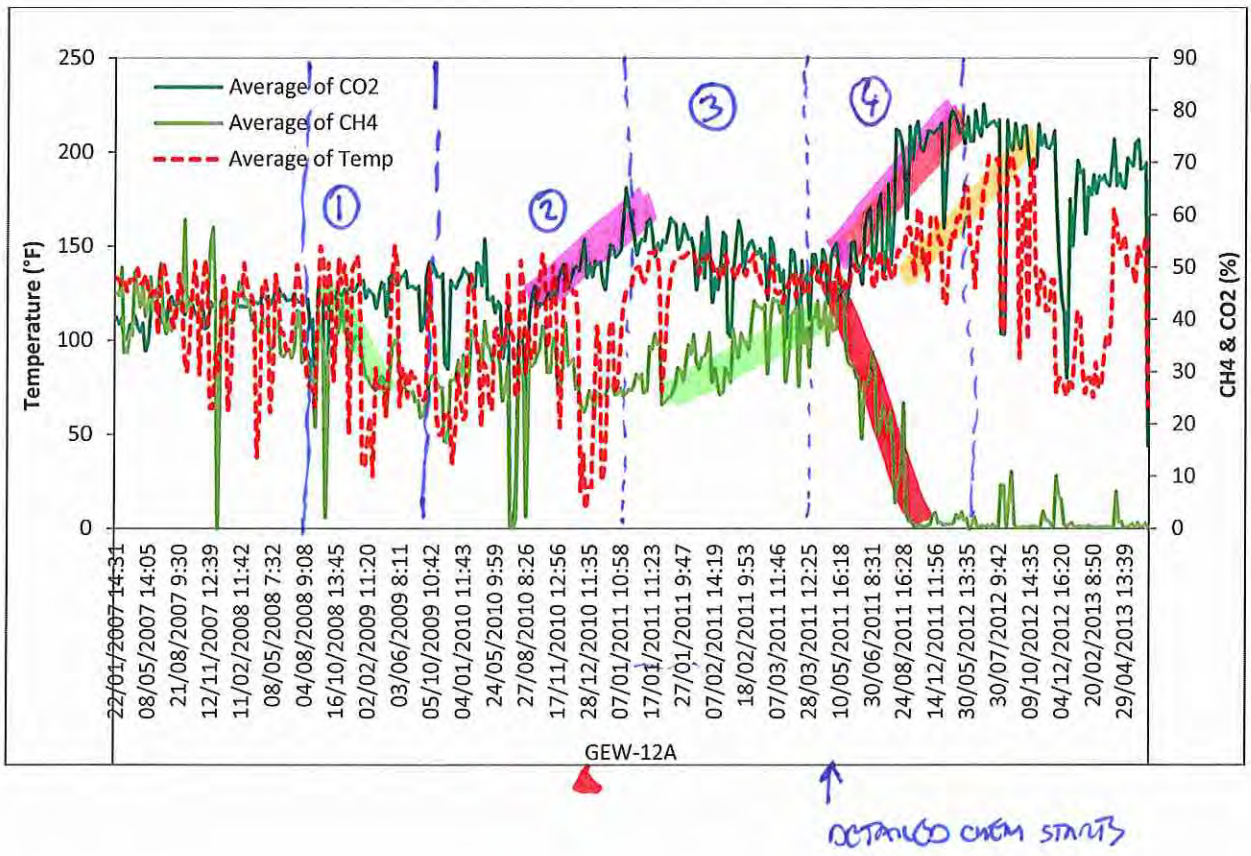

Average of Vacuum
Average of O2
Oxygen Concentration (%)
Vacuum (" w.c.)
GEW-110

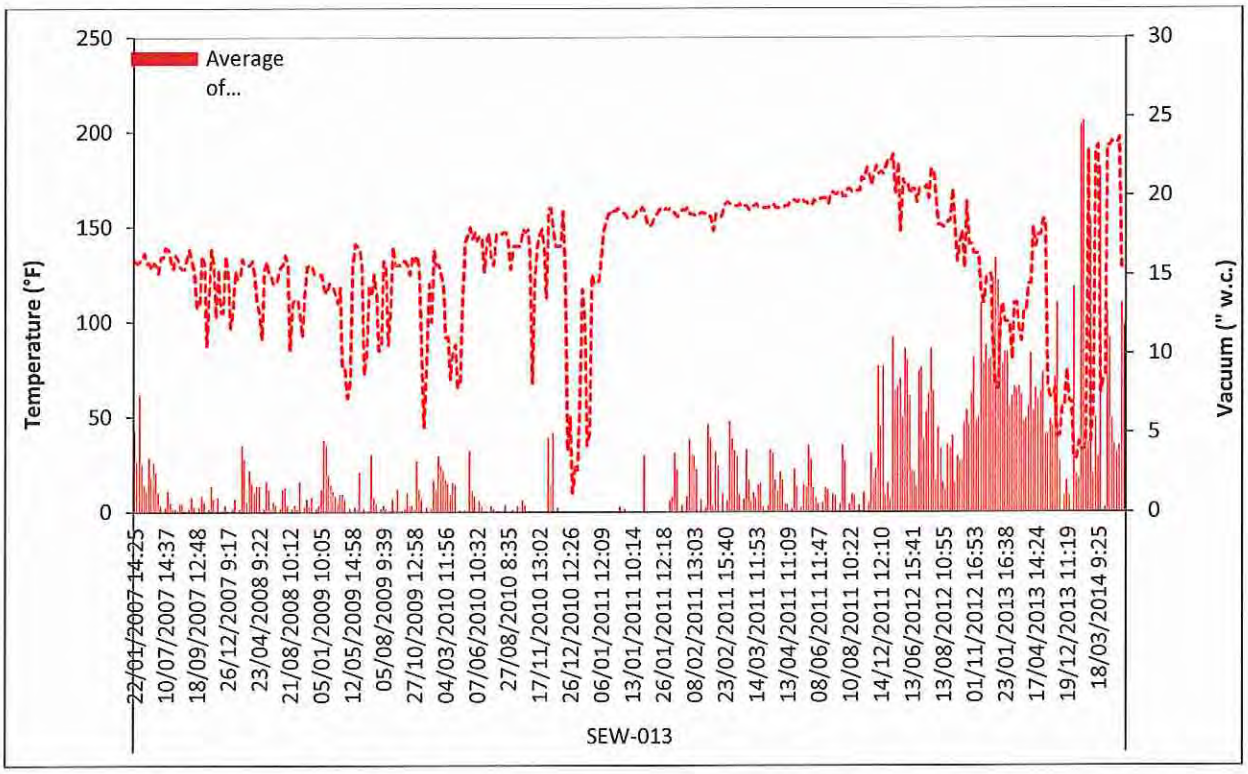

Average of Vacuum
Average of Bal
Balance Gas Concentration (%)
Vacuum (" w.c.)
GEW-110

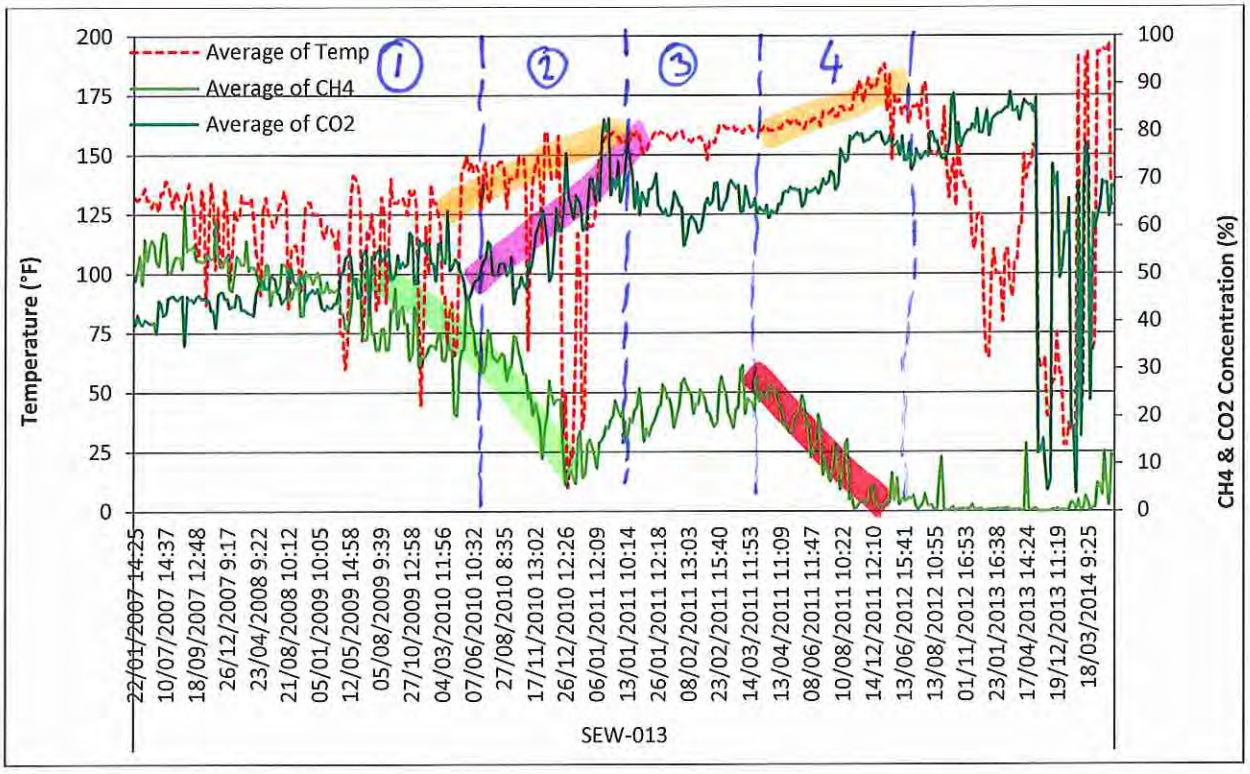
APPENDIX G

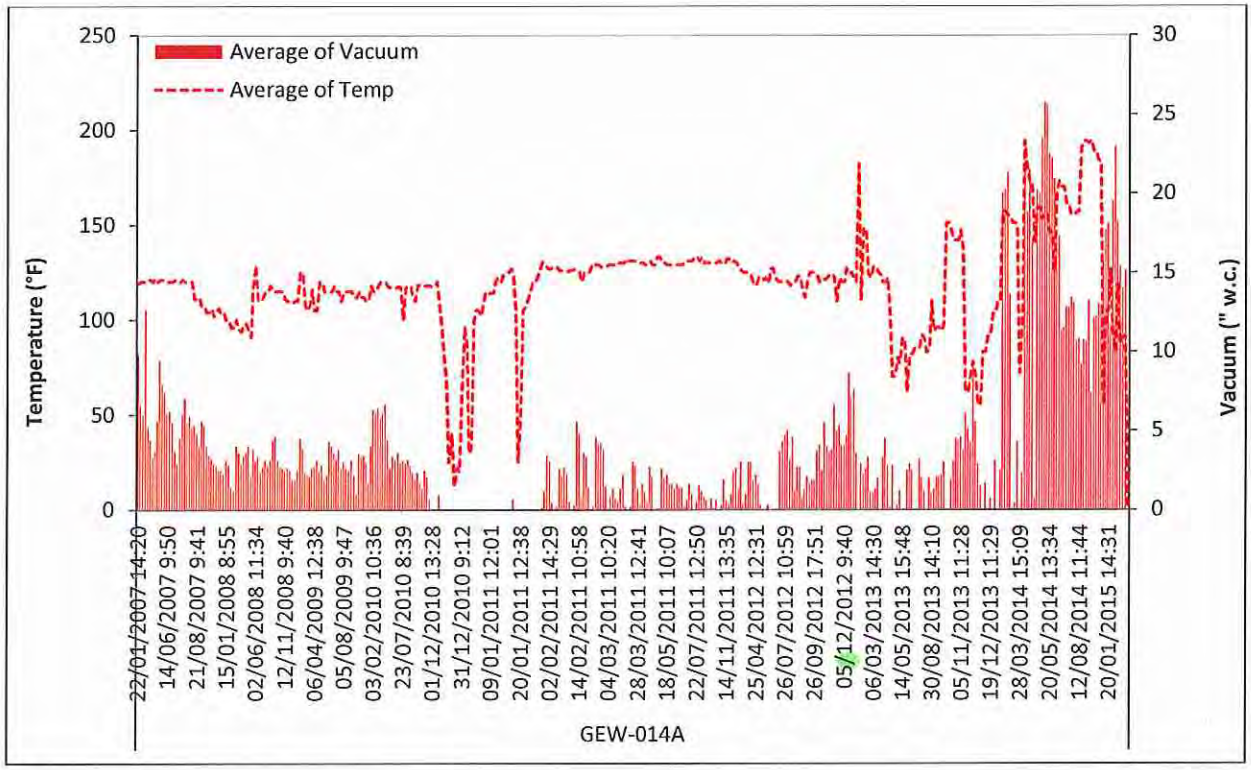
WELLFIELD MONITORING LFG DATA

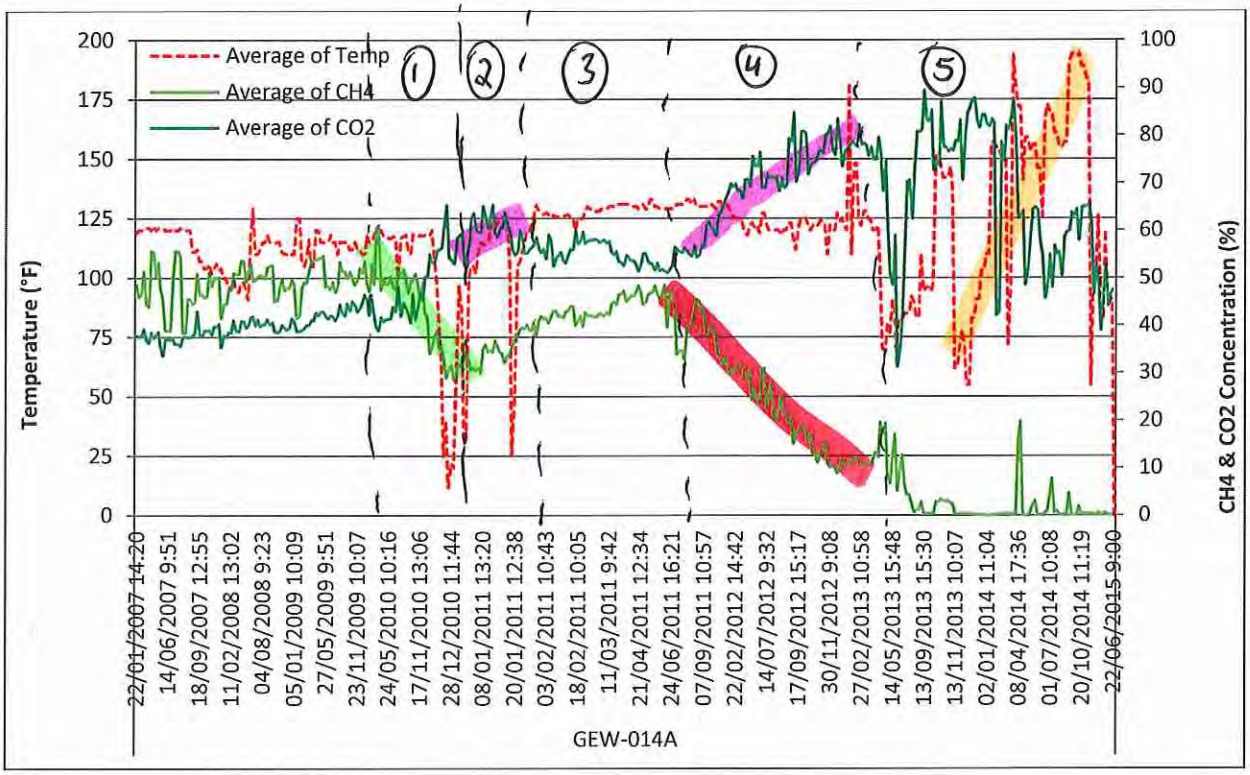

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
20
18
16
14
12
10
8
6
4
2
0
22/01/2007 14:31
08/05/2007 13:50
08/08/2007 9:11
18/10/2007 10:00
03/01/2008 9:20
24/03/2008 8:34
23/06/2008 8:59
15/09/2008 10:10
25/11/2008 15:39
16/03/2009 12:19
16/06/2009 7:29
05/10/2009 10:45
04/01/2010 11:43
10/05/2010 10:10
09/08/2010 10:24
18/10/2010 10:05
22/12/2010 16:42
04/01/2011 18:21
11/01/2011 12:48
20/01/2011 12:26
31/01/2011 9:27
09/02/2011 9:42
23/02/2011 15:24
09/03/2011 11:28
28/03/2011 12:25
05/05/2011 10:53
24/06/2011 16:06
10/08/2011 10:07
14/11/2011 15:02
05/03/2012 14:17
10/07/2012 14:39
30/08/2012 18:08
01/11/2012 12:41
27/12/2012 10:00
05/03/2013 15:50
07/05/2013 14:16
GEW-12A

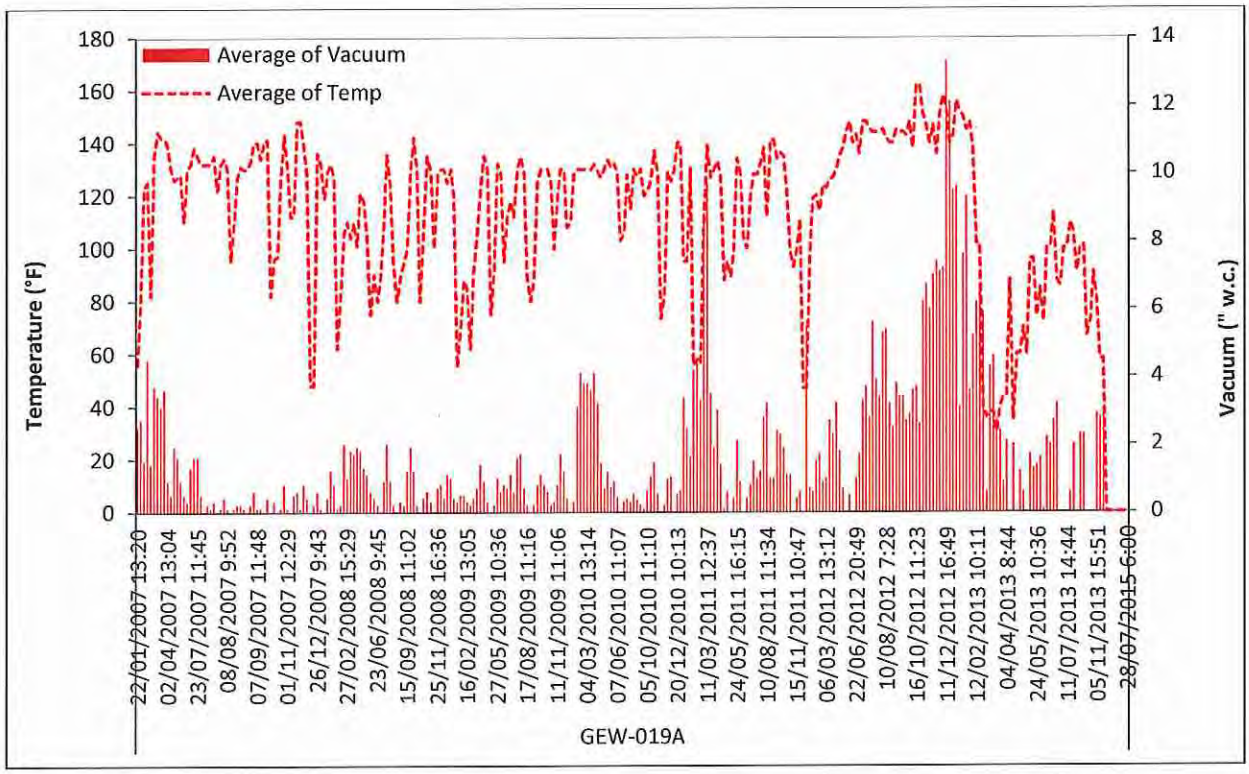

Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
90
80
70
60
50
40
30
20
10
0
1
2
3
4
22/01/2007 14:31
08/05/2007 14:05
21/08/2007 9:30
12/11/2007 12:39
11/02/2008 11:42
08/05/2008 7:32
04/08/2008 9:08
16/10/2008 13:45
02/02/2009 11:20
03/06/2009 8:11
05/10/2009 10:42
04/01/2010 11:43
24/05/2010 9:59
27/08/2010 8:26
17/11/2010 12:56
28/12/2010 11:35
07/01/2011 10:58
17/01/2011 11:23
27/01/2011 9:47
07/02/2011 14:19
18/02/2011 9:53
07/03/2011 11:46
28/03/2011 12:25
10/05/2011 16:18
30/06/2011 8:31
24/08/2011 16:28
14/12/2011 11:56
30/05/2012 13:35
30/07/2012 9:42
09/10/2012 14:35
04/12/2012 16:20
20/02/2013 8:50
29/04/2013 13:39
GEW-12A
OCTAFLOO CHEM STARTS

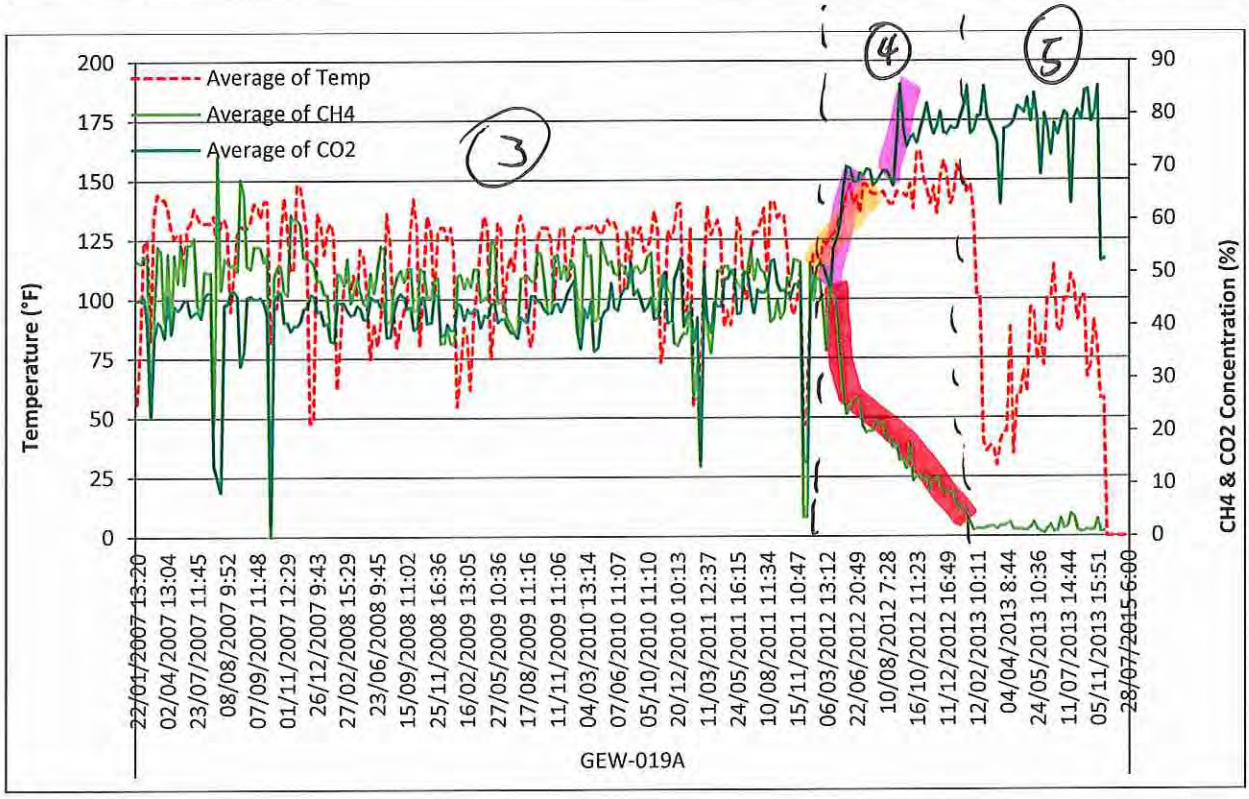

Average of...
Temperature (°F)
Vacuum (" w.c.)
SEW-013

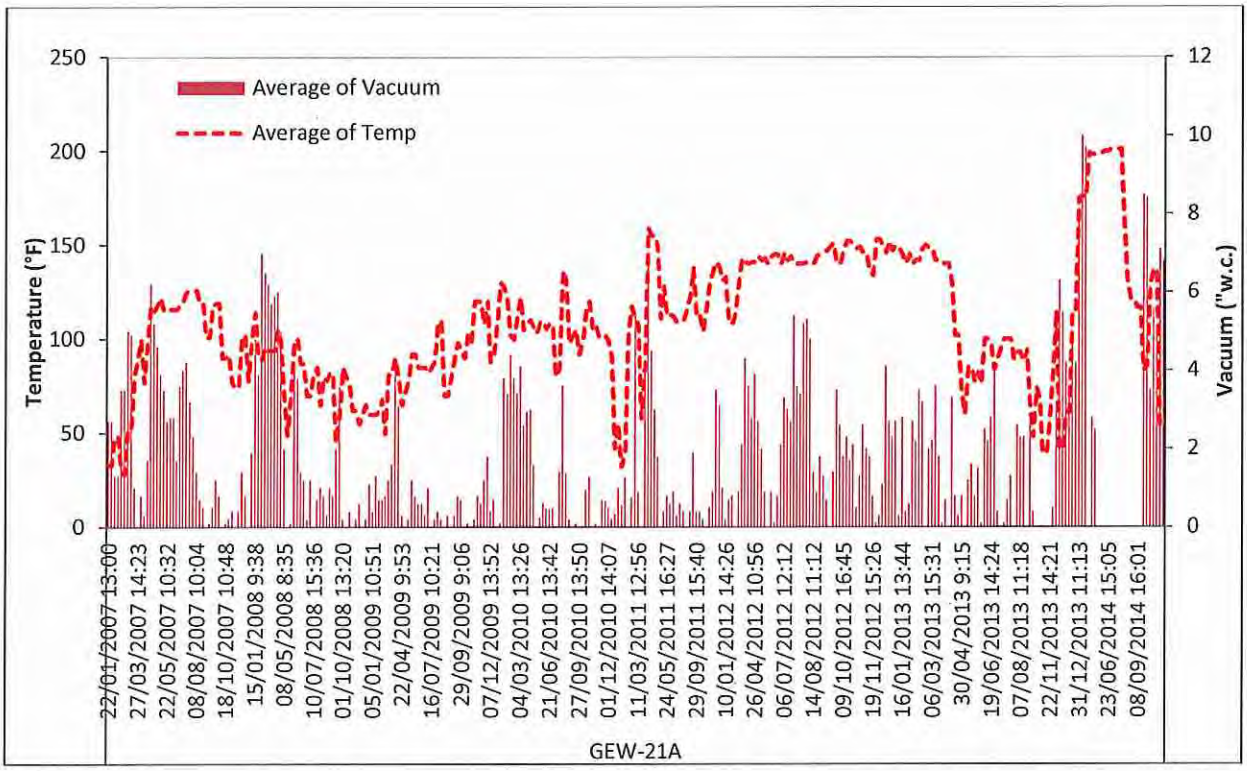

Average of Temp
Average of CH4
Average of CO2
1
2
3
4
Temperature (°F)
CH4 & CO2 Concentration (%)
SEW-013

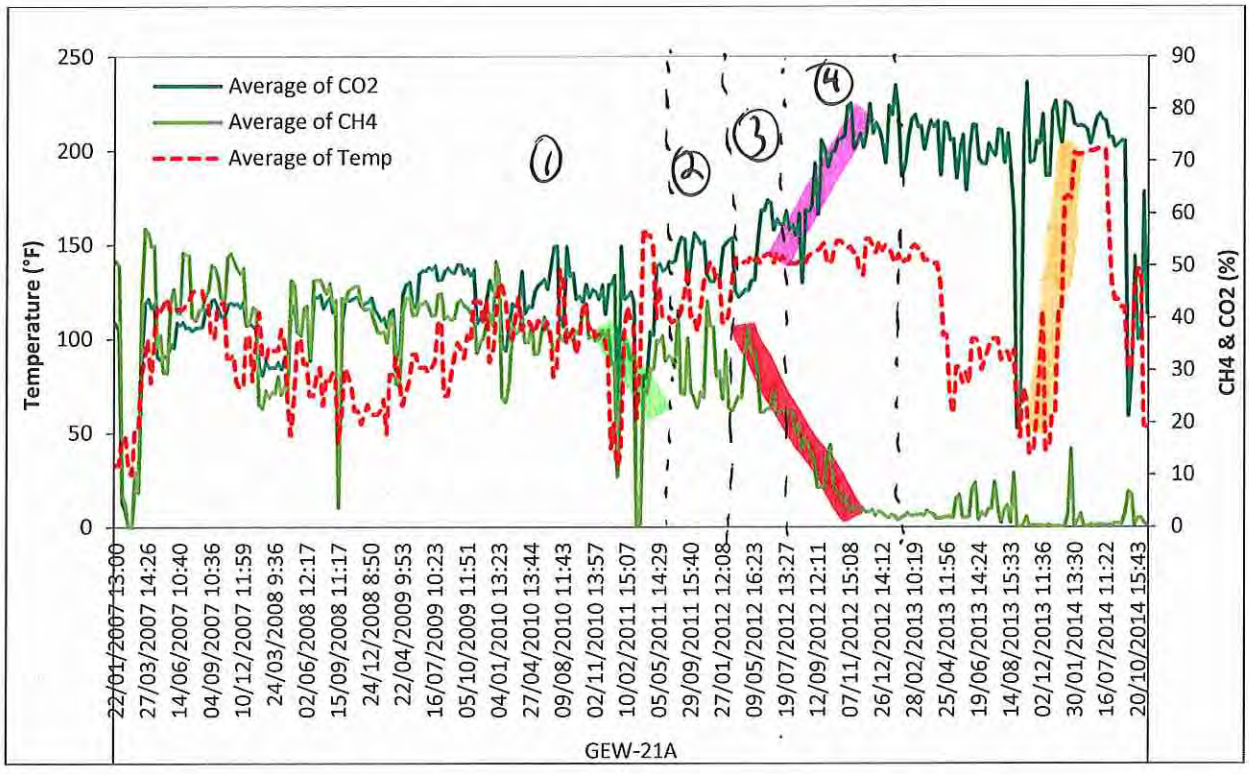

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-014A

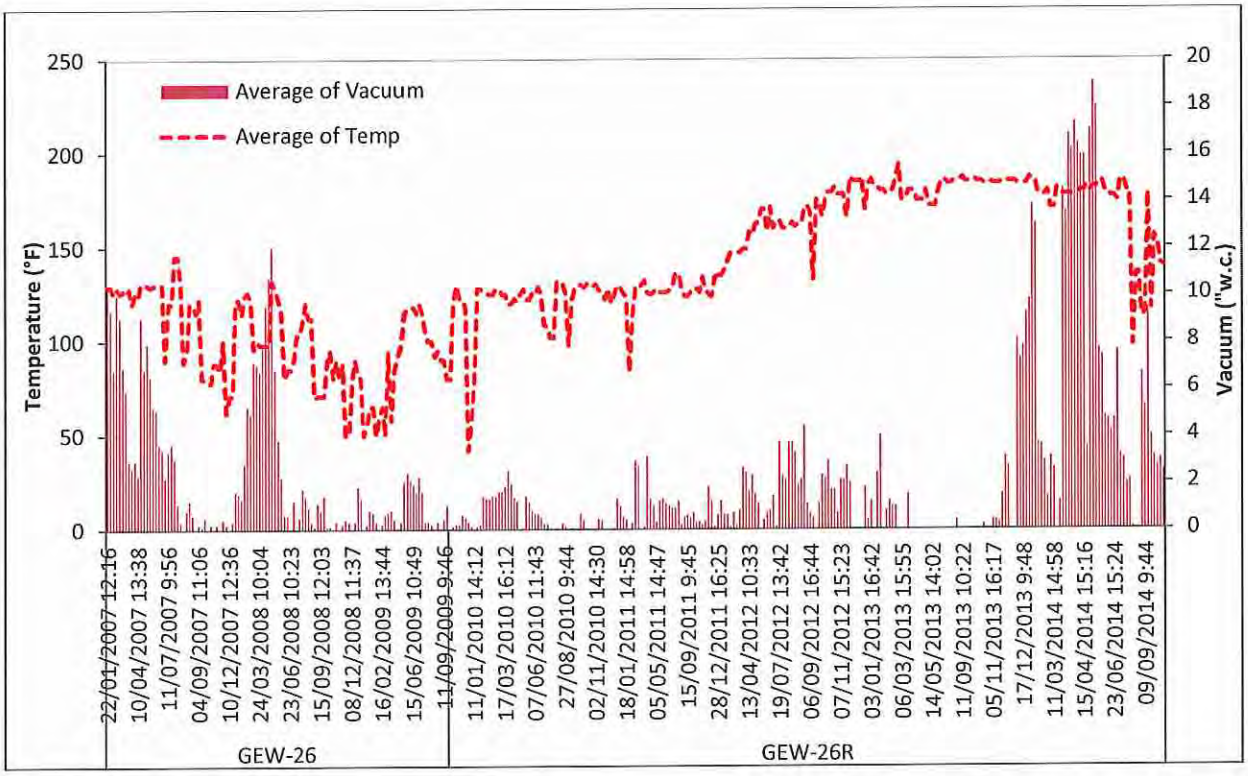

Average of Temp
Average of CH4
Average of CO2
1
2
3
4
5
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-014A

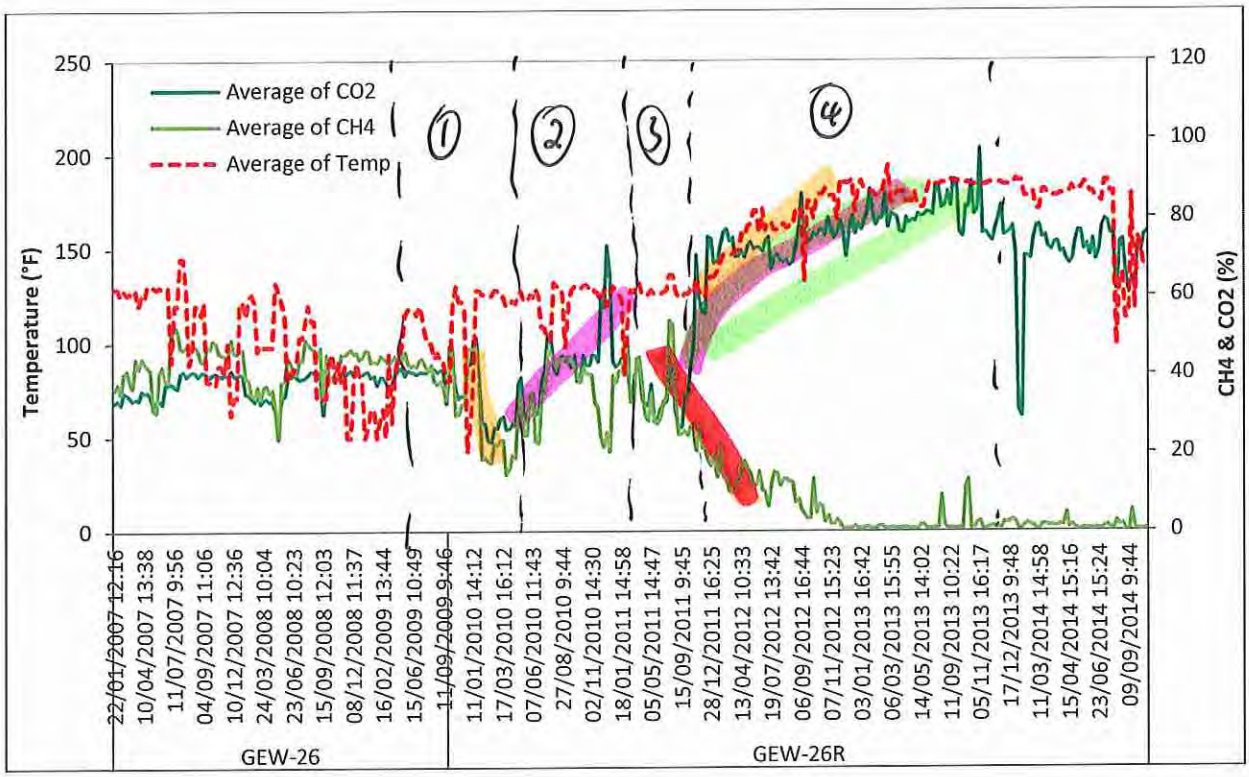

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-019A

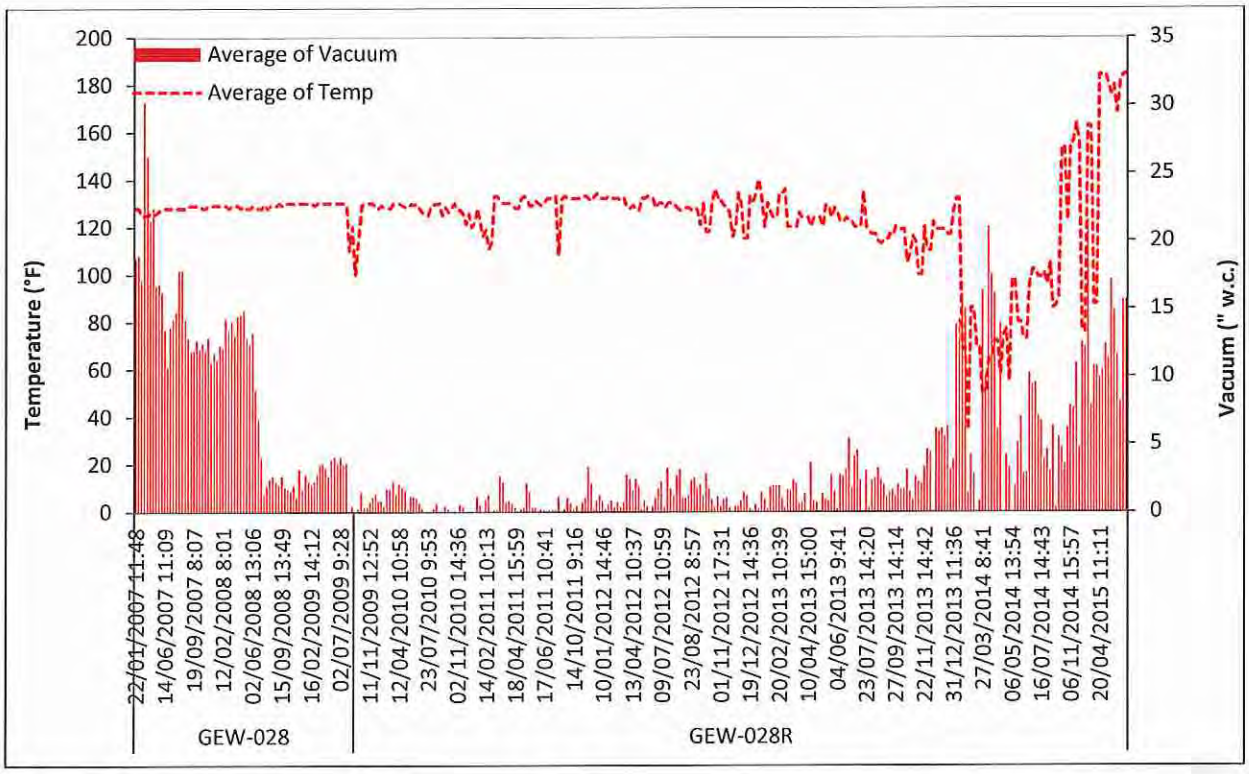

Average of Temp
Average of CH4
Average of CO2
3
4
5
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-019A

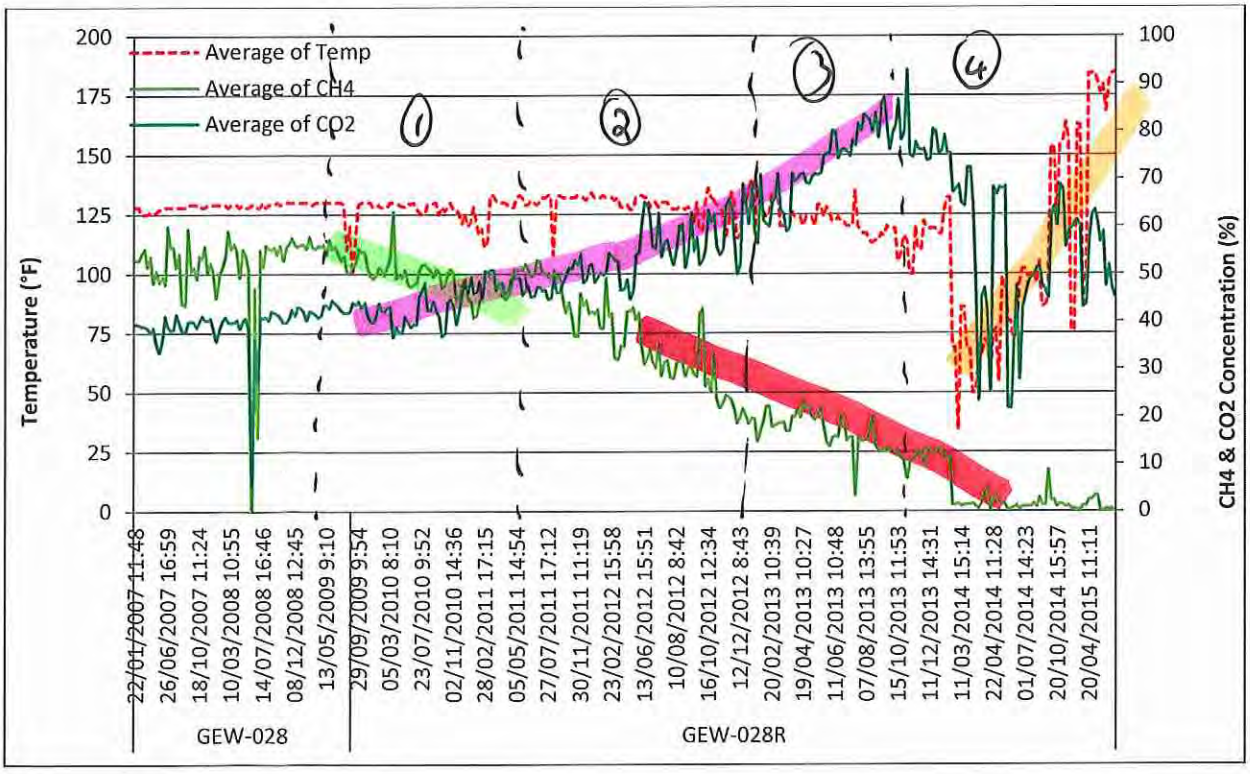

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
12
10
8
6
4
2
0
22/01/2007 13:00
27/03/2007 14:23
22/05/2007 10:32
08/08/2007 10:04
18/10/2007 10:48
15/01/2008 9:38
08/05/2008 8:35
10/07/2008 15:36
01/10/2008 13:20
05/01/2009 10:51
22/04/2009 9:53
16/07/2009 10:21
29/09/2009 9:06
07/12/2009 13:52
04/03/2010 13:26
21/06/2010 13:42
27/09/2010 13:50
01/12/2010 14:07
11/03/2011 12:56
24/05/2011 16:27
29/09/2011 15:40
10/01/2012 14:26
26/04/2012 10:56
06/07/2012 12:12
14/08/2012 11:12
09/10/2012 16:45
19/11/2012 15:26
16/01/2013 13:44
06/03/2013 15:31
30/04/2013 9:15
19/06/2013 14:24
07/08/2013 11:18
22/11/2013 14:21
31/12/2013 11:13
23/06/2014 15:05
08/09/2014 16:01
GEW-21A

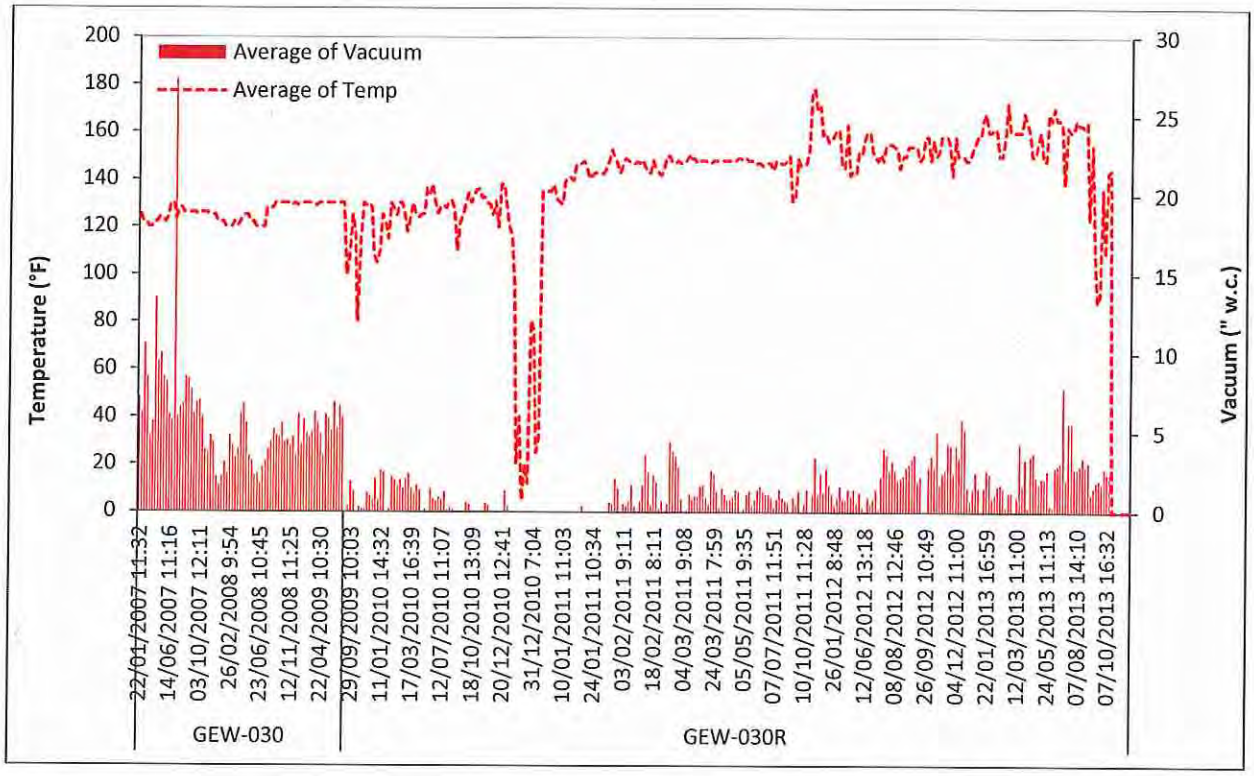

Average of CO2
Average of CH4
Average of Temp
①
②
③
④
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
90
80
70
60
50
40
30
20
10
0
22/01/2007 13:00
27/03/2007 14:26
14/06/2007 10:40
04/09/2007 10:36
10/12/2007 11:59
24/03/2008 9:36
02/06/2008 12:17
15/09/2008 11:17
24/12/2008 8:50
22/04/2009 9:53
16/07/2009 10:23
05/10/2009 11:51
04/01/2010 13:23
27/04/2010 13:44
09/08/2010 11:43
02/11/2010 13:57
10/02/2011 15:07
05/05/2011 14:29
29/09/2011 15:40
27/01/2012 12:08
09/05/2012 16:23
19/07/2012 13:27
12/09/2012 12:11
07/11/2012 15:08
26/12/2012 14:12
28/02/2013 10:19
25/04/2013 11:56
19/06/2013 14:24
14/08/2013 15:33
02/12/2013 11:36
30/01/2014 13:30
16/07/2014 11:22
20/10/2014 15:43
GEW-21A

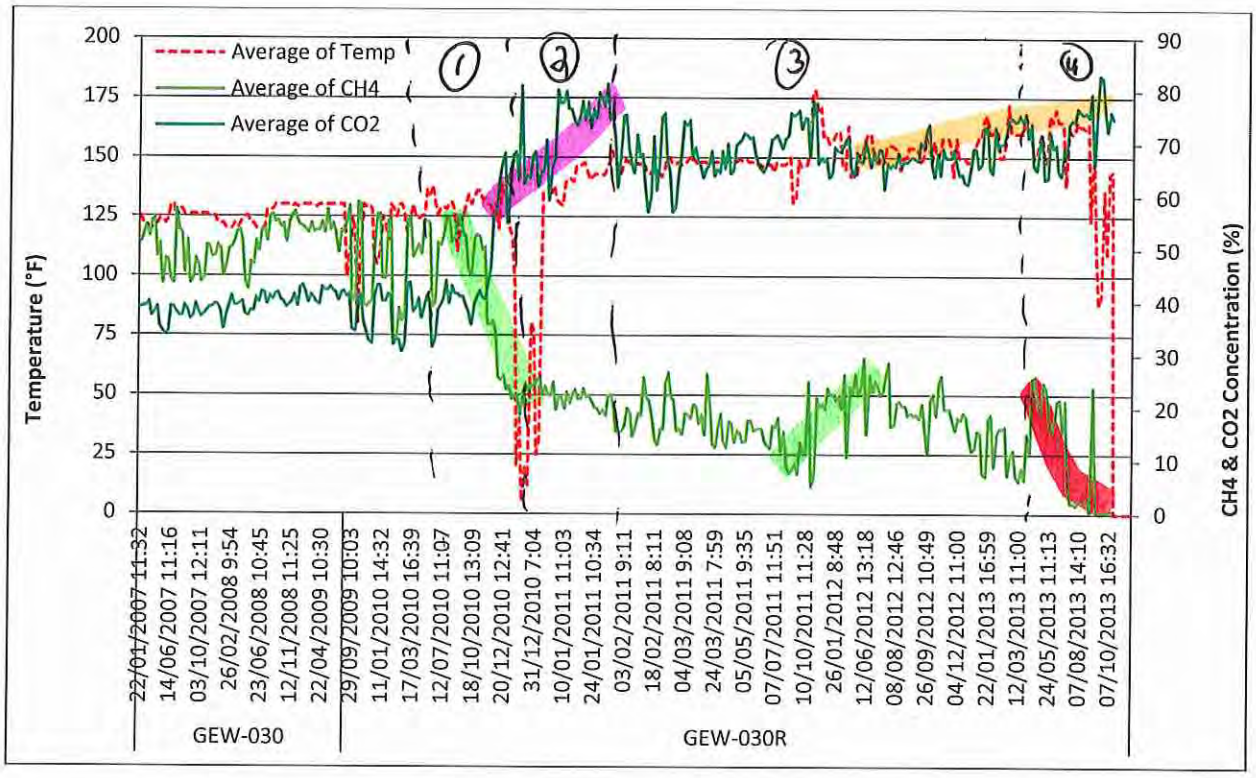

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
20
18
16
14
12
10
8
6
4
2
0
22/01/2007 12:16
10/04/2007 13:38
11/07/2007 9:56
04/09/2007 11:06
10/12/2007 12:36
24/03/2008 10:04
23/06/2008 10:23
15/09/2008 12:03
08/12/2008 11:37
16/02/2009 13:44
15/06/2009 10:49
11/09/2009 9:46
11/01/2010 14:12
17/03/2010 16:12
07/06/2010 11:43
27/08/2010 9:44
02/11/2010 14:30
18/01/2011 14:58
05/05/2011 14:47
15/09/2011 9:45
28/12/2011 16:25
13/04/2012 10:33
19/07/2012 13:42
06/09/2012 16:44
07/11/2012 15:23
03/01/2013 16:42
06/03/2013 15:55
14/05/2013 14:02
11/09/2013 10:22
05/11/2013 16:17
17/12/2013 9:48
11/03/2014 14:58
15/04/2014 15:16
23/06/2014 15:24
09/09/2014 9:44
GEW-26
GEW-26R

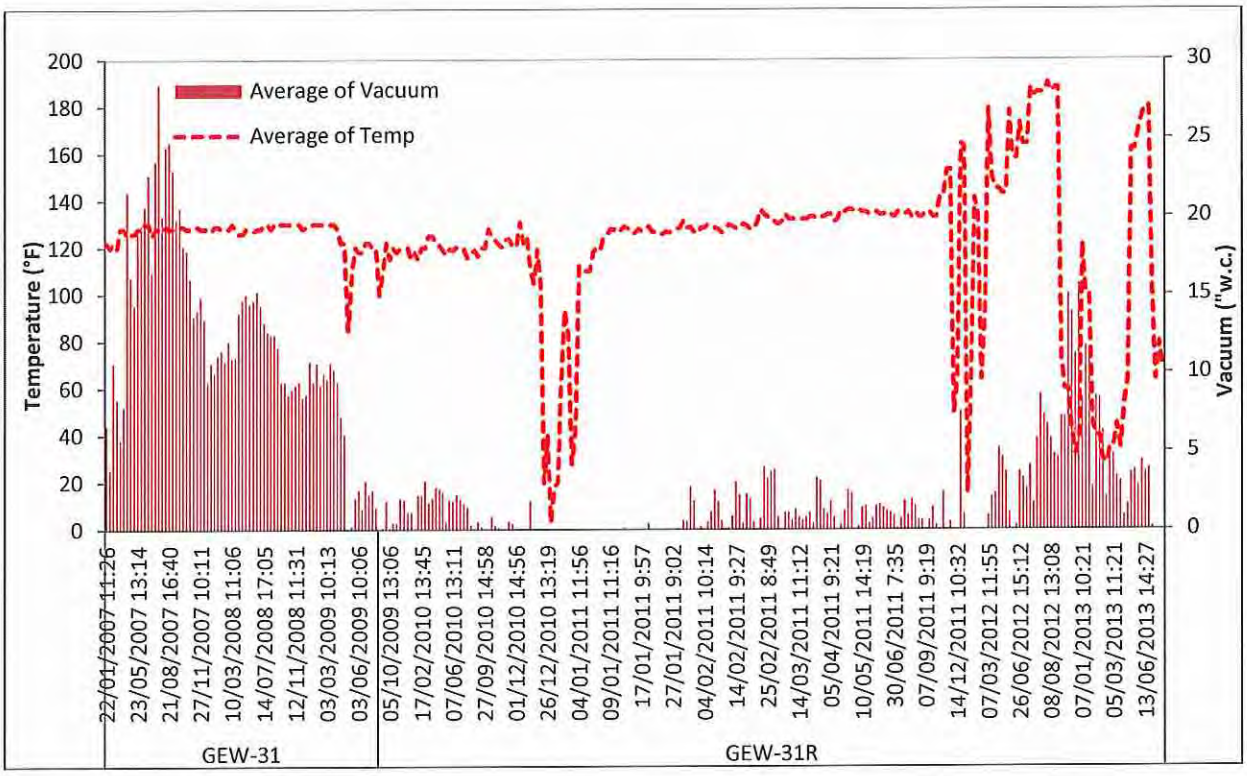

Average of CO2
Average of CH4
Average of Temp
① ② ③ ④
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
120
100
80
60
40
20
0
22/01/2007 12:16
10/04/2007 13:38
11/07/2007 9:56
04/09/2007 11:06
10/12/2007 12:36
24/03/2008 10:04
23/06/2008 10:23
15/09/2008 12:03
08/12/2008 11:37
16/02/2009 13:44
15/06/2009 10:49
11/09/2009 9:46
11/01/2010 14:12
17/03/2010 16:12
07/06/2010 11:43
27/08/2010 9:44
02/11/2010 14:30
18/01/2011 14:58
05/05/2011 14:47
15/09/2011 9:45
28/12/2011 16:25
13/04/2012 10:33
19/07/2012 13:42
06/09/2012 16:44
07/11/2012 15:23
03/01/2013 16:42
06/03/2013 15:55
14/05/2013 14:02
11/09/2013 10:22
05/11/2013 16:17
17/12/2013 9:48
11/03/2014 14:58
15/04/2014 15:16
23/06/2014 15:24
09/09/2014 9:44
GEW-26
GEW-26R

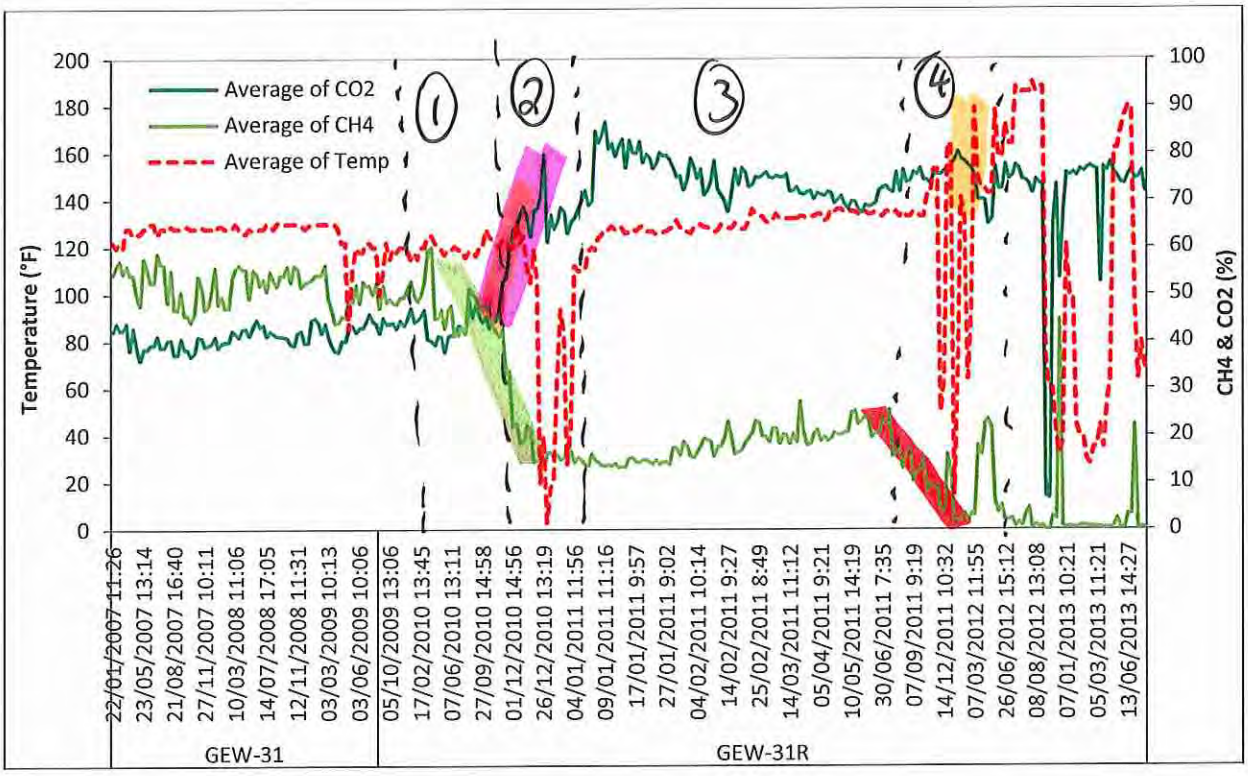

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-028
GEW-028R

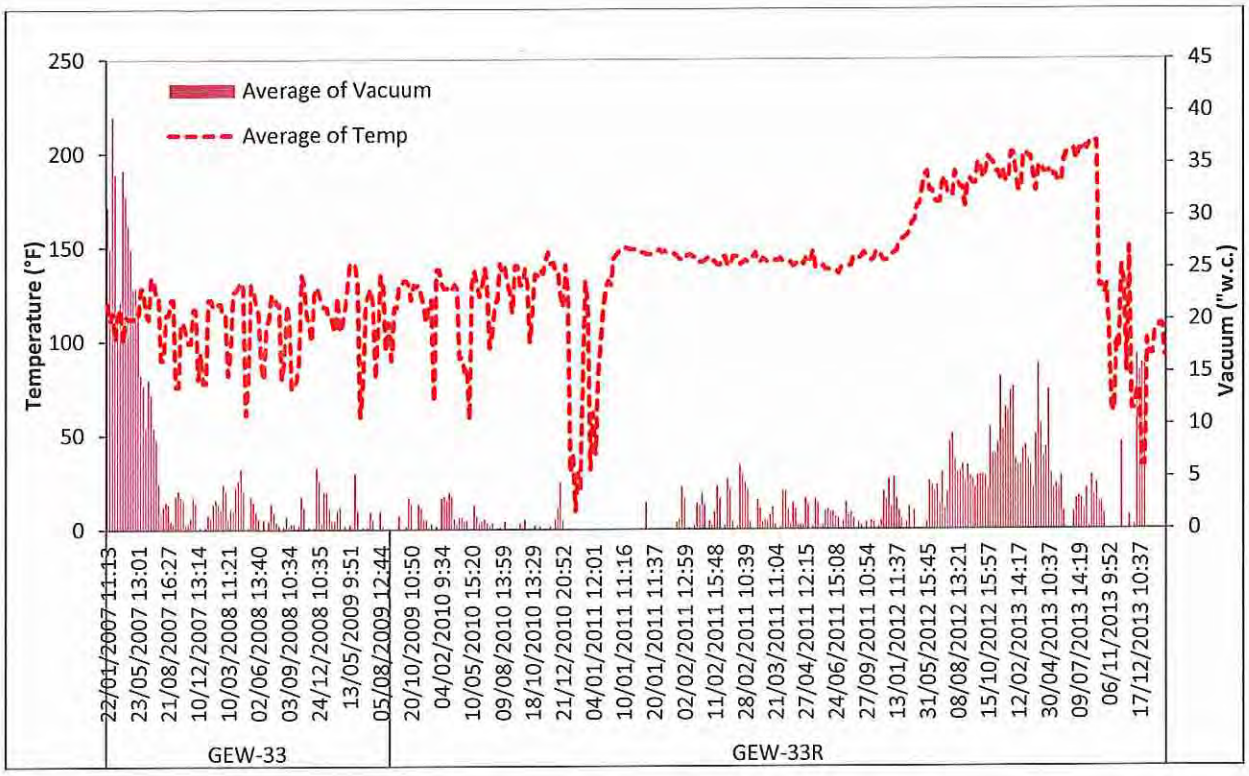

Average of Temp
Average of CH4
Average of CO2
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-028
GEW-028R

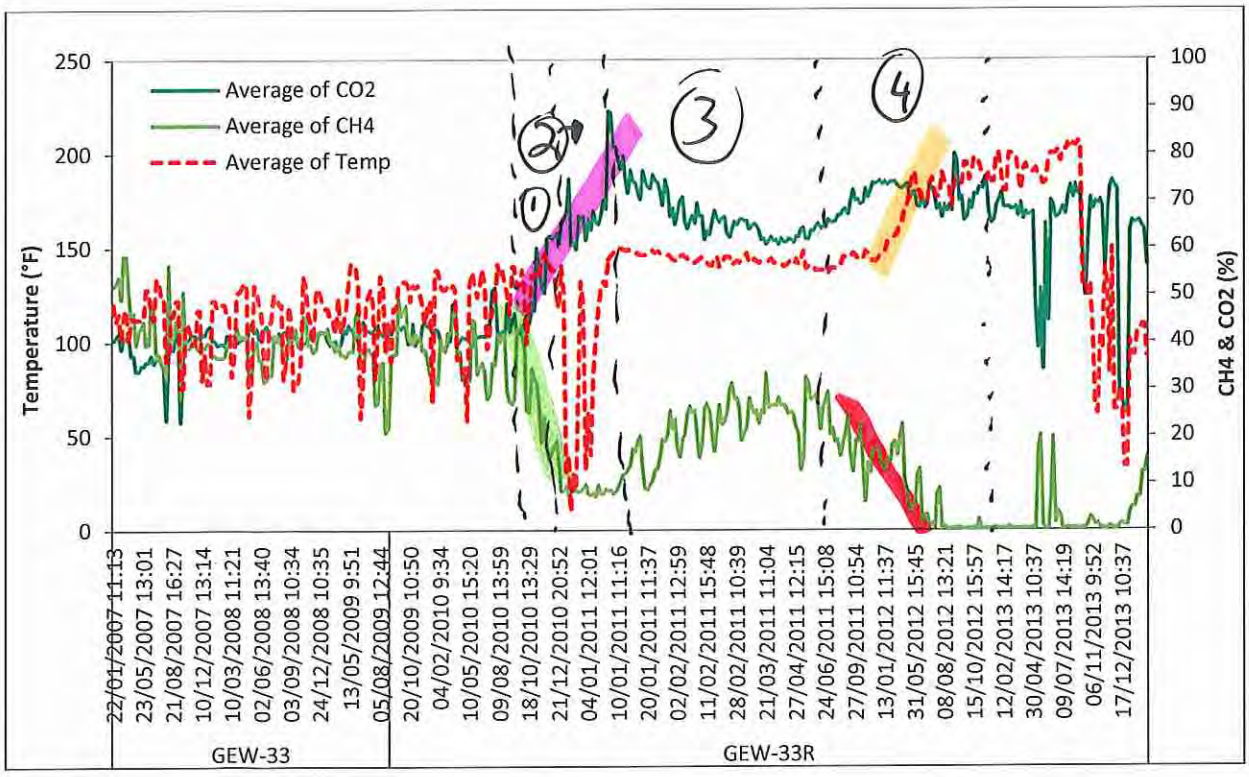

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-030
GEW-030R

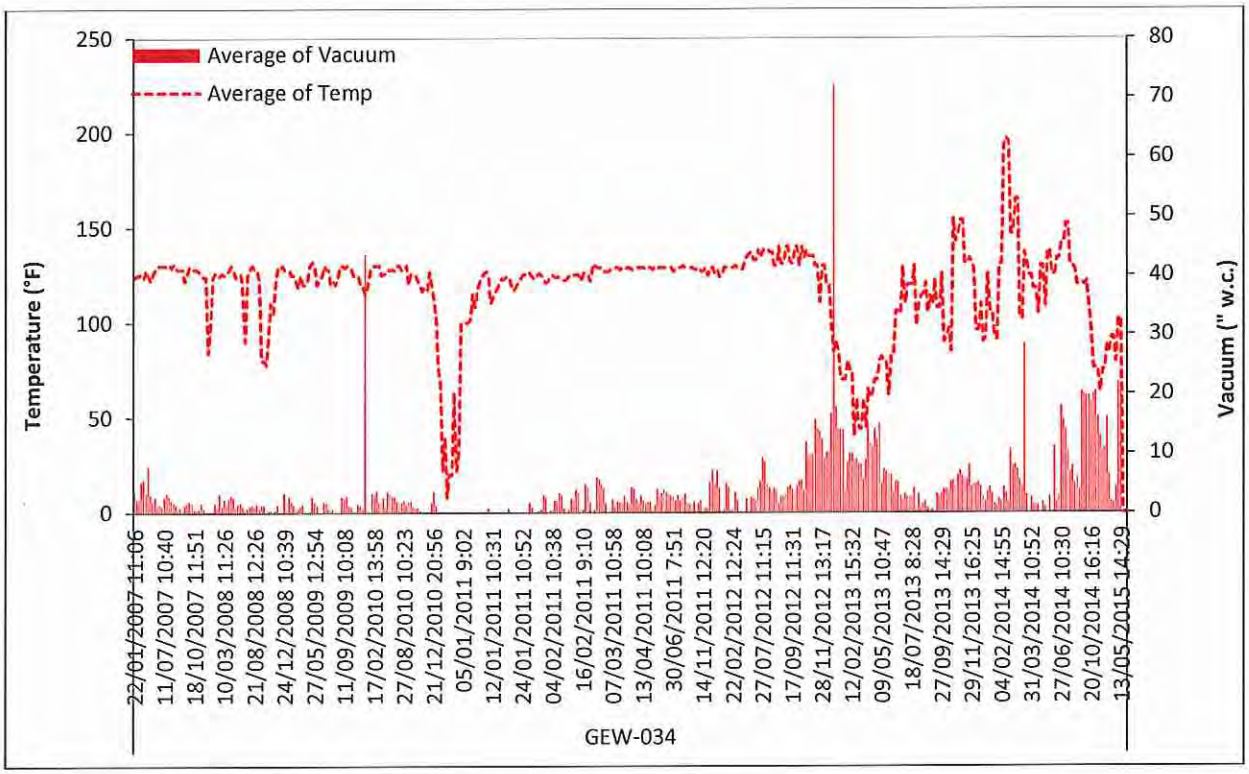

Average of Temp
Average of CH4
Average of CO2
1
2
3
4
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-030
GEW-030R

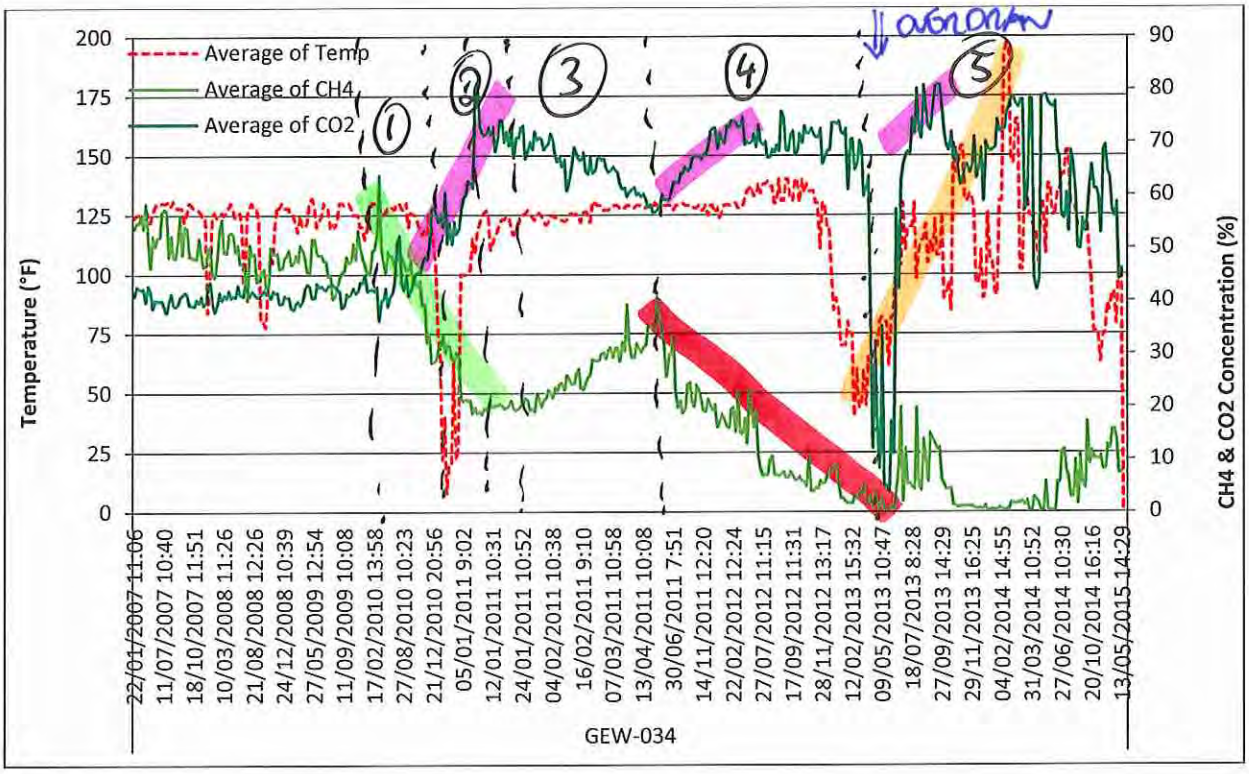

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
GEW-31
GEW-31R

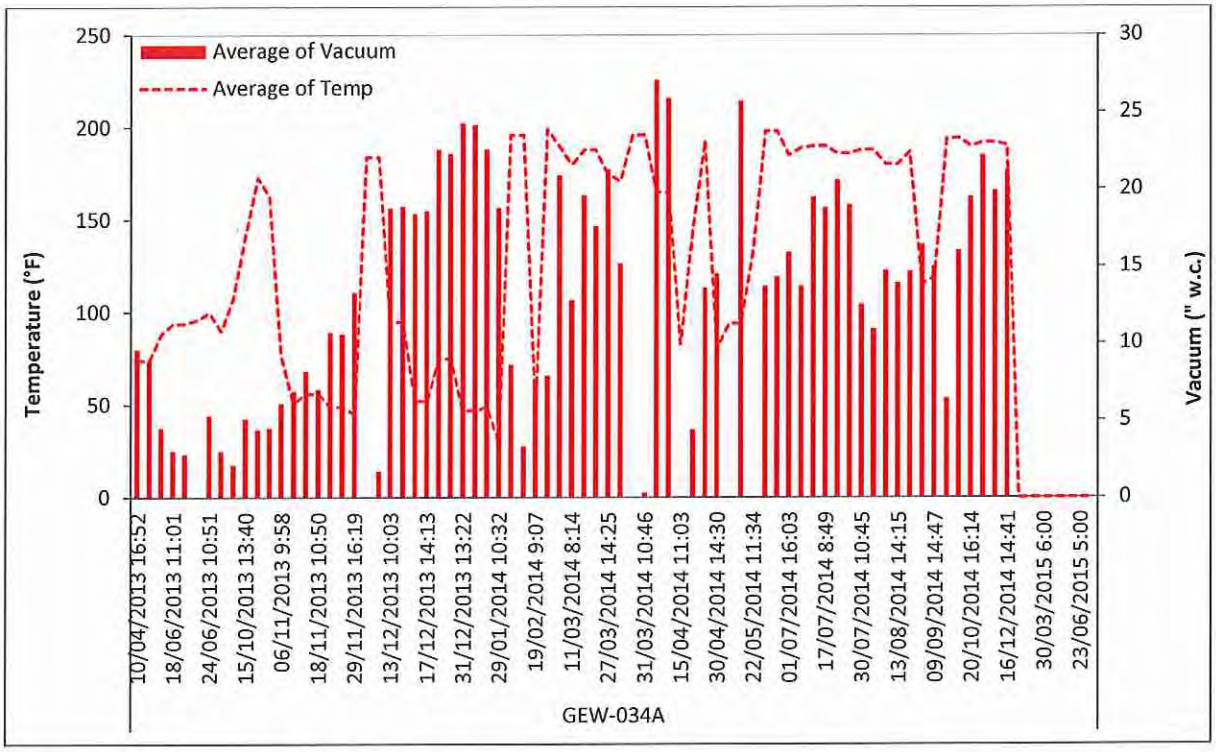

Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
1
2
3
4
GEW-31
GEW-31R

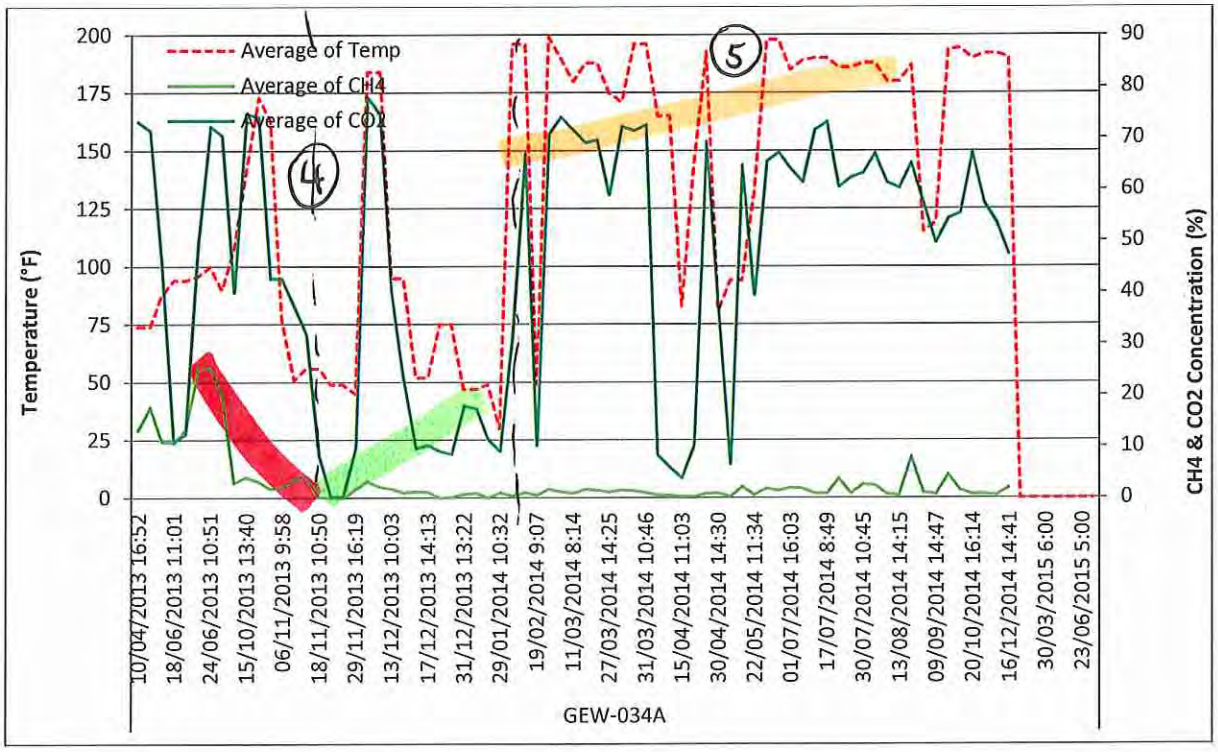

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
GEW-33
GEW-33R

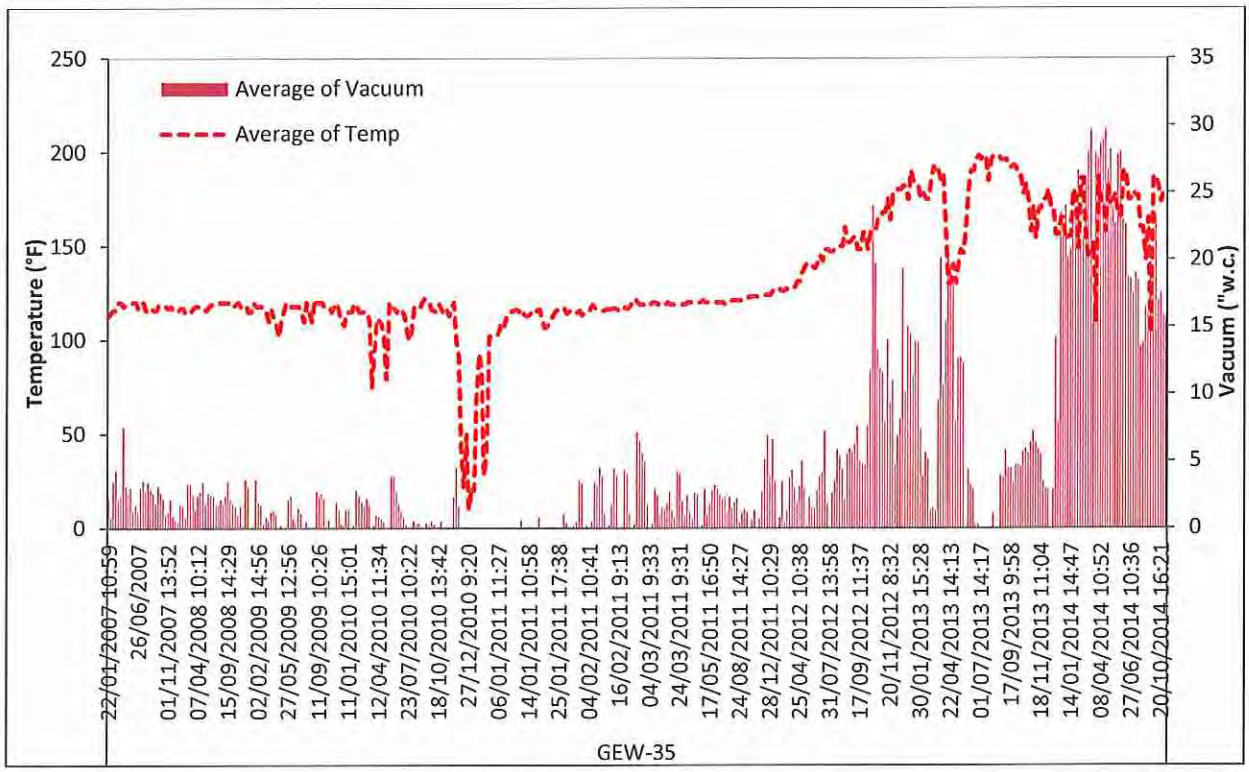

Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
1
2
3
4
GEW-33
GEW-33R

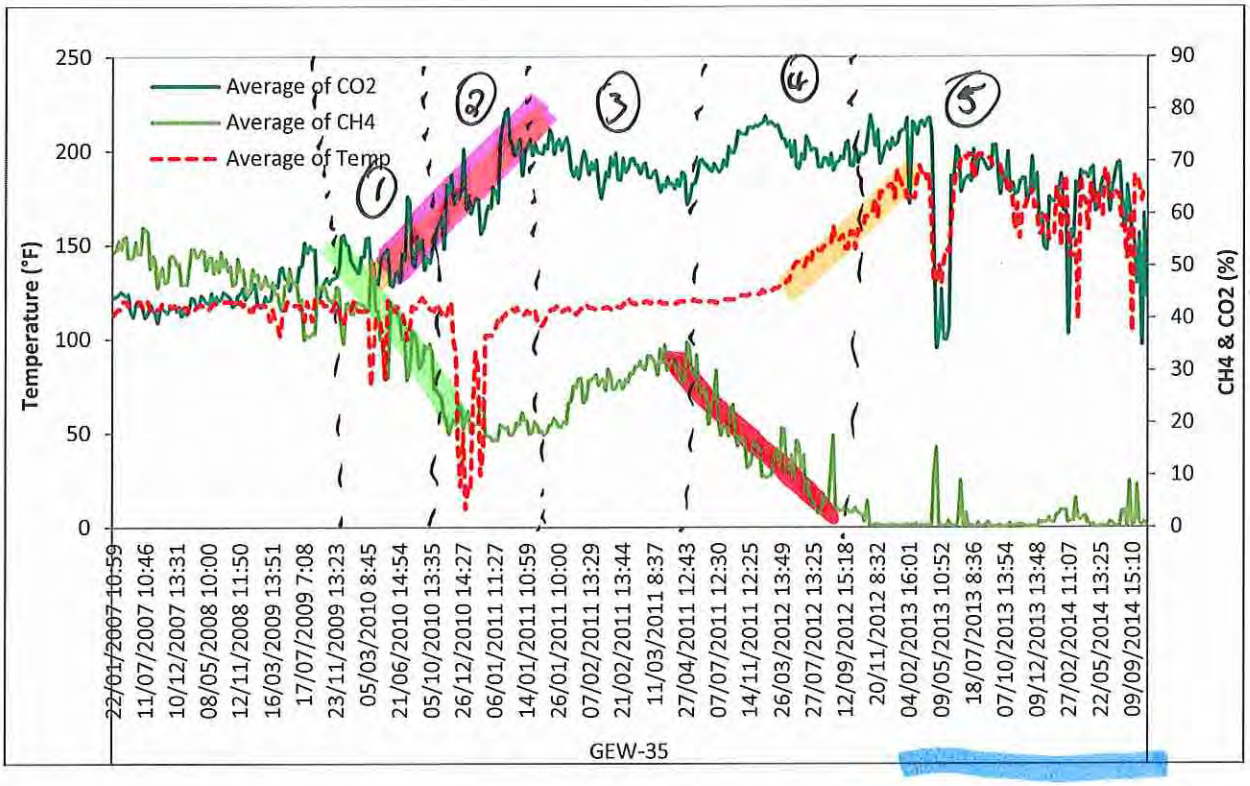

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-034

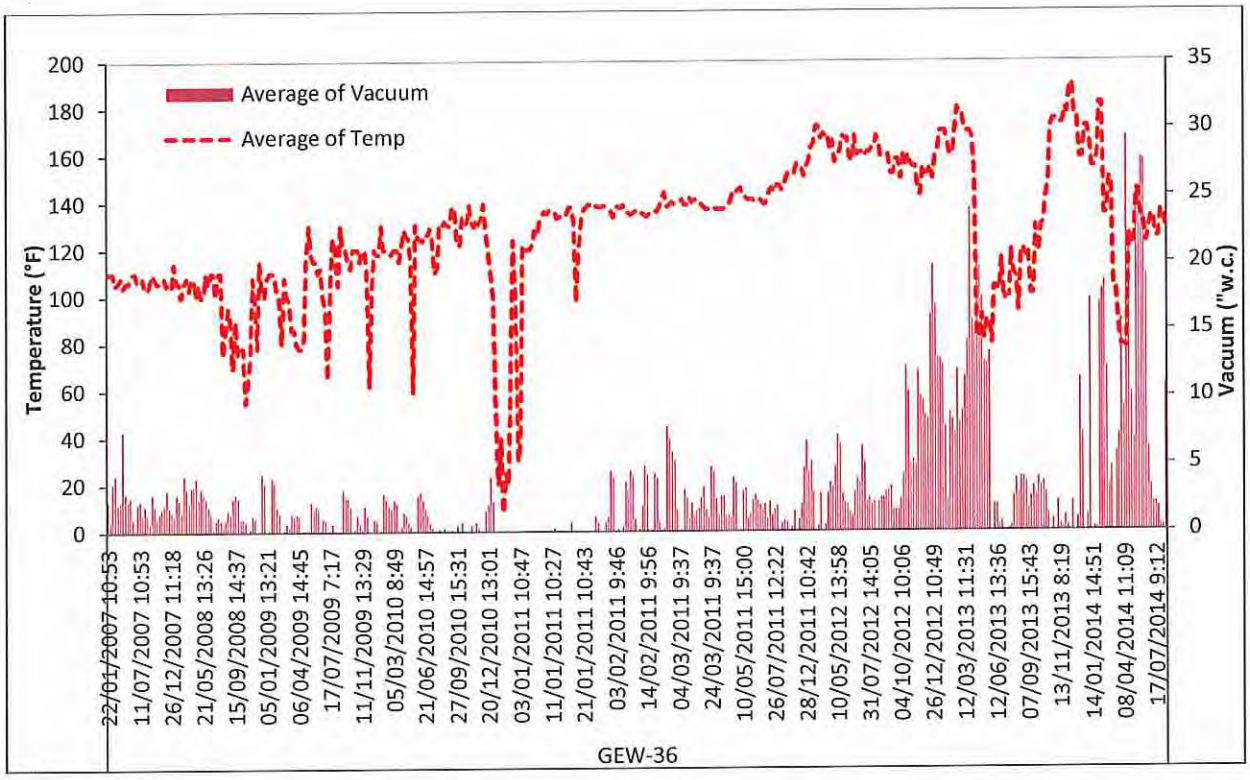

Average of Temp
Average of CH4
Average of CO2
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-034

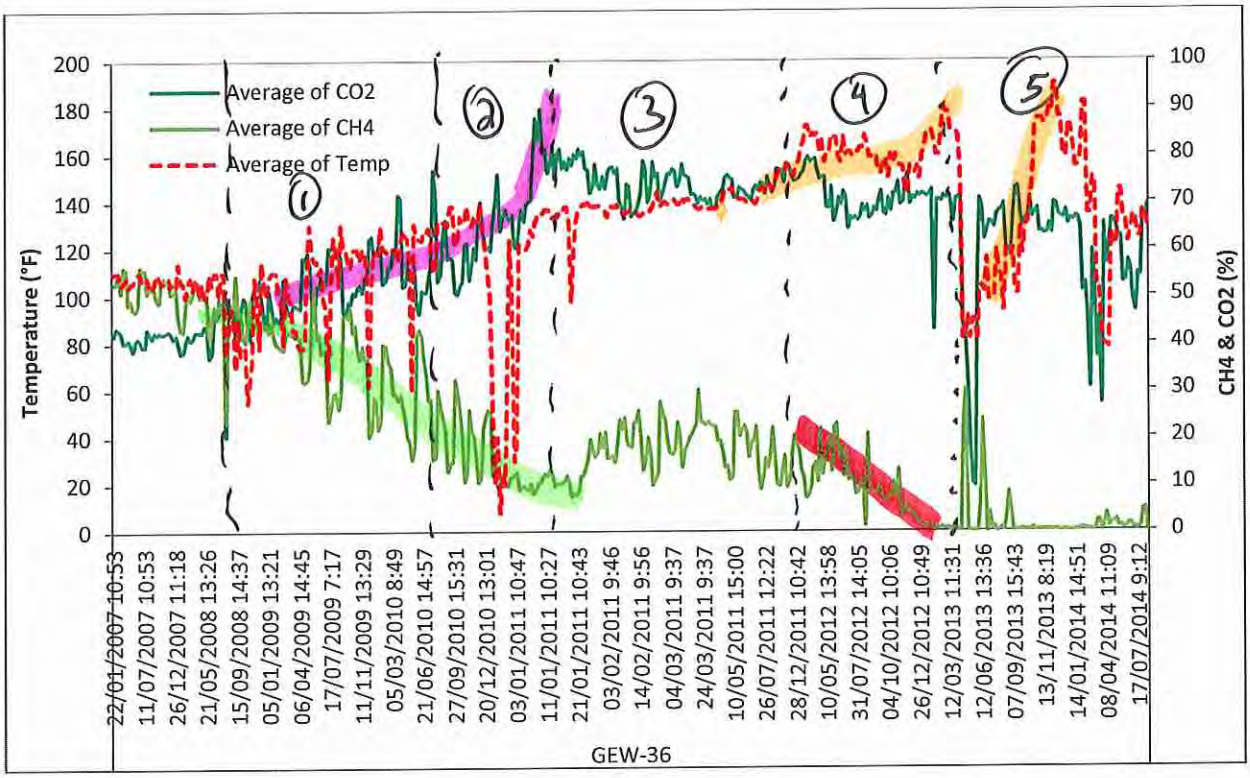

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
250
200
150
100
50
0
30
25
20
15
10
5
0
10/04/2013 16:52
18/06/2013 11:01
24/06/2013 10:51
15/10/2013 13:40
06/11/2013 9:58
18/11/2013 10:50
29/11/2013 16:19
13/12/2013 10:03
17/12/2013 14:13
31/12/2013 13:22
29/01/2014 10:32
19/02/2014 9:07
11/03/2014 8:14
27/03/2014 14:25
31/03/2014 10:46
15/04/2014 11:03
30/04/2014 14:30
22/05/2014 11:34
01/07/2014 16:03
17/07/2014 8:49
30/07/2014 10:45
13/08/2014 14:15
09/09/2014 14:47
20/10/2014 16:14
16/12/2014 14:41
30/03/2015 6:00
23/06/2015 5:00
GEW-034A

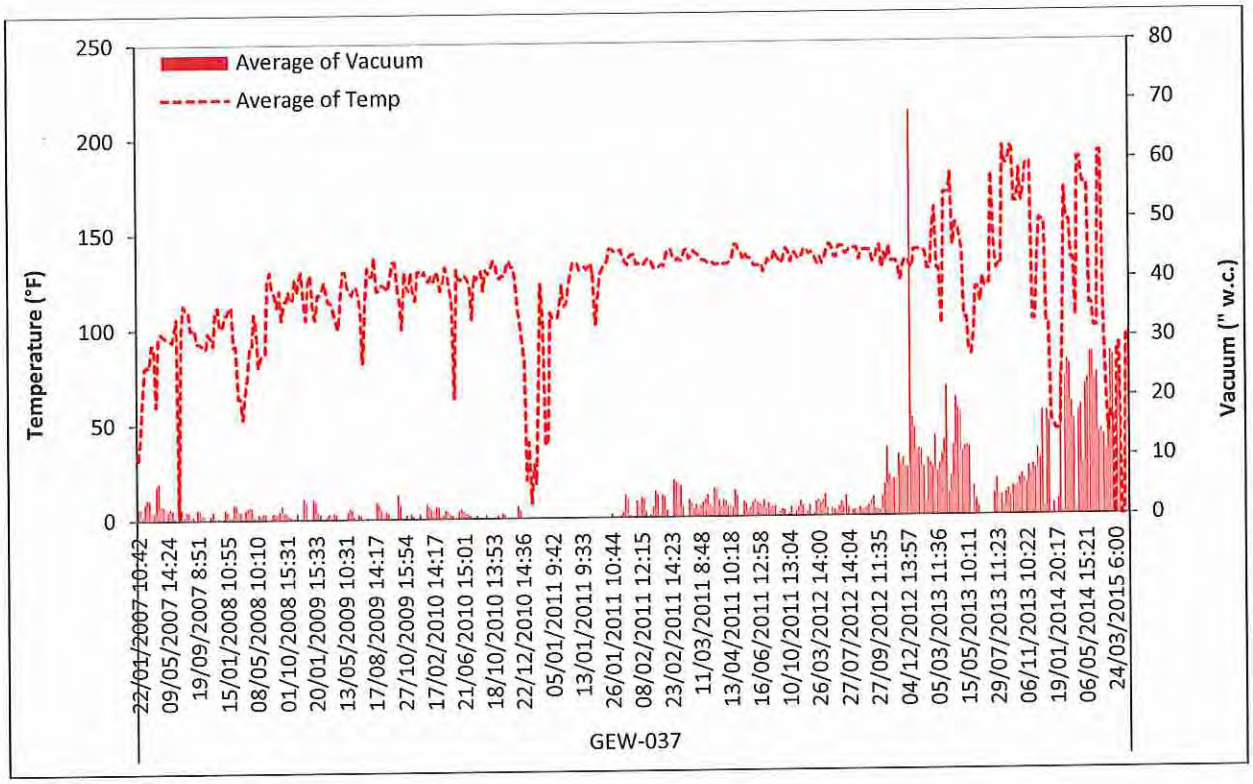

Average of Temp
Average of CH4
Average of CO2
4
5
Temperature (°F)
CH4 & CO2 Concentration (%)
200
175
150
125
100
75
50
25
0
90
80
70
60
50
40
30
20
10
0
10/04/2013 16:52
18/06/2013 11:01
24/06/2013 10:51
15/10/2013 13:40
06/11/2013 9:58
18/11/2013 10:50
29/11/2013 16:19
13/12/2013 10:03
17/12/2013 14:13
31/12/2013 13:22
29/01/2014 10:32
19/02/2014 9:07
11/03/2014 8:14
27/03/2014 14:25
31/03/2014 10:46
15/04/2014 11:03
30/04/2014 14:30
22/05/2014 11:34
01/07/2014 16:03
17/07/2014 8:49
30/07/2014 10:45
13/08/2014 14:15
09/09/2014 14:47
20/10/2014 16:14
16/12/2014 14:41
30/03/2015 6:00
23/06/2015 5:00
GEW-034A

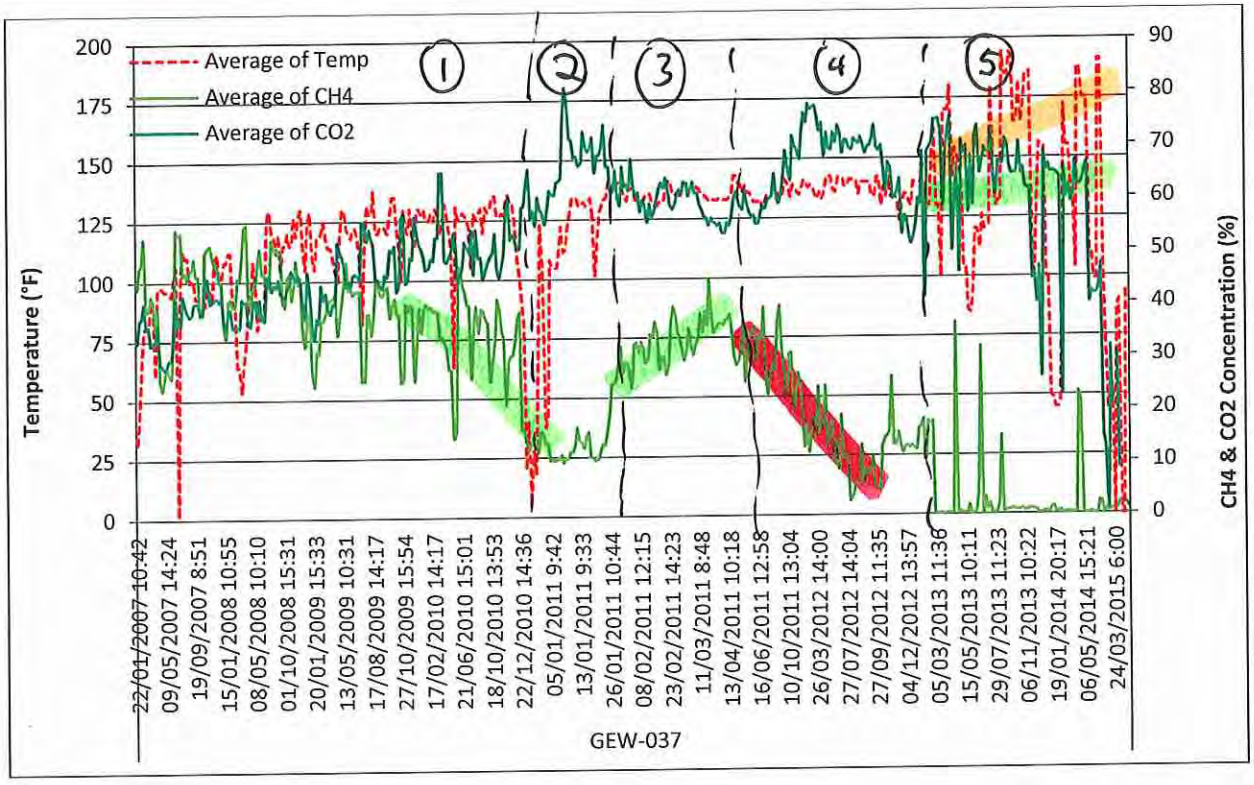

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
GEW-35

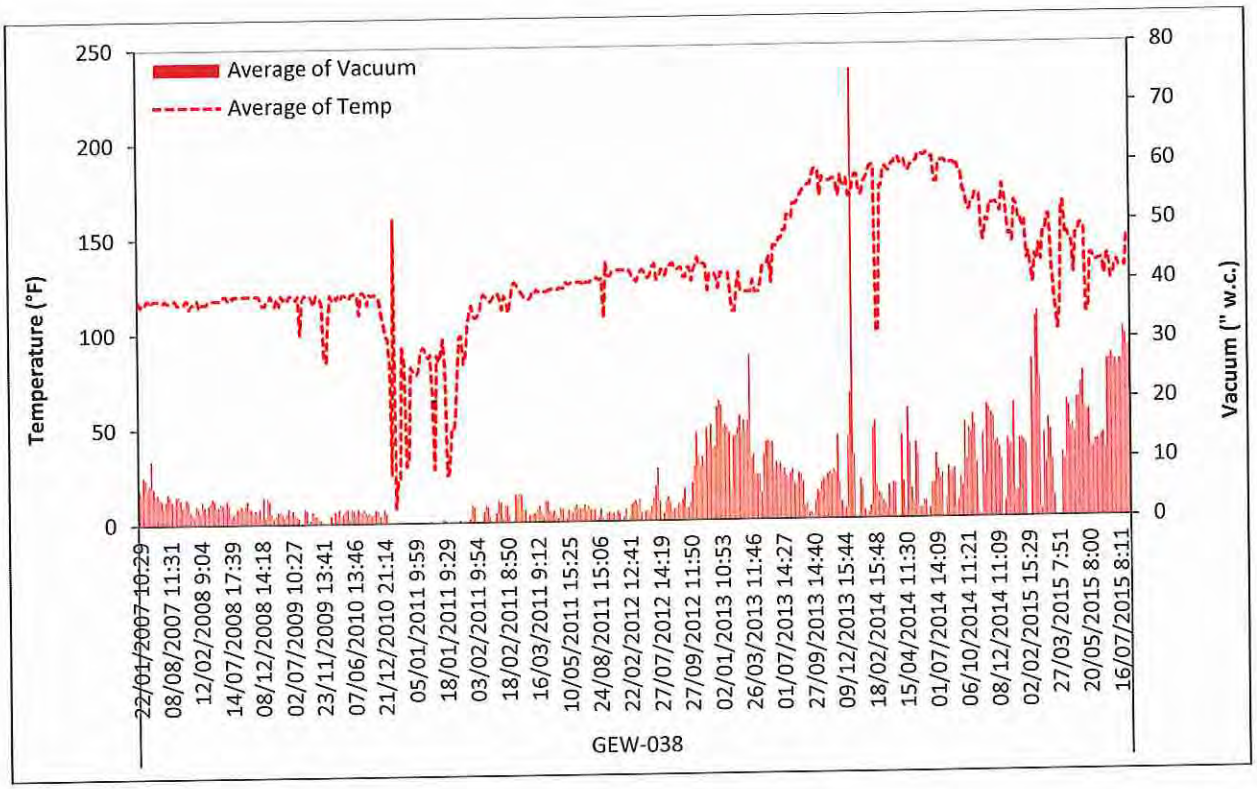

Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
GEW-35

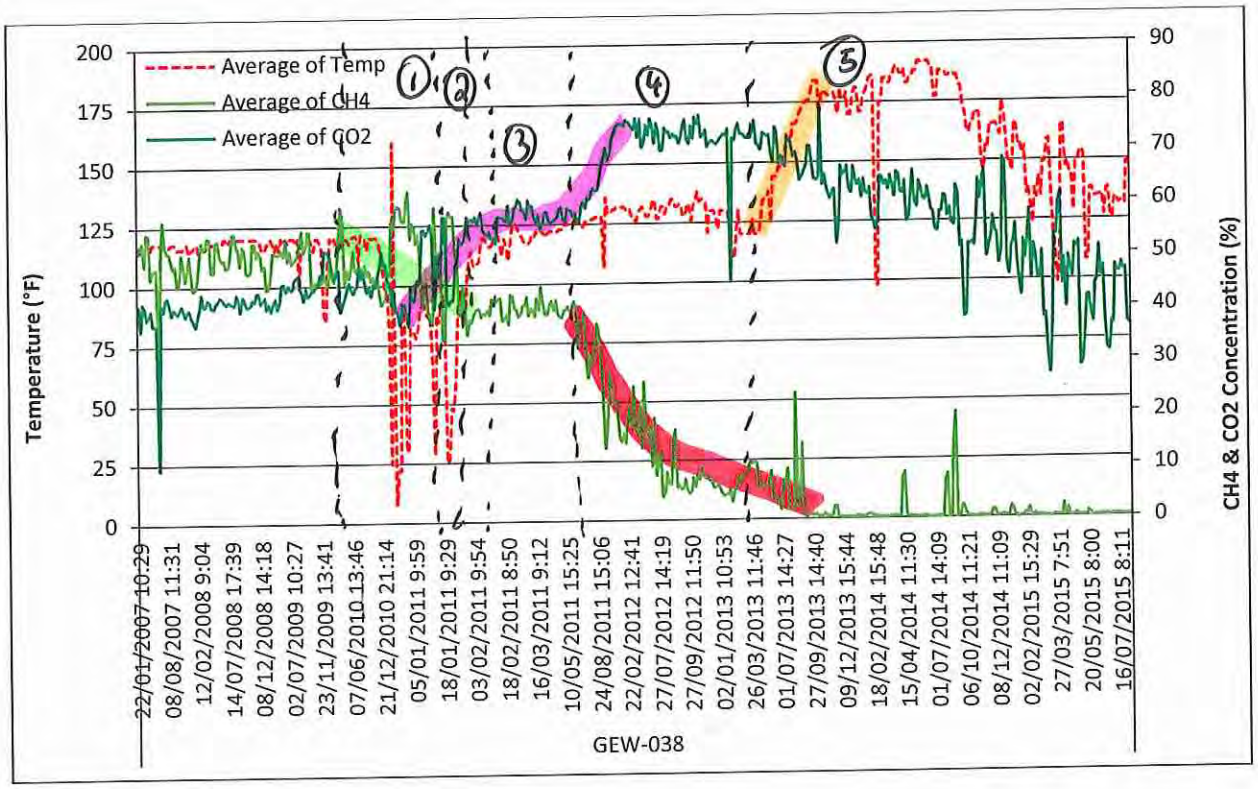

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
GEW-36

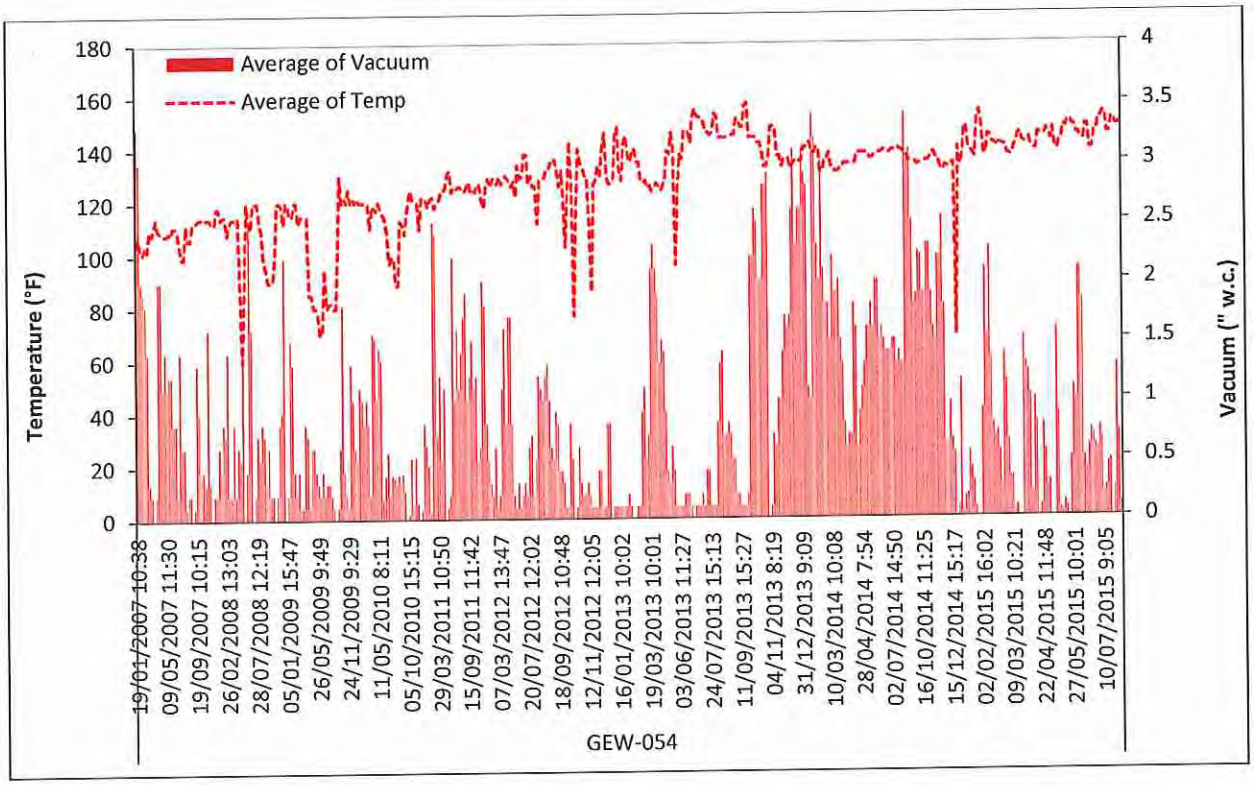

Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
GEW-36

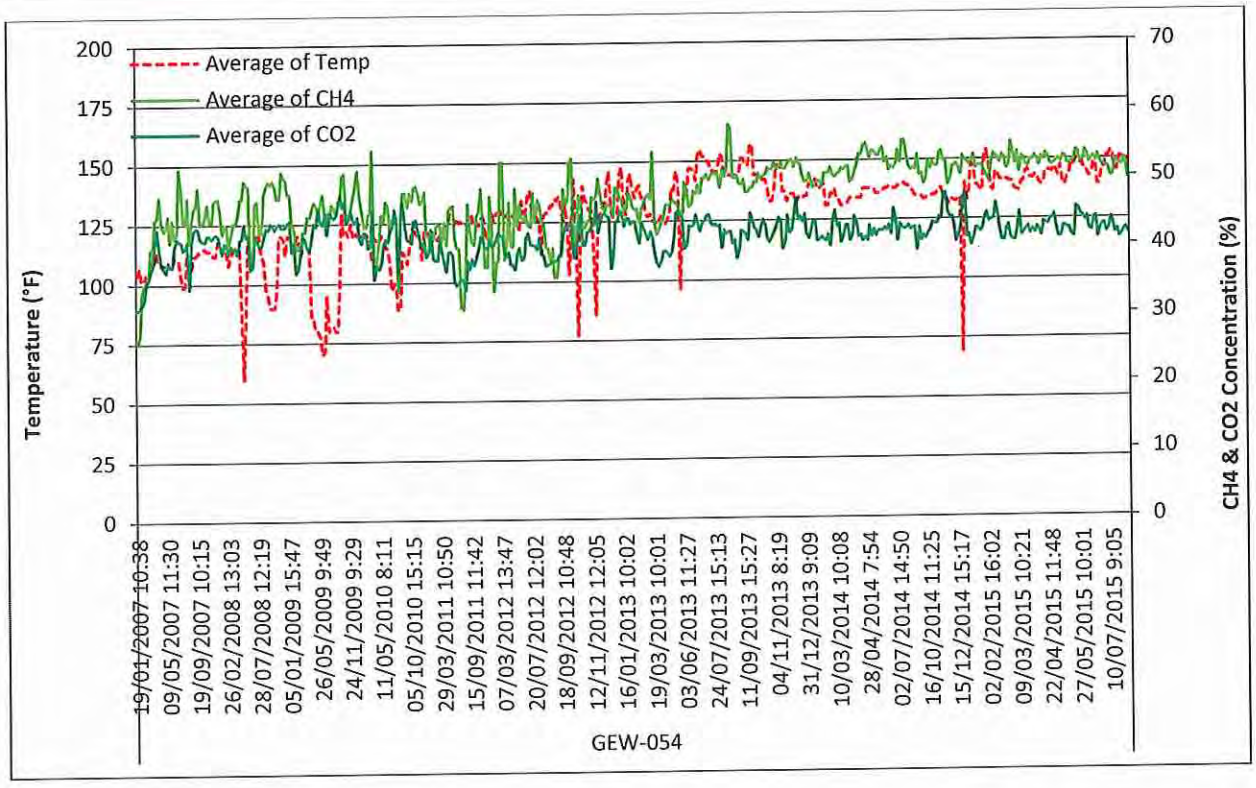

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-037

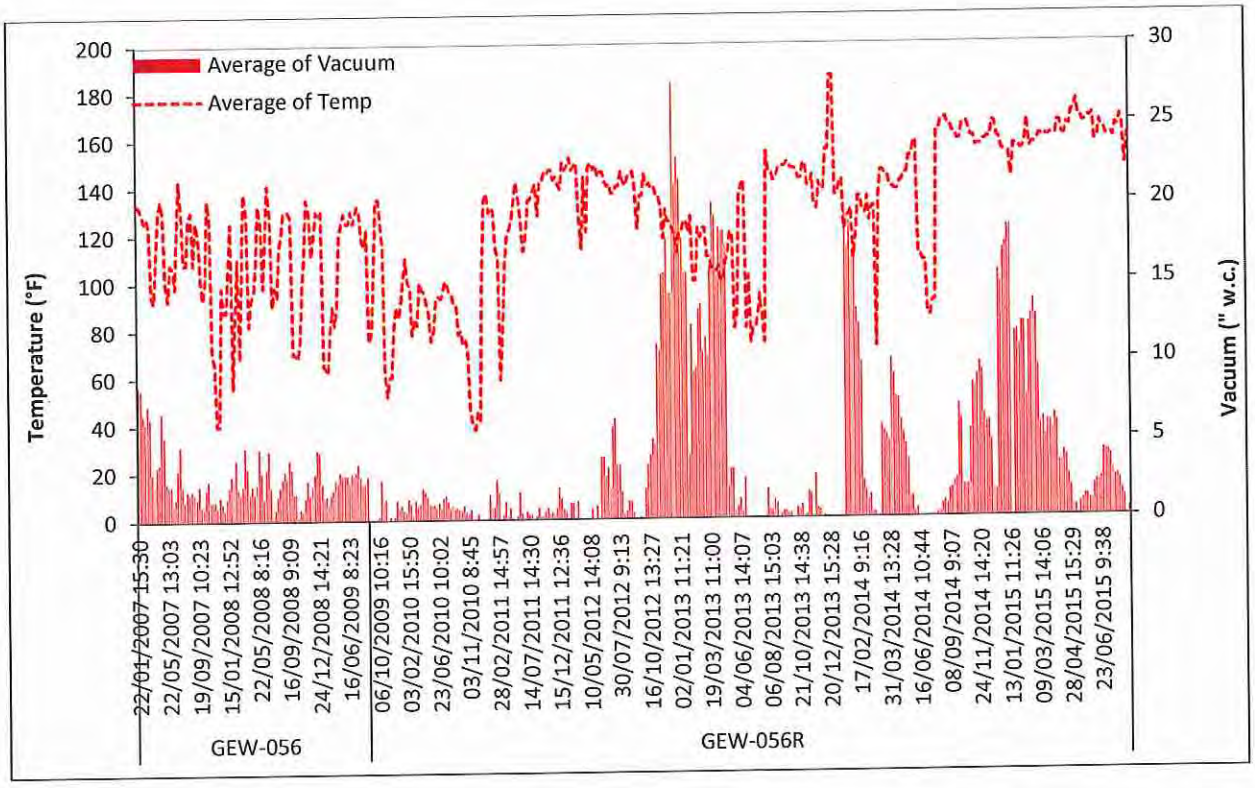

Average of Temp
Average of CH4
Average of CO2
1
2
3
4
5
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-037

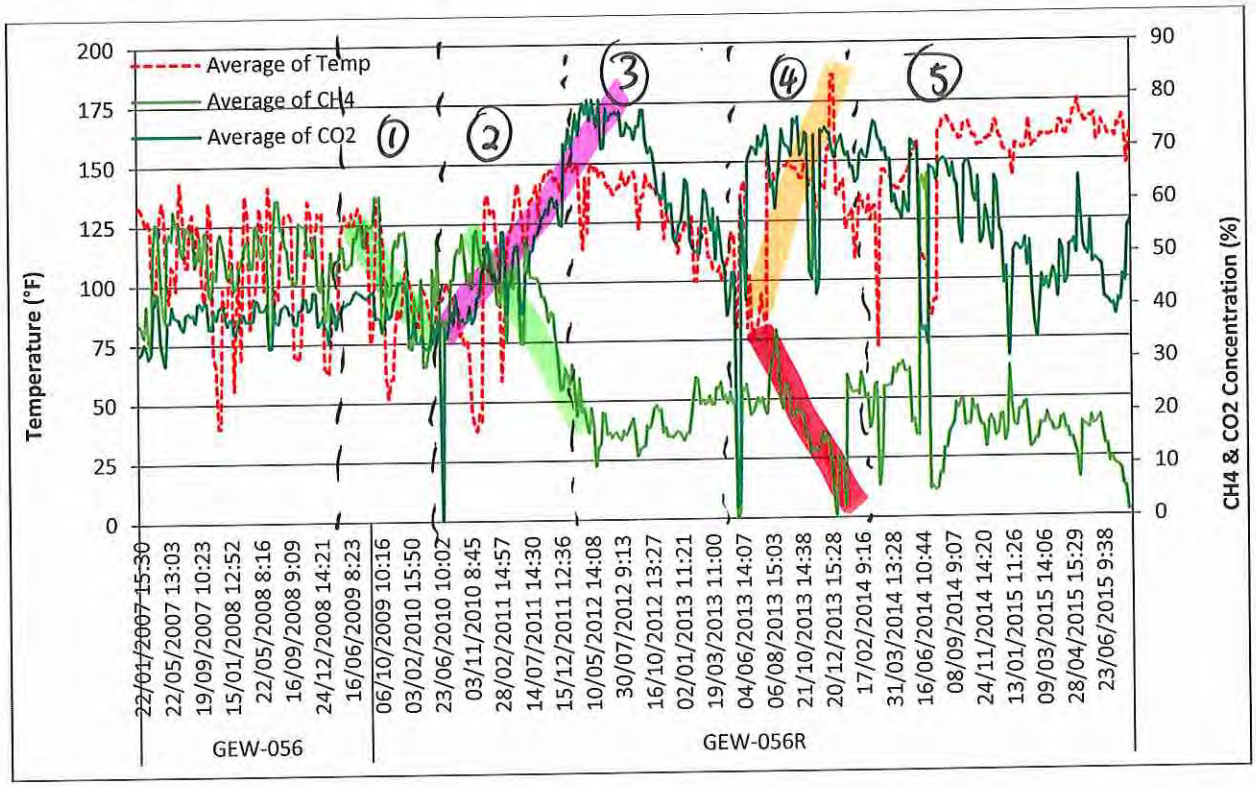

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-038

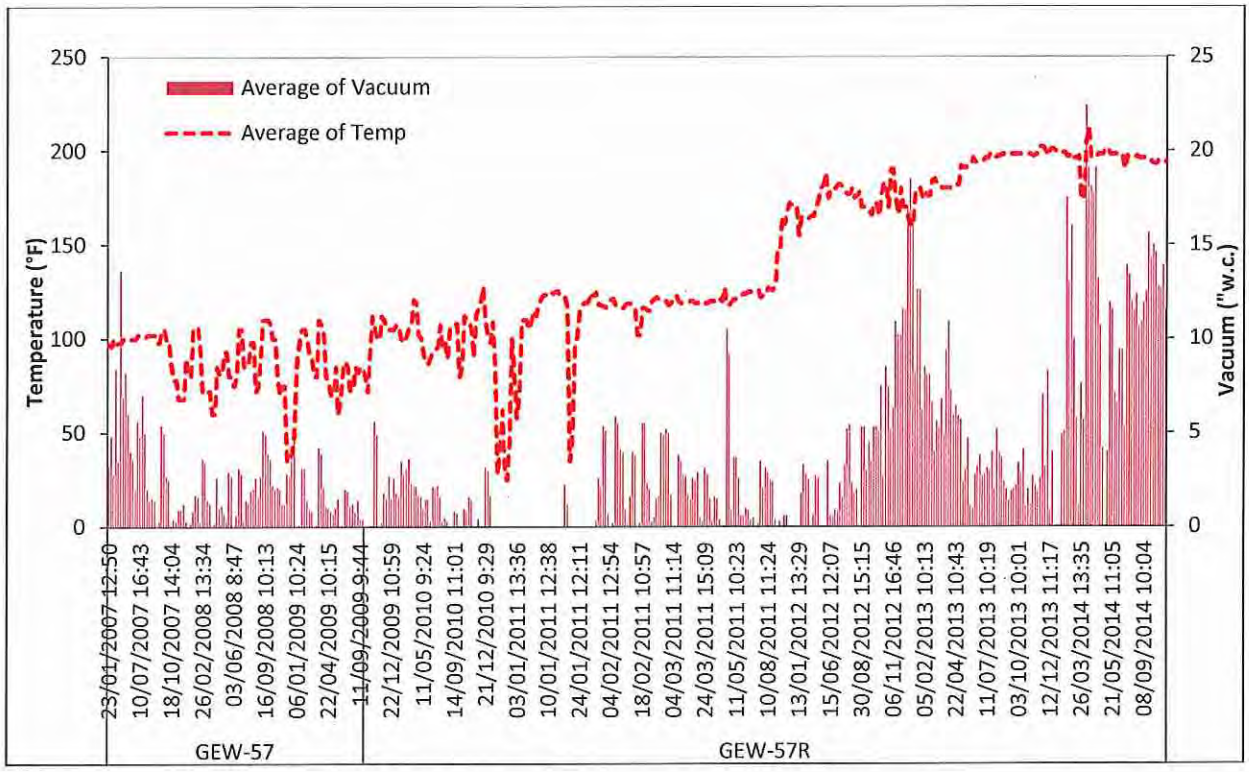

Average of Temp
Average of CH4
Average of CO2
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-038

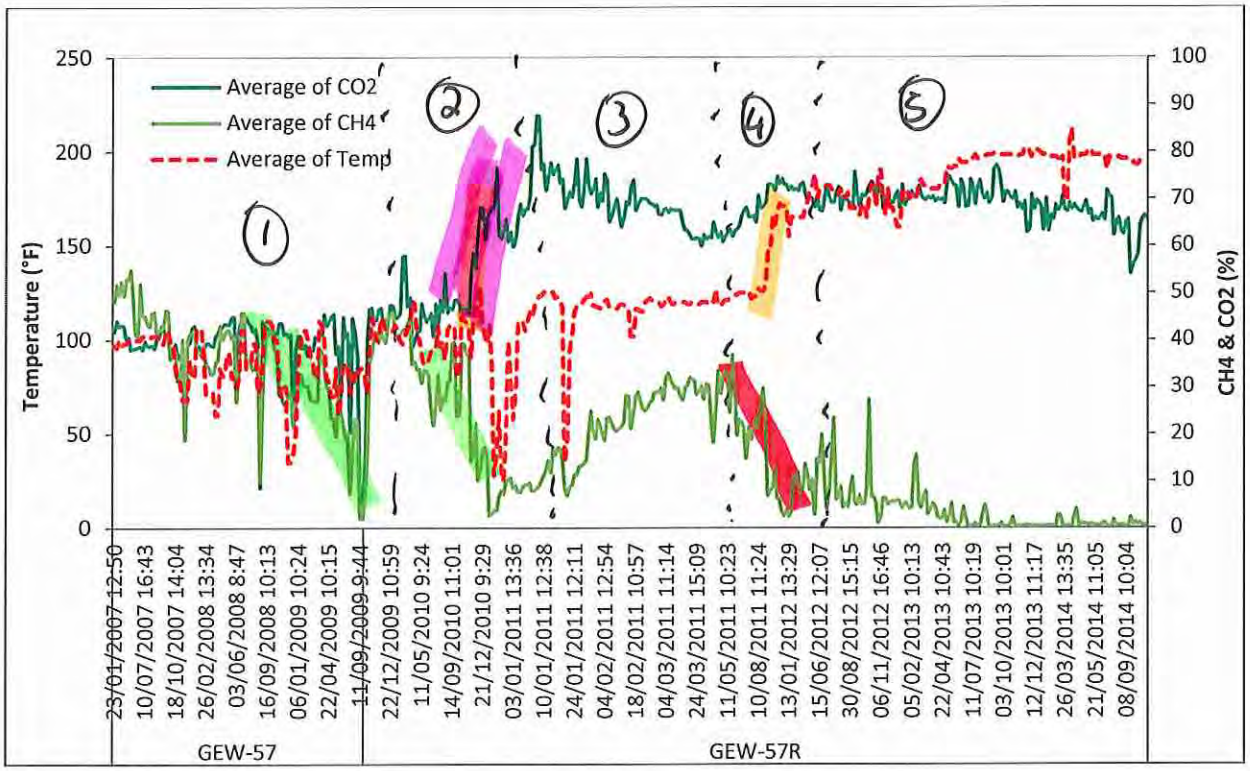

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-054

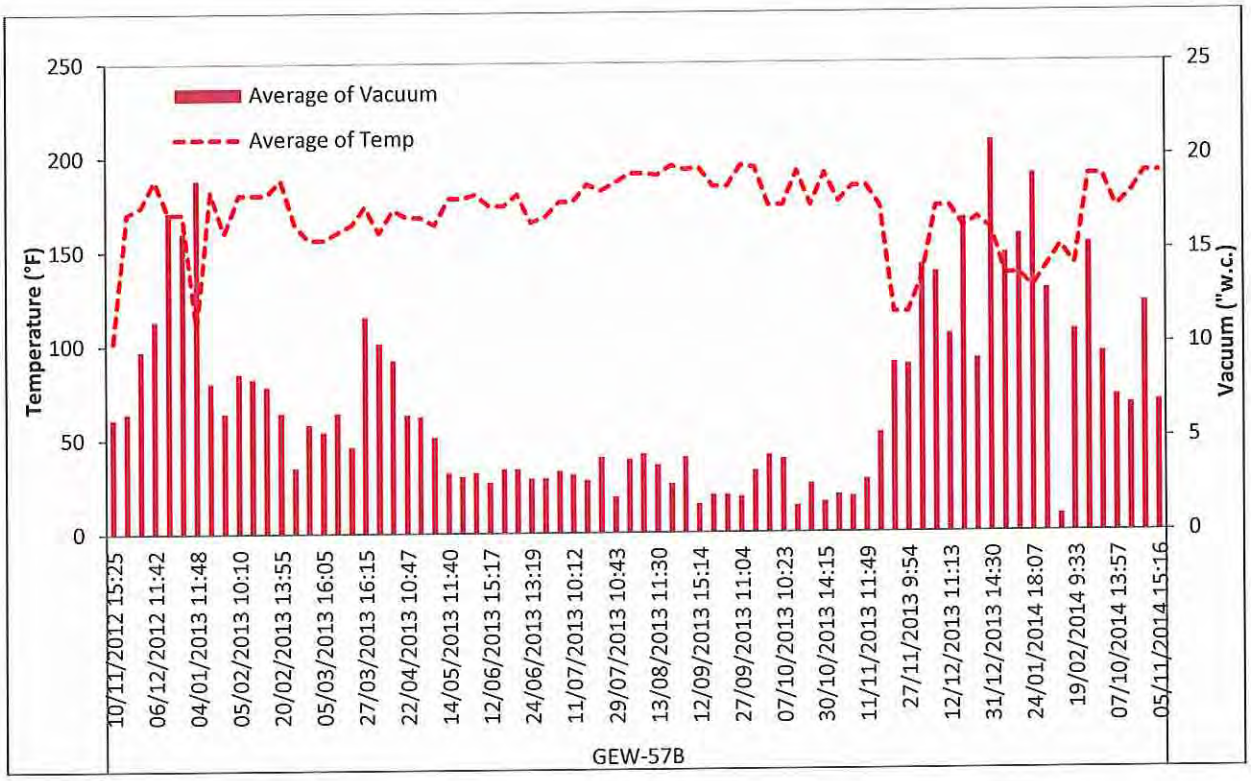

Average of Temp
Average of CH4
Average of CO2
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-054


Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-056
GEW-056R

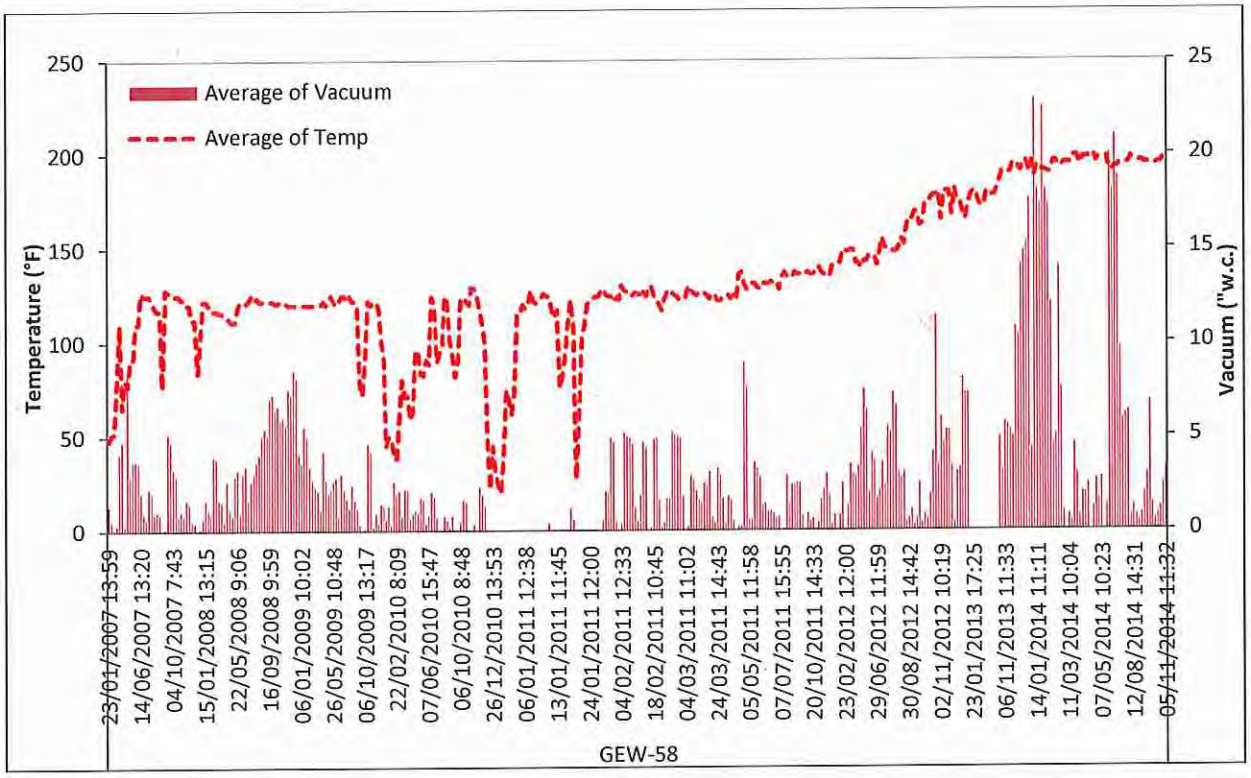

Average of Temp
Average of CH4
Average of CO2
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-056
GEW-056R

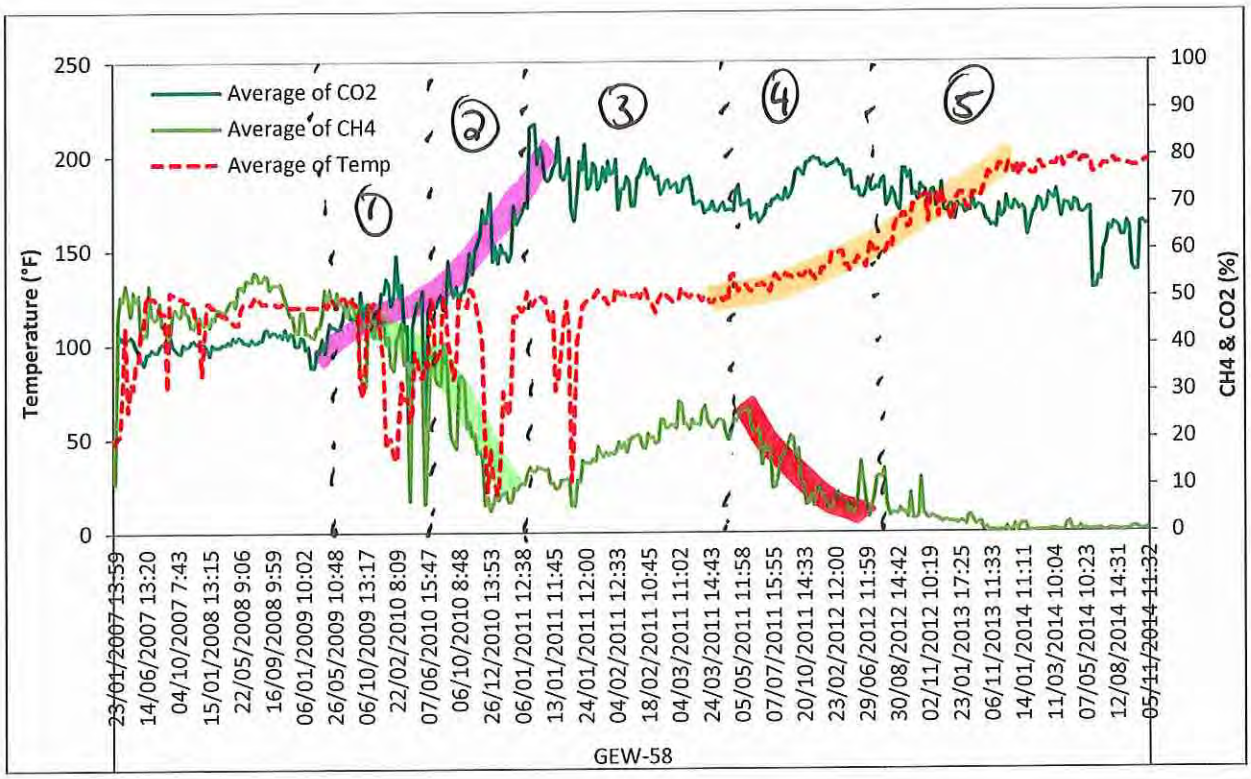

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
25
20
15
10
5
0
23/01/2007 12:50
10/07/2007 16:43
18/10/2007 14:04
26/02/2008 13:34
03/06/2008 8:47
16/09/2008 10:13
06/01/2009 10:24
22/04/2009 10:15
11/09/2009 9:44
22/12/2009 10:59
11/05/2010 9:24
14/09/2010 11:01
21/12/2010 9:29
03/01/2011 13:36
10/01/2011 12:38
24/01/2011 12:11
04/02/2011 12:54
18/02/2011 10:57
04/03/2011 11:14
24/03/2011 15:09
11/05/2011 10:23
10/08/2011 11:24
13/01/2012 13:29
15/06/2012 12:07
30/08/2012 15:15
06/11/2012 16:46
05/02/2013 10:13
22/04/2013 10:43
11/07/2013 10:19
03/10/2013 10:01
12/12/2013 11:17
26/03/2014 13:35
21/05/2014 11:05
08/09/2014 10:04
GEW-57
GEW-57R

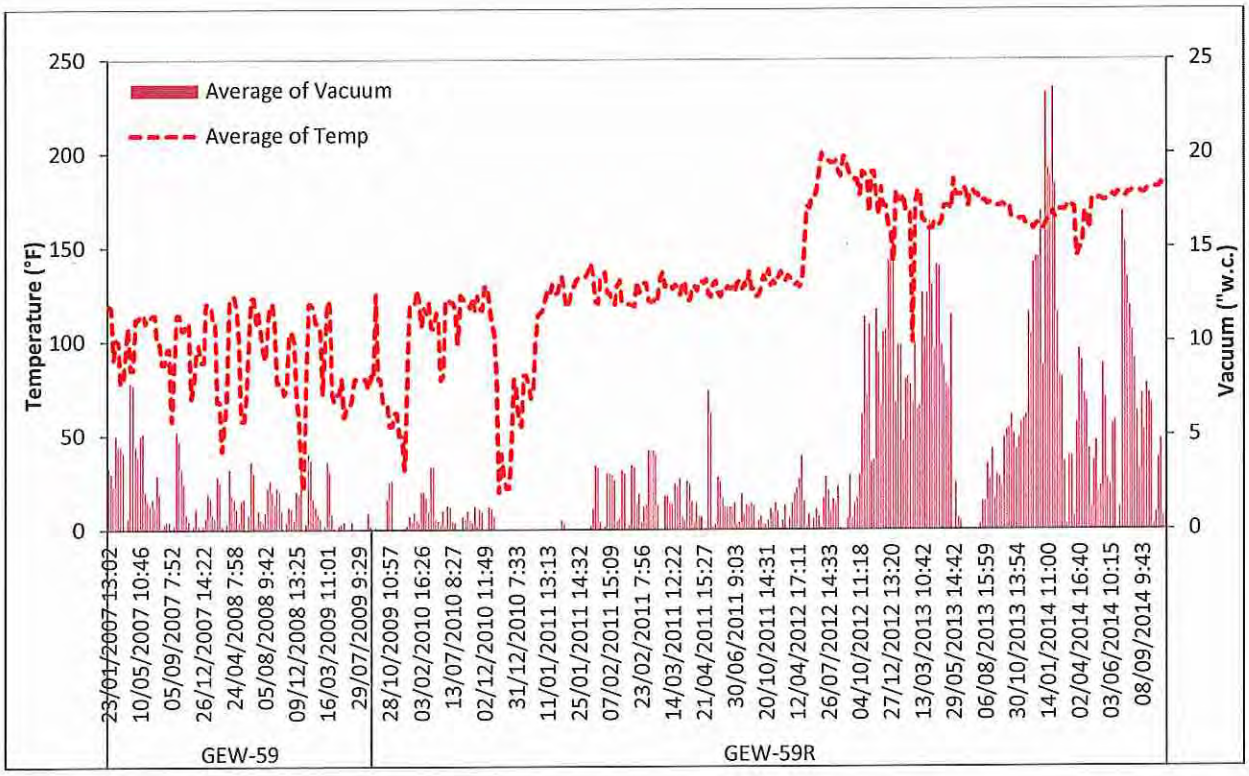

Average of CO2
Average of CH4
Average of Temp
1
2
3
4
5
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
100
90
80
70
60
50
40
30
20
10
0
23/01/2007 12:50
10/07/2007 16:43
18/10/2007 14:04
26/02/2008 13:34
03/06/2008 8:47
16/09/2008 10:13
06/01/2009 10:24
22/04/2009 10:15
11/09/2009 9:44
22/12/2009 10:59
11/05/2010 9:24
14/09/2010 11:01
21/12/2010 9:29
03/01/2011 13:36
10/01/2011 12:38
24/01/2011 12:11
04/02/2011 12:54
18/02/2011 10:57
04/03/2011 11:14
24/03/2011 15:09
11/05/2011 10:23
10/08/2011 11:24
13/01/2012 13:29
15/06/2012 12:07
30/08/2012 15:15
06/11/2012 16:46
05/02/2013 10:13
22/04/2013 10:43
11/07/2013 10:19
03/10/2013 10:01
12/12/2013 11:17
26/03/2014 13:35
21/05/2014 11:05
08/09/2014 10:04
GEW-57
GEW-57R

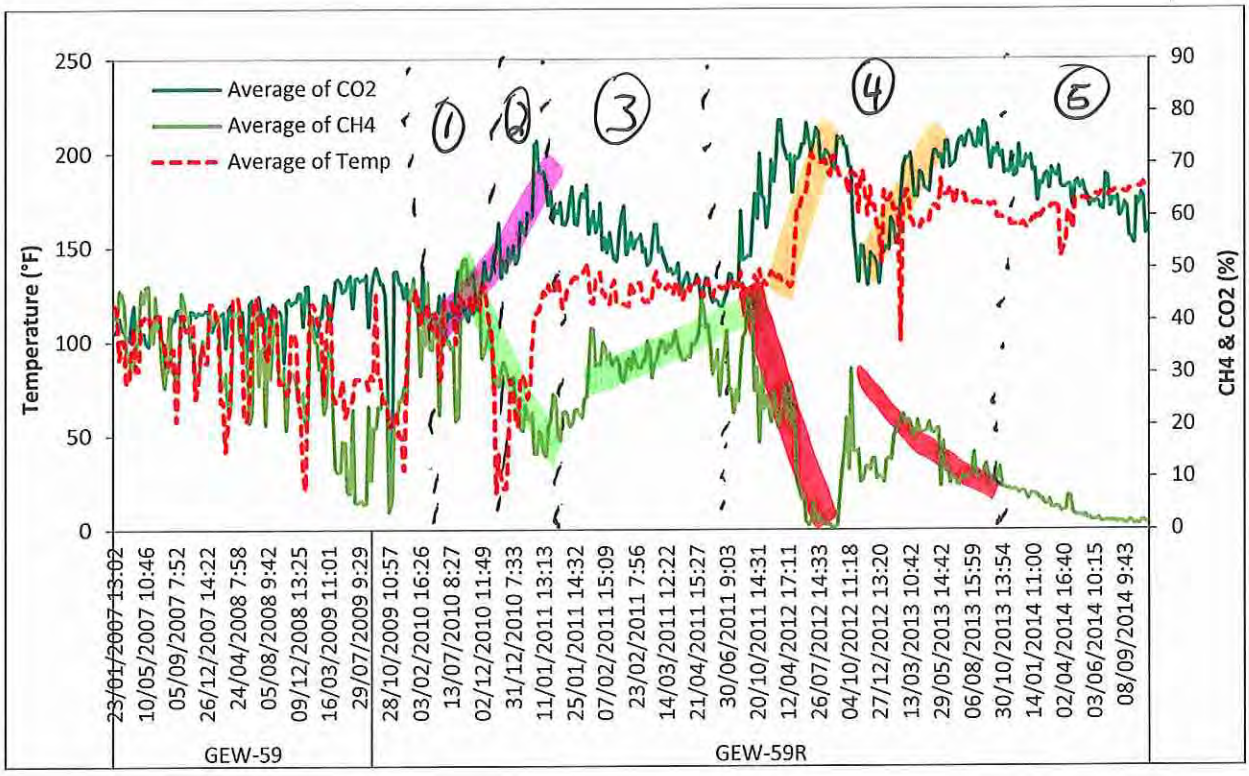

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
25
20
15
10
5
0
10/11/2012 15:25
06/12/2012 11:42
04/01/2013 11:48
05/02/2013 10:10
20/02/2013 13:55
05/03/2013 16:05
27/03/2013 16:15
22/04/2013 10:47
14/05/2013 11:40
12/06/2013 15:17
24/06/2013 13:19
11/07/2013 10:12
29/07/2013 10:43
13/08/2013 11:30
12/09/2013 15:14
27/09/2013 11:04
07/10/2013 10:23
30/10/2013 14:15
11/11/2013 11:49
27/11/2013 9:54
12/12/2013 11:13
31/12/2013 14:30
24/01/2014 18:07
19/02/2014 9:33
07/10/2014 13:57
05/11/2014 15:16
GEW-57B

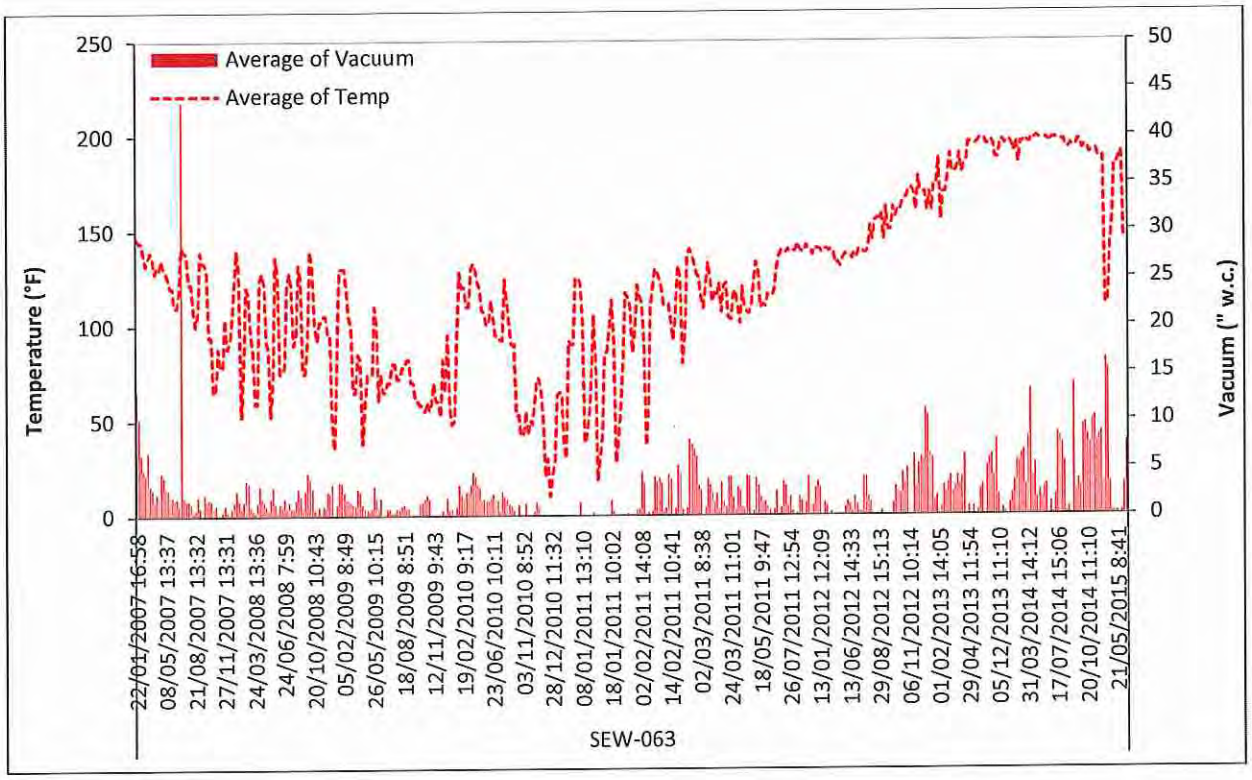

Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
90
80
70
60
50
40
30
20
10
0
3
10/11/2012 15:25
06/12/2012 11:42
04/01/2013 11:48
05/02/2013 10:10
20/02/2013 13:55
05/03/2013 16:05
27/03/2013 16:15
22/04/2013 10:47
14/05/2013 11:40
12/06/2013 15:17
24/06/2013 13:19
11/07/2013 10:12
29/07/2013 10:43
13/08/2013 11:30
12/09/2013 15:14
27/09/2013 11:04
07/10/2013 10:23
30/10/2013 14:15
11/11/2013 11:49
27/11/2013 9:54
12/12/2013 11:13
31/12/2013 14:30
24/01/2014 18:07
19/02/2014 9:33
07/10/2014 13:57
05/11/2014 15:16
GEW-57B

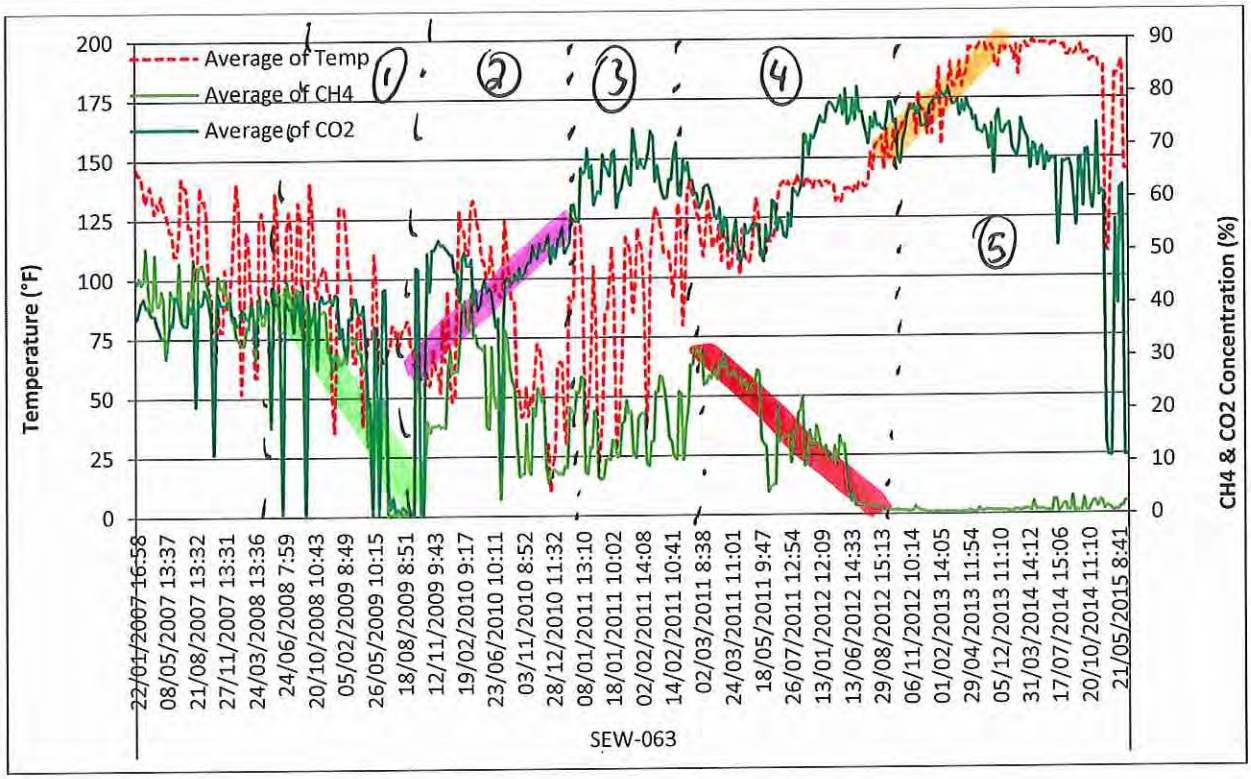

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
25
20
15
10
5
0
23/01/2007 13:59
14/06/2007 13:20
04/10/2007 7:43
15/01/2008 13:15
22/05/2008 9:06
16/09/2008 9:59
06/01/2009 10:02
26/05/2009 10:48
06/10/2009 13:17
22/02/2010 8:09
07/06/2010 15:47
06/10/2010 8:48
26/12/2010 13:53
06/01/2011 12:38
13/01/2011 11:45
24/01/2011 12:00
04/02/2011 12:33
18/02/2011 10:45
04/03/2011 11:02
24/03/2011 14:43
05/05/2011 11:58
07/07/2011 15:55
20/10/2011 14:33
23/02/2012 12:00
29/06/2012 11:59
30/08/2012 14:42
02/11/2012 10:19
23/01/2013 17:25
06/11/2013 11:33
14/01/2014 11:11
11/03/2014 10:04
07/05/2014 10:23
12/08/2014 14:31
05/11/2014 11:32
GEW-58

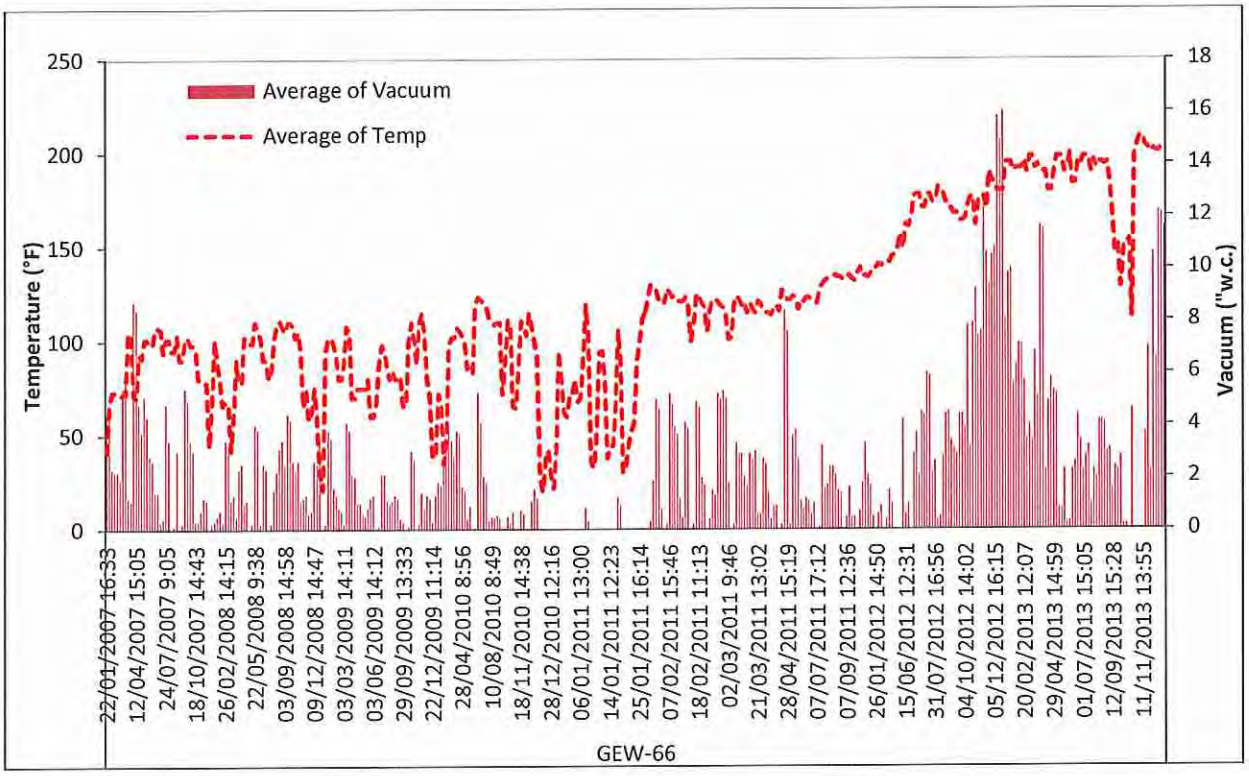

Average of CO2
Average of CH4
Average of Temp
1
2
3
4
5
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
100
90
80
70
60
50
40
30
20
10
0
23/01/2007 13:59
14/06/2007 13:20
04/10/2007 7:43
15/01/2008 13:15
22/05/2008 9:06
16/09/2008 9:59
06/01/2009 10:02
26/05/2009 10:48
06/10/2009 13:17
22/02/2010 8:09
07/06/2010 15:47
06/10/2010 8:48
26/12/2010 13:53
06/01/2011 12:38
13/01/2011 11:45
24/01/2011 12:00
04/02/2011 12:33
18/02/2011 10:45
04/03/2011 11:02
24/03/2011 14:43
05/05/2011 11:58
07/07/2011 15:55
20/10/2011 14:33
23/02/2012 12:00
29/06/2012 11:59
30/08/2012 14:42
02/11/2012 10:19
23/01/2013 17:25
06/11/2013 11:33
14/01/2014 11:11
11/03/2014 10:04
07/05/2014 10:23
12/08/2014 14:31
05/11/2014 11:32
GEW-58

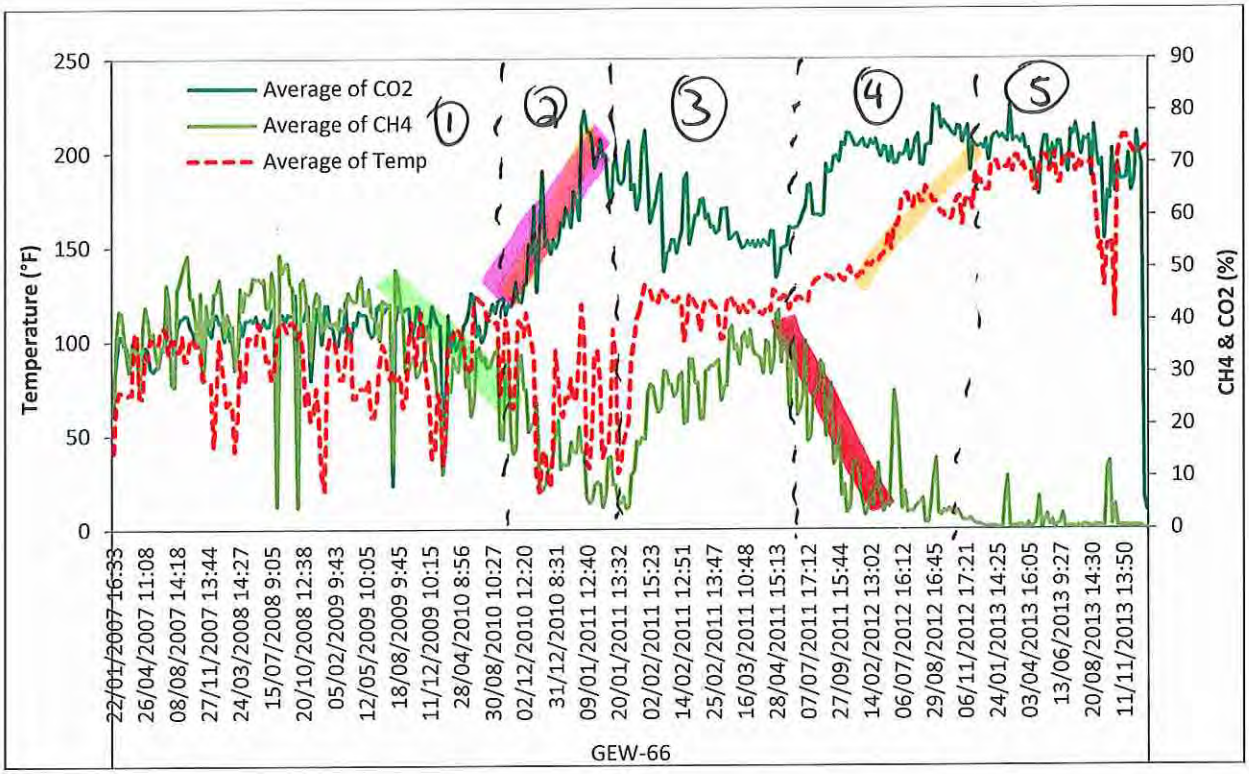

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
25
20
15
10
5
0
23/01/2007 13:02
10/05/2007 10:46
05/09/2007 7:52
26/12/2007 14:22
24/04/2008 7:58
05/08/2008 9:42
09/12/2008 13:25
16/03/2009 11:01
29/07/2009 9:29
28/10/2009 10:57
03/02/2010 16:26
13/07/2010 8:27
02/12/2010 11:49
31/12/2010 7:33
11/01/2011 13:13
25/01/2011 14:32
07/02/2011 15:09
23/02/2011 7:56
14/03/2011 12:22
21/04/2011 15:27
30/06/2011 9:03
20/10/2011 14:31
12/04/2012 17:11
26/07/2012 14:33
04/10/2012 11:18
27/12/2012 13:20
13/03/2013 10:42
29/05/2013 14:42
06/08/2013 15:59
30/10/2013 13:54
14/01/2014 11:00
02/04/2014 16:40
03/06/2014 10:15
08/09/2014 9:43
GEW-59
GEW-59R

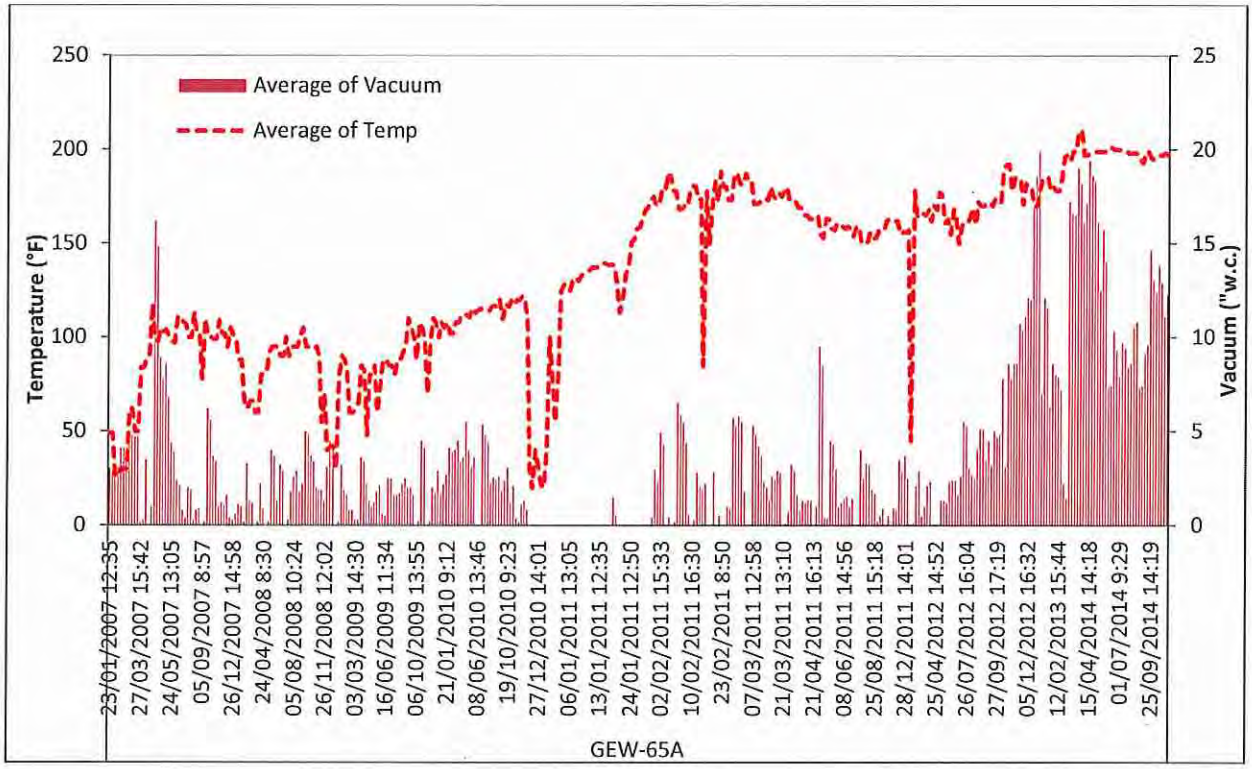

Average of CO2
Average of CH4
Average of Temp
1
2
3
4
5
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
90
80
70
60
50
40
30
20
10
0
23/01/2007 13:02
10/05/2007 10:46
05/09/2007 7:52
26/12/2007 14:22
24/04/2008 7:58
05/08/2008 9:42
09/12/2008 13:25
16/03/2009 11:01
29/07/2009 9:29
28/10/2009 10:57
03/02/2010 16:26
13/07/2010 8:27
02/12/2010 11:49
31/12/2010 7:33
11/01/2011 13:13
25/01/2011 14:32
07/02/2011 15:09
23/02/2011 7:56
14/03/2011 12:22
21/04/2011 15:27
30/06/2011 9:03
20/10/2011 14:31
12/04/2012 17:11
26/07/2012 14:33
04/10/2012 11:18
27/12/2012 13:20
13/03/2013 10:42
29/05/2013 14:42
06/08/2013 15:59
30/10/2013 13:54
14/01/2014 11:00
02/04/2014 16:40
03/06/2014 10:15
08/09/2014 9:43
GEW-59
GEW-59R

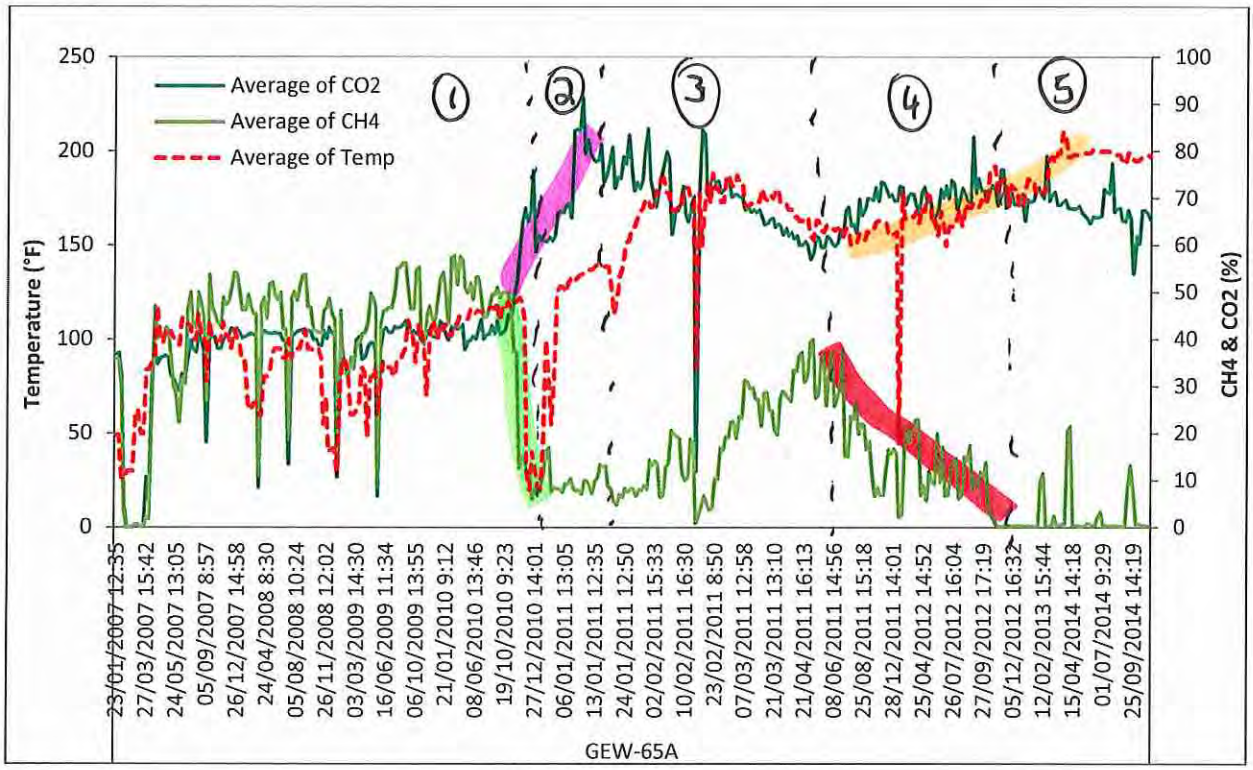

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
250
200
150
100
50
0
50
45
40
35
30
25
20
15
10
5
0
22/01/2007 16:58
08/05/2007 13:37
21/08/2007 13:32
27/11/2007 13:31
24/03/2008 13:36
24/06/2008 7:59
20/10/2008 10:43
05/02/2009 8:49
26/05/2009 10:15
18/08/2009 8:51
12/11/2009 9:43
19/02/2010 9:17
23/06/2010 10:11
03/11/2010 8:52
28/12/2010 11:32
08/01/2011 13:10
18/01/2011 10:02
02/02/2011 14:08
14/02/2011 10:41
02/03/2011 8:38
24/03/2011 11:01
18/05/2011 9:47
26/07/2011 12:54
13/01/2012 12:09
13/06/2012 14:33
29/08/2012 15:13
06/11/2012 10:14
01/02/2013 14:05
29/04/2013 11:54
05/12/2013 11:10
31/03/2014 14:12
17/07/2014 15:06
20/10/2014 11:10
21/05/2015 8:41
SEW-063

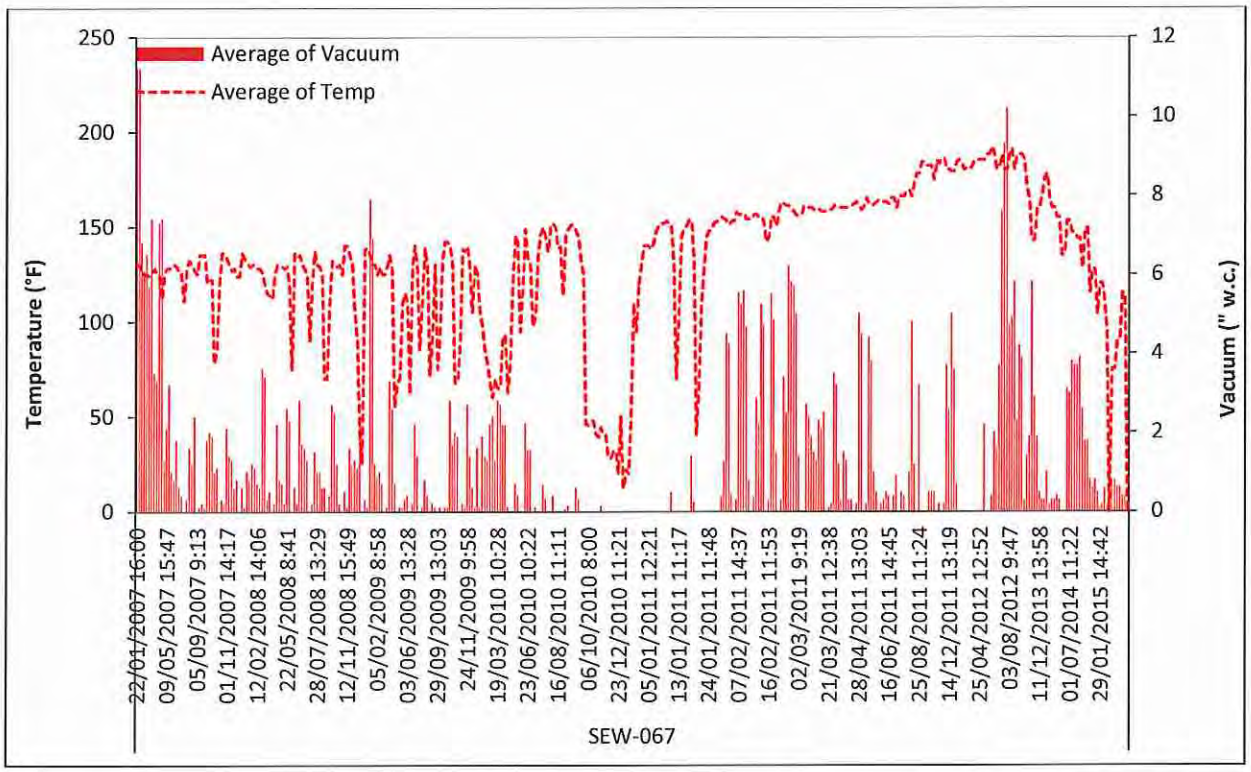

Average of Temp
Average of CH4
Average of CO2
1
2
3
4
5
Temperature (°F)
CH4 & CO2 Concentration (%)
200
175
150
125
100
75
50
25
0
90
80
70
60
50
40
30
20
10
0
22/01/2007 16:58
08/05/2007 13:37
21/08/2007 13:32
27/11/2007 13:31
24/03/2008 13:36
24/06/2008 7:59
20/10/2008 10:43
05/02/2009 8:49
26/05/2009 10:15
18/08/2009 8:51
12/11/2009 9:43
19/02/2010 9:17
23/06/2010 10:11
03/11/2010 8:52
28/12/2010 11:32
08/01/2011 13:10
18/01/2011 10:02
02/02/2011 14:08
14/02/2011 10:41
02/03/2011 8:38
24/03/2011 11:01
18/05/2011 9:47
26/07/2011 12:54
13/01/2012 12:09
13/06/2012 14:33
29/08/2012 15:13
06/11/2012 10:14
01/02/2013 14:05
29/04/2013 11:54
05/12/2013 11:10
31/03/2014 14:12
17/07/2014 15:06
20/10/2014 11:10
21/05/2015 8:41
SEW-063

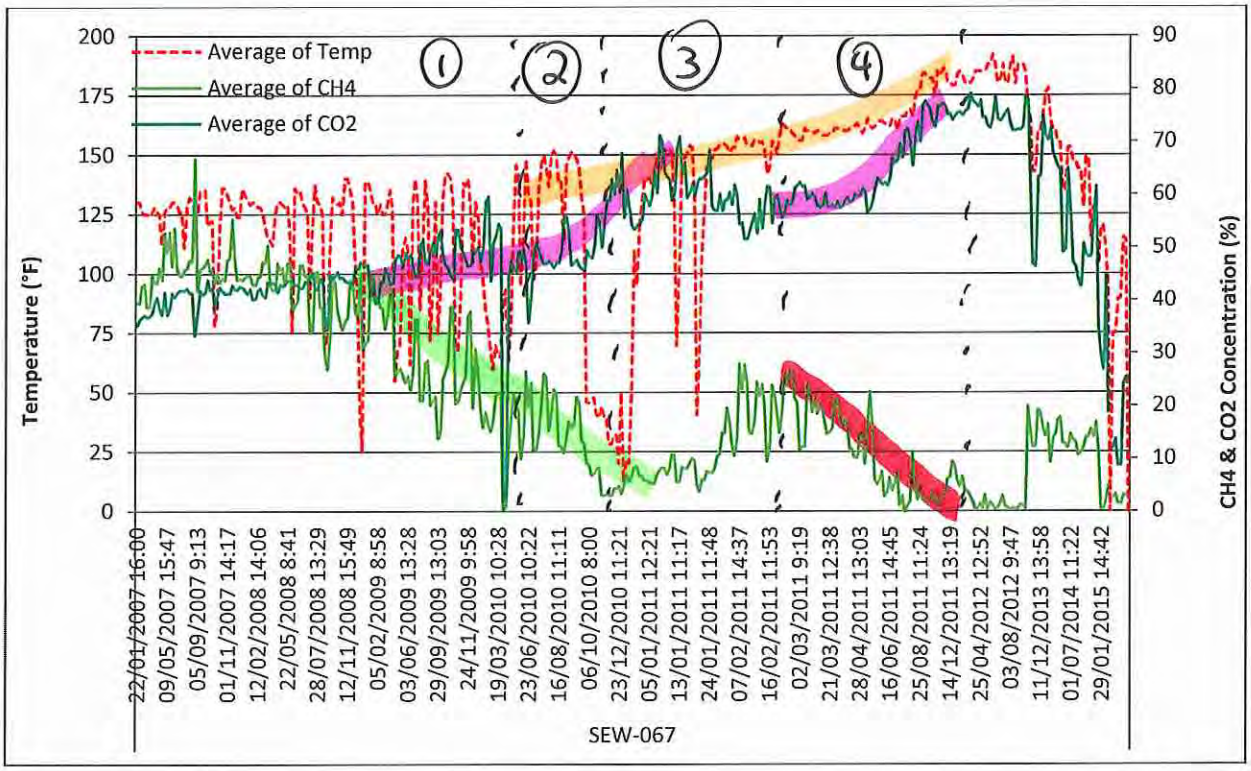

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
GEW-66

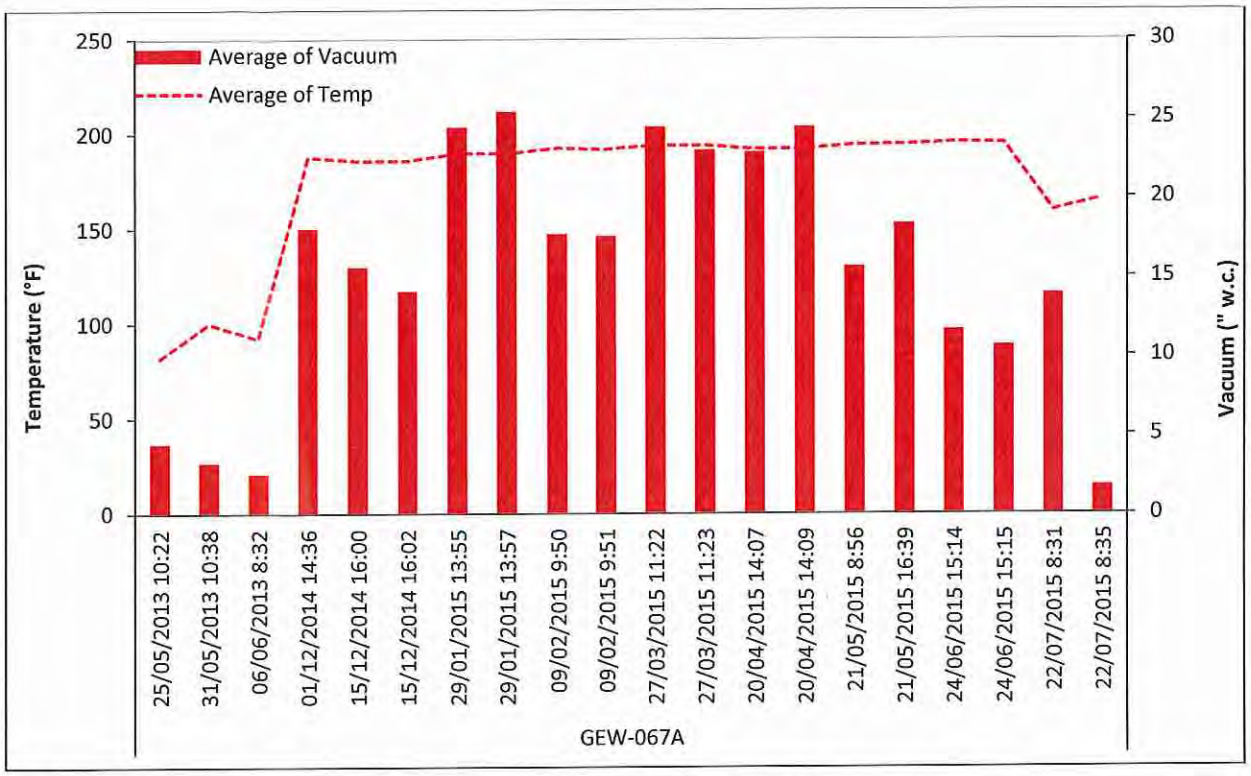

Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
GEW-66

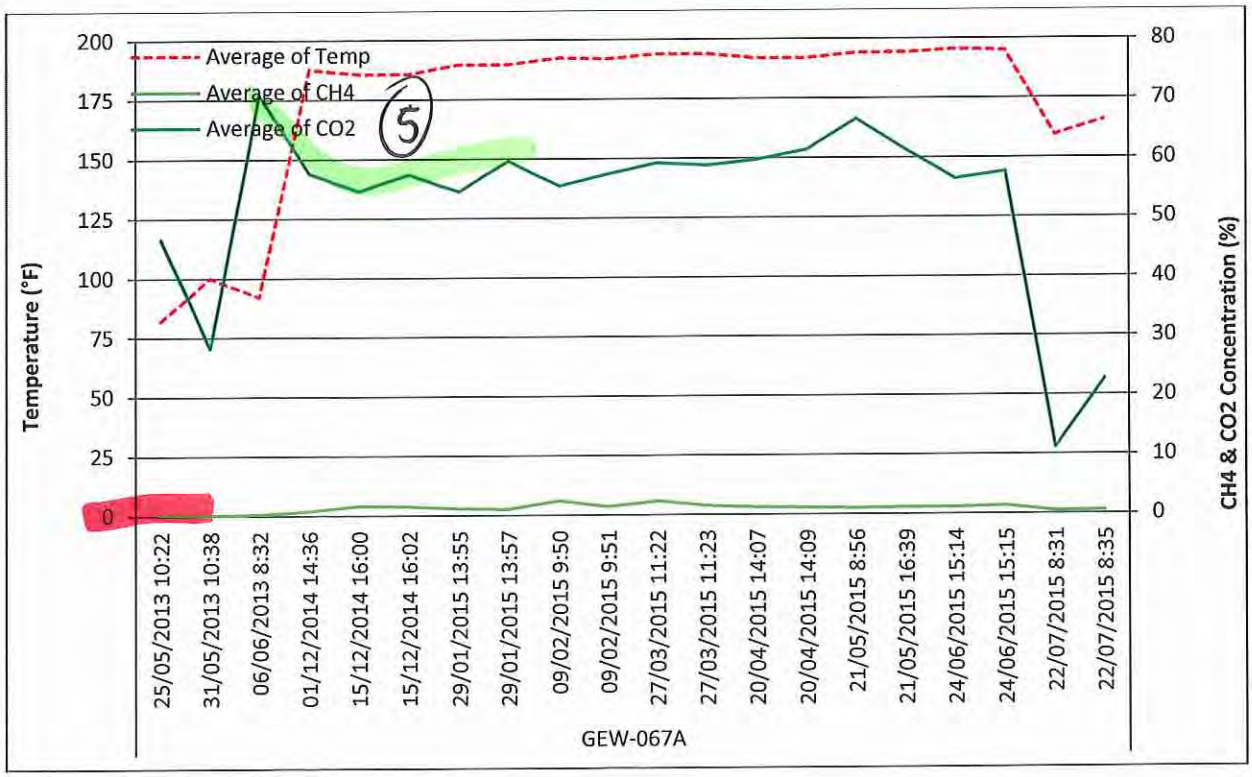

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
25
20
15
10
5
0
23/01/2007 12:35
27/03/2007 15:42
24/05/2007 13:05
05/09/2007 8:57
26/12/2007 14:58
24/04/2008 8:30
05/08/2008 10:24
26/11/2008 12:02
03/03/2009 14:30
16/06/2009 11:34
06/10/2009 13:55
21/01/2010 9:12
08/06/2010 13:46
19/10/2010 9:23
27/12/2010 14:01
06/01/2011 13:05
13/01/2011 12:35
24/01/2011 12:50
02/02/2011 15:33
10/02/2011 16:30
23/02/2011 8:50
07/03/2011 12:58
21/03/2011 13:10
21/04/2011 16:13
08/06/2011 14:56
25/08/2011 15:18
28/12/2011 14:01
25/04/2012 14:52
26/07/2012 16:04
27/09/2012 17:19
05/12/2012 16:32
12/02/2013 15:44
15/04/2014 14:18
01/07/2014 9:29
25/09/2014 14:19
GEW-65A

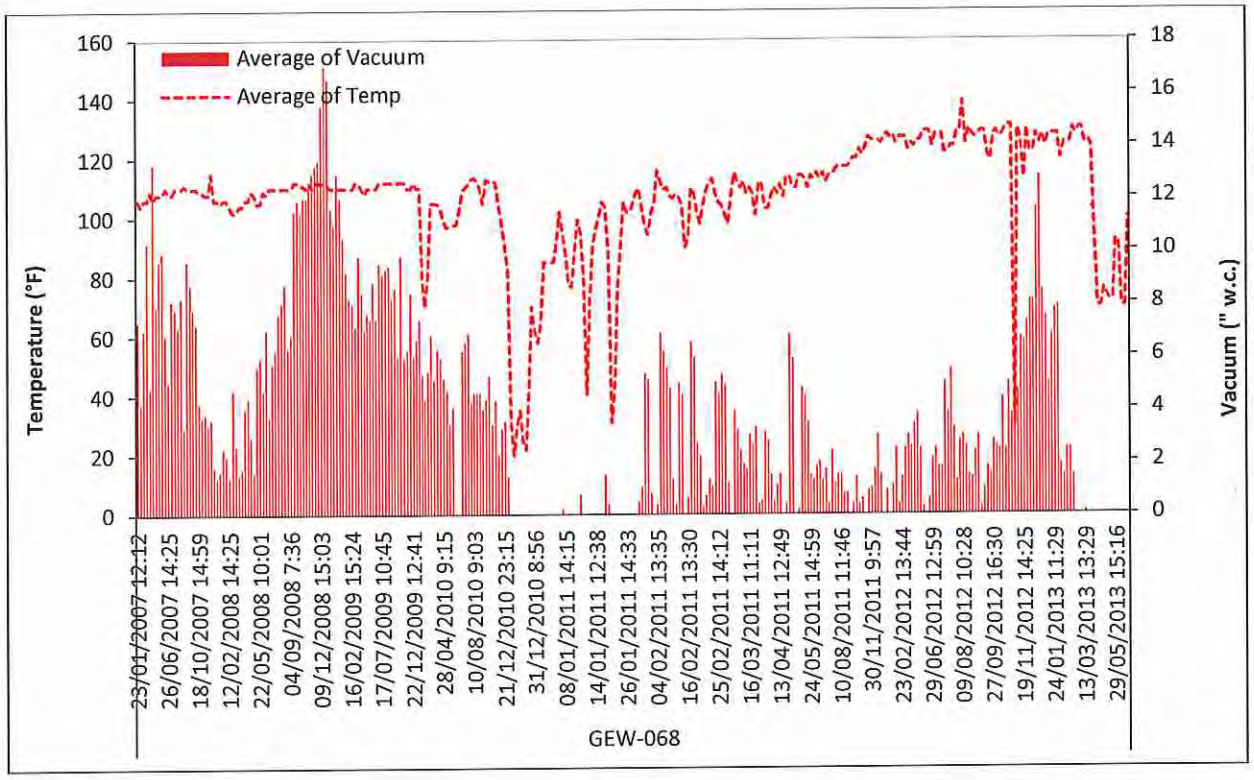

Average of CO2
Average of CH4
Average of Temp
1
2
3
4
5
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
100
90
80
70
60
50
40
30
20
10
0
23/01/2007 12:35
27/03/2007 15:42
24/05/2007 13:05
05/09/2007 8:57
26/12/2007 14:58
24/04/2008 8:30
05/08/2008 10:24
26/11/2008 12:02
03/03/2009 14:30
16/06/2009 11:34
06/10/2009 13:55
21/01/2010 9:12
08/06/2010 13:46
19/10/2010 9:23
27/12/2010 14:01
06/01/2011 13:05
13/01/2011 12:35
24/01/2011 12:50
02/02/2011 15:33
10/02/2011 16:30
23/02/2011 8:50
07/03/2011 12:58
21/03/2011 13:10
21/04/2011 16:13
08/06/2011 14:56
25/08/2011 15:18
28/12/2011 14:01
25/04/2012 14:52
26/07/2012 16:04
27/09/2012 17:19
05/12/2012 16:32
12/02/2013 15:44
15/04/2014 14:18
01/07/2014 9:29
25/09/2014 14:19
GEW-65A

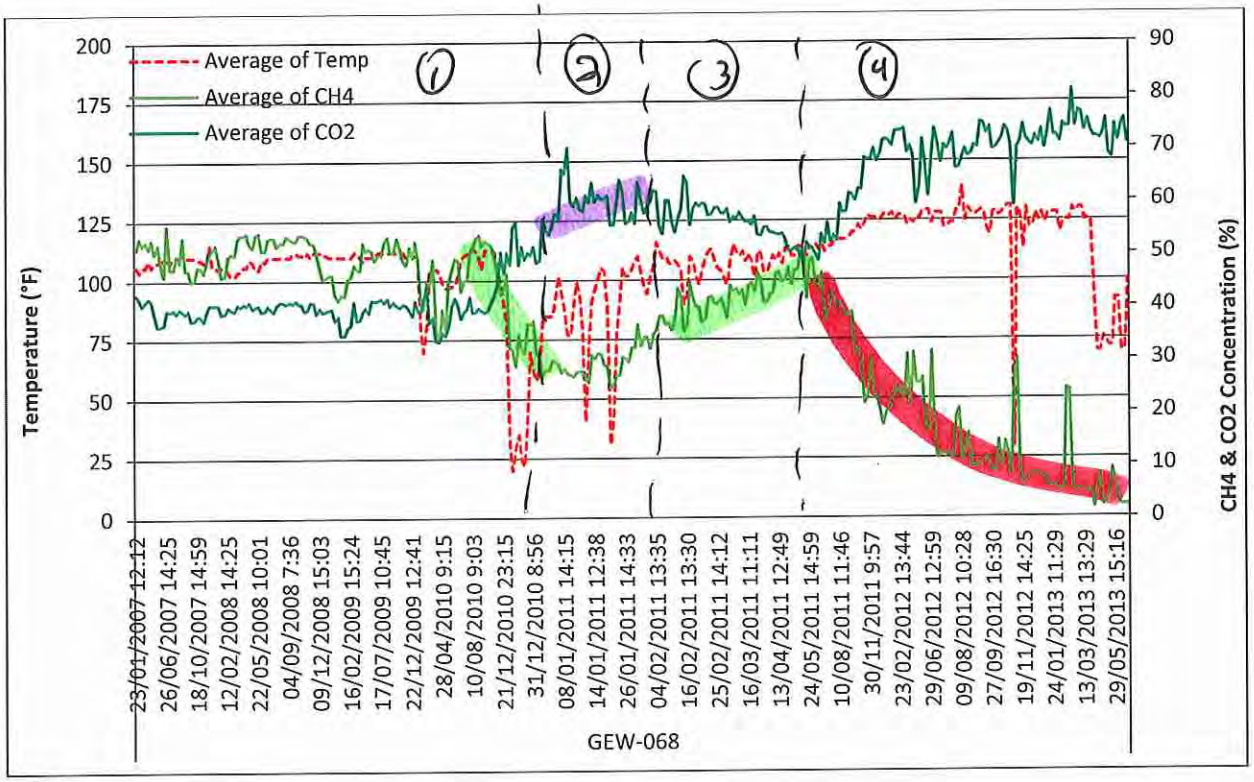

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
250
200
150
100
50
0
12
10
8
6
4
2
0
22/01/2007 16:00
09/05/2007 15:47
05/09/2007 9:13
01/11/2007 14:17
12/02/2008 14:06
22/05/2008 8:41
28/07/2008 13:29
12/11/2008 15:49
05/02/2009 8:58
03/06/2009 13:28
29/09/2009 13:03
24/11/2009 9:58
19/03/2010 10:28
23/06/2010 10:22
16/08/2010 11:11
06/10/2010 8:00
23/12/2010 11:21
05/01/2011 12:21
13/01/2011 11:17
24/01/2011 11:48
07/02/2011 14:37
16/02/2011 11:53
02/03/2011 9:19
21/03/2011 12:38
28/04/2011 13:03
16/06/2011 14:45
25/08/2011 11:24
14/12/2011 13:19
25/04/2012 12:52
03/08/2012 9:47
11/12/2013 13:58
01/07/2014 11:22
29/01/2015 14:42
SEW-067

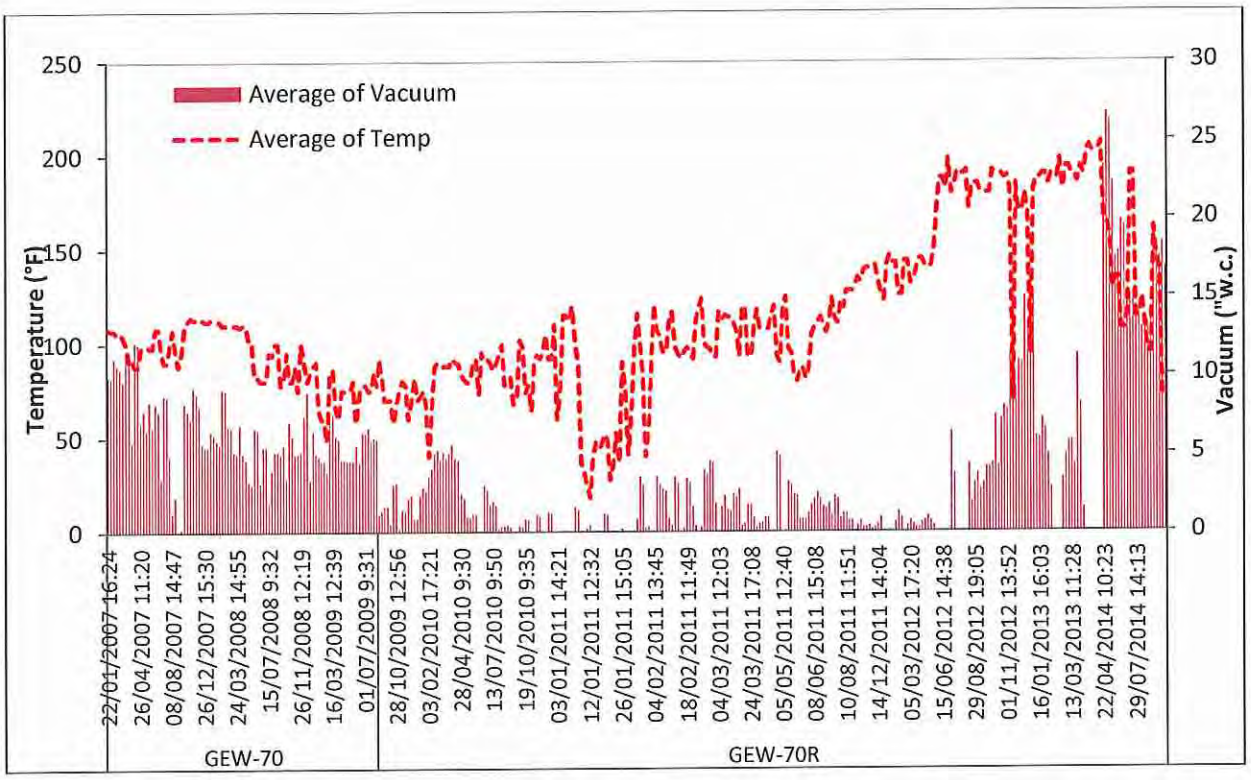

Average of Temp
Average of CH4
Average of CO2
① ② ③ ④
Temperature (°F)
CH4 & CO2 Concentration (%)
200
175
150
125
100
75
50
25
0
90
80
70
60
50
40
30
20
10
0
22/01/2007 16:00
09/05/2007 15:47
05/09/2007 9:13
01/11/2007 14:17
12/02/2008 14:06
22/05/2008 8:41
28/07/2008 13:29
12/11/2008 15:49
05/02/2009 8:58
03/06/2009 13:28
29/09/2009 13:03
24/11/2009 9:58
19/03/2010 10:28
23/06/2010 10:22
16/08/2010 11:11
06/10/2010 8:00
23/12/2010 11:21
05/01/2011 12:21
13/01/2011 11:17
24/01/2011 11:48
07/02/2011 14:37
16/02/2011 11:53
02/03/2011 9:19
21/03/2011 12:38
28/04/2011 13:03
16/06/2011 14:45
25/08/2011 11:24
14/12/2011 13:19
25/04/2012 12:52
03/08/2012 9:47
11/12/2013 13:58
01/07/2014 11:22
29/01/2015 14:42
SEW-067

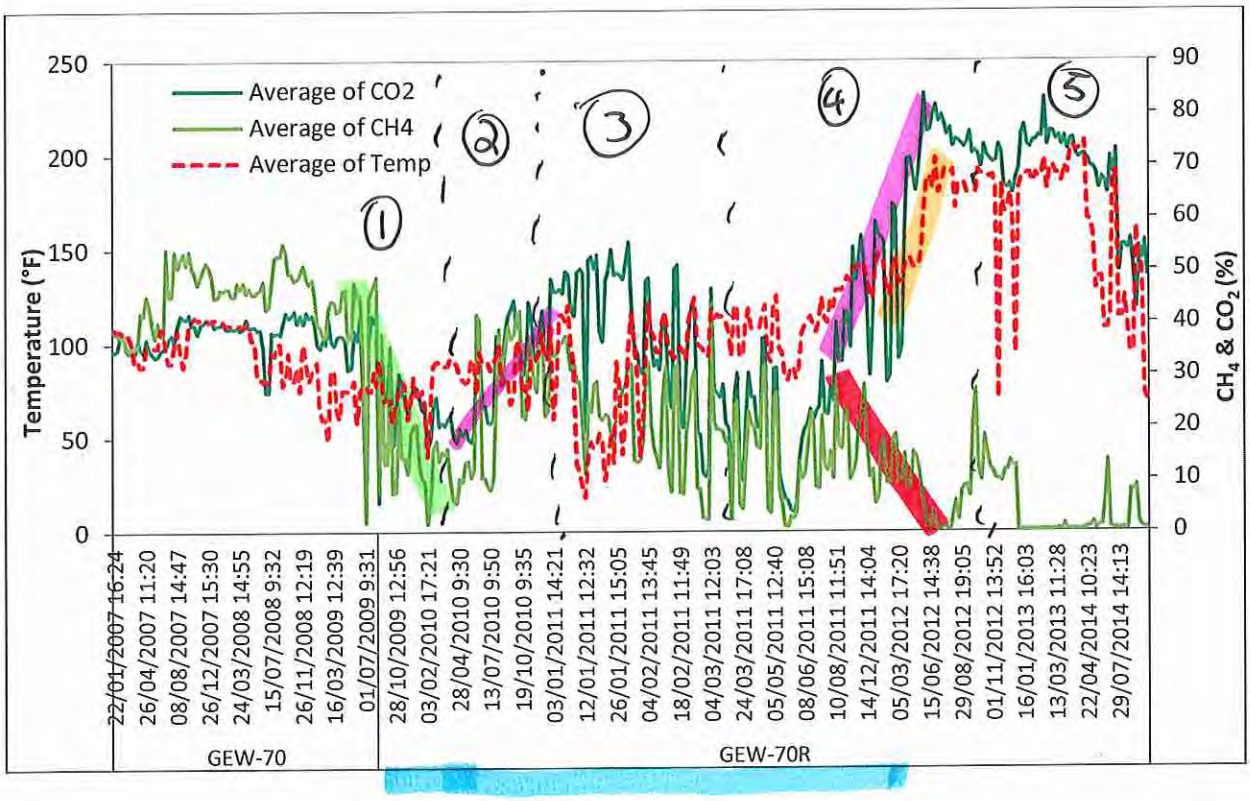

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
250
200
150
100
50
0
30
25
20
15
10
5
0
25/05/2013 10:22
31/05/2013 10:38
06/06/2013 8:32
01/12/2014 14:36
15/12/2014 16:00
15/12/2014 16:02
29/01/2015 13:55
29/01/2015 13:57
09/02/2015 9:50
09/02/2015 9:51
27/03/2015 11:22
27/03/2015 11:23
20/04/2015 14:07
20/04/2015 14:09
21/05/2015 8:56
21/05/2015 16:39
24/06/2015 15:14
24/06/2015 15:15
22/07/2015 8:31
22/07/2015 8:35
GEW-067A

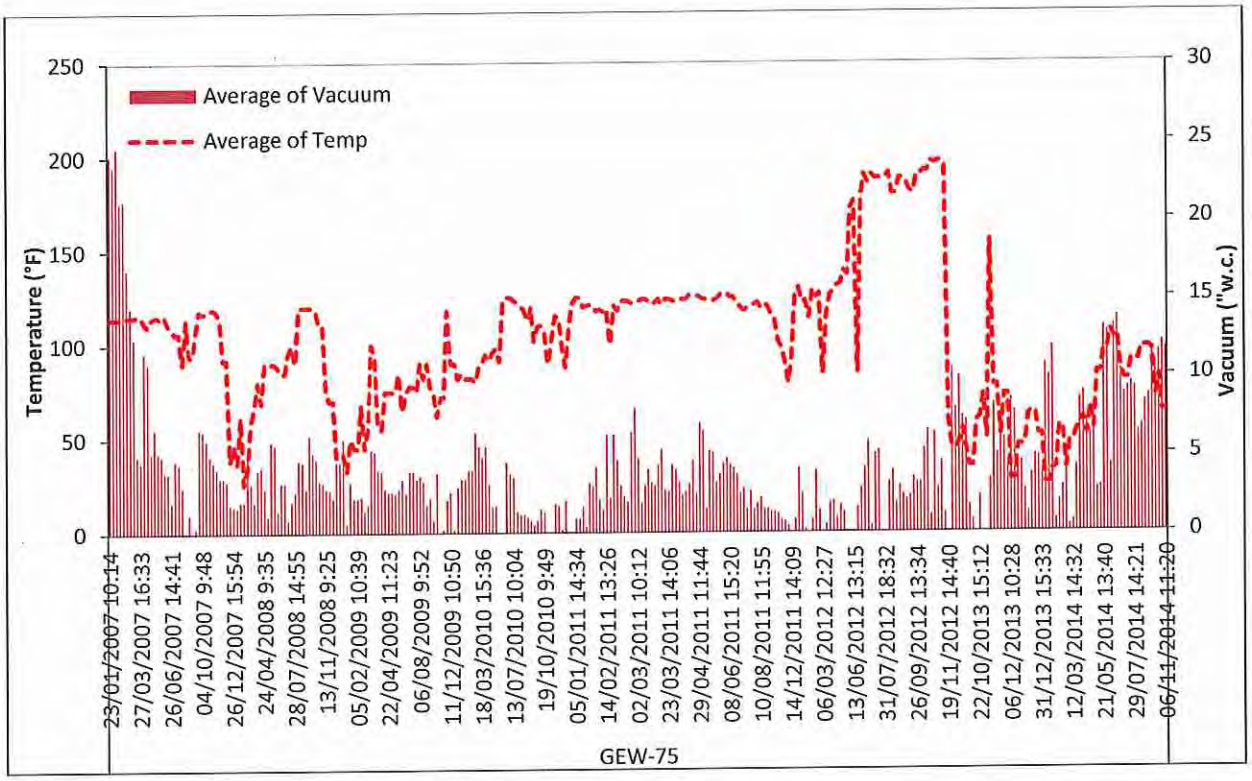

Average of Temp
Average of CH4
Average of CO2
5
Temperature (°F)
CH4 & CO2 Concentration (%)
200
175
150
125
100
75
50
25
0
80
70
60
50
40
30
20
10
0
25/05/2013 10:22
31/05/2013 10:38
06/06/2013 8:32
01/12/2014 14:36
15/12/2014 16:00
15/12/2014 16:02
29/01/2015 13:55
29/01/2015 13:57
09/02/2015 9:50
09/02/2015 9:51
27/03/2015 11:22
27/03/2015 11:23
20/04/2015 14:07
20/04/2015 14:09
21/05/2015 8:56
21/05/2015 16:39
24/06/2015 15:14
24/06/2015 15:15
22/07/2015 8:31
22/07/2015 8:35
GEW-067A

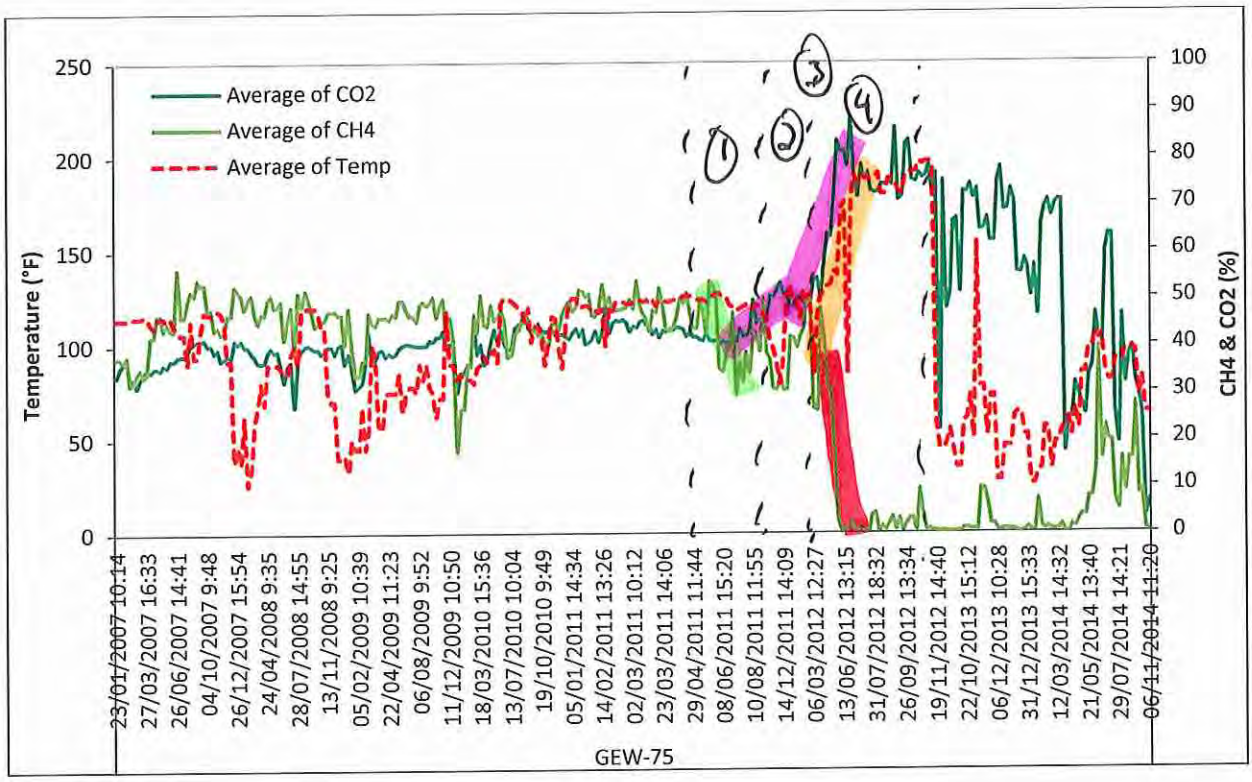

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-068

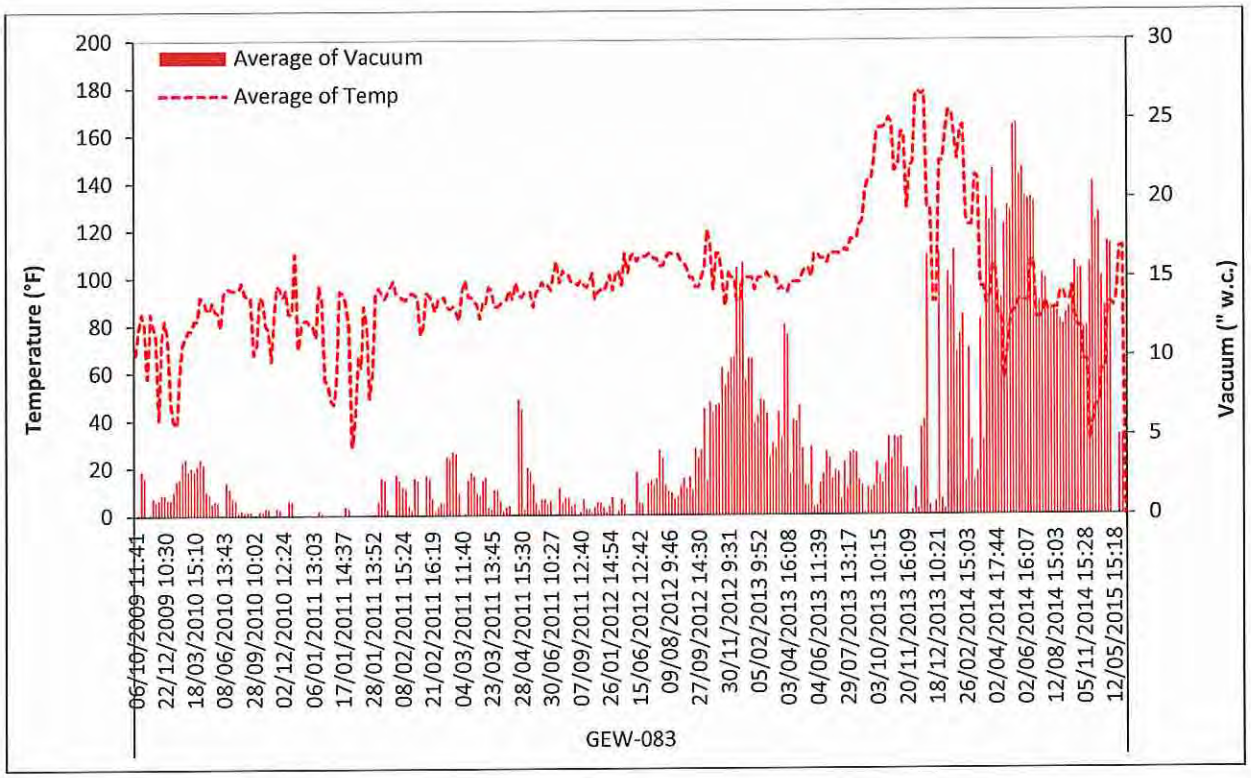

Average of Temp
Average of CH4
Average of CO2
1
2
3
4
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-068

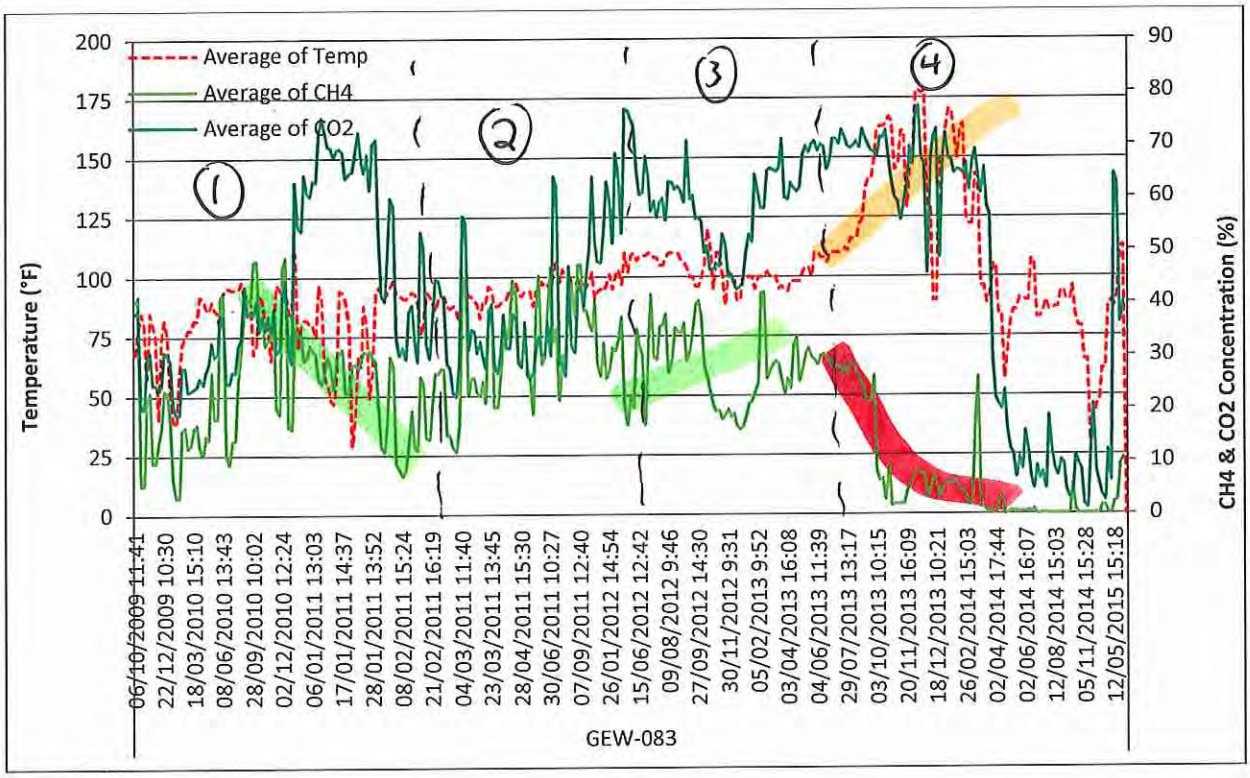

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
30
25
20
15
10
5
0
22/01/2007 16:24
26/04/2007 11:20
08/08/2007 14:47
26/12/2007 15:30
24/03/2008 14:55
15/07/2008 9:32
26/11/2008 12:19
16/03/2009 12:39
01/07/2009 9:31
28/10/2009 12:56
03/02/2010 17:21
28/04/2010 9:30
13/07/2010 9:50
19/10/2010 9:35
03/01/2011 14:21
12/01/2011 12:32
26/01/2011 15:05
04/02/2011 13:45
18/02/2011 11:49
04/03/2011 12:03
24/03/2011 17:08
05/05/2011 12:40
08/06/2011 15:08
10/08/2011 11:51
14/12/2011 14:04
05/03/2012 17:20
15/06/2012 14:38
29/08/2012 19:05
01/11/2012 13:52
16/01/2013 16:03
13/03/2013 11:28
22/04/2014 10:23
29/07/2014 14:13
GEW-70
GEW-70R

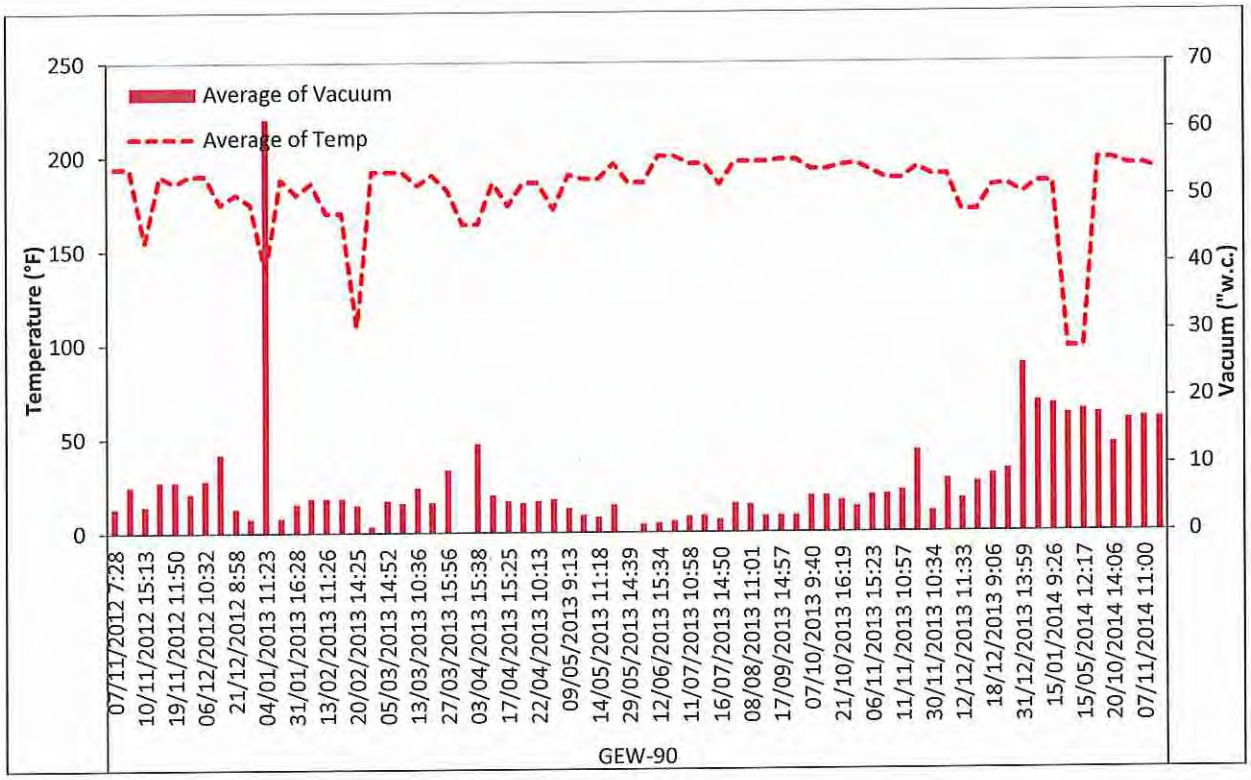

Average of CO2
Average of CH4
Average of Temp
①
②
③
④
⑤
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
90
80
70
60
50
40
30
20
10
0
22/01/2007 16:24
26/04/2007 11:20
08/08/2007 14:47
26/12/2007 15:30
24/03/2008 14:55
15/07/2008 9:32
26/11/2008 12:19
16/03/2009 12:39
01/07/2009 9:31
28/10/2009 12:56
03/02/2010 17:21
28/04/2010 9:30
13/07/2010 9:50
19/10/2010 9:35
03/01/2011 14:21
12/01/2011 12:32
26/01/2011 15:05
04/02/2011 13:45
18/02/2011 11:49
04/03/2011 12:03
24/03/2011 17:08
05/05/2011 12:40
08/06/2011 15:08
10/08/2011 11:51
14/12/2011 14:04
05/03/2012 17:20
15/06/2012 14:38
29/08/2012 19:05
01/11/2012 13:52
16/01/2013 16:03
13/03/2013 11:28
22/04/2014 10:23
29/07/2014 14:13
GEW-70
GEW-70R

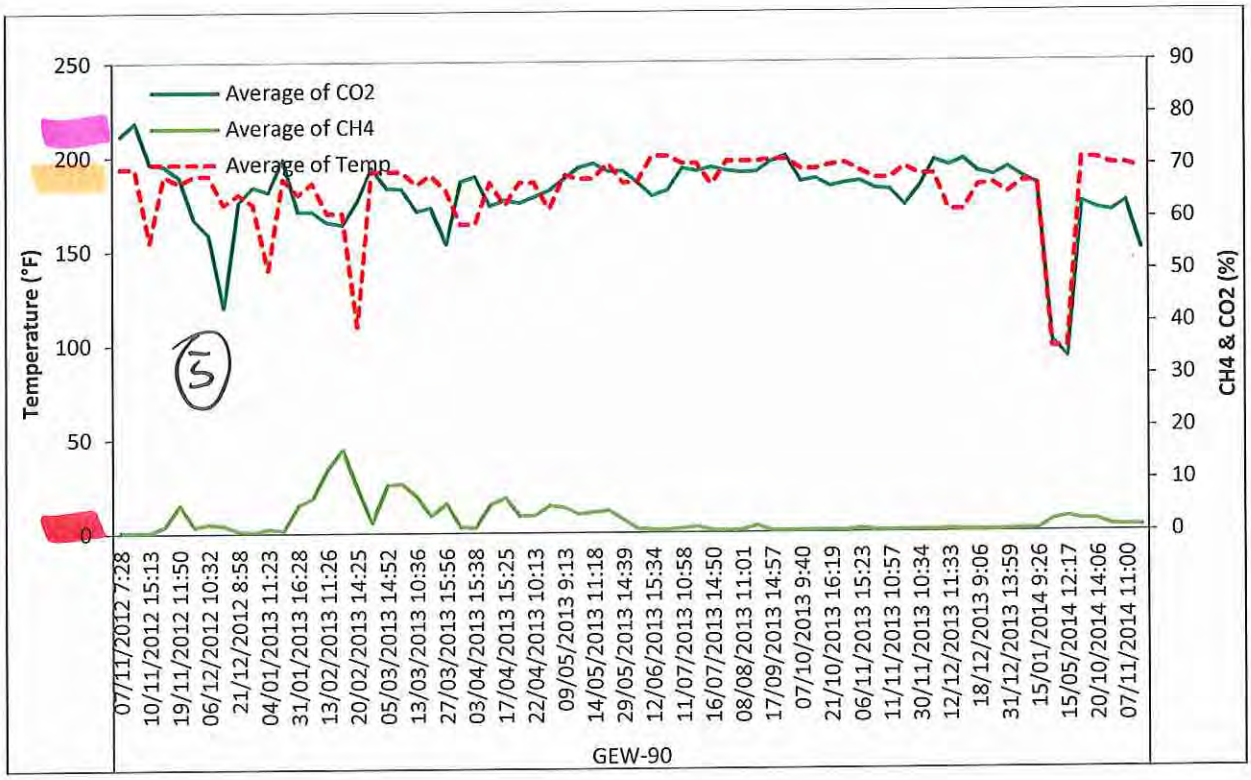

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
30
25
20
15
10
5
0
23/01/2007 10:14
27/03/2007 16:33
26/06/2007 14:41
04/10/2007 9:48
26/12/2007 15:54
24/04/2008 9:35
28/07/2008 14:55
13/11/2008 9:25
05/02/2009 10:39
22/04/2009 11:23
06/08/2009 9:52
11/12/2009 10:50
18/03/2010 15:36
13/07/2010 10:04
19/10/2010 9:49
05/01/2011 14:34
14/02/2011 13:26
02/03/2011 10:12
23/03/2011 14:06
29/04/2011 11:44
08/06/2011 15:20
10/08/2011 11:55
14/12/2011 14:09
06/03/2012 12:27
13/06/2012 13:15
31/07/2012 18:32
26/09/2012 13:34
19/11/2012 14:40
22/10/2013 15:12
06/12/2013 10:28
31/12/2013 15:33
12/03/2014 14:32
21/05/2014 13:40
29/07/2014 14:21
06/11/2014 11:20
GEW-75

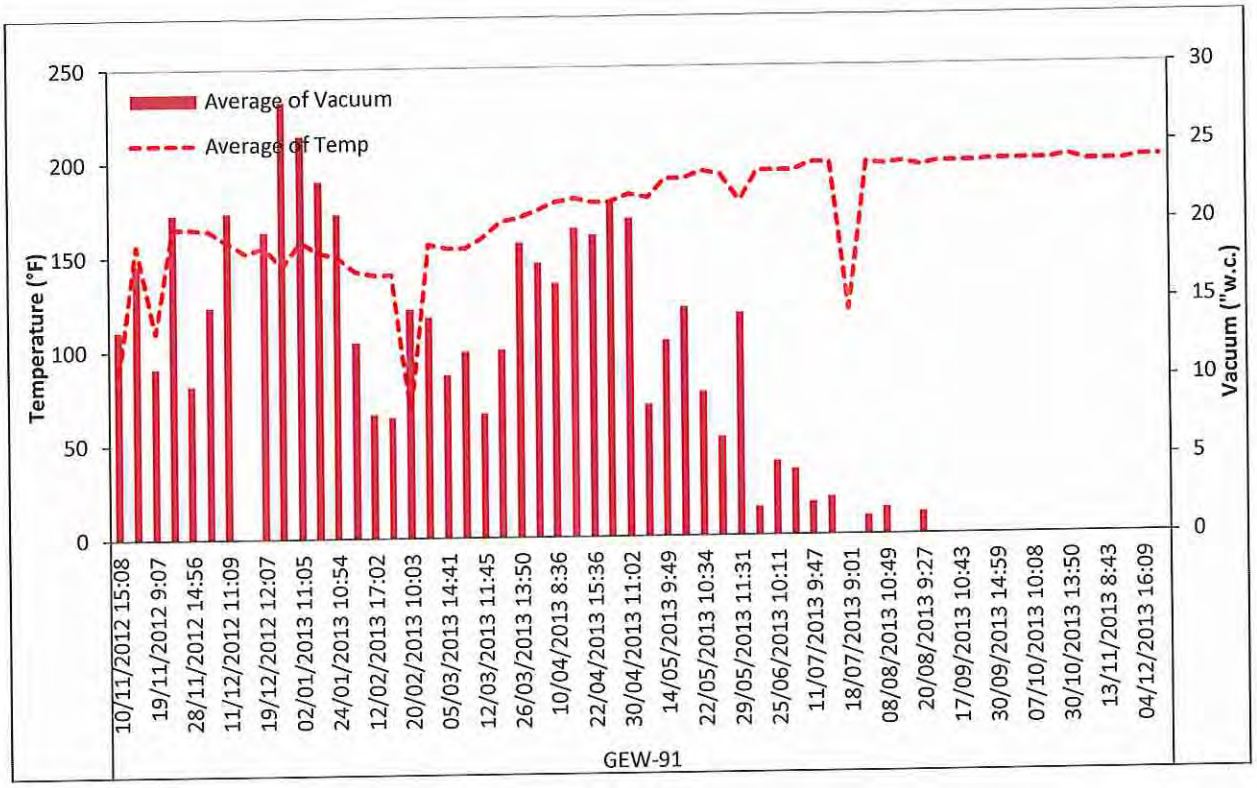

Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
23/01/2007 10:14
27/03/2007 16:33
26/06/2007 14:41
04/10/2007 9:48
26/12/2007 15:54
24/04/2008 9:35
28/07/2008 14:55
13/11/2008 9:25
05/02/2009 10:39
22/04/2009 11:23
06/08/2009 9:52
11/12/2009 10:50
18/03/2010 15:36
13/07/2010 10:04
19/10/2010 9:49
05/01/2011 14:34
14/02/2011 13:26
02/03/2011 10:12
23/03/2011 14:06
29/04/2011 11:44
08/06/2011 15:20
10/08/2011 11:55
14/12/2011 14:09
06/03/2012 12:27
13/06/2012 13:15
31/07/2012 18:32
26/09/2012 13:34
19/11/2012 14:40
22/10/2013 15:12
06/12/2013 10:28
31/12/2013 15:33
12/03/2014 14:32
21/05/2014 13:40
29/07/2014 14:21
06/11/2014 11:20
GEW-75

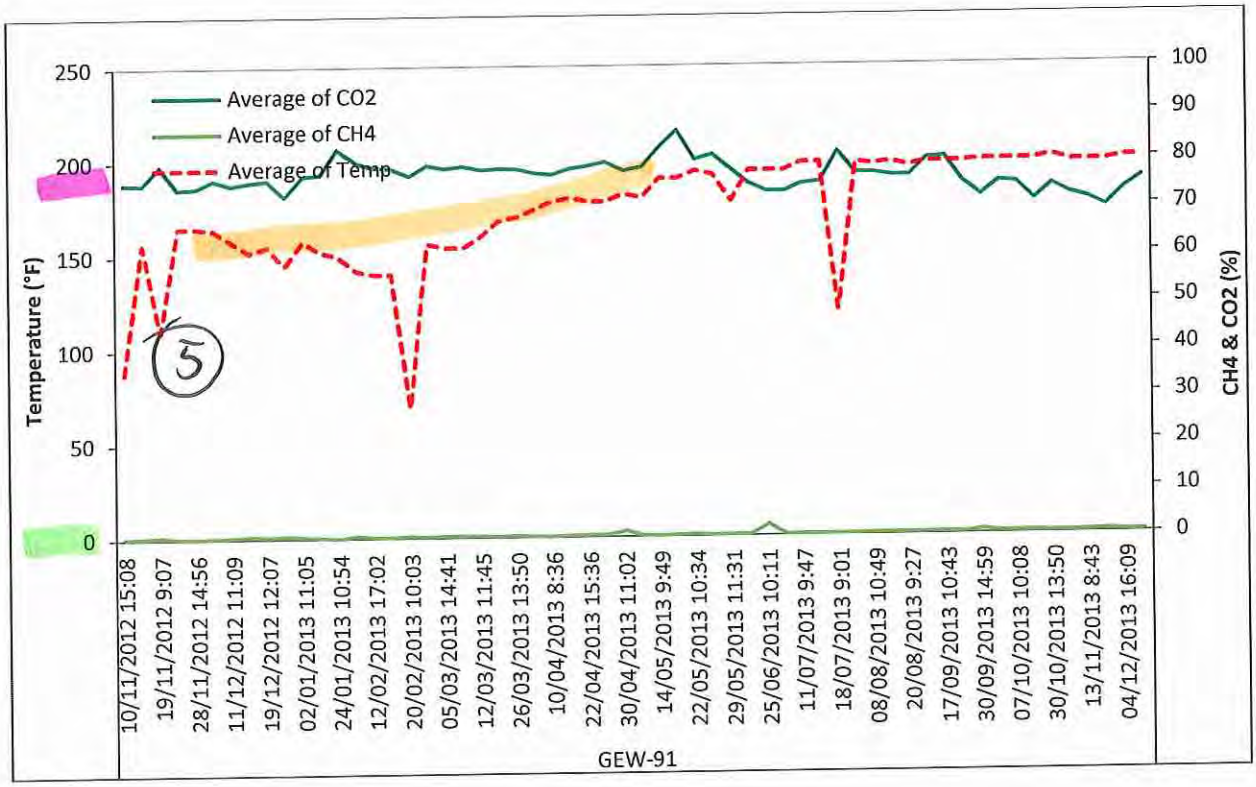

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-083

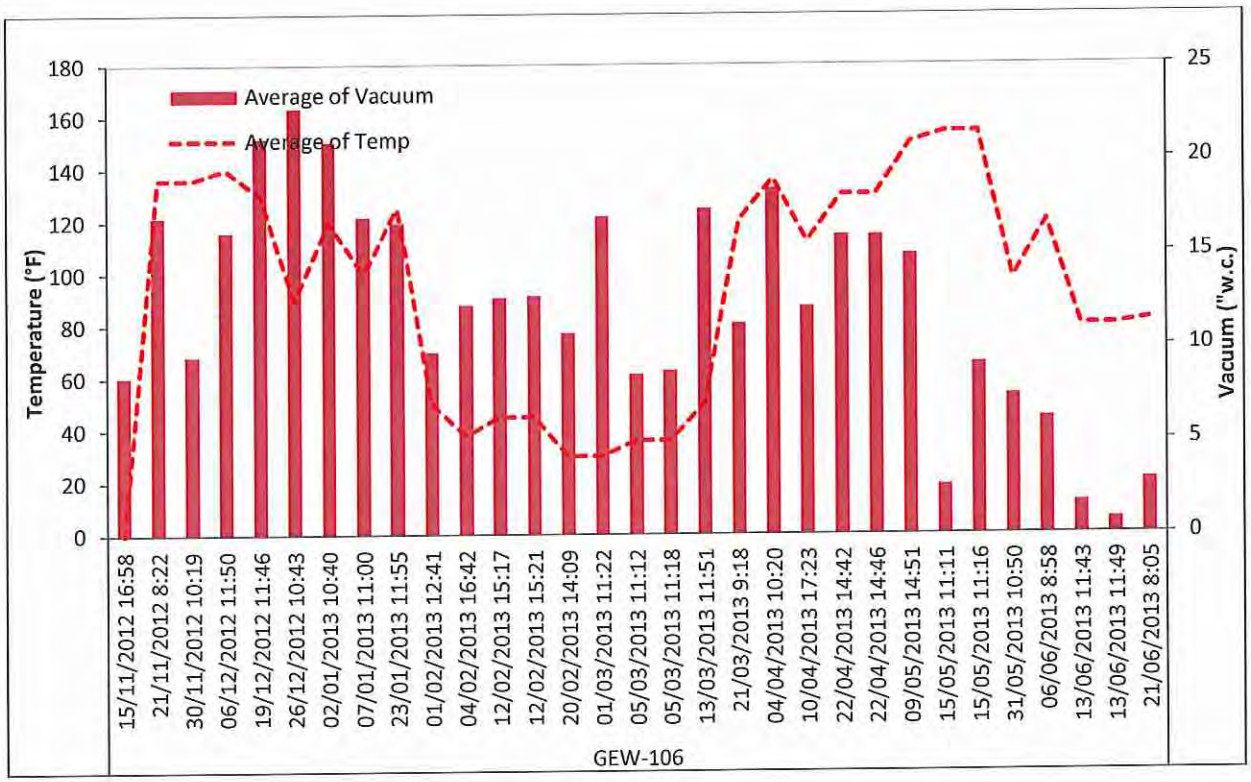

Average of Temp
Average of CH4
Average of CO2
1
2
3
4
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-083

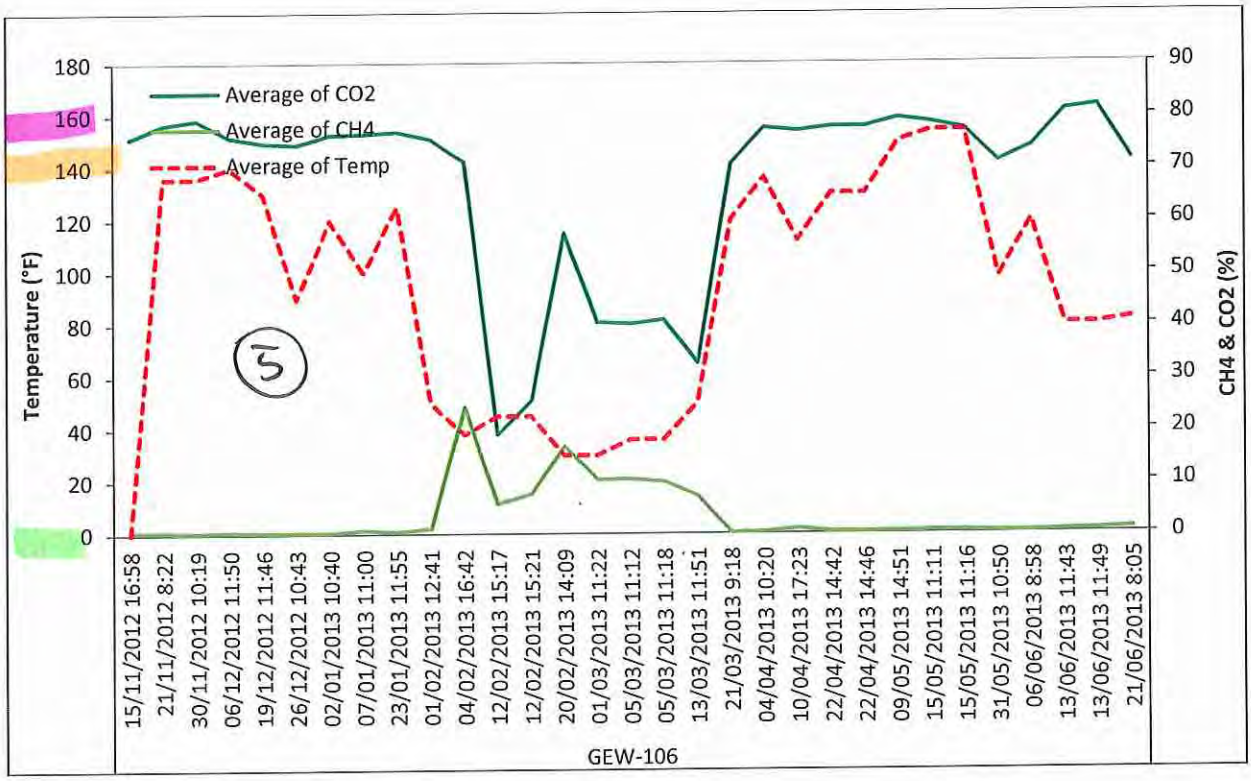

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
70
60
50
40
30
20
10
0
07/11/2012 7:28
10/11/2012 15:13
19/11/2012 11:50
06/12/2012 10:32
21/12/2012 8:58
04/01/2013 11:23
31/01/2013 16:28
13/02/2013 11:26
20/02/2013 14:25
05/03/2013 14:52
13/03/2013 10:36
27/03/2013 15:56
03/04/2013 15:38
17/04/2013 15:25
22/04/2013 10:13
09/05/2013 9:13
14/05/2013 11:18
29/05/2013 14:39
12/06/2013 15:34
11/07/2013 10:58
16/07/2013 14:50
08/08/2013 11:01
17/09/2013 14:57
07/10/2013 9:40
21/10/2013 16:19
06/11/2013 15:23
11/11/2013 10:57
30/11/2013 10:34
12/12/2013 11:33
18/12/2013 9:06
31/12/2013 13:59
15/01/2014 9:26
15/05/2014 12:17
20/10/2014 14:06
07/11/2014 11:00
GEW-90

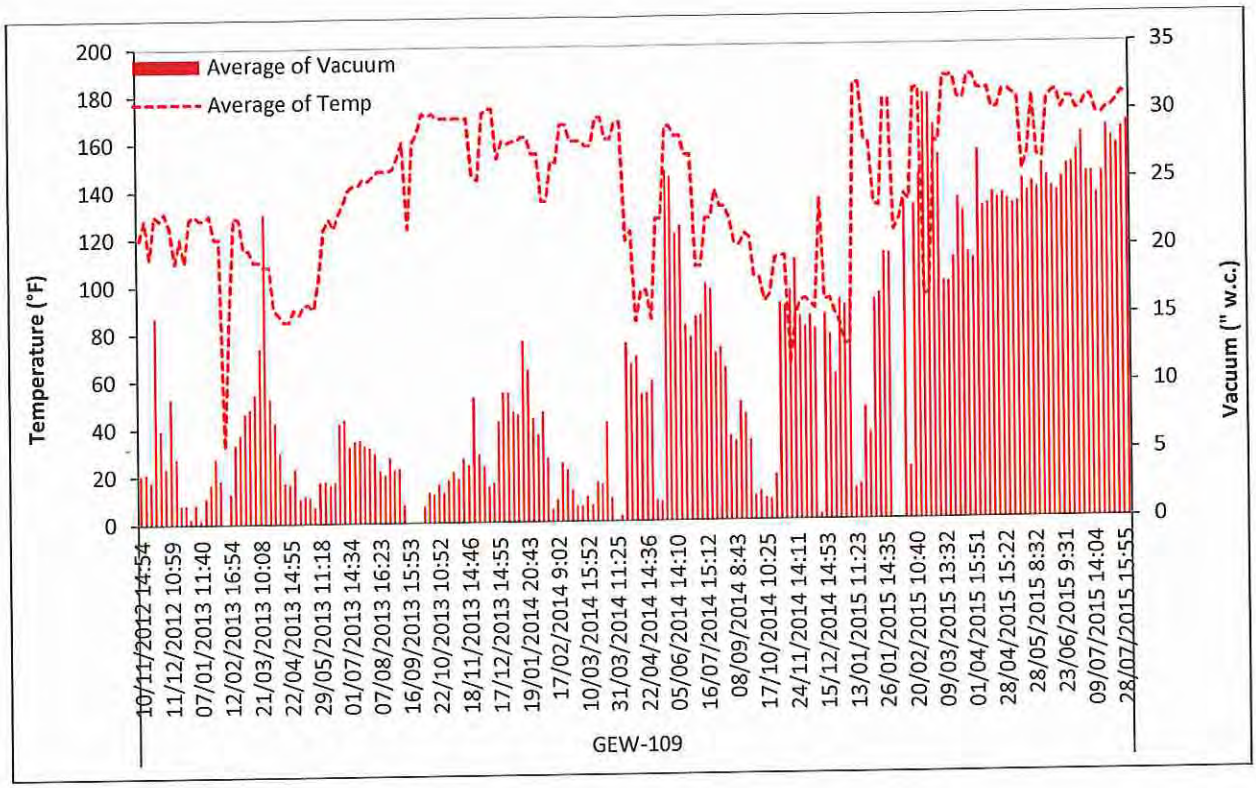

Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
90
80
70
60
50
40
30
20
10
0
07/11/2012 7:28
10/11/2012 15:13
19/11/2012 11:50
06/12/2012 10:32
21/12/2012 8:58
04/01/2013 11:23
31/01/2013 16:28
13/02/2013 11:26
20/02/2013 14:25
05/03/2013 14:52
13/03/2013 10:36
27/03/2013 15:56
03/04/2013 15:38
17/04/2013 15:25
22/04/2013 10:13
09/05/2013 9:13
14/05/2013 11:18
29/05/2013 14:39
12/06/2013 15:34
11/07/2013 10:58
16/07/2013 14:50
08/08/2013 11:01
17/09/2013 14:57
07/10/2013 9:40
21/10/2013 16:19
06/11/2013 15:23
11/11/2013 10:57
30/11/2013 10:34
12/12/2013 11:33
18/12/2013 9:06
31/12/2013 13:59
15/01/2014 9:26
15/05/2014 12:17
20/10/2014 14:06
07/11/2014 11:00
GEW-90

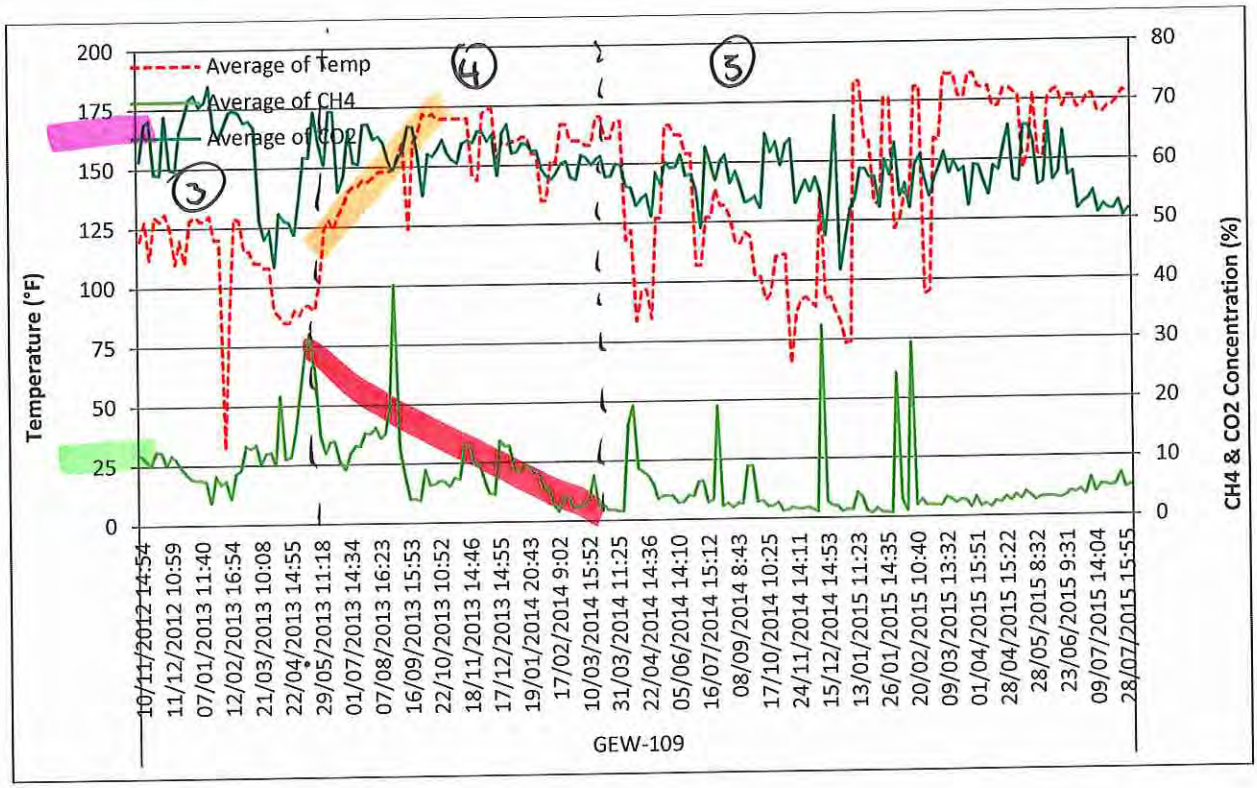

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
250
200
150
100
50
0
30
25
20
15
10
5
0
10/11/2012 15:08
19/11/2012 9:07
28/11/2012 14:56
11/12/2012 11:09
19/12/2012 12:07
02/01/2013 11:05
24/01/2013 10:54
12/02/2013 17:02
20/02/2013 10:03
05/03/2013 14:41
12/03/2013 11:45
26/03/2013 13:50
10/04/2013 8:36
22/04/2013 15:36
30/04/2013 11:02
14/05/2013 9:49
22/05/2013 10:34
29/05/2013 11:31
25/06/2013 10:11
11/07/2013 9:47
18/07/2013 9:01
08/08/2013 10:49
20/08/2013 9:27
17/09/2013 10:43
30/09/2013 14:59
07/10/2013 10:08
30/10/2013 13:50
13/11/2013 8:43
04/12/2013 16:09
GEW-91


Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
250
200
150
100
50
0
100
90
80
70
60
50
40
30
20
10
0
5
10/11/2012 15:08
19/11/2012 9:07
28/11/2012 14:56
11/12/2012 11:09
19/12/2012 12:07
02/01/2013 11:05
24/01/2013 10:54
12/02/2013 17:02
20/02/2013 10:03
05/03/2013 14:41
12/03/2013 11:45
26/03/2013 13:50
10/04/2013 8:36
22/04/2013 15:36
30/04/2013 11:02
14/05/2013 9:49
22/05/2013 10:34
29/05/2013 11:31
25/06/2013 10:11
11/07/2013 9:47
18/07/2013 9:01
08/08/2013 10:49
20/08/2013 9:27
17/09/2013 10:43
30/09/2013 14:59
07/10/2013 10:08
30/10/2013 13:50
13/11/2013 8:43
04/12/2013 16:09
GEW-91


Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum ("w.c.)
180
160
140
120
100
80
60
40
20
0
25
20
15
10
5
0
15/11/2012 16:58
21/11/2012 8:22
30/11/2012 10:19
06/12/2012 11:50
19/12/2012 11:46
26/12/2012 10:43
02/01/2013 10:40
07/01/2013 11:00
23/01/2013 11:55
01/02/2013 12:41
04/02/2013 16:42
12/02/2013 15:17
12/02/2013 15:21
20/02/2013 14:09
01/03/2013 11:22
05/03/2013 11:12
05/03/2013 11:18
13/03/2013 11:51
21/03/2013 9:18
04/04/2013 10:20
10/04/2013 17:23
22/04/2013 14:42
22/04/2013 14:46
09/05/2013 14:51
15/05/2013 11:11
15/05/2013 11:16
31/05/2013 10:50
06/06/2013 8:58
13/06/2013 11:43
13/06/2013 11:49
21/06/2013 8:05
GEW-106


Average of CO2
Average of CH4
Average of Temp
Temperature (°F)
CH4 & CO2 (%)
180
160
140
120
100
80
60
40
20
0
90
80
70
60
50
40
30
20
10
0
15/11/2012 16:58
21/11/2012 8:22
30/11/2012 10:19
06/12/2012 11:50
19/12/2012 11:46
26/12/2012 10:43
02/01/2013 10:40
07/01/2013 11:00
23/01/2013 11:55
01/02/2013 12:41
04/02/2013 16:42
12/02/2013 15:17
12/02/2013 15:21
20/02/2013 14:09
01/03/2013 11:22
05/03/2013 11:12
05/03/2013 11:18
13/03/2013 11:51
21/03/2013 9:18
04/04/2013 10:20
10/04/2013 17:23
22/04/2013 14:42
22/04/2013 14:46
09/05/2013 14:51
15/05/2013 11:11
15/05/2013 11:16
31/05/2013 10:50
06/06/2013 8:58
13/06/2013 11:43
13/06/2013 11:49
21/06/2013 8:05
GEW-106

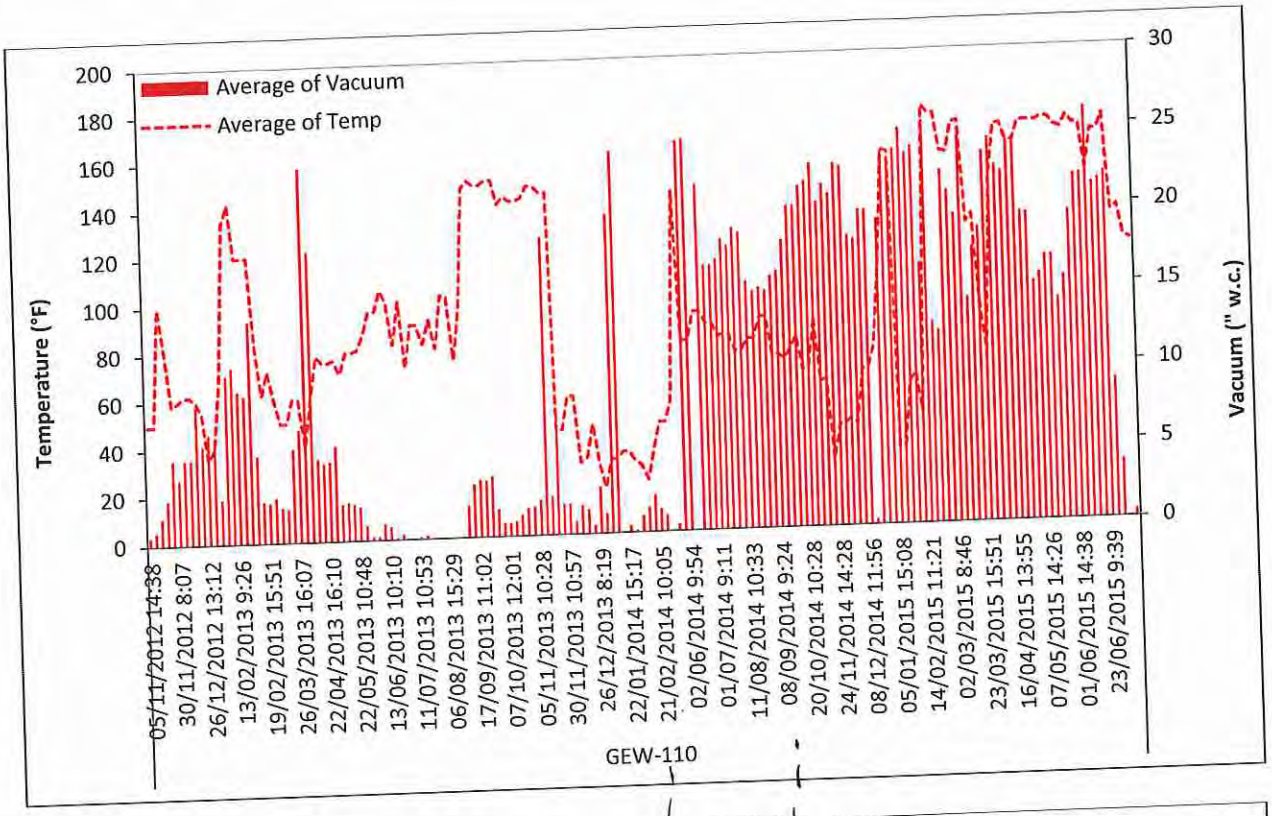

Average of Vacuum
Average of Temp
Temperature (°F)
Vacuum (" w.c.)
GEW-109

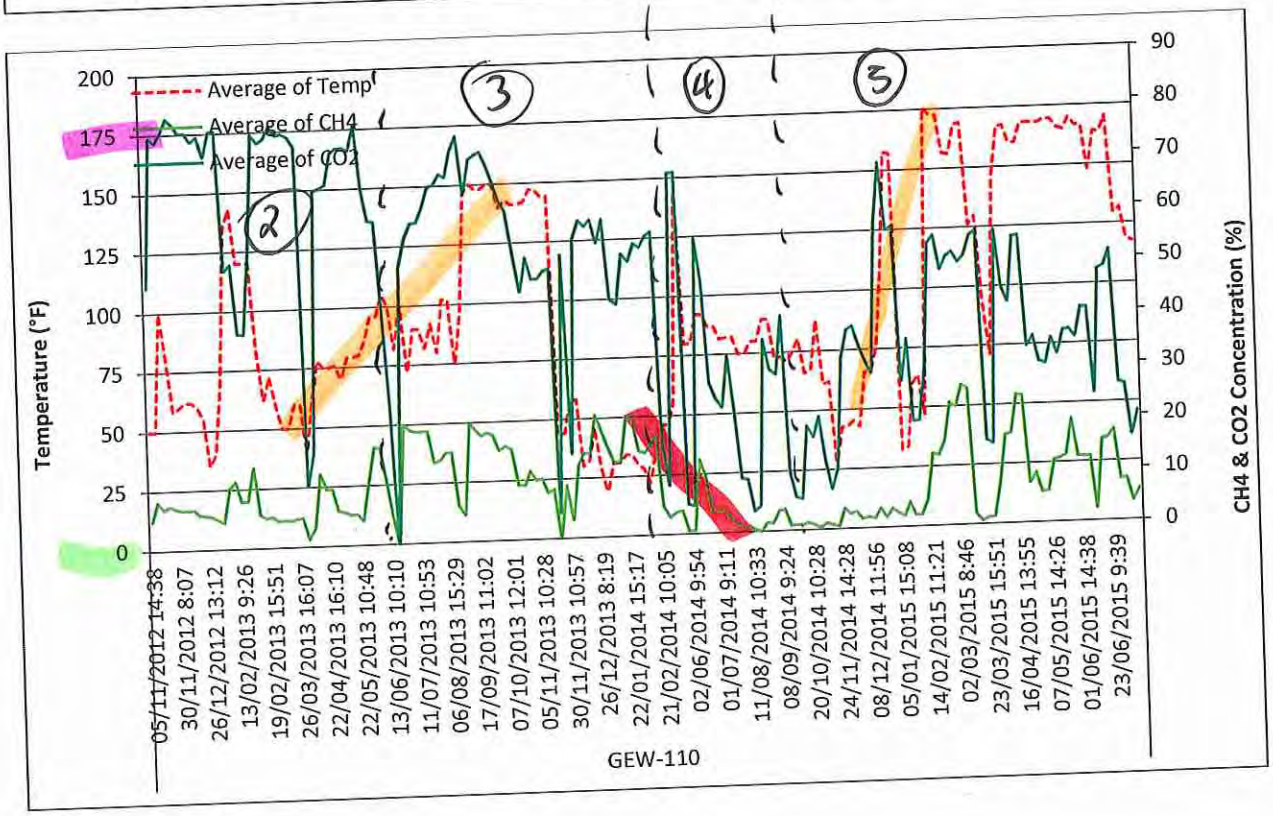

Average of Temp
Average of CH4
Average of CO2
Temperature (°F)
CH4 & CO2 Concentration (%)
GEW-109

Source: BL_004_0002789

GEW-110

LFG Database





APPENDIX H

AQUATERRA WELL FIELD DATA

Gas Extraction Monitoring Data										
Code	Time	Date	CH4	CO2	O2	Bal	Static Pressu	Differential Press	Temp	Adjusted Flow
STLGEW34	21:38	7/27/2005	54.1	33.3	0.1	12.5	-23.3	4.2	110	>>>
STLGEW33	21:45	7/27/2005	61.8	38.2	0	0	-1.8	-7.66	102	0
STLGEW32	21:49	7/27/2005	69.8	29.1	1.1	0	-10.4	0.26	115	28
STLGEW31	21:54	7/27/2005	53.6	35.1	0.1	11.2	-30.3	2.86	116	>>>
STLGEW30	21:58	7/27/2005	50.3	35.7	0	14	-24.5	2.1	120	76
STLGEW28	22:01	7/27/2005	46.1	33.2	0	20.7	-4.7	0.09	119	15
STLGEW27	22:04	7/27/2005	62.7	37.1	0.2	0	-28.4	0.34	121	29
STLGEW26	22:09	7/27/2005	69.4	30.2	0.4	0	-17.6	0.37	118	33
STLGEW25	22:12	7/27/2005	66.6	33.4	0	0	-3.3	1.2	123	62
STLGEW24	22:17	7/27/2005	64.9	35.1	0	0	-3.4	1.34	100	72
STLGEW23	22:21	7/27/2005	52.3	38.1	0.5	9.1	-21.3	-0.14	103	0
STLGEW22	22:27	7/27/2005	64.6	35.4	0	0	-2.3	0.47	104	40
STLGEW21	22:31	7/27/2005	60.6	37.3	2	0.1	-3.2	0.8	106	53
STLGEW21	22:31	7/27/2005	60.6	37.3	2	0.1	-3	0.68	106	48
STLGEW20	22:38	7/27/2005	62	38	0	0	-1.2	0.58	124	41
STLGEW19	23:05	7/27/2005	23.9	29.2	1.9	45	-0.9	0	138	0
STLGEW18	23:10	7/27/2005	61.6	38.4	0	0	-17.9	0.08	122	14
STLGEW17	23:15	7/27/2005	35.5	32.9	0	31.6	-7.6	-0.35	101	0
STLGEW16	23:19	7/27/2005	32.3	31	0	36.7	-7.6	-0.01	110	0
STLGEW14	23:25	7/27/2005	40.1	33.6	1.4	24.9	-7.4	0.03	124	6
STLGEW13	23:28	7/27/2005	30.8	29.2	1.2	38.8	-8.8	0.53	112	39
STLGEW01	23:37	7/27/2005	32.3	26.7	4.8	36.2	-1.4	0.49	129	35
STLGEW40	1:23	7/28/2005	63.3	36.7	0	0	-6.2	1.17	109	63
STLGEW41	1:26	7/28/2005	62.3	37.7	0	0	-2.9	1.01	110	59
STLGEW42	1:31	7/28/2005	57.4	39.9	0	2.7	-4.4	0.63	119	43
STLGEW43	1:49	7/28/2005	62.6	37.4	0	0	-4.1	1.53	129	66
STLGEW44	1:56	7/28/2005	40.9	32	0.3	26.8	-3.1	0.51	121	37
STLGEW45	1:59	7/28/2005	32.6	30	0	37.4	-5.4	0.95	118	52
STLGEW47	2:03	7/28/2005	61.2	38.8	0	0	-42.4	-0.07	110	0
STLGEW48	2:12	7/28/2005	55.1	37.3	1.7	5.9	-50	-0.12	117	0
STLGEW67	2:29	7/28/2005	56.1	36.6	0	7.3	-25.3	5	120	>>>
STLGEW66	3:05	7/28/2005	53.4	40.9	0.3	5.4	-10.9	0.57	114	40
STLGEW70	3:10	7/28/2005	40.4	34.8	0	24.8	-24.8	5.61	119	>>>
STLGEW62	3:13	7/28/2005	16.7	25.8	0.4	57.1	-5.4	-0.02	96	0
STLGEW59	3:17	7/28/2005	63.5	36.4	0.1	0	-6.2	2.34	121	86
STLGEW58	3:22	7/28/2005	44.2	34.2	0	21.6	-9.3	1.05	130	51
STLGEW57	3:25	7/28/2005	39.6	33.5	0	26.9	-5.2	0.04	99	9
STLGEW61	3:28	7/28/2005	32.2	40.1	0.6	27.1	-0.9	-0.03	98	0
STLGEW60	3:31	7/28/2005	34.9	31.2	0	33.9	-6	0.06	109	12
STLGEW65	3:40	7/28/2005	44.1	38.7	0	17.2	-12.7	0.46	115	35
STLGEW64	3:43	7/28/2005	49.4	39	0	11.6	-9.6	0.16	123	19
STLGEW68	3:46	7/28/2005	50.9	38.8	0	10.3	-14.2	1.15	108	60
STLGEW69	3:49	7/28/2005	60	40	0	0	-12.5	1.2	107	63
STLGEW74	3:54	7/28/2005	58.1	40.9	0	1	-14	6.09	118	>>>
STLGEW73	3:57	7/28/2005	57.2	37.5	0.3	5	-22.3	2.57	117	87
STLGEW77	4:01	7/28/2005	32.5	20.7	9	37.8	-3.2	0	102	0
STLGEW78	4:05	7/28/2005	67.4	32.6	0	0	-7.4	1.08	116	61
STLGEW79	4:09	7/28/2005	72.3	27.7	0	0	-3.6	0.04	123	7
STLGEW80	4:15	7/28/2005	64.6	35.4	0	0	-3	0.45	119	37
STLGEW82	4:18	7/28/2005	42.4	34.1	0	23.5	-1.8	0.25	103	28
STLGEW76	4:22	7/28/2005	42.9	34.3	0	22.8	-1.1	0.16	100	23
STLGEW71	4:27	7/28/2005	1.3	0.1	19.6	79	-6.2	0.02	110	4
STLGSKFL	4:33	7/28/2005	55.5	37.1	1	6.4	-56.2	25.82	>>>	>>>
STLGEW71	2:21	8/1/2005	11.6	9.8	11.7	66.9	-4.7	0	100	0
STLGEW77	2:37	8/1/2005	48.7	30.1	2.4	18.8	-2.2	-0.79	120	0

Bal 17, 16, 13, 01, 45, 62, 60, 77, 71

O2 71,

Temp 69

ST. LOUIS GAS PRODUCERS
MONTH OF JULY
5 DAY RECHECKS

WELL NUMBER	DATE AND TIME of Reading	CH4 % by vol.	O2 % by vol.	PRESSURE inches of water column	TEMPERATURE deg F	COMMENTS
GEW-71	8/2/2005	46	1.8	-6.2	110	Gas well was broke/ Repiared well
GEW-77	8/2/2005	49.3	0.6	-2.5	120	Gas well was broke/ Repiared well

15 DAY RECHECK

WELL NUMBER	DATE AND TIME of Reading	CH4 % by vol.	O2 % by vol.	PRESSURE inches of water column	TEMPERATURE deg F	

State of MO v. Republic Services, Inc. et al
PL1 - 0562853

Device ID	Date/Time	CH4	CO2	O2	Current Flow	Temp	Adj Static	Adj Differential	Balance	Comments
STLGEW34	8/28/2005 21:27	58.5	34.7	0.4	<<<	112	-29.6	6.27	6.4	
STLGEW33	8/28/2005 21:36	43.8	34.1	1	0	95	-6.2	-9.89	21.1	
STLGEW32	8/28/2005 21:40	64	34.8	1.2	30	117	-16	0.32	0	
STLGEW31	8/28/2005 21:44	50.2	34.3	0	<<<	119	-32.9	2.88	15.5	
STLGEW31	8/28/2005 21:45	50.2	34.3	0	<<<	119	-34.1	3.74	15.5	
STLGEW30	8/28/2005 21:49	40.7	32.9	0	13	114	-18	0.07	26.4	
STLGEW28	8/28/2005 21:54	41.3	30.9	0	10	120	-5.6	0.06	27.8	
STLGEW27	8/28/2005 21:59	51.6	33.9	0.2	51	123	-40.6	1.06	14.3	
STLGEW26	8/28/2005 22:05	58.5	35.5	0	52	129	-35	1.16	6	
STLGEW25	8/28/2005 22:09	25.4	27.1	0	15	98	-4.2	0.08	47.5	Replace Well
STLGEW24	8/28/2005 22:14	33.1	31.1	0	19	111	-3.6	0.14	35.8	Replace Well
STLGEW23	8/28/2005 22:18	47.8	36.8	2.7	0	98	-41.6	-0.08	12.7	
STLGEW22	8/28/2005 22:23	35.7	33.5	0	6	93	-2.9	0.03	30.8	
STLGEW20	8/28/2005 22:30	54.2	40.8	0.4	69	102	-3.2	1.36	4.6	Replace Well
STLGEW19	8/28/2005 22:39	10.4	17.7	5.6	0	148	-1	-0.13	66.9	Replace Well
STLGEW18	8/28/2005 22:43	54.7	38.8	0	34	128	-28.8	0.52	6.5	
STLGEW17	8/28/2005 22:50	30.3	33.2	0	0	99	-2.8	-0.09	36.5	
STLGEW16	8/28/2005 22:54	38.5	34.4	0	15	113	-6.1	0.09	27.1	
STLGEW14	8/28/2005 22:59	3.3	3.4	16.7	3	86	-0.9	0.02	76.6	Replace Well
STLGEW14	8/28/2005 22:59	3.3	3.4	16.7	0	86	-0.2	0	76.6	
STLGEW13	8/28/2005 23:05	52.8	40.9	0.3	43	123	-8.2	0.68	6	
STLGEW63	8/28/2005 23:13	65.1	34.6	0.3	<<<	126	-27.7	4.94	0	
STLGEW21	8/28/2005 23:42	9.6	6.3	16	0	100	-0.2	0	68.1	Replace Well
STLGEW67	8/29/2005 0:48	.57	35.8	0.4	<<<	122	-27.9	5.97	6.8	
STLGEW70	8/29/2005 1:31	56.6	41.8	0.5	75	110	-15.2	1.82	1.1	
STLGEW69	8/29/2005 1:35	57.8	41.3	0	80	107	-18.4	1.98	0.9	
STLGEW65	8/29/2005 1:40	42.4	38.4	0	24	107	-11.2	0.2	19.2	
STLGEW66	8/29/2005 1:46	36.1	33.4	0	26	99	-14.6	0.23	30.6	
STLGEW62	8/29/2005 1:55	12.5	26.9	0	23	94	-7.3	0.19	60.6	
STLGEW62	8/29/2005 1:57	35.9	31.8	0	17	95	-6.4	0.09	32.3	
STLGEW59	8/29/2005 2:00	60.2	39.7	0.1	<<<	115	-12	3.92	0	
STLGEW58	8/29/2005 2:04	42.9	37.3	0	18	120	-6.4	0.14	19.8	
STLGEW57	8/29/2005 2:07	49.5	36.6	0	17	104	-5.9	0.11	13.9	
STLGEW61	8/29/2005 2:11	37.7	46.5	0.9	0	93	-2.5	-0.04	14.9	
STLGEW60	8/29/2005 2:15	34	32.5	0	9	98	-5.4	0.04	33.5	
STLGEW64	8/29/2005 2:23	44.6	37.7	0	35	109	-11.6	0.42	17.7	
STLGEW66	8/29/2005 2:26	45.3	35.8	0	<<<	109	-17	16.5	18.9	
STLGEW73	8/29/2005 2:32	41.8	32.2	0	57	113	-25.2	1.16	26	
STLGEW74	8/29/2005 2:37	62.9	35.8	1.3	49	93	-8.2	0.65	0	
STLGEW75	8/29/2005 2:40	60.5	37.1	0.4	28	116	-4.4	0.27	2	
STLGEW77	8/29/2005 2:45	38.5	30.2	0	3	113	-5.8	0.02	31.3	
STLGEW78	8/29/2005 2:48	58.6	41.2	0	84	116	-15.4	2.33	0.2	
STLGEW80	8/29/2005 2:54	52.3	39.1	0	64	97	-7.6	1.15	8.6	
STLGEW82	8/29/2005 3:39	35.7	33.8	0.4	0	99	-1	-0.09	30.1	
STLGEW76	8/29/2005 3:42	50.2	38.7	0	48	105	-2	0.72	11.1	
STLGEW72	8/29/2005 3:47	45.3	34.3	0	0	111	-1.6	-0.32	20.4	
STLGEW01	8/29/2005 3:57	57.8	40.3	0	32	118	-1.5	0.36	1.9	

O_2 : 19, 14, 21

Temp : 19

Bal 25, 24, 22, 17, 14, 21, 66, 62, 61, 77, 82

ST. LOUIS GAS PRODUCERS
MONTH OF AUGUST
5 DAY RECHECKS

WELL NUMBER	DATE AND TIME of Reading	CH4 % by vol.	O2 % by vol.	PRESSURE inches of water column	TEMPERATURE deg F	COMMENTS
GEW - 14	8/30/2005	14	12.2	-0.3	83	Drill Replacement well
GEW - 21	8/30/2005	19.8	16	-0.2	101	Drill Replacement well
GEW - 19	8/30/2005	10	4.8	-0.8	140	Drill Replacement well

15 DAY RECHECK

WELL NUMBER	DATE AND TIME of Reading	CH4 % by vol.	O2 % by vol.	PRESSURE inches of water column	TEMPERATURE deg F	

State of MO v. Republic Services, Inc. et al
PL1 - 0562855

Gas Extraction Monitoring Data											
Code	Time	Date	CH4	CO2	O2	Bal	Static Press	Differential Press	Temp	Adjusted Flow	Adjusted Energy
STLGEW42	10:14	9/25/2005	63.1	36.9	0	0	-3.4	0.41	74	41	1570
STLGEW43	10:17	9/25/2005	65.3	34.7	0	0	-2.5	1.25	130	60	2378
STLGEW44	10:25	9/25/2005	76.2	23.8	0	0	-3.7	1.43	79	85	3932
STLGEW41	10:32	9/25/2005	72.1	27.9	0	0	-4.8	0.73	76	58	2539
STLGEW40	10:38	9/25/2005	68	32	0	0	-4.9	0.85	81	61	2518
STLGEW04	10:42	9/25/2005	69.3	30.7	0	0	-1.4	1.36	124	67	2819
STLGEW03	10:48	9/25/2005	69.7	30.3	0	0	-0.8	1.16	125	61	2581
STLGEW02	10:52	9/25/2005	63.2	36.8	0	0	-1	2.16	133	78	2992
STLGEW46	10:58	9/25/2005	66.7	33.3	0	0	-4.3	0.31	113	31	1255
STLGEW45	11:03	9/25/2005	65.2	34.8	0	0	-4.8	0.32	79	36	1425
STLGEW47	11:09	9/25/2005	60.7	39.3	0	0	-8	0.04	95	8	294
STLGEW48	11:15	9/25/2005	60.8	39.2	0	0	-1.6	1.12	119	59	2177
STLGEW34	2:02	9/26/2005	48.3	34.3	1.3	16.1	-21.9	7.99	116	>>>	>>>
STLGEW33	2:10	9/26/2005	51.8	37.4	2.3	8.5	-14.6	0	115	0	0
STLGEW32	2:13	9/26/2005	57.1	36.4	1.4	5.1	-14.9	0.08	115	15	520
STLGEW31	2:16	9/26/2005	60.2	37.4	0	2.4	-35.5	3.38	121	>>>	>>>
STLGEW30	2:20	9/26/2005	61.1	38.9	0	0	-5	0.29	121	28	1038
STLGEW28	2:25	9/26/2005	66	34	0	0	-2.2	-2.9	118	0	0
STLGEW27	2:28	9/26/2005	58	37.7	0	4.3	-38.4	0.89	123	46	1619
STLGEW26	2:33	9/26/2005	59.3	37	0.2	3.5	-35	1.16	128	53	1908
STLGEW25	2:36	9/26/2005	43.3	34.1	0.2	22.4	-2	0.03	89	6	157
STLGEW24	2:39	9/26/2005	53.6	37.2	0	9.2	-1.8	0.26	112	28	911
STLGEW23	2:44	9/26/2005	45.5	32.8	4.3	17.4	-40.2	-0.07	84	0	0
STLGEW22	2:48	9/26/2005	60.5	39.5	0	0	-1.7	0.05	84	10	367
STLGEW21	2:52	9/26/2005	70.7	29.3	0	0	-0.7	0	82	0	0
STLGEW20	2:56	9/26/2005	52.2	37.9	0.7	9.2	-3.1	1.18	93	67	2123
STLGEW19	2:58	9/26/2005	36.5	36.6	2.2	24.7	-2	0.03	125	5	110
STLGEW18	3:03	9/26/2005	48.2	35.4	1.3	15.1	-32.7	0.5	128	33	965
STLGEW17	3:07	9/26/2005	23.9	29.2	1.5	45.4	-6.7	3.94	92	>>>	>>>
STLGEW16	3:21	9/26/2005	25.2	28.2	1.3	45.3	-2.7	0.02	107	4	61
STLGEW14	3:26	9/26/2005	12.1	18.8	6.2	62.9	-1.8	0	88	0	0
STLGEW13	3:28	9/26/2005	51.3	37.9	0	10.8	-9.4	0.72	123	44	1370
STLGEW63	3:36	9/26/2005	56	35.2	3.6	5.2	-15	0.24	126	24	816
STLGEW67	3:40	9/26/2005	49.5	35.1	0.1	15.3	-27.5	6.03	122	>>>	>>>
STLGEW70	3:45	9/26/2005	45.7	34.2	2.4	17.7	-16.9	2.06	110	80	2219
STLGEW69	3:49	9/26/2005	41	30.6	4.5	23.9	-12.8	-0.02	103	0	0
STLGEW66	3:53	9/26/2005	33.6	31.9	1.2	33.3	-6.7	-0.84	79	0	0
STLGEW62	3:57	9/26/2005	25.9	29.2	0.1	44.8	-5.6	-0.02	89	0	0
STLGEW59	4:01	9/26/2005	54.8	36.7	0.4	8.1	-14	3.57	86	>>>	>>>
STLGEW58	4:05	9/26/2005	39	33.9	0	27.1	-4.7	4.72	119	>>>	>>>
STLGEW57	4:08	9/26/2005	45.8	36.9	0	17.3	-4.6	0.08	99	15	417
STLGEW61	4:13	9/26/2005	39.4	40.1	0	20.5	-2.2	-0.05	80	0	0
STLGEW65	4:16	9/26/2005	43.3	37.9	1.3	17.5	-7	0.01	99	2	52
STLGEW60	4:20	9/26/2005	26.1	30	0.9	43	-4.3	0.01	85	2	31
STLGEW64	4:24	9/26/2005	38.9	30.6	3.3	27.2	-9.6	-0.01	106	0	0
STLGEW68	4:27	9/26/2005	50	35.5	0	14.5	-16.8	1.4	109	66	2003
STLGEW73	4:33	9/26/2005	44.5	31.5	0.9	23.1	-11.8	0.05	110	9	243
STLGEW74	4:37	9/26/2005	69.4	30.6	0	0	-3.5	-8.05	84	0	0
STLGEW77	4:41	9/26/2005	46.1	32	0	21.9	-5.4	0	99	0	0
STLGEW78	4:45	9/26/2005	59.7	38.1	0	2.2	-17.8	2.42	116	86	3117
STLGEW80	4:48	9/26/2005	56.9	37.5	0	5.6	-10.1	1.66	85	81	2798
STLGEW82	4:55	9/26/2005	36	32.6	0.8	30.6	-1.8	0.12	78	20	437
STLGEW76	4:58	9/26/2005	43.5	35.3	0	21.2	-3.3	0.81	80	56	1479
STLGEW75	5:01	9/26/2005	51.7	35.6	1.2	11.5	-6.9	0.11	112	17	633
STLGEW72	5:05	9/26/2005	24.5	24.8	2.3	48.4	-2.3	-0.94	105	0	0
STLGEW01	5:13	9/26/2005	57	37.4	0.6	5	-1.6	0.38	111	34	1176
STLGSKFL	5:20	9/26/2005	54.5	37.4	1.3	6.8	-62	25.52	75	>>>	>>>

O_2 : 14

Bal 17, 16, 14, 62

ST. LOUIS GAS PRODUCERS
MONTH OF SEPTEMBER
5 DAY RECHECKS

WELL NUMBER	DATE AND TIME of Reading	CH4 % by vol.	O2 % by vol.	PRESSURE inches of water column	TEMPERATURE deg F	COMMENTS
GEW - 14	9/29/2005	13	6.8	-0.8	88	Well shut off / Open to recheck

15 DAY RECHECK

WELL NUMBER	DATE AND TIME of Reading	CH4 % by vol.	O2 % by vol.	PRESSURE inches of water column	TEMPERATURE deg F	
GEW-14	10/3/2005 0:00	12.8	6	-0.5	86	Recheck well / shut back off

State of MO v. Republic Services, Inc. et al
PL1 - 0562857

Gas Extraction Monitoring Data											
Code	Time	Date	CH4	CO2	O2	Bal	Static Press	Differential	Temp	Adjusted Flow	Adjusted Energy
STLGEW40	9:08	10/24/2005	61	38.7	0.3	0	-5.7	0.97	73	64	2370
STLGEW41	9:12	10/24/2005	59.9	40.1	0	0	-2.2	0.16	56	26	945
STLGEW42	9:15	10/24/2005	46.6	35.4	0	18	-2.3	-0.02	61	0	0
STLGEW43	9:18	10/24/2005	55.2	37.2	0	7.6	-5.1	0.98	128	51	1709
STLGEW44	9:22	10/24/2005	32.7	29.2	0	38.1	-4	0.18	74	25	496
STLGEW45	9:25	10/24/2005	34.9	31.7	0	33.4	-5.7	0.6	74	48	1016
STLGEW46	9:32	10/24/2005	39	28.3	6	26.7	-6.4	0.06	114	10	236
STLGEW02	9:54	10/24/2005	46.5	34.6	2.2	16.7	-3.4	0.06	118	12	338
STLGEW03	10:16	10/24/2005	39.6	33.7	1.1	25.6	-1.7	0.08	109	15	360
STLGEW04	10:20	10/24/2005	65.8	33.9	0.3	0	-1.6	0.12	122	18	719
STLGEW01	10:26	10/24/2005	31.9	27	4.7	36.4	-0.4	0.1	128	15	290
STLGEW05	10:34	10/24/2005	30.5	29	1	39.5	-1.7	0.05	96	10	185
STLGEW47	10:39	10/24/2005	43.9	34.7	0.4	21	-9.7	0	97	0	0
STLGEW48	10:43	10/24/2005	51.7	38.7	0	9.6	-2.5	0.43	109	37	1161
STLGEW49	10:50	10/24/2005	28.9	30.9	0	40.2	-2.5	0.17	91	23	403
STLGEW51	10:58	10/24/2005	61.4	38.6	0	0	-4.1	0.46	110	38	1416
STLGEW53	11:05	10/24/2005	66.4	33.6	0	0	-4.9	0.93	117	55	2217
STLGEW54	11:12	10/24/2005	58.4	39.5	0	2.1	-4.6	0.97	114	56	1985
STLGEW55	11:17	10/24/2005	65.4	33.3	1.3	0	-5.2	1.04	116	59	2342
STLGEW52	10:20	10/25/2005	59.9	38.3	0.5	1.3	-8.7	3.24	104	>>>	>>>
STLGEW50	10:24	10/25/2005	64.8	35.2	0	0	-1.6	0.32	107	32	1258
STLGEW06	10:37	10/25/2005	64.4	35.6	0	0	-2	0.81	102	54	2111
STLGEW08	10:43	10/25/2005	81.5	18.3	0.2	0	-3.2	0.68	125	49	2424

Bal 44, 45, 01, 05, 49

ST. LOUIS GAS PRODUCERS

MONTH OF OCTOBER

5 DAY RECHECKS

WELL NUMBER	DATE AND TIME of Reading	CH4 % by vol.	O2 % by vol.	PRESSURE inches of water column	TEMPERATURE deg F	COMMENTS
GEW - 46	10/27/2005	40	4.8	-1	110	Well shut off / Open to recheck

15 DAY RECHECK

WELL NUMBER	DATE AND TIME of Reading	CH4 % by vol.	O2 % by vol.	PRESSURE inches of water column	TEMPERATURE deg F	

State of MO v. Republic Services, Inc. et al
PL1 - 0562859

Gas Extraction Monitoring Data

Code	Time	Date	CH4	CO2	O2	Bal	Static Press	Differential Press	Temp	Adjusted Flow
STLGEW40	2:48	11/19/2005	55.6	37.5	0.8	6.1	-7.6	1.04	67	67
STLGEW41	2:53	11/19/2005	29.7	26.3	2.6	39.4	-2.6	0.02	67	6
STLGEW42	2:56	11/19/2005	40.1	33.1	0.3	26.5	-2.9	0	71	0
STLGEW43	2:59	11/19/2005	50.9	35.3	0	13.8	-5.8	1.04	125	54
STLGEW44	3:03	11/19/2005	25.4	25.3	0	49.3	-2.2	0.01	76	3
STLGEW45	3:08	11/19/2005	44.8	34.1	0	21.1	-2.7	-1.6	75	0
STLGEW46	3:12	11/19/2005	66.5	33.5	0	0	-0.8	0.14	94	22
STLGEW47	3:16	11/19/2005	47.6	36.9	0.4	15.1	-8.2	0	105	0
STLGEW02	3:21	11/19/2005	61.7	38.3	0	0	-0.6	0.95	130	51
STLGEW01	3:26	11/19/2005	37.5	30	3.7	28.8	-0.4	0.04	125	6
STLGEW03	3:30	11/19/2005	63.8	36.2	0	0	-1.5	0.5	121	39
STLGEW04	3:33	11/19/2005	66.6	33.4	0	0	-1.4	0.43	123	36
STLGEW05	3:36	11/19/2005	36.7	31.8	0.4	31.1	-0.8	0.06	97	12
STLGEW48	3:41	11/19/2005	47.2	36.5	0	16.3	-1.6	0.16	110	22
STLGEW06	3:45	11/19/2005	39.9	31.8	0.4	27.9	-1.9	0.26	103	28
STLGEW50	3:48	11/19/2005	54.2	37.9	0	7.9	-2.8	0.59	109	44
STLGEW52	3:52	11/19/2005	14.2	19.2	3.1	63.5	-2.7	0.03	105	6
STLGEW49	3:59	11/19/2005	19.3	27.1	0.1	53.5	-1.6	-0.05	82	0
STLGEW51	4:04	11/19/2005	45.6	34.4	1.5	18.5	-3.1	0.2	96	25
STLGEW53	4:10	11/19/2005	40.9	31.5	1.3	26.3	-3.9	0.01	108	2
STLGEW54	4:14	11/19/2005	39	31.7	0.5	28.8	-3.5	0	110	0
STLGEW55	4:18	11/19/2005	53.6	35.1	1.6	9.7	-3.5	0.06	111	12
STLGEW07	4:25	11/19/2005	66.2	32.7	1.1	0	-2.2	0.32	105	33
STLGEW08	4:29	11/19/2005	79.7	20.3	0	0	-5	0.9	124	57
STLGEW09	4:33	11/19/2005	71.8	28.1	0.1	0	-2.1	0.48	139	36
STLGEW10	4:36	11/19/2005	82.5	17	0.5	0	-2.5	0.36	127	35
STLGEW38	10:24	11/26/2005	75.5	24.1	0.4	0	-2.1	0.52	121	42
STLGEW39	10:28	11/26/2005	61	37.8	0.4	0.8	-1	0.06	113	12
STLGEW37	10:39	11/26/2005	51.3	34.8	2.3	11.6	-1	0.13	111	19
STLGEW36	10:42	11/26/2005	78.2	21.5	0.3	0	-1.1	0.57	120	45
STLGEW35	10:46	11/26/2005	77.8	22.1	0.1	0	-1.2	0.56	117	45
STLGEW34	10:53	11/26/2005	63.6	33.9	2.5	0	-0.5	0	99	0
STLGEW33	11:10	11/26/2005	50.6	28.9	5.2	15.3	-6	-0.79	108	0
STLGEW32	11:14	11/26/2005	45.4	28.8	4.8	21	-11.4	11.14	53	>>>
STLGEW31	11:18	11/26/2005	60.5	36.8	2.7	0	-7.8	0.67	127	42
STLGEW30	11:22	11/26/2005	70.9	28.9	0.2	0	-3.9	0.62	125	44
STLGEW29	11:27	11/26/2005	59.9	37.7	1.3	1.1	-0.7	0.15	62	25
STLGEW28	11:31	11/26/2005	70.2	29.7	0.1	0	-1.7	-1.86	124	0
STLGEW27	11:35	11/26/2005	64.1	33.6	2.3	0	-4.7	0.06	107	13
STLGEW26	11:41	11/26/2005	68.5	31.3	0.2	0	-18.8	0.11	125	16
STLGEW25	11:55	11/26/2005	50.6	33.4	1.4	14.6	-1.2	0.11	69	21
STLGEW24	11:59	11/26/2005	53.7	35.8	0.1	10.4	-1.4	0.44	112	37
STLGEW23	12:08	11/26/2005	51.6	36.2	1.7	10.5	-0.8	0.03	66	7
STLGEW22	12:10	11/26/2005	55.6	37.7	0.3	6.4	-2.7	0.39	62	40
STLGEW21	12:15	11/26/2005	71	28.2	0.8	0	-0.9	0.11	>>>	>>>
STLGEW20	12:19	11/26/2005	67.1	32.4	0.5	0	-1.2	1.98	>>>	>>>
STLGEW19	12:26	11/26/2005	68.8	31.2	0	0	-0.9	0.07	130	12
STLGEW18	12:30	11/26/2005	73.2	26.6	0.2	0	-2.8	0.13	120	20
STLGEW17	12:42	11/26/2005	74.3	25.7	0	0	-1.2	0.17	115	24
STLGEW16	12:49	11/26/2005	28.5	25.9	3.3	42.3	-1.9	0	81	0
STLGEW15	12:54	11/26/2005	9	17.3	3	70.7	-1.8	0.01	105	2
STLGEW14	13:01	11/26/2005	44.6	29.5	2.1	23.8	-3.9	0.1	120	16
STLGEW13	13:05	11/26/2005	45.6	34.1	0.3	20	-4.5	0.04	118	8

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STLGEW12	13:21	11/26/2005	66.7	30.9	2.4	0	-1.6	0	89		0
STLGEW11	13:24	11/26/2005	53.7	31.2	0	15.1	-2.5	0.24	115		27
STLGEW56	13:28	11/26/2005	38.9	29.3	0.2	31.6	-3.7	0.16	122		20
STLGEW63	13:34	11/26/2005	44.5	27.8	2.2	25.5	-13.1	1.71	132		66
STLGEW67	14:35	11/26/2005	52.9	32.3	0.3	14.5	-7	0.97	120		54
STLGEW71	14:38	11/26/2005	54.2	34.5	1.2	10.1	-8.8	0.02	116		4
STLGEW70	14:43	11/26/2005	66.4	33	0.6	0	-5.4	0.51	98		44
STLGEW66	14:47	11/26/2005	43.4	30.5	4.5	21.6	-5.9	0.1	89		18
STLGEW66	14:50	11/26/2005	55.9	36.5	0.5	5.1	-6.8	0.53	89		44
STLGEW62	14:53	11/26/2005	47.8	35	0.4	16.8	-3.1	0	92		0
STLGEW59	15:01	11/26/2005	63.4	34.5	2.1	0	-5.2	1.28	110		67
STLGEW58	15:05	11/26/2005	66.3	32.7	1	0	-2	0.27	126		27
STLGEW61	15:12	11/26/2005	54.5	40.6	0	4.9	-5.2	0.94	79		61
STLGEW65	15:16	11/26/2005	40.7	30.2	4.4	24.7	-2.8	-0.13	99		0
STLGEW57	15:25	11/26/2005	70.2	29	0.8	0	-2	0.26	94		32
STLGEW60	15:28	11/26/2005	46.6	31.2	0.3	21.9	-1.6	0.18	94		24
STLGEW64	15:33	11/26/2005	42.5	27.3	4.6	25.4	-7.2	0.08	110		15
STLGEW68	15:39	11/26/2005	52.8	29.9	4.5	12.8	-6.2	0.03	108		7
STLGEW69	15:44	11/26/2005	63	35.5	1.5	0	-8.8	1.18	108		64
STLGEW75	15:48	11/26/2005	71.9	28.1	0	0	-3.2	0.69	103		52
STLGEW79	16:15	11/26/2005	74.7	25.3	0	0	-1.1	-0.87	109		0
STLGEW78	16:19	11/26/2005	73.2	26.8	0	0	-4.4	0.44	114		39
STLGEW77	16:23	11/26/2005	72.3	27.3	0.4	0	-3.1	0.65	92		53
STLGEW05	16:27	11/26/2005	62.2	36.5	0.7	0.6	-9.8	3.12	90	>>>	
STLGEW82	16:30	11/26/2005	68.1	31.9	0	0	-1	0.57	100		47
STLGEW76	16:36	11/26/2005	69.6	29.6	0.8	0	-3.5	2.08	84		98
STLGEW72	16:39	11/26/2005	75.2	24.8	0	0	-2.1	0.26	101		32
STLGEW33	16:44	11/26/2005	72.7	26.7	0.6	0	-2.8	0.1	101		19
STLGEW33	16:49	11/26/2005	64.8	31.8	3.4	0	-5.8	5.97	98	>>>	
STLGEW69	16:55	11/26/2005	69.7	30.3	0	0	-6.8	6.7	105	>>>	
STLGEW74	17:00	11/26/2005	69.7	29.6	0.7	0	-2.2	0.06	89		13
STLGSKFL	17:07	11/26/2005	60.4	37	0.2	2.4	-62.2	25.26	78	>>>	

West

B,1 56

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ST. LOUIS GAS PRODUCERS
MONTH OF NOVEMBER
5 DAY RECHECKS

WELL NUMBER	DATE AND TIME of Reading	CH4 % by vol.	O2 % by vol.	PRESSURE inches of water column	TEMPERATURE deg F	COMMENTS
GW-33	11/26/2005	64.8	3.4	-5.8	98	Retest Well

15 DAY RECHECK

WELL NUMBER	DATE AND TIME of Reading	CH4 % by vol.	O2 % by vol.	PRESSURE inches of water column	TEMPERATURE deg F	

State of MO v. Republic Services, Inc. et al
PL1 - 056286

Bridgeton Landfill Wellfield Data
July, 2006

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW01	7/28/2006 14:02	32.4	29	4.3	-0.4	128
BRIGEW02	7/28/2006 9:20	48	37.7	0	-4.5	124
BRIGEW03	7/28/2006 9:18	31.1	32.8	0	-1.8	110
BRIGEW04	7/28/2006 9:15	45.6	36.4	0	-1.2	122
BRIGEW05	7/28/2006 9:11	25.4	30.3	0	-1.1	100
BRIGEW06	7/28/2006 16:09	42	35.1	2.6	-0.7	106
BRIGEW07	7/28/2006 8:45	43.8	36	0.1	-7.6	114
BRIGEW08	7/28/2006 8:43	36	29.3	3.1	-5.3	120
BRIGEW09	7/28/2006 16:05	13.8	16.8	4.8	-16.3	118
BRIGEW10	7/28/2006 8:32	56.2	36.9	0.1	-9.7	122
BRIGEW11	7/28/2006 8:29	40.2	33.1	0.2	-10.1	138
BRIGEW12	7/28/2006 12:29	39.1	34.2	0.2	-3.3	126
BRIGEW13	7/28/2006 12:27	59.6	39.6	0.6	-5	130
BRIGEW14	7/28/2006 12:25	47.4	37.5	0.3	-4.1	116
BRIGEW15	7/28/2006 12:23	25.6	26.1	2.7	-1.7	104
BRIGEW16	7/28/2006 12:18	50.1	36.1	0.6	-2	120
BRIGEW17	7/28/2006 12:15	50.3	34.7	1.2	-3	116
BRIGEW18	7/28/2006 12:12	46	31.5	4.9	-10.7	124
BRIGEW19	7/28/2006 12:05	48.3	27.9	2	-1.2	138
BRIGEW20	7/28/2006 11:58	50.4	37.2	0.6	-3.6	120
BRIGEW21	7/28/2006 11:56	48.5	37.7	0.2	-2.8	118
BRIGEW22	7/28/2006 11:53	47.6	37.6	0.4	-3	106
BRIGEW23	7/28/2006 11:51	8.1	4.9	15.2	-14.4	106
BRIGEW24	7/28/2006 11:48	34	32.5	0.3	-2.6	120
BRIGEW25	7/28/2006 11:45	31.4	31.6	0.8	-3.1	102
BRIGEW26	7/28/2006 11:43	46.3	35	1.2	-18.2	130
BRIGEW27	7/28/2006 11:40	29.9	20.5	8.3	-13.3	120
BRIGEW28	7/28/2006 11:36	59.9	39.6	0.4	-11.4	124
BRIGEW29	7/28/2006 11:33	56.3	42.1	0.2	-3	102
BRIGEW30	7/28/2006 11:30	57.1	38.6	0.5	-8.6	120
BRIGEW31	7/28/2006 11:27	56.3	42.2	1.4	-12.8	130
BRIGEW32	7/28/2006 11:23	59.3	39	1.6	-13.8	120
BRIGEW33	7/28/2006 11:17	59.8	39.5	0.6	-12	118
BRIGEW34	7/28/2006 11:15	51.5	37.5	0.2	-8.7	122
BRIGEW35	7/28/2006 11:13	56.7	40.1	0.2	-8	114
BRIGEW36	7/28/2006 11:10	48.9	39.6	0.2	-3.8	98
BRIGEW37	7/28/2006 11:08	35.1	33.9	0.5	-3.2	104
BRIGEW38	7/28/2006 11:05	50.5	36.9	1.4	-4.5	84
BRIGEW39	7/28/2006 8:22	46.7	37.9	0.2	-3	116
BRIGEW40	7/28/2006 9:55	32.8	29.5	3.4	-7	106
BRIGEW41	7/28/2006 9:51	43.6	36.6	0	-2.1	110
BRIGEW42	7/28/2006 9:49	27.4	29.1	0	-2	110
BRIGEW43	7/28/2006 9:36	41.2	34.7	0.1	-2.2	126
BRIGEW44	7/28/2006 9:34	17	23.7	0.1	-1.2	120
BRIGEW45	7/28/2006 9:26	37.8	33.2	0	-2.3	108
BRIGEW46	7/28/2006 9:23	46.6	37.8	0.1	-6.9	116
BRIGEW47	7/28/2006 9:13	57.3	41	0	-8.4	110
BRIGEW48	7/28/2006 9:08	46.3	38.6	0.1	-1.1	118
BRIGEW49	7/28/2006 9:29	25.6	30.3	0	-1.9	92
BRIGEW50	7/28/2006 8:55	46.3	37	0	-0.5	110

O_2 ~~0.11~~ .23

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Bridgeton Landfill Wellfield Data
July, 2006

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)
BRIGEW51	7/28/2006 9:31	43.5	37.5	0	-2.6	108
BRIGEW52	7/28/2006 8:53	20.5	27.2	0	-1	104
BRIGEW53	7/28/2006 9:42	40	35.2	0.4	-2.1	110
BRIGEW54	7/28/2006 9:47	35	35.7	0	-2	108
BRIGEW55	7/28/2006 9:45	35.3	34.9	0.1	-2.4	106
BRIGEW56	7/28/2006 8:25	31.7	32.6	0	-4.9	130
BRIGEW57	7/28/2006 14:57	50.2	41	0.2	-5.8	100
BRIGEW58	7/28/2006 15:03	47.2	39.7	0.3	-4.7	122
BRIGEW59	7/28/2006 15:05	43.1	36.2	0.5	-5.8	112
BRIGEW60	7/28/2006 14:56	51.2	39.8	0.6	-6.1	106
BRIGEW61	7/28/2006 15:00	39	38.3	0.6	-3.9	90
BRIGEW62	7/28/2006 15:07	28.5	29.1	0.9	-4.1	100
BRIGEW63	7/28/2006 12:31	35.8	31.5	0.3	-9	132
BRIGEW64	7/28/2006 14:53	50.1	39.2	0.9	-9.1	106
BRIGEW65	7/28/2006 14:51	34.1	34.2	2.1	-5.1	106
BRIGEW66	7/28/2006 15:10	31.8	31.3	1	-6.3	100
BRIGEW67	7/28/2006 14:10	45.8	35	1.3	-6.4	124
BRIGEW68	7/28/2006 14:45	53.4	38.8	0.3	-12.2	110
BRIGEW69	7/28/2006 14:48	56.5	39.2	0.2	-13.8	108
BRIGEW70	7/28/2006 15:12	45	36.3	1	-12.2	110
BRIGEW71	7/28/2006 14:15	30.5	30.5	1.6	-6.4	112
BRIGEW72	7/28/2006 14:20	30.8	29.3	1.1	-3.4	102
BRIGEW73	7/28/2006 14:43	52.3	36.9	0.3	-12	118
BRIGEW74	7/28/2006 14:41	56.8	42.9	0.2	-13.5	116
BRIGEW75	7/28/2006 14:17	35.4	33.7	0.8	-8.1	112
BRIGEW76	7/28/2006 14:22	22.3	24.8	0.3	-2	110
BRIGEW77	7/28/2006 14:32	36.9	31.1	2.3	-10.6	120
BRIGEW78	7/28/2006 14:34	53.1	38.5	0.3	-12.5	118
BRIGEW79	7/28/2006 14:36	49.1	36.9	0.2	-12.7	114
BRIGEW80	7/28/2006 14:29	45.2	38.3	0.2	-6.1	104
BRIGEW81	7/28/2006 14:27	42.7	35.6	0.3	-4	116
BRIGEW82	7/28/2006 14:25	37.5	35	0.5	-3.9	106

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Bridgeton Landfill Wellfield Data
August, 2006

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)	
BRIGEW01	8/9/2006 17:35	39.3	31.1	2.6	-0.5	130	
BRIGEW02	8/9/2006 14:11	46.2	39.2	0.1	-4.3	124	
BRIGEW03	8/9/2006 14:08	31.1	32.3	0.2	-1.6	112	
BRIGEW04	8/9/2006 14:06	43	36.6	0.2	-1.1	122	
BRIGEW05	8/9/2006 14:01	26.3	30.9	0.2	-0.9	106	
BRIGEW06	8/9/2006 13:56	56.7	42.9	0.2	-0.1	110	
BRIGEW07	8/9/2006 12:20	41.9	36.1	0.1	-7.8	120	
BRIGEW08	8/9/2006 12:17	37.3	28.3	3.2	-5.5	120	
BRIGEW09	8/9/2006 12:13	18.1	19.8	4.4	-10.4	120	
BRIGEW10	8/9/2006 12:10	53	36.5	0.2	-10.3	122	
BRIGEW11	8/9/2006 12:08	41.1	32.9	0.5	-9.8	139	
BRIGEW12	8/9/2006 10:36	31	31.2	0	-2.9	126	
BRIGEW13	8/9/2006 10:32	49.4	39.1	0.2	-5.7	128	
BRIGEW14	8/9/2006 10:29	38.4	35.3	0	-4.1	116	
BRIGEW15	8/9/2006 10:25	15.3	21.6	3.2	-1.8	108	
BRIGEW16	8/9/2006 10:21	28.5	30.8	0.3	-2.4	120	
BRIGEW17	8/9/2006 10:14	42.9	35.6	0	-4.5	114	
BRIGEW18	8/9/2006 10:12	41.1	34.1	3	-13.2	120	
BRIGEW19	8/9/2006 10:10	50.4	40.4	0	-1.5	138	OK
BRIGEW20	8/9/2006 10:08	36.1	33.1	1.1	-4.5	120	
BRIGEW21	8/9/2006 16:50	43.5	37	0.2	-2.2	128	
BRIGEW22	8/9/2006 16:48	44.9	36.8	0.4	-2.4	112	
BRIGEW23	8/9/2006 16:45	8.6	4.7	14.1	-14	136	✓
BRIGEW24	8/9/2006 16:42	31.3	30.8	0.3	-3.7	120	
BRIGEW25	8/9/2006 16:40	27.4	28.6	0.2	-2.7	116	
BRIGEW26	8/9/2006 16:38	45	35.3	0.6	-13	124	
BRIGEW27	8/9/2006 16:33	29	21	7	-12.9	116	✓
BRIGEW28	8/9/2006 16:31	60.7	38.9	0.3	-11	124	
BRIGEW29	8/9/2006 16:28	43.9	38.5	0.2	-2.3	108	
BRIGEW30	8/9/2006 16:26	53.3	37.7	0.4	-10.1	112	
BRIGEW31	8/9/2006 16:24	55.7	32.9	1.2	-15.7	130	
BRIGEW32	8/9/2006 15:52	60	38.8	1.1	-13.7	120	
BRIGEW33	8/9/2006 15:48	60.1	39.6	0.2	-12	118	
BRIGEW34	8/9/2006 15:45	44.8	35.3	0.2	-8	124	
BRIGEW35	8/9/2006 15:42	48.8	40.1	0.2	-8	112	
BRIGEW36	8/9/2006 15:40	45.7	40.8	0.2	-2.7	100	
BRIGEW37	8/9/2006 15:38	31.8	35	0.2	-2.2	104	
BRIGEW38	8/9/2006 15:36	50.9	38.9	0.7	-3.7	84	
BRIGEW39	8/9/2006 10:45	49.6	37.4	0	-3.1	114	
BRIGEW40	8/9/2006 14:32	39.1	35	0.1	-6	110	
BRIGEW41	8/9/2006 14:30	38.6	35.7	0.1	-1.9	116	
BRIGEW42	8/9/2006 14:27	25	28.4	0.1	-1.9	116	
BRIGEW43	8/9/2006 14:25	39.3	35.1	0.2	-4.4	128	
BRIGEW44	8/9/2006 14:23	23.1	27	0.2	-1.2	126	
BRIGEW45	8/9/2006 14:15	37.6	34.1	0.2	-4.5	116	
BRIGEW46	8/9/2006 14:13	47.6	38.9	0.5	-6.8	118	
BRIGEW47	8/9/2006 14:03	48.6	39.8	0.2	-14.7	120	
BRIGEW48	8/9/2006 13:59	47.7	39.3	0.2	-1	120	

Temp 11, 19, 23
O2 23, 27

Bridgeton Landfill Wellfield Data
August, 2006

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW49	8/9/2006 14:18	27.3	32.1	0.2	-1.7	96
BRIGEW50	8/9/2006 13:53	47.8	39.5	0.3	-0.7	112
BRIGEW51	8/9/2006 14:20	44.4	38.2	0.1	-2.3	110
BRIGEW52	8/9/2006 13:51	17.6	26.4	0.8	-0.6	110
BRIGEW53	8/9/2006 14:39	52.2	40	0.1	-2	120
BRIGEW54	8/9/2006 14:37	35.4	36.2	0.1	-1.7	110
BRIGEW55	8/9/2006 14:34	34	35.4	0.1	-2.2	110
BRIGEW56	8/9/2006 10:42	28.7	30.5	0	-4.4	56
BRIGEW57	8/10/2006 9:27	58.4	40.8	0	-5.3	102
BRIGEW58	8/10/2006 9:23	51.2	38.8	0	-4.1	134 ov
BRIGEW59	8/10/2006 9:31	51.8	36.7	0	-5.3	110
BRIGEW60	8/10/2006 9:11	55.9	38.8	0	-5.6	104
BRIGEW61	8/10/2006 9:15	38.8	37	0	-4.2	84
BRIGEW62	8/10/2006 9:18	24.9	27.3	0	-3.6	94
BRIGEW63	8/9/2006 10:39	35.1	31.8	0.4	-8.5	128
BRIGEW64	8/10/2006 9:07	54.1	39.6	0	-8.6	106
BRIGEW65	8/10/2006 9:04	36.6	34.6	0	-4.5	84
BRIGEW66	8/10/2006 9:01	33.7	32.5	0	-5.8	96
BRIGEW67	8/9/2006 17:22	54.1	36.4	0.1	-5.3	124
BRIGEW68	8/10/2006 8:53	57	37.9	0	-13.2	110
BRIGEW69	8/10/2006 8:56	60.5	39.4	0	-14.3	108
BRIGEW70	8/10/2006 8:58	54.7	38.5	0	-12.5	110
BRIGEW71	8/9/2006 17:20	42.5	33.9	0.2	-7	112
BRIGEW72	8/9/2006 17:15	37.1	33.7	0.1	-2.8	110
BRIGEW73	8/10/2006 8:50	57	36.6	0	-12.1	118
BRIGEW74	8/10/2006 8:46	57.4	42.5	0	-13	110
BRIGEW75	8/10/2006 8:42	45.1	35.9	0	-9	114
BRIGEW76	8/9/2006 17:12	50.2	41.6	0.2	-1.5	114
BRIGEW77	8/9/2006 16:58	42.6	34.3	0.2	-10.5	120
BRIGEW78	8/9/2006 17:02	57.3	42.4	0.1	-11.7	116
BRIGEW79	8/9/2006 17:06	57.3	40.5	0.2	-11.8	116
BRIGEW80	8/9/2006 16:55	44.8	38	0.3	-5.1	108
BRIGEW81	8/9/2006 16:53	48.5	36.8	0.2	-3.2	118
BRIGEW82	8/9/2006 17:09	38.8	34.6	0.2	-4.5	112

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Bridgeton Landfill Wellfield Data
September, 2006

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIGEW01	9/27/2006 11:52	30.8	27.2	4.8	-0.4	128
BRIGEW02	9/27/2006 10:46	48.4	37.7	0.2	-4.5	110
BRIGEW03	9/27/2006 10:44	31.8	33.1	0	-1.3	106
BRIGEW04	9/27/2006 10:42	43.3	37.4	0	-0.5	120
BRIGEW05	9/27/2006 10:38	26.6	30.8	0	-0.4	100
BRIGEW06	9/27/2006 10:32	34.9	31.5	2.8	-0.1	104
BRIGEW07	9/27/2006 10:22	43.4	35.4	0	-8.3	116
BRIGEW08	9/27/2006 10:20	43.1	30.8	2.6	-3.4	122
BRIGEW09	9/27/2006 10:17	16.3	19	4.4	-5.3	120
BRIGEW10	9/27/2006 10:15	53.5	36.3	0	-11.3	122
BRIGEW11	9/27/2006 9:58	52.8	35.9	1.9	-8.4	140
BRIGEW12	9/26/2006 16:57	35.6	33.7	0	-2.4	130
BRIGEW13	9/26/2006 16:54	49.2	38	0.3	-7.6	134
BRIGEW14	9/26/2006 16:52	42.8	35.8	0	-2.7	110
BRIGEW15	9/26/2006 16:49	13.3	19.3	4	-1	100
BRIGEW16	9/26/2006 16:46	34	33.9	0.2	-1.3	118
BRIGEW17	9/26/2006 16:43	50.8	37.4	0	-2.6	116
BRIGEW18	9/26/2006 16:41	41.9	33.2	4.8	-2	120
BRIGEW19	9/26/2006 16:39	57.4	42.5	0	-0.7	142
BRIGEW20	9/26/2006 16:37	41	35.6	0.8	-3.9	120
BRIGEW21	9/26/2006 18:04	40.1	35.7	0	-2.1	112
BRIGEW22	9/26/2006 18:01	48.3	36.7	0.3	-2.1	104
BRIGEW23	9/26/2006 17:59	1	0	19	0	88
BRIGEW24	9/26/2006 17:56	35.1	32.3	0.1	-2	120
BRIGEW25	9/26/2006 17:54	35.1	32.1	0	-1.9	110
BRIGEW26	9/26/2006 17:52	48.7	35.6	0.3	-5.6	134
BRIGEW27	9/26/2006 17:49	18.7	12.9	10.7	-7.6	108
BRIGEW28	9/26/2006 17:47	51.1	35.7	0	-13.7	124
BRIGEW29	9/26/2006 17:45	38.6	36.1	0	-2.4	92
BRIGEW30	9/26/2006 17:43	43.3	34.5	0.4	-10.3	120
BRIGEW31	9/26/2006 17:41	54.6	30.1	1	-16.5	126
BRIGEW32	9/26/2006 17:38	59.8	32.9	1.7	-17.3	118
BRIGEW33	9/26/2006 17:33	60.2	39.7	0	-15.2	106
BRIGEW34	9/26/2006 17:30	37.7	33.8	0	-8.6	126
BRIGEW35	9/26/2006 17:28	46	37.9	0	-9.2	112
BRIGEW36	9/26/2006 17:26	43.7	40.4	0	-3.1	102
BRIGEW37	9/26/2006 17:24	29.1	32.5	0	-2.1	106
BRIGEW38	9/26/2006 17:22	51.7	38.1	0	-4	82
BRIGEW39	9/26/2006 15:16	45.5	36.8	0	-2.9	114
BRIGEW40	9/27/2006 11:14	42.2	35.9	0	-4.9	96
BRIGEW41	9/27/2006 11:11	40.2	34.7	0	-1.9	106
BRIGEW42	9/27/2006 11:09	27	29.4	0	-1.5	102
BRIGEW43	9/27/2006 11:02	40.1	35.1	0	-1.3	128
BRIGEW44	9/27/2006 11:00	25	28	0	-1.1	114
BRIGEW45	9/27/2006 10:50	27.8	29.8	0	-10.7	100
BRIGEW46	9/27/2006 10:48	45.3	37.7	0	-8.4	110
BRIGEW47	9/27/2006 10:40	50.9	38.9	0	-17.3	110

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Bridgeton Landfill Wellfield Data
September, 2006

BRIGEW48	9/27/2006 10:35	45.2	38.1	0	-0.7	112
BRIGEW49	9/27/2006 10:53	25.1	29.8	0	-1.5	92
BRIGEW50	9/27/2006 10:28	46.9	37.6	0	-0.6	100
BRIGEW51	9/27/2006 10:56	47	37.1	0	-2.9	112
BRIGEW52	9/27/2006 10:25	19.3	26.4	0	-0.2	100
BRIGEW53	9/27/2006 11:04	44.4	37.3	0	-2	110
BRIGEW54	9/27/2006 11:06	35.1	35.1	0	-1.6	110
BRIGEW55	9/27/2006 11:16	34.7	34.8	0	-1.9	106
BRIGEW56	9/26/2006 17:02	30.6	29.7	0	-3.9	130
BRIGEW57	9/26/2006 18:53	46.1	38.6	0	-8.1	98
BRIGEW58	9/26/2006 18:56	45.7	37.6	0	-4.1	132
BRIGEW59	9/14/2006 16:52	45.5	36.4	0.3	-6	110
BRIGEW60	9/26/2006 18:51	39.2	36.1	0	-7.2	106
BRIGEW61	9/26/2006 18:58	34	34	0.2	-5.3	82
BRIGEW62	9/26/2006 19:01	21.6	24.8	0.2	-3.2	100
BRIGEW63	9/26/2006 17:00	44.7	34.1	0	-8.4	140
BRIGEW64	9/26/2006 18:49	47.7	38.6	0.2	-10.4	104
BRIGEW65	9/27/2006 12:04	21	21.6	6.8	-5.5	84
BRIGEW66	9/26/2006 18:43	31.3	30.8	0.1	-5.1	94
BRIGEW67	9/26/2006 19:07	45.3	34.6	0	-6.7	126
BRIGEW68	9/26/2006 18:36	45.4	35.9	0	-13.7	110
BRIGEW69	9/26/2006 18:39	55.4	39.6	0	-19.2	110
BRIGEW70	9/26/2006 18:41	49	37.9	0	-15.1	110
BRIGEW71	9/26/2006 19:04	32.9	31	0	-7.2	110
BRIGEW72	9/26/2006 18:24	34.6	31.7	0	-2.2	94
BRIGEW73	9/26/2006 18:33	61	38	0.9	-7	90
BRIGEW74	9/26/2006 18:29	58.1	41.8	0	-14.6	104
BRIGEW75	9/26/2006 18:26	44	36	0	-7.7	114
BRIGEW76	9/26/2006 18:21	54.5	39	0	-2	110
BRIGEW77	9/26/2006 18:14	46.8	36.1	0	-10.2	120
BRIGEW78	9/26/2006 18:16	52.4	39.1	0	-14.8	118
BRIGEW79	9/26/2006 18:19	55.6	38.2	0	-15.7	110
BRIGEW80	9/26/2006 18:12	42.5	36.5	0	-5.3	90
BRIGEW81	9/26/2006 18:09	45.2	35.8	0	-3.3	116
BRIGEW82	9/26/2006 18:06	27.8	28.8	0.1	-3.7	110

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O2 65

Bridgeton Landfill Wellfield Data
October, 2006

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIGEW01	10/31/2006 9:37	51.6	40.4	0	0	90
BRIGEW02	10/31/2006 9:41	43	37	0.8	-6.8	115
BRIGEW03	10/31/2006 10:19	28.3	32.7	0.3	-2.2	112
BRIGEW04	10/31/2006 10:17	23.4	27.9	0.3	-1.1	120
BRIGEW05	10/31/2006 10:15	21.7	30.2	0.2	-1.1	100
BRIGEW06	10/31/2006 9:28	1.6	8.9	12	-0.5	60 ✓
BRIGEW07	10/31/2006 9:22	40.1	35.5	0.4	-10.7	120
BRIGEW08	10/31/2006 9:20	35.4	27.8	4.9	-6.2	120
BRIGEW09	10/30/2006 15:46	20.6	19.6	3.6	-11.1	120
BRIGEW10	10/30/2006 15:49	46.4	30.9	0.2	-13.8	120
BRIGEW11	10/30/2006 15:52	47.7	31	0.4	-8.8	139 140 OK
BRIGEW12	10/30/2006 16:02	30.5	28.7	0.4	-2	130
BRIGEW13	10/30/2006 16:07	44.8	31.2	1.4	-8.1	120
BRIGEW14	10/30/2006 16:10	41.9	30.8	0.6	-3.1	113
BRIGEW15	10/30/2006 17:19	11.1	15.7	4.2	-1.5	80
BRIGEW16	10/30/2006 17:23	39.6	31.8	1.3	-2.7	110
BRIGEW17	10/30/2006 16:20	52.3	32.9	0.7	-2	118
BRIGEW18	10/30/2006 16:22	45.5	29.7	4.9	-1.6	120
BRIGEW19	10/30/2006 14:46	53.6	39.1	0.7	-0.2	110
BRIGEW2	Remonitored in 14 days not 4	43	30.6	1.7	-3	121
BRIGEW2		35.1	31.4	0.5	-1.7	128
BRIGEW2		50.5	32.7	0.7	-2.1	100
BRIGEW2		54.8	33.1	1.3	-1.1	78
BRIGEW2		29	28.3	1.1	-1.7	105
BRIGEW2		32	28.8	0.4	-1.9	107
BRIGEW2		35.3	29.5	1.2	-4.7	120
BRIGEW2		12	20.6	0.7	-1.8	75
BRIGEW2		45.6	30.5	1.3	-16	125
BRIGEW2		23.4	25.7	0.8	-3	88
BRIGEW3		46.4	31.8	0.4	-11.8	120
BRIGEW3		64.2	35.2	0.4	-19.4	126
BRIGEW32	10/30/2006 15:23	53.1	33.2	2	-19.4	119
BRIGEW33	10/30/2006 15:26	45.2	33.1	0.8	-19	115
BRIGEW34	10/30/2006 15:28	29.9	28	0.6	-9.4	120
BRIGEW35	10/30/2006 15:31	38.1	30.5	0.3	-10.2	111
BRIGEW36	10/30/2006 15:34	32.9	30.6	0.4	-2.7	100
BRIGEW37	10/30/2006 15:36	35.1	31.3	0.5	-0.8	100
BRIGEW38	10/30/2006 15:39	44.6	31.8	0.5	-3.5	117
BRIGEW39	10/30/2006 15:42	44	30.8	0.4	-3.4	110
BRIGEW40	10/31/2006 10:00	34.9	34.8	0.4	-8.5	98
BRIGEW41	10/31/2006 9:57	30.2	32.5	0.5	-3.7	110
BRIGEW42	10/31/2006 9:55	20.4	27.1	0	-3.1	105
BRIGEW43	10/31/2006 9:52	31.9	33.2	0.3	-3.2	127
BRIGEW44	10/31/2006 9:49	5.6	20.9	0	-2.4	120
BRIGEW45	10/31/2006 9:46	23.3	28.4	0.6	-14.7	110
BRIGEW46	10/31/2006 9:43	40.3	37.6	0.5	-12.2	120
BRIGEW47	10/31/2006 10:23	45.4	39.5	0.4	-26.1	112
BRIGEW48	10/31/2006 10:12	36.8	36.4	0.3	-1.7	109
BRIGEW49	10/31/2006 10:26	17.3	27.7	0.4	-2.9	99
BRIGEW50	10/31/2006 10:10	32.8	34	0.3	-2	107

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Bridgeton Landfill Wellfield Data
October, 2006

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	
BRIGEW51	10/31/2006 10:05	40.7	37	0.5	-4.4	105	
BRIGEW52	10/31/2006 10:08	11.2	22.8	0.3	-1.7	111	
BRIGEW53	10/31/2006 10:03	36.3	36.1	0.4	-4.1	110	
BRIGEW54	10/31/2006 10:30	28.6	35.1	0.3	-3.2	100	
BRIGEW55	10/31/2006 9:17	23.9	30.7	0.4	-3.8	100	
BRIGEW56	10/30/2006 15:56	19.1	18.3	5.6	-4.2	138	✓
BRIGEW57	10/30/2006 17:50	42.6	33	0.5	-10	98	
BRIGEW58	10/30/2006 16:54	37.2	30.1	0.1	-4.3	130	✓
BRIGEW59	10/30/2006 17:01	0.3		20.8	-0.1	60	✓
BRIGEW60	10/30/2006 16:50	38.4	30.6	0.4	-8.4	105	
BRIGEW61	10/30/2006 17:52	31.7	28.6	0.5	-7.3	95	
BRIGEW62	10/30/2006 17:54	22.9	23.6	0.6	-3.7	90	
BRIGEW63	10/30/2006 15:59	31.2	28.7	1.1	-6.7	137	
BRIGEW64	10/30/2006 16:48	43.9	32.6	0.2	-12.9	110	
BRIGEW65	10/31/2006 8:54	0	0	21.4	-9.2	40	✓
BRIGEW66	10/30/2006 17:47	0.6	0	20.6	-2	60	✓
BRIGEW67	10/30/2006 17:09	39.3	30.4	0.4	-7.8	125	
BRIGEW68	10/30/2006 16:45	43.7	30.8	0.5	-10.3	110	
BRIGEW69	10/30/2006 17:43	45.2	32.7	0.4	-21.2	110	
BRIGEW70	10/30/2006 17:31	40.8	31.6	0.1	-18.4	110	
BRIGEW71	10/30/2006 17:12	30.4	27.9	0.3	-8.5	108	
BRIGEW72	10/30/2006 17:16	31.3	28.2	0.3	-2.7	80	
BRIGEW72	10/30/2006 17:36	50.8	33.2	0.3	-19.8	118	
BRIGEW73	10/30/2006 17:41	47.6	30.7	0.3	-10.9	110	
BRIGEW74	10/30/2006 17:34	62.5	37	0.4	-20.1	105	
BRIGEW75	10/30/2006 17:29	38	30.4	0.3	-9.9	112	
BRIGEW76	10/31/2006 9:00	33.4	35.1	0.3	-4.7	78	
BRIGEW77	10/30/2006 17:39	40	29.4	0.5	-13.6	120	
BRIGEW78	10/31/2006 9:04	53.7	38.2	0.4	-24	118	
BRIGEW79	10/30/2006 17:27	46.6	32.6	0.5	-21.2	105	
BRIGEW80	10/30/2006 16:34	40.8	30.9	0.1	-8.3	95	
BRIGEW81	10/30/2006 16:30	48.1	31.9	0.2	-4.1	118	
BRIGEW82	10/30/2006 16:28	25.6	25.6	0.3	-5.4	110	

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O2 59, 65, 66

Bridgeton Landfill Wellfield Data
November, 2006

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW01	11/9/2006 14:12	56.8	38.7	0.2	-0.1	110
BRIGEW02	11/9/2006 11:11	43.9	36.2	0	-5.3	128
BRIGEW03	11/9/2006 11:08	27.9	29.7	0.3	-2	100
BRIGEW04	11/9/2006 11:05	31.4	26.9	0	-1	120
BRIGEW05	11/9/2006 11:01	21.9	28.5	0	-1	100
BRIGEW06	11/9/2006 17:47	18.2	21.8	4.6	-5.2	94
BRIGEW07	11/9/2006 9:50	43.3	35.1	0	-8.2	120
BRIGEW08	11/9/2006 9:48	44	30.4	3.6	-4.4	120
BRIGEW09	11/9/2006 9:44	16.2	18.5	4.8	-4.6	120
BRIGEW10	11/9/2006 9:42	51.3	35.8	0	-13.6	120
BRIGEW11	11/9/2006 9:39	54.8	36.3	0.1	-5.8	142
BRIGEW12	11/9/2006 9:38	34.2	38.5	0	-2	121
BRIGEW13	11/9/2006 13:10	42.1	35.1	2.1	-1.4	126
BRIGEW14	11/9/2006 9:33	47.2	39.7	0	-2.4	115
BRIGEW15	11/9/2006 12:13	15.1	21.1	2.5	-5.5	115
BRIGEW16	11/9/2006 9:31	39.5	36.4	0.5	-1.7	85
BRIGEW17	11/9/2006 9:29	47.9	39.6	0	-4.1	117
BRIGEW18	11/9/2006 9:26	42.8	35.2	4.1	-10.8	105
BRIGEW19	11/9/2006 9:22	51.6	47.5	0	-1	115
BRIGEW20	11/9/2006 9:21	47.4	38.4	0.2	-4.1	119
BRIGEW21	11/9/2006 15:11	52.9	37.6	0.4	-1.9	110
BRIGEW22	11/9/2006 15:09	60.3	37.8	0.6	-3.3	104
BRIGEW23	11/9/2006 15:06	59.2	38.2	2.4	-2.5	108
BRIGEW24	11/9/2006 15:03	34	28.2	2.7	-2.8	118
BRIGEW25	11/9/2006 15:01	41.2	4.7	0.4	-3.1	108
BRIGEW26	11/9/2006 14:58	41.4	33.4	0.6	-4.5	124
BRIGEW27	11/9/2006 14:55	18.5	22.2	0.2	-3.8	112
BRIGEW28	11/9/2006 14:48	41.4	30	4.7	-20.2	124
BRIGEW29	11/9/2006 14:46	29.1	30.5	1.9	-4.8	100
BRIGEW30	11/9/2006 14:43	42	32.4	2.2	-15.4	122
BRIGEW31	11/9/2006 14:41	61	36.3	2.4	-24.8	128
BRIGEW32	11/9/2006 13:03	61	33.6	4.3	-12.8	118
BRIGEW33	11/9/2006 12:42	48.6	34.2	1.9	-24.3	98
BRIGEW34	11/9/2006 12:40	35	31.5	0.5	-10.4	126
BRIGEW35	11/9/2006 12:37	43	35	0.7	-12.6	112
BRIGEW36	11/9/2006 12:35	37.2	34.1	0.3	-4.6	100
BRIGEW37	11/9/2006 12:33	32.9	32.3	0.7	-2.4	82
BRIGEW38	11/9/2006 12:31	41.7	33.4	1.7	-5.1	118
BRIGEW39	11/9/2006 12:28	33.6	28.7	4.6	-4.1	112
BRIGEW40	11/9/2006 11:46	37.6	33.1	0.9	-6.7	98
BRIGEW41	11/9/2006 11:43	33.3	32.5	0	-2.8	106
BRIGEW42	11/9/2006 11:40	25.1	27.6	0	-2.3	100
BRIGEW43	11/9/2006 11:35	35.4	31.9	0	-2.2	130
BRIGEW44	11/9/2006 11:31	10.5	20.2	0.7	-1.4	112
BRIGEW45	11/9/2006 11:19	21.5	22.3	3.9	-12.3	94
BRIGEW46	11/9/2006 11:15	36.9	33.9	0.9	-9.6	112
BRIGEW47	11/9/2006 11:26	50	37.7	0.1	-22.2	120

Temp: 11

O2 0.2, 3.8

Bridgeton Landfill Wellfield Data
November, 2006

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW48	11/9/2006 10:59	36.8	35.5	0	-1.5	110
BRIGEW49	11/9/2006 11:22	18.3	26	0	-2.2	100
BRIGEW50	11/9/2006 10:16	34.9	33.1	0	-1.7	110
BRIGEW51	11/9/2006 10:13	39.1	34.8	0	-3.2	110
BRIGEW52	11/9/2006 9:55	14	22.6	0	-1.1	102
BRIGEW53	11/9/2006 10:11	34.8	33.8	0	-3.1	116
BRIGEW54	11/9/2006 11:37	29.5	32.8	0	-2.6	102
BRIGEW55	11/9/2006 10:08	28.6	31.4	0	-2.3	104
BRIGEW56	11/9/2006 9:42	48.8	24.5	0.6	-6.9	80
BRIGEW57	11/9/2006 12:33	35.7	37.3	0.4	-11.6	96
BRIGEW58	11/9/2006 12:30	33.1	35.8	0.2	-5.5	126
BRIGEW59	11/9/2006 14:38	31.4	31.3	3.3	-10	108
BRIGEW60	11/9/2006 12:54	38	35	0.5	-9.8	110
BRIGEW61	11/9/2006 12:35	25.1	32.5	0.1	-8.8	102
BRIGEW62	11/9/2006 12:23	14.2	25.7	0	-3.9	100
BRIGEW63	11/9/2006 9:40	34.3	37.8	0	-5.9	138
BRIGEW64	11/30/2006 12:58	52.6	38.7	1.1	-13.8	96
BRIGEW65	11/9/2006 17:50	18.9	23.2	4.5	-5.1	92
BRIGEW66	11/9/2006 12:38	22.5	31.4	0.4	-6.9	103
BRIGEW67	11/9/2006 12:20	37.8	31.4	0.2	-7.5	123
BRIGEW68	11/9/2006 12:50	34.7	36	1	-5.5	108
BRIGEW69	11/9/2006 12:52	16.7	25.6	3.6	-16	104
BRIGEW70	11/9/2006 15:49	36	30.8	2.7	-21.7	110
BRIGEW71	11/9/2006 12:18	28.1	31.5	0	-9	122
BRIGEW72	11/9/2006 12:15	26	30.9	0.1	-3.5	91
BRIGEW73	11/9/2006 15:24	41.9	33.5	1.2	-13	114
BRIGEW74	11/9/2006 15:44	58.3	41.4	0.1	-24.2	100
BRIGEW75	11/9/2006 15:41	33.6	29.3	3.3	-11.5	114
BRIGEW76	11/9/2006 15:38	40.6	34.5	0.6	-3	106
BRIGEW77	11/9/2006 15:22	34.4	28.9	2.4	-15.4	120
BRIGEW78	11/9/2006 15:28	47.3	35.2	1.2	-23	118
BRIGEW79	11/9/2006 15:34	39.5	32.3	3.5	-14.9	110
BRIGEW80	11/9/2006 15:20	42.3	35	0.6	-8.4	100
BRIGEW81	11/9/2006 15:17	41.7	33.3	0.7	-4.5	120
BRIGEW82	11/9/2006 15:15	29.6	28.6	1.4	-3.1	112

Bridgeton Landfill Wellfield Data
December 2006

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg. F)
BRIGEW01	12/19/2006 18:32	35.7	30	2.4	-1.2	88
BRIGEW02	12/19/2006 11:05	50.8	37.5	0	-4.1	133
BRIGEW03	12/19/2006 11:07	34.5	33.6	0	-1.2	113
BRIGEW04	12/19/2006 11:09	46.1	36.4	0	-0.8	112
BRIGEW05	12/19/2006 11:11	21.1	26.9	0	-1.2	98
BRIGEW06	12/19/2006 11:17	34.9	32.7	4.3	-0.5	76
BRIGEW08	12/19/2006 11:38	35.9	27.3	4.1	-6.5	127
BRIGEW09	12/19/2006 11:42	17.3	21	1.5	-8.9	122
BRIGEW10	12/19/2006 11:47	26.6	23.6	4.4	-24.9	120
BRIGEW11	12/19/2006 11:51	48.8	33.2	2.6	-9.4	136
BRIGEW12	12/19/2006 14:10	45.6	35.3	0	-2.6	124
BRIGEW13	12/19/2006 14:07	59.5	38.1	2.3	-1.6	130
BRIGEW14	12/19/2006 14:05	56.7	34.4	2.4	-3.5	112
BRIGEW15	12/19/2006 14:01	9	15.5	4.8	-2.4	100
BRIGEW18	12/19/2006 15:13	42.8	30.2	4.3	-38.1	121
BRIGEW19	12/19/2006 15:15	40.8	32.4	0	-2.9	80
BRIGEW20	12/19/2006 15:17	35.7	29.5	0	-5	96
BRIGEW21	12/19/2006 15:19	58.6	37.4	1.2	-3.1	112
BRIGEW22	12/19/2006 15:20	37.8	31.2	1.2	-7.7	114
BRIGEW23	12/19/2006 15:23	30.3	29.1	0	-5	108
BRIGEW24	12/19/2006 15:25	27.1	26.9	0.1	-5.2	80
BRIGEW25	12/19/2006 15:27	33.1	28.2	0	-6.7	93
BRIGEW26	12/19/2006 15:30	27	24.7	0.3	-22.3	96
BRIGEW27	12/19/2006 12:31	42.1	34.2	0.2	-7.1	96
BRIGEW28	12/19/2006 12:25	39.3	27.7	2.2	-32	126
BRIGEW29	12/19/2006 12:28	13.4	21.1	0	-6.7	129
BRIGEW30	12/19/2006 12:23	35.4	26.3	3.4	-19.7	130
BRIGEW31	12/19/2006 12:20	47.2	30	4.7	-26.6	125
BRIGEW32	12/19/2006 12:17	62.7	35.7	1.4	-10.9	118
BRIGEW33	12/19/2006 12:14	59.5	31.4	3.8	-41.9	100
BRIGEW35	12/19/2006 12:06	25.6	20.5	4.9	-17.7	116
BRIGEW35	12/19/2006 12:08	47	33.8	2.4	-8.3	110
BRIGEW36	12/19/2006 12:04	33.4	32.9	0.4	-5.2	90
BRIGEW37	12/19/2006 12:02	18.1	33.1	0.1	-2.7	50
BRIGEW38	12/19/2006 12:00	54.9	36.1	0	-4.3	112
BRIGEW39	12/19/2006 11:57	46.8	33.3	0.7	-2.5	111
BRIGEW40	12/19/2006 10:47	29.1	28.1	3.3	-9.8	80
BRIGEW41	12/19/2006 10:49	25.3	28.5	0.8	-4.3	82
BRIGEW42	12/19/2006 10:52	19	23.8	1.5	-4.1	74
BRIGEW43	12/19/2006 10:54	33.6	29.2	2.6	-3.9	122
BRIGEW44	12/19/2006 10:57	4.6	15.8	4.1	-2	90
BRIGEW45	12/19/2006 11:00	28.6	30.2	0.7	-7.9	90
BRIGEW46	12/19/2006 11:02	34.6	30.5	2.9	-5.8	115
BRIGEW47	12/19/2006 11:27	54.7	39.2	0.5	-6.2	91
BRIGEW48	12/19/2006 11:13	34.3	32.2	0.2	-2.2	109
BRIGEW49	12/19/2006 11:25	15.6	23.4	0	-2.1	91
BRIGEW50	12/19/2006 11:19	26.4	27.8	2.1	-2.7	110
BRIGEW51	12/19/2006 11:23	30.5	30	1	-5.1	110
BRIGEW52	12/19/2006 11:21	7.1	16.3	3	-1.6	99
BRIGEW56	12/19/2006 11:55	37.4	30.3	0.5	-9.1	129
BRIGEW57	12/19/2006 12:54	43.2	35.8	0.6	-5	100
BRIGEW60	12/19/2006 12:52	56.5	37.7	0.6	-5.7	100

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Bridgeton Landfill Wellfield Data
December 2006

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIGEW61	12/19/2006 12:56	26.9	28.8	1	-4.5	65
BRIGEW62	12/19/2006 13:31	30.1	28.3	0.9	-5.6	86
BRIGEW63	12/19/2006 11:54	42.4	32.6	0	-8.9	130
BRIGEW64	12/19/2006 12:50	39.5	35.4	0.5	-8.9	90
BRIGEW67	12/19/2006 13:10	46.5	29.9	4.8	-14.4	96
BRIGEW67	12/19/2006 13:35	49.5	32.3	2.5	-6.5	123
BRIGEW68	12/19/2006 12:47	32	29.1	4.8	-84.2	100
BRIGEW70	12/19/2006 13:25	36.9	33	0.2	-10.6	110
BRIGEW72	12/19/2006 13:20	41.8	30	3.9	-40.4	118
BRIGEW72	12/19/2006 13:41	23.9	23.3	3.6	-6.4	108
BRIGEW73	12/19/2006 13:14	42	30	4.3	-21.5	104
BRIGEW74	12/19/2006 13:23	56.5	37.5	0.2	-36.5	112
BRIGEW75	12/19/2006 13:43	30.6	25.5	4.9	-4.1	117
BRIGEW77	12/19/2006 13:15	29.6	24.4	2.7	-22.5	121
BRIGEW77	12/19/2006 13:15	29.6	24.4	2.7	-22.5	121
BRIGEW80	12/19/2006 13:49	28	25.9	2.9	-12.6	102
BRIGEW80	12/19/2006 13:49	28	25.9	2.9	-12.6	102
BRIGEW01	12/19/2006 16:51	25.9	22.2	6.5	-2.2	110
BRIGEW82	12/19/2006 13:55	21.1	20	4.1	-4.9	86

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Bridgeton Landfill, LLC
January 2007
Wellfield Gas Balancing Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIGEW02	1/18/2007 14:51	51.8	41.7	0	-2.4	113
BRIGEW03	1/18/2007 14:42	47.7	39.6	0	-0.3	102
BRIGEW04	1/18/2007 14:31	51.3	40.8	0	-1.5	110
BRIGEW05	1/18/2007 14:23	36	33.3	0	-0.1	93
BRIGEW06	1/18/2007 16:33	48.3	37.1	0	-0.5	97
BRIGEW08	1/19/2007 10:16	42.6	36.9	0.3	-5.5	125
BRIGEW09	1/19/2007 10:01	16.3	26.4	0.2	-5.3	130
BRIGEW10	1/19/2007 9:46	45.9	39.8	0	-20.9	120
BRIGEW11	1/22/2007 15:41	51.7	42.2	0	-11.6	138
BRIGEW12	1/22/2007 14:37	44.6	39.2	0	-3.3	132
BRIGEW13	1/22/2007 14:25	48.6	39.3	0	-5.1	132
BRIGEW14	1/22/2007 14:20	48.4	37.8	0	-9.6	119
BRIGEW15	1/23/2007 10:38	2.6	15.9	3.7	-4.4	97
BRIGEW16	1/22/2007 14:12	24	21.2	3	-5.2	88
BRIGEW17	1/22/2007 13:52	42.5	36.4	0	-6.6	111
BRIGEW18	1/22/2007 13:32	41.2	33.5	3.1	-33.4	123
BRIGEW19	1/22/2007 13:25	51.8	45	0	-2.7	79
BRIGEW20	1/22/2007 13:13	50.3	39.5	0	-3.7	130
BRIGEW21	1/22/2007 13:00	50.8	38.9	0.2	-2.8	33
BRIGEW22	1/22/2007 12:54	47.8	37.3	0.2	-6.7	105
BRIGEW23	1/22/2007 12:49	47.2	37.2	0	-3.6	108
BRIGEW24	1/22/2007 12:38	28.8	30.5	0	-4.4	113
BRIGEW25	1/22/2007 12:29	25.5	28.7	0	-6.5	113
BRIGEW26	1/22/2007 12:16	36.3	33	0	-10.3	129
BRIGEW27	1/22/2007 12:00	27	31	0	-3.7	117
BRIGEW28	1/22/2007 11:54	52.8	39.3	0	-18.7	128
BRIGEW29	1/22/2007 11:38	46.6	36.4	0	-4.2	81
BRIGEW30	1/22/2007 11:32	51.5	39.1	0	-7.2	125
BRIGEW31	1/22/2007 11:26	54.3	42.2	0	-6.6	122
BRIGEW32	1/22/2007 11:19	53.3	41.1	0.3	-21.2	121
BRIGEW33	1/22/2007 11:13	52	40.5	0	-30.5	120
BRIGEW34	1/22/2007 11:06	53.8	41	0	-3.5	124
BRIGEW35	1/22/2007 10:59	52.7	44	0	-2.2	113
BRIGEW36	1/22/2007 10:53	52.8	41.9	0	-2.2	110
BRIGEW37	1/22/2007 10:42	43.7	33.5	1.9	-2	32
BRIGEW38	1/22/2007 10:29	51.6	41.4	0	-5.7	117
BRIGEW39	1/19/2007 9:34	52.5	43.3	0	-1.6	109
BRIGEW40	1/19/2007 9:25	49.7	38.4	0	-7.2	97
BRIGEW41	1/19/2007 9:19	45	36.2	0	-2.6	93
BRIGEW42	1/19/2007 9:03	33.3	33.9	0	-3.3	89
BRIGEW43	1/19/2007 8:54	48.7	39.4	0	-2.8	129
BRIGEW44	1/18/2007 11:25	27.7	30.1	0	-0.9	98
BRIGEW45	1/18/2007 15:35	42.7	35.4	0	-10.1	104
BRIGEW46	1/18/2007 15:01	44.9	40	0	-3.4	108
BRIGEW47	1/19/2007 11:24	48.6	41.3	0	-17.2	110
BRIGEW48	1/18/2007 14:06	51.1	40.7	0	-0.2	110
BRIGEW49	1/18/2007 11:01	21.7	30.4	0	-1.1	97

Bridgeton Landfill, LLC
January 2007
Wellfield Gas Balancing Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)
BRIGEW50	1/18/2007 13:31	49.9	38.2	0	-0.3	102
BRIGEW51	1/19/2007 11:02	35.6	35.4	0	-2.7	108
BRIGEW51	1/19/2007 11:06	36.3	34.7	0	-2.6	109
BRIGEW52	1/18/2007 13:18	12.9	21.4	2.1	-0.1	34
BRIGEW52	1/18/2007 13:22	17.3	26.3	0	-0.2	80
BRIGEW52	1/18/2007 16:22	14.6	26.1	0	-0.6	97
BRIGEW52	1/18/2007 16:25	14.9	25.4	0	-0.5	77
BRIGEW52	1/19/2007 11:31	10.5	24.8	0	-0.3	42
BRIGEW53	1/19/2007 10:49	35	35.5	0	-4.4	115
BRIGEW54	1/19/2007 10:44	27.6	31.6	0	-2.9	107
BRIGEW55	1/19/2007 10:22	28.7	33.2	0	-5.3	103
BRIGEW56	1/22/2007 15:35	37	32.6	1	-8.2	132
BRIGEW57	1/23/2007 12:50	48.3	41.8	0	-3.2	97
BRIGEW58	1/23/2007 14:18	45.4	40.8	0.3	-1.2	51
BRIGEW59	1/23/2007 13:02	40.9	37.8	0.2	-3.2	119
BRIGEW60	1/23/2007 12:25	52.2	42.5	0	-5	99
BRIGEW61	1/23/2007 12:45	45.3	38.8	0	-2	67
BRIGEW62	1/22/2007 16:44	33.7	30.5	1	-4.3	106
BRIGEW63	1/23/2007 14:30	44.6	41.4	0	-4.9	136
BRIGEW64	1/23/2007 12:17	51	39.5	0	-4.1	86
BRIGEW65	1/23/2007 12:35	35.9	36.9	0	-3	49
BRIGEW66	1/22/2007 16:39	36.6	32.8	0.6	-4.7	65
BRIGEW67	1/22/2007 16:00	39.5	35.2	0	-11.4	130
BRIGEW68	1/23/2007 12:12	51.1	42.4	0	-7.3	106
BRIGEW69	1/23/2007 13:15	48.7	39.6	0.2	-9.2	80
BRIGEW70	1/22/2007 16:24	38.2	34.6	0	-9.9	108
BRIGEW71	1/22/2007 16:18	33	32	0	-12.2	113
BRIGEW72	1/23/2007 10:28	14.1	25.2	0	-10.8	114
BRIGEW73	1/23/2007 12:05	50.5	37.8	0	-21	120
BRIGEW74	1/23/2007 13:20	47.1	39.9	0.1	-26.2	116
BRIGEW75	1/23/2007 10:14	37.4	33.6	0.1	-24.1	114
BRIGEW76	1/23/2007 10:54	38.3	35.4	0	-4.9	94
BRIGEW77	1/23/2007 11:52	33.7	33.2	0.4	-15.9	121
BRIGEW78	1/23/2007 11:46	40.5	36.6	0	-31.6	116
BRIGEW79	1/23/2007 13:28	36.4	34.7	0	-22.6	117
BRIGEW80	1/23/2007 11:22	32.6	33.5	0.2	-12.2	100
BRIGEW81	1/23/2007 11:17	22.6	28.8	0	-6.6	63
BRIGEW82	1/23/2007 11:01	22.8	28.7	0	-3.8	121

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O_2 ø

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Temperature (Deg F)	Initial Static Pressure (inches H_2O)
BrigIT-1	1/29/2007 12:26	8.4	14	11.4	0	-0.3
BrigIT-1	1/29/2007 13:52	7.8	13.7	11.7	0	-0.2
BrigIT-2	1/29/2007 12:33	0	3.2	17.1	0	-0.3
BrigIT-2	1/29/2007 13:55	0	3.1	17.3	0	-0.1
BrigIT-3	1/29/2007 12:38	10.3	17.9	6.1	0	-0.1
BrigIT-3	1/29/2007 13:59	14.9	22	2.1	0	-0.2
BrigIT-4	1/29/2007 12:43	30.7	30.6	1.5	0	0
BrigIT-4	1/29/2007 14:03	33.6	31.8	0.2	0	-0.3
BrigIT-4	1/29/2007 14:07	32.7	31.9	0	0	-0.3
BrigIT-5	1/29/2007 12:47	42.5	35.6	0	0	0
BrigIT-5	1/29/2007 14:10	44.9	36	0	0	-0.3
BrigIT-6	1/29/2007 12:57	12.4	19.2	6.9	0	0.1
BrigIT-6	1/29/2007 14:14	11.7	19.2	6.8	0	-0.2
BrigT-56	1/29/2007 13:12	55.7	40.8	0	0	-0.2
BrigT-56	1/29/2007 14:24	46.1	38.6	0	0	-23.5
BRIPEW01	1/24/2007 10:03	49.9	17.9	6.4	39	-1.7
BRIPEW01	1/24/2007 10:10	62.8	24.3	0.9	39	-1.8
BRIPEW02	1/24/2007 10:19	4.4	12.3	6.5	38	-1.2
BRIPEW03	1/24/2007 10:42	3	17.4	3.9	40	-0.8
BRIPEW03	1/24/2007 10:49	3.5	20.3	0.6	39	-1
BRIPEW04	1/24/2007 10:58	0	9.2	13.2	41	-0.2
BRIPEW05	1/24/2007 11:09	0.6	1	21	42	-39
BRIPEW05	1/24/2007 11:16	1.9	3	20.1	38	-24.4
BRIPEW06	1/24/2007 11:29	6.3	7.2	17.5	54	-3.9
BRIPEW06	1/24/2007 11:38	26.9	26.5	5.8	59	-2.8
BRIPEW07	1/24/2007 11:46	33.7	28.5	1.4	55	-36.1
BRIPEW07	1/24/2007 11:53	33	28.1	1.8	55	-1.6
BRIPEW08	1/24/2007 12:01	1.5	6.4	15.1	48	-0.6
BRIPEW09	1/24/2007 12:09	12.1	10.9	16.2	49	0.2
BRIPEW09	1/24/2007 12:14	19.1	16	13.7	45	-1.2
BRIPEW10	1/24/2007 13:18	23.3	14.6	12.9	45	-29.9
BRIPEW10	1/24/2007 13:27	23.7	14.3	13	47	-12.3
BRIPEW11	1/24/2007 13:38	0.9	1.4	20.6	51	-3.3
BRIPEW12	1/24/2007 13:52	0	0.4	21.2	46	-2.7
BRIPEW13	1/24/2007 14:03	32.1	30.1	3.4	46	-15
BRIPEW13	1/24/2007 14:05	32.7	31	2.5	45	-5.9
BRIPEW14	1/24/2007 14:15	12.5	14.9	12.4	66	-0.3
BRIPEW15	1/24/2007 14:22	0	0.8	21.2	47	-0.2
BRIPEW16	1/24/2007 14:31	0	0.1	21.5	45	-0.6
BRIPEW17	1/24/2007 14:38	0.4	11.6	8.1	44	-0.8
BRIPEW18	1/24/2007 14:46	0	0.2	21.3	43	-1.1
BRIPEW19	1/24/2007 14:57	0	1.6	19.7	44	-1
BRIPEW20	1/24/2007 15:06	58	33.6	0.5	42	-0.6
BRIPEW21	1/24/2007 15:14	53.9	22.5	0.5	43	0
BRIPEW21	1/24/2007 15:17	54.6	22.9	0	42	-0.8
BRIPEW22	1/24/2007 15:26	54.3	37.9	0	43	-0.5
BRIPEW23	1/24/2007 15:34	55	30.6	0	42	0.4

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Temperature (Deg F)	Initial Static Pressure (Inches H_2O)
BRIPEW23	1/24/2007 15:40	55.1	30.8	0.2	41	-1
BRIPEW24	1/24/2007 15:50	67	24.9	0	42	0.3
BRIPEW24	1/24/2007 15:55	65.8	24.4	0	42	-1.5
BRIPEW25	1/24/2007 16:04	52.3	37	0.7	52	-30.2
BRIPEW25	1/24/2007 16:11	53.2	36.8	0.7	51	-14.8
BRIPEW26	1/24/2007 16:19	34	32.2	3.1	67	-24.9
BRIPEW26	1/24/2007 16:22	31.8	31.8	3.2	65	-17.2
BRIPEW27	1/24/2007 16:34	1.3	1.4	20.6	43	-3.2
BRIPEW28	1/24/2007 16:42	3.6	9.7	12.7	38	-0.5
BRIPEW29	1/24/2007 16:51	48.8	29.9	4.5	38	-1.6
BRIPEW30	1/24/2007 16:58	3	4	17.7	38	-0.4
BRIPEW31	1/24/2007 17:06	14	7.2	12.7	38	-1.6
BRIPEW35	1/24/2007 17:13	29.1	25.2	7.6	36	-0.2
BRIPEW36	1/24/2007 17:21	0.1	0.8	20.8	40	-2.5
BRIPEW37	1/24/2007 17:29	0	0.2	21.1	44	-3.2
BRIPEW38	1/24/2007 17:38	52.4	44.6	0.1	35	3.9
BRIPEW38	1/24/2007 17:42	52.7	44.8	0	56	-0.8
BRIPEW39	1/24/2007 17:52	54.1	42.1	0	34	13.7
BRIPEW39	1/24/2007 17:56	53.9	42.1	0	45	-0.7
BRIPEW40	1/24/2007 18:06	55.1	39.6	0	34	-0.6

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O_2: 1, 2, 6, 01, 02, 04, 05, 06, 08, 09, 10, 11, 12, 14, 15, 16, 18, 17, 19, 27, 28, 30, 31, 36, 37

#25

Device ID	Date	Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIEW12A	2/27/2007	9:31:00 AM	33.8	36.5	0	-4.1	126
BRIEW19A	2/27/2007	10:35:00 AM	52.7	40.3	0	-4.5	125
BRIEW20A	2/27/2007	10:38:00 AM	52.7	39.4	0	-6.7	112
BRIEW21A	2/27/2007	10:46:00 AM	10.6	8.8	16.8	-5	52
BRIEW21A	2/27/2007	10:49:00 AM	6.8	6.7	18.3	-4.9	52
BRIEW24A	2/27/2007	11:02:00 AM	44.7	36.1	0	-5.9	114
BRIEW25A	2/27/2007	11:11:00 AM	33.2	31.3	0	-6	95
BRIEW25A	2/27/2007	11:14:00 AM	34.2	32.2	0	-5.5	95
BRIGEW01	2/2/2007	11:35:00 AM	58.3	41.5	0	0	30
BRIGEW01	2/2/2007	11:41:00 AM	58.7	41.2	0	-0.3	88
BRIGEW01	2/23/2007	12:00:00 PM	48.9	37.7	0.1	-0.6	105
BRIGEW02	2/2/2007	10:25:00 AM	53.6	41.5	0	-3.2	112
BRIGEW02	2/23/2007	1:21:00 PM	54.2	39.5	0	-2.9	124
BRIGEW03	2/2/2007	10:18:00 AM	49.8	36.8	0	-1	104
BRIGEW03	2/23/2007	1:25:00 PM	41.7	35.8	0	-0.6	108
BRIGEW03	2/23/2007	1:33:00 PM	41.3	36.9	0	-0.4	105
BRIGEW04	2/2/2007	10:12:00 AM	53.7	40.9	0	-1	113
BRIGEW04	2/23/2007	1:37:00 PM	48.4	39.9	0	-0.3	118
BRIGEW05	2/2/2007	10:02:00 AM	40.4	32.7	0	-0.9	95
BRIGEW05	2/2/2007	10:07:00 AM	41.7	33.6	0	-0.8	95
BRIGEW05	2/23/2007	1:47:00 PM	33	33.8	0	-0.8	98
BRIGEW05	2/23/2007	1:53:00 PM	34.5	34.2	0	-0.6	95
BRIGEW06	2/2/2007	8:16:00 AM	38.9	32.9	0	-0.6	77
BRIGEW06	2/23/2007	10:13:00 AM	44.4	37	0	-0.2	85
BRIGEW07	2/2/2007	8:49:00 AM	60.2	39.6	0	0.1	21
BRIGEW07	2/2/2007	8:54:00 AM	59.4	39.8	0	-1.2	81
BRIGEW07	2/2/2007	2:28:00 PM	59.1	40.8	0	-1.9	104
BRIGEW07	2/2/2007	2:33:00 PM	55.9	42	0	-1.9	105
BRIGEW07	2/23/2007	10:07:00 AM	53.1	40.3	0	-2.3	111
BRIGEW08	2/2/2007	8:31:00 AM	52.3	38.1	0	-4.3	128
BRIGEW08	2/23/2007	9:57:00 AM	41.2	36.4	0.2	-4	128
BRIGEW08	2/23/2007	10:02:00 AM	39.8	37.5	0	-3.1	125
BRIGEW09	2/2/2007	2:46:00 PM	17.8	26	0	-3.8	128
BRIGEW09	2/2/2007	2:52:00 PM	14.8	23.8	0	-2.2	124
BRIGEW09	2/23/2007	9:43:00 AM	9.4	21.5	0.3	-1.5	100
BRIGEW09	2/23/2007	9:52:00 AM	9.8	21.1	0.3	-1.5	104
BRIGEW09	2/23/2007	2:13:00 PM	13.5	25.6	0	-0.6	117
BRIGEW10	2/2/2007	2:59:00 PM	47.5	37.3	0	-20.3	120
BRIGEW10	2/23/2007	9:34:00 AM	38.8	35.5	0.1	-26.3	120
BRIGEW10	2/23/2007	9:38:00 AM	38.9	38.3	0	-24.9	120
BRIGEW11	2/2/2007	3:05:00 PM	54.6	42.2	0	-6.5	135
BRIGEW11	2/2/2007	3:11:00 PM	54	41.3	0	-6.7	135
BRIGEW11	2/23/2007	9:30:00 AM	53.7	42	0	-8.7	135
BRIGEW12	2/2/2007	3:17:00 PM	49.9	40.3	0	-2.5	130
BRIGEW13	2/27/2007	9:35:00 AM	53.6	39.7	0	-7.4	132
BRIGEW14	2/27/2007	9:40:00 AM	51.3	39.1	0	-12.6	120

Device ID	Date	Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIGEW15	2/27/2007	12:14:00 PM	6.9	18.8	2.3	-5.1	95
BRIGEW15	2/27/2007	12:19:00 PM	6.8	18.7	2.2	-4.7	88
BRIGEW16	2/27/2007	9:47:00 AM	40.3	34	0	-6.7	92
BRIGEW16	2/27/2007	9:59:00 AM	40.1	34.9	0	-6.2	92
BRIGEW17	2/27/2007	10:05:00 AM	36.3	32	0	-8.9	104
BRIGEW17	2/27/2007	10:16:00 AM	33.5	32.1	0	-7.6	103
BRIGEW18	2/27/2007	10:26:00 AM	39.4	32.5	3.8	-44.8	118
BRIGEW18	2/27/2007	10:31:00 AM	38.2	32.2	4	-44.5	116
BRIGEW22	2/27/2007	10:53:00 AM	50.2	37.4	0	-10	92
BRIGEW23	2/27/2007	10:58:00 AM	47	37.1	0	-5.7	108
BRIGEW26	2/27/2007	11:21:00 AM	40.3	35.5	0	-10	128
BRIGEW26	2/27/2007	11:24:00 AM	41	35	0	-9	126
BRIGEW27	2/27/2007	2:10:00 PM	24.2	28.7	0	-4.4	92
BRIGEW27	2/27/2007	2:16:00 PM	24.5	29.4	0	-4.4	90
BRIGEW28	2/27/2007	2:04:00 PM	55.2	38.9	0.1	-30.2	125
BRIGEW29	2/27/2007	2:00:00 PM	49.9	35.2	0	-6	82
BRIGEW30	2/27/2007	1:55:00 PM	54.6	39.4	0	-10.6	122
BRIGEW31	2/27/2007	1:51:00 PM	57.1	42.5	0	-10.6	122
BRIGEW32	2/27/2007	1:44:00 PM	54.7	40.9	0.6	-32.8	120
BRIGEW33	2/27/2007	1:38:00 PM	53.8	41.8	0.2	-39.5	115
BRIGEW34	2/27/2007	1:30:00 PM	56.3	42.1	0	-5.2	126
BRIGEW35	2/27/2007	1:26:00 PM	54.7	44.6	0	-3.5	116
BRIGEW36	2/27/2007	1:22:00 PM	55.2	43	0	-3.6	110
BRIGEW37	2/27/2007	1:18:00 PM	53.1	40.8	0	-2.8	80
BRIGEW38	2/2/2007	3:41:00 PM	52.7	36.8	0	-5.3	115
BRIGEW38	2/27/2007	1:14:00 PM	53.3	41.9	0	-8	117
BRIGEW39	2/2/2007	3:46:00 PM	53.5	40.9	0	-1	111
BRIGEW39	2/27/2007	1:11:00 PM	55.5	42.8	0	-1.5	115
BRIGEW40	2/2/2007	1:13:00 PM	53.1	38.9	0	-5	48
BRIGEW40	2/23/2007	11:20:00 AM	42.6	37	0	-9.3	98
BRIGEW40	2/23/2007	11:24:00 AM	42	37.7	0	-7.1	95
BRIGEW41	2/2/2007	1:19:00 PM	46.4	34.4	0	-2	58
BRIGEW41	2/23/2007	11:29:00 AM	39.7	34.8	0	-2	98
BRIGEW41	2/23/2007	11:33:00 AM	41.4	36	0	-1.7	94
BRIGEW42	2/2/2007	1:25:00 PM	34.2	31.6	0	-2	49
BRIGEW42	2/2/2007	1:37:00 PM	33.7	32.5	0	-1.6	75
BRIGEW42	2/23/2007	11:38:00 AM	21	27.8	0	-2.1	92
BRIGEW42	2/23/2007	11:44:00 AM	21.9	29.7	0	-1.3	82
BRIGEW43	2/2/2007	1:44:00 PM	51.8	39.2	0	-1.9	112
BRIGEW43	2/23/2007	11:48:00 AM	44.5	38.8	0	-8	110
BRIGEW44	2/2/2007	11:05:00 AM	15.9	25.2	0	-1.3	65
BRIGEW44	2/2/2007	11:10:00 AM	9.4	25.6	0	-0.9	65
BRIGEW44	2/23/2007	12:59:00 PM	20.3	30.4	0	-1.2	60
BRIGEW44	2/23/2007	1:04:00 PM	28.9	32.5	0	-0.8	62
BRIGEW45	2/2/2007	10:39:00 AM	50.8	37.8	0	-5.7	82

O_2 20.4 21A

Temp 11.13

DeviceID	Date	Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by Vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIGEW45	2/23/2007	1:09:00 PM	46.9	39.6	0	-10.4	95
BRIGEW46	2/2/2007	10:33:00 AM	48.7	37	0	-3.3	107
BRIGEW46	2/23/2007	1:14:00 PM	47.8	40.2	0	-3.5	112
BRIGEW47	2/2/2007	10:48:00 AM	51	40.9	0	-17.8	108
BRIGEW47	2/23/2007	1:41:00 PM	51.2	42.8	0	-23.4	111
BRIGEW48	2/2/2007	9:52:00 AM	52.2	39.5	0	-1	112
BRIGEW48	2/23/2007	1:58:00 PM	50	40.5	0	-0.3	113
BRIGEW49	2/2/2007	9:41:00 AM	27.6	28.7	0	-0.9	89
BRIGEW49	2/2/2007	9:45:00 AM	26.7	29.2	0	-0.9	87
BRIGEW49	2/2/2007	10:54:00 AM	27.5	29.5	0	-0.9	83
BRIGEW49	2/2/2007	10:58:00 AM	24.2	27.8	0	-0.8	81
BRIGEW49	2/23/2007	12:42:00 PM	25.8	29.4	0	-0.3	83
BRIGEW49	2/23/2007	12:45:00 PM	25.7	30.4	0	-0.2	82
BRIGEW50	2/2/2007	8:22:00 AM	48.3	35.6	0	-1	108
BRIGEW50	2/23/2007	10:17:00 AM	40.1	36.7	0	-0.7	110
BRIGEW50	2/23/2007	10:21:00 AM	42.9	37.3	0	-0.5	108
BRIGEW51	2/2/2007	9:30:00 AM	42.9	35.3	0	-0.7	109
BRIGEW51	2/2/2007	9:34:00 AM	42.2	33.8	0	-2.3	109
BRIGEW51	2/23/2007	12:49:00 PM	42.1	36.6	0	-1.5	109
BRIGEW51	2/23/2007	12:53:00 PM	42	38.5	0	-1.4	109
BRIGEW52	2/2/2007	9:07:00 AM	18.8	24.5	0.5	-0.5	22
BRIGEW52	2/2/2007	9:07:00 AM	18.8	24.5	0.5	-0.4	22
BRIGEW52	2/2/2007	9:14:00 AM	14.5	27.1	0	-0.5	41
BRIGEW52	2/2/2007	9:14:00 AM	14.5	27.1	0	-0.5	41
BRIGEW52	2/2/2007	2:19:00 PM	17.3	27.2	0	-0.4	84
BRIGEW52	2/2/2007	2:24:00 PM	17	26.3	0	-0.3	60
BRIGEW52	2/23/2007	10:25:00 AM	8.9	23.7	0	-0.2	45
BRIGEW52	2/23/2007	10:28:00 AM	8.2	24.7	0	-0.2	45
BRIGEW53	2/2/2007	2:08:00 PM	41.8	34.4	0	-3	118
BRIGEW53	2/2/2007	2:13:00 PM	42.1	35.2	0	-2.5	117
BRIGEW53	2/23/2007	10:53:00 AM	37.8	34.8	0	-2.7	118
BRIGEW53	2/23/2007	10:57:00 AM	38.2	35.4	0	-2.3	115
BRIGEW54	2/2/2007	1:50:00 PM	33.4	31.9	0	-2.2	102
BRIGEW54	2/2/2007	2:02:00 PM	34.9	32.6	0	-1.6	101
BRIGEW54	2/23/2007	11:02:00 AM	35	35.3	0	-1.8	104
BRIGEW54	2/23/2007	11:06:00 AM	35.8	35.8	0	-1.4	102
BRIGEW55	2/2/2007	1:01:00 PM	38.9	34.5	0	-2.7	102
BRIGEW55	2/2/2007	1:07:00 PM	34.7	34.4	0	-1.7	101

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BrigIT-1	2/15/2007	2.9	6.1	16.5	-0.9	0
BrigIT-2	2/15/2007	0	3.6	19.2	-0.9	0
BrigIT-3	2/15/2007	3.2	11.2	12.5	-0.9	0
BrigIT-4	2/13/2007	27.7	24.8	2.9	-1.5	0
BrigIT-5	2/13/2007	45.4	38.8	0	-1.2	0
BrigIT-6	2/13/2007	22.4	23.8	5.2	-1.3	0
BrigT-56	2/15/2007	27.4	27.7	6.7	-37.7	0
BRIPEW01	2/15/2007	3.7	2.2	20.1	-1.5	33
BRIPEW02	2/15/2007	0	0.5	20.6	-0.9	33
BRIPEW03	2/15/2007	0.2	14.8	6.9	-0.6	38
BRIPEW04	2/15/2007	0	5.6	15.8	-0.2	40
BRIPEW05	2/15/2007	3.3	7.4	18.1	-1.5	49
BRIPEW06	2/15/2007	54.7	41.3	0	0	50
BRIPEW06	2/15/2007	54.7	41.2	0	-0.3	49
BRIPEW07	2/15/2007	56	35.2	0	-1.3	42
BRIPEW08	2/13/2007	57.1	18.4	0	7.2	28
BRIPEW09	2/13/2007	55.1	44	0	-0.9	30
BRIPEW09	2/13/2007	55.2	44	0	-1	30
BRIPEW10	2/13/2007	58.1	38.5	0	-4	25
BRIPEW11	2/13/2007	0.4	1.5	19.7	-2.7	24
BRIPEW11	2/13/2007	0.3	1.5	19.8	-2.2	23
BRIPEW12	2/13/2007	0	1	20	-2.3	22
BRIPEW13	2/14/2007	60.1	37.5	0.5	-0.5	41
BRIPEW14	2/14/2007	15.7	27.4	3.6	-0.6	47
BRIPEW15	2/14/2007	7.9	11	3.5	-0.3	40
BRIPEW16	2/14/2007	0.3	0.2	20.8	-0.8	51
BRIPEW17	2/14/2007	0.2	9.8	9.9	-1	45
BRIPEW18	2/14/2007	0.5	9.5	9.8	-1.8	50
BRIPEW19	2/14/2007	0.2	6.3	15.2	-0.9	47
BRIPEW20	2/14/2007	65.1	34.8	0	0.4	45
BRIPEW20	2/14/2007	61.8	33.4	0.5	-1.3	35
BRIPEW21	2/14/2007	53.5	33.7	1.1	-1	39
BRIPEW22	2/14/2007	19.4	12.3	13.9	-0.5	39
BRIPEW23	2/14/2007	40.6	36.7	0.5	-1	43
BRIPEW24	2/14/2007	74.1	25.6	0	0.3	37
BRIPEW24	2/14/2007	72.6	23.6	0	-0.8	37
BRIPEW25	2/14/2007	55.7	38.5	0.6	-5.4	30
BRIPEW26	2/14/2007	44.2	37.3	0.1	-5.4	38
BRIPEW27	2/14/2007	47.6	34.5	5	-0.3	35
BRIPEW28	2/14/2007	68.5	29.6	0	0.1	34
BRIPEW28	2/14/2007	59.3	27.4	1.8	-1.3	34
BRIPEW29	2/14/2007	56.1	43.4	0	-1.2	28
BRIPEW30	2/14/2007	18.1	17.8	7.5	-0.6	28
BRIPEW31	2/14/2007	29.7	27.6	3	-0.6	25
BRIPEW32	2/14/2007	48.2	36.4	0.5	-1	26
BRIPEW33	2/15/2007	52	28.7	0.5	-1.5	27
BRIPEW34	2/15/2007	15.9	26.8	4.8	-1	22

D_2 : 1,2,3,4,01
02,03,04,05
11,12,16,17,18,19
22,27,30

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIPEW35	2/15/2007	37.5	16.5	9	-0.4	25
BRIPEW36	2/15/2007	4.9	5	19.9	-0.1	27
BRIPEW37	2/15/2007	24.4	17.8	12.4	-0.6	25
BRIPEW38	2/15/2007	51.5	47.8	0	-1.5	51
BRIPEW39	2/15/2007	51.5	48.4	0	-1.6	41
BRIPEW40	2/15/2007	2.6	20	11.1	0	30
BRIPEW40	2/15/2007	0	0.2	21.4	0	38

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW01	3/13/2007 9:33	42.3	35.8	0.4	-0.5	118
BRIGEW01	3/13/2007 9:36	42.9	36.1	0.3	-0.4	118
BRIGEW02	3/13/2007 10:02	50.1	40.7	0	-2.6	128
BRIGEW03	3/12/2007 15:47	37.4	36.7	0	-0.2	108
BRIGEW03	3/12/2007 15:51	36.6	36.6	0	-0.2	108
BRIGEW04	3/12/2007 15:43	45.5	40.2	0	-0.3	120
BRIGEW05	3/12/2007 15:34	30	32.8	0	-0.1	97
BRIGEW05	3/12/2007 15:36	30.3	33.4	0	-0.1	97
BRIGEW06	3/12/2007 15:19	52.6	43.6	0	0.2	90
BRIGEW06	3/12/2007 15:25	52.5	42.8	0	-0.1	98
BRIGEW07	3/12/2007 14:47	53.4	43.4	0	-0.5	115
BRIGEW08	3/12/2007 14:25	44.5	40.7	0	-1.6	128
BRIGEW08	3/12/2007 14:38	44.7	40.8	0	0.5	115
BRIGEW08	3/12/2007 14:41	50.9	44.3	0	-1	115
BRIGEW09	3/12/2007 14:12	16.1	25.7	0.3	-0.9	120
BRIGEW09	3/12/2007 14:18	16.5	26.3	0	-2	120
BRIGEW10	3/12/2007 14:01	37.8	37.6	0.4	-22.9	120
BRIGEW10	3/12/2007 14:05	38.1	38.3	0.2	-21.3	120
BRIGEW11	3/12/2007 13:51	47	38.7	2.2	-7.1	138
BRIGEW11	3/12/2007 13:56	46.3	40.3	2.3	-6.5	137
BRIGEW12	3/13/2007 13:48	37.4	39	0	-1.1	132
BRIGEW12	3/13/2007 13:52	37	39.2	0	-1.1	132
BRIGEW13	3/13/2007 13:57	47.8	39.3	0.2	-3	133
BRIGEW14	3/13/2007 14:02	44.5	36.9	0.1	-5.2	121
BRIGEW14	3/13/2007 14:06	44	36.4	0.3	-4.4	121
BRIGEW15	3/13/2007 16:18	2.4	16.7	2.4	-0.8	80
BRIGEW15	3/13/2007 16:23	2.5	16.7	2.4	-0.7	81
BRIGEW16	3/13/2007 14:11	36.3	34	0.2	-1.9	100
BRIGEW16	3/13/2007 14:16	37.5	33.8	0	-1.8	100
BRIGEW17	3/13/2007 14:22	33.3	30.5	0	-3.9	103
BRIGEW17	3/13/2007 14:27	30.4	30.4	0	-3.5	101
BRIGEW18	3/13/2007 14:35	33.1	29.1	4.7	-36.2	116
BRIGEW18	3/13/2007 14:50	33.1	28.7	4.7	-29	113
BRIGEW19	3/13/2007 14:56	22.8	23.1	6.8	-1.4	82
BRIGEW19	3/13/2007 15:05	42.6	37.9	0.3	-3.7	135
BRIGEW19	3/27/2007 14:13	54.9	40.7	0.3	-3.4	144
BRIGEW19	3/27/2007 14:15	54.1	10	0.4	-3.1	142
BRIGEW19	3/27/2007 14:13	40.7	37.8	0.4	-3.6	142
BRIGEW20	3/13/2007 15:09	46.2	37.5	0.4	-4.2	120
BRIGEW20	3/13/2007 15:13	45.5	37	0.4	-4.2	119
BRIGEW21	3/13/2007 15:18	45.4	33.6	4.2	-1	81
BRIGEW22	3/13/2007 15:23	44	36.3	0	-5.2	101
BRIGEW22	3/13/2007 15:25	44.9	37.3	0	-5	101
BRIGEW23	3/13/2007 15:30	33.7	32.9	0	-1.6	109
BRIGEW23	3/13/2007 15:36	32.3	31.9	0	-1.4	102
BRIGEW24	3/13/2007 15:42	39.5	35.3	0	-1.7	115
BRIGEW24	3/13/2007 15:47	39	36.1	0	-1.4	112

O_2: 35, 36, 37, 40, 41, 19

Temp: 11, 12, 13, 19,

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIGEW25	3/15/2007 10:43	34.8	33.3	0	-3.3	80
BRIGEW25	3/15/2007 10:49	34.9	33.2	0	-3.1	77
BRIGEW26	3/15/2007 10:36	38.5	34.3	0	-6.9	127
BRIGEW26	3/15/2007 10:39	36.8	33.5	0	-5.9	125
BRIGEW27	3/15/2007 10:27	16.8	25.9	1.2	-3.7	70
BRIGEW27	3/15/2007 10:30	16.5	25.6	1	-3.7	70
BRIGEW28	3/15/2007 10:22	51.5	38.6	0	-26.2	125
BRIGEW29	3/15/2007 10:15	43.3	35.2	0	-5	68
BRIGEW29	3/15/2007 10:17	42.9	35.3	0	-4.8	68
BRIGEW30	3/15/2007 10:10	52.6	40.1	0	-8.5	120
BRIGEW31	3/15/2007 10:05	54.5	42.5	0.2	-8.3	120
BRIGEW32	3/15/2007 10:00	51.9	41	0.9	-20.1	119
BRIGEW33	3/15/2007 9:49	49.2	38.6	1.5	-34	101
BRIGEW34	3/15/2007 9:43	53.7	42.3	0	-5.5	124
BRIGEW35	3/15/2007 9:38	53.3	45	0	-4.3	116
BRIGEW36	3/15/2007 9:35	51	42.2	0	-4.2	105
BRIGEW37	3/15/2007 9:27	39.3	36.2	0	-3.5	81
BRIGEW37	3/15/2007 9:31	39.7	36.4	0	-3.4	80
BRIGEW38	3/15/2007 9:21	49.1	41.1	0	-7.7	116
BRIGEW39	3/15/2007 9:18	51.3	41.7	0	-1.9	112
BRIGEW40	3/13/2007 12:56	49.6	39.4	0	-5.8	105
BRIGEW41	3/13/2007 12:51	48.1	37.8	0.1	-0.4	108
BRIGEW42	3/13/2007 10:44	34.9	33.7	0	-1	100
BRIGEW42	3/13/2007 10:51	34	33.5	0	-0.9	100
BRIGEW43	3/13/2007 10:40	46.4	39.7	0	-2.7	111
BRIGEW44	3/13/2007 10:23	34.7	35.1	0	-2.1	109
BRIGEW44	3/13/2007 10:33	38.3	37	0	-0.4	105
BRIGEW45	3/13/2007 10:14	48.8	38.3	0	-9.9	101
BRIGEW46	3/13/2007 10:08	46.1	39.5	0	-3.5	115
BRIGEW46	3/13/2007 10:10	46.2	39.7	0	-3.5	115
BRIGEW47	3/13/2007 9:52	49.7	41.5	0	-23.3	116
BRIGEW48	3/12/2007 15:29	46.5	40.8	0	-0.4	113
BRIGEW49	3/13/2007 13:22	29.6	30.9	0	-0.1	88
BRIGEW49	3/13/2007 13:25	30	31	0	-0.1	88
BRIGEW50	3/12/2007 15:07	46.4	39.5	0	0	112
BRIGEW50	3/12/2007 15:13	45.9	39.9	0	-0.2	112
BRIGEW51	3/13/2007 13:16	44	38.8	0	-0.9	112
BRIGEW52	3/12/2007 14:55	37.5	35.8	0	0.3	86
BRIGEW52	3/12/2007 14:59	38.5	36.8	0	0.2	86
BRIGEW52	3/12/2007 15:02	0	0.8	20.8	0	0
BRIGEW52	3/27/2007 10:29	37.5	35.8	0	0	84
BRIGEW52	3/27/2007 10:32	38.5	36.8	0	0	85
BRIGEW52	3/27/2007 17:07	0	0.8	0	0.3	92
BRIGEW52	3/27/2007 17:10	0	0.8	0	0	110
BRIGEW52	3/29/2007 14:05	0	0.8	0.1	-9.1	112
BRIGEW53	3/13/2007 13:07	41.7	36.2	0	-1.9	118

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW53	3/13/2007 13:11	42.2	36	0	-1.4	108
BRIGEW54	3/13/2007 12:43	40.1	37	0.1	-0.3	110
BRIGEW54	3/13/2007 12:46	40.2	37.7	0	-0.2	108
BRIGEW55	3/13/2007 13:02	45.2	41.1	0	-0.5	90
BRIGEW56	3/13/2007 13:33	51.9	41.3	0.3	-3	95
BRIGEW57	3/15/2007 11:11	52.3	43.1	0	-8.4	97
BRIGEW58	3/15/2007 11:43	49.9	41.5	0	-4.7	65
BRIGEW59	3/15/2007 11:48	34.2	36.7	0	-4.4	78
BRIGEW59	3/15/2007 11:51	32.9	36.4	0	-4.1	78
BRIGEW60	3/15/2007 11:05	53	41.7	0.1	-9.1	105
BRIGEW61	3/15/2007 11:16	32.9	32.6	0	-4.8	68
BRIGEW61	3/15/2007 11:21	32.2	32	0	-4.2	65
BRIGEW62	3/15/2007 11:37	33.3	34.1	0	-5.4	105
BRIGEW62	3/15/2007 11:39	32.7	32.6	0	-5.2	105
BRIGEW63	3/13/2007 13:39	39.8	38.8	0.2	-3.2	139
BRIGEW63	3/13/2007 13:42	39.3	38.1	0.1	-2.8	136
BRIGEW64	3/15/2007 11:01	52	40.9	0.7	-7.6	104
BRIGEW65	3/15/2007 13:38	0.2	0.2	21	-4.7	50
BRIGEW65	3/15/2007 13:41	0.1	0.1	21.1	-4.7	50
BRIGEW65	3/27/2007 0:00	1.8	5.9	17.9		
BRIGEW66	3/15/2007 11:26	30.2	31.3	1	-5.4	72
BRIGEW66	3/15/2007 11:31	35.7	33.3	0.5	-5.6	72
BRIGEW67	3/15/2007 14:03	44.6	37.5	0	-7.4	126
BRIGEW68	3/15/2007 10:56	52.4	41.2	0	-10.3	106
BRIGEW69	3/15/2007 13:34	49.7	38.8	0	-11.8	102
BRIGEW70	3/15/2007 13:46	35.9	34.7	0.2	-11.4	100
BRIGEW70	3/15/2007 13:50	35.3	34.3	0.4	-10.9	90
BRIGEW71	3/15/2007 13:55	36	33.2	0.1	-5	88
BRIGEW71	3/15/2007 13:59	36.3	33.8	0	-5	88
BRIGEW72	3/13/2007 16:27	18.3	26.8	0	-1.5	80
BRIGEW72	3/13/2007 16:30	18.5	26.8	0	-1.6	80
BRIGEW73	3/15/2007 13:23	47	37.2	0	-13.9	115
BRIGEW74	3/15/2007 13:27	48.2	38.7	0	-35.8	108
BRIGEW75	3/15/2007 12:45	34	31.3	0	-14.4	115
BRIGEW75	3/15/2007 12:48	35.1	33.2	0	-12.4	115
BRIGEW76	3/13/2007 16:09	34.6	32.1	0.1	-1.7	95
BRIGEW76	3/13/2007 16:11	33.5	32.4	0	-1.8	94
BRIGEW77	3/15/2007 13:12	39.4	35.2	0	-8.8	92
BRIGEW77	3/15/2007 13:18	37.4	33.6	0	-8.2	92
BRIGEW78	3/15/2007 13:04	42.4	36.3	0	-28.5	117
BRIGEW78	3/15/2007 13:08	42.6	35.8	0	-27.1	115
BRIGEW79	3/15/2007 12:54	39.8	34.3	0.2	-12.2	98
BRIGEW79	3/15/2007 12:58	40.2	34.1	0	-11.7	92
BRIGEW80	3/13/2007 15:52	42	36.3	0	-5	92
BRIGEW81	3/13/2007 15:56	45.2	37.2	0.6	-2.1	100
BRIGEW82	3/13/2007 16:01	26.4	29.4	0	-2.6	112

O_2: 52, 64
65,

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW82	3/13/2007 16:04	25.6	29.2	0	-2.8	112
BRIGINLT	3/12/2007 10:17	40.3	36.5	0.9	-54.1	75
BRIGINLT	3/12/2007 16:01	41.1	36.8	1	-52.7	76
BRIGINLT	3/13/2007 9:25	41.9	35.9	1	-53.2	75
BRIGINLT	3/13/2007 16:39	45.2	36.1	1.1	-53	76
BRIGINLT	3/15/2007 9:09	44.3	36.3	1	-55.7	75
BRIGINLT	3/15/2007 15:24	46	35.4	1.5	-57	75

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Temp (Deg F)	Initial Static Pressure (Inches H2O)
BrigIT-1	3/9/2007					-0.4
BrigIT-2	3/9/2007					-0.3
BrigIT-3	3/9/2007					-0.4
BrigIT-4	3/9/2007					-0.4
BrigIT-5	3/9/2007					-1.4
BrigIT-6	3/9/2007					-1.5
BrigT-56	3/9/2007					-40
BRIPEW01	3/9/2007					-1.4
BRIPEW02	3/9/2007					-0.6
BRIPEW03	3/9/2007					-0.4
BRIPEW04	3/9/2007					-0.5
BRIPEW05	3/9/2007					-0.3
BRIPEW06	3/9/2007					-1.2
BRIPEW07	3/9/2007					-1.7
BRIPEW08	3/9/2007					-41.9
BRIPEW09	3/9/2007					-0.1
BRIPEW10	3/9/2007					-1.3
BRIPEW11	3/9/2007					-3.5
BRIPEW11	3/9/2007					-3.8
BRIPEW12	3/9/2007					-0.5
BRIPEW13	3/12/2007 10:25	53.2	38.3	0.2	70	-1
BRIPEW13	3/12/2007 10:28	53.3	39.1	0	70	-2.5
BRIPEW14	3/9/2007					-1
BRIPEW15	3/9/2007					-0.6
BRIPEW16	3/9/2007					-1
BRIPEW17	3/9/2007					-0.4
BRIPEW18	3/9/2007					-0.4
BRIPEW19	3/9/2007					-0.2
BRIPEW20	3/9/2007					-0.4
BRIPEW21	3/9/2007					-1.5
BRIPEW22	3/9/2007					-1.2
BRIPEW23	3/12/2007 10:37	55.4	37.1	0.2	65	-0.2
BRIPEW23	3/12/2007 10:41	55	36.6	0	68	-1.8
BRIPEW24	3/12/2007 10:45	56.6	35.8	0	65	-0.1
BRIPEW24	3/12/2007 10:49	56.5	35.8	0	65	-2
BRIPEW25	3/12/2007 10:52	57.4	32	0	68	1.7
BRIPEW25	3/12/2007 10:59	57.4	33.6	0	68	-0.9
BRIPEW26	3/12/2007 11:02	55.6	38.6	0	68	0.9
BRIPEW26	3/12/2007 11:07	55.1	40.1	0	68	-1.2
BRIPEW27	3/12/2007 11:11	60.7	39.1	0.1	70	0.6
BRIPEW27	3/12/2007 11:14	55.2	39.7	0	70	-1.4
BRIPEW28	3/12/2007 11:17	56.9	36.6	0	70	0
BRIPEW28	3/12/2007 11:21	57	36.3	0	70	-1.8
BRIPEW29	3/12/2007 11:25	51.9	40.7	0.1	68	-0.1
BRIPEW29	3/12/2007 11:27	52.5	41.4	0	70	-1.9
BRIPEW30	3/12/2007 11:32	30.9	28	0	71	-1.1
BRIPEW31	3/12/2007 11:41	13.3	23	0	71	-1

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Temp (Deg F)	Initial Static Pressure (inches H_2O)
BRIPEW32	3/12/2007 12:26	43.5	34.7	0.3	76	-0.4
BRIPEW32	3/12/2007 12:29	42.5	35	0.1	78	-1.2
BRIPEW33	3/12/2007 12:32	24.8	28	0.3	75	-1.1
BRIPEW34	3/12/2007 12:36	13.1	27.8	0.2	78	-0.9
BRIPEW35	3/12/2007 12:40	57.9	34.4	0.1	80	-0.1
BRIPEW35	3/12/2007 12:44	56.9	36.1	0	80	-1.3
BRIPEW36	3/12/2007 12:48	54.3	43.8	0.1	81	1.3
BRIPEW36	3/12/2007 12:51	53.7	43.7	0	82	-1.3
BRIPEW37	3/12/2007 12:55	53.6	44.1	0	85	0.2
BRIPEW37	3/12/2007 13:01	52.6	44.9	0	85	-2.2
BRIPEW38	3/12/2007 13:04	53.3	44.7	0.1	78	1.7
BRIPEW38	3/12/2007 13:08	53.3	45.4	0	81	-0.9
BRIPEW39	3/12/2007 13:12	54.6	42.7	0	72	1.3
BRIPEW39	3/12/2007 13:15	55.2	42	0	75	-1.4
BRIPEW40	3/12/2007 13:19	57.3	37.4	0	84	-0.4
BRIPEW40	3/12/2007 13:22	56.6	38.4	0	84	-1.4

WELL #	DATE	TIME	%CH4	%CO2	%O2	Initial Static Pressure (Inches	Initial Temperature (Deg F)
BRGEW65A	4/2/2007	11:01:00 AM	47	38.1	0	2.3	90
BRGEW65A	4/2/2007	11:09:00 AM	40.1	34.8	0	-1	118
BRGEW65A	4/12/2007	1:57:00 PM	41.5	36.1	0	-16.2	100
BRGEW65A	4/12/2007	2:02:00 PM	40	36.2	0	-14.8	98
BRGEW65A	4/26/2007	10:30:00 AM	42.5	36.5	0	-8.9	105
BRGEW65A	4/26/2007	10:36:00 AM	42	36.2	0	-7.8	103
BRIEW12A	4/10/2007	2:58:00 PM	42.4	37.7	0	-1.1	130
BRIEW12A	4/23/2007	1:19:00 PM	47.1	39.2	0	-2.1	130
BRIEW14A	4/10/2007	2:49:00 PM	50.4	38.1	0	-5.6	120
BRIEW14A	4/23/2007	1:29:00 PM	53.3	38.6	0.1	-9.4	121
BRIEW19A	4/2/2007	1:04:00 PM	53.6	45.7	0	-0.9	139
BRIEW19A	4/10/2007	12:29:00 PM	40.5	38.5	0	-0.5	130
BRIEW19A	4/23/2007	10:24:00 AM	53.3	43.6	0.8	-1.9	126
BRIEW20A	4/10/2007	12:33:00 PM	42.1	35.5	1.1	-4.3	117
BRIEW20A	4/23/2007	10:29:00 AM	46.1	35.4	1.1	-7.9	122
BRIEW20A	4/23/2007	10:34:00 AM	44.7	35.3	1.1	-5.7	120
BRIEW21A	4/10/2007	12:37:00 PM	53.8	42	0	-0.3	77
BRIEW21A	4/10/2007	12:41:00 PM	53.8	42.8	0	-1.7	100
BRIEW21A	4/23/2007	10:39:00 AM	34.5	32.6	0	-6.2	118
BRIEW21A	4/23/2007	10:43:00 AM	36.7	32.1	0	-5.2	115
BRIEW23A	4/10/2007	1:00:00 PM	40.6	35.3	0	-2.8	110
BRIEW23A	4/10/2007	1:04:00 PM	42	36.4	0	-1.5	109
BRIEW23A	4/23/2007	11:01:00 AM	38.6	32.6	0	-4.1	109
BRIEW23A	4/23/2007	11:04:00 AM	36.4	31.9	0	-3.8	108
BRIEW24A	4/10/2007	1:14:00 PM	33.8	33.4	0	-2.3	118
BRIEW24A	4/10/2007	1:17:00 PM	34.8	33.9	0	-1.7	116
BRIEW24A	4/23/2007	11:09:00 AM	39.8	33.9	0.3	-4.1	120
BRIEW24A	4/23/2007	11:14:00 AM	38	33.9	0	-3.6	118
BRIEW25A	4/10/2007	1:23:00 PM	33.8	31.3	0	-2.6	98
BRIEW25A	4/10/2007	1:27:00 PM	32.6	31.7	0	-1.4	97
BRIEW25A	4/23/2007	11:18:00 AM	21.8	27.7	0	-4.1	104
BRIEW25A	4/23/2007	11:27:00 AM	21.8	27.8	0	-3.6	100
BRIEW27A	4/12/2007	10:42:00 AM	22.5	31.1	0	-5.4	88
BRIEW27A	4/12/2007	10:46:00 AM	21.5	30.2	0	-5.3	77
BRIEW27A	4/24/2007	1:43:00 PM	18.5	26.1	0.1	-1.8	90
BRIEW27A	4/24/2007	1:51:00 PM	18.4	26.7	0.1	-1.8	90
BRIGEW01	4/11/2007	12:36:00 PM	51.1	37.5	0.5	-0.6	115
BRIGEW01	4/24/2007	11:55:00 AM	44.5	34.1	1.1	-0.8	121
BRIGEW01	4/24/2007	12:01:00 PM	45	34.5	0.8	-0.4	120
BRIGEW02	4/11/2007	12:32:00 PM	55.4	41.6	0.2	-3.5	127
BRIGEW02	4/24/2007	10:00:00 AM	52.4	39.6	0	-3.5	127
BRIGEW03	4/11/2007	11:27:00 AM	47.9	38.2	0	-1.9	112
BRIGEW03	4/24/2007	9:53:00 AM	37.4	35.3	0	-1.6	115
BRIGEW03	4/24/2007	9:57:00 AM	37.6	35.1	0	-1.1	113
BRIGEW04	4/11/2007	11:30:00 AM	48.3	37.8	0	-0.6	118
BRIGEW04	4/24/2007	9:45:00 AM	37.8	34.9	0	-0.8	121
BRIGEW04	4/24/2007	9:49:00 AM	38.1	35.3	0	-0.5	115
BRIGEW05	4/11/2007	11:20:00 AM	40.1	34.6	0	-0.5	96

Temp: 14A

WELL #	DATE	TIME	%CH4	%CO2	%O2	Intial Static Pressure (inches	Intial Temperature (Deg F)
BRIGEW05	4/11/2007	11:23:00 AM	41.4	34.8	0	-0.3	95
BRIGEW05	4/24/2007	9:35:00 AM	33	33	0	-0.4	95
BRIGEW05	4/24/2007	9:38:00 AM	34.6	34	0	-0.2	93
BRIGEW06	4/11/2007	10:59:00 AM	56.7	43.1	0	0.1	50
BRIGEW06	4/11/2007	11:04:00 AM	57	42.8	0	-0.3	93
BRIGEW06	4/12/2007	11:40:00 AM	21.6	28.1	2.4	-1.2	70
BRIGEW06	4/12/2007	11:43:00 AM	21.3	27.7	2.6	-1.2	66
BRIGEW06	4/12/2007	4:12:00 PM	38.2	29.9	2	-0.8	78
BRIGEW06	4/24/2007	9:27:00 AM	56.9	42.6	0	-0.2	97
BRIGEW07	4/11/2007	10:31:00 AM	57	42.8	0.1	-0.2	115
BRIGEW07	4/24/2007	8:58:00 AM	54.3	41.6	0	-2.4	116
BRIGEW08	4/11/2007	10:23:00 AM	55.9	43.9	0	0.7	120
BRIGEW08	4/11/2007	10:27:00 AM	57.2	42.6	0	-1.7	127
BRIGEW08	4/24/2007	8:53:00 AM	49.6	40.7	0	-1.3	127
BRIGEW09	4/11/2007	10:14:00 AM	54.1	43.2	0.1	0	62
BRIGEW09	4/11/2007	10:19:00 AM	53.6	42.9	0	-0.7	103
BRIGEW10	4/11/2007	10:08:00 AM	52.8	38.8	0.3	-18.6	120
BRIGEW10	4/23/2007	2:37:00 PM	48.3	38.7	0.3	-19.2	121
BRIGEW11	4/11/2007	10:03:00 AM	55.5	44.1	0.2	-4.9	129
BRIGEW11	4/23/2007	1:14:00 PM	57.4	42.4	0.1	-6.5	130
BRIGEW13	4/10/2007	2:54:00 PM	52.9	40	0	-1.3	131
BRIGEW13	4/23/2007	1:24:00 PM	55.9	39.6	0.1	-3.4	131
BRIGEW15	4/10/2007	2:30:00 PM	13.6	23.1	0	0	88
BRIGEW15	4/10/2007	2:34:00 PM	13.9	24	0	-0.3	98
BRIGEW15	4/23/2007	2:26:00 PM	9	21.1	1.1	-2.7	98
BRIGEW15	4/23/2007	2:30:00 PM	7.7	20.9	1.4	-1.9	95
BRIGEW16	4/10/2007	3:15:00 PM	51.9	36.1	0	-0.7	88
BRIGEW16	4/23/2007	1:36:00 PM	53.6	36.9	0	-6.6	117
BRIGEW17	4/10/2007	3:20:00 PM	54.9	40.8	0	-0.5	105
BRIGEW17	4/23/2007	1:42:00 PM	52.9	37.6	0	-5.1	115
BRIGEW18	4/2/2007	12:50:00 PM	44.2	35.3	2.4	-6.2	118
BRIGEW18	4/10/2007	12:09:00 PM	37.8	30.9	4.8	-6.6	110
BRIGEW18	4/10/2007	12:14:00 PM	37.7	30.1	4.7	-6.3	110
BRIGEW18	4/23/2007	10:01:00 AM	44.8	27.8	6.6	-7.2	111
BRIGEW18	4/23/2007	10:17:00 AM	42.9	32	4.6	-9.9	115
BRIGEW22	4/10/2007	12:53:00 PM	46	37.7	0	-2.5	91
BRIGEW22	4/23/2007	10:48:00 AM	45.4	35.7	0	-5	100
BRIGEW26	4/10/2007	1:35:00 PM	44.1	35.9	0	-2.9	126
BRIGEW26	4/10/2007	1:38:00 PM	43	35.5	0	-2.3	124
BRIGEW26	4/23/2007	11:35:00 AM	42.1	35.6	0	-9	131
BRIGEW26	4/23/2007	11:40:00 AM	41.3	34.7	0	-6.8	130
BRIGEW28	4/12/2007	10:38:00 AM	48.1	38.6	0	-22.4	125
BRIGEW28	4/24/2007	1:40:00 PM	50.5	35.4	0.2	-16.7	126
BRIGEW29	4/12/2007	10:34:00 AM	48	39	0.2	-6.7	43
BRIGEW29	4/24/2007	2:04:00 PM	36.5	34.7	0	-2.5	93
BRIGEW29	4/24/2007	2:08:00 PM	33.5	32.4	0	-2.4	91
BRIGEW30	4/12/2007	10:29:00 AM	48.8	39.2	0	-13.5	122
BRIGEW30	4/24/2007	1:36:00 PM	51.2	35.5	0.3	-9.5	124

WELL #	DATE	TIME	%CH4	%CO2	%O2	Initial Static Pressure (Inches	Initial Temperature (Deg F)
BRIGEW31	4/12/2007	10:26:00 AM	54.1	42.8	0	-21.5	125
BRIGEW31	4/24/2007	1:24:00 PM	50.2	38.9	0.5	-17.1	126
BRIGEW32	4/12/2007	10:20:00 AM	51.8	41	0.7	-27.9	120
BRIGEW32	4/24/2007	1:19:00 PM	48.2	39.2	0.9	-16.1	120
BRIGEW33	4/12/2007	10:07:00 AM	50.7	41.3	0	-34.4	100
BRIGEW33	4/24/2007	1:09:00 PM	44.5	37.1	0.5	-32.1	113
BRIGEW33	4/24/2007	1:14:00 PM	46.2	37.2	0.4	-29.1	112
BRIGEW34	4/12/2007	9:46:00 AM	52.7	42.8	0	-7.8	125
BRIGEW34	4/24/2007	1:04:00 PM	46.4	41.7	0	-3	122
BRIGEW35	4/12/2007	9:42:00 AM	51.6	44.6	0	-7.5	118
BRIGEW35	4/24/2007	12:54:00 PM	51.5	41.3	0.1	-3.2	119
BRIGEW36	4/12/2007	9:37:00 AM	48.5	40.8	0	-7.5	104
BRIGEW36	4/24/2007	12:51:00 PM	49.3	40	0	-2.9	106
BRIGEW37	4/12/2007	9:27:00 AM	36.1	33.7	0	-5.7	60
BRIGEW37	4/12/2007	9:31:00 AM	40.1	36.6	0	-6.2	96
BRIGEW37	4/24/2007	12:43:00 PM	26.3	29.4	0.1	-2.5	98
BRIGEW37	4/24/2007	12:47:00 PM	24.5	29.1	0	-2.2	97
BRIGEW38	4/12/2007	9:23:00 AM	46.6	40.5	0	-10.8	116
BRIGEW38	4/24/2007	12:36:00 PM	48	37.8	0.4	-6.1	118
BRIGEW39	4/12/2007	9:13:00 AM	49.4	40	0.6	-3.2	117
BRIGEW39	4/24/2007	12:19:00 PM	52.2	39.9	0.3	-0.8	118
BRIGEW40	4/11/2007	1:42:00 PM	53.5	41	0	-7.5	91
BRIGEW40	4/24/2007	10:48:00 AM	42.9	36	0.6	-5	101
BRIGEW40	4/24/2007	10:52:00 AM	42.4	35.6	0.6	-3.6	100
BRIGEW41	4/11/2007	1:30:00 PM	52.4	40.3	0	-1.6	97
BRIGEW41	4/24/2007	10:39:00 AM	41.8	35.3	0.9	-1.5	105
BRIGEW41	4/24/2007	10:44:00 AM	42.8	36.5	0.7	-1.2	105
BRIGEW42	4/11/2007	1:23:00 PM	40.1	35.8	0	-1.5	91
BRIGEW42	4/11/2007	1:26:00 PM	40.3	36.5	0	-1.2	90
BRIGEW42	4/24/2007	10:31:00 AM	33.1	31.8	1.9	-1.2	95
BRIGEW42	4/24/2007	10:36:00 AM	32.5	31	1.7	-0.9	95
BRIGEW43	4/11/2007	1:19:00 PM	52.1	42.1	0	-2.7	111
BRIGEW43	4/24/2007	10:24:00 AM	48.8	39.3	0	-1.3	112
BRIGEW44	4/11/2007	12:57:00 PM	41.6	37.3	0	-1.2	105
BRIGEW44	4/11/2007	1:05:00 PM	41.9	36.9	0	-1.1	102
BRIGEW44	4/24/2007	10:12:00 AM	31.6	33	0	-0.9	110
BRIGEW44	4/24/2007	10:16:00 AM	32	34.4	0	-0.6	105
BRIGEW45	4/11/2007	12:50:00 PM	54.9	40.2	0.1	-15.8	92
BRIGEW45	4/24/2007	10:08:00 AM	53.5	41.4	0	-13.9	108
BRIGEW46	4/11/2007	12:42:00 PM	50.4	40.2	0	-4.4	111
BRIGEW46	4/24/2007	10:03:00 AM	48.2	38.7	0.1	-4.7	115
BRIGEW47	4/11/2007	11:54:00 AM	54.3	42.3	0.1	-23.6	113
BRIGEW47	4/24/2007	9:42:00 AM	52.1	41.1	0.1	-24.6	117
BRIGEW48	4/11/2007	11:16:00 AM	54.7	41.2	0	-0.6	116
BRIGEW48	4/24/2007	9:32:00 AM	52.6	40	0	-0.8	115
BRIGEW49	4/11/2007	2:03:00 PM	38.1	35	0	-1.9	100
BRIGEW49	4/11/2007	2:07:00 PM	41.2	36	0	-1.6	97
BRIGEW49	4/24/2007	11:23:00 AM	26.6	31.3	0.2	-0.4	91

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WELL #	DATE	TIME	%CH4	%CO2	%O2	Initial Static Pressure (Inches	Initial Temperature (Deg F)
BRIGEW49	4/24/2007	11:29:00 AM	27.4	31.1	0.1	-0.3	90
BRIGEW50	4/11/2007	10:40:00 AM	55.7	41.3	0	-0.3	112
BRIGEW50	4/12/2007	11:29:00 AM	37.9	34.2	0	-1.3	97
BRIGEW50	4/12/2007	11:35:00 AM	37.9	34.7	0	-1.3	95
BRIGEW50	4/12/2007	4:17:00 PM	48.8	36.1	1	-0.8	88
BRIGEW50	4/24/2007	9:14:00 AM	53.5	40.3	0	-0.2	115
BRIGEW51	4/11/2007	1:58:00 PM	50.7	40.1	0	-2.2	111
BRIGEW51	4/24/2007	11:19:00 AM	49	38.8	0.2	-1.5	110
BRIGEW52	4/11/2007	10:36:00 AM	48.5	36.9	0	-0.2	115
BRIGEW52	4/24/2007	9:02:00 AM	18.6	28.2	0	-0.5	112
BRIGEW52	4/24/2007	9:10:00 AM	16.6	27	0	-0.2	105
BRIGEW52	4/24/2007	3:31:00 PM	46.6	36	0	-0.1	117
BRIGEW53	4/11/2007	1:54:00 PM	49.4	36.8	0.1	-1.3	117
BRIGEW53	4/24/2007	11:14:00 AM	45	36.4	0.2	-3.2	118
BRIGEW54	4/11/2007	1:49:00 PM	47.7	39.9	0	-2	110
BRIGEW54	4/24/2007	11:04:00 AM	43.9	37.8	0	-1.7	109
BRIGEW54	4/24/2007	11:11:00 AM	42.9	37.4	0.3	-1.1	108
BRIGEW55	4/11/2007	1:46:00 PM	46.1	40	0	-1.5	115
BRIGEW55	4/24/2007	10:56:00 AM	40.1	36.8	0.5	-1.2	112
BRIGEW55	4/24/2007	11:00:00 AM	40.9	37.2	0.2	-1	110
BRIGEW56	4/10/2007	3:33:00 PM	47.1	34.2	0	-3.6	129
BRIGEW56	4/23/2007	2:47:00 PM	40.1	32.1	2.1	-6.8	135
BRIGEW56	4/23/2007	2:53:00 PM	38.1	30	2.8	-5.3	129
BRIGEW57	4/12/2007	2:11:00 PM	52.8	40.4	0	-13.6	98
BRIGEW57	4/26/2007	10:40:00 AM	52.7	40.5	0	-6.9	100
BRIGEW58	4/12/2007	2:26:00 PM	51.3	41.1	0	-8.6	77
BRIGEW58	4/24/2007	2:29:00 PM	49.5	39.7	0.2	-2.9	90
BRIGEW59	4/12/2007	2:34:00 PM	35.4	35.5	0	-7.8	85
BRIGEW59	4/12/2007	2:41:00 PM	40.3	39.1	0	-7.7	85
BRIGEW59	4/24/2007	2:33:00 PM	45.8	36.7	0.2	-4.4	112
BRIGEW59	4/24/2007	2:42:00 PM	43.6	37.6	0	-3.9	112
BRIGEW60	4/12/2007	2:06:00 PM	52.6	41.2	0	-12.7	106
BRIGEW60	4/24/2007	2:22:00 PM	47.3	37.9	0	-7	108
BRIGEW61	4/12/2007	2:18:00 PM	30.3	30.3	0	-6.4	56
BRIGEW61	4/12/2007	2:22:00 PM	30.3	30.3	0	-6	53
BRIGEW61	4/26/2007	10:48:00 AM	33.4	32.2	0.9	-1.8	68
BRIGEW61	4/26/2007	10:53:00 AM	35	31.8	0	-1.6	61
BRIGEW62	4/12/2007	2:47:00 PM	26.6	28.1	0	-8.5	103
BRIGEW62	4/12/2007	2:51:00 PM	28.1	29.4	0	-7.8	100
BRIGEW62	4/26/2007	10:59:00 AM	39.1	34.5	0	-2.5	110
BRIGEW62	4/26/2007	11:04:00 AM	36.8	32.8	0	-2.3	108
BRIGEW63	4/10/2007	3:05:00 PM	40.1	36.4	0	-2.3	132
BRIGEW63	4/10/2007	3:09:00 PM	40.1	35.5	0	-1.9	130
BRIGEW63	4/23/2007	1:06:00 PM	42.8	34.1	0.5	-4.5	135
BRIGEW63	4/23/2007	1:10:00 PM	41.4	34	0.4	-4.1	130
BRIGEW64	4/12/2007	1:54:00 PM	50.3	39.9	0.4	-11	103
BRIGEW64	4/24/2007	2:18:00 PM	48.4	39.4	0.5	-5.3	108
BRIGEW66	4/12/2007	2:56:00 PM	27.3	28.9	1.1	-8.7	71

WELL #	DATE	TIME	%CH4	%CO2	%O2	Initial Static Pressure (inches)	Initial Temperature (Deg F)
BRIGEW66	4/12/2007	3:05:00 PM	38.3	33.4	0	-8.4	70
BRIGEW66	4/26/2007	11:08:00 AM	42.6	35	0.1	-4.5	93
BRIGEW66	4/26/2007	11:14:00 AM	40.4	34.5	0	-3.6	91
BRIGEW67	4/12/2007	12:46:00 PM	46.1	38.5	0	-7.3	125
BRIGEW67	4/12/2007	12:54:00 PM	43.8	37.3	0	-7.4	112
BRIGEW67	4/24/2007	3:42:00 PM	52.7	41.4	0.2	-1.2	126
BRIGEW68	4/12/2007	1:43:00 PM	52.7	41.2	0	-13.3	106
BRIGEW68	4/24/2007	2:13:00 PM	50.2	38.7	0.2	-7.8	108
BRIGEW69	4/12/2007	1:47:00 PM	52.6	40.8	0	-14.2	102
BRIGEW69	4/26/2007	10:22:00 AM	55.5	40.6	0	-7.7	106
BRIGEW69	4/26/2007	10:27:00 AM	55.8	41.1	0	-9.5	108
BRIGEW70	4/12/2007	3:11:00 PM	41.9	35	0	-12.1	88
BRIGEW70	4/12/2007	3:14:00 PM	41.5	34.4	0	-12	88
BRIGEW70	4/26/2007	11:20:00 AM	45.1	36.9	0	-7.3	98
BRIGEW71	4/12/2007	1:02:00 PM	35.7	33.6	0	-8.8	113
BRIGEW71	4/12/2007	1:06:00 PM	35.3	33.8	0	-8.4	108
BRIGEW71	4/26/2007	11:50:00 AM	47.7	37.5	0	-2.1	95
BRIGEW72	4/10/2007	2:40:00 PM	32.2	32.4	0	-0.3	78
BRIGEW72	4/10/2007	2:43:00 PM	32.8	32.7	0	-0.3	86
BRIGEW72	4/23/2007	2:18:00 PM	27.8	29.6	0.4	-3.4	90
BRIGEW72	4/23/2007	2:23:00 PM	27.2	30.5	0	-3.2	90
BRIGEW73	4/12/2007	1:39:00 PM	46.6	36.2	0	-14.8	113
BRIGEW73	4/26/2007	10:09:00 AM	47.7	36.9	0	-8.7	115
BRIGEW74	4/12/2007	1:31:00 PM	49.3	39.5	0	-35.7	108
BRIGEW74	4/26/2007	10:13:00 AM	50.9	39.6	0	-35.8	108
BRIGEW75	4/12/2007	1:19:00 PM	41.8	34.6	0	-11.5	112
BRIGEW75	4/12/2007	1:24:00 PM	42	35.3	0	-10.8	110
BRIGEW75	4/26/2007	9:48:00 AM	46.4	35.4	0	-5.1	114
BRIGEW76	4/10/2007	2:20:00 PM	50.6	37.7	0	-3.7	84
BRIGEW76	4/23/2007	1:47:00 PM	48.1	36.1	0.1	-2.1	90
BRIGEW77	4/12/2007	10:50:00 AM	43.5	36.9	0	-10.7	99
BRIGEW77	4/12/2007	10:58:00 AM	42.3	36.3	0	-9.5	95
BRIGEW77	4/26/2007	10:03:00 AM	48	37.7	0	-6.2	98
BRIGEW78	4/12/2007	11:03:00 AM	46.5	38	0	-23.5	117
BRIGEW78	4/26/2007	9:59:00 AM	48.1	38.1	0	-19.1	117
BRIGEW79	4/12/2007	11:08:00 AM	41.8	34.4	0.9	-12.3	80
BRIGEW79	4/12/2007	11:16:00 AM	42.1	34	1.1	-11	76
BRIGEW79	4/26/2007	9:52:00 AM	49.8	37.1	0	-7.7	97
BRIGEW80	4/10/2007	1:44:00 PM	50	37.3	0	-3.1	78
BRIGEW80	4/23/2007	11:44:00 AM	50	38.7	0.2	-6.3	90
BRIGEW81	4/10/2007	1:54:00 PM	44.8	34.2	0	-0.2	120
BRIGEW81	4/23/2007	11:53:00 AM	37.2	33.7	0	-4.8	131
BRIGEW81	4/23/2007	12:02:00 PM	38.7	31.9	0.4	-4.6	120
BRIGEW82	4/10/2007	2:03:00 PM	40.5	34.9	0	-0.2	95
BRIGEW82	4/23/2007	12:05:00 PM	33.4	30.8	0.1	-5.3	115
BRIGEW82	4/23/2007	12:09:00 PM	34.8	31.1	0	-4	113

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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Temp (Deg F)	Initial Static Pressure (Inches H_2O)
BrigIT-1	4/9/2007 11:06	28.1	23.6	5.7	0	-1.8
BrigIT-2	4/9/2007 11:09	0.1	5.3	16.8	0	-1.8
BrigIT-3	4/9/2007 11:37	1.3	8.6	13.8	0	-1.7
BrigIT-4	4/9/2007 11:54	14.5	19.8	7.4	0	-2
BrigIT-5	4/9/2007 11:58	31.2	29.9	1.4	0	-1.6
BrigIT-6	4/9/2007 12:22	27.1	26.2	4.5	0	-1.6
BrigT-56	4/9/2007 10:18	28.7	23.4	8.1	0	-29.1
BrigT-56	4/9/2007 10:20	38	29.8	4.7	0	-24.5
BrigT-56	4/12/2007 11:56	29.4	30.9	1.4	30	-51.2
BRIPEW01	4/9/2007 10:31	53.1	26.8	1.5	66	-1.3
BRIPEW01	4/9/2007 10:37	53.4	27.7	1.1	66	-2.2
BRIPEW01	4/9/2007 10:43	8.6	22.6	3	63	-0.6
BRIPEW02	4/9/2007 10:46	9	23.1	2.2	63	-0.6
BRIPEW03	4/9/2007 10:55	5.3	17.3	4.7	68	-0.4
BRIPEW04	4/9/2007 11:02	0	8.7	13	61	-0.2
BRIPEW05	4/9/2007 11:14	17.7	25.1	8.5	61	-2.3
BRIPEW06	4/9/2007 11:21	45.7	31	5.1	74	-28.8
BRIPEW06	4/9/2007 11:25	51.9	35.3	2.9	74	-6.7
BRIPEW07	4/9/2007 11:29	57.5	34.7	0.4	62	-1.7
BRIPEW07	4/9/2007 11:32	57.6	34.8	0.2	62	-2.4
BRIPEW08	4/9/2007 11:41	6.6	3.6	17.4	65	-43.5
BRIPEW08	4/9/2007 11:44	7.8	4.2	16.4	65	-43.4
BRIPEW09	4/9/2007 11:49	55.4	40.6	1.4	61	-7.3
BRIPEW09	4/23/2007 15:35	21.3	27.4	0.4	122	-2.1
BRIPEW09	4/23/2007 15:41	14.3	25.6	0.2	111	-1.2
BRIPEW10	4/9/2007 12:01	56.9	33	2	65	8.9
BRIPEW10	4/9/2007 12:06	36.3	20.7	9.2	65	-3.1
BRIPEW11	4/9/2007 12:10	0.1	0.3	20.9	63	-1.6
BRIPEW12	4/9/2007 12:17	0	0.1	21.1	62	-0.1
BRIPEW13	4/9/2007 13:02	55.3	39.7	0.5	65	-8.6
BRIPEW14	4/9/2007 13:08	37.5	33.4	2.3	70	-2.4
BRIPEW15	4/9/2007 13:20	0	5.3	17.9	61	-0.7
BRIPEW16	4/9/2007 13:27	0.1	9.2	16.4	655	-0.6
BRIPEW17	4/9/2007 13:35	0	5.7	16.6	67	-1
BRIPEW18	4/9/2007 13:41	0.3	11.6	8.5	66	-0.7
BRIPEW19	4/9/2007 13:46	0	5.2	15.6	64	-0.3
BRIPEW20	4/9/2007 13:56	41.6	26.5	4.3	60	-5.1
BRIPEW21	4/9/2007 14:04	3.6	19.2	12.5	62	-0.5
BRIPEW22	4/9/2007 14:14	0.6	2.9	20	63	-0.7
BRIPEW23	4/9/2007 14:20	37.9	27.2	6.2	61	-2.7
BRIPEW24	4/9/2007 14:33	51.8	36.2	1.7	61	-3.8
BRIPEW25	4/9/2007 14:39	54.4	37.3	0.4	68	-2.3
BRIPEW25	4/9/2007 14:45	52.9	35.9	1.1	68	-4.9
BRIPEW26	4/9/2007 14:50	45.4	39.6	0.2	65	-2.6
BRIPEW27	4/9/2007 14:55	54.1	39.3	1.6	67	-1.6
BRIPEW27	4/9/2007 14:59	54	39.7	1.4	67	-4.6
BRIPEW28	4/9/2007 15:06	14.1	15.3	12	67	-1.7

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Temp (Deg F)	Initial Static Pressure (inches H_2O)
BRIPEW29	4/9/2007 15:12	3.7	35.7	4.5	67	-1.7
BRIPEW30	4/9/2007 15:17	9	26.1	7.6	65	-1.2
BRIPEW31	4/9/2007 15:26	3.6	17.7	7.4	61	-1.5
BRIPEW32	4/10/2007 9:12	19.1	27	1.5	48	-1.6
BRIPEW33	4/10/2007 9:17	13.3	27.6	1.5	49	-1.5
BRIPEW34	4/10/2007 9:27	2.7	18.8	8.2	48	-0.8
BRIPEW34	4/10/2007 9:27	2.7	18.8	8.2	48	-0.4
BRIPEW35	4/10/2007 9:38	5.1	14.9	11.1	51	-1.7
BRIPEW36	4/10/2007 9:43	44.8	39.9	0.4	51	-4.2
BRIPEW37	4/10/2007 9:48	43	40.6	0	50	-4.6
BRIPEW38	4/10/2007 9:54	52.9	45.5	0	50	-5
BRIPEW39	4/10/2007 10:00	54.2	38.8	0.8	58	-3.2
BRIPEW39	4/10/2007 10:03	49.9	39.2	1	60	-4.9
BRIPEW40	4/10/2007 10:11	8.2	18.9	8.4	52	-2.4
BRLCS-1B	4/10/2007 11:02	54.9	34.2	1.8	0	-42.7
BRLCS-1B	4/23/2007 14:57	59.7	39.2	0.5	0	-46.4
BRLCS-2C	4/10/2007 10:33	55.9	42.9	0	0	129.7
BRLCS-2C	4/10/2007 10:39	54.5	44.9	0	0	-3.7
BRLCS-2C	4/23/2007 15:05	57.2	42.5	0.2	0	-31
BRLCS-3C	4/10/2007 10:19	55.5	42.9	0	0	8.2
BRLCS-3C	4/10/2007 10:24	55.1	42.3	0	0	-3.6
BRLCS-3C	4/23/2007 15:11	57.1	42.6	0.2	0	-10.7
BRLCS-3C	4/23/2007 15:17	56.1	43.6	0.1	0	-15.3
BRLCS-4A	4/10/2007 10:55	46	35.1	3.6	0	-9.4
BRLCS-5A	4/10/2007 11:12	44.3	35.8	4	0	-11.2
BRLCS-5A	4/23/2007 15:30	55.6	43.7	0.5	0	-10.6
BRLCS-6A	4/10/2007 11:18	11.4	20.9	5	0	-0.1
BRLCS-6A	4/23/2007 15:24	5.3	8.7	12.6	0	0

O2| 2,3,4,5&,04.
05,06,07,08,10,11
12,15,16,17,18,19,
21,22,30,31,34,35,40

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRGEW12A	5/8/2007 13:50	40.6	34.1	0	-1.9	135
BRGEW12A	5/8/2007 14:05	43.1	35.9	0.1	-1.7	128
BRGEW14A	5/8/2007 14:20	47.9	35.9	0.2	-8	121
BRGEW19A	5/8/2007 10:53	48.2	42.9	1.3	-1.6	127
BRGEW20A	5/8/2007 10:58	47	37.9	0.9	-3.4	122
BRGEW21A	5/8/2007 11:02	29.6	32.8	0.1	-4.6	118
BRGEW21A	5/8/2007 11:06	29.5	32.4	0.1	-3.7	122
BRGEW23A	5/8/2007 11:16	34.6	33.2	0.1	-3	110
BRGEW23A	5/8/2007 11:19	34.7	33.4	0.1	-2.8	110
BRGEW24A	5/8/2007 11:23	42.1	36.1	0.1	-2.6	116
BRGEW25A	5/8/2007 11:30	17.7	26.9	0.2	-3.4	108
BRGEW25A	5/8/2007 11:32	17.3	27.4	0.1	-2.9	108
BRGEW27A	5/9/2007 15:26	15.9	24	1	-1.8	100
BRGEW27A	5/9/2007 15:32	17.7	24.9	0.5	-1.8	100
BRGEW65A	5/10/2007 11:30	36.2	32.4	0.4	-8.5	104
BRGEW65A	5/10/2007 11:36	30.4	31.6	0	-6.8	101
BRIGEW01	5/9/2007 12:02	42.6	34	0.8	-0.4	112
BRIGEW01	5/9/2007 12:10	42.8	34.5	0.4	-0.3	112
BRIGEW02	5/9/2007 10:26	53.8	40.2	0.1	-3.7	127
BRIGEW03	5/9/2007 10:14	43.5	36	0.2	-1.3	112
BRIGEW03	5/9/2007 10:22	43.5	36.8	0	-1.2	112
BRIGEW04	5/9/2007 10:04	42.6	36.5	0.2	-1	113
BRIGEW04	5/9/2007 10:10	43.1	35.9	0.1	-0.9	112
BRIGEW05	5/9/2007 9:42	32.7	33.1	0.2	-0.6	90
BRIGEW05	5/9/2007 9:49	32.7	32.9	0.1	-0.6	90
BRIGEW06	5/9/2007 9:22	43.9	36.4	0.2	-0.7	96
BRIGEW06	5/9/2007 9:34	43	36.1	0.1	-0.6	94
BRIGEW07	5/9/2007 8:59	55.3	40.9	0.1	-2.9	117
BRIGEW07	5/9/2007 9:05	56	40	0	-3.2	118
BRIGEW08	5/9/2007 8:55	53.3	39.8	0.2	-1.6	128
BRIGEW09	5/8/2007 15:19	12.9	24.8	0.3	-0.3	94
BRIGEW09	5/8/2007 15:23	13.3	24.8	0.2	-0.3	94
BRIGEW10	5/8/2007 15:15	49.3	36.6	0.5	-17.6	120
BRIGEW11	5/8/2007 15:11	56.4	43.1	0.4	-5.4	138
BRIGEW11	5/10/2007 12:27	57.1	42.3	0.5	-5.2	135
BRIGEW11	5/10/2007 12:32	56.9	42.9	0	-4.7	130
BRIGEW13	5/8/2007 14:09	57	39.5	0.1	-2.9	128
BRIGEW13	5/8/2007 14:16	56.1	39.8	0.1	-3.1	131
BRIGEW15	5/8/2007 14:32	3	17.5	2.7	-1.5	91
BRIGEW15	5/8/2007 14:37	2.8	17.5	2.6	-1.4	90
BRIGEW16	5/8/2007 14:23	48.3	36.5	0.3	-7.4	118
BRIGEW17	5/8/2007 14:27	51	35.5	0.2	-4.3	115
BRIGEW18	5/8/2007 10:45	35.5	31.4	4.1	-12.8	117
BRIGEW18	5/8/2007 10:50	32.7	29.9	4.6	-11.2	115
BRIGEW22	5/8/2007 11:10	46.6	37.4	0	-3.3	105
BRIGEW26	5/8/2007 11:35	31.2	32.4	0.3	-7.9	130
BRIGEW26	5/8/2007 11:39	30.6	33.4	0.1	-6.5	129
BRIGEW28	5/9/2007 15:17	48.2	33.5	1.1	-16.8	127
BRIGEW29	5/9/2007 15:13	51.9	36.8	0.7	-2.7	103

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by Vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIGEW30	5/9/2007 15:05	43.7	34.6	0.3	-10	124
BRIGEW30	5/9/2007 15:10	48.3	33.9	0.5	-8.5	122
BRIGEW31	5/9/2007 14:59	47.7	36.1	1	-15.4	126
BRIGEW32	5/9/2007 14:54	47.1	37.2	1.1	-16.6	120
BRIGEW33	5/9/2007 14:41	39.5	33.9	1.3	-27.1	112
BRIGEW33	5/9/2007 14:46	42.4	33.9	1.2	-22.9	112
BRIGEW34	5/9/2007 14:37	52.3	38.7	1.1	-1.9	126
BRIGEW35	5/9/2007 14:32	51.9	40.4	0.7	-2.5	119
BRIGEW36	5/9/2007 14:28	47.4	38.6	0.5	-2.4	106
BRIGEW37	5/9/2007 14:18	27.1	28.4	0.8	-1.8	96
BRIGEW37	5/9/2007 14:24	28.8	29	0.4	-1.7	96
BRIGEW38	5/9/2007 14:13	48.3	37.7	0.9	-4.9	118
BRIGEW39	5/9/2007 14:08	52	38.9	1	-0.7	116
BRIGEW40	5/9/2007 11:19	50.7	37.8	0.4	-4.5	105
BRIGEW41	5/9/2007 11:13	50.5	37.4	0.4	-1.7	109
BRIGEW42	5/9/2007 11:09	50.1	38.5	0.3	-0.9	95
BRIGEW43	5/9/2007 11:04	48.6	39.9	0.3	-2.9	112
BRIGEW44	5/9/2007 10:56	35.6	35.7	0.5	-1	111
BRIGEW44	5/9/2007 11:00	35	35.8	0.1	-0.9	111
BRIGEW45	5/9/2007 10:35	53.4	40	0.4	-10.7	112
BRIGEW46	5/9/2007 10:31	48.3	38.8	0.4	-3.9	117
BRIGEW47	5/9/2007 9:53	55.1	40.6	0.3	-25.5	120
BRIGEW47	5/9/2007 9:59	54.1	41	0.2	-27.6	120
BRIGEW48	5/9/2007 9:38	51.2	39	0.1	-1.1	115
BRIGEW49	5/9/2007 12:51	28.5	29.1	1.1	-0.5	91
BRIGEW49	5/9/2007 12:56	27.5	30	0.8	-0.4	91
BRIGEW50	5/9/2007 9:18	48.5	37.8	0	-1	112
BRIGEW51	5/9/2007 12:46	48	37.2	0.9	-1.2	112
BRIGEW52	5/9/2007 9:09	16.5	27.5	0.1	-1.4	110
BRIGEW52	5/9/2007 9:14	17.2	28.3	0	-0.7	110
BRIGEW53	5/9/2007 13:11	42.4	33	1.3	-1.4	119
BRIGEW53	5/9/2007 13:20	45.3	32.6	1.3	-0.9	119
BRIGEW54	5/9/2007 11:23	43.3	36.8	0.2	-1.3	108
BRIGEW54	5/9/2007 11:30	45	38.3	0.1	-1.1	108
BRIGEW55	5/9/2007 12:26	40.8	37.2	0.6	-0.8	113
BRIGEW55	5/9/2007 12:33	44.6	37.4	0.6	-0.6	112
BRIGEW56	5/8/2007 15:27	53.6	38.1	0.4	-2.3	100
BRIGEW57	5/10/2007 11:04	54.8	37.9	0	-8.2	99
BRIGEW58	5/10/2007 10:51	50.7	38.7	0.2	-3.7	90
BRIGEW59	5/10/2007 10:46	46.5	36	0.3	-5	114
BRIGEW60	5/10/2007 11:08	51.6	35.6	0.2	-8.1	108
BRIGEW61	5/10/2007 10:56	22.3	26.2	0	-2.2	90
BRIGEW61	5/10/2007 11:00	20.9	25.8	0.2	-2.2	90
BRIGEW62	5/10/2007 10:36	43	33	0	-3.7	112
BRIGEW62	5/10/2007 10:39	39.2	31.9	0	-3.4	110
BRIGEW63	5/8/2007 13:37	30.1	33.5	0.7	-2.9	128
BRIGEW63	5/8/2007 13:40	33.7	33.8	0.4	-2.7	125
BRIGEW64	5/10/2007 11:12	50.9	36.8	0.4	-6.6	107
BRIGEW66	5/10/2007 10:21	36.7	31	0.8	-5	101

Temp 10, 11, 13, 12A

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIGEW66	5/10/2007 10:26	37.7	30.4	0.7	-4.4	101
BRIGEW67	5/9/2007 15:47	49.1	37.2	0.9	-2.1	128
BRIGEW68	5/10/2007 11:17	51.8	36.5	0.1	-9.6	108
BRIGEW69	5/10/2007 11:21	58.3	38.1	0.2	-10.3	109
BRIGEW69	5/10/2007 11:27	58.1	38.8	0	-11.6	111
BRIGEW70	5/10/2007 10:10	43	34.9	0.1	-7.7	99
BRIGEW70	5/10/2007 10:17	40.1	34.2	0	-6.5	99
BRIGEW71	5/9/2007 15:39	40.4	35.4	0.6	-2.4	94
BRIGEW71	5/9/2007 15:43	39.1	33.9	0.7	-2.5	94
BRIGEW72	5/8/2007 13:19	17.3	26.8	0.9	-3.4	105
BRIGEW72	5/8/2007 13:25	18.8	26.2	0.9	-2.9	105
BRIGEW73	5/10/2007 9:57	48.2	34.5	0.2	-10.4	116
BRIGEW74	5/10/2007 10:01	53.9	37.4	0	-35.7	114
BRIGEW75	5/10/2007 9:23	46.6	35.1	0.1	-6.6	115
BRIGEW76	5/8/2007 12:52	39.3	34.3	1.7	-2.1	93
BRIGEW76	5/8/2007 12:57	42.7	33.1	1.5	-2	100
BRIGEW77	5/10/2007 9:53	47.4	38.4	0	-5.1	110
BRIGEW78	5/10/2007 9:39	36.5	36.7	0	-20.6	118
BRIGEW78	5/10/2007 9:43	41.9	38.8	0	-16.4	118
BRIGEW79	5/10/2007 9:28	43.8	36.3	0.6	-8.6	110
BRIGEW79	5/10/2007 9:34	47.6	37.9	0.3	-8.2	110
BRIGEW80	5/8/2007 11:51	47	38.8	0.1	-5.7	100
BRIGEW81	5/8/2007 11:59	38.2	34.8	0.2	-3.8	122
BRIGEW81	5/8/2007 12:05	39	34.6	0	-3.5	122
BRIGEW82	5/8/2007 12:08	33.3	31.3	0.2	-4.6	112
BRIGEW82	5/8/2007 12:15	32.9	32.4	0	-3.5	115
BRIGINLT	5/8/2007 8:53	41.2	36.5	0.7	-54.9	81
BRIGINLT	5/8/2007 16:05	45.1	34.9	1.2	-54.3	82
BRIGINLT	5/9/2007 8:39	43.7	37.2	0.6	-54.8	81
BRIGINLT	5/9/2007 16:09	44.7	33.7	2.4	-53.2	82
BRIGINLT	5/10/2007 8:51	44.3	36.8	0.8	-55.4	81
BRIGINLT	5/10/2007 13:01	45.8	36.1	0.8	-55.5	82

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Temp (Deg F)	Initial Static Pressure (inches H_2O)
BRIGEW17	5/22/2007 11:36	47	34.3	0.2	116	-4.4
BRIGEW76	5/22/2007 11:31	46.1	35.6	0.2	105	-1.8
BrigIT-1	5/7/2007 10:22	10.4	14	10.4	0	-1.8
BrigIT-2	5/7/2007 10:55	0.1	6	15.3	0	-1.8
BrigIT-3	5/7/2007 11:19	4.7	9.3	12.3	0	-1.9
BrigIT-4	5/7/2007 11:36	15.6	19.6	6.8	0	-2.2
BrigIT-5	5/7/2007 11:39	32.5	29.9	2.2	0	-1.9
BrigIT-6	5/7/2007 12:01	13.5	15	10.5	0	-2
BrigT-56	5/7/2007 9:44	52.9	38.1	0.2	0	-49.6
BRIPEW01	5/7/2007 9:57	56.6	34	0.7	82	-1.8
BRIPEW01	5/7/2007 10:03	56.7	33.5	0.3	82	-2.6
BRIPEW02	5/7/2007 10:09	0	18.9	4.2	80	-0.7
BRIPEW03	5/7/2007 10:14	3.1	17.6	4.6	78	-0.5
BRIPEW04	5/7/2007 10:19	0	4.9	15.6	78	0
BRIPEW05	5/7/2007 10:58	18.5	26.8	7.3	86	-1.6
BRIPEW06	5/7/2007 11:03	58.3	41.4	0.1	78	-0.2
BRIPEW06	5/7/2007 11:08	58.6	41	0.2	78	-0.7
BRIPEW07	5/7/2007 11:11	61.5	38.2	0.2	87	-1.6
BRIPEW07	5/7/2007 11:17	58.8	37.3	0.5	88	-2.8
BRIPEW08	5/7/2007 11:24	29.7	8.8	12	88	-42.6
BRIPEW08	5/7/2007 11:29	23.9	6.8	13.3	88	-42.9
BRIPEW09	5/7/2007 11:32	57.6	41.7	0.6	84	-6.8
BRIPEW10	5/7/2007 11:42	60.4	37.9	0.2	88	-11
BRIPEW10	5/7/2007 11:49	58.4	32.6	2.3	88	-6.4
BRIPEW11	5/7/2007 11:52	0	0.6	19.8	91	-1.1
BRIPEW12	5/7/2007 11:57	0	0	20.1	92	-0.6
BRIPEW13	5/7/2007 12:04	57.5	42.1	0.3	90	-0.7
BRIPEW13	5/7/2007 12:09	57.7	40.9	0.5	91	-2.2
BRIPEW14	5/7/2007 12:13	24.1	24.9	5.7	88	-2
BRIPEW15	5/7/2007 12:33	0	1.8	18.7	91	-1.2
BRIPEW16	5/7/2007 12:51	0	2.1	19	90	-0.8
BRIPEW17	5/7/2007 12:57	0	2	18.3	94	-2.1
BRIPEW18	5/7/2007 13:09	0	3	16.8	91	-1
BRIPEW19	5/7/2007 13:12	0	1.2	18.7	92	-0.7
BRIPEW20	5/7/2007 13:17	52.6	33.4	1.3	91	-4.3
BRIPEW20	5/7/2007 13:26	52.5	33.6	1.2	91	-6.9
BRIPEW21	5/7/2007 13:29	0.4	8.1	15	92	-1.3
BRIPEW22	5/7/2007 13:42	0.2	0.4	19.8	91	-0.9
BRIPEW23	5/7/2007 13:54	12.1	23.8	7	97	-3.2
BRIPEW24	5/7/2007 13:59	6.8	29.2	1.8	93	-3.7
BRIPEW25	5/7/2007 14:06	18.8	29.4	3.6	98	-11.4
BRIPEW25	5/7/2007 14:14	18.6	28.6	4.1	97	-4.6
BRIPEW26	5/7/2007 14:17	2.2	20.7	6.5	95	-3.2
BRIPEW27	5/7/2007 14:30	7.6	26.8	1.6	94	-4.8
BRIPEW27	5/7/2007 14:35	7.1	26.7	1.1	94	-3.9
BRIPEW28	5/7/2007 14:38	0.3	8.4	14.9	98	-1.2
BRIPEW29	5/7/2007 14:43	0	11.4	13.4	98	-0.3

O2 1,2,3,6,04,08,11,12,13
14,15,16,17,18,19
21,22,25,26,28,29,

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Inital Temp (Deg F)	Inital Static Pressure (Inches H_2O)
BRIPEW30	5/7/2007 14:47	0	30.5	2.9	98	-0.5
BRIPEW31	5/7/2007 14:55	7.3	19.6	0.4	96	-1
BRIPEW32	5/8/2007 9:02	0	12.3	7.4	87	-0.3
BRIPEW33	5/8/2007 9:10	0	14.9	8.6	85	-0.4
BRIPEW34	5/8/2007 9:15	0	8.8	13.9	90	-0.4
BRIPEW35	5/8/2007 9:21	0	6.4	15.6	90	-0.6
BRIPEW36	5/8/2007 9:28	24.2	35.4	1.5	91	-4.7
BRIPEW36	5/8/2007 9:37	27.6	34.9	1.8	90	-3.4
BRIPEW37	5/8/2007 9:41	30.6	37	0.5	91	-4.6
BRIPEW38	5/8/2007 9:47	51.1	41.2	0.3	91	-5.6
BRIPEW39	5/8/2007 9:53	9.8	24.9	2.3	87	-12.6
BRIPEW39	5/8/2007 10:04	14.3	26.6	2.8	88	-5.3
BRIPEW40	5/8/2007 10:09	0.7	6.5	14.3	92	-1.8
BRIPEW40	5/8/2007 10:19	0.3	3.7	16.4	92	-1.3
BRLCS-1B	5/7/2007 15:10	31.1	23	8.4	0	-46.4
BRLCS-1B	5/7/2007 15:14	32.6	23.1	8.2	0	-46.6
BRLCS-1B	5/22/2007 12:55	20.7	14.4	12.3	0	-48.2
BRLCS-1B	5/22/2007 12:59	25.3	15	11.9	0	-48.1
BRLCS-2C	5/7/2007 13:34	58.1	41.4	0.4	0	-42.5
BRLCS-2C	5/22/2007 11:57	58.7	40.3	0.9	0	-38.7
BRLCS-3C	5/7/2007 14:25	57	42.7	0.1	0	-20.9
BRLCS-3C	5/22/2007 12:11	58.2	41	0.6	0	-20.7
BRLCS-4A	5/7/2007 15:03	53.2	39.9	2.5	0	-6.3
BRLCS-4A	5/22/2007 11:27	54.9	36.2	3.3	0	-6.9
BRLCS-5A	5/7/2007 15:25	6.6	7.2	16.9	0	-13.5
BRLCS-5A	5/7/2007 15:28	3.5	3.9	18.6	0	-10.8
BRLCS-5A	5/22/2007 12:33	18.8	10.9	14.7	0	-10.2
BRLCS-5A	5/22/2007 12:38	16.4	11	14.7	0	-8.9
BRLCS-6A	5/7/2007 15:19	12.2	26.5	0.7	0	-0.7
BRLCS-6A	5/22/2007 12:29	34.7	31.9	1	0	-0.5

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRGEW65A	6/14/2007	31.8	32.6	0	-2.4	111
BRIEW12A	6/14/2007	41.8	45.1	0	-0.6	126
BRIEW14A	6/14/2007	38.9	37.2	0	-6.1	120
BRIEW19A	6/14/2007	47.9	44.8	0.5	-0.5	110
BRIEW20A	6/14/2007	46	41.7	0.1	-2.6	110
BRIEW21A	6/14/2007	41.2	39.1	0	-2.8	116
BRIEW23A	6/14/2007	48	42.4	0	-0.4	110
BRIEW24A	6/14/2007	47.2	42.2	1	-0.4	110
BRIEW25A	6/14/2007	33.3	35.1	0	-0.9	110
BRIEW27A	6/14/2007	29.3	32.7	0.4	-0.7	108
BRIGEW01	6/14/2007	39.6	32.8	0.5	-0.5	122
BRIGEW02	6/14/2007	50.2	41.8	0	-2.8	123
BRIGEW03	6/14/2007	45.4	40.3	0	-0.4	112
BRIGEW04	6/14/2007	44.7	38.5	0	-0.3	108
BRIGEW05	6/14/2007	39.4	37.8	0	-0.1	95
BRIGEW06	6/14/2007	34.2	34.3	1.7	-0.6	94
BRIGEW07	6/14/2007	47.6	38.4	0	-4.3	118
BRIGEW08	6/14/2007	45.7	37.9	0	-1.4	128
BRIGEW09	6/14/2007	24.1	30	0	-0.2	102
BRIGEW10	6/14/2007	45.5	39.1	0	-20	121
BRIGEW11	6/14/2007	53.5	44.7	0	-4.4	130
BRIGEW13	6/14/2007	51.8	44.3	0.5	-1.2	126
BRIGEW15	6/14/2007	11.3	24	1.3	-0.7	120
BRIGEW16	6/14/2007	37.2	37	0	-5.7	110
BRIGEW17	6/14/2007	38.9	37.8	0	-3.8	118
BRIGEW18	6/14/2007	28.4	25.8	7.2	-8.3	110
BRIGEW18	6/14/2007	26.5	24	8	-6.8	110
BRIGEW22	6/14/2007	51.5	43.9	0	-1.7	111
BRIGEW26	6/14/2007	38.6	37.5	0.6	-3.6	130
BRIGEW28	6/14/2007	47.8	41	0	-13.4	128
BRIGEW29	6/14/2007	46	42.5	0	-1.4	102
BRIGEW30	6/14/2007	44.3	39.2	0.1	-6.1	130
BRIGEW31	6/14/2007	52.6	39.3	0.3	-20.6	130
BRIGEW32	6/14/2007	48.8	38.6	0.4	-17.8	120
BRIGEW33	6/14/2007	39.5	35.8	0.1	-14.8	128
BRIGEW34	6/14/2007	52	40	0	-1.2	130
BRIGEW35	6/14/2007	52.4	42.6	0	-1.3	120
BRIGEW36	6/14/2007	48	41.1	0	-1	110
BRIGEW37	6/14/2007	38.3	34.3	0.4	-0.4	100
BRIGEW38	6/14/2007	28.5	10.4	0	-4.5	118
BRIGEW39	6/14/2007	52.7	39.7	0	-0.9	118
BRIGEW40	6/14/2007	53.7	41.7	0	-4.8	108
BRIGEW41	6/14/2007	53.6	41	0	-0.8	108
BRIGEW42	6/14/2007	55.3	43.5	0	-0.5	100
BRIGEW43	6/14/2007	50.6	42.3	0	-4.3	110
BRIGEW44	6/14/2007	41.2	38.7	0	-0.3	114
BRIGEW45	6/14/2007	51.7	43	0	-12	111

O_2 32, 33, 34, 35, 40, 18, 54, 18,

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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW46	6/14/2007	44.3	40.5	0.3	-3.4	120
BRIGEW47	6/14/2007	46.8	42.1	0	-28.4	121
BRIGEW48	6/14/2007	44.9	40	0	-0.7	113
BRIGEW49	6/14/2007	26.6	32.2	0.6	-0.2	93
BRIGEW50	6/14/2007	43.7	39.5	0.3	-0.7	117
BRIGEW51	6/14/2007	44.4	41.7	0	-0.8	113
BRIGEW52	6/14/2007	26.1	32	0.4	-0.3	110
BRIGEW53	6/14/2007	42.3	38.5	0	-1.1	118
BRIGEW54	6/14/2007	41.7	40.5	0	-0.8	111
BRIGEW56	6/14/2007	53.8	41.1	0	-2.2	108
BRIGEW57	6/14/2007	41.2	38.2	0	-4	100
BRIGEW58	6/14/2007	42.2	38.2	0	-2	127
BRIGEW59	6/14/2007	38.1	38.7	0	-2	110
BRIGEW60	6/14/2007	42.2	36.9	0	-4.5	110
BRIGEW61	6/14/2007	36.1	32.4	0	-0.4	97
BRIGEW62	6/14/2007	33.1	32.1	0	-0.7	100
BRIGEW63	6/14/2007	41.3	41.7	0.2	-1.8	110
BRIGEW64	6/14/2007	46.4	38.8	0.2	-3.7	110
BRIGEW66	6/14/2007	35	34.4	0	-1.4	107
BRIGEW67	6/14/2007	46.5	41.3	0	-1	130
BRIGEW68	6/14/2007	45.9	36.8	0	-6.8	110
BRIGEW69	6/14/2007	44.1	37.2	0	-10.2	110
BRIGEW70	6/14/2007	37.8	34.8	0	-8.2	108
BRIGEW71	6/14/2007	39.5	37.4	0	-1.1	106
BRIGEW72	6/14/2007	25.5	29.7	0	-0.8	105
BRIGEW73	6/14/2007	42.2	34.6	0.1	-6.9	114
BRIGEW74	6/14/2007	43.5	37.9	0	-30.7	120
BRIGEW75	6/14/2007	43.5	37	0	-3.9	115
BRIGEW76	6/14/2007	43.1	37.3	0	-0.4	110
BRIGEW77	6/14/2007	40.7	35.8	0	-5.4	116
BRIGEW78	6/14/2007	44.8	37.2	0	-10	120
BRIGEW79	6/14/2007	42.2	36.2	0.2	-5.3	110
BRIGEW80	6/14/2007	47.8	38.3	0	-2.3	105
BRIGEW81	6/14/2007	48.3	38.7	0	-0.4	111
BRIGEW82	6/14/2007	39.8	34.8	0	-3.7	120
BRIGINLT	6/14/2007	42.9	36.2	1.1	-64.7	88

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temp (Deg F)
BRIPEW01	6/19/2007	55.9	36.1	0.3	-1.3	86
BRIPEW02	6/19/2007	9.5	26.6	1.2	-0.3	94
BRIPEW03	6/19/2007	6.7	22.6	1.3	-0.2	88
BRIPEW04	6/19/2007	0.4	13.5	7.1	-0.2	98
BRIPEW05	6/19/2007	20.5	28	0.2	-0.3	104
BRIPEW06	6/19/2007	56.8	41.6	0.2	-0.2	84
BRIPEW07	6/19/2007	56.8	35.9	0.3	-1.4	108
BRIPEW08	6/19/2007	26.4	17.6	10.1	-30.7	106
BRIPEW09	6/14/2007	40.5	28.1	7.1	-0.4	96
BRIPEW10	6/14/2007	51.2	34.1	1.7	-10.5	106
BRIPEW11	6/14/2007	48.3	32.4	2.9	-8.4	106
BRIPEW12	6/14/2007	0	0	20.4	-1	104
BRIPEW13	6/14/2007	58.5	41.1	0.2	-3	100
BRIPEW14	6/19/2007	56.3	39.3	0.5	-1.4	98
BRIPEW15	6/19/2007	6.5	7.9	10.8	-0.4	104
BRIPEW16	6/19/2007	28.9	21.7	3.9	-0.3	104
BRIPEW17	6/19/2007	0.2	6.2	10.9	-0.4	108
BRIPEW18	6/19/2007	0	0.2	20.5	-0.4	98
BRIPEW19	6/19/2007	0	.4	15.8	-0.4	108
BRIPEW20	6/19/2007	43.2	27.5	4	-3.9	96
BRIPEW21	6/19/2007	16.4	24.7	3.4	-0.7	98
BRIPEW22	6/14/2007	20.3	13.8	12.2	-0.6	98
BRIPEW23	6/14/2007	12.8	27.9	0.3	-1.6	112
BRIPEW24	6/14/2007	15	13.9	0	-2.7	110
BRIPEW25	6/14/2007	40.4	17.3	0.1	-2.7	114
BRIPEW26	6/14/2007	21.3	24.2	0.5	-1.7	102
BRIPEW27	6/14/2007	35	30.9	0.2	-2.7	104
BRIPEW28	6/14/2007	6.8	13	9.7	-0.3	110
BRIPEW29	6/14/2007	58	37.5	0.2	-0.2	110
BRIPEW30	6/14/2007	42.8	30.7	4.1	-0.6	108
BRIPEW31	6/14/2007	17.1	17.8	0.3	-0.3	104
BRIPEW32	6/14/2007	59.9	29	0.1	-0.1	100
BRIPEW33	6/14/2007	7.8	22.2	0.1	-0.3	100
BRIPEW34	6/14/2007	25.7	19.4	0.1	-0.2	96
BRIPEW35	6/14/2007	56.6	19.6	0	-0.1	102
BRIPEW36	6/14/2007	58.3	41.4	0.1	-0.9	100
BRIPEW37	6/14/2007	55.2	38.4	0.3	-3.2	98
BRIPEW38	6/14/2007	54.1	41.4	0.1	-10.1	94
BRIPEW39	6/14/2007	61.3	33.6	0	-0.2	102
BRIPEW40	6/14/2007	58.3	34.7	0.3	-0.2	98
BRLCS-2C	6/14/2007	59.2	38.7	0.2	-40.6	
BRLCS-3C	6/14/2007	62.2	37.3	0	-38.7	
BRLCS-6A	6/14/2007	24.5	33.9	0.3	0	

O_2 } 04, 08, 10, 11, 15, 17, 18, 19, 22

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Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)
BRGEW65A	7/10/07 17:34	50	39.8	0	-0.4	107
BRGEW65A	7/24/07 8:53	42.6	37.9	0	-2	100
BRGEW65A	7/24/07 8:55	42.5	37.3	0.1	-1.9	100
BRIEW12A	7/10/07 14:31	50.7	39.4	0	-1.1	139
BRIEW12A	7/18/07 15:26	39.9	42.2	0	-0.8	141
BRIEW12A	7/18/07 15:33	37.3	39.2	0.3	-0.5	133
BRIEW12A	7/18/07 16:29	39.4	43.5	0	-0.2	123
BRIEW12A	7/23/07 10:53	37.9	44.3	0	-0.8	112
BRIEW14A	7/10/07 14:41	55.6	36.1	0	-4.4	120
BRIEW14A	7/10/07 14:43	55.6	36.1	0	-4.4	120
BRIEW14A	7/10/07 14:45	54.4	35.7	0	-6	121
BRIEW14A	7/23/07 11:04	38.5	37.6	0	-7	120
BRIEW14A	7/23/07 11:05	38.4	37.6	0	-5.5	120
BRIEW19A	7/11/07 9:16	55.3	41.9	0	-1.3	132
BRIEW19A	7/11/07 9:18	56.5	42.4	0	-1.6	138
BRIEW19A	7/23/07 11:45	43.8	42.7	0	-1.6	135
BRIEW19A	7/23/07 11:49	42	41.5	0.1	-0.5	132
BRIEW19A	7/24/07 12:47	50.2	45.6	0	[redacted]	132
BRIEW19A	7/24/07 12:54	50	46.2	0	-0.2	132
BRIEW19A	7/24/07 12:55	50	46.2	0	-0.1	132
BRIEW19A	7/25/07 13:56	21.7	13.4	0.1	-0.3	135
BRIEW19A	7/25/07 14:04	72	11	0.2	[redacted]	122
BRIEW19A	7/25/07 14:23	46.8	8.5	0.3	-0.1	132
BRIEW20A	7/11/07 9:21	57.5	40.7	0	-2.3	120
BRIEW20A	7/11/07 9:23	57.4	40.8	0	-2.7	121
BRIEW20A	7/23/07 11:53	44.5	41.1	0	-2.6	127
BRIEW20A	7/23/07 11:55	44.3	41.3	0	-1.7	127
BRIEW21A	7/11/07 9:27	52.1	38.2	0	-3.6	118
BRIEW21A	7/11/07 9:29	51.9	38.2	0	-4.2	120
BRIEW21A	7/23/07 12:29	40.2	37.7	0.1	-4.2	125
BRIEW21A	7/23/07 12:31	39.6	38.1	0.1	-3.2	126
BRIEW23A	7/11/07 9:38	52.4	37.8	0	-1.7	100
BRIEW23A	7/11/07 9:41	52.2	37.5	0	-1.8	100
BRIEW23A	7/23/07 12:40	40.1	37.7	0	-4.5	125
BRIEW23A	7/23/07 12:43	36.1	34.4	1.8	-3.5	125
BRIEW24A	7/11/07 9:44	48.8	37.7	0	-2.3	110
BRIEW24A	7/23/07 12:47	46.2	40.8	0.2	-1.5	138
BRIEW24A	7/23/07 12:49	46.1	40.6	0.2	-0.7	136
BRIEW24A	7/24/07 13:02	52.2	42.5	0	-0.1	120
BRIEW25A	7/11/07 9:48	42.3	34	0	-1.9	100
BRIEW25A	7/11/07 9:51	42.6	33.5	0	-1.5	100
BRIEW25A	7/23/07 12:53	42.5	38.5	0.1	-1.4	130
BRIEW25A	7/23/07 12:56	42.4	38.7	0	-0.8	129
BRIEW27A	7/11/07 10:01	43.2	35.6	0.1	-1.2	100
BRIEW27A	7/23/07 13:06	39	37.7	0.1	-0.6	99
BRIEW27A	7/23/07 13:08	38.5	37.5	0.2	-0.6	99
BRIGEW01	7/10/07 14:20	52.2	36.5	0	-0.1	108

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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIGEW01	7/10/07 14:22	51.5	36.5	0	-0.3	108
BRIGEW01	7/23/07 9:28	39.4	33.7	0	-0.4	119
BRIGEW01	7/23/07 9:30	39.4	34.1	0	-0.1	118
BRIGEW02	7/10/07 14:12	51.5	40.3	0	-3.4	128
BRIGEW02	7/23/07 9:35	48.2	41.2	0	-3.4	93
BRIGEW03	7/10/07 14:28	45.6	38.9	0	-0.8	114
BRIGEW03	7/10/07 14:30	45.2	39.1	0	-0.9	114
BRIGEW03	7/23/07 9:40	41.1	38.9	0	-0.8	108
BRIGEW03	7/23/07 9:43	41	38.9	0	-0.8	108
BRIGEW04	7/10/07 14:36	49.5	40.2	0	-1.3	126
BRIGEW04	7/23/07 9:47	43.7	39.8	0	-1.2	127
BRIGEW04	7/23/07 9:50	43.5	40	0	-1	127
BRIGEW05	7/10/07 14:47	50.2	39.5	0	0	97
BRIGEW05	7/10/07 14:50	49.6	38.8	0	-0.2	97
BRIGEW05	7/23/07 9:53	31.4	36.4	0	-0.5	97
BRIGEW05	7/23/07 9:55	31.5	36.3	0	-0.2	97
BRIGEW06	7/10/07 15:01	49.6	38.7	0	-0.1	98
BRIGEW06	7/23/07 9:59	36.9	35.9	0.8	-0.4	94
BRIGEW06	7/23/07 10:01	37.6	35.7	0.7	-0.2	94
BRIGEW07	7/10/07 15:58	51.2	40.1	0	-3.2	118
BRIGEW07	7/23/07 10:05	47.5	40.2	0	-4	119
BRIGEW07	7/23/07 10:07	46.8	40.4	0	-3.1	119
BRIGEW08	7/10/07 15:54	50.9	40.3	0	-2.4	128
BRIGEW08	7/23/07 10:18	44.9	40.1	0	-6.7	128
BRIGEW08	7/23/07 10:23	44.7	39.6	0	-5	126
BRIGEW09	7/10/07 16:06	34.2	34.3	0	0.8	108
BRIGEW09	7/10/07 16:10	36.1	35.2	0	-2.4	108
BRIGEW09	7/23/07 10:28	19.8	30.5	0	-1.4	109
BRIGEW09	7/23/07 10:34	19.8	30.3	0	-0.7	109
BRIGEW10	7/10/07 16:15	48.4	38.5	0	-16.9	120
BRIGEW10	7/23/07 10:39	44.6	40.3	0	-17.8	119
BRIGEW10	7/23/07 10:40	45	40.8	0	-17.2	119
BRIGEW11	7/10/07 14:11	54.7	40.3	0	-4.1	130
BRIGEW11	7/10/07 14:16	54.8	40.4	0	-4.8	131
BRIGEW11	7/10/07 16:21	48.3	42	0	-4.4	139
BRIGEW11	7/23/07 10:45	40.9	46.6	0	-4.7	141
BRIGEW11	7/23/07 10:49	50	44	0	-4.1	136
BRIGEW11	7/24/07 12:15	43.4	35.2	4	-2.4	98
BRIGEW13	7/10/07 14:35	58.6	41.3	0	0	134
BRIGEW13	7/10/07 14:37	58.2	41.7	0	-0.2	139
BRIGEW13	7/23/07 10:57	50.3	44.8	0	-1.3	138
BRIGEW13	7/23/07 10:59	50.4	45.2	0	-0.6	133
BRIGEW13	7/24/07 12:27	52.1	45.3	0	-0.2	128
BRIGEW15	7/10/07 14:49	27.9	27.1	0	0	98
BRIGEW15	7/10/07 14:53	29.5	27.6	0	-0.2	100
BRIGEW15	7/23/07 11:09	17.5	28.2	0	-0.5	100
BRIGEW15	7/23/07 11:12	17.2	28.2	0	-0.4	100

Temp. 12A, 14A, 19A, 24A 11, 13

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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIGEW16	7/10/07 15:17	54.8	34.3	0	-3.8	108
BRIGEW16	7/10/07 15:19	54.1	35	0	-4.5	110
BRIGEW16	7/10/07 15:32	58.7	36.8	0	-3.2	120
BRIGEW16	7/10/07 15:34	58.2	36.9	0	-3.9	120
BRIGEW16	7/23/07 11:15	33.2	34.9	0	-5.2	109
BRIGEW16	7/23/07 11:17	33.2	35.6	0	-4.5	109
BRIGEW17	7/23/07 11:28	38.2	37.1	0	-5.2	118
BRIGEW17	7/23/07 11:30	36.3	36.5	0	-4.4	118
BRIGEW18	7/10/07 15:38	59.6	40.3	0	0.9	98
BRIGEW18	7/10/07 15:41	59.1	40.3	0	-0.6	120
BRIGEW18	7/23/07 11:34	29	27	[redacted]	-2.4	114
BRIGEW18	7/23/07 11:41	5.3	7.5	[redacted]	-1.2	111
BRIGEW18	7/24/07 12:41	50.3	43.1	0	[redacted]	116
BRIGEW18	7/24/07 12:43	50.9	43.4	0	-0.3	116
BRIGEW22	7/11/07 9:32	56.8	40.1	0	-2.2	96
BRIGEW22	7/11/07 9:34	57.3	40.5	0	-2.6	108
BRIGEW22	7/23/07 12:35	48.6	41.2	0	-3	122
BRIGEW26	7/11/07 9:56	52.3	37.2	0.4	-3.3	120
BRIGEW26	7/11/07 9:58	51.6	36.7	0.5	-3.6	120
BRIGEW26	7/23/07 13:00	47	40.3	0.7	-3	145
BRIGEW26	7/23/07 13:02	46.6	40.9	0.6	-1.1	145
BRIGEW26	7/24/07 13:07	47.2	39.7	0.1	-0.3	129
BRIGEW28	7/11/07 10:04	55.6	38.2	0	-13.4	128
BRIGEW28	7/11/07 10:06	55.6	38.4	0	-14.3	128
BRIGEW28	7/23/07 13:11	51.3	41.4	0	-14.7	128
BRIGEW29	7/11/07 10:10	56	39.7	0	-2.1	80
BRIGEW29	7/11/07 10:13	31.7	32	0	-2.2	84
BRIGEW29	7/23/07 13:15	27.4	30.2	0	-1.5	115
BRIGEW29	7/23/07 13:17	27.1	29.8	0.3	-1.2	115
BRIGEW30	7/11/07 10:19	53.7	37.5	0	-6	128
BRIGEW30	7/11/07 10:21	53.1	37.5	0	-6.5	128
BRIGEW30	7/23/07 13:20	45.7	39.4	0	-6.8	126
BRIGEW31	7/11/07 10:25	56.5	38.8	0.1	-23.3	128
BRIGEW31	7/11/07 10:27	56.2	38.8	0.1	-28	128
BRIGEW31	7/23/07 13:29	48.4	40.2	0.5	-20	127
BRIGEW32	7/11/07 10:31	54	38.1	0.3	-18.8	120
BRIGEW32	7/11/07 10:33	53.9	37.8	0.3	-24.1	130
BRIGEW32	7/23/07 13:35	45.7	40.1	0.3	-19.6	124
BRIGEW33	7/11/07 10:36	45.8	35.6	0	-14.3	112
BRIGEW33	7/23/07 13:40	36.8	36.6	0.1	-12.9	134
BRIGEW33	7/23/07 13:43	37.4	37	0.1	-9.7	132
BRIGEW33	7/24/07 13:14	36.3	35.8	0	-8.6	125
BRIGEW33	7/24/07 13:21	34.9	34.8	0.8	-4.4	125
BRIGEW34	7/11/07 10:40	57.3	39	0	-2.7	130
BRIGEW34	7/11/07 10:42	57.1	37.9	0	-3.2	130
BRIGEW34	7/23/07 13:46	48.4	40.1	0	-2.8	131
BRIGEW34	7/23/07 13:49	52.3	41.3	0.1	-2	129

Bridgeton Landfill, LLC
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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg. F)
BRIGEW35	7/11/07 10:46	56.9	40.2	0	-3.1	120
BRIGEW35	7/11/07 10:48	56.5	40.9	0	-3.4	120
BRIGEW35	7/23/07 13:53	49.6	42.7	0	-2.8	116
BRIGEW36	7/11/07 10:51	55.8	39.5	0	-2.1	106
BRIGEW36	7/11/07 10:53	55.6	39.4	0	-2.3	106
BRIGEW36	7/23/07 13:56	50.9	43.1	0	-1.3	108
BRIGEW37	7/11/07 10:58	53.9	36.7	0	-1.6	100
BRIGEW37	7/11/07 11:00	54.1	36.6	0	-1.8	100
BRIGEW37	7/23/07 14:00	46.2	42.2	0	-0.7	113
BRIGEW38	7/11/07 11:00	52.6	42.5	0	-4	118
BRIGEW38	7/23/07 14:04	51.4	42.9	0	-5.2	117
BRIGEW39	7/11/07 11:03	50.9	40.3	0	-1.2	118
BRIGEW39	7/23/07 14:07	50	41.4	0	-0.9	119
BRIGEW40	7/10/07 13:10	54.3	37.7	0	-8	109
BRIGEW40	7/10/07 13:12	53.9	37.4	0	-8.1	109
BRIGEW40	7/10/07 13:16	53.5	39.1	0	-8.8	109
BRIGEW40	7/23/07 14:11	46.8	39.5	0	-7.4	114
BRIGEW41	7/10/07 13:24	49.8	39.5	0	-1.4	115
BRIGEW41	7/11/07 10:52	50.8	40.2	0	-1.4	119
BRIGEW41	7/23/07 14:14	46.1	40.3	0	-1.4	125
BRIGEW42	7/10/07 13:33	47.3	39.1	0	-0.7	108
BRIGEW42	7/23/07 14:18	44.7	40	0	-0.6	109
BRIGEW42	7/23/07 14:19	44.6	40.3	0	-0.3	109
BRIGEW43	7/10/07 13:40	49.7	41.1	0	-2.6	114
BRIGEW43	7/23/07 14:25	48.7	42.8	0	-4.2	113
BRIGEW44	7/10/07 13:45	45.9	39.2	0	-0.5	118
BRIGEW44	7/23/07 14:28	40.5	39.1	0	-0.3	129
BRIGEW44	7/23/07 14:30	41.4	39.7	0	-0.2	129
BRIGEW45	7/10/07 14:00	51.5	41.2	0	-9.4	120
BRIGEW45	7/23/07 14:34	51.1	43.6	0	-10.4	131
BRIGEW45	7/23/07 14:37	50.2	42.8	0	-6.7	131
BRIGEW45	7/24/07 13:31	49.4	41.1	0	-6.6	132
BRIGEW45	7/24/07 13:35	49	40.7	0.1	-2.5	125
BRIGEW46	7/10/07 14:06	48.1	39.8	0	-4.6	116
BRIGEW46	7/23/07 14:41	46.7	41.7	0	-4.6	118
BRIGEW47	7/10/07 14:42	48.2	41.2	0	-24.8	122
BRIGEW47	7/23/07 14:45	47.9	42.6	0	-26.5	122
BRIGEW48	7/10/07 14:56	52.3	41.6	0	-0.1	118
BRIGEW48	7/23/07 14:49	48.2	43.2	0	-0.9	116
BRIGEW49	7/10/07 13:50	39.4	36.4	0	-0.4	101
BRIGEW49	7/10/07 13:55	39.8	36.8	0	-0.3	101
BRIGEW49	7/23/07 14:54	34	36.5	0	0	91
BRIGEW49	7/23/07 14:56	36.1	37.1	0	-0.2	91
BRIGEW50	7/10/07 15:05	52.1	41	0	-0.2	110
BRIGEW50	7/23/07 14:59	48.8	42.4	0	-0.3	115
BRIGEW51	7/10/07 15:32	49.2	41.4	0	[redacted]	112
BRIGEW51	7/10/07 15:39	49.1	41	0	-5	112

Temp: 26, 33
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O2 : 18

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Bridgeton Landfill, LLC
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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIGEW51	7/24/07 7:13	49.1	42.1	0	-0.6	112
BRIGEW52	7/10/07 15:10	43.1	37.4	0	-0.1	112
BRIGEW52	7/11/07 11:51	32.3	36.1	0	-0.4	112
BRIGEW52	7/24/07 7:20	33.3	35.5	0	-0.2	116
BRIGEW52	7/24/07 7:24	33.3	35.6	0	-0.2	116
BRIGEW53	7/10/07 15:16	48.8	40.9	0	-4	97
BRIGEW53	7/24/07 7:28	45.6	38.2	0	-3.6	82
BRIGEW53	7/24/07 7:31	45.4	38.2	0	-1.4	82
BRIGEW54	7/10/07 15:21	48.8	41.2	0	-1.4	104
BRIGEW54	7/24/07 7:34	44.2	40.1	0	-0.6	99
BRIGEW54	7/24/07 7:37	44	40.2	0	-0.6	99
BRIGEW55	7/10/07 15:44	46.9	41.8	0	-2	121
BRIGEW55	7/24/07 7:42	44.3	41.1	0	-3	118
BRIGEW55	7/24/07 7:44	44	41.2	0	-2	118
BRIGEW56	7/10/07 13:55	56.3	38.9	0	-1.4	98
BRIGEW56	7/10/07 14:01	56.6	38.8	0	-3.2	122
BRIGEW56	7/24/07 7:48	52.1	37.5	0.3	-4.7	[illegible]
BRIGEW56	7/24/07 7:52	50.6	36.7	0.9	-2.2	129
BRIGEW57	7/10/07 16:36	45.2	38	0	-5.6	102
BRIGEW57	7/10/07 16:43	45	39.7	0	-4.8	102
BRIGEW57	7/24/07 8:00	43.6	38.8	0	-7	101
BRIGEW57	7/24/07 8:02	43	38.6	0	-5	101
BRIGEW58	7/10/07 16:50	46.3	39.1	0	-0.6	125
BRIGEW58	7/24/07 8:07	45.6	38.7	0	-2.2	125
BRIGEW58	7/24/07 8:09	45.8	38.7	0	-2	122
BRIGEW59	7/10/07 16:58	38.3	40.3	0	-1.6	114
BRIGEW59	7/10/07 17:01	38.3	40.2	0	-1.2	114
BRIGEW59	7/24/07 8:14	31.6	36.2	0	-2.9	99
BRIGEW59	7/24/07 8:18	27.4	31.7	2.7	-1.9	99
BRIGEW60	7/10/07 17:07	45.1	37.5	0	-2.2	109
BRIGEW60	7/10/07 17:09	45.1	37.2	0	-1.9	109
BRIGEW60	7/24/07 8:22	45.9	38.3	0	-3.3	108
BRIGEW60	7/24/07 8:24	46.1	38.5	0	-3.1	108
BRIGEW61	7/10/07 17:15	53.3	41.3	0	0	77
BRIGEW61	7/10/07 17:17	53.4	41.6	0	-0.2	77
BRIGEW61	7/24/07 8:29	50.3	40.6	0	-1.1	72
BRIGEW62	7/10/07 17:22	43.8	41.5	0	0	108
BRIGEW62	7/10/07 17:25	44	41.5	0	-0.1	108
BRIGEW62	7/24/07 8:32	44.5	38.9	0.1	-1.2	108
BRIGEW62	7/24/07 8:34	44.2	38.6	0.2	-0.9	108
BRIGEW63	7/10/07 13:45	37.7	37.1	0.1	-2.6	142
BRIGEW63	7/10/07 13:45	37.7	37.1	0.1	-2.6	142
BRIGEW63	7/10/07 13:47	37.5	36.4	2.1	-2.1	139
BRIGEW63	7/10/07 13:49	37.6	36.3	0.1	-1.7	138
BRIGEW63	7/24/07 8:40	42.8	40.1	0	-1.6	122
BRIGEW63	7/24/07 8:41	41.5	38.8	0.7	-1.3	122
BRIGEW64	7/10/07 17:30	51.2	40.6	0	-1.8	107

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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW64	7/24/07 8:49	50	40.6	0.1	-4	106
BRIGEW66	7/10/07 17:42	43.9	41	0	-0.4	94
BRIGEW66	7/24/07 9:05	28	34.5	0	-4.8	101
BRIGEW66	7/24/07 9:07	27.4	33.8	0.4	-3.4	101
BRIGEW67	7/10/07 17:49	46	41.4	0	-1.8	129
BRIGEW67	7/24/07 9:12	44.8	41.8	0	-0.6	126
BRIGEW67	7/24/07 9:13	44.6	41.8	0	-0.4	126
BRIGEW68	7/11/07 9:07	47.3	39.3	0	-8.1	108
BRIGEW68	7/24/07 9:19	47.3	39.5	0	-7.8	110
BRIGEW69	7/11/07 9:13	47.9	40.1	0	-10.8	109
BRIGEW69	7/24/07 9:25	48.9	38.9	0	-10.1	110
BRIGEW70	7/11/07 9:20	45.1	37.1	0	-8.7	90
BRIGEW70	7/11/07 9:24	45.2	37.7	0	-8.6	90
BRIGEW70	7/24/07 9:28	53.6	36.3	0.1	-4.8	99
BRIGEW71	7/10/07 17:54	40.7	38.5	0	0	94
BRIGEW71	7/10/07 17:59	40.7	39	0	-0.2	94
BRIGEW71	7/24/07 9:32	44.6	38.9	0	-1.1	101
BRIGEW71	7/24/07 9:34	44.3	38.7	0	-1	101
BRIGEW72	7/10/07 14:56	46.4	32.4	0	-0.6	116
BRIGEW72	7/11/07 9:31	29.2	32	0	-2.7	109
BRIGEW72	7/11/07 9:37	29.7	31.9	0	-2.2	109
BRIGEW72	7/24/07 9:42	35.1	36.9	0	-3.8	84
BRIGEW72	7/24/07 9:44	35.1	36.8	0	-2.2	84
BRIGEW73	7/11/07 9:42	46.4	36.9	0	-7.6	114
BRIGEW73	7/11/07 9:45	46.2	36.9	0	-7	114
BRIGEW73	7/24/07 9:50	48.5	37.6	0	-5.9	114
BRIGEW74	7/11/07 9:52	48.1	39.7	0	-28.7	118
BRIGEW74	7/24/07 9:54	50.4	40	0	-31.4	130
BRIGEW74	7/24/07 9:59	48.2	38.7	0	-13	128
BRIGEW75	7/11/07 9:56	46.2	38	0	-4.6	106
BRIGEW75	7/11/07 9:58	46.4	37.9	0	-4.4	106
BRIGEW75	7/24/07 10:03	49.7	38.9	0.1	-2.9	90
BRIGEW76	7/10/07 15:01	60.3	39.3	0	-0.1	110
BRIGEW76	7/10/07 15:03	59.7	38.5	0	-0.3	112
BRIGEW76	7/11/07 10:07	45.2	39.2	0	-2.2	109
BRIGEW76	7/11/07 10:09	45.3	38.6	0	-1.8	109
BRIGEW76	7/24/07 10:07	46.7	40	0	-1.1	116
BRIGEW77	7/11/07 10:20	46.1	39.4	0	-4.7	109
BRIGEW77	7/24/07 10:15	46	38.7	0	-2.5	93
BRIGEW78	7/11/07 10:23	49.6	40.7	0	-11.7	118
BRIGEW78	7/24/07 10:19	49.6	40.6	0	-11.4	119
BRIGEW79	7/11/07 10:27	44.4	37.7	0	-6.7	100
BRIGEW79	7/11/07 10:29	44.9	37.7	0	-6.1	100
BRIGEW79	7/24/07 10:23	46.1	37.6	0.3	-4	122
BRIGEW80	7/11/07 10:35	50.5	41	0	-3.4	97
BRIGEW80	7/24/07 10:28	49.7	40.6	0	-2.4	110
BRIGEW81	7/11/07 10:39	51.3	41	0	-2.2	99

Temp 56163

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Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)
BRIGEW81	7/24/07 10:32	50	39.6	0	-1	104
BRIGEW82	7/11/07 9:07	54.9	38.8	0	-3.5	110
BRIGEW82	7/11/07 9:10	54.8	39.5	0	-3.5	116
BRIGEW82	7/11/07 10:45	49.4	39.4	0	-1.9	120
BRIGEW82	7/24/07 10:37	42.6	37.2	0	-1.3	121
BRIGEW82	7/24/07 10:39	43.2	37.5	0	-1.2	121
BRIGINLT	7/10/07 12:51	48.8	37	0.6	-53.4	90
BRIGINLT	7/11/07 8:57	48.9	36.7	0.9	-51.4	90
BRIGINLT	7/11/07 11:03	53.4	36.2	0.6	-53.1	90
BRIGINLT	7/13/07 7:45	45.4	37.2	0.4	-51.7	88
BRIGINLT	7/23/07 9:10	44.4	38.5	0	-49.2	88
BRIGINLT	7/24/07 13:42	44.5	37.8	0.8	-59.8	.
BrigIT-1	7/13/07 9:02	43	35.9	0.6	0.1	80
BrigIT-1	7/18/07 15:45	48.2	37.9	0	0	.
BrigIT-1	7/18/07 15:49	47.4	37.6	0	-0.3	0
BrigIT-2	7/13/07 9:06	5.4	18.6	0	0.1	80
BrigIT-2	7/18/07 15:53	20.9	25.7	0	-0.3	0
BrigIT-3	7/13/07 9:35	54.2	41.3	0	0.1	80
BrigIT-3	7/13/07 9:39	54.4	42.2	0	0	.
BrigIT-3	7/24/07 11:53	44.6	37.2	0.3	-0.4	.
BrigIT-4	7/13/07 9:56	24.1	25.7	3.2	0	80
BrigIT-4	7/18/07 15:57	42.6	36.2	0.3	-0.2	.
BrigIT-5	7/13/07 9:59	0	1.6	17.6	0	80
BrigIT-5	7/13/07 10:01	41.2	36	0	0	80
BrigIT-5	7/18/07 15:59	50	39.5	0	-0.2	.
BrigIT-6	7/13/07 10:23	37.6	32.5	2.3	0	80
BrigIT-6	7/18/07 16:03	50.7	39.2	0	-0.3	.
BrigT-56	7/13/07 15:47	41.3	37.5	0.2	-43	.
BRIPEW01	7/13/07 8:15	39.9	28.6	6.9	[redacted]	65
BRIPEW01	7/13/07 8:21	46	33.7	3.9	-0.2	65
BRIPEW02	7/13/07 8:25	0	0.3	18.5	31.8	72
BRIPEW02	7/13/07 8:32	0	0.3	18.4	-0.2	72
BRIPEW03	7/13/07 8:36	0	0.1	18.4	0	82
BRIPEW03	7/13/07 8:42	0.2	0.2	18.3	-0.3	82
BRIPEW04	7/13/07 8:46	0	0.1	18.3	[redacted]	96
BRIPEW04	7/13/07 8:49	0	0.1	18.2	-0.3	96
BRIPEW05	7/13/07 9:10	8.7	3.7	15.8	[redacted]	92
BRIPEW05	7/13/07 9:18	12.4	5.1	14.7	-0.5	92
BRIPEW06	7/13/07 9:22	57.4	41.6	0	[redacted]	80
BRIPEW06	7/13/07 9:24	56.4	41.8	0	-0.9	80
BRIPEW07	7/13/07 9:28	5	3.7	16	[redacted]	98
BRIPEW07	7/13/07 9:31	5.3	3.3	16.1	-0.4	98
BRIPEW08	7/13/07 9:43	0	3	17.3	-37.6	100
BRIPEW08	7/13/07 9:47	0	0.9	18	-23.7	100
BRIPEW09	7/13/07 9:50	56.5	43.3	0	[redacted]	104
BRIPEW09	7/13/07 9:52	55.4	43.1	0	-0.4	104
BRIPEW10	7/13/07 10:04	60.6	38.2	0	0	102

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Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg. F)
BRIPEW10	7/13/07 10:06	21.1	14.1	11.1	-0.7	102
BRIPEW11	7/13/07 10:11	25.3	14.9	10.1	-34.1	102
BRIPEW12	7/13/07 10:15	8.3	4.4	15.5	-34.3	100
BRIPEW12	7/13/07 10:19	4.9	2.3	16.8	-5.9	100
BRIPEW13	7/13/07 10:27	0	1	18.1	1	104
BRIPEW13	7/13/07 10:30	1.2	0.6	17.1	-0.3	104
BRIPEW14	7/13/07 10:33	0	0.9	18.2	0.2	105
BRIPEW14	7/13/07 10:35	0	0.4	18.3	0	105
BRIPEW14	7/24/07 11:57	56.3	41.4	0.3	0.2	108
BRIPEW14	7/24/07 11:59	55.7	41.3	0.1	-0.6	108
BRIPEW15	7/13/07 10:39	0	0.3	18.3	2.7	96
BRIPEW15	7/13/07 10:41	0	0.2	18.3	0	96
BRIPEW15	7/24/07 12:03	0.2	1.2	18.1	0.4	105
BRIPEW15	7/24/07 12:05	2.4	4.7	14.1	-4.1	105
BRIPEW16	7/13/07 10:45	23.3	21	6.3	0	100
BRIPEW16	7/13/07 10:46	22.9	21.3	6.3	-0.1	100
BRIPEW17	7/13/07 10:50	0	8.8	10.3	-0.2	102
BRIPEW18	7/13/07 10:53	0	0.6	18.3	0	99
BRIPEW18	7/18/07 16:07	0	1	17.5	0	98
BRIPEW18	7/18/07 16:09	0	0.8	17.3	-0.2	98
BRIPEW19	7/13/07 10:57	0	2.4	16.4	-0.1	99
BRIPEW20	7/13/07 11:00	35.7	24.6	5.5	-1.2	98
BRIPEW21	7/13/07 11:03	0	6.2	13.1	-0.4	100
BRIPEW22	7/13/07 11:06	0	0.8	18.1	-0.3	100
BRIPEW23	7/13/07 11:09	0	0.4	18	-2.4	98
BRIPEW23	7/13/07 11:11	8.8	21.9	6.5	-1.1	98
BRIPEW24	7/13/07 11:14	13.6	29.1	1.1	-9	97
BRIPEW25	7/13/07 11:21	26.7	26.5	1.1	-4	100
BRIPEW26	7/13/07 11:26	6.3	18.1	6.4	-2	102
BRIPEW27	7/13/07 11:29	12.5	28.6	1.6	-3	101
BRIPEW28	7/13/07 11:32	0.2	5	13.3	0	101
BRIPEW28	7/18/07 16:16	0.5	10.1	7.7	-0.4	98
BRIPEW29	7/13/07 11:35	50.8	36.6	1.6	0	102
BRIPEW29	7/13/07 11:37	55.7	41.1	0	-2.4	102
BRIPEW30	7/13/07 11:41	49.2	36	2.1	-0.2	100
BRIPEW31	7/13/07 11:45	26.7	17	1.4	-0.4	102
BRIPEW32	7/13/07 11:48	41.6	37.4	0	0	104
BRIPEW32	7/13/07 11:50	42.7	38.6	0	-0.6	104
BRIPEW33	7/13/07 11:53	30.6	21	0.2	0	103
BRIPEW33	7/13/07 11:55	32.6	22	0	-0.5	103
BRIPEW34	7/13/07 11:58	31.5	22.6	3.9	0	104
BRIPEW34	7/18/07 16:21	24.6	23	2.5	0	99
BRIPEW34	7/18/07 16:24	18.4	27.9	0	-0.7	99
BRIPEW35	7/13/07 12:02	44	18.7	3	0	101
BRIPEW35	7/13/07 12:04	33.9	25.9	0	-0.8	101
BRIPEW36	7/13/07 12:08	51.9	40.6	0	-1.4	99
BRIPEW37	7/13/07 12:11	47.3	36.9	0	-3.3	99

O2 : 4, 56, 102
63, 64, 05, 07,
08, 10, 11, 12, 13
14, 15, 16, 17, 18, 19
20, 21, 22, 23, 26
28,

= 24 #

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000391

Bridgeton Landfill, LLC
July 2007
Wellfield Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)
BRIPEW38	7/13/07 12:15	52.4	46	0	-3.2	101
BRIPEW39	7/13/07 12:18	57	40.2	0	[redacted]	101
BRIPEW39	7/13/07 12:21	56.6	41.8	0	-0.2	101
BRIPEW40	7/13/07 12:24	62	33.7	0	0	98
BRIPEW40	7/13/07 12:26	61.9	33.6	0	-3.6	98
BRLCS-1B	7/13/07 15:20	55.7	37.3	0.3	-37.8	100
BRLCS-2C	7/13/07 15:37	53.4	42.5	0	-31.4	100
BRLCS-3C	7/13/07 15:32	53.4	42.9	0	-23.6	100
BRLCS-4A	7/13/07 15:25	41.3	35.3	4.4	-4.8	100
BRLCS-5A	7/13/07 15:11	0.5	1.5	17.8	-1.4	100
BRLCS-5A	7/13/07 15:13	0.5	0.8	17.8	-0.5	100
BRLCS-6A	7/13/07 15:06	24.2	31.2	1.1	-9	100

Bridgeton Sanitary Landfill
August 2007 Wellfield Data

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by Vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRGEW65A	8/8/07 14:14	50	40.9	0.1	-0.3	113
BRGEW65A	8/21/07 13:16	47.5	40	0.9	-0.8	102
BRGEW65A	8/21/07 13:18	44.4	37.8	1.9	-0.9	102
BRIEW12A	8/8/07 9:11	41.7	42.8	0	0	107
BRIEW12A	8/8/07 9:14	41.8	42.8	0	-0.2	118
BRIEW12A	8/21/07 9:30	42.3	43.6	0	-0.8	[redacted]
BRIEW12A	8/21/07 9:32	41.6	42.9	0.1	-0.6	126
BRIEW12A	8/28/07 8:28	59	41	0	-0.2	92
BRIEW14A	8/8/07 9:25	45.5	37.5	0	-5.9	120
BRIEW14A	8/8/07 9:27	45.5	37.6	0	-5.2	120
BRIEW14A	8/21/07 9:40	44.5	37.9	0	-5.3	111
BRIEW14A	8/21/07 9:41	44.8	38.3	0	-4.8	111
BRIEW19A	8/8/07 9:50	52.7	43.9	0.1	-0.4	[redacted]
BRIEW19A	8/8/07 9:52	52	44.1	0.1	-0.1	130
BRIEW19A	8/10/07 10:37	51.3	46.5	0.1	[redacted]	95
BRIEW19A	8/10/07 10:40	51.5	46.5	0.1	-0.1	110
BRIEW19A	8/21/07 10:14	50.4	45.6	0.1	-0.2	127
BRIEW19A	8/28/07 9:12	67.6	32.4	0	-0.2	131
BRIEW19A	8/28/07 9:15	64.8	35.2	0	-0.1	130
BRIEW20A	8/8/07 9:56	53.2	41.4	0	-1.9	125
BRIEW20A	8/21/07 10:18	53.3	43	0	-1.8	123
BRIEW21A	8/8/07 10:01	41.5	38.2	0	-2.3	126
BRIEW21A	8/8/07 10:04	41.7	38.4	0	-1.4	126
BRIEW21A	8/21/07 10:21	44.2	41.6	0.3	-0.7	119
BRIEW21A	8/21/07 10:23	45.4	40.9	0	-0.5	119
BRIEW23A	8/8/07 10:13	47.3	38.1	0	-0.9	97
BRIEW23A	8/8/07 10:15	46.5	38	0	-0.6	97
BRIEW23A	8/21/07 10:33	47.3	41	0	-0.2	97
BRIEW24A	8/8/07 10:19	53.2	42.4	0.1	-0.3	88
BRIEW24A	8/8/07 10:21	54	43	0	-0.6	96
BRIEW24A	8/21/07 10:36	47.4	41	0	-0.6	117
BRIEW24A	8/21/07 10:37	47.3	40.9	0.1	-0.3	117
BRIEW25A	8/8/07 10:26	47.3	38	0	-1.6	100
BRIEW25A	8/21/07 10:42	44	38.8	0.3	-0.5	107
BRIEW25A	8/21/07 10:46	43.8	39	0.2	-0.4	107
BRIEW27A	8/8/07 10:35	41.6	36.3	1.3	-0.7	108
BRIEW27A	8/8/07 10:37	39.2	33.8	2.6	-0.8	108
BRIEW27A	8/21/07 10:54	35.6	29.9	4.5	-1	95
BRIEW27A	8/21/07 10:57	42.2	40.1	0	-1.2	110
BRIGEW01	8/8/07 7:40	57.5	39.9	0	-0.1	104
BRIGEW01	8/8/07 7:42	57.3	39.6	0	-0.2	104
BRIGEW01	8/21/07 8:18	32.8	30.9	0.9	-0.5	120
BRIGEW01	8/21/07 8:19	32.6	30.8	0.9	-0.2	120
BRIGEW02	8/8/07 7:47	52.2	41.5	0	-1.5	112
BRIGEW02	8/21/07 8:23	48.6	40.4	0	-3.9	123
BRIGEW02	8/21/07 8:25	48.6	40.6	0	-3.6	123
BRIGEW03	8/8/07 7:51	54.7	43.6	0	0	92

03 Temp, SA.

Temp 12A, 14A

Bridgeton Sanitary Landfill
August 2007 Wellfield Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)
BRIGEW03	8/8/07 7:56	53.1	42.5	0	-0.1	113
BRIGEW03	8/21/07 8:28	36	37	0	-2	115
BRIGEW03	8/21/07 8:30	33.9	36.3	0	-1.2	115
BRIGEW04	8/8/07 8:00	53.8	41.8	0	0	111
BRIGEW04	8/8/07 8:03	54	42	0	-0.2	120
BRIGEW04	8/21/07 8:34	41.1	38.3	0	-0.9	127
BRIGEW04	8/21/07 8:36	40.6	38.7	0	-0.7	124
BRIGEW05	8/8/07 8:07	35.5	36.4	0	-0.7	98
BRIGEW05	8/8/07 8:10	35.2	36	0	-0.4	98
BRIGEW05	8/21/07 8:39	32.3	36.1	0	-0.6	92
BRIGEW05	8/21/07 8:41	32.1	36.1	0	-0.2	92
BRIGEW06	8/8/07 8:15	40.9	35.6	1.2	-0.3	95
BRIGEW06	8/8/07 8:18	42.2	36.4	1	-0.2	95
BRIGEW06	8/21/07 8:46	33.2	32.2	2.5	-0.2	94
BRIGEW07	8/8/07 8:30	55.3	41	0	-1.9	118
BRIGEW07	8/8/07 8:31	55.1	40.8	0	-2.3	118
BRIGEW07	8/21/07 8:50	51.8	40.7	0	-2.9	118
BRIGEW08	8/8/07 8:48	54.2	41.8	0	[redacted]	126
BRIGEW08	8/8/07 8:52	54.7	42	0	-0.1	126
BRIGEW08	8/21/07 8:56	48	40.3	0	-1.8	127
BRIGEW09	8/8/07 8:56	24.5	30.1	0	0	96
BRIGEW09	8/8/07 8:59	25.2	30.1	0	-0.1	101
BRIGEW09	8/21/07 9:08	23.4	30.8	0	-0.2	87
BRIGEW09	8/21/07 9:11	24.4	31.7	0	-0.6	104
BRIGEW10	8/8/07 9:03	52.6	41.5	0	-16.8	120
BRIGEW10	8/21/07 9:15	45.4	37.3	1.8	-16.8	122
BRIGEW10	8/21/07 9:17	50.2	41.4	0	-15.5	122
BRIGEW11	8/8/07 9:07	48.2	44.6	0.3	-2.4	100
BRIGEW11	8/21/07 9:21	47	45.4	0.3	-2.6	87
BRIGEW11	8/21/07 9:24	46.2	37.4	2.7	-2.6	87
BRIGEW11	8/21/07 9:26	53.3	43.4	0	-2.8	105
BRIGEW13	8/8/07 9:18	53.5	44.7	0	-0.2	[redacted]
BRIGEW13	8/8/07 9:21	53.4	44.5	0	-0.1	[redacted]
BRIGEW13	8/10/07 10:26	53.4	45.1	0.4	-0.5	129
BRIGEW13	8/21/07 9:35	51.2	45.3	0	-0.5	128
BRIGEW13	8/28/07 8:46	65	35	0	-0.1	128
BRIGEW15	8/8/07 9:31	40.3	35	0.1	-0.2	96
BRIGEW15	8/21/07 9:45	41.8	37.4	0.4	-0.4	85
BRIGEW15	8/21/07 9:46	41.7	37.7	0.4	-0.3	85
BRIGEW16	8/8/07 9:34	42	35.6	0	-5.2	110
BRIGEW16	8/8/07 9:35	41.9	35.4	0	-4.2	110
BRIGEW16	8/21/07 9:50	41.9	37.1	0	-3.9	108
BRIGEW16	8/21/07 9:52	41.9	36.9	0	-2.8	108
BRIGEW17	8/8/07 9:39	44.6	37.3	0	-3.6	117
BRIGEW17	8/8/07 9:41	42.1	35.9	0	-2.7	117
BRIGEW17	8/21/07 9:57	46.6	39.6	0	-2.5	116
BRIGEW17	8/21/07 10:00	45.5	39.1	0	-1	116

Bridgeton Sanitary Landfill
August 2007 Wellfield Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIGEW18	8/8/07 9:45	29.6	25	7.3	-1.1	112
BRIGEW18	8/8/07 9:47	18.6	15.9	11.1	-0.3	112
BRIGEW18	8/10/07 10:32	48.3	41.8	1.1	0	118
BRIGEW18	8/10/07 10:33	40.3	35.7	3.2	-0.2	118
BRIGEW18	8/21/07 10:03	29.9	27.4	6.7	-0.3	111
BRIGEW18	8/21/07 10:08	33.8	31.2	5.9	-5.8	120
BRIGEW18	8/21/07 10:10	6.1	7.5	15	-0.1	120
BRIGEW18	8/28/07 9:25	49.8	43.7	0	[redacted]	108
BRIGEW18	8/28/07 9:27	49.9	43.8	0	-0.2	108
BRIGEW22	8/8/07 10:07	46.4	39.1	0	-4.1	98
BRIGEW22	8/8/07 10:09	46.4	39.2	0	-3.2	98
BRIGEW22	8/21/07 10:26	47.8	40.6	0	-2.1	106
BRIGEW22	8/21/07 10:28	47.6	40.8	0	-1.7	106
BRIGEW26	8/8/07 10:29	47.6	40.4	0	0	89
BRIGEW26	8/8/07 10:31	47.4	40.8	0.1	-0.8	94
BRIGEW26	8/21/07 10:49	47.2	40.6	0.4	-1.2	120
BRIGEW26	8/21/07 10:51	46.1	39.7	0.8	-0.6	120
BRIGEW28	8/8/07 10:41	54	39.5	0	-17.8	128
BRIGEW28	8/21/07 11:01	43.7	38	0	-17.8	128
BRIGEW28	8/21/07 11:02	43.4	37.7	0	-14.2	128
BRIGEW28	8/28/07 9:38	59.4	39.8	0	-12.8	129
BRIGEW29	8/8/07 10:45	52.7	41.8	0.3	-1.3	88
BRIGEW29	8/8/07 10:46	54.2	42.4	0	-1.4	88
BRIGEW29	8/21/07 11:10	39.1	37	0.4	-1.6	94
BRIGEW29	8/21/07 11:14	26.5	25.2	[redacted]	-1.5	94
BRIGEW29	8/21/07 11:15	40	37.7	0.1	-1.5	94
BRIGEW30	8/8/07 10:50	51.9	38.6	0	-8.5	126
BRIGEW30	8/21/07 16:45	43.7	37	0	-8.4	126
BRIGEW30	8/21/07 16:46	44.4	37.4	0	-7.7	126
BRIGEW31	8/8/07 10:56	55	40.3	0.4	-24.4	129
BRIGEW31	8/21/07 16:40	46.9	37.3	0.6	-24.7	128
BRIGEW31	8/21/07 16:41	46.8	37.3	0.6	-22.9	128
BRIGEW32	8/8/07 11:02	50	38.8	0.4	-22.1	123
BRIGEW32	8/21/07 16:32	41.1	37.8	2.2	-21.8	122
BRIGEW32	8/21/07 16:33	49.3	38.6	0	-19.4	122
BRIGEW33	8/8/07 11:08	32.6	23.6	[redacted]	-1.6	90
BRIGEW33	8/8/07 11:10	56.4	41.6	0.2	-2.2	90
BRIGEW33	8/21/07 16:25	40.6	38.6	0	-2.6	114
BRIGEW33	8/21/07 16:27	41.1	38.5	0.1	-2.4	114
BRIGEW34	8/8/07 11:14	48.2	39.2	0	-1.6	131
BRIGEW34	8/8/07 11:16	48.2	39	0	-1.3	129
BRIGEW34	8/21/07 16:21	51.7	39.5	0	-0.6	128
BRIGEW34	8/28/07 9:54	55.9	40.8	0	-0.8	128
BRIGEW35	8/8/07 11:19	51.9	41.5	0	-3.4	115
BRIGEW35	8/21/07 16:17	50.9	41.1	0.2	-2.9	117
BRIGEW36	8/8/07 11:22	52.7	42.2	0	-1.9	104
BRIGEW36	8/21/07 16:14	51.7	41.3	0	-1.3	103

O2 18, 29, 33

Temp. 18, 34.

Bridgeton Sanitary Landfill
August 2007 Wellfield Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIGEW37	8/8/07 11:26	46.7	40.1	0	-1.4	110
BRIGEW37	8/8/07 11:27	45.3	39.1	0	-1.3	110
BRIGEW37	8/21/07 16:08	47.3	38.4	0.1	-0.7	100
BRIGEW37	8/21/07 16:10	47.2	38.8	0	-0.6	100
BRIGEW38	8/8/07 11:31	51.4	41.6	0	-4.7	117
BRIGEW38	8/21/07 16:03	49.7	39.8	0.5	-3.9	118
BRIGEW39	8/8/07 11:34	48.4	38.7	0.2	-1.4	119
BRIGEW39	8/21/07 16:00	51.1	39.4	0.1	-0.9	120
BRIGEW40	8/8/07 12:04	45.8	37.9	0.3	-8.7	94
BRIGEW40	8/8/07 12:05	46.1	37.4	0	-7.6	94
BRIGEW40	8/21/07 15:54	47.4	37.6	0	-5.8	104
BRIGEW40	8/21/07 15:56	47.3	37.5	0	-5	104
BRIGEW41	8/8/07 12:09	47.4	38.2	0	-1.8	104
BRIGEW41	8/8/07 12:11	47.9	38.1	0	-1.5	104
BRIGEW41	8/21/07 15:49	48.7	38.2	0	-1	112
BRIGEW42	8/8/07 12:14	54	41.2	0	-0.5	105
BRIGEW42	8/8/07 12:16	53.7	41.7	0	-0.6	105
BRIGEW42	8/21/07 15:45	47.5	38.6	0	-0.4	113
BRIGEW42	8/21/07 15:46	47.3	38.5	0	-0.2	113
BRIGEW43	8/8/07 12:20	48.5	40.1	0	-1.9	113
BRIGEW43	8/21/07 15:41	48.1	40.3	0	-1.7	114
BRIGEW44	8/8/07 12:23	49.2	40.7	0	-0.3	108
BRIGEW44	8/21/07 15:35	45.2	39.8	0	0	114
BRIGEW44	8/21/07 15:36	45.2	39.5	0	-0.2	114
BRIGEW45	8/8/07 12:26	58.5	41.5	0	-0.5	88
BRIGEW45	8/8/07 12:29	59.1	40.9	0	-0.2	93
BRIGEW45	8/21/07 15:28	56.2	41.4	0	-0.6	112
BRIGEW45	8/21/07 15:30	56.4	41.3	0	-1	112
BRIGEW46	8/8/07 12:33	49	40	0	-3	116
BRIGEW46	8/21/07 15:22	47	40.6	0	-3.2	118
BRIGEW46	8/21/07 15:24	46.7	40.6	0	-2.4	118
BRIGEW47	8/8/07 12:37	51.8	41.8	0	-27.2	123
BRIGEW47	8/21/07 15:18	49.3	40.7	0.3	-26.6	124
BRIGEW48	8/8/07 12:42	48.5	40	0	-0.6	116
BRIGEW48	8/21/07 14:59	45.3	39.7	0	-0.5	115
BRIGEW48	8/21/07 15:02	46	40.8	0	-0.2	115
BRIGEW49	8/8/07 12:45	42.9	37.4	0	-0.1	104
BRIGEW49	8/21/07 14:52	39.6	37.6	0	-0.2	99
BRIGEW49	8/21/07 14:54	39.8	37.7	0	-0.1	99
BRIGEW50	8/8/07 12:50	49.1	39.9	0	-0.2	115
BRIGEW50	8/21/07 14:47	45.4	39.7	0	-0.4	115
BRIGEW50	8/21/07 14:48	46.6	39.6	0	-0.2	115
BRIGEW51	8/8/07 12:53	51	42.1	0	-0.2	114
BRIGEW51	8/21/07 14:43	48	42.2	0.2	-0.3	114
BRIGEW52	8/8/07 12:59	40	36.7	0	-0.2	118
BRIGEW52	8/21/07 14:37	34.3	36.4	0	-0.2	116
BRIGEW52	8/21/07 14:39	34.5	36.5	0	-0.1	116

Bridgeton Sanitary Landfill
August 2007 Wellfield Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIGEW53	8/8/07 13:03	43.9	36.9	0	-0.2	114
BRIGEW53	8/21/07 14:30	41.7	36.8	0.2	-0.8	113
BRIGEW53	8/21/07 14:33	41.4	36.5	0.2	-0.3	113
BRIGEW54	8/8/07 13:06	47.6	41.2	0	-0.1	112
BRIGEW54	8/21/07 14:24	41.1	34.3	2.6	-0.2	106
BRIGEW54	8/21/07 14:26	44.4	41.2	0.2	-0.2	106
BRIGEW55	8/8/07 13:10	45.6	41.5	0	-0.3	118
BRIGEW55	8/21/07 14:18	43.2	41.9	0.1	-0.3	124
BRIGEW55	8/21/07 14:20	43.6	42	0	-0.1	124
BRIGEW56	8/8/07 13:18	56.1	39.5	0	-1.2	108
BRIGEW56	8/8/07 13:20	56.1	39.8	0	-1.9	108
BRIGEW56	8/21/07 14:12	55	39.4	0	-1.7	127
BRIGEW56	8/21/07 14:14	55.3	39.6	0	-1.9	130
BRIGEW56	8/28/07 8:10	49	38.2	0.7	-1.7	108
BRIGEW57	8/8/07 13:27	45.6	38.8	0	-2	102
BRIGEW57	8/8/07 13:29	45.9	38.3	0	-1.4	102
BRIGEW57	8/21/07 14:05	41.4	40.2	0.1	-1.5	102
BRIGEW57	8/21/07 14:07	42.1	40.4	0	-1.4	102
BRIGEW58	8/8/07 13:33	49	39.7	0	-0.9	119
BRIGEW58	8/21/07 13:58	44.2	40.3	0	-1	117
BRIGEW58	8/21/07 14:00	44	40.2	0.2	-0.9	117
BRIGEW59	8/8/07 13:37	32.8	30.4	4.5	-0.1	88
BRIGEW59	8/8/07 13:39	40.8	38.1	0.1	-0.3	88
BRIGEW59	8/21/07 13:53	30.5	40.6	0.1	-0.4	96
BRIGEW59	8/21/07 13:54	30.6	40.2	0.1	-0.4	96
BRIGEW60	8/8/07 13:45	53.5	39.9	0	-1.4	107
BRIGEW60	8/8/07 13:46	53.7	39.5	0	-1.4	107
BRIGEW60	8/21/07 13:49	49.5	40.8	0	-2	107
BRIGEW61	8/8/07 13:50	55.4	42.3	0	-0.3	80
BRIGEW61	8/8/07 13:52	55.3	42.3	0	-0.5	80
BRIGEW61	8/21/07 13:45	52.2	43.2	0	-0.8	77
BRIGEW62	8/8/07 13:57	45	42.1	0	[redacted]	92
BRIGEW62	8/8/07 14:00	44.8	41.8	0	-0.3	92
BRIGEW62	8/21/07 13:39	46.5	39.4	0.3	-1	108
BRIGEW62	8/21/07 13:41	46.5	39.4	0.3	-0.8	108
BRIGEW63	8/8/07 14:04	48.8	41.5	0.1	-0.4	109
BRIGEW63	8/21/07 13:32	23.8	21 [redacted]5		-0.6	100
BRIGEW63	8/21/07 13:34	46.6	41.2	0.3	-2	108
BRIGEW64	8/8/07 14:10	52.4	40.8	0.1	-3.3	108
BRIGEW64	8/21/07 13:22	51.2	41.7	0	-3.7	106
BRIGEW66	8/8/07 14:18	46	38.8	0.2	[redacted]	95
BRIGEW66	8/8/07 14:20	47.4	40.3	0	-0.1	95
BRIGEW66	8/21/07 13:12	49.6	40.5	0	-3	103
BRIGEW67	8/8/07 14:25	45.7	41.8	0	[redacted]	111
BRIGEW67	8/8/07 14:28	46.1	42.2	0	-0.3	128
BRIGEW67	8/21/07 13:05	47.5	41.4	0	-1.6	[redacted]
BRIGEW67	8/21/07 13:07	47.3	41.3	0	-1.2	130

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Temp 67

Bridgeton Sanitary Landfill
August 2007 Wellfield Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)
BRIGEW67	8/28/07 8:59	66.6	33.4	0	-2.4	127
BRIGEW68	8/8/07 14:40	49.7	39	0	-7.1	110
BRIGEW68	8/21/07 13:00	48.6	39.7	0.1	-8.2	110
BRIGEW69	8/8/07 14:44	50.9	39.9	0.1	-7.1	112
BRIGEW69	8/21/07 12:57	50.9	40.8	0	-7.8	111
BRIGEW70	8/8/07 14:47	50.7	39.5	0.4	-1.2	107
BRIGEW70	8/21/07 12:53	52.3	41.4	0.5	-2.2	96
BRIGEW71	8/8/07 14:50	41.8	38.2	0	[redacted]	113
BRIGEW71	8/8/07 14:53	40.7	38.5	0	-0.2	113
BRIGEW71	8/21/07 12:49	49.4	38.9	0	-1.8	118
BRIGEW72	8/8/07 14:58	45.3	38.4	0.3	[redacted]	110
BRIGEW72	8/8/07 15:00	43.9	39.7	0.1	-0.2	110
BRIGEW72	8/21/07 12:41	42.2	36.1	0	-1	114
BRIGEW72	8/21/07 12:45	42.2	36.2	0	-0.8	114
BRIGEW73	8/8/07 15:06	48.6	37.4	0	-4.4	116
BRIGEW73	8/21/07 12:36	49.9	37.6	0	-5.2	116
BRIGEW74	8/8/07 15:09	50.8	41.2	0	-5.1	100
BRIGEW74	8/21/07 12:32	51.9	41.8	0	-5.9	110
BRIGEW75	8/8/07 15:13	51.6	40.3	0.1	-0.1	113
BRIGEW75	8/21/07 12:29	50.7	40.8	0	-1.2	94
BRIGEW76	8/8/07 15:17	50.9	40.6	0	-0.6	120
BRIGEW76	8/21/07 12:25	52.9	41.8	0	-0.9	117
BRIGEW77	8/8/07 15:21	47.8	38.5	0	-1.2	106
BRIGEW77	8/8/07 15:23	47.8	39	0	-1.1	106
BRIGEW77	8/21/07 12:21	55.3	40.5	0.2	-1.8	97
BRIGEW78	8/8/07 15:26	51.1	39.7	0.1	-10.2	119
BRIGEW78	8/21/07 12:17	51.3	40.1	0.2	-11	118
BRIGEW79	8/8/07 15:30	49.8	38.1	0.1	-2.3	98
BRIGEW79	8/21/07 12:13	50.4	38.8	0	-3.4	106
BRIGEW80	8/8/07 15:34	50.5	40.3	0.1	-1.9	88
BRIGEW80	8/21/07 12:09	50.4	40.1	0.3	-2.6	93
BRIGEW81	8/8/07 15:40	50.2	38.4	0	-0.2	115
BRIGEW81	8/21/07 12:05	51.1	39.4	0	-0.4	99
BRIGEW82	8/8/07 15:44	46.8	37.5	0	-0.2	125
BRIGEW82	8/21/07 12:00	50.1	39.8	0	-0.5	120
BRIGINLT	8/8/07 7:11	46.2	37	1.2	-57.9	90
BRIGINLT	8/8/07 15:50	48	36.4	0.9	-55.9	92
BRIGINLT	8/9/07 7:25	47.4	37.6	1	-57	91
BRIGINLT	8/9/07 11:41	44.6	37.6	1.1	-56.3	91
BRIGINLT	8/10/07 7:26	46.4	37.2	1.2	-56.8	91
BRIGINLT	8/10/07 10:52	45.3	37.7	1.2	-55.4	91
BRIGINLT	8/21/07 7:58	45.5	37.1	1.2	-55.4	92
BRIGINLT	8/21/07 16:56	45.6	36.2	1.6	-57.9	92
BRIGINLT	8/22/07 9:10	46.1	36.8	1.3	-58.8	92
BRIGINLT	8/22/07 10:21	45	37.3	1.4	-55.6	92
BRIGINLT	8/28/07 7:23	42.8	34.4	2.3	-79.2	
BRIGINLT	8/28/07 7:35	42.6	34.8	2.1	-57.5	

Bridgeton Sanitary Landfill
August 2007 Wellfield Data

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg. F)
BrigIT-1	8/9/07 8:10	24.6	25.5	3.2	-0.6	
BrigIT-2	8/9/07 8:14	36.3	33.4	0	-0.5	
BrigIT-3	8/9/07 8:37	42	35.9	0.2	-0.5	
BrigIT-4	8/9/07 8:52	47.7	37.4	0.2	-0.6	
BrigIT-5	8/9/07 8:55	44.8	36.9	0	-0.5	
BrigIT-6	8/9/07 9:21	27	26.2	3.2	-0.5	
BrigT-56	8/22/07 9:16	58	42	0	[redacted]	87
BrigT-56	8/22/07 9:25	57.7	42.3	0	-0.2	87
BRIPEW01	8/9/07 7:41	50.6	35.5	2.6	0	70
BRIPEW01	8/9/07 7:44	21.2	15.1	11.6	-0.4	70
BRIPEW02	8/9/07 7:49	3.7	7.9	12.5	-40.8	71
BRIPEW02	8/9/07 7:53	1.9	4.8	14.8	-0.2	71
BRIPEW03	8/9/07 7:57	15	16.8	6	-0.4	75
BRIPEW04	8/9/07 8:01	35.8	15.3	3.8	0	76
BRIPEW04	8/9/07 8:06	27.8	11.7	6.9	-1.8	76
BRIPEW05	8/9/07 8:17	22.4	12.9	11.7	-44.2	88
BRIPEW05	8/9/07 8:21	0	0.6	18.5	-4.8	88
BRIPEW06	8/9/07 8:25	49.7	37.1	0.7	-2.4	80
BRIPEW06	8/9/07 8:27	47.2	36.4	0.6	-3.9	80
BRIPEW07	8/9/07 8:31	53.9	27.4	3.2	-0.9	74
BRIPEW07	8/9/07 8:33	64.6	31.9	0.3	-4.6	74
BRIPEW08	8/9/07 8:43	3.6	3	16.2	-50.5	75
BRIPEW09	8/9/07 8:47	57.2	41.3	0.2	-0.2	104
BRIPEW09	8/9/07 8:49	55.9	40.8	0.6	-11.7	104
BRIPEW10	8/9/07 8:59	62.8	35.9	0	[redacted]5	78
BRIPEW10	8/9/07 9:03	54.3	31.7	2.3	-14.7	78
BRIPEW10	8/17/07 12:18	60.7	36.7	0	[redacted]	99
BRIPEW10	8/17/07 12:21	57.7	36.1	0.5	-46.6	99
BRIPEW11	8/9/07 9:08	21.5	14.9	11.4	-49.5	78
BRIPEW11	8/9/07 9:12	20.2	13.2	12.1	-46.6	78
BRIPEW11	8/17/07 12:14	32.7	22.8	7.8	-19.9	98
BRIPEW12	8/9/07 9:16	47.6	34.8	1.1	-9.4	77
BRIPEW12	8/9/07 9:18	48.5	35.5	0.7	-15.1	77
BRIPEW13	8/9/07 9:25	57.8	41.6	0.2	-0.8	80
BRIPEW13	8/9/07 9:27	57.4	41.2	0	-8.6	80
BRIPEW14	8/9/07 9:31	56.6	42.2	0.1	-0.8	80
BRIPEW14	8/9/07 9:33	55.9	41.8	0.1	-8.4	80
BRIPEW15	8/9/07 9:38	8.9	10.1	12.3	-20.8	81
BRIPEW15	8/9/07 9:40	8.9	9.6	12.6	-13.8	81
BRIPEW16	8/9/07 9:43	27.1	22.4	6.9	-0.1	86
BRIPEW17	8/9/07 9:47	8.1	22.1	3.2	-0.1	87
BRIPEW18	8/9/07 9:51	0	1.3	17.9	-0.4	84
BRIPEW19	8/9/07 9:55	0	1.6	16.7	-0.4	85
BRIPEW20	8/9/07 9:58	34.5	22.6	7	-1.3	85
BRIPEW21	8/9/07 10:02	39.4	30.6	0.6	-0.2	90
BRIPEW21	8/9/07 10:04	38.4	30.2	0.6	-2.9	90
BRIPEW22	8/9/07 10:08	6.4	6.4	14.3	-0.4	84

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01,02,04,05

07,10,11,15

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Bridgeton Sanitary Landfill
August 2007 Wellfield Data

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIPEW23	8/9/07 10:11	38.6	11.4	2.1	-0.4	87
BRIPEW23	8/9/07 10:15	0.3	9.4	10.7	-2.1	87
BRIPEW24	8/9/07 10:19	37.2	29.8	0.7	-9.6	84
BRIPEW25	8/9/07 10:22	36.1	27.4	0.5	-3.7	92
BRIPEW26	8/9/07 10:25	30	27.7	0.5	-1.9	85
BRIPEW27	8/9/07 10:29	39	31.1	0.4	-2.6	90
BRIPEW28	8/9/07 10:32	1.6	7	12.8	-0.3	83
BRIPEW29	8/9/07 10:35	44.5	37.3	0.7	-1.8	88
BRIPEW29	8/9/07 10:37	44.5	37.5	0.4	-6.6	88
BRIPEW30	8/9/07 10:40	55.7	40.8	0	-0.1	91
BRIPEW30	8/9/07 10:44	45.9	34.2	3	-19.6	91
BRIPEW30	8/17/07 12:07	36.5	26.3	6.5	-22	91
BRIPEW31	8/9/07 10:50	36.3	22.9	0	-0.2	91
BRIPEW31	8/9/07 10:53	27.8	17.3	4.5	-8.7	91
BRIPEW31	8/17/07 12:03	18.1	15.2	9.8	-1.9	90
BRIPEW32	8/9/07 11:00	46.7	37.5	0.3	-0.6	87
BRIPEW32	8/9/07 11:02	46.5	37.6	0.2	-1.6	87
BRIPEW33	8/9/07 11:06	23.5	26.9	0.7	-0.6	84
BRIPEW34	8/9/07 11:09	4.2	16.8	6.7	-0.8	84
BRIPEW35	8/9/07 11:12	11.2	25	4.5	-1.2	84
BRIPEW36	8/9/07 11:15	50.5	41.5	0.1	-1.8	86
BRIPEW36	8/9/07 11:17	50.5	41.5	0	-5.1	86
BRIPEW37	8/9/07 11:21	42.1	36.9	0.3	-4.2	83
BRIPEW38	8/9/07 11:24	47.8	42.7	0	-5.9	80
BRIPEW38	8/9/07 11:26	48.9	43.3	0	-8.8	80
BRIPEW39	8/9/07 11:30	35.7	35.4	0.4	-9.8	76
BRIPEW40	8/9/07 11:33	5.3	11.1	11.2	-6.2	79
BRIPEW40	8/9/07 11:35	5.1	10.8	11.4	-3.2	79
BRLCS-1B	8/10/07 8:53	61.4	34.6	0.7	-52.4	
BRLCS-1B	8/22/07 9:52	55.7	30	2.3	-51.4	
BRLCS-2C	8/10/07 9:16	59.6	40.4	0	[redacted]	
BRLCS-2C	8/10/07 9:30	58.4	41.6	0	-4.6	
BRLCS-2C	8/22/07 10:09	26.3	16.5	0	-30.8	
BRLCS-2C	8/22/07 10:15	56	42.3	0	-0.7	
BRLCS-3C	8/10/07 9:12	59	40.6	0	-49	
BRLCS-3C	8/22/07 10:02	55.8	40	0.5	-43.7	
BRLCS-4A	8/10/07 9:00	40.6	33.1	[redacted]	-6.2	
BRLCS-4A	8/10/07 9:03	53.1	42.7	0.8	-0.4	
BRLCS-4A	8/22/07 9:56	49.2	49.9	0	-0.1	
BRLCS-5A	8/10/07 8:41	54.8	43.4	0	0	
BRLCS-5A	8/10/07 8:45	40.5	33.3	4.8	-0.4	
BRLCS-5A	8/22/07 9:35	55.4	43.1	0	[redacted]	
BRLCS-5A	8/22/07 9:44	15.3	12.6	13.2	-1	
BRLCS-6A	8/10/07 8:32	29.6	32.6	1.9	-0.4	
BRLCS-6A	8/22/07 9:31	28.5	32.7	1.3	-0.1	

Bridgeton Sanitary Landfill
Spetember 2007 Wellfield Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRGEW65A	9/5/07 8:57	27	18.2	9.4	1.2	78
BRGEW65A	9/5/07 9:00	53.7	41.5	0	-0.2	110
BRGEW65A	9/19/07 11:09	46.8	40.6	0	-6.2	100
BRGEW65A	9/19/07 11:10	45.2	40.4	0	-5.6	100
BRIEW12A	9/4/07 8:25	41.6	44.5	0	-0.2	83
BRIEW12A	9/18/07 12:41	42	42.2	0.2	0	101
BRIEW12A	9/18/07 12:44	44.6	42.8	0.1	-0.2	126
BRIEW14A	9/4/07 8:36	50.8	42.9	0	-4	112
BRIEW14A	9/18/07 12:55	46.4	38.1	0.1	-5.6	107
BRIEW14A	9/18/07 12:57	46.5	37.8	0.1	-5.3	107
BRIEW19A	9/4/07 10:25	51.3	45.3	0	0	130
BRIEW19A	9/4/07 10:28	50.8	45.6	0	-0.2	133
BRIEW19A	9/7/07 11:46	54.9	45.1	0	-0.6	140
BRIEW19A	9/7/07 11:48	54.9	45.1	0	-0.1	140
BRIEW19A	9/7/07 11:51	54.7	45.3	0	-0.1	134
BRIEW19A	9/18/07 13:24	52.1	44.3	0.1	0	141
BRIEW19A	9/18/07 13:30	53.6	42.1	0.1	-0.4	141
BRIEW20A	9/4/07 10:32	54.8	43.3	0	-1.7	125
BRIEW20A	9/18/07 13:33	55.1	42.2	0.2	-1.7	124
BRIEW20A	9/18/07 13:35	54.6	41.8	0.1	-2.1	124
BRIEW21A	9/4/07 10:36	50.1	43.4	0	[redacted]	101
BRIEW21A	9/4/07 10:39	49.7	43.5	0	-0.1	101
BRIEW21A	9/18/07 13:39	47.7	42	0.2	-0.5	118
BRIEW23A	9/4/07 10:47	49.6	42.4	0	[redacted]	92
BRIEW23A	9/4/07 10:51	49.4	42	0	-0.1	92
BRIEW23A	9/18/07 13:50	31.9	33.4	0.1	-1.5	110
BRIEW23A	9/18/07 13:52	31.2	33.1	0.1	-1.2	110
BRIEW24A	9/4/07 10:54	51.9	42.7	0	[redacted]	114
BRIEW24A	9/4/07 10:56	51.8	43	0	-0.2	114
BRIEW24A	9/18/07 13:56	39.8	36.4	0.2	-1.3	121
BRIEW24A	9/18/07 13:58	39.9	36.8	0.3	-1	121
BRIEW25A	9/4/07 11:00	51.2	41.4	0	-0.7	119
BRIEW25A	9/19/07 7:47	52.6	40.1	0	-1.8	75
BRIEW25A	9/19/07 7:53	52.4	40.6	0	-1	80
BRIEW27A	9/4/07 11:10	40.8	37.1	0	-0.6	120
BRIEW27A	9/4/07 11:12	40.6	37.1	0	-0.5	120
BRIEW27A	9/19/07 8:01	36.3	36.8	0	-1	90
BRIEW27A	9/19/07 8:04	36.4	36.8	0	-0.9	90
BRIGEW01	9/4/07 7:12	48	36.6	0	-0.3	108
BRIGEW01	9/18/07 11:47	49.9	37.4	0.1	-0.2	104
BRIGEW02	9/4/07 7:16	50.2	40.3	0	-2.6	125
BRIGEW02	9/18/07 11:51	50.9	40.9	0	-2	122
BRIGEW03	9/4/07 7:20	46.8	39.5	0	-0.5	108
BRIGEW03	9/4/07 7:22	46.4	39.6	0	-0.2	108
BRIGEW03	9/18/07 11:56	47.5	39.7	0.1	0	108
BRIGEW03	9/18/07 11:57	47.2	39.8	0.2	-0.1	108
BRIGEW04	9/4/07 7:26	48.6	39.7	0	-0.2	124
BRIGEW04	9/18/07 12:03	53.3	40.4	0	-0.6	124
BRIGEW04	9/18/07 12:05	53.2	41.1	0.1	-0.8	125

02, 23, 28, 30, 34, 39, 40, 14A
5A

Temp 19A

Bridgeton Sanitary Landfill
Spetember 2007 Wellfield Data

Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIGEW05	9/4/07 7:31	45.1	39.3	0	0	91
BRIGEW05	9/4/07 7:35	44.4	39	0	-0.1	91
BRIGEW05	9/18/07 12:09	42	38.1	0	0	98
BRIGEW05	9/18/07 12:11	42.2	38.1	0	-0.1	98
BRIGEW06	9/4/07 7:39	53	41	0	0	94
BRIGEW06	9/4/07 7:42	52.5	41.2	0	0	94
BRIGEW06	9/7/07 11:16	51.9	41.7	0.4	0	91
BRIGEW06	9/7/07 11:18	52.5	42.2	0.3	-0.3	95
BRIGEW06	9/18/07 12:15	44.1	36.8	1.3	-0.3	94
BRIGEW07	9/4/07 7:49	54	41.2	0	-2.5	117
BRIGEW07	9/4/07 7:51	54	41.3	0	-2.7	117
BRIGEW07	9/18/07 12:20	52.1	40	0.1	-3.6	118
BRIGEW08	9/4/07 7:56	50.8	41.1	0.2	-0.3	127
BRIGEW08	9/18/07 12:26	51	40.4	0.1	-0.2	129
BRIGEW09	9/4/07 8:02	31.4	34.5	0	-0.4	115
BRIGEW09	9/4/07 8:06	31.5	35.3	0	-0.4	115
BRIGEW09	9/18/07 12:30	31.3	34.6	0.1	-0.1	98
BRIGEW10	9/4/07 8:10	48.5	40.2	1	-14.2	121
BRIGEW10	9/18/07 12:34	49.5	40.6	0.2	-13.5	123
BRIGEW11	9/4/07 8:16	46.4	44.9	0.8	-2.2	125
BRIGEW11	9/4/07 8:20	49.9	41.1	1.7	-2.2	125
BRIGEW11	9/18/07 12:37	49.5	39.4	1.6	-1.7	93
BRIGEW13	9/4/07 8:28	54.8	45.2	0	0	134
BRIGEW13	9/4/07 8:31	55.4	44.6	0	-0.2	138
BRIGEW13	9/7/07 11:24	55.4	44.6	0	-0.9	132
BRIGEW13	9/7/07 11:26	55.9	44.1	0	-0.3	126
BRIGEW13	9/18/07 12:48	52.9	45.1	0.1	0	108
BRIGEW13	9/18/07 12:51	52.8	45.4	0.1	-0.3	108
BRIGEW15	9/4/07 8:42	48	39.2	2.9	0	86
BRIGEW15	9/4/07 8:45			0	-0.1	86
BRIGEW15	9/7/07 11:40	50.5	41.1	0.1	-0.6	92
BRIGEW15	9/18/07 13:03	12.5	26.1	0.7	-0.4	94
BRIGEW15	9/18/07 13:05	12.3	25.9	0.7	-0.3	94
BRIGEW16	9/4/07 10:13	48.1	38.1	0.2	-2.4	108
BRIGEW16	9/18/07 13:10	36.5	35.8	0.3	-2.3	106
BRIGEW16	9/18/07 13:11	36.5	35.9	0.1	-1.6	106
BRIGEW17	9/4/07 10:18	50	39.8	0	-0.5	117
BRIGEW17	9/18/07 13:17	48.1	39.7	0.2	-1.9	118
BRIGEW18	9/4/07 10:22	47.6	40.7	1	-1.3	122
BRIGEW18	9/18/07 13:21	44.5	37	2.4	-0.8	122
BRIGEW22	9/4/07 10:43	52.7	42.1	0	-0.9	104
BRIGEW22	9/18/07 13:43	44.1	38.6	0.2	-1.8	106
BRIGEW22	9/18/07 13:45	44.1	38.3	0	-1.5	106
BRIGEW26	9/4/07 11:04	43.6	40.6	0	[redacted]	115
BRIGEW26	9/4/07 11:06	43.2	40.6	0.2	-0.2	122
BRIGEW26	9/19/07 7:56	47.3	40.1	0	-0.1	80
BRIGEW26	9/19/07 7:58	46.8	39.6	0	-0.5	80
BRIGEW28	9/4/07 11:15	50.6	40	0	-11.8	129
BRIGEW28	9/19/07 8:07	51.3	39.7	0	-11.9	129

Bridgeton Sanitary Landfill
Spetember 2007 Wellfield Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIGEW29	9/4/07 11:19	41.9	37.2	0.1	-1	113
BRIGEW29	9/4/07 11:21	40	36	0.9	-0.8	113
BRIGEW29	9/19/07 8:11	46	40.4	0	-1.8	74
BRIGEW30	9/4/07 11:25	48.4	39.7	0	-6.2	126
BRIGEW30	9/19/07 8:15	47.1	38.2	0	-6.9	125
BRIGEW31	9/4/07 11:28	50.5	40.6	0.6	-19.8	128
BRIGEW31	9/19/07 8:20	45.7	38.4	0.3	-20.5	129
BRIGEW31	9/19/07 8:22	45.4	38.2	0.4	-18.1	129
BRIGEW32	9/4/07 11:35	47.9	39.3	0.4	-16.5	123
BRIGEW32	9/19/07 8:26	44.6	38.1	0.8	-18.4	122
BRIGEW32	9/19/07 8:28	45.8	40	0.3	-17.1	122
BRIGEW33	9/4/07 11:39	44.5	42.4	0.1	-0.8	122
BRIGEW33	9/4/07 11:40	44.1	41.8	0.2	-0.6	122
BRIGEW33	9/19/07 8:33	28.3	23.1	[redacted]	-3.2	76
BRIGEW33	9/19/07 8:34	50.7	40.6	0	-3.7	76
BRIGEW34	9/4/07 11:44	48.8	41.1	0	-0.3	128
BRIGEW34	9/19/07 8:38	54.1	41.6	0	-1.2	122
BRIGEW34	9/19/07 8:40	53.8	41.1	0	-1.5	126
BRIGEW35	9/4/07 11:47	45.9	39.2	1.3	-2.6	116
BRIGEW35	9/4/07 11:49	48.9	42	0.1	-1.9	116
BRIGEW35	9/19/07 8:45	49.7	41.8	0	-3.1	119
BRIGEW36	9/4/07 13:15	51.5	42.4	0.2	-0.6	106
BRIGEW36	9/19/07 8:48	49.8	42	0	-2.8	110
BRIGEW37	9/4/07 13:18	49.2	40.7	0.2	-0.1	101
BRIGEW37	9/19/07 8:51	46.1	40.9	0	-1.7	93
BRIGEW37	9/19/07 8:53	46	40.8	0	-1.6	93
BRIGEW38	9/4/07 13:21	48.5	40.8	0.5	-3.5	118
BRIGEW38	9/19/07 8:57	48.9	40.5	0	-4.7	118
BRIGEW39	9/4/07 13:25	52	41.4	0	-0.5	118
BRIGEW39	9/19/07 9:00	50.2	40	0.1	-1.2	117
BRIGEW40	9/4/07 13:35	48.2	38.9	0.4	-4.2	119
BRIGEW40	9/19/07 9:08	49.2	39.2	0	-4.7	102
BRIGEW41	9/4/07 13:40	49.2	40	0.1	-0.6	106
BRIGEW41	9/19/07 9:12	48.7	39.6	0	-1.2	82
BRIGEW42	9/4/07 13:43	51	41.6	0	0	110
BRIGEW42	9/4/07 13:45	50.6	41.8	0	-0.3	110
BRIGEW42	9/19/07 9:15	43.8	39.4	0	-1	105
BRIGEW42	9/19/07 9:16	43.9	39.2	0	-0.7	105
BRIGEW43	9/4/07 13:49	47.5	41.3	0.1	-1.4	114
BRIGEW43	9/4/07 13:51	47.6	41.8	0	-1	114
BRIGEW43	9/19/07 9:21	49.3	41.4	0	-1.7	114
BRIGEW44	9/4/07 13:56	45.4	41.8	0	0	104
BRIGEW44	9/4/07 13:57	45.5	41.5	0	-0.2	104
BRIGEW44	9/19/07 9:24	29.6	33	0	-0.8	84
BRIGEW44	9/19/07 9:26	30.2	32.9	0	-0.4	84
BRIGEW45	9/4/07 14:02	52.9	41.8	0.1	-1.1	98
BRIGEW45	9/19/07 9:31	57.6	42.4	0	-2.1	84
BRIGEW45	9/19/07 9:33	57.1	42.3	0	-3.1	84
BRIGEW46	9/4/07 14:06	44.9	40.9	0.1	-4.1	115

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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by Vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIGEW46	9/4/07 14:08	45	40.9	0.2	-3.2	115
BRIGEW46	9/19/07 9:38	49.9	41.6	0	-1.4	108
BRIGEW47	9/4/07 14:13	45.3	40.4	0.9	-25.6	124
BRIGEW47	9/4/07 14:14	46.5	41.3	0.4	-20.2	122
BRIGEW47	9/19/07 9:42	52.2	42.1	0	-19.2	122
BRIGEW48	9/4/07 14:18	48.8	41.7	0	-0.5	118
BRIGEW48	9/19/07 9:45	52.9	41.8	0	-0.8	116
BRIGEW48	9/19/07 9:48	51.9	41.6	0	-0.9	116
BRIGEW49	9/4/07 14:22	46.2	40.9	0.1	0	106
BRIGEW49	9/4/07 14:25	46.6	41	0	-0.2	106
BRIGEW49	9/19/07 9:52	37.6	37.3	0	-1	100
BRIGEW49	9/19/07 9:54	36.7	36.4	0	-0.6	100
BRIGEW50	9/4/07 14:28	51.5	42.1	0	[redacted]	116
BRIGEW50	9/4/07 14:30	51.3	42.6	0	-0.2	116
BRIGEW50	9/19/07 9:58	51.3	40.8	0	-0.2	115
BRIGEW51	9/4/07 14:34	47.8	43.1	0.1	0	114
BRIGEW51	9/4/07 14:36	47.5	43	0	-0.2	114
BRIGEW51	9/19/07 10:01	51.6	42.1	0	-1.3	115
BRIGEW52	9/4/07 14:39	44.2	39.4	0.1	0	118
BRIGEW52	9/4/07 14:41	43.7	39	0	-0.1	118
BRIGEW52	9/19/07 10:05	35.7	36.9	0	-0.4	114
BRIGEW52	9/19/07 10:07	35	36.9	0	-0.2	114
BRIGEW53	9/4/07 14:45	46.6	40.6	0	-0.6	112
BRIGEW53	9/19/07 10:11	43.8	36.4	0	-0.6	90
BRIGEW54	9/4/07 14:49	46.1	42.9	0.1	[redacted]	112
BRIGEW54	9/4/07 14:51	46.5	43.2	0	-0.1	112
BRIGEW54	9/19/07 10:15	49.1	43.1	0	-1.3	113
BRIGEW55	9/4/07 14:59	42.2	42.3	0	[redacted]	126
BRIGEW55	9/4/07 15:04	42.4	42.3	0	-0.2	126
BRIGEW55	9/19/07 10:19	46.8	41.5	0	-0.4	120
BRIGEW56	9/4/07 15:08	50.2	41.5	0.2	-1.4	126
BRIGEW56	9/19/07 10:23	54.1	41.7	0	-2.2	120
BRIGEW57	9/4/07 15:13	42.3	43	0.1	[redacted]	98
BRIGEW57	9/4/07 15:17	42.9	42.4	0	-0.3	98
BRIGEW57	9/19/07 10:27	46.3	40.9	0	-5.4	105
BRIGEW57	9/19/07 10:29	46.1	41.1	0	-5	105
BRIGEW58	9/5/07 7:36	41.8	42.2	0	[redacted]	76
BRIGEW58	9/5/07 7:47	42.1	42	0	-0.1	128
BRIGEW58	9/19/07 10:32	47.1	39.8	0	-5.1	127
BRIGEW58	9/19/07 10:34	47.5	39.2	0	-4.7	127
BRIGEW59	9/5/07 7:52	27.4	42.1	0	[redacted]	58
BRIGEW59	9/5/07 7:58	31.3	42.3	0	-0.2	87
BRIGEW59	9/19/07 10:38	45.3	40.1	0.1	-5.2	114
BRIGEW59	9/19/07 10:40	43.9	39.6	0.1	-4.7	114
BRIGEW60	9/5/07 8:02	53.5	40.9	0	[redacted]	110
BRIGEW60	9/5/07 8:05	53.5	41.1	0	-0.2	113
BRIGEW60	9/19/07 10:44	40.9	36.4	0	-8.2	113
BRIGEW60	9/19/07 10:46	41	36	0.1	-6.8	113
BRIGEW61	9/5/07 8:09	51	39.5	0	[redacted]	74

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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW61	9/5/07 8:11	51.3	39.3	0	-0.1	74
BRIGEW61	9/19/07 10:49	48.6	42.7	0	-2.5	74
BRIGEW62	9/5/07 8:14	44.7	41.7	0	[redacted]	95
BRIGEW62	9/5/07 8:22	45.1	41.6	0	-0.2	112
BRIGEW62	9/7/07 11:35	52.5	42.1	0	-4.4	112
BRIGEW62	9/19/07 10:53	39.8	37.8	0.3	-5	116
BRIGEW62	9/19/07 10:54	38.7	37.7	0.3	-4	116
BRIGEW63	9/5/07 8:27	47.6	40.2	0	-0.9	139
BRIGEW63	9/5/07 8:34	47.7	40.5	0	-0.1	133
BRIGEW63	9/7/07 11:58	45.9	43	0	-2.2	133
BRIGEW63	9/7/07 12:02	45	42	0.4	-1.6	129
BRIGEW63	9/19/07 10:59	42	40.2	0.3	-1.7	94
BRIGEW63	9/19/07 11:00	39.6	37.9	1.3	-1.6	94
BRIGEW64	9/5/07 8:51	54.1	40.9	0	[redacted]	108
BRIGEW64	9/5/07 8:53	54.5	40.9	0	-0.1	112
BRIGEW64	9/19/07 11:05	48.7	41.6	0.1	-7.4	108
BRIGEW66	9/5/07 9:05	51.1	41	0	[redacted]	90
BRIGEW66	9/5/07 9:07	52.5	40.8	0	-0.2	90
BRIGEW66	9/19/07 11:15	44.5	38.8	0	-5.4	102
BRIGEW66	9/19/07 11:17	44.3	38	0.2	-4.9	102
BRIGEW67	9/5/07 9:13	41.8	37.9	1.3	[redacted]	125
BRIGEW67	9/5/07 9:20	45.8	41.8	0	-0.1	135
BRIGEW67	9/5/07 9:22	46.2	41.1	0	-0.2	135
BRIGEW67	9/5/07 9:31	46.7	41.5	0	-0.1	135
BRIGEW67	9/7/07 11:31	47.7	43.8	0	-1.8	120
BRIGEW67	9/19/07 11:44	45.5	41.9	0.5	-2	122
BRIGEW67	9/19/07 11:46	45.6	42.3	0	-1.9	122
BRIGEW68	9/5/07 9:37	53.1	39.3	0	-3.3	111
BRIGEW68	9/19/07 11:50	47.1	38.9	0	-9.6	110
BRIGEW68	9/19/07 11:51	47	39.4	0	-8.7	110
BRIGEW69	9/5/07 10:48	54.5	40.1	0	[redacted]	88
BRIGEW69	9/5/07 11:22	54.7	40.3	0	-0.2	105
BRIGEW69	9/19/07 11:55	52.8	41.4	0	-8.2	110
BRIGEW70	9/5/07 11:25	53.3	41	0	[redacted]	88
BRIGEW70	9/5/07 11:28	51.2	40.8	0	-0.2	95
BRIGEW70	9/19/07 11:59	53.7	41.7	0	-8.2	110
BRIGEW71	9/5/07 11:32	47.4	38.5	0	[redacted]	113
BRIGEW71	9/5/07 11:33	47.8	38.4	0	-0.3	117
BRIGEW71	9/19/07 12:02	50	39.6	0	-4.9	121
BRIGEW72	9/5/07 11:37	50.4	39.7	0	0	102
BRIGEW72	9/5/07 11:39	50.3	40	0	-0.2	108
BRIGEW72	9/19/07 12:05	30.3	34.4	0	-2.6	112
BRIGEW72	9/19/07 12:07	30	34.9	0	-2.1	112
BRIGEW73	9/5/07 11:44	55.4	39.1	0	-0.6	113
BRIGEW73	9/19/07 12:11	48.9	37.2	0.1	-6.9	115
BRIGEW74	9/5/07 11:48	53.5	41.4	0	-1.7	105
BRIGEW74	9/19/07 12:15	53.1	42.4	0	-8.3	110
BRIGEW75	9/5/07 11:52	54	41.1	0	[redacted]	94
BRIGEW75	9/5/07 11:54	53	41.1	0	-0.3	108

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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)
BRIGEW75	9/19/07 12:18	53.1	41.3	0	-6.6	118
BRIGEW76	9/5/07 11:59	55.8	42.2	0	0	120
BRIGEW76	9/5/07 12:01	55.3	41.6	0	-0.2	120
BRIGEW76	9/19/07 12:21	46.3	40.4	0	-1.7	117
BRIGEW76	9/19/07 12:23	46.8	40.6	0	-1.4	117
BRIGEW77	9/5/07 12:06	49.4	39.9	0	[redacted]	95
BRIGEW77	9/5/07 12:08	49.3	39.8	0	-0.2	102
BRIGEW77	9/19/07 12:27	46.4	39.6	0	-5.6	122
BRIGEW77	9/19/07 12:29	46.1	39.8	0	-5.3	122
BRIGEW78	9/5/07 12:11	51.7	40.8	0	-6.2	118
BRIGEW78	9/19/07 12:33	51.7	40.6	0	-12.9	119
BRIGEW79	9/5/07 12:15	50.2	39.2	0	-0.4	103
BRIGEW79	9/19/07 12:37	50.8	39	0	-5	106
BRIGEW80	9/5/07 12:19	50.9	40.2	0	[redacted]	85
BRIGEW80	9/5/07 12:21	50.9	40	0	-0.2	94
BRIGEW80	9/19/07 12:40	50.3	41.4	0	-6	104
BRIGEW81	9/5/07 12:25	46.4	38.8	0	[redacted]	100
BRIGEW81	9/5/07 12:27	46.6	38.9	0	-0.2	116
BRIGEW81	9/19/07 12:44	45.1	38	0	-3.6	[redacted]
BRIGEW81	9/19/07 12:49	43.7	40.1	0.2	-2.3	130
BRIGEW82	9/5/07 12:32	43.1	36.9	0	[redacted]	96
BRIGEW82	9/5/07 12:34	43.4	37.4	0	-0.2	96
BRIGEW82	9/19/07 12:54	35.6	35.5	0.1	-2.5	104
BRIGEW82	9/19/07 12:56	38.9	36.7	0	-1.7	104
BRIGINLT	9/4/07 6:56	45.7	35.9	1.8	-51.8	
BRIGINLT	9/5/07 7:12	55.3	40.2	0	-47.6	86
BRIGINLT	9/5/07 9:58	48.9	36.7	2	-44.5	
BRIGINLT	9/5/07 10:36	49.8	36.7	1.6	-44.3	
BRIGINLT	9/5/07 10:41	49.1	36.5	1.6	-50.8	
BRIGINLT	9/6/07 9:34	47	35.5	2.8	-44.2	87
BRIGINLT	9/7/07 6:39	49.4	39.6	1.2	-45.9	90
BRIGINLT	9/7/07 13:39	47.5	39.5	1.1	-44.8	89
BRIGINLT	9/18/07 11:30	43.5	36.2	1.7	-46.7	89
BRIGINLT	9/18/07 11:33	43.6	36.2	1.6	-53.5	89
BRIGINLT	9/19/07 7:28	43.8	35.9	1.6	-54.2	89
BRIGINLT	9/19/07 13:48	43	36.5	1.5	-57	90
BrigIT-1	9/7/07 13:16	20	25.7	3.5	-0.6	
BrigIT-2	9/7/07 13:19	36.2	34.8	0	-0.5	
BrigIT-3	9/7/07 13:21	34.2	34.6	0.6	-0.5	
BrigIT-4	9/7/07 13:23	42.7	37.8	0.3	-0.5	
BrigIT-5	9/7/07 13:26	42.7	37.6	0.4	-0.5	
BrigIT-6	9/7/07 13:29	35.6	31.1	2.8	-0.4	
BrigT-56	9/7/07 11:12	28.1	29.8	2	-0.4	95
BRIPEW01	9/5/07 12:47	47	34.2	3.1	0	88
BRIPEW01	9/5/07 12:48	8.7	6.1	15.6	-0.6	88
BRIPEW02	9/5/07 12:52	18.4	16.6	8.3	0	88
BRIPEW02	9/5/07 12:55	13.3	11.5	11.2	-1.6	88
BRIPEW03	9/5/07 12:59	45	32.2	0.2	-0.3	87
BRIPEW03	9/5/07 13:00	44.4	32	0.3	-1.4	87

Bridgeton Sanitary Landfill
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Device ID	Date Time	CH_4 (Methane) (%)	CO_2 (Carbon Dioxide) (%)	O_2 (Oxygen) (%by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)
BRIPEW04	9/5/07 13:04	17.7	11.1	10.2	0	89
BRIPEW04	9/5/07 13:06	17.5	10.9	10.3	-0.1	89
BRIPEW05	9/5/07 13:09	59.8	26.5	2	0	92
BRIPEW05	9/5/07 13:12	11.5	4.7	15.4	-0.2	92
BRIPEW06	9/5/07 13:15	55	40.1	0.3	-2.7	82
BRIPEW06	9/5/07 13:17	54.9	39.8	0	-3.7	82
BRIPEW07	9/5/07 13:20	56.7	37.7	0.3	-2.5	88
BRIPEW07	9/5/07 13:22	55.7	37.1	0.6	-10.8	88
BRIPEW08	9/5/07 13:26	72	23.7	0	[redacted]	90
BRIPEW08	9/5/07 13:32	48.6	16.7	5.8	-18.6	90
BRIPEW09	9/5/07 13:35	53.2	39.9	1	-5.6	96
BRIPEW09	9/5/07 13:37	49.7	37.7	2.1	-12.6	96
BRIPEW10	9/5/07 13:41	49.2	33.6	2.8	-39.1	96
BRIPEW11	9/7/07 6:51	16.7	12.2	13	-28.8	78
BRIPEW11	9/7/07 6:55	18	13.1	12.9	-3.8	78
BRIPEW12	9/7/07 6:58	48.5	38.2	0.8	-13.1	82
BRIPEW12	9/7/07 7:00	48.5	38.5	0.5	-17.4	82
BRIPEW13	9/7/07 7:04	58	42	0	-9.1	74
BRIPEW13	9/7/07 7:05	58	42	0	-12.8	74
BRIPEW14	9/7/07 7:09	54.3	43	0	-7.5	77
BRIPEW14	9/7/07 7:10	53.3	42.7	0	-10.8	77
BRIPEW15	9/7/07 7:15	17.7	13.8	10.4	-13	78
BRIPEW16	9/7/07 7:18	47.4	34	0.8	-0.3	76
BRIPEW16	9/7/07 7:20	50.6	34.3	0.6	-2.9	76
BRIPEW17	9/7/07 7:23	18.5	16.9	9.4	-2	78
BRIPEW18	9/7/07 7:27	0.2	3.2	15.8	-0.8	75
BRIPEW19	9/7/07 7:31	0	3.4	12.5	-0.1	73
BRIPEW19	9/7/07 7:32	0	3.9	11.7	-0.5	73
BRIPEW20	9/7/07 9:23	47	33	4	-0.4	72
BRIPEW20	9/7/07 9:25	40.9	30.1	5.3	-2.2	72
BRIPEW21	9/7/07 9:29	5.7	14.6	10	-3.9	72
BRIPEW21	9/7/07 9:30	5.6	14.7	10.1	-2.7	72
BRIPEW22	9/7/07 9:34	1.8	4.8	15.9	-0.3	72
BRIPEW23	9/7/07 9:38	29.7	24	5.3	-0.4	68
BRIPEW24	9/7/07 9:42	51.3	37.1	0	-6	68
BRIPEW24	9/7/07 9:43	51.1	37.2	0	-7.1	68
BRIPEW25	9/7/07 9:47	52.6	34.1	0	-3	68
BRIPEW25	9/7/07 9:49	52.6	34	0	-7.9	68
BRIPEW26	9/7/07 9:54	55.3	38.1	0	-1.8	69
BRIPEW26	9/7/07 9:55	55.1	38	0	-3.7	69
BRIPEW27	9/7/07 10:01	48.8	37.9	0	-2.5	70
BRIPEW27	9/7/07 10:03	49.7	38.6	0	-7.2	70
BRIPEW28	9/7/07 10:06	4.8	14.7	7.2	-0.2	70
BRIPEW29	9/7/07 10:10	55.5	41.7	0	-6.4	70
BRIPEW29	9/7/07 10:11	55.8	42	0	-17.3	70
BRIPEW30	9/7/07 10:15	29.6	22.2	8.9	-12.8	69
BRIPEW31	9/7/07 10:21	15.9	11	13.6	-2.7	70
BRIPEW32	9/7/07 10:25	53.7	41.9	0.1	-1.6	72
BRIPEW32	9/7/07 10:26	53.5	41.7	0	-5.4	72

O2

Temp 81

04, 05, 08

4, 14, 16, 17, 18, 19, 20, 21, 22, 28, 30, 31

Bridgeton Sanitary Landfill
Spetember 2007 Wellfield Data

Device ID	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)
BRIPEW33	9/7/07 10:29	30.9	22.2	2.6	-0.4	70
BRIPEW34	9/7/07 10:33	22.8	26.5	3.9	-0.5	74
BRIPEW35	9/7/07 10:36	19.4	28	6.4	-1	74
BRIPEW36	9/7/07 10:40	33.7	28.4	6.8	-3.8	74
BRIPEW37	9/7/07 10:47	36.6	26.9	5.3	-2.1	74
BRIPEW38	9/7/07 10:51	51.5	45.2	0	-6.9	78
BRIPEW38	9/7/07 10:52	52.1	45.6	0	-8.5	78
BRIPEW39	9/7/07 10:56	46.2	36.4	1.3	-3.2	78
BRIPEW40	9/7/07 11:00	2.9	9.2	10.6	-1.8	74
BRIPEW40	9/7/07 11:02	2.9	8.6	11	-0.5	74
BRLCS-1B	9/7/07 12:41	58.9	37.2	0.1	-40.8	90
BRLCS-1B	9/19/07 13:13	60	35.8	0.3	-51.5	95
BRLCS-2C	9/7/07 13:10	58.2	41.8	0	-19.8	93
BRLCS-2C	9/19/07 13:42	55.5	42.1	0	-36.5	96
BRLCS-3C	9/7/07 12:59	57.7	42.3	0	[redacted]	91
BRLCS-3C	9/7/07 13:04	57.3	42.7	0	-2.5	91
BRLCS-3C	9/19/07 13:36	54.2	41	0.3	-30.6	102
BRLCS-4A	9/7/07 12:47	54	43.8	0.9	-4.2	92
BRLCS-4A	9/7/07 12:48	56	43.9	0.1	-8.4	92
BRLCS-4A	9/19/07 13:03	55.6	42.9	0.3	-10.2	108
BRLCS-4A	9/19/07 13:06	55.8	42.5	0.3	-13.5	108
BRLCS-5A	9/7/07 12:31	55.9	44.1	0	[redacted]	84
BRLCS-5A	9/7/07 12:34	53.6	43.8	0.2	-0.8	84
BRLCS-5A	9/19/07 13:20	53.8	42.7	0.1	[redacted]	96
BRLCS-5A	9/19/07 13:22	50.8	40.9	0.8	-1.7	96
BRLCS-6A	9/7/07 12:21	50.2	43	0	[redacted]	108
BRLCS-6A	9/7/07 12:26	51.4	43.3	0	-0.2	126
BRLCS-6A	9/19/07 13:27	36.2	35.9	0.9	-0.3	134
BRLCS-6A	9/19/07 13:30	36.5	35.8	1	-0.1	120

O_2 35, 36, 7
39, 40

Temp CA

Bridgeton Landfill Wellfield Data

1. The following wells must maintain temperature less than or equal to 140°F per SLCDOH letter dated December 15, 2008: 12A, 13, 28, 34, 56, 67, 19A
2. The following wells must maintain negative pressure only per SLCDOH letter dated May 29, 2007: BrigIT1-6, BrigT-56, and BRIPEW01-60.
3. The following wells are under alternative SOP from 1/1/09 - 6/30/09 per SLCDOH letter dated December 15, 2008: BRLCS1B, BRLCS2C, BRLCS3C, BRLCS4A, BRLCS5A, and BRLCS 6A. Wells must maintain negative pressure and T < 131°F.
4. All other wells must have: T < 131°F, P < 0, O_2 < 5%.

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRGEW65A	7/15/2008 9:11	1.6	0	100		
BRGEW65A	7/15/2008 9:14	0	-0.3	90	<1	until compliant pressure achieved
BRGEW65A	7/28/2008 14:27	0	-1.8	95		
BRGEW65A	8/5/2008 10:24	0	-2.6	95		
BRGEW65A	8/22/2008 9:04	0	-2.9	95		
BRGEW65A	9/3/2008 15:02	0	-1.8	100		
BRGEW65A	9/3/2008 15:04	0	-2.2	105		
BRGEW65A	9/16/2008 10:32	0	-5	95		
BRGEW65A	9/16/2008 10:34	0	-4.8	95		
BRGEW65A	10/2/2008 10:34	0	-3.7	94		
BRGEW65A	10/2/2008 10:36	0	-3.4	94		
BRGEW65A	10/20/2008 12:42	0	-2	95		
BRGEW65A	10/20/2008 12:46	0	-1.9	90		
BRGEW65A	11/13/2008 8:56	0	-1.9	55		
BRGEW65A	11/26/2008 12:02	0	-1.3	70		
BRGEW65A	12/9/2008 14:55	0	-3.1	40		
BRGEW65A	12/24/2008 15:31	0	-4.5	42		
BRGEW65A	12/24/2008 15:33	0	-4.4	42		
BRIEW12A	7/14/2008 15:38	0	0	100		
BRIEW12A	7/14/2008 15:40	0	-0.3	120	<1	until compliant pressure achieved
BRIEW12A	7/25/2008 11:44	0	-1.6	140		
BRIEW12A	7/25/2008 11:47	0	-1.2	129	<1	until compliant temperature achieved
BRIEW12A	8/4/2008 9:06	0.5	-0.6	125		
BRIEW12A	8/4/2008 9:08	0.4	-0.6	98		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563072

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIEW12A	8/21/2008 10:03	0	-0.3	80		
BRIEW12A	9/3/2008 8:33	1.8	-0.8	75		
BRIEW12A	9/3/2008 8:34	1.3	-0.8	75		
BRIEW12A	9/15/2008 10:07	8.6	-2.6	65		
BRIEW12A	9/15/2008 10:10	0	-3.3	115	<1	until compliant O_2 achieved
BRIEW12A	10/1/2008 10:53	0	-3.6	150		
BRIEW12A	10/1/2008 11:06	0	-3.4	145		
BRIEW12A	10/1/2008 11:58	18.2	-2.4	112	<1	until compliant temperature achieved
BRIEW12A	10/1/2008 12:04	0.4	-2.9	141	<1	until compliant O_2 achieved
BRIEW12A	10/1/2008 12:07	0	-2.4	128	<1	until compliant temperature achieved
BRIEW12A	10/16/2008 13:42	0	0	78		
BRIEW12A	10/16/2008 13:45	0	-0.2	110	<1	until compliant pressure achieved
BRIEW12A	11/12/2008 9:13	0	0	144		
BRIEW12A	11/12/2008 9:26	0	-0.2	130	<1	until compliant pressure and temperature achieved
BRIEW12A	11/25/2008 15:35	0	-0.4	140		
BRIEW12A	11/25/2008 15:39	0	-0.2	129	<1	until compliant temperature achieved
BRIEW12A	12/8/2008 9:50	0	0.5	50		
BRIEW12A	12/8/2008 9:55	0	-0.3	138	<1	until compliant pressure achieved
BRIEW12A	12/8/2008 10:02	0	-0.2	141		
BRIEW12A	12/23/2008 15:08	0	-0.8	145		
BRIEW12A	12/23/2008 15:12	0	-0.2	130	15	until compliant temperature achieved
BRIEW14A	7/14/2008 15:53	0	-2.4	110		
BRIEW14A	7/25/2008 12:00	0	-2.7	112		
BRIEW14A	8/4/2008 9:23	0	-3.1	115		
BRIEW14A	8/21/2008 10:21	0	-2.8	115		
BRIEW14A	9/3/2008 8:45	0	-3.1	118		
BRIEW14A	9/15/2008 10:19	0	-4.4	115		
BRIEW14A	9/15/2008 10:21	0	-4.6	115		
BRIEW14A	10/1/2008 12:21	0	-3.1	115		
BRIEW14A	10/1/2008 12:25	0	-2.7	115		
BRIEW14A	10/16/2008 13:54	0	-2.6	115		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

BRIEW12A — 7/25, 10/1, 10/16, 11/25, 12/8, 12/23, 9/15, 10/1

O_2 / 12H

Temp / O_2

State of MO v. Republic Services, Inc. et al
PL1 - 0563073

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIEW14A	11/12/2008 9:40	0.1	-2.5	111		
BRIEW14A	11/25/2008 15:48	0	-2.6	110		
BRIEW14A	11/25/2008 15:49	0	-2.5	110		
BRIEW14A	12/8/2008 10:16	0	-1.9	109		
BRIEW14A	12/24/2008 8:06	0	-1.9	110		
BRIEW19A	7/10/2008 15:23	0	0	90		
BRIEW19A	7/10/2008 15:26	0	-0.9	110	<1	until compliant pressure achieved
BRIEW19A	7/28/2008 7:43	0	-2	136		
BRIEW19A	7/28/2008 7:45	0	-0.9	124	<1	until compliant temperature achieved
BRIEW19A	8/4/2008 10:18	1.1	-0.2	95		
BRIEW19A	8/21/2008 10:47	0	0	80		
BRIEW19A	8/21/2008 10:49	0	-0.3	90	<1	until compliant pressure achieved
BRIEW19A	9/3/2008 9:10	0	-0.2	95		
BRIEW19A	9/15/2008 11:02	0	-1.2	100		
BRIEW19A	9/15/2008 11:04	0	-1.9	130		
BRIEW19A	10/1/2008 13:03	0	-1.2	142		
BRIEW19A	10/1/2008 13:07	0	-0.2	130	<1	until compliant temperature achieved
BRIEW19A	10/16/2008 14:31	0	0.3	80		
BRIEW19A	10/16/2008 14:33	0	-0.4	109	<1	until compliant pressure achieved
BRIEW19A	11/12/2008 10:05	0	-0.6	135		
BRIEW19A	11/12/2008 10:08	0	-0.3	129	<1	until compliant temperature achieved
BRIEW19A	11/25/2008 16:34	0	0	100		
BRIEW19A	11/25/2008 16:36	0	-0.7	128	<1	until compliant pressure achieved
BRIEW19A	12/8/2008 10:46	0	-0.8	130		
BRIEW19A	12/8/2008 10:48	0	-0.4	130		
BRIEW19A	12/24/2008 8:36	0	-1.1	125		
BRIEW20A	7/10/2008 15:29	0	-2	125		
BRIEW20A	7/28/2008 7:49	0	-2.4	120		
BRIEW20A	8/4/2008 10:22	0	-2	125		
BRIEW20A	8/21/2008 10:53	0	-2	123		
BRIEW20A	9/3/2008 9:16	0	-2	118		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563074

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIEW20A	9/3/2008 9:18	0	-2.6	118		
BRIEW20A	9/15/2008 11:10	1.3	-3.3	130		
BRIEW20A	9/15/2008 11:13	1.2	-2	130		
BRIEW20A	10/1/2008 13:12	0	-1	128		
BRIEW20A	10/16/2008 14:37	0	-0.9	125		
BRIEW20A	10/16/2008 14:39	0	-1.4	125		
BRIEW20A	11/12/2008 10:13	0	-1.4	124		
BRIEW20A	11/12/2008 10:15	0	-1.9	124		
BRIEW20A	11/25/2008 16:40	0	-1.8	125		
BRIEW20A	11/25/2008 16:42	0	-2.3	125		
BRIEW20A	12/8/2008 10:54	0.7	-2.2	120		
BRIEW20A	12/24/2008 8:40	0	-2.8	120		
BRIEW20A	12/24/2008 8:43	0	-3.1	120		
BRIEW21A	7/10/2008 15:36	0	0.1	81		
BRIEW21A	7/10/2008 15:39	0	-0.7	85	<1	until compliant pressure achieved
BRIEW21A	7/28/2008 8:21	0	-1	65		
BRIEW21A	8/4/2008 10:27	0	-0.8	80		
BRIEW21A	8/21/2008 10:57	0	-0.3	78		
BRIEW21A	9/3/2008 9:23	0.7	-1	82		
BRIEW21A	9/3/2008 9:25	0.6	-0.8	82		
BRIEW21A	9/15/2008 11:17	18.2	-2	45		
BRIEW21A	9/15/2008 11:20	1.7	-3.6	60	<1	until compliant O_2 achieved
BRIEW21A	10/1/2008 13:20	0	-0.2	85		
BRIEW21A	10/16/2008 14:44	0	0	80		
BRIEW21A	10/16/2008 14:48	0	-0.4	75	<1	until compliant pressure achieved
BRIEW21A	11/12/2008 10:20	0	0	62		
BRIEW21A	11/12/2008 10:22	0	-0.2	62	<1	until compliant pressure achieved
BRIEW21A	11/26/2008 6:45	0	-0.6	55		
BRIEW21A	12/8/2008 11:00	0	0	60		
BRIEW21A	12/8/2008 11:02	0	-0.2	65	<1	until compliant pressure achieved
BRIEW21A	12/24/2008 8:50	0	-1.1	60		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

Temp': 19 7/28/2008, 10/1/2008, 11/12/2008.

O_2: 21 9/15/2008

State of MO v. Republic Services, Inc. et al
PL1 - 0563075

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIEW23A	7/10/2008 15:52	0	0	105		
BRIEW23A	7/10/2008 15:54	0	-0.4	110	<1	until compliant pressure achieved
BRIEW23A	7/28/2008 8:30	0	-2.3	102		
BRIEW23A	7/28/2008 8:32	0	-1.9	102		
BRIEW23A	8/4/2008 10:36	0	-0.9	110		
BRIEW23A	8/4/2008 10:38	0	-0.8	105		
BRIEW23A	8/21/2008 11:04	1.3	0	75		
BRIEW23A	8/21/2008 11:06	0	-0.2	80	<1	until compliant pressure achieved
BRIEW23A	9/3/2008 9:34	0	-1	90		
BRIEW23A	9/15/2008 11:31	0	-2.2	100		
BRIEW23A	9/15/2008 11:33	0	-2.1	95		
BRIEW23A	10/1/2008 13:34	0	0	85		
BRIEW23A	10/1/2008 13:36	0	-0.2	85	<1	until compliant pressure achieved
BRIEW23A	10/16/2008 15:28	0	-0.2	102		
BRIEW23A	11/12/2008 10:37	0	0.2	80		
BRIEW23A	11/12/2008 10:40	0	-0.2	110	<1	until compliant pressure achieved
BRIEW23A	11/26/2008 6:57	0	-1.5	108		
BRIEW23A	11/26/2008 7:00	0	-1.2	105		
BRIEW23A	12/8/2008 11:13	0	0.1	98		
BRIEW23A	12/8/2008 11:17	0	-0.2	105	<1	until compliant pressure achieved
BRIEW23A	12/24/2008 9:06	0	-1.7	100		
BRIEW23A	12/24/2008 9:09	0	-1.4	95		
BRIEW24A	7/14/2008 16:24	0	-1.4	110		
BRIEW24A	7/28/2008 8:36	0	-2	110		
BRIEW24A	7/28/2008 8:38	0	-1.3	105		
BRIEW24A	8/4/2008 10:44	0	-0.4	90		
BRIEW24A	8/21/2008 11:11	0	0	72		
BRIEW24A	8/21/2008 11:13	0	-0.4	80	<1	until compliant pressure achieved
BRIEW24A	9/3/2008 9:37	0	-1	90		
BRIEW24A	9/15/2008 11:37	0	-2.3	95		
BRIEW24A	9/15/2008 11:39	12.3	-1.9	90		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563076

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIEW24A	9/15/2008 11:43	0	-2.3	100	<1	until compliant O_2 achieved
BRIEW24A	10/1/2008 13:41	0	-0.2	90		
BRIEW24A	10/16/2008 15:32	0	-0.2	80		
BRIEW24A	11/12/2008 10:44	0	0	95		
BRIEW24A	11/12/2008 10:46	0	-0.3	105	<1	until compliant pressure achieved
BRIEW24A	11/26/2008 7:05	0	-1.6	110		
BRIEW24A	11/26/2008 7:08	0	-1.2	108		
BRIEW24A	12/8/2008 11:22	0	0	100		
BRIEW24A	12/8/2008 11:24	0	-0.2	105	<1	until compliant pressure achieved
BRIEW24A	12/24/2008 9:15	0	-2.1	102		
BRIEW24A	12/24/2008 9:18	0	-1.8	100		
BRIEW25A	7/14/2008 16:28	0.2	0	90		
BRIEW25A	7/14/2008 16:30	0	-0.3	90	<1	until compliant pressure achieved
BRIEW25A	7/28/2008 8:43	0	-1	108		
BRIEW25A	7/28/2008 8:45	0	-0.8	108		
BRIEW25A	8/4/2008 10:48	0.7	-0.4	101		
BRIEW25A	8/21/2008 11:19	0	-0.2	70		
BRIEW25A	8/21/2008 11:21	0	-0.9	95		
BRIEW25A	9/3/2008 9:42	0	-1.1	110		
BRIEW25A	9/3/2008 9:44	0	-0.8	110		
BRIEW25A	9/15/2008 11:47	0	-2	110		
BRIEW25A	9/15/2008 11:50	18.3	-1.7	98		
BRIEW25A	9/15/2008 11:53	0	-2.2	120	<1	until compliant O_2 achieved
BRIEW25A	10/1/2008 13:50	0	-0.6	120		
BRIEW25A	10/1/2008 13:53	4.2	-0.3	112		
BRIEW25A	10/1/2008 13:55	0	-0.8	120		
BRIEW25A	10/16/2008 15:36	0	-0.8	120		
BRIEW25A	10/16/2008 15:39	0	-0.4	118		
BRIEW25A	11/12/2008 10:50	0	0	105		
BRIEW25A	11/12/2008 10:53	0	-0.3	115	<1	until compliant pressure achieved
BRIEW25A	11/26/2008 7:13	0	-0.9	120		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

(O2) 24H: 9/15, 8r
25H 9/15

State of MO v. Republic Services, Inc. et al
PL1 - 0563077

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIEW25A	11/26/2008 7:15	0	-0.8	120		
BRIEW25A	12/8/2008 11:29	0	0	110		
BRIEW25A	12/8/2008 11:32	0	-0.2	120	<1	until compliant pressure achieved
BRIEW25A	12/24/2008 9:24	0	-2.1	112		
BRIEW25A	12/24/2008 9:27	0	-2	112		
BRIEW27A	7/14/2008 16:39	0	0.1	109		
BRIEW27A	7/14/2008 16:42	0	-0.2	120	<1	until compliant pressure achieved
BRIEW27A	7/28/2008 8:56	0	-1	125		
BRIEW27A	7/28/2008 8:59	0	-1.4	125		
BRIEW27A	8/4/2008 10:59	0	-1.8	125		
BRIEW27A	8/4/2008 11:01	0	-1.5	125		
BRIEW27A	8/21/2008 11:32	0	-0.9	122		
BRIEW27A	8/21/2008 11:37	0	-0.6	120		
BRIEW27A	9/3/2008 9:52	0	-0.3	125		
BRIEW27A	9/3/2008 9:54	0	-0.6	130		
BRIEW27A	9/15/2008 13:44	0	-1.6	125		
BRIEW27A	10/1/2008 14:10	0	-0.6	125		
BRIEW27A	10/1/2008 14:13	0	-0.5	122		
BRIEW27A	10/16/2008 15:50	0	-0.3	124		
BRIEW27A	11/12/2008 11:06	0	0	120		
BRIEW27A	11/12/2008 11:10	0	-0.2	129	<1	until compliant pressure achieved
BRIEW27A	11/26/2008 7:30	0	-0.9	125		
BRIEW27A	12/8/2008 12:41	0	-0.2	125		
BRIEW27A	12/24/2008 9:46	0	-2	110		
BRIEW27A	12/24/2008 9:50	0	-1.5	108		
BRIGEW01	7/14/2008 14:51	0	-0.3	110		
BRIGEW01	7/25/2008 8:29	0	-0.2	100		
BRIGEW01	8/4/2008 7:50	0	0	95		
BRIGEW01	8/4/2008 7:52	0	-0.2	95	<1	until compliant pressure achieved
BRIGEW01	8/21/2008 9:00	0	-0.2	100		
BRIGEW01	8/21/2008 9:02	0	-0.4	100		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563078

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW01	9/3/2008 7:11	0	-0.5	100		
BRIGEW01	9/3/2008 7:13	0	-0.2	100		
BRIGEW01	9/15/2008 8:25	0	-0.3	95		
BRIGEW01	9/15/2008 8:27	0	-0.2	95		
BRIGEW01	10/1/2008 9:04	0	0	94		
BRIGEW01	10/1/2008 9:07	0	-0.2	94	<1	until compliant pressure achieved
BRIGEW01	10/16/2008 9:02	0.1	-0.3	123		
BRIGEW01	10/16/2008 9:04	0	-0.2	123		
BRIGEW01	11/12/2008 7:34	0	0	95		
BRIGEW01	11/12/2008 7:38	0	-0.2	95	<1	until compliant pressure achieved
BRIGEW01	11/25/2008 12:47	0	0	90		
BRIGEW01	11/25/2008 12:50	0	-0.2	95	<1	until compliant pressure achieved
BRIGEW01	11/25/2008 16:50	0	-1.8	100		
BRIGEW01	11/25/2008 16:53	0	-0.2	98		
BRIGEW01	12/8/2008 7:56	0	-0.4	102		
BRIGEW01	12/23/2008 13:24	0	-0.4	105		
BRIGEW01	12/23/2008 13:28	0	-0.6	105		
BRIGEW02	7/14/2008 14:55	0	-4.2	118		
BRIGEW02	7/25/2008 8:35	0	-3.9	120		
BRIGEW02	8/4/2008 7:58	0.1	-3.4	122		
BRIGEW02	8/21/2008 9:10	0	-3.1	119		
BRIGEW02	8/21/2008 9:12	0	-3.4	119		
BRIGEW02	9/3/2008 7:19	0	-5	110		
BRIGEW02	9/15/2008 8:32	0	-3.8	127		
BRIGEW02	10/1/2008 9:11	0	-3.1	120		
BRIGEW02	10/16/2008 9:08	0	-4.6	120		
BRIGEW02	11/12/2008 7:44	0	-1.3	120		
BRIGEW02	11/12/2008 7:47	0	-1.5	120		
BRIGEW02	11/25/2008 12:56	0	0.3	120		
BRIGEW02	11/25/2008 13:04	0	0.2	120		
BRIGEW02	11/25/2008 16:58	0	-9.6	120	<1	until compliant pressure achieved

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563079

Bridgeton Landfill Welifield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW02	11/25/2008 17:02	0	-3.8	112		
BRIGEW02	12/8/2008 8:04	0	0.7	118		
BRIGEW02	12/8/2008 8:10	0	-0.2	125	<1	until compliant pressure achieved
BRIGEW02	12/23/2008 14:08	0	-1.8	115		
BRIGEW02	12/23/2008 14:12	0	-1.9	115		
BRIGEW03	7/14/2008 14:59	0	-0.6	115		
BRIGEW03	7/25/2008 8:39	0	-0.9	112		
BRIGEW03	7/25/2008 8:42	0	-0.8	110		
BRIGEW03	8/4/2008 8:03	0	-0.4	110		
BRIGEW03	8/21/2008 9:16	0	-0.4	110		
BRIGEW03	9/3/2008 7:23	0	-0.8	110		
BRIGEW03	9/15/2008 8:35	0	-0.8	110		
BRIGEW03	9/15/2008 8:37	0	-0.8	100		
BRIGEW03	10/1/2008 9:16	0	-0.3	65		
BRIGEW03	10/16/2008 9:21	1	-0.6	58		
BRIGEW03	10/16/2008 9:23	0.9	-0.5	58		
BRIGEW03	11/12/2008 7:51	0	0	50		
BRIGEW03	11/12/2008 7:54	0	-0.2	74	<1	until compliant pressure achieved
BRIGEW03	11/25/2008 14:35	0	-0.2	110		
BRIGEW03	12/8/2008 8:17	0	0	110		
BRIGEW03	12/8/2008 8:20	0	-0.1	112	<1	until compliant pressure achieved
BRIGEW03	12/23/2008 14:18	0	-0.3	110		
BRIGEW04	7/14/2008 15:04	0	-0.5	128		
BRIGEW04	7/25/2008 8:46	0	-0.8	122		
BRIGEW04	7/25/2008 8:48	0	-0.7	122		
BRIGEW04	8/4/2008 8:06	0	-0.3	120		
BRIGEW04	8/21/2008 9:21	0	-0.3	120		
BRIGEW04	9/3/2008 7:27	0	-0.6	120		
BRIGEW04	9/3/2008 7:30	0	-0.7	123		
BRIGEW04	9/15/2008 8:41	0	-0.9	122		
BRIGEW04	9/15/2008 8:43	0	-0.8	120		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563080

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW04	10/1/2008 9:20	0	-0.3	120		
BRIGEW04	10/16/2008 9:27	0	-0.5	119		
BRIGEW04	11/12/2008 7:57	0	-0.2	115		
BRIGEW04	11/12/2008 8:00	0	-0.2	120		
BRIGEW04	11/25/2008 14:39	0	-0.2	120		
BRIGEW04	12/8/2008 8:38	0	-0.2	120		
BRIGEW04	12/23/2008 14:25	0	-0.2	118		
BRIGEW05	7/14/2008 15:08	0	-0.2	100		
BRIGEW05	7/25/2008 8:52	0	-0.4	91		
BRIGEW05	7/25/2008 8:55	0	-0.2	91		
BRIGEW05	8/4/2008 8:09	0	0	92		
BRIGEW05	8/4/2008 8:12	0	-0.2	95	<1	until compliant pressure achieved
BRIGEW05	8/21/2008 9:24	0	-0.4	95		
BRIGEW05	8/21/2008 9:27	0	-0.2	95		
BRIGEW05	9/3/2008 7:34	0	-0.2	95		
BRIGEW05	9/15/2008 8:48	0	-0.5	88		
BRIGEW05	9/15/2008 8:53	0	-0.4	80		
BRIGEW05	10/1/2008 9:24	0	0	65		
BRIGEW05	10/1/2008 9:27	0	-0.2	88	<1	until compliant pressure achieved
BRIGEW05	10/16/2008 9:31	0	-0.4	91		
BRIGEW05	10/16/2008 9:34	0	-0.2	91		
BRIGEW05	11/12/2008 8:05	0	-0.1	90		
BRIGEW05	11/25/2008 14:44	0	0	90		
BRIGEW05	11/25/2008 14:50	0	-0.2	95	<1	until compliant pressure achieved
BRIGEW05	12/8/2008 8:43	0	-0.2	94		
BRIGEW05	12/23/2008 14:32	0	-0.1	90		
BRIGEW06	7/14/2008 15:13	0	-0.2	95		
BRIGEW06	7/25/2008 9:23	0	-0.1	90		
BRIGEW06	7/25/2008 9:27	0	-0.2	90		
BRIGEW06	8/4/2008 8:16	0	0	90		
BRIGEW06	8/4/2008 8:18	0	-0.2	90	<1	until compliant pressure achieved

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563081

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW06	8/21/2008 9:32	0	-0.3	90		
BRIGEW06	9/3/2008 7:39	0	-0.4	90		
BRIGEW06	9/15/2008 8:59	0	-0.6	85		
BRIGEW06	9/15/2008 9:03	0	-0.4	80		
BRIGEW06	10/1/2008 9:32	0	0	80		
BRIGEW06	10/1/2008 9:35	0	0	80		
BRIGEW06	10/1/2008 9:37	0	-0.2	85	<1	until compliant pressure achieved
BRIGEW06	10/16/2008 9:41	0	-0.3	82		
BRIGEW06	10/16/2008 9:43	0	-0.2	82		
BRIGEW06	10/23/2008 10:47	0	-3.3	88		
BRIGEW06	10/23/2008 10:52	0.1	-1.4	88		
BRIGEW06	11/12/2008 8:10	0	0	45		
BRIGEW06	11/12/2008 8:14	0	-0.3	85	<1	until compliant pressure achieved
BRIGEW06	11/25/2008 14:54	0	-0.2	88		
BRIGEW06	11/25/2008 14:59	0	-0.1	85		
BRIGEW06	12/8/2008 8:53	0.2	0	80		
BRIGEW06	12/8/2008 8:55	0	-0.2	80	<1	until compliant pressure achieved
BRIGEW06	12/23/2008 14:55	0	0	85		
BRIGEW06	12/23/2008 14:59	0	-0.4	85	<1	until compliant pressure achieved
BRIGEW07	7/14/2008 15:18	0	-1	115		
BRIGEW07	7/25/2008 9:40	0	-1.7	115		
BRIGEW07	7/25/2008 9:43	0	-2.2	115		
BRIGEW07	8/4/2008 8:24	0	-2.4	115		
BRIGEW07	8/4/2008 8:26	0	-2.8	115		
BRIGEW07	8/21/2008 9:38	0	-3.9	115		
BRIGEW07	8/21/2008 9:40	0	-4.3	115		
BRIGEW07	9/3/2008 7:44	0	-5.4	118		
BRIGEW07	9/3/2008 7:45	0	-5.8	118		
BRIGEW07	9/15/2008 9:07	0	-7.4	118		
BRIGEW07	10/1/2008 9:45	0	-6.7	119		
BRIGEW07	10/1/2008 9:48	0	-6.5	119		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563082

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000419

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW07	10/16/2008 9:50	0	-6.4	118		
BRIGEW07	11/12/2008 8:20	0	-6.1	117		
BRIGEW07	11/25/2008 15:03	0	-5.8	115		
BRIGEW07	12/8/2008 9:16	0	-5.5	115		
BRIGEW07	12/24/2008 7:30	0	-6.1	115		
BRIGEW08	7/14/2008 15:23	0	-0.3	125		
BRIGEW08	7/25/2008 9:50	0	-0.6	122		
BRIGEW08	7/25/2008 9:52	0	-0.4	122		
BRIGEW08	8/4/2008 8:41	0	-0.1	122		
BRIGEW08	8/4/2008 8:43	0	-0.5	128		
BRIGEW08	8/21/2008 9:44	0	-0.9	125		
BRIGEW08	9/3/2008 7:49	0	-1.4	128		
BRIGEW08	9/15/2008 9:12	0	-1.7	122		
BRIGEW08	10/1/2008 9:53	0	-1.2	124		
BRIGEW08	10/1/2008 9:55	0	-0.9	124		
BRIGEW08	10/16/2008 9:54	0	-1	120		
BRIGEW08	11/12/2008 8:41	0	-0.6	121		
BRIGEW08	11/25/2008 15:08	0	-0.5	120		
BRIGEW08	12/8/2008 9:21	0	-0.3	120		
BRIGEW08	12/24/2008 7:34	0	-0.6	120		
BRIGEW09	7/14/2008 15:26	0	-0.2	115		
BRIGEW09	7/25/2008 9:58	0	-0.8	108		
BRIGEW09	7/25/2008 10:02	0	-0.5	108		
BRIGEW09	8/4/2008 8:47	0	-0.2	101		
BRIGEW09	8/21/2008 9:48	0	-0.2	90		
BRIGEW09	9/3/2008 7:53	0	-0.4	102		
BRIGEW09	9/15/2008 9:30	0	-0.7	80		
BRIGEW09	9/15/2008 9:41	0	-0.6	80		
BRIGEW09	10/1/2008 10:14	14	-0.3	74		
BRIGEW09	10/1/2008 10:16	0	-0.5	85	<1	until compliant O_2 achieved
BRIGEW09	10/16/2008 9:58	0	-0.4	105		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563083

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW09	10/16/2008 10:02	0	-0.3	105		
BRIGEW09	11/12/2008 8:49	0	0	85		
BRIGEW09	11/12/2008 8:51	0	-0.2	115	<1	until compliant pressure achieved
BRIGEW09	11/25/2008 15:12	0	-0.4	112		
BRIGEW09	11/25/2008 15:15	0	-0.3	112		
BRIGEW09	12/8/2008 9:26	0	0	110		
BRIGEW09	12/8/2008 9:29	0	-0.2	110	<1	until compliant pressure achieved
BRIGEW09	12/24/2008 7:40	0	-0.5	108		
BRIGEW09	12/24/2008 7:44	0	-0.3	108		
BRIGEW10	7/14/2008 15:30	0	-11.2	122		
BRIGEW10	7/25/2008 11:18	0	-10.5	121		
BRIGEW10	7/25/2008 11:20	0	-10.8	121		
BRIGEW10	8/4/2008 8:51	0	-11.8	120		
BRIGEW10	8/4/2008 8:53	0	-12	120		
BRIGEW10	8/21/2008 9:52	0	-12	120		
BRIGEW10	9/3/2008 8:19	0	-12	123		
BRIGEW10	9/3/2008 8:21	0	-12.3	123		
BRIGEW10	9/15/2008 9:53	0	-13.2	122		
BRIGEW10	9/15/2008 9:55	0	-13.5	122		
BRIGEW10	10/1/2008 10:21	0	-13.9	121		
BRIGEW10	10/1/2008 10:23	0	-13.2	121		
BRIGEW10	10/16/2008 11:38	6.4	-9.2	110		
BRIGEW10	10/16/2008 13:22	14.9	0.5	75		
BRIGEW10	10/16/2008 13:27	0	-2.8	120	<1	until compliant pressure and O_2 achieved
BRIGEW10	11/12/2008 8:55	0	-4.9	120		
BRIGEW10	11/12/2008 8:57	0	-5.2	120		
BRIGEW10	11/25/2008 15:20	0	-5.4	120		
BRIGEW10	11/25/2008 15:22	0	-5.7	120		
BRIGEW10	12/8/2008 9:33	0	-5.7	120		
BRIGEW10	12/8/2008 9:35	0	-6.1	120		
BRIGEW10	12/24/2008 7:49	0	-6.7	120		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563084

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW10	12/24/2008 7:52	0	-7	120		
BRIGEW11	7/14/2008 15:34	0	-2.2	120		
BRIGEW11	7/25/2008 11:25	0	-2.5	122		
BRIGEW11	7/25/2008 11:28	0	-2.7	128		
BRIGEW11	8/4/2008 8:59	0	-3.2	135		
BRIGEW11	8/4/2008 9:02	0	-2.7	125	<1	until compliant temperature achieved
BRIGEW11	8/21/2008 9:56	0	-1.9	110		
BRIGEW11	8/21/2008 9:59	0	-2.3	123		
BRIGEW11	9/3/2008 8:28	0	-3.2	130		
BRIGEW11	9/15/2008 10:00	0	-4.4	105		
BRIGEW11	9/15/2008 10:03	0	-4.9	100		
BRIGEW11	10/1/2008 10:29	0	-5.8	102		
BRIGEW11	10/16/2008 13:35	0	-1.3	135		
BRIGEW11	10/16/2008 13:38	0	-0.8	130	<1	until compliant temperature achieved
BRIGEW11	11/12/2008 9:04	0	-0.9	128		
BRIGEW11	11/12/2008 9:07	0	-0.9	128		
BRIGEW11	11/25/2008 15:28	0	-1.7	129		
BRIGEW11	11/25/2008 15:30	0	-1.9	130		
BRIGEW11	12/8/2008 9:43	0	-1.8	128		
BRIGEW11	12/8/2008 9:46	0	-2.1	129		
BRIGEW11	12/24/2008 7:56	0	-3.2	122		
BRIGEW13	7/14/2008 15:47	0	0	125		
BRIGEW13	7/14/2008 15:48	0	-0.2	129	<1	until compliant pressure achieved
BRIGEW13	7/25/2008 11:55	0	-1.4	130		
BRIGEW13	8/4/2008 9:14	0	-1.5	135		
BRIGEW13	8/4/2008 9:18	0	-0.4	130	<1	until compliant temperature achieved
BRIGEW13	8/21/2008 10:12	0	0.2	85		
BRIGEW13	8/21/2008 10:16	0	-0.2	110	<1	until compliant pressure achieved
BRIGEW13	9/3/2008 8:39	0	-0.4	112		
BRIGEW13	9/3/2008 8:41	0	-0.2	112		
BRIGEW13	9/15/2008 10:14	0	-1.9	105		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

O2 BRIGEW(13) : 10/16

11 8/4

11 10/1

13 8/4

State of MO v. Republic Services, Inc. et al
PL1 - 0563085

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW13	10/1/2008 12:13	0	0	92		
BRIGEW13	10/1/2008 12:16	0	-0.3	115	<1	until compliant pressure achieved
BRIGEW13	10/16/2008 13:50	0	-0.8	129		
BRIGEW13	11/12/2008 9:34	0	-0.4	130		
BRIGEW13	11/25/2008 15:43	0	-0.9	130		
BRIGEW13	12/8/2008 10:08	0	0	125		
BRIGEW13	12/8/2008 10:11	0	-0.2	125	<1	until compliant pressure achieved
BRIGEW13	12/24/2008 8:01	0	-0.4	125		
BRIGEW15	7/14/2008 16:16	0	0	100		
BRIGEW15	7/14/2008 16:18	0	-0.2	90	<1	until compliant pressure achieved
BRIGEW15	7/25/2008 12:07	0	-0.5	98		
BRIGEW15	7/25/2008 12:10	0	-0.2	95		
BRIGEW15	8/4/2008 9:27	0	-0.4	90		
BRIGEW15	8/4/2008 9:33	19.9	-0.4	90		
BRIGEW15	8/4/2008 9:36	0	-0.7	90	<1	until compliant O_2 achieved
BRIGEW15	8/21/2008 10:25	0	-0.6	100		
BRIGEW15	9/3/2008 8:49	0	-0.8	105		
BRIGEW15	9/3/2008 8:51	0	-0.7	105		
BRIGEW15	9/15/2008 10:28	0	-1.7	90		
BRIGEW15	9/15/2008 10:30	7.5	-1.5	80		
BRIGEW15	9/15/2008 10:33	0	-1.6	90	<1	until compliant O_2 achieved
BRIGEW15	10/1/2008 12:33	0	-0.4	95		
BRIGEW15	10/1/2008 12:36	0	-0.3	90		
BRIGEW15	10/16/2008 14:00	0	0	72		
BRIGEW15	10/16/2008 14:03	0	-0.2	90	<1	until compliant pressure achieved
BRIGEW15	11/12/2008 9:45	0	-0.3	96		
BRIGEW15	11/25/2008 15:56	0	-0.4	92		
BRIGEW15	11/25/2008 15:59	0	-0.3	88		
BRIGEW15	12/8/2008 10:20	0	0.2	60		
BRIGEW15	12/8/2008 10:25	0	-0.1	100	<1	until compliant pressure achieved
BRIGEW15	12/24/2008 8:12	0	-0.3	105		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563086

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW16	7/14/2008 16:07	0	0	85		
BRIGEW16	7/14/2008 16:09	0	-0.6	75	<1	until compliant pressure achieved
BRIGEW16	7/25/2008 12:15	0	-0.7	82		
BRIGEW16	8/4/2008 9:57	0	-1	91		
BRIGEW16	8/4/2008 9:59	0	-0.6	91		
BRIGEW16	8/21/2008 10:29	16.6	-0.4	70		
BRIGEW16	8/21/2008 10:31	0	-1.9	80	<1	until compliant O_2 achieved
BRIGEW16	9/3/2008 8:56	0	-1.7	82		
BRIGEW16	9/3/2008 8:57	0	-1	82		
BRIGEW16	9/15/2008 10:43	0	-2.3	68		
BRIGEW16	9/15/2008 10:45	0	-2	75		
BRIGEW16	10/1/2008 12:41	4.8	-0.3	72		
BRIGEW16	10/1/2008 12:44	0	-0.8	70		
BRIGEW16	10/16/2008 14:08	0	-0.3	70		
BRIGEW16	11/12/2008 9:50	0	-0.3	62		
BRIGEW16	11/25/2008 16:03	0	-0.4	58		
BRIGEW16	11/25/2008 16:06	0	-0.2	58		
BRIGEW16	12/8/2008 10:29	0	0.3	42		
BRIGEW16	12/8/2008 10:31	0	-0.1	45	<1	until compliant pressure achieved
BRIGEW16	12/24/2008 8:17	0	-0.3	60		
BRIGEW17	7/10/2008 15:09	0	0.9	99		
BRIGEW17	7/10/2008 15:12	0	-0.4	94	<1	until compliant pressure achieved
BRIGEW17	7/25/2008 12:20	0	-1.4	120		
BRIGEW17	8/4/2008 10:03	0	-1.8	120		
BRIGEW17	8/21/2008 10:36	0	-1.6	120		
BRIGEW17	9/3/2008 9:02	0	-1.8	120		
BRIGEW17	9/15/2008 10:50	0	-3.6	118		
BRIGEW17	9/15/2008 10:52	0	-2.7	110		
BRIGEW17	10/1/2008 12:49	0	0	100		
BRIGEW17	10/1/2008 12:51	0	-0.3	110	<1	until compliant pressure achieved
BRIGEW17	10/16/2008 14:12	0	-0.2	112		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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8/14
9/15

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State of MO v. Republic Services, Inc. et al
PL1 - 0563087

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW17	11/12/2008 9:54	0	-0.2	111		
BRIGEW17	11/25/2008 16:18	0	-0.1	110		
BRIGEW17	12/8/2008 10:36	0	0.4	110		
BRIGEW17	12/8/2008 10:38	0	-0.2	118	<1	until compliant pressure achieved
BRIGEW17	12/24/2008 8:22	0	-1.6	118		
BRIGEW17	12/24/2008 8:24	0	-1.2	115		
BRIGEW18	7/10/2008 15:17	5.7	-1.6	120		
BRIGEW18	7/10/2008 15:19	5.8	-0.8	120		
BRIGEW18	7/25/2008 12:24	5.5	-0.8	118		
BRIGEW18	7/25/2008 12:27	7.5	-0.2	111		
BRIGEW18	8/4/2008 10:12	2.2	-0.2	118	25	until compliant O_2 achieved
BRIGEW18	8/21/2008 10:40	1.7	-0.1	118		
BRIGEW18	8/21/2008 10:42	2.6	-0.3	120		
BRIGEW18	9/3/2008 9:06	2.8	-0.3	118		
BRIGEW18	9/15/2008 10:57	3.2	-1.4	110		
BRIGEW18	10/1/2008 12:57	0.2	-0.2	120		
BRIGEW18	10/16/2008 14:17	0	0	120		
BRIGEW18	10/16/2008 14:20	1	-0.2	118	<1	until compliant pressure achieved
BRIGEW18	11/12/2008 9:59	1.3	-0.6	115		
BRIGEW18	11/12/2008 10:00	1.5	-0.2	115		
BRIGEW18	11/25/2008 16:23	0	0.4	110		
BRIGEW18	11/25/2008 16:27	0	-0.2	115	<1	until compliant pressure achieved
BRIGEW18	12/8/2008 10:42	0	-0.3	119		
BRIGEW18	12/24/2008 8:32	0.2	-1	111		
BRIGEW22	7/10/2008 15:43	0	-1.4	110		
BRIGEW22	7/10/2008 15:45	0	-2.2	110		
BRIGEW22	7/28/2008 8:26	0	-3.9	110		
BRIGEW22	8/4/2008 10:32	0	-4.2	115		
BRIGEW22	8/21/2008 11:00	0	-3	110		
BRIGEW22	9/3/2008 9:29	0	-4.7	102		
BRIGEW22	9/15/2008 11:24	0	-5.6	117		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563088

Device ID	Date/Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW22	9/15/2008 11:26	0	-4.8	117		
BRIGEW22	10/1/2008 13:25	0	-2	115		
BRIGEW22	10/1/2008 13:28	0	-1.6	115		
BRIGEW22	10/16/2008 14:52	0	-0.8	110		
BRIGEW22	10/16/2008 14:55	0	-1.3	110		
BRIGEW22	11/12/2008 10:27	0	-1.5	111		
BRIGEW22	11/12/2008 10:31	0	-2.2	114		
BRIGEW22	11/26/2008 6:49	0	-4.6	112		
BRIGEW22	11/26/2008 6:51	0	-4.5	112		
BRIGEW22	12/8/2008 11:07	0	-3.7	110		
BRIGEW22	12/24/2008 9:01	0	-4.6	108		
BRIGEW26	7/14/2008 16:34	0	0	103		
BRIGEW26	7/14/2008 16:36	0	-0.5	103	<1	until compliant pressure achieved
BRIGEW26	7/28/2008 8:49	0	-1.7	111		
BRIGEW26	8/4/2008 10:52	0	-1.4	120		
BRIGEW26	8/21/2008 11:25	0	-0.9	112		
BRIGEW26	8/21/2008 11:27	0	-0.3	112		
BRIGEW26	9/3/2008 9:48	0	-0.1	70		
BRIGEW26	9/15/2008 12:00	0	-1.1	71		
BRIGEW26	9/15/2008 12:03	5.1	-0.8	71		
BRIGEW26	9/15/2008 12:06	0.5	-1.4	71	<1	until compliant O_2 achieved
BRIGEW26	10/1/2008 14:01	0	-0.1	90		
BRIGEW26	10/1/2008 14:04	0	-0.1	95		
BRIGEW26	10/16/2008 15:43	0	0	80		
BRIGEW26	10/16/2008 15:46	0	-0.3	90	<1	until compliant pressure achieved
BRIGEW26	11/12/2008 10:57	0	0	80		
BRIGEW26	11/12/2008 11:01	0	-0.2	88	<1	until compliant pressure achieved
BRIGEW26	11/26/2008 7:20	0	-0.4	50		
BRIGEW26	11/26/2008 7:23	0	-0.3	50		
BRIGEW26	12/8/2008 11:37	0	0.2	80		
BRIGEW26	12/8/2008 11:40	0	-0.3	90	<1	until compliant pressure achieved

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

O_2 18 7/10, 7/25,
26 9/5

State of MO v. Republic Services, Inc. et al
PL1 - 0563089

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000426

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW26	12/24/2008 9:33	0	-1.8	82		
BRIGEW26	12/24/2008 9:38	0	-1.2	80		
BRIGEW28	7/14/2008 16:46	0	-1.3	130		
BRIGEW28	7/28/2008 9:03	0	-1.9	128		
BRIGEW28	7/28/2008 9:05	0	-2.4	129		
BRIGEW28	8/4/2008 11:05	0	-2.6	129		
BRIGEW28	8/21/2008 11:40	0	-2.2	129		
BRIGEW28	9/3/2008 9:58	0	-2	130		
BRIGEW28	9/15/2008 13:49	0	-2.6	129		
BRIGEW28	10/1/2008 14:31	0	-1.8	130		
BRIGEW28	10/16/2008 15:56	0	-1.7	130		
BRIGEW28	11/12/2008 11:14	0	-1.5	130		
BRIGEW28	11/26/2008 7:33	0	-1.9	130		
BRIGEW28	12/8/2008 12:45	0	-1.1	130		
BRIGEW28	12/24/2008 9:54	0	-3.2	130		
BRIGEW29	7/14/2008 16:53	0.4	-0.2	90		
BRIGEW29	7/28/2008 9:11	8.7	-1	70		
BRIGEW29	7/28/2008 9:13	0	-1.4	80	<1	until compliant O_2 achieved
BRIGEW29	8/4/2008 11:10	0	-1.8	102		
BRIGEW29	8/21/2008 11:44	0	-1.4	95		
BRIGEW29	8/21/2008 11:47	0	-1.1	95		
BRIGEW29	9/3/2008 10:05	0	-0.8	60		
BRIGEW29	9/15/2008 13:55	0.9	-2.2	70		
BRIGEW29	10/1/2008 14:37	0.5	-0.9	80		
BRIGEW29	10/16/2008 16:00	0	-1.1	73		
BRIGEW29	11/12/2008 11:19	0.7	-0.7	60		
BRIGEW29	11/26/2008 7:38	0	-1	34		
BRIGEW29	12/8/2008 12:49	0	0	50		
BRIGEW29	12/8/2008 12:51	0	-0.2	65	<1	until compliant pressure achieved
BRIGEW29	12/24/2008 10:01	0	-2.6	70		
BRIGEW29	12/24/2008 10:07	0	-2.4	55		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563090

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW30	7/14/2008 16:58	0	-3.2	128		
BRIGEW30	7/28/2008 9:18	0	-3.9	128		
BRIGEW30	7/28/2008 9:21	0	-4.4	128		
BRIGEW30	8/4/2008 11:16	0	-5.2	130		
BRIGEW30	8/21/2008 11:52	0	-4.8	130		
BRIGEW30	9/3/2008 10:09	0	-4.7	130		
BRIGEW30	9/15/2008 14:00	0	-5.6	130		
BRIGEW30	10/1/2008 14:42	0	-4.4	130		
BRIGEW30	10/16/2008 16:04	0	-4.5	130		
BRIGEW30	11/12/2008 11:25	0	-4.2	129		
BRIGEW30	11/26/2008 7:42	0	-4.7	130		
BRIGEW30	12/8/2008 13:02	0	-3.6	129		
BRIGEW30	12/24/2008 10:13	0	-6.2	130		
BRIGEW31	7/14/2008 17:05	0	-13.2	130		
BRIGEW31	7/28/2008 9:48	0	-12.6	130		
BRIGEW31	8/4/2008 11:43	0.5	-12.4	128		
BRIGEW31	8/21/2008 12:08	0.6	-12.4	130		
BRIGEW31	9/3/2008 10:20	0	-11.6	131		
BRIGEW31	9/3/2008 10:22	0	-9.4	130	<1	until compliant temperature achieved
BRIGEW31	9/15/2008 14:04	0	-9.4	130		
BRIGEW31	10/1/2008 14:48	0	-8.6	130		
BRIGEW31	10/16/2008 16:12	0	-8.9	130		
BRIGEW31	11/12/2008 11:31	0	-9.2	130		
BRIGEW31	11/26/2008 7:54	0	-9.4	130		
BRIGEW31	12/8/2008 13:17	0.1	-8.4	128		
BRIGEW31	12/8/2008 13:20	0.3	-8.6	129		
BRIGEW31	12/24/2008 10:19	0	-10.7	130		
BRIGEW32	7/14/2008 17:08	0	-0.6	100		
BRIGEW32	7/28/2008 9:53	0	-0.2	92		
BRIGEW32	8/4/2008 11:32	0	-0.2	92		
BRIGEW32	8/21/2008 12:12	0	0.2	90		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

O2 | 29 + 7/28

Temp 31 9/3

State of MO v. Republic Services, Inc. et al
PL1 - 0563091

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW32	8/21/2008 12:14	0	-0.6	95	<1	until compliant pressure achieved
BRIGEW32	9/3/2008 10:26	0	0	100		
BRIGEW32	9/3/2008 10:28	0	-0.3	105	<1	until compliant pressure achieved
BRIGEW32	9/15/2008 14:09	0	-0.5	90		
BRIGEW32	9/15/2008 14:12	0	-0.4	90		
BRIGEW32	10/1/2008 14:53	0	1.5	88		
BRIGEW32	10/1/2008 14:55	0	-0.4	94	<1	until compliant pressure achieved
BRIGEW32	10/16/2008 16:17	0	-3.8	121		
BRIGEW32	11/12/2008 11:36	0	-3.6	120		
BRIGEW32	11/26/2008 7:58	0	-4	120		
BRIGEW32	12/8/2008 13:27	0	-2.2	120		
BRIGEW32	12/24/2008 10:26	0	-5.9	118		
BRIGEW33	7/14/2008 17:17	0	0	108		
BRIGEW33	7/14/2008 17:18	0	-0.8	112	<1	until compliant pressure achieved
BRIGEW33	7/28/2008 9:57	0	-2.4	125		
BRIGEW33	7/28/2008 9:59	0	-1.6	125		
BRIGEW33	8/4/2008 11:48	0	-0.7	120		
BRIGEW33	8/4/2008 11:51	0	-0.4	120		
BRIGEW33	8/21/2008 12:19	0	0.5	80		
BRIGEW33	8/21/2008 12:21	0	-0.3	90	<1	until compliant pressure achieved
BRIGEW33	9/3/2008 10:32	0	-1.2	120		
BRIGEW33	9/3/2008 10:34	0	-0.3	112		
BRIGEW33	9/15/2008 14:16	0	-0.5	75		
BRIGEW33	9/15/2008 14:18	0	-0.5	75		
BRIGEW33	10/1/2008 15:00	0	1.6	80		
BRIGEW33	10/1/2008 15:02	0	-0.4	90	<1	until compliant pressure achieved
BRIGEW33	10/16/2008 16:24	0	-3.1	135		
BRIGEW33	10/16/2008 16:26	0	-2.1	130	<1	until compliant temperature achieved
BRIGEW33	11/12/2008 11:39	0	-0.1	115		
BRIGEW33	11/26/2008 8:02	0	-0.2	110		
BRIGEW33	12/8/2008 13:31	0	1.8	100		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563092

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000429

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW33	12/8/2008 13:37	0	-0.2	125	<1	until compliant pressure achieved
BRIGEW33	12/24/2008 10:31	0	-5.9	129		
BRIGEW33	12/24/2008 10:35	0	-4.6	125		
BRIGEW34	7/14/2008 17:22	0	-0.7	125		
BRIGEW34	7/28/2008 10:03	0	-1	128		
BRIGEW34	8/4/2008 11:55	0	-1.2	130		
BRIGEW34	8/21/2008 12:26	0	-1	128		
BRIGEW34	9/3/2008 10:38	0	-1.4	128		
BRIGEW34	9/3/2008 10:40	0	-0.7	122		
BRIGEW34	9/15/2008 14:22	0	-1.2	80		
BRIGEW34	9/15/2008 14:23	0	-1.2	80		
BRIGEW34	10/1/2008 15:07	0	0	78		
BRIGEW34	10/1/2008 15:11	0	-0.3	95	<1	until compliant pressure achieved
BRIGEW34	10/16/2008 16:31	0	-0.3	110		
BRIGEW34	11/12/2008 11:43	0	0.1	105		
BRIGEW34	11/12/2008 11:45	0	-0.3	120	<1	until compliant pressure achieved
BRIGEW34	11/26/2008 8:29	0	-1.3	129		
BRIGEW34	12/8/2008 13:42	0	0	128		
BRIGEW34	12/8/2008 13:45	0	-0.2	130	<1	until compliant pressure achieved
BRIGEW34	12/24/2008 10:39	0	-3.2	128		
BRIGEW35	7/14/2008 17:25	0	-1.8	120		
BRIGEW35	7/28/2008 10:09	0	-1.8	120		
BRIGEW35	8/4/2008 11:59	0	-2.1	120		
BRIGEW35	8/21/2008 12:30	0	-1.9	120		
BRIGEW35	9/3/2008 10:44	0	-2.4	120		
BRIGEW35	9/15/2008 14:29	0	-3.5	120		
BRIGEW35	10/1/2008 15:16	0	-2.1	120		
BRIGEW35	10/1/2008 15:19	0	-1.8	118		
BRIGEW35	10/20/2008 7:53	0	-1.6	119		
BRIGEW35	11/12/2008 11:50	0	-1	120		
BRIGEW35	11/26/2008 8:33	0	-1.6	118		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

Temp 33 10/16.

State of MO v. Republic Services, Inc. et al
PL1 - 0563093

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW35	12/8/2008 13:50	0	-0.1	119		
BRIGEW35	12/24/2008 10:44	0	-3.6	119		
BRIGEW35	12/24/2008 10:46	0	-3.1	115		
BRIGEW36	7/14/2008 17:29	0	-0.2	110		
BRIGEW36	7/28/2008 10:13	0	-0.9	100		
BRIGEW36	8/4/2008 12:06	0	-1.1	110		
BRIGEW36	8/4/2008 12:08	0	-0.9	110		
BRIGEW36	8/21/2008 12:34	10.9	-0.6	75		
BRIGEW36	8/21/2008 12:36	0	-0.9	85	<1	until compliant O_2 achieved
BRIGEW36	9/3/2008 10:48	0	-1.6	95		
BRIGEW36	9/3/2008 10:50	0	-1.3	92		
BRIGEW36	9/15/2008 14:33	0	-2.5	69		
BRIGEW36	9/15/2008 14:37	0	-2.8	90		
BRIGEW36	9/15/2008 14:39	0	-2.5	75		
BRIGEW36	10/1/2008 15:23	0	-1	78		
BRIGEW36	10/1/2008 15:24	0	-1	78		
BRIGEW36	10/20/2008 8:02	1.2	-0.8	55		
BRIGEW36	11/12/2008 11:57	0.7	0	64		
BRIGEW36	11/12/2008 11:59	0	-0.2	75	<1	until compliant pressure achieved
BRIGEW36	11/26/2008 8:37	0	-1.2	108		
BRIGEW36	11/26/2008 8:39	0	-1	100		
BRIGEW36	12/8/2008 13:56	0	0.8	78		
BRIGEW36	12/8/2008 14:03	0	-0.1	115	<1	until compliant pressure achieved
BRIGEW36	12/24/2008 10:50	0	-4.3	105		
BRIGEW36	12/24/2008 10:53	0	-3.6	100		
BRIGEW37	7/14/2008 17:32	0	0	125		
BRIGEW37	7/14/2008 17:35	0	-0.2	130	<1	until compliant pressure achieved
BRIGEW37	7/28/2008 10:18	0	-1	120		
BRIGEW37	8/4/2008 12:12	0	-1	118		
BRIGEW37	8/21/2008 12:40	0	-1	112		
BRIGEW37	9/3/2008 10:53	0	-1.4	120		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563094

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW37	9/15/2008 14:43	0	-2.3	105		
BRIGEW37	10/1/2008 15:28	0	-1.2	115		
BRIGEW37	10/1/2008 15:31	0	-1	115		
BRIGEW37	10/20/2008 8:06	0	-0.6	120		
BRIGEW37	10/20/2008 8:09	0	-0.4	115		
BRIGEW37	11/12/2008 12:04	0	0.2	115		
BRIGEW37	11/12/2008 12:07	0	-0.2	127	<1	until compliant pressure achieved
BRIGEW37	11/26/2008 8:43	0	-1	119		
BRIGEW37	12/8/2008 14:08	0	0.3	127		
BRIGEW37	12/8/2008 14:12	0	-0.2	130	<1	until compliant pressure achieved
BRIGEW37	12/24/2008 10:59	0	-3.5	115		
BRIGEW37	12/24/2008 11:02	0	-2.9	105		
BRIGEW38	7/14/2008 17:39	0	-1	120		
BRIGEW38	7/28/2008 10:32	0	-1.7	119		
BRIGEW38	7/28/2008 10:34	0	-2	120		
BRIGEW38	8/4/2008 12:17	0	-2.6	120		
BRIGEW38	8/21/2008 12:44	0	-2.8	120		
BRIGEW38	8/21/2008 12:46	1	-3	120		
BRIGEW38	8/21/2008 12:49	0	-2.6	120		
BRIGEW38	9/3/2008 10:57	0	-3	120		
BRIGEW38	9/15/2008 14:47	0	-3.8	120		
BRIGEW38	10/1/2008 15:47	0	-2.6	120		
BRIGEW38	10/1/2008 15:50	0	-2.5	120		
BRIGEW38	10/20/2008 8:12	0	-2	120		
BRIGEW38	10/20/2008 8:15	0	-2.3	120		
BRIGEW38	11/12/2008 12:11	0	-1.8	120		
BRIGEW38	11/26/2008 8:47	0	-2.6	120		
BRIGEW38	12/8/2008 14:18	0	-1.2	118		
BRIGEW38	12/24/2008 11:09	0	-4.5	115		
BRIGEW39	7/14/2008 17:42	0	-0.8	118		
BRIGEW39	7/28/2008 10:42	0	-0.9	118		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

O_2. 36 8/21

State of MO v. Republic Services, Inc. et al
PL1 - 0563095

Device ID	Date Time	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW39	7/28/2008 10:44	0	-1.1	118		
BRIGEW39	8/4/2008 12:20	0	-1.4	118		
BRIGEW39	8/21/2008 12:52	0	-1.2	118		
BRIGEW39	8/21/2008 12:54	0	-1.6	118		
BRIGEW39	9/3/2008 11:01	0	-1.9	118		
BRIGEW39	9/3/2008 11:02	0	-2.2	118		
BRIGEW39	9/15/2008 14:50	0	-2.6	115		
BRIGEW39	9/15/2008 14:52	0	-2.2	115		
BRIGEW39	10/1/2008 15:56	0	-1.2	115		
BRIGEW39	10/20/2008 8:19	0	-1.2	115		
BRIGEW39	10/20/2008 8:21	0	-1.4	115		
BRIGEW39	11/12/2008 12:15	0	-1	115		
BRIGEW39	11/12/2008 12:16	0	-1.3	115		
BRIGEW39	11/26/2008 8:50	0	-1.9	115		
BRIGEW39	12/8/2008 14:22	0	-1	115		
BRIGEW39	12/8/2008 14:24	0	-1.2	115		
BRIGEW39	12/24/2008 11:12	0	-3.1	112		
BRIGEW40	7/14/2008 17:49	0	-1.1	100		
BRIGEW40	7/28/2008 10:49	0	-1.2	100		
BRIGEW40	7/28/2008 10:52	0	-1.6	98		
BRIGEW40	8/4/2008 13:02	0	-1.7	105		
BRIGEW40	8/21/2008 13:52	0	-1.8	100		
BRIGEW40	9/3/2008 11:42	0	-2.2	90		
BRIGEW40	9/3/2008 11:44	0	-2.8	90		
BRIGEW40	9/16/2008 6:58	0.4	-3.4	105		
BRIGEW40	9/16/2008 7:01	0.1	-2.9	105		
BRIGEW40	10/2/2008 7:39	0	-2.2	102		
BRIGEW40	10/20/2008 8:35	0	-2.2	102		
BRIGEW40	11/12/2008 13:31	0	-1.9	100		
BRIGEW40	11/12/2008 13:34	0	-1.5	100		
BRIGEW40	11/26/2008 8:54	0	-1.8	100		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563096

Deviation	Date Time	30 Minute Average (inches H2O)	Instantaneous Pressure (inches H2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW40	11/26/2008 8:55	0	-1.3	100		
BRIGEW40	12/8/2008 14:43	0	-0.7	95		
BRIGEW40	12/8/2008 14:45	0	-0.5	95		
BRIGEW40	12/24/2008 12:20	0	-2.3	90		
BRIGEW40	12/24/2008 12:22	0	-1.7	80		
BRIGEW41	7/14/2008 17:53	0	-0.7	118		
BRIGEW41	7/28/2008 11:00	0	-0.9	115		
BRIGEW41	8/4/2008 13:06	0	-0.8	120		
BRIGEW41	8/21/2008 13:56	0	-0.8	118		
BRIGEW41	9/3/2008 11:47	0	-1.4	110		
BRIGEW41	9/3/2008 11:49	0	-1.6	110		
BRIGEW41	9/16/2008 7:05	0	-2.4	125		
BRIGEW41	9/16/2008 7:08	0	-1.9	120		
BRIGEW41	10/2/2008 7:43	0	-1.2	120		
BRIGEW41	10/20/2008 8:41	0	-1.1	120		
BRIGEW41	11/12/2008 13:38	0	-0.7	120		
BRIGEW41	11/12/2008 13:41	0	-0.4	118		
BRIGEW41	11/26/2008 9:07	0	-0.6	115		
BRIGEW41	12/8/2008 14:51	0	-0.1	110		
BRIGEW41	12/24/2008 12:27	0	-2.2	110		
BRIGEW41	12/24/2008 12:29	0	-1.9	100		
BRIGEW42	7/14/2008 17:58	0	-0.8	115		
BRIGEW42	7/28/2008 11:04	0	-1.3	109		
BRIGEW42	8/4/2008 13:10	0	-1	115		
BRIGEW42	8/21/2008 13:59	0	-0.8	110		
BRIGEW42	8/21/2008 14:01	0	-1.3	110		
BRIGEW42	9/3/2008 11:53	0	-2	108		
BRIGEW42	9/3/2008 11:55	0	-2.6	108		
BRIGEW42	9/16/2008 7:13	0	-2.9	102		
BRIGEW42	9/16/2008 7:15	0	-2.3	94		
BRIGEW42	10/2/2008 7:47	0	-1.6	104		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563097

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW42	10/20/2008 8:47	0	-1.5	100		
BRIGEW42	11/12/2008 13:45	0	-1.2	102		
BRIGEW42	11/12/2008 13:47	0	-0.8	102		
BRIGEW42	11/26/2008 9:11	0	-1	92		
BRIGEW42	11/26/2008 9:19	0	-0.6	92		
BRIGEW42	12/8/2008 14:55	0	0	85		
BRIGEW42	12/8/2008 14:57	0	-0.5	85	<1	until compliant pressure achieved
BRIGEW42	12/24/2008 12:33	0	-2.7	80		
BRIGEW42	12/24/2008 12:35	0	-2.4	75		
BRIGEW43	7/14/2008 18:01	0	-1.5	120		
BRIGEW43	7/28/2008 11:08	0	-1.7	121		
BRIGEW43	8/4/2008 13:15	1.2	-1.4	128		
BRIGEW43	8/4/2008 13:17	0	-0.8	123		
BRIGEW43	8/21/2008 14:06	0.2	-0.2	120		
BRIGEW43	9/3/2008 12:01	0.2	-0.8	110		
BRIGEW43	9/16/2008 7:22	15.1	-1.2	125		
BRIGEW43	9/16/2008 7:27	17.3	-1	118		
BRIGEW43	9/16/2008 7:32	10.9	-1.5	128		
BRIGEW43	9/16/2008 7:37	16.3	-1.1	120		
BRIGEW43	10/1/2008 16:01	0	-0.2	115	15	until compliant O_2 achieved
BRIGEW43	10/20/2008 8:53	0	-0.3	115		
BRIGEW43	10/20/2008 8:55	0	-0.4	120		
BRIGEW43	11/12/2008 13:52	0	-0.2	120		
BRIGEW43	11/26/2008 9:26	0	-0.6	120		
BRIGEW43	12/8/2008 15:01	0	0	105		
BRIGEW43	12/8/2008 15:05	0	-0.2	120	<1	until compliant pressure achieved
BRIGEW43	12/24/2008 12:39	0	-2.5	118		
BRIGEW43	12/24/2008 12:42	0	-2.3	115		
BRIGEW44	7/14/2008 18:05	0	-0.8	130		
BRIGEW44	7/28/2008 11:13	0	-1.4	123		
BRIGEW44	8/4/2008 13:21	0	-1.2	130		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563098

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW44	8/21/2008 14:10	0	-1.2	124		
BRIGEW44	9/3/2008 12:05	0	-1.5	118		
BRIGEW44	9/16/2008 7:41	0	-1.9	130		
BRIGEW44	9/16/2008 7:43	0	-1.3	129		
BRIGEW44	10/2/2008 7:51	0	-0.8	124		
BRIGEW44	10/2/2008 7:54	0	-1	127		
BRIGEW44	10/20/2008 9:10	0	-1	125		
BRIGEW44	11/12/2008 13:56	0	-0.7	122		
BRIGEW44	11/12/2008 14:00	0	-0.4	122		
BRIGEW44	11/26/2008 9:29	0	-0.6	120		
BRIGEW44	11/26/2008 9:31	0	-0.4	120		
BRIGEW44	12/8/2008 15:09	0	0	115		
BRIGEW44	12/8/2008 15:11	0	-0.2	119	<1	until compliant pressure achieved
BRIGEW44	12/24/2008 12:49	0	-1.9	110		
BRIGEW44	12/24/2008 12:52	0	-1.6	100		
BRIGEW45	7/14/2008 18:09	0	-12.7	110		
BRIGEW45	7/28/2008 11:19	0	-11.6	110		
BRIGEW45	7/28/2008 11:21	0	-12.2	110		
BRIGEW45	7/28/2008 11:24	0	-11.3	110		
BRIGEW45	8/4/2008 13:25	0	-11.9	118		
BRIGEW45	8/4/2008 13:28	0	-12	118		
BRIGEW45	8/4/2008 13:30	0	-10.6	118		
BRIGEW45	8/21/2008 14:17	0	-10.3	110		
BRIGEW45	8/21/2008 14:18	0	-9	110		
BRIGEW45	9/3/2008 12:31	0	-8.6	102		
BRIGEW45	9/3/2008 12:34	0	-10	102		
BRIGEW45	9/16/2008 7:50	0	-9.4	117		
BRIGEW45	10/2/2008 8:00	0	-10.9	111		
BRIGEW45	10/2/2008 8:03	0	-11.3	111		
BRIGEW45	10/20/2008 9:17	0	-10.2	112		
BRIGEW45	10/20/2008 9:20	0	-10.6	115		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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State of MO v. Republic Services, Inc. et al
PL1 - 0563099

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000436

Bridgeton Landfill Wellfield Data

Device ID	Date-Time	O2 (Oxygen) (% by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved* (days)	Notes
BRIGEW45	11/12/2008 14:07	0	-10.3	112		
BRIGEW45	11/12/2008 14:10	0	-10.5	115		
BRIGEW45	11/26/2008 9:36	0	-10.2	115		
BRIGEW45	11/26/2008 9:38	0	-11.3	115		
BRIGEW45	12/8/2008 15:17	0	-10.9	110		
BRIGEW45	12/24/2008 12:59	0	-12	110		
BRIGEW46	7/14/2008 18:13	1.3	-2.2	124		
BRIGEW46	7/28/2008 11:29	0	-1.7	127		
BRIGEW46	8/4/2008 13:36	0.8	-1.9	126		
BRIGEW46	8/21/2008 14:25	0	-1.8	125		
BRIGEW46	8/21/2008 14:28	0	-2.3	129		
BRIGEW46	9/3/2008 12:39	0	-3	130		
BRIGEW46	9/16/2008 7:54	0	-2.8	130		
BRIGEW46	10/2/2008 8:08	0	-2.5	129		
BRIGEW46	10/20/2008 9:24	0	-2.8	130		
BRIGEW46	11/12/2008 14:14	0	-1.9	128		
BRIGEW46	11/26/2008 9:42	0	-1.4	130		
BRIGEW46	12/8/2008 15:22	0	-2	128		
BRIGEW46	12/24/2008 13:03	0	-3.8	125		
BRIGEW47	7/14/2008 18:19	0	-2.8	105		
BRIGEW47	7/28/2008 11:34	0	-2.6	101		
BRIGEW47	7/28/2008 11:36	0	-2.9	101		
BRIGEW47	8/4/2008 13:47	0	-3.2	110		
BRIGEW47	8/4/2008 13:50	0	-5.4	110		
BRIGEW47	8/4/2008 13:54	0	-3.6	110		
BRIGEW47	8/21/2008 14:41	0	-3.3	105		
BRIGEW47	8/21/2008 14:43	0	-3.6	105		
BRIGEW47	9/3/2008 12:43	0	-4.4	105		
BRIGEW47	9/3/2008 12:46	0	-9.4	110		
BRIGEW47	9/16/2008 7:59	0	-10.3	111		
BRIGEW47	9/16/2008 8:02	0	-9.6	105		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563100

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW47	10/2/2008 8:12	0	-12.1	112		
BRIGEW47	10/2/2008 8:14	0	-8.4	112		
BRIGEW47	10/20/2008 9:30	0	-6.5	108		
BRIGEW47	10/20/2008 9:33	0	-3.7	108		
BRIGEW47	11/12/2008 14:19	0	-3.2	98		
BRIGEW47	11/12/2008 14:21	0	-3	98		
BRIGEW47	11/26/2008 9:47	0	-2.8	90		
BRIGEW47	12/8/2008 15:27	0	-2.1	85		
BRIGEW47	12/8/2008 15:30	0	-8.5	95		
BRIGEW47	12/23/2008 15:33	0	-8.3	100		
BRIGEW48	7/14/2008 18:22	0	-0.4	120		
BRIGEW48	7/28/2008 11:45	0	-0.2	110		
BRIGEW48	7/28/2008 11:47	0	-0.3	110		
BRIGEW48	8/4/2008 13:58	0	-0.4	127		
BRIGEW48	8/21/2008 14:47	0	-1	125		
BRIGEW48	8/21/2008 14:51	0	-0.6	123		
BRIGEW48	9/3/2008 12:49	0	-0.8	128		
BRIGEW48	9/3/2008 12:52	0	-1.2	110		
BRIGEW48	9/16/2008 8:06	0	-1.6	110		
BRIGEW48	9/16/2008 8:09	0	-1	110		
BRIGEW48	10/2/2008 8:19	0	-1	110		
BRIGEW48	10/20/2008 9:37	0	-0.8	112		
BRIGEW48	11/12/2008 14:26	0	-0.6	112		
BRIGEW48	11/26/2008 9:51	0	-0.8	115		
BRIGEW48	12/8/2008 15:35	0	-0.6	112		
BRIGEW48	12/23/2008 14:42	0	-0.5	105		
BRIGEW48	12/23/2008 14:44	0	-0.3	105		
BRIGEW49	7/15/2008 7:04	0	0	100		
BRIGEW49	7/15/2008 7:07	0	-0.1	120	<1	until compliant pressure achieved
BRIGEW49	7/28/2008 11:50	0	-0.5	117		
BRIGEW49	7/28/2008 11:53	0	-0.4	117		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563101

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW49	8/4/2008 14:18	0	-0.2	118		
BRIGEW49	8/21/2008 14:57	0	0	126		
BRIGEW49	8/21/2008 15:00	0	-0.3	121	<1	until compliant pressure achieved
BRIGEW49	9/3/2008 12:55	0	-0.5	123		
BRIGEW49	9/16/2008 8:37	0	-0.9	112		
BRIGEW49	9/16/2008 8:41	0	-0.8	110		
BRIGEW49	10/2/2008 8:32	0	-0.5	112		
BRIGEW49	10/2/2008 8:35	0	-0.3	110		
BRIGEW49	10/20/2008 9:43	0	0	80		
BRIGEW49	10/20/2008 9:48	0	-0.2	90	<1	until compliant pressure achieved
BRIGEW49	11/12/2008 14:31	0	-0.2	100		
BRIGEW49	11/26/2008 9:55	0	-0.4	90		
BRIGEW49	11/26/2008 9:57	0	-0.2	90		
BRIGEW49	12/8/2008 15:39	0	0	80		
BRIGEW49	12/8/2008 15:41	0	-0.1	90	<1	until compliant pressure achieved
BRIGEW49	12/23/2008 15:49	0	-0.2	90		
BRIGEW50	7/15/2008 7:12	0	-0.2	120		
BRIGEW50	7/28/2008 11:56	0	0	118		
BRIGEW50	7/28/2008 11:59	0	-0.4	118	<1	until compliant pressure achieved
BRIGEW50	8/4/2008 14:14	0	-0.4	120		
BRIGEW50	8/21/2008 15:04	0	-0.3	120		
BRIGEW50	9/3/2008 13:21	0	-0.6	120		
BRIGEW50	9/16/2008 8:45	0	-0.8	117		
BRIGEW50	10/2/2008 8:39	0	-0.6	119		
BRIGEW50	10/2/2008 8:42	0	-0.8	119		
BRIGEW50	10/20/2008 9:59	0	-0.6	118		
BRIGEW50	10/23/2008 10:57	0	-26.2	115		
BRIGEW50	10/23/2008 11:02	0	-2.4	115		
BRIGEW50	11/12/2008 14:35	0	0	105		
BRIGEW50	11/12/2008 14:42	0	-0.2	119	<1	until compliant pressure achieved
BRIGEW50	11/26/2008 10:01	0	-0.4	117		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563102

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW50	11/26/2008 10:03	0	-0.6	117		
BRIGEW50	12/8/2008 9:09	0	-0.4	115		
BRIGEW50	12/24/2008 13:07	0	-1.8	112		
BRIGEW50	12/24/2008 13:10	0	-1.5	112		
BRIGEW51	7/15/2008 7:25	0	-0.2	115		
BRIGEW51	7/28/2008 12:09	0	-0.6	115		
BRIGEW51	8/4/2008 14:22	0	-0.4	115		
BRIGEW51	8/22/2008 7:19	0	-1	112		
BRIGEW51	9/3/2008 13:25	0	-0.5	112		
BRIGEW51	9/16/2008 8:49	0	-0.9	110		
BRIGEW51	10/2/2008 8:46	0	-0.5	112		
BRIGEW51	10/2/2008 8:50	0	-0.6	115		
BRIGEW51	10/20/2008 10:06	0	-0.6	115		
BRIGEW51	11/12/2008 14:47	0	-0.2	115		
BRIGEW51	11/26/2008 10:06	0	-0.8	112		
BRIGEW51	11/26/2008 10:08	0	-1.1	115		
BRIGEW51	12/9/2008 11:16	0	-1.5	115		
BRIGEW51	12/24/2008 13:13	0	-3	112		
BRIGEW52	7/15/2008 7:17	0	0.1	102		
BRIGEW52	7/15/2008 7:20	0	-0.2	122	<1	until compliant pressure achieved
BRIGEW52	7/28/2008 12:03	0	-0.5	119		
BRIGEW52	7/28/2008 12:06	0	-0.3	115		
BRIGEW52	8/4/2008 14:27	0	0	120		
BRIGEW52	8/4/2008 14:35	0	0	120		
BRIGEW52	8/5/2008 7:58	0	-26.4	115	<1	until compliant pressure achieved
BRIGEW52	8/5/2008 8:02	0	-3	115		
BRIGEW52	8/21/2008 15:08	0	0	110		
BRIGEW52	8/21/2008 15:10	0	-0.3	115	<1	until compliant pressure achieved
BRIGEW52	9/3/2008 13:29	0	-0.6	120		
BRIGEW52	9/3/2008 13:31	0	-0.2	115		
BRIGEW52	9/16/2008 8:53	0	-0.3	109		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563103

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW52	10/2/2008 8:54	0	-0.2	110		
BRIGEW52	10/20/2008 10:11	0	-0.2	110		
BRIGEW52	11/12/2008 14:52	0	0	111		
BRIGEW52	11/12/2008 14:55	0	-0.2	115	<1	until compliant pressure achieved
BRIGEW52	11/26/2008 10:12	0	-0.5	110		
BRIGEW52	11/26/2008 10:15	0	-0.2	110		
BRIGEW52	12/9/2008 11:20	0	-0.2	105		
BRIGEW52	12/24/2008 13:19	0	-0.9	100		
BRIGEW52	12/24/2008 13:24	0	-0.6	90		
BRIGEW53	7/15/2008 7:50	0	0	90		
BRIGEW53	7/15/2008 7:52	0	-0.2	110	<1	until compliant pressure achieved
BRIGEW53	7/28/2008 12:26	0	-0.8	128		
BRIGEW53	7/28/2008 12:29	0	-0.6	120		
BRIGEW53	8/5/2008 8:11	0	-1.3	100		
BRIGEW53	8/5/2008 8:13	0	-1.2	100		
BRIGEW53	8/22/2008 7:27	0	-0.6	75		
BRIGEW53	8/22/2008 7:29	0	-0.8	100		
BRIGEW53	9/3/2008 13:36	0	-0.6	129		
BRIGEW53	9/3/2008 13:37	0	-0.4	122		
BRIGEW53	9/16/2008 8:57	0	-0.6	83		
BRIGEW53	10/2/2008 8:58	0	-0.2	78		
BRIGEW53	10/2/2008 9:01	0	-0.3	85		
BRIGEW53	10/20/2008 10:16	0	-0.3	118		
BRIGEW53	11/12/2008 15:05	0	0	115		
BRIGEW53	11/12/2008 15:07	0	-0.2	125	<1	until compliant pressure achieved
BRIGEW53	11/26/2008 10:19	0	-1	130		
BRIGEW53	11/26/2008 10:21	0	-0.6	120		
BRIGEW53	12/9/2008 11:25	0	-0.6	100		
BRIGEW53	12/9/2008 11:27	0	-0.5	90		
BRIGEW53	12/24/2008 13:32	0	-1.8	40		
BRIGEW54	7/15/2008 7:56	0	0	120		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563104

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000441

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW54	7/15/2008 7:59	0	-0.2	120	<1	until compliant pressure achieved
BRIGEW54	7/28/2008 12:19	0	-0.7	120		
BRIGEW54	7/28/2008 12:22	0	-0.5	112		
BRIGEW54	8/5/2008 8:17	0	-0.8	110		
BRIGEW54	8/22/2008 7:33	0	-0.7	98		
BRIGEW54	9/3/2008 13:42	0	-0.3	95		
BRIGEW54	9/16/2008 9:01	0	-0.6	90		
BRIGEW54	10/2/2008 9:05	0	-0.2	90		
BRIGEW54	10/20/2008 10:19	0	-0.2	90		
BRIGEW54	11/12/2008 15:11	0	0	98		
BRIGEW54	11/12/2008 15:14	0	-0.2	120	<1	until compliant pressure achieved
BRIGEW54	11/26/2008 10:26	0	-0.8	120		
BRIGEW54	12/9/2008 11:32	0	-0.9	119		
BRIGEW54	12/24/2008 13:38	0	-2.2	112		
BRIGEW55	7/15/2008 8:03	0	0.2	80		
BRIGEW55	7/15/2008 8:07	0	-0.3	120	<1	until compliant pressure achieved
BRIGEW55	7/28/2008 12:33	0	-0.9	120		
BRIGEW55	8/5/2008 8:22	0	-1.6	120		
BRIGEW55	8/22/2008 7:38	0	-1.2	115		
BRIGEW55	9/3/2008 13:45	0	-0.8	118		
BRIGEW55	9/16/2008 9:05	0	-1.3	120		
BRIGEW55	10/2/2008 9:09	0	-1.1	119		
BRIGEW55	10/20/2008 10:27	0	-0.8	120		
BRIGEW55	10/20/2008 10:30	0	-0.7	120		
BRIGEW55	11/12/2008 15:20	0	-0.2	115		
BRIGEW55	11/26/2008 10:30	0	-0.6	115		
BRIGEW55	11/26/2008 10:32	0	-0.4	112		
BRIGEW55	12/9/2008 11:40	0	-0.4	110		
BRIGEW55	12/24/2008 13:45	0	-1.8	105		
BRIGEW55	12/24/2008 13:48	0	-1.6	90		
BRIGEW56	7/15/2008 8:10	0	-0.3	90		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563105

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW56	7/28/2008 13:12	0	-0.7	98		
BRIGEW56	7/28/2008 13:14	0	-1.5	94		
BRIGEW56	8/5/2008 9:04	0	-2.1	115		
BRIGEW56	8/5/2008 9:06	0	-2.6	120		
BRIGEW56	8/22/2008 7:43	0	-3.1	130		
BRIGEW56	9/3/2008 13:50	0	-2.7	130		
BRIGEW56	9/16/2008 9:09	0	-3.8	130		
BRIGEW56	9/16/2008 9:11	0	-3.2	128		
BRIGEW56	10/2/2008 9:13	0	-1.7	70		
BRIGEW56	10/2/2008 9:15	0	-1.7	70		
BRIGEW56	10/20/2008 10:35	0	-0.2	68		
BRIGEW56	10/20/2008 10:38	0	-0.7	75		
BRIGEW56	11/12/2008 15:27	0	-0.6	98		
BRIGEW56	11/12/2008 15:28	0	-1.4	112		
BRIGEW56	11/26/2008 10:52	0	-2.5	135		
BRIGEW56	11/26/2008 10:55	0	-1.6	130	<1	until compliant temperature achieved
BRIGEW56	12/9/2008 12:44	0	-2.2	111		
BRIGEW56	12/9/2008 12:47	0	-2.9	120		
BRIGEW56	12/24/2008 14:18	0	-4.3	130		
BRIGEW56	12/24/2008 14:21	0	-4.3	128		
BRIGEW57	7/15/2008 8:54	0	-0.3	85		
BRIGEW57	7/28/2008 13:56	0	-1.4	88		
BRIGEW57	7/28/2008 13:58	0	-1.3	88		
BRIGEW57	8/5/2008 10:01	0	-1.9	98		
BRIGEW57	8/5/2008 10:03	0.1	-2	98		
BRIGEW57	8/22/2008 8:27	1.5	-2.6	72		
BRIGEW57	9/3/2008 14:33	16.3	-1.6	75		
BRIGEW57	9/3/2008 14:36	0	-2.7	92	<1	until compliant O_2 achieved
BRIGEW57	9/16/2008 10:11	0	-5.1	110		
BRIGEW57	9/16/2008 10:13	0	-4.9	110		
BRIGEW57	10/2/2008 10:02	0	-3.9	110		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563106

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW57	10/2/2008 10:04	0	-3.6	108		
BRIGEW57	10/20/2008 12:22	0	-2.2	100		
BRIGEW57	10/20/2008 12:25	0	-2	100		
BRIGEW57	11/13/2008 8:26	0	-2.1	80		
BRIGEW57	11/13/2008 8:29	0	-2	70		
BRIGEW57	11/26/2008 11:38	0	-1.2	75		
BRIGEW57	11/26/2008 11:39	0	-1.2	75		
BRIGEW57	12/9/2008 14:25	0	-2.8	35		
BRIGEW57	12/9/2008 14:27	0	-2.7	35		
BRIGEW57	12/24/2008 15:04	8	-4.3	40		
BRIGEW57	12/24/2008 15:07	0	-4.7	50	<1	until compliant O_2 achieved
BRIGEW58	7/15/2008 8:45	0	-1.6	122		
BRIGEW58	7/28/2008 13:47	0	-2.6	125		
BRIGEW58	7/28/2008 13:49	0	-3	122		
BRIGEW58	8/5/2008 9:47	0	-3.6	124		
BRIGEW58	8/5/2008 9:50	0	-4	122		
BRIGEW58	8/22/2008 8:22	0	-5	122		
BRIGEW58	8/22/2008 8:23	0	-5.4	122		
BRIGEW58	9/3/2008 14:23	0	-5.1	122		
BRIGEW58	9/16/2008 9:59	0	-7	122		
BRIGEW58	9/16/2008 10:02	0	-7.2	122		
BRIGEW58	10/2/2008 9:47	0	-6.4	121		
BRIGEW58	10/2/2008 9:49	0	-6.6	121		
BRIGEW58	10/20/2008 11:19	0	-5.9	122		
BRIGEW58	11/13/2008 8:15	0	-6	121		
BRIGEW58	11/26/2008 11:27	0	-5.6	121		
BRIGEW58	12/9/2008 13:36	0	-7.5	120		
BRIGEW58	12/9/2008 13:38	0	-7.2	120		
BRIGEW58	12/24/2008 14:52	0	-8.5	120		
BRIGEW58	12/24/2008 14:54	0	-8.1	120		
BRIGEW59	7/15/2008 8:34	0	-0.2	110		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

O_2 57 9/3
Temp 56 11/26.

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000444

State of MO v. Republic Services, Inc. et al
PL1 - 0563107

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW59	7/28/2008 13:39	0	-1	115		
BRIGEW59	7/28/2008 13:41	0	-0.5	105		
BRIGEW59	8/5/2008 9:40	3.8	-0.4	95		
BRIGEW59	8/5/2008 9:42	0	-0.9	90		
BRIGEW59	8/22/2008 8:11	4	-2.2	111		
BRIGEW59	8/22/2008 8:14	0	-2.6	120		
BRIGEW59	9/3/2008 14:16	0	-2	120		
BRIGEW59	9/3/2008 14:18	0	-1.4	110		
BRIGEW59	9/16/2008 9:53	0	-2.2	78		
BRIGEW59	9/16/2008 9:54	0.1	-2	78		
BRIGEW59	10/2/2008 9:42	3.4	-1	78		
BRIGEW59	10/20/2008 11:11	0	0	72		
BRIGEW59	10/20/2008 11:14	0	-0.4	75	<1	until compliant pressure achieved
BRIGEW59	11/13/2008 8:01	0	-1.2	105		
BRIGEW59	11/13/2008 8:05	0	-1.1	105		
BRIGEW59	11/26/2008 11:23	0	-0.5	100		
BRIGEW59	12/9/2008 13:25	0	-2	70		
BRIGEW59	12/9/2008 13:28	0	-1.9	60		
BRIGEW59	12/24/2008 14:46	0.2	-3.3	30		
BRIGEW60	7/15/2008 8:51	0	-2.2	112		
BRIGEW60	7/28/2008 13:53	0	-3.4	105		
BRIGEW60	8/5/2008 9:56	0	-4	118		
BRIGEW60	8/22/2008 8:31	0	-4.6	118		
BRIGEW60	9/3/2008 14:28	0	-3.6	120		
BRIGEW60	9/16/2008 10:07	0	-5.9	120		
BRIGEW60	10/2/2008 9:55	0	-5	120		
BRIGEW60	10/20/2008 12:18	0	-3.8	120		
BRIGEW60	11/13/2008 8:19	0	-3.7	118		
BRIGEW60	11/13/2008 8:22	0	-3.5	118		
BRIGEW60	11/26/2008 11:32	0	-2.2	115		
BRIGEW60	11/26/2008 11:34	0	-2	115		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563108

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW60	12/9/2008 13:44	0	-2.6	110		
BRIGEW60	12/24/2008 14:58	0	-4.5	100		
BRIGEW61	7/15/2008 8:57	0	-0.5	80		
BRIGEW61	7/28/2008 14:02	0	-0.9	79		
BRIGEW61	7/28/2008 14:03	0	-1.3	79		
BRIGEW61	8/5/2008 10:07	0	-1.7	82		
BRIGEW61	8/22/2008 8:35	0	-2.1	70		
BRIGEW61	9/3/2008 14:40	0	-1.2	70		
BRIGEW61	9/3/2008 14:42	0	-1.8	70		
BRIGEW61	9/16/2008 10:16	0	-3.4	70		
BRIGEW61	10/2/2008 10:07	0	-2.9	70		
BRIGEW61	10/2/2008 10:10	0	-2.7	70		
BRIGEW61	10/20/2008 12:28	0	-2	70		
BRIGEW61	10/20/2008 12:30	0	-1.9	70		
BRIGEW61	11/13/2008 8:34	0	-1.9	68		
BRIGEW61	11/26/2008 11:44	0	-1.5	68		
BRIGEW61	11/26/2008 11:45	0	-1.3	68		
BRIGEW61	12/9/2008 14:33	0	-2.3	60		
BRIGEW61	12/24/2008 15:11	0	-3.2	60		
BRIGEW61	12/24/2008 15:15	0	-3	60		
BRIGEW62	7/15/2008 9:01	0	-0.6	110		
BRIGEW62	7/28/2008 14:08	0	-1.4	110		
BRIGEW62	7/28/2008 14:10	0	-0.7	105		
BRIGEW62	8/5/2008 10:12	0.4	-0.9	92		
BRIGEW62	8/5/2008 10:14	6.6	-0.8	92		
BRIGEW62	8/5/2008 10:16	0	-1.6	92	<1	until compliant O_2 achieved
BRIGEW62	8/22/2008 8:39	0	-1.7	85		
BRIGEW62	9/3/2008 14:53	0	-0.8	85		
BRIGEW62	9/3/2008 14:55	1.4	-0.5	80		
BRIGEW62	9/16/2008 10:20	19.3	-2.3	80		
BRIGEW62	9/16/2008 10:23	0.4	-3.6	80	<1	until compliant O_2 achieved

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563109

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000446

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW62	10/2/2008 10:14	0	-1.8	90		
BRIGEW62	10/2/2008 10:17	6.2	-1.4	85		
BRIGEW62	10/2/2008 10:19	0	-1.9	90	<1	until compliant O_2 achieved
BRIGEW62	10/20/2008 12:35	0	-0.5	88		
BRIGEW62	11/13/2008 8:37	0	-0.9	82		
BRIGEW62	11/13/2008 8:40	1.3	-0.6	74		
BRIGEW62	11/26/2008 11:49	12.8	0	65		
BRIGEW62	11/26/2008 11:51	0	-0.4	60	<1	until compliant O_2 and pressure achieved
BRIGEW62	12/9/2008 14:38	0	-1.9	80		
BRIGEW62	12/9/2008 14:40	0	-1.7	72		
BRIGEW62	12/24/2008 15:19	0	-2.9	40		
BRIGEW63	7/15/2008 8:15	0	-0.8	121		
BRIGEW63	7/28/2008 13:20	0	-1.4	128		
BRIGEW63	7/28/2008 13:22	0	-0.8	120		
BRIGEW63	8/5/2008 9:12	3.6	-0.8	90		
BRIGEW63	8/5/2008 9:15	0.1	-1.6	95		
BRIGEW63	8/22/2008 7:51	0	-2.8	132		
BRIGEW63	8/22/2008 7:54	2.3	-2	125	<1	until compliant temperature achieved
BRIGEW63	9/3/2008 13:54	0	-0.8	75		
BRIGEW63	9/16/2008 9:17	20.4	-2.6	75		
BRIGEW63	9/16/2008 9:21	0.8	-4.5	95	<1	until compliant O_2 achieved
BRIGEW63	10/2/2008 9:19	0.2	-3.9	140		
BRIGEW63	10/2/2008 9:24	0.1	-2.9	130	<1	until compliant temperature achieved
BRIGEW63	10/20/2008 10:43	0	-0.6	100		
BRIGEW63	10/20/2008 10:46	5.3	-0.3	92		
BRIGEW63	10/20/2008 10:48	0	-0.9	102	<1	until compliant O_2 achieved
BRIGEW63	11/12/2008 15:33	0	-0.3	102		
BRIGEW63	11/26/2008 10:59	0	-1	105		
BRIGEW63	11/26/2008 11:02	0	-0.9	105		
BRIGEW63	12/9/2008 12:55	0	-2.5	95		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563110

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW63	12/9/2008 12:58	0	-2.4	95		
BRIGEW63	12/24/2008 14:27	0	-3.3	50		
BRIGEW64	7/15/2008 9:18	0	-4	110		
BRIGEW64	7/28/2008 14:31	0	-5.8	110		
BRIGEW64	8/5/2008 10:28	0	-6.8	110		
BRIGEW64	8/22/2008 9:08	4.5	-7.1	110		
BRIGEW64	8/22/2008 9:10	2.8	-6.2	110		
BRIGEW64	9/4/2008 7:28	0	-3	110		
BRIGEW64	9/4/2008 7:30	0	-3.7	110		
BRIGEW64	9/16/2008 10:38	0	-8.2	110		
BRIGEW64	9/16/2008 10:40	0	-8.5	110		
BRIGEW64	10/2/2008 10:39	0	-8.1	110		
BRIGEW64	10/2/2008 10:41	0	-8.6	110		
BRIGEW64	10/20/2008 12:50	0	-8.8	110		
BRIGEW64	10/20/2008 12:52	0	-8.9	110		
BRIGEW64	11/13/2008 9:00	0	-9.6	110		
BRIGEW64	11/26/2008 12:05	0	-9.4	110		
BRIGEW64	12/9/2008 14:59	0	-11.7	110		
BRIGEW64	12/24/2008 15:37	0	-13.2	110		
BRIGEW66	7/15/2008 9:05	0	0	80		
BRIGEW66	7/15/2008 9:07	0	-0.2	85	<1	until compliant pressure achieved
BRIGEW66	7/28/2008 14:20	16.5	-1.5	102		
BRIGEW66	7/28/2008 14:24	0	-2.2	109	<1	until compliant O_2 achieved
BRIGEW66	8/5/2008 10:20	0	-3.1	111		
BRIGEW66	8/22/2008 9:00	0.3	-3.4	108		
BRIGEW66	9/3/2008 14:58	0	-2.5	105		
BRIGEW66	9/16/2008 10:27	0	-4.4	110		
BRIGEW66	9/16/2008 10:29	0	-4.2	110		
BRIGEW66	10/2/2008 10:24	0.5	-2.6	108		
BRIGEW66	10/2/2008 10:27	13.3	-2.3	102		
BRIGEW66	10/2/2008 10:30	0	-2.6	105	<1	until compliant O_2 achieved

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

O_2 62 11/26 temp 63 8/22
63 9/16, 10/20 10/2
66 7/28, 10/2

State of MO v. Republic Services, Inc. et al
PL1 - 0563111

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW66	10/20/2008 12:38	0	-1.1	95		
BRIGEW66	11/13/2008 8:45	0	-1.2	65		
BRIGEW66	11/13/2008 8:50	1.2	-1.3	75		
BRIGEW66	11/26/2008 11:55	4.7	-0.6	58		
BRIGEW66	11/26/2008 11:57	0	-0.7	62		
BRIGEW66	12/9/2008 14:47	0	-2.6	75		
BRIGEW66	12/9/2008 14:51	0	-2.5	60		
BRIGEW66	12/24/2008 15:26	2.3	-3.7	30		
BRIGEW67	7/15/2008 8:25	0	0.5	90		
BRIGEW67	7/15/2008 8:27	0	-0.2	120	<1	until compliant pressure achieved
BRIGEW67	7/28/2008 13:27	0	-1.5	137		
BRIGEW67	7/28/2008 13:29	0	-1	130	<1	until compliant temperature achieved
BRIGEW67	8/5/2008 9:20	0	-1	129		
BRIGEW67	8/5/2008 9:23	0	-0.6	125		
BRIGEW67	8/22/2008 7:58	3.2	-0.6	70		
BRIGEW67	9/3/2008 13:59	3.4	0	70		
BRIGEW67	9/3/2008 14:02	0	-0.4	110	<1	until compliant pressure achieved
BRIGEW67	9/16/2008 9:40	0	-2.7	132		
BRIGEW67	9/16/2008 9:44	0	-2.5	130	<1	until compliant temperature achieved
BRIGEW67	10/2/2008 9:30	0	-1.2	129		
BRIGEW67	10/20/2008 10:57	0	-0.2	130		
BRIGEW67	11/12/2008 15:38	0	0.6	125		
BRIGEW67	11/12/2008 15:44	0	-0.5	140	<1	until compliant pressure achieved
BRIGEW67	11/12/2008 15:49	0	-0.1	140		
BRIGEW67	11/26/2008 11:06	0	-1.6	135		
BRIGEW67	11/26/2008 11:12	0	-1.2	130	14	until compliant temperature achieved
BRIGEW67	12/9/2008 13:10	0	-1.3	105		
BRIGEW67	12/9/2008 13:13	0	-1.1	90		
BRIGEW67	12/24/2008 14:34	0	-2.3	42		
BRIGEW68	7/15/2008 9:22	0	-3.7	110		
BRIGEW68	7/28/2008 14:35	0	-5.7	110		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563112

Device ID	Date Time	O2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW68	7/28/2008 14:37	0	-6.2	110		
BRIGEW68	8/5/2008 10:32	0	-7.6	110		
BRIGEW68	8/22/2008 9:14	0	-8	110		
BRIGEW68	8/22/2008 9:16	0	-8.7	110		
BRIGEW68	9/4/2008 7:34	0	-6.3	110		
BRIGEW68	9/4/2008 7:36	0	-6.8	110		
BRIGEW68	9/16/2008 10:44	0	-11.5	112		
BRIGEW68	9/16/2008 10:46	0	-11.9	112		
BRIGEW68	10/2/2008 10:45	0	-11.5	111		
BRIGEW68	10/2/2008 10:47	0	-12	111		
BRIGEW68	10/20/2008 12:56	0	-12	110		
BRIGEW68	10/20/2008 12:58	0	-12.5	112		
BRIGEW68	11/13/2008 9:05	0	-12.9	110		
BRIGEW68	11/13/2008 9:07	0	-13.2	112		
BRIGEW68	11/26/2008 12:09	0	-13.4	112		
BRIGEW68	12/9/2008 15:03	0	-15.5	112		
BRIGEW68	12/24/2008 15:41	0	-16.9	111		
BRIGEW68	12/24/2008 15:43	0	-16.6	111		
BRIGEW69	7/15/2008 9:28	0	-5.4	110		
BRIGEW69	7/28/2008 14:42	0	-7.7	111		
BRIGEW69	8/5/2008 10:36	0.2	-9	111		
BRIGEW69	8/5/2008 10:39	0	-8.1	111		
BRIGEW69	8/22/2008 9:25	0	-7.6	109		
BRIGEW69	8/22/2008 9:28	0	-8.3	111		
BRIGEW69	9/4/2008 7:41	0	-6.6	112		
BRIGEW69	9/16/2008 10:50	0	-10.4	110		
BRIGEW69	10/2/2008 10:52	0	-9.4	110		
BRIGEW69	10/2/2008 10:54	0	-9.8	112		
BRIGEW69	10/20/2008 13:04	0	-9	112		
BRIGEW69	10/20/2008 13:05	0	-9.4	112		
BRIGEW69	11/13/2008 9:12	0	-9.8	110		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

Temp 67 7/28 11/26. 9/16 11/12.

State of MO v. Republic Services, Inc. et al
PL1 - 0563113

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000450

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW69	11/26/2008 12:13	0	-10	111		
BRIGEW69	12/9/2008 15:09	0	-12.2	110		
BRIGEW69	12/24/2008 15:47	0	-14	110		
BRIGEW70	7/15/2008 9:32	0	-1.8	95		
BRIGEW70	7/28/2008 14:46	0	-3.9	94		
BRIGEW70	8/5/2008 10:48	0	-5.1	100		
BRIGEW70	8/5/2008 10:50	0	-5.1	100		
BRIGEW70	8/22/2008 9:32	0	-4.9	78		
BRIGEW70	8/22/2008 9:35	0	-5.5	80		
BRIGEW70	9/4/2008 7:48	0	-3.4	95		
BRIGEW70	9/16/2008 10:53	0	-7	80		
BRIGEW70	10/2/2008 10:59	0	-6.1	80		
BRIGEW70	10/20/2008 13:09	0	-4.9	88		
BRIGEW70	11/13/2008 9:16	0	-5	75		
BRIGEW70	11/26/2008 12:19	0	-5.1	100		
BRIGEW70	12/9/2008 15:14	0	-7.4	90		
BRIGEW70	12/24/2008 15:50	0	-8.9	80		
BRIGEW71	7/15/2008 9:37	0	0	100		
BRIGEW71	7/15/2008 9:40	0	-0.3	95	<1	until compliant pressure achieved
BRIGEW71	7/28/2008 13:34	0	-0.9	95		
BRIGEW71	8/5/2008 9:27	0	-1.5	95		
BRIGEW71	8/5/2008 9:30	0	-1.4	95		
BRIGEW71	8/22/2008 8:02	7.3	-1.5	75		
BRIGEW71	8/22/2008 8:04	0	-2.2	90	<1	until compliant O_2 achieved
BRIGEW71	9/3/2008 14:06	0	-1.9	115		
BRIGEW71	9/3/2008 14:11	0	-1.3	110		
BRIGEW71	9/16/2008 9:48	0	-2.9	74		
BRIGEW71	10/2/2008 9:33	0	-1.7	70		
BRIGEW71	10/2/2008 9:35	1.3	-1.6	70		
BRIGEW71	10/20/2008 11:01	10.3	-0.6	70		
BRIGEW71	10/20/2008 11:05	0	-1.1	75	<1	until compliant O_2 achieved

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563114

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW71	11/12/2008 15:55	0	0	85		
BRIGEW71	11/12/2008 15:58	0	-0.2	95	<1	until compliant pressure achieved
BRIGEW71	11/26/2008 11:17	0	-0.7	85		
BRIGEW71	11/26/2008 11:18	0	-0.6	85		
BRIGEW71	12/9/2008 13:17	0	-2	80		
BRIGEW71	12/9/2008 13:20	0	-1.8	78		
BRIGEW71	12/24/2008 14:41	0	-3.5	74		
BRIGEW72	7/15/2008 9:43	0	-0.2	95		
BRIGEW72	7/28/2008 14:49	0	-0.2	95		
BRIGEW72	8/5/2008 10:56	0	-1.4	92		
BRIGEW72	8/5/2008 10:58	0.1	-1.2	92		
BRIGEW72	8/22/2008 9:44	16.9	-1	80		
BRIGEW72	8/22/2008 9:46	0.7	-1.7	90	<1	until compliant O_2 achieved
BRIGEW72	9/4/2008 7:53	0	-0.5	118		
BRIGEW72	9/4/2008 7:55	0	-0.1	110		
BRIGEW72	9/16/2008 10:58	0	-1.9	82		
BRIGEW72	9/16/2008 11:00	0	-1.8	82		
BRIGEW72	10/2/2008 11:03	0	-0.8	68		
BRIGEW72	10/2/2008 11:05	0	-0.8	68		
BRIGEW72	10/20/2008 13:13	4.8	-0.1	78		
BRIGEW72	10/20/2008 13:15	0	-0.3	70		
BRIGEW72	11/13/2008 9:21	0	-0.5	80		
BRIGEW72	11/26/2008 12:23	0	0	80		
BRIGEW72	11/26/2008 12:24	0	-0.2	90	<1	until compliant pressure achieved
BRIGEW72	12/9/2008 15:40	0	-2	90		
BRIGEW72	12/9/2008 15:42	0	-2	90		
BRIGEW72	12/24/2008 15:57	0	-2.9	60		
BRIGEW73	7/15/2008 9:56	0	-2.1	110		
BRIGEW73	7/28/2008 15:06	0	-3.6	110		
BRIGEW73	7/28/2008 15:09	0	-4.2	110		
BRIGEW73	8/5/2008 11:12	0	-6.2	120		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

O2. 71 8/22
10/20
72 8/22

State of MO v. Republic Services, Inc. et al
PL1 - 0563115

Device ID	Date/Time	Exceedance Duration (hours)	Initial Static Pressure Inches H2O	Initial Gradient (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW73	8/5/2008 11:14	0	-6.5	120		
BRIGEW73	8/22/2008 10:03	0	-6.9	120		
BRIGEW73	8/22/2008 10:06	0	-7.6	125		
BRIGEW73	9/4/2008 8:14	0	-6.1	125		
BRIGEW73	9/16/2008 11:15	1.8	-10.4	125		
BRIGEW73	10/2/2008 11:29	0	-9.3	125		
BRIGEW73	10/2/2008 11:31	0	-9.7	125		
BRIGEW73	10/20/2008 13:31	0	-10.2	128		
BRIGEW73	10/20/2008 13:34	0	-10.5	128		
BRIGEW73	11/13/2008 9:37	0	-11	130		
BRIGEW73	11/26/2008 12:37	0	-11.1	130		
BRIGEW73	12/9/2008 16:00	0	-13.6	130		
BRIGEW73	12/24/2008 16:06	0	-15.3	129		
BRIGEW74	7/15/2008 9:51	0	-27	112		
BRIGEW74	7/28/2008 15:00	0	-27.6	112		
BRIGEW74	8/5/2008 11:07	0	-28.4	119		
BRIGEW74	8/22/2008 9:56	2.6	-28.2	115		
BRIGEW74	9/4/2008 8:07	0	-27.4	110		
BRIGEW74	9/4/2008 8:09	0	-28.2	110		
BRIGEW74	9/16/2008 11:09	0	-29.9	120		
BRIGEW74	9/16/2008 11:10	0	-30.1	120		
BRIGEW74	10/2/2008 11:22	0	-26.9	120		
BRIGEW74	10/2/2008 11:24	0	-27.3	120		
BRIGEW74	10/20/2008 13:27	0	-29.4	120		
BRIGEW74	11/13/2008 9:32	0	-29.9	118		
BRIGEW74	11/26/2008 12:33	0	-30.9	115		
BRIGEW74	12/9/2008 15:54	0	-32.1	110		
BRIGEW74	12/9/2008 15:56	0	-32.4	110		
BRIGEW74	12/24/2008 16:03	0	-33.3	110		
BRIGEW75	7/15/2008 9:48	0.2	-0.8	95		
BRIGEW75	7/28/2008 14:53	4.9	-2	100		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563116

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000453

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW75	7/28/2008 14:55	0	-2.6	90		
BRIGEW75	8/5/2008 11:03	0	-4.6	120		
BRIGEW75	8/22/2008 9:50	0	-4.5	120		
BRIGEW75	9/4/2008 8:01	0	-2.8	120		
BRIGEW75	9/16/2008 11:05	0	-6.2	120		
BRIGEW75	10/2/2008 11:12	0	-5.1	120		
BRIGEW75	10/2/2008 11:14	0	-4.7	118		
BRIGEW75	10/20/2008 13:20	0	-3.3	110		
BRIGEW75	10/20/2008 13:22	0	-3.2	110		
BRIGEW75	11/13/2008 9:25	0	-2.8	75		
BRIGEW75	11/13/2008 9:27	0	-2.7	70		
BRIGEW75	11/26/2008 12:29	0	-2.2	70		
BRIGEW75	12/9/2008 15:47	0	-4.5	40		
BRIGEW75	12/9/2008 15:49	0	-4.5	40		
BRIGEW75	12/24/2008 16:00	0.2	-6	42		
BRIGEW76	7/15/2008 10:33	0	0	75		
BRIGEW76	7/15/2008 10:35	0	-0.2	75	<1	until compliant pressure achieved
BRIGEW76	7/28/2008 15:49	0	0	90		
BRIGEW76	7/28/2008 15:51	0	-0.3	100	<1	until compliant pressure achieved
BRIGEW76	8/5/2008 12:01	0	-1	118		
BRIGEW76	8/5/2008 12:03	0	-0.9	110		
BRIGEW76	8/22/2008 10:59	0	-0.5	100		
BRIGEW76	9/4/2008 9:08	0	0.4	88		
BRIGEW76	9/4/2008 9:10	0	-0.3	95	<1	until compliant pressure achieved
BRIGEW76	9/16/2008 11:56	0	-3.1	110		
BRIGEW76	9/16/2008 11:57	0	-2.5	110		
BRIGEW76	10/2/2008 12:25	0	-1.4	110		
BRIGEW76	10/2/2008 12:27	0	-1	98		
BRIGEW76	10/20/2008 14:23	0	-0.4	112		
BRIGEW76	10/20/2008 14:26	0	-0.2	110		
BRIGEW76	11/13/2008 10:31	0	0.2	78		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563117

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000454

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW76	11/13/2008 10:40	0	-0.1	115	<1	until compliant pressure achieved
BRIGEW76	11/26/2008 13:09	0	-0.8	115		
BRIGEW76	11/26/2008 13:11	0	-0.3	110		
BRIGEW76	12/9/2008 16:38	0	-1	80		
BRIGEW76	12/9/2008 16:39	0	-1	80		
BRIGEW76	12/24/2008 16:46	0	-1.7	55		
BRIGEW77	7/15/2008 10:02	0	-0.8	118		
BRIGEW77	7/28/2008 15:13	0	-1.6	120		
BRIGEW77	8/5/2008 11:20	0	-2.6	118		
BRIGEW77	8/5/2008 11:22	0	-2.2	118		
BRIGEW77	8/22/2008 10:10	0	-2.2	90		
BRIGEW77	9/4/2008 8:18	0	-0.3	80		
BRIGEW77	9/16/2008 11:20	0	-3.7	80		
BRIGEW77	9/16/2008 11:21	0.3	-3.7	80		
BRIGEW77	10/2/2008 11:36	12.4	-2.2	80		
BRIGEW77	10/2/2008 11:38	0	-2.6	75	<1	until compliant O_2 achieved
BRIGEW77	10/20/2008 13:37	0	-2	110		
BRIGEW77	10/20/2008 13:39	0	-1.9	108		
BRIGEW77	11/13/2008 9:43	0	-1.5	70		
BRIGEW77	11/13/2008 9:44	0	-1.6	70		
BRIGEW77	11/26/2008 12:41	0	-1.2	70		
BRIGEW77	12/9/2008 16:04	0	-3.9	45		
BRIGEW77	12/9/2008 16:06	0	-3.9	45		
BRIGEW77	12/24/2008 16:10	0	-5.1	38		
BRIGEW78	7/15/2008 10:06	0	-1.2	100		
BRIGEW78	7/15/2008 10:09	0	-1.1	100		
BRIGEW78	7/28/2008 15:20	1.8	-1.9	100		
BRIGEW78	8/5/2008 11:27	6.4	-3.3	110		
BRIGEW78	8/5/2008 11:30	0	-3.9	100	<1	until compliant O_2 achieved
BRIGEW78	8/22/2008 10:16	0	-4.2	110		
BRIGEW78	9/4/2008 8:26	0	-1.9	102		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563118

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW78	9/4/2008 8:28	0	-1.6	95		
BRIGEW78	9/16/2008 11:26	0	-5.6	82		
BRIGEW78	10/2/2008 11:43	5.3	-4.1	75		
BRIGEW78	10/2/2008 11:46	0	-4.7	82	<1	until compliant O_2 achieved
BRIGEW78	10/20/2008 13:43	0	-3.6	105		
BRIGEW78	10/20/2008 13:48	0	-3.5	102		
BRIGEW78	11/13/2008 9:48	0	-2.9	80		
BRIGEW78	11/26/2008 12:45	0	-2.6	85		
BRIGEW78	12/9/2008 16:12	0	-5.7	80		
BRIGEW78	12/24/2008 16:14	0	-7.3	80		
BRIGEW79	7/15/2008 10:29	0	-1.9	110		
BRIGEW79	7/28/2008 15:44	0.2	-2.4	110		
BRIGEW79	8/5/2008 11:55	0.3	-3.9	120		
BRIGEW79	8/22/2008 10:53	0	-3.7	110		
BRIGEW79	8/22/2008 10:55	0	-4.3	115		
BRIGEW79	9/4/2008 9:02	0	-3.1	112		
BRIGEW79	9/4/2008 9:03	0	-4	115		
BRIGEW79	9/16/2008 11:51	0.4	-10	125		
BRIGEW79	10/2/2008 12:06	0	-8.4	121		
BRIGEW79	10/2/2008 12:08	0	-8.1	121		
BRIGEW79	10/20/2008 14:14	0	-6.2	122		
BRIGEW79	10/20/2008 14:16	0	-5.5	120		
BRIGEW79	11/13/2008 10:17	0	-3.8	120		
BRIGEW79	11/13/2008 10:19	0	-3.3	118		
BRIGEW79	11/26/2008 13:03	0	-2.8	115		
BRIGEW79	11/26/2008 13:05	0	-2.4	110		
BRIGEW79	12/9/2008 16:33	0	-4.3	95		
BRIGEW79	12/24/2008 16:42	0	-5.8	90		
BRIGEW80	7/15/2008 10:13	0	-1.8	100		
BRIGEW80	7/28/2008 15:24	0	-1.7	102		
BRIGEW80	7/28/2008 15:26	0	-2	102		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

O2: 77 1012

78 805; 1012

State of MO v. Republic Services, Inc. et al
PL1 - 0563119

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW80	8/5/2008 11:35	0	-3.2	110		
BRIGEW80	8/5/2008 11:36	0	-3.7	110		
BRIGEW80	8/22/2008 10:22	0	-4.9	105		
BRIGEW80	8/22/2008 10:26	0	-5	100		
BRIGEW80	9/4/2008 8:34	0	-3	100		
BRIGEW80	9/4/2008 8:36	0	-3.6	100		
BRIGEW80	9/16/2008 11:30	0	-7.7	110		
BRIGEW80	9/16/2008 11:32	0	-7.2	110		
BRIGEW80	10/2/2008 11:52	0	-5.1	108		
BRIGEW80	10/2/2008 11:54	0	-4.9	108		
BRIGEW80	10/20/2008 13:53	0	-3.7	108		
BRIGEW80	10/20/2008 13:56	0	-3.3	108		
BRIGEW80	11/13/2008 9:54	0	-2.2	105		
BRIGEW80	11/13/2008 9:57	0	-2.4	105		
BRIGEW80	11/26/2008 12:49	0	-2.1	108		
BRIGEW80	11/26/2008 12:50	0	-2.4	108		
BRIGEW80	12/9/2008 16:17	0	-6.2	100		
BRIGEW80	12/24/2008 16:21	0	-7.5	100		
BRIGEW80	12/24/2008 16:25	0	-7	100		
BRIGEW81	7/15/2008 10:17	1.8	-0.3	98		
BRIGEW81	7/28/2008 15:30	15.2	-0.2	105		
BRIGEW81	7/28/2008 15:32	0.6	-0.8	100	<1	until compliant O_2 achieved
BRIGEW81	8/5/2008 11:41	0	-1.7	121		
BRIGEW81	8/5/2008 11:43	0	-1.3	121		
BRIGEW81	8/22/2008 10:42	20.1	-0.9	92		
BRIGEW81	8/22/2008 10:45	0.2	-2.4	112	<1	until compliant O_2 achieved
BRIGEW81	9/4/2008 8:43	0	-1.4	128		
BRIGEW81	9/16/2008 11:36	0	-4.1	125		
BRIGEW81	9/16/2008 11:39	0.4	-3.9	125		
BRIGEW81	10/2/2008 12:00	0	-1.9	120		
BRIGEW81	10/2/2008 12:02	0	-1.6	120		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563120

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000457

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIGEW81	10/20/2008 14:01	0	-0.5	90		
BRIGEW81	11/13/2008 10:02	0	-0.5	78		
BRIGEW81	11/26/2008 12:55	0	-0.3	89		
BRIGEW81	12/9/2008 16:22	0	-2.4	70		
BRIGEW81	12/9/2008 16:25	0	-2.2	70		
BRIGEW81	12/24/2008 16:32	20.8	-3	35		
BRIGEW81	12/24/2008 16:35	0.1	-4	85	<1	until compliant O_2 achieved
BRIGEW82	7/15/2008 10:24	0	-0.2	91		
BRIGEW82	7/28/2008 15:37	0	0	100		
BRIGEW82	7/28/2008 15:39	0	-0.3	115	<1	until compliant pressure achieved
BRIGEW82	8/5/2008 11:49	0	-1.4	120		
BRIGEW82	8/5/2008 11:51	0	-1	118		
BRIGEW82	8/22/2008 10:49	0	-0.5	98		
BRIGEW82	9/4/2008 8:54	0	0.3	69		
BRIGEW82	9/4/2008 8:57	0	-0.6	110	<1	until compliant pressure achieved
BRIGEW82	9/16/2008 11:44	0	-3.4	120		
BRIGEW82	9/16/2008 11:47	0	-2.7	120		
BRIGEW82	10/2/2008 12:14	0	-1	115		
BRIGEW82	10/2/2008 12:17	12.1	-0.8	100		
BRIGEW82	10/2/2008 12:20	0	-1.1	110	<1	until compliant O_2 achieved
BRIGEW82	10/20/2008 14:07	0	-0.4	115		
BRIGEW82	10/20/2008 14:10	0	-0.3	110		
BRIGEW82	11/13/2008 10:06	0	0	62		
BRIGEW82	11/13/2008 10:12	0	-0.2	100	<1	until compliant pressure achieved
BRIGEW82	11/26/2008 12:59	0	-0.4	115		
BRIGEW82	12/9/2008 16:29	0	-1.6	105		
BRIGEW82	12/24/2008 16:39	0	-2.4	95		
BrigIT-1	7/10/2008 8:46	3.7	-1.2			
BrigIT-1	8/5/2008 14:01	13.6	-3.2	91		
BrigIT-1	9/4/2008 11:09	12	-3	90		
BrigIT-1	10/6/2008 9:34	14.7	-3	90		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

O_2 61 7/28, 8/22, 12/24.

State of MO v. Republic Services, Inc. et al
PL1 - 0563121

Device ID	Date/Time	% Methane (CH4) by Vol.	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (Days)	Notes
BrigIT-1	11/13/2008 15:04	3.6	-0.8	82		
BrigIT-1	12/26/2008 8:22	4.7	-1	70		
BrigIT-1	12/26/2008 8:24	4.3	-1.6	70		
BrigIT-2	7/10/2008 8:56	0	-0.3			
BrigIT-2	8/5/2008 14:11	19.9	-2.8	113		
BrigIT-2	9/4/2008 11:19	15.3	-2.7	64		
BrigIT-2	10/6/2008 9:38	19.7	-2.9	70		
BrigIT-2	11/13/2008 15:07	9.9	-0.5	60		
BrigIT-2	12/26/2008 8:32	0	-1.3	40		
BrigIT-3	7/10/2008 9:13	0.1	-1			
BrigIT-3	7/10/2008 9:15	0	-2			
BrigIT-3	7/10/2008 9:55	0.6	-2.4			
BrigIT-3	7/10/2008 9:57	0.8	-3.5			
BrigIT-3	8/5/2008 14:26	6.5	-5	107		
BrigIT-3	9/4/2008 11:34	5.1	-4.3	100		
BrigIT-3	10/6/2008 10:06	6.4	-4.8	109		
BrigIT-3	10/6/2008 10:09	5.8	-1.5	107		
BrigIT-3	11/13/2008 15:46	0	-0.6	75		
BrigIT-3	12/26/2008 8:43	0	-1.4	60		
BrigIT-4	7/10/2008 10:13	0	-2.8			
BrigIT-4	8/5/2008 14:38	20.2	-2.9	124		
BrigIT-4	9/4/2008 11:45	19.7	-2.8	70		
BrigIT-4	10/6/2008 10:29	20.2	-0.9	90		
BrigIT-4	11/13/2008 16:03	19.1	-0.6	60		
BrigIT-4	12/26/2008 9:02	19.8	-1.3	48		
BrigIT-5	7/10/2008 10:20	0	-2.9			
BrigIT-5	8/5/2008 14:44	20.1	-3	128		
BrigIT-5	9/4/2008 11:51	5.5	-2.9	70		
BrigIT-5	10/6/2008 10:38	7.3	-0.8	90		
BrigIT-5	11/13/2008 16:14	1.4	-0.7	60		
BrigIT-5	12/26/2008 9:12	1.1	-1.4	45		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563122

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (Inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BrigIT-6	7/10/2008 10:31	3.7	-3			
BrigIT-6	8/5/2008 14:56	19.9	-2.9	115		
BrigIT-6	9/4/2008 12:05	18.3	-3.9	70		
BrigIT-6	10/6/2008 11:04	19.2	-0.8	82		
BrigIT-6	11/14/2008 8:30	17.1	-0.8	55		
BrigIT-6	12/26/2008 9:28	5.3	-1.4	45		
BrigT-56	7/15/2008 7:41	1.5	-0.3	92		
BrigT-56	8/4/2008 14:06	11.2	-0.2	100		
BrigT-56	8/4/2008 14:08	11	-0.2	100		
BrigT-56	9/4/2008 10:26	9.5	-0.2	75		
BrigT-56	9/4/2008 10:28	10	-0.2	75		
BrigT-56	10/2/2008 13:37	11.5	-0.2	80		
BrigT-56	10/2/2008 13:39	11.8	-0.2	80		
BrigT-56	11/13/2008 11:47	8.9	0	70		
BrigT-56	11/13/2008 11:48	10.2	0	70		
BrigT-56	12/2/2008 7:26	0	0	20		
BrigT-56	12/2/2008 7:45	5.1	-0.2	30	19	until compliant pressure achieved
BrigT-56	12/10/2008 8:03	0	0.2	30		
BrigT-56	12/10/2008 8:09	0	-0.2	40	<1	until compliant pressure achieved
BRIPEW01	7/10/2008 8:24	6.2	-4.4	70		
BRIPEW01	7/10/2008 8:26	6.6	-5.1	70		
BRIPEW01	7/28/2008 7:55	8.8	-5.3	68		
BRIPEW01	8/5/2008 13:39	4.9	-2.8	94		
BRIPEW01	8/5/2008 13:41	5.4	-11.8	94		
BRIPEW01	9/4/2008 10:49	4.8	-7.4	65		
BRIPEW01	9/4/2008 10:51	4.5	-11.3	65		
BRIPEW01	10/6/2008 9:01	7.1	-15.7	70		
BRIPEW01	10/6/2008 9:04	7.1	-12.4	70		
BRIPEW01	11/13/2008 13:54	6.7	-9.2	62		
BRIPEW01	11/13/2008 13:57	6.5	-8.1	65		
BRIPEW01	12/26/2008 8:00	7.5	-8	40		

O(7/10, 7/28, 8/5

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

5 8/5, 9/4, 10/6. O2 Brig -2 8/5, 9/4, 10/6 11/13 9/4, 10/6

6 " " " 11/14, 12/26. 3 " " " 11/13, 12/26.

5 8/4, 9/4 10/2 11/13 12/2. 4 " " " " 12/26. = 32

Device ID	Date Time	O2 (Oxygen) (%by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW01	12/26/2008 8:02	7.8	-5.9	40		
BRIPEW02	7/10/2008 8:33	6.5	-47.3	70		
BRIPEW02	7/28/2008 8:10	15.8	-45.4	68		
BRIPEW02	8/5/2008 13:47	13.6	-43.9	100		
BRIPEW02	9/4/2008 10:55	6.3	-44.8	60		
BRIPEW02	10/6/2008 9:11	7	-42.7	70		
BRIPEW02	10/6/2008 9:15	7.4	-37	70		
BRIPEW02	11/13/2008 14:01	11.8	-39.7	60		
BRIPEW02	11/13/2008 14:08	12.1	-31.4	60		
BRIPEW02	12/26/2008 8:06	12.5	-25.5	32		
BRIPEW02	12/26/2008 8:08	12.4	-15	32		
BRIPEW03	7/10/2008 8:37	3	-1.1	80		
BRIPEW03	7/10/2008 8:39	3.4	-4.7	80		
BRIPEW03	7/28/2008 8:13	11	-5.5	68		
BRIPEW03	8/5/2008 13:52	11.2	-5	98		
BRIPEW03	9/4/2008 10:59	2.8	-5	60		
BRIPEW03	10/6/2008 9:19	10.8	-8	75		
BRIPEW03	10/6/2008 9:21	10.6	-5.8	75		
BRIPEW03	11/13/2008 14:12	8	-9.4	64		
BRIPEW03	11/13/2008 14:14	8.1	-2.2	64		
BRIPEW03	12/26/2008 8:14	9.8	-4.8	35		
BRIPEW04	7/10/2008 8:43	8.9	-2.1	83		
BRIPEW04	7/28/2008 8:16	11.6	-4.2	70		
BRIPEW04	8/5/2008 13:56	7.8	-0.4	100		
BRIPEW04	8/5/2008 13:58	4.6	-10.9	100		
BRIPEW04	9/4/2008 11:04	2.7	-0.2	55		
BRIPEW04	9/4/2008 11:06	2.4	-26	60		
BRIPEW04	10/6/2008 9:25	3.2	-33.9	80		
BRIPEW04	10/6/2008 9:27	2.9	-27.5	80		
BRIPEW04	11/13/2008 14:28	1.2	-4.6	60		
BRIPEW04	11/13/2008 14:32	1.5	-2.8	60		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563124

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW04	12/26/2008 8:18	0.9	-2.2	35		
BRIPEW05	7/10/2008 8:50	0.1	-1.8	90		
BRIPEW05	7/10/2008 8:52	0	-5.4	90		
BRIPEW05	8/5/2008 14:06	0	7.7	110		
BRIPEW05	8/5/2008 14:08	0.2	-46.4	102	<1	until compliant pressure achieved
BRIPEW05	9/4/2008 11:15	0.7	-48.4	70		
BRIPEW05	10/6/2008 9:42	1.8	-44.9	82		
BRIPEW05	10/6/2008 9:45	1.3	-36.6	82		
BRIPEW05	11/13/2008 15:11	0	12.9	62		
BRIPEW05	11/13/2008 15:21	2	-40.5	62	<1	until compliant pressure achieved
BRIPEW05	12/26/2008 8:28	1.4	-6.7	42		
BRIPEW06	7/10/2008 9:00	0	-1.5	80		
BRIPEW06	7/10/2008 9:02	0	-2.5	80		
BRIPEW06	8/5/2008 14:15	0.3	-3.1	90		
BRIPEW06	8/5/2008 14:17	0.2	-5.2	90		
BRIPEW06	9/4/2008 11:23	0	-7.3	75		
BRIPEW06	9/4/2008 11:25	0	-10.4	75		
BRIPEW06	10/6/2008 9:49	9.3	-45.1	75		
BRIPEW06	10/6/2008 9:54	9.9	-40.1	75		
BRIPEW06	11/13/2008 15:26	0	0.7	68		
BRIPEW06	11/13/2008 15:29	0	-0.3	70	<1	until compliant pressure achieved
BRIPEW06	12/26/2008 8:35	0	0.2	65		
BRIPEW06	12/26/2008 8:38	0	-0.3	65	<1	until compliant pressure achieved
BRIPEW07	7/10/2008 9:05	0	-14.3	80		
BRIPEW07	7/10/2008 9:07	0	-23.9	80		
BRIPEW07	8/5/2008 14:22	0.6	-21.3	90		
BRIPEW07	9/4/2008 11:30	0	-23.2	65		
BRIPEW07	10/6/2008 9:58	1.3	-24.9	80		
BRIPEW07	10/6/2008 10:00	1.2	-14.9	80		
BRIPEW07	11/13/2008 15:33	0	-6	68		
BRIPEW07	11/13/2008 15:35	0	-2.2	68		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563125

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW07	12/26/2008 8:41	0	-3.4	38		
BRIPEW08	7/10/2008 10:03	13.9	-48.8	90		
BRIPEW08	8/5/2008 14:30	18.7	-37.2	100		
BRIPEW08	9/4/2008 11:39	19.4	-39.8	60		
BRIPEW08	10/6/2008 10:12	20	-35.2	85		
BRIPEW08	10/6/2008 10:14	20.3	-25.4	85		
BRIPEW08	11/13/2008 15:50	8.7	0.8	60		
BRIPEW08	11/13/2008 15:52	8.2	-11.1	60	<1	until compliant pressure achieved
BRIPEW08	12/26/2008 8:48	18.9	-27	35		
BRIPEW08	12/26/2008 8:50	20.2	-23	35		
BRIPEW09	7/10/2008 10:08	1.9	-0.2	85		
BRIPEW09	7/10/2008 10:11	2.1	-5.8	85		
BRIPEW09	8/5/2008 14:33	1.3	-4.6	100		
BRIPEW09	8/5/2008 14:35	0.6	-29	100		
BRIPEW09	9/4/2008 11:42	1.8	-23.7	90		
BRIPEW09	10/6/2008 10:20	1.3	-18	95		
BRIPEW09	10/6/2008 10:21	1	-14.2	95		
BRIPEW09	11/13/2008 15:57	0.9	-25.1	90		
BRIPEW09	11/13/2008 16:00	0.7	-23	65		
BRIPEW09	12/26/2008 8:57	1.8	-22.7	60		
BRIPEW09	12/26/2008 8:59	1.4	-19.7	60		
BRIPEW10	7/10/2008 10:17	2.8	-44.4	85		
BRIPEW10	8/5/2008 14:42	9.8	-42.7	100		
BRIPEW10	9/4/2008 11:49	3.1	-46.8	55		
BRIPEW10	10/6/2008 10:33	17.4	-45	85		
BRIPEW10	10/6/2008 10:35	20	-40.2	85		
BRIPEW10	11/13/2008 16:07	0	10.2	60		
BRIPEW10	11/13/2008 16:11	3.4	-16.7	60	<1	until compliant pressure achieved
BRIPEW10	12/26/2008 9:05	4.6	-41.9	40		
BRIPEW10	12/26/2008 9:09	4.9	-36.1	40		
BRIPEW11	7/10/2008 10:24	13.1	-46.8	90		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563126

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW11	8/5/2008 14:48	8.3	-42	100		
BRIPEW11	9/4/2008 11:54	14.5	-41.7	60		
BRIPEW11	10/6/2008 10:42	19.7	-44.4	82		
BRIPEW11	10/6/2008 10:45	20.3	-2.4	80		
BRIPEW11	11/14/2008 8:19	17.8	-0.4	50		
BRIPEW11	12/26/2008 9:16	19.6	0	38		
BRIPEW11	12/26/2008 9:21	19.9	-23.5	38	<1	until compliant pressure achieved
BRIPEW12	7/10/2008 10:28	11.4	-0.9	90		
BRIPEW12	8/5/2008 14:53	20.4	-0.2	100		
BRIPEW12	9/4/2008 12:02	18.5	-0.2	60		
BRIPEW12	10/6/2008 10:55	20.2	0	88		
BRIPEW12	10/6/2008 10:59	20.2	-1.2	80	<1	until compliant pressure achieved
BRIPEW12	11/14/2008 8:24	18.3	-25	50		
BRIPEW12	11/14/2008 8:27	18.5	-9.8	50		
BRIPEW12	12/26/2008 9:26	20.4	-0.5	40		
BRIPEW13	7/10/2008 10:34	0	-8.5	80		
BRIPEW13	7/10/2008 10:36	0	-11.7	80		
BRIPEW13	8/6/2008 8:01	0	-12.6	72		
BRIPEW13	9/4/2008 12:09	0	-17.3	60		
BRIPEW13	10/6/2008 11:08	2.5	-42.4	80		
BRIPEW13	10/6/2008 11:11	2.5	-36.9	80		
BRIPEW13	11/14/2008 8:34	0.7	-34.3	60		
BRIPEW13	11/14/2008 8:36	0.5	-31.2	60		
BRIPEW13	12/26/2008 9:33	0	-4.8	45		
BRIPEW14	7/10/2008 10:39	0.2	-6.8	80		
BRIPEW14	7/10/2008 10:40	0.2	-7.9	80		
BRIPEW14	8/6/2008 8:05	2.6	-12.9	85		
BRIPEW14	9/4/2008 12:13	0	-11.3	72		
BRIPEW14	9/4/2008 12:15	0	-16.2	72		
BRIPEW14	10/6/2008 11:19	5	-15.9	90		
BRIPEW14	10/6/2008 11:21	2	-14.6	90		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563127

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW14	11/14/2008 8:46	0	-10.8	80		
BRIPEW14	12/26/2008 9:36	0	-11.3	70		
BRIPEW15	7/10/2008 10:52	7.1	-43.1	85		
BRIPEW15	8/6/2008 8:10	8.3	-42.2	70		
BRIPEW15	9/4/2008 12:18	3.8	-48.4	55		
BRIPEW15	10/6/2008 11:25	11.2	-42.4	80		
BRIPEW15	10/6/2008 11:28	11.9	-38.8	80		
BRIPEW15	11/14/2008 8:51	2.7	-37.6	52		
BRIPEW15	11/14/2008 8:53	3.1	-35.3	52		
BRIPEW15	12/26/2008 9:40	10.2	-35.7	38		
BRIPEW15	12/26/2008 9:42	11.1	-30.8	38		
BRIPEW16	7/10/2008 10:56	0	0	85		
BRIPEW16	7/10/2008 10:57	0	-2.9	85	<1	until compliant pressure achieved
BRIPEW16	8/6/2008 8:14	2	-8	70		
BRIPEW16	8/6/2008 8:16	1.9	-14.4	70		
BRIPEW16	9/4/2008 12:22	0	-8.1	70		
BRIPEW16	9/4/2008 12:23	0	-17.5	70		
BRIPEW16	10/6/2008 11:32	5.1	-8.7	80		
BRIPEW16	10/6/2008 11:34	5.1	-7.6	80		
BRIPEW16	11/14/2008 8:56	9.3	-3.5	70		
BRIPEW16	11/14/2008 9:00	9.9	-2.9	70		
BRIPEW16	12/26/2008 9:46	0.1	0	40		
BRIPEW16	12/26/2008 9:49	12.5	-0.4	40	<1	until compliant pressure achieved
BRIPEW17	7/10/2008 11:03	1.1	-12.7	80		
BRIPEW17	7/10/2008 11:05	1.7	-21.7	80		
BRIPEW17	8/6/2008 8:20	10.5	-26.8	80		
BRIPEW17	9/4/2008 12:26	0	-25.2	65		
BRIPEW17	10/6/2008 11:41	4.5	-25.2	80		
BRIPEW17	10/6/2008 11:43	3.9	-15.9	80		
BRIPEW17	11/14/2008 9:03	0.5	-12.5	60		
BRIPEW17	11/14/2008 9:05	0.2	-10.6	60		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563128

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW17	12/26/2008 9:54	7.4	-5.9	45		
BRIPEW18	7/10/2008 11:10	0.4	-1.4	85		
BRIPEW18	7/10/2008 11:11	0.1	-5.8	85		
BRIPEW18	8/6/2008 8:30	7.8	-19	75		
BRIPEW18	9/4/2008 12:29	0	-11.8	60		
BRIPEW18	10/6/2008 11:47	4	-17	80		
BRIPEW18	10/6/2008 11:48	5	-12	80		
BRIPEW18	11/14/2008 9:08	1.8	-8.6	60		
BRIPEW18	11/14/2008 9:10	1.9	-7.9	60		
BRIPEW18	12/26/2008 9:58	2.4	-7.6	48		
BRIPEW19	7/10/2008 11:17	16.3	0	85		
BRIPEW19	7/10/2008 11:19	16.8	-0.6	85	<1	until compliant pressure achieved
BRIPEW19	8/6/2008 8:41	20.3	-0.2	75		
BRIPEW19	9/4/2008 12:32	19.2	0	60		
BRIPEW19	9/4/2008 12:34	20	-0.3	60	<1	until compliant pressure achieved
BRIPEW19	10/6/2008 11:52	17.7	-6.5	82		
BRIPEW19	10/6/2008 11:53	19.4	-3.7	82		
BRIPEW19	11/14/2008 9:14	16.4	-4.5	55		
BRIPEW19	11/14/2008 9:16	16.8	-3.7	55		
BRIPEW19	12/26/2008 10:01	17.9	-2.6	40		
BRIPEW19	12/26/2008 10:03	18.1	-1.7	40		
BRIPEW20	7/10/2008 11:23	6.9	-0.1	80		
BRIPEW20	7/10/2008 11:25	9.4	-1.2	80		
BRIPEW20	8/6/2008 8:47	11.6	-2.2	79		
BRIPEW20	8/6/2008 8:48	11.1	-7.8	73		
BRIPEW20	9/4/2008 12:38	11.9	-12	60		
BRIPEW20	10/6/2008 11:57	7.6	-31.2	80		
BRIPEW20	10/6/2008 11:59	8.5	-26.7	80		
BRIPEW20	11/14/2008 9:21	5.2	-29.5	60		
BRIPEW20	11/14/2008 9:23	5.3	-22.2	60		
BRIPEW20	12/26/2008 10:08	2.5	-2.7	45		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563129

Bridgeton Landfill Wellfield Data

Device ID	Date/Time	% Oxygen (% by vol)	Final Static Pressure (inches H2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW21	7/10/2008 11:29	1.6	-10.9	80		
BRIPEW21	8/6/2008 8:52	5.2	-16.6	80		
BRIPEW21	9/4/2008 12:41	0	-12	60		
BRIPEW21	9/4/2008 12:44	0	-27	60		
BRIPEW21	10/6/2008 12:42	4	-39.2	80		
BRIPEW21	10/6/2008 12:44	5	-32.6	80		
BRIPEW21	11/14/2008 9:28	0.7	-27	65		
BRIPEW21	11/14/2008 9:29	0.8	-22.4	65		
BRIPEW21	12/26/2008 10:12	3.2	-21.5	45		
BRIPEW22	7/10/2008 11:37	9.2	-1.2	85		
BRIPEW22	8/6/2008 8:55	13.1	-2.2	80		
BRIPEW22	9/4/2008 12:49	7.3	-2.3	60		
BRIPEW22	9/4/2008 12:51	7.9	-5.4	60		
BRIPEW22	10/6/2008 12:47	11.6	-3.9	80		
BRIPEW22	10/6/2008 12:49	13	-2.5	80		
BRIPEW22	11/14/2008 9:33	11	-2.2	60		
BRIPEW22	12/26/2008 10:16	13.1	-2.6	45		
BRIPEW23	7/10/2008 11:43	0.6	-9.5	85		
BRIPEW23	8/6/2008 8:58	20.1	-0.3	80		
BRIPEW23	9/4/2008 12:53	14.9	-0.7	60		
BRIPEW23	10/6/2008 12:53	5.9	-2	85		
BRIPEW23	10/6/2008 12:55	4.7	-0.6	85		
BRIPEW23	11/14/2008 9:37	0	-0.8	55		
BRIPEW23	12/26/2008 10:19	6	-0.3	45		
BRIPEW24	7/10/2008 11:47	17	-0.5	85		
BRIPEW24	8/6/2008 9:02	0	-2.2	82		
BRIPEW24	8/6/2008 9:04	0	-6.5	80		
BRIPEW24	9/4/2008 12:57	0	-14.1	60		
BRIPEW24	9/4/2008 12:58	0	-19.8	60		
BRIPEW24	10/6/2008 12:59	1.6	-24.9	80		
BRIPEW24	10/6/2008 13:00	1.9	-22.2	80		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563130

Bridgeton Landfill Wellfield Data

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW24	11/14/2008 9:42	0	-21.4	60		
BRIPEW24	11/14/2008 9:44	0	-19.5	60		
BRIPEW24	12/26/2008 10:23	1.1	-14.7	45		
BRIPEW25	7/10/2008 11:56	8.7	0	85		
BRIPEW25	7/10/2008 11:58	13.2	-2.2	85	<1	until compliant pressure achieved
BRIPEW25	8/6/2008 9:07	14.5	-4.6	80		
BRIPEW25	9/4/2008 13:02	4.2	-10.6	60		
BRIPEW25	9/4/2008 13:04	2.1	-22.6	60		
BRIPEW25	10/6/2008 13:07	2.5	-31	80		
BRIPEW25	10/6/2008 13:09	2.4	-28.9	80		
BRIPEW25	11/14/2008 9:48	0	-23.2	60		
BRIPEW25	11/14/2008 9:49	0.1	-20.7	60		
BRIPEW25	12/26/2008 10:27	1.2	-16.7	48		
BRIPEW26	7/10/2008 12:02	6.4	-3.8	80		
BRIPEW26	8/6/2008 9:11	8.9	-2.8	80		
BRIPEW26	8/6/2008 9:13	5.5	-8.5	80		
BRIPEW26	9/4/2008 13:07	6.6	-10.6	60		
BRIPEW26	10/6/2008 13:12	7.3	-11.8	80		
BRIPEW26	10/6/2008 13:14	8.7	-9.6	80		
BRIPEW26	11/14/2008 9:53	4.9	-10.7	64		
BRIPEW26	11/14/2008 9:55	4.8	-9.6	64		
BRIPEW26	12/26/2008 10:32	6	-7.1	48		
BRIPEW27	7/10/2008 12:05	6.3	-14	85		
BRIPEW27	8/6/2008 9:17	1.5	-19.3	77		
BRIPEW27	9/4/2008 13:10	0.3	-17	64		
BRIPEW27	10/6/2008 13:18	3.1	-17.7	80		
BRIPEW27	10/6/2008 13:20	2.5	-11.9	80		
BRIPEW27	11/14/2008 10:02	0.5	-10	55		
BRIPEW27	11/14/2008 10:04	0.4	-7.4	55		
BRIPEW27	12/26/2008 10:35	1	-5.6	45		
BRIPEW28	7/10/2008 12:09	10.4	0	90		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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PL1 - 0563131

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW28	7/10/2008 12:11	10.9	-2.6	90	<1	until compliant pressure achieved
BRIPEW28	8/6/2008 9:20	14.1	-11.8	80		
BRIPEW28	9/4/2008 13:13	9.3	-6.6	62		
BRIPEW28	10/6/2008 13:24	15.5	-8.4	82		
BRIPEW28	10/6/2008 13:25	15.8	-2.4	82		
BRIPEW28	11/14/2008 10:08	13.8	-1.7	60		
BRIPEW28	12/26/2008 10:37	2.4	-12.3	50		
BRIPEW29	7/10/2008 12:16	1.7	-9.2	83		
BRIPEW29	8/6/2008 9:25	0	-11	82		
BRIPEW29	9/4/2008 13:16	0	-9	60		
BRIPEW29	9/4/2008 13:18	0	-37	60		
BRIPEW29	10/6/2008 13:30	3	-32.8	80		
BRIPEW29	10/6/2008 13:32	1.2	-28.4	80		
BRIPEW29	11/14/2008 10:15	0	-32.7	60		
BRIPEW29	11/14/2008 10:20	0	-28.6	60		
BRIPEW29	12/26/2008 10:40	1.1	-35.4	48		
BRIPEW29	12/26/2008 10:44	1.3	-28.2	48		
BRIPEW30	7/10/2008 12:21	17.5	-1	80		
BRIPEW30	8/6/2008 9:29	8.8	-7	80		
BRIPEW30	8/6/2008 9:31	6.4	-19.9	75		
BRIPEW30	9/4/2008 13:21	1.4	-14.1	65		
BRIPEW30	10/6/2008 13:38	7.1	-12.4	82		
BRIPEW30	10/6/2008 13:39	7.1	-9.2	82		
BRIPEW30	11/14/2008 10:24	2.4	-6.7	60		
BRIPEW30	12/10/2008 8:38	3.4	-6.3	30		
BRIPEW30	12/10/2008 8:40	4.2	-4.5	30		
BRIPEW30	12/26/2008 10:49	0	0.3	45		
BRIPEW30	12/26/2008 10:51	0	-11.8	45	<1	until compliant pressure achieved
BRIPEW31	7/10/2008 12:27	5.9	-43	80		
BRIPEW31	8/6/2008 9:36	2.7	-44.6	80		
BRIPEW31	9/4/2008 13:23	0	-44.8	65		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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PL1 - 0563132

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000469

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW31	10/6/2008 13:44	3.6	-45.8	80		
BRIPEW31	10/6/2008 13:46	3.2	-43.1	80		
BRIPEW31	11/14/2008 10:28	2	-42.9	58		
BRIPEW31	11/14/2008 10:29	2	-40.4	58		
BRIPEW31	12/26/2008 10:57	19	-44.1	50		
BRIPEW31	12/26/2008 11:00	13.5	-40.9	50		
BRIPEW32	7/10/2008 12:31	5.5	-0.2	90		
BRIPEW32	7/10/2008 12:33	5.8	-3.4	90		
BRIPEW32	8/6/2008 9:40	20	-3.6	80		
BRIPEW32	9/4/2008 13:27	16.8	-0.6	60		
BRIPEW32	10/6/2008 13:50	19.5	0	84		
BRIPEW32	10/6/2008 13:52	20.3	-0.3	84	<1	until compliant pressure achieved
BRIPEW32	11/14/2008 10:33	17.3	-1	55		
BRIPEW32	12/26/2008 11:05	4.9	0	48		
BRIPEW32	12/26/2008 11:07	18.5	-0.2	48	<1	until compliant pressure achieved
BRIPEW33	7/10/2008 12:36	4.5	-1	85		
BRIPEW33	7/10/2008 12:38	4	-2.7	85		
BRIPEW33	8/6/2008 9:44	7.4	-4	80		
BRIPEW33	9/4/2008 13:31	4.1	-3.4	60		
BRIPEW33	9/4/2008 13:32	3.1	-10	60		
BRIPEW33	10/6/2008 13:55	12.8	-21.4	80		
BRIPEW33	10/6/2008 13:57	12.7	-15.6	80		
BRIPEW33	11/14/2008 10:36	11.4	-24.4	68		
BRIPEW33	11/14/2008 10:38	11.5	-15.8	68		
BRIPEW33	12/26/2008 11:12	17.4	-9.3	50		
BRIPEW33	12/26/2008 11:14	18.6	-2.2	50		
BRIPEW34	7/10/2008 12:42	0	-0.4	85		
BRIPEW34	7/10/2008 12:43	0	-2.3	85		
BRIPEW34	8/6/2008 9:48	6	-4	80		
BRIPEW34	9/4/2008 13:35	3	-3.7	60		
BRIPEW34	9/4/2008 13:37	3	-11.2	60		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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PL1 - 0563133

Exceedance	Date/Time	Initial Oxygen (% by Vol)	Initial Static Pressure (inches H2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW34	10/6/2008 14:05	13.8	-14.7	78		
BRIPEW34	10/6/2008 14:06	13.9	-9.4	78		
BRIPEW34	11/14/2008 10:41	11.2	-11.4	65		
BRIPEW34	11/14/2008 10:43	11.4	-8.7	65		
BRIPEW34	12/26/2008 11:17	8.8	-5.7	55		
BRIPEW35	7/10/2008 12:47	7.7	-0.5	88		
BRIPEW35	8/6/2008 9:51	8.8	-0.8	83		
BRIPEW35	8/6/2008 9:53	5.5	-3.7	79		
BRIPEW35	9/4/2008 13:39	4.3	-4.5	60		
BRIPEW35	9/4/2008 13:41	2.8	-9.7	60		
BRIPEW35	10/6/2008 14:10	10.9	-13.9	82		
BRIPEW35	10/6/2008 14:12	11.2	-7.8	82		
BRIPEW35	11/14/2008 10:46	7	-16	80		
BRIPEW35	11/14/2008 10:47	6.8	-11.4	80		
BRIPEW35	12/26/2008 11:20	2.9	-8	62		
BRIPEW36	7/10/2008 12:51	6.6	-1.1	88		
BRIPEW36	8/6/2008 10:00	6.3	-1.8	85		
BRIPEW36	8/6/2008 10:01	2.6	-9.1	80		
BRIPEW36	9/4/2008 13:45	2.6	-15	60		
BRIPEW36	10/6/2008 14:18	4.7	-17.4	78		
BRIPEW36	10/6/2008 14:20	9.1	-9	78		
BRIPEW36	11/14/2008 10:50	0	-4.4	58		
BRIPEW36	12/26/2008 11:23	15.1	-0.7	50		
BRIPEW37	7/10/2008 12:56	13.7	-0.3	85		
BRIPEW37	8/6/2008 10:06	17.7	-0.4	84		
BRIPEW37	9/4/2008 13:49	12.4	-1.2	60		
BRIPEW37	9/4/2008 13:50	11.1	-10.4	60		
BRIPEW37	10/6/2008 14:24	12.9	-12.8	80		
BRIPEW37	10/6/2008 14:26	15.2	-7.8	80		
BRIPEW37	11/14/2008 10:54	17.2	-1.5	55		
BRIPEW37	12/26/2008 11:26	10.1	-9	50		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

State of MO v. Republic Services, Inc. et al
PL1 - 0563134

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW38	7/10/2008 13:09	0.7	-40.1	85		
BRIPEW38	8/6/2008 10:10	0	-17.7	84		
BRIPEW38	9/4/2008 13:53	0.1	-32.9	63		
BRIPEW38	10/6/2008 14:30	2.1	-35.2	80		
BRIPEW38	10/6/2008 14:31	1.8	-29.8	80		
BRIPEW38	11/14/2008 10:58	0	-4.5	70		
BRIPEW38	12/26/2008 11:29	0.3	-2.1	62		
BRIPEW39	7/10/2008 13:13	5.8	-1.5	85		
BRIPEW39	7/10/2008 13:15	4.4	-3.3	85		
BRIPEW39	8/6/2008 10:14	0	1.8	80		
BRIPEW39	8/6/2008 10:16	0.9	-1.9	80	<1	until compliant pressure achieved
BRIPEW39	9/4/2008 13:56	1.8	-4.6	65		
BRIPEW39	9/4/2008 13:58	1.8	-7.7	65		
BRIPEW39	10/6/2008 14:36	2.8	-9.7	82		
BRIPEW39	10/6/2008 14:38	3.3	-4.8	82		
BRIPEW39	11/14/2008 11:02	1	-2.3	69		
BRIPEW39	12/26/2008 11:33	1.1	-3.3	60		
BRIPEW40	7/10/2008 13:19	12.3	-0.5	85		
BRIPEW40	8/6/2008 10:19	14.8	-1	80		
BRIPEW40	9/4/2008 14:01	7.6	-2.1	65		
BRIPEW40	9/4/2008 14:02	7.3	-4.8	65		
BRIPEW40	10/6/2008 14:43	14.7	-6.7	80		
BRIPEW40	10/6/2008 14:44	15.2	-3.9	80		
BRIPEW40	11/14/2008 11:05	10.7	-3.9	60		
BRIPEW40	11/14/2008 11:07	10.8	-2.4	60		
BRIPEW40	12/26/2008 11:35	10.1	-2.1	50		
BRIPEW41	10/6/2008 14:54	2.2	0	90		
BRIPEW41	10/6/2008 14:58	0.8	-0.8	90	<1	until compliant pressure achieved
BRIPEW41	11/14/2008 11:38	11.6	-2	55		
BRIPEW41	11/14/2008 11:39	11.6	-1.2	55		
BRIPEW41	12/26/2008 11:44	1.5	-1.3	50		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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PL1 - 0563135

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000472

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW42	10/6/2008 15:01	0	0	90		
BRIPEW42	10/6/2008 15:05	0	-1.3	90	<1	until compliant pressure achieved
BRIPEW42	11/14/2008 11:42	1.5	0	55		
BRIPEW42	11/14/2008 11:44	1.4	-1.6	55	<1	until compliant pressure achieved
BRIPEW42	12/26/2008 11:47	5.7	-8.1	48		
BRIPEW43	10/6/2008 15:09	0	0.1	88		
BRIPEW43	10/6/2008 15:11	0	-0.2	88	<1	until compliant pressure achieved
BRIPEW43	11/14/2008 11:47	3.7	-0.1	55		
BRIPEW43	12/26/2008 11:49	0	0.7	50		
BRIPEW43	12/26/2008 11:52	0	-0.6	50	<1	until compliant pressure achieved
BRIPEW44	10/6/2008 15:14	14.6	0	85		
BRIPEW44	10/6/2008 15:16	15	-0.3	85	<1	until compliant pressure achieved
BRIPEW44	11/14/2008 11:50	17.7	-0.6	57		
BRIPEW44	12/26/2008 11:54	11.7	-0.7	45		
BRIPEW45	10/6/2008 15:20	14.3	0	85		
BRIPEW45	10/6/2008 15:22	14.3	-0.2	85	<1	until compliant pressure achieved
BRIPEW45	11/14/2008 11:53	17	-0.2	55		
BRIPEW45	12/26/2008 11:57	18.5	-0.2	50		
BRIPEW46	10/6/2008 15:25	7	0	80		
BRIPEW46	10/6/2008 15:29	6.8	-0.2	80	<1	until compliant pressure achieved
BRIPEW46	11/14/2008 11:56	14.3	-0.7	55		
BRIPEW46	12/26/2008 12:00	16.7	-0.9	45		
BRIPEW46	12/26/2008 12:02	16.7	-0.3	45		
BRIPEW47	10/6/2008 15:33	20.5	0.4	80		
BRIPEW47	10/6/2008 15:35	20.6	-0.5	80	<1	until compliant pressure achieved
BRIPEW47	11/14/2008 12:00	16.5	-0.6	58		
BRIPEW47	12/26/2008 12:04	17.7	-0.7	48		
BRIPEW47	12/26/2008 12:07	17.7	-0.3	48		
BRIPEW48	10/6/2008 15:38	20.6	0.7	82		
BRIPEW48	10/6/2008 15:41	20.8	-0.4	82	<1	until compliant pressure achieved
BRIPEW48	11/14/2008 12:03	19.7	2	55		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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PL1 - 0563136

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW48	11/14/2008 12:06	19.8	-0.2	55	<1	until compliant pressure achieved
BRIPEW48	12/26/2008 12:10	18	-2.8	52		
BRIPEW48	12/26/2008 12:13	18.1	-2	52		
BRIPEW49	10/6/2008 15:44	0.1	0	80		
BRIPEW49	10/6/2008 15:46	0	-0.2	80	<1	until compliant pressure achieved
BRIPEW49	11/14/2008 12:08	4.3	-0.2	55		
BRIPEW49	12/26/2008 12:16	6.8	-0.1	45		
BRIPEW50	10/6/2008 15:50	0	0.1	80		
BRIPEW50	10/6/2008 15:52	0	-1	80	<1	until compliant pressure achieved
BRIPEW50	11/14/2008 12:11	0	-1.5	60		
BRIPEW50	12/26/2008 12:20	0	-1.3	50		
BRIPEW51	10/6/2008 15:55	0	0.1	84		
BRIPEW51	10/6/2008 15:58	0	-0.2	84	<1	until compliant pressure achieved
BRIPEW51	11/14/2008 12:15	5.1	-2.5	55		
BRIPEW51	12/26/2008 12:23	4.9	-3.8	45		
BRIPEW52	10/6/2008 16:01	0	0	80		
BRIPEW52	10/6/2008 16:04	0	-0.8	80	<1	until compliant pressure achieved
BRIPEW52	11/14/2008 12:18	0	0	55		
BRIPEW52	11/14/2008 12:21	0	-3.5	55	<1	until compliant pressure achieved
BRIPEW52	12/26/2008 12:25	16.8	-0.4	50		
BRIPEW53	10/6/2008 16:08	0	0.7	80		
BRIPEW53	10/6/2008 16:10	0	-0.5	80	<1	until compliant pressure achieved
BRIPEW53	11/14/2008 12:25	0	1.9	70		
BRIPEW53	11/14/2008 12:28	0	-0.2	70	<1	until compliant pressure achieved
BRIPEW53	12/26/2008 12:27	5.7	-21.8	50		
BRIPEW54	10/6/2008 16:14	0.3	-12.8	80		
BRIPEW54	10/6/2008 16:16	0.9	-0.3	80		
BRIPEW54	11/14/2008 12:32	0	6.1	55		
BRIPEW54	11/14/2008 12:35	0	-6.6	55	<1	until compliant pressure achieved
BRIPEW54	12/26/2008 12:31	8.2	-30.9	48		
BRIPEW55	10/6/2008 16:19	0	0.7	82		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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PL1 - 0563137

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRIPEW55	10/6/2008 16:23	0	-1	82	<1	until compliant pressure achieved
BRIPEW55	11/14/2008 12:38	0	0.5	55		
BRIPEW55	11/14/2008 12:40	0	-0.6	55	<1	until compliant pressure achieved
BRIPEW55	12/26/2008 12:33	7.4	-1.2	50		
BRIPEW56	10/6/2008 16:27	0	-0.3	80		
BRIPEW56	11/14/2008 12:44	0	-0.3	65		
BRIPEW56	12/26/2008 12:36	0.2	-0.3	50		
BRIPEW57	10/6/2008 16:33	0	0.4	80		
BRIPEW57	10/6/2008 16:36	0	-0.2	80	<1	until compliant pressure achieved
BRIPEW57	11/14/2008 12:50	0	-0.3	60		
BRIPEW57	12/26/2008 12:39	0	-0.5	50		
BRIPEW58	10/6/2008 16:39	0	0	80		
BRIPEW58	10/6/2008 16:42	0	-0.6	80	<1	until compliant pressure achieved
BRIPEW58	11/14/2008 12:53	0	-0.2	60		
BRIPEW58	12/26/2008 12:42	0	0	50		
BRIPEW58	12/26/2008 12:43	0	-0.3	50	<1	until compliant pressure achieved
BRIPEW59	10/6/2008 16:45	0	0	80		
BRIPEW59	10/6/2008 16:48	0	-0.2	80	<1	until compliant pressure achieved
BRIPEW59	11/14/2008 12:56	0	-0.1	80		
BRIPEW59	12/26/2008 12:48	0	-0.1	70		
BRIPEW60	10/6/2008 16:51	0.4	-0.6	80		
BRIPEW60	11/14/2008 12:59	0	0.5	62		
BRIPEW60	11/14/2008 13:01	0	-0.3	62	<1	until compliant pressure achieved
BRIPEW60	12/26/2008 12:51	0	14.4	65		
BRIPEW60	12/26/2008 12:55	0	-1.6	90	<1	until compliant pressure achieved
BRLCS-1B	7/15/2008 8:19	2.8	-49.7	90		
BRLCS-1B	7/28/2008 13:01	0	26.1	90		
BRLCS-1B	7/28/2008 13:08	1.5	-43.9	90	<1	until compliant pressure achieved
BRLCS-1B	8/5/2008 9:00	0	-32.6	90		
BRLCS-1B	8/22/2008 7:45	0	-35.5	80		
BRLCS-1B	9/4/2008 10:12	0	-37.1	75		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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PL1 - 0563138

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRLCS-1B	9/16/2008 12:05	0	-40.9	85		
BRLCS-1B	10/2/2008 13:23	0.1	-37.6	80		
BRLCS-1B	10/20/2008 14:35	0	-35.2	80		
BRLCS-1B	11/13/2008 10:55	0.6	-32.3	70		
BRLCS-1B	11/26/2008 13:22	0	-37	80		
BRLCS-1B	12/10/2008 7:36	0	-39	55		
BRLCS-1B	12/26/2008 7:26	0.1	-40.7	60		
BRLCS-2C	7/14/2008 17:01	0.6	-45.5	95		
BRLCS-2C	7/28/2008 9:26	0	-44.6	90		
BRLCS-2C	8/4/2008 11:21	0	-44.6	100		
BRLCS-2C	8/21/2008 11:57	0.2	-48	90		
BRLCS-2C	9/4/2008 10:40	0	-49.5	65		
BRLCS-2C	9/16/2008 12:23	0.1	-48.9	80		
BRLCS-2C	10/2/2008 14:09	0	0	85		
BRLCS-2C	10/2/2008 14:10	0	0	85		
BRLCS-2C	10/16/2008 16:49	0	2.2	64		
BRLCS-2C	10/16/2008 16:51	11.6	-3.5	70	14	until compliant pressure achieved
BRLCS-2C	10/16/2008 16:56	1.9	-0.4	70	<1	until compliant O_2 achieved
BRLCS-2D	12/26/2008 7:44	2.9	-27.6	60		
BRLCS-3C	7/14/2008 17:13	0	-45.6	85		
BRLCS-3C	7/28/2008 9:38	0	-43.7	85		
BRLCS-3C	8/4/2008 11:27	0	-44.7	95		
BRLCS-3C	8/21/2008 12:01	0	-45	90		
BRLCS-3C	9/4/2008 10:35	0	-39	70		
BRLCS-3C	9/16/2008 12:20	0	-44.6	90		
BRLCS-3C	10/2/2008 13:51	0	0	75		
BRLCS-3C	10/2/2008 13:59	1.6	0	75		
BRLCS-3C	10/16/2008 16:40	0	-2.9	80	14	until compliant pressure achieved
BRLCS-3C	10/16/2008 16:42	0	-12.1	78		
BRLCS-3C	11/13/2008 11:18	0	-30.2	80		
BRLCS-3C	11/26/2008 13:33	0	-33.1	80		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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PL1 - 0563139

Device ID	Date Time	O_2 (Oxygen) (% by vol)	Initial Static Pressure (inches H_2O)	Initial Temperature (Deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRLCS-3C	12/10/2008 8:31	0	-33.8	65		
BRLCS-3C	12/26/2008 7:39	0.5	-35.8	70		
BRLCS-4A	7/15/2008 10:39	0	-5.8	90		
BRLCS-4A	7/28/2008 16:11	0	-7.2	100		
BRLCS-4A	8/5/2008 12:08	0	-7.4	100		
BRLCS-4A	8/22/2008 11:13	0	-7.4	95		
BRLCS-4A	9/4/2008 9:14	0	-6.8	70		
BRLCS-4A	9/16/2008 12:02	0	-7.7	85		
BRLCS-4A	10/2/2008 12:30	0	-6.6	80		
BRLCS-4A	10/20/2008 14:30	0	-7.1	80		
BRLCS-4A	11/13/2008 10:45	0	-6.6	65		
BRLCS-4A	11/13/2008 10:47	0	-4.8	65		
BRLCS-4A	11/26/2008 13:15	0	-4.6	70		
BRLCS-4A	11/26/2008 13:18	0	-4.1	70		
BRLCS-4A	12/10/2008 7:26	0	-1.3	40		
BRLCS-4A	12/10/2008 7:30	0	-1.4	40		
BRLCS-4A	12/26/2008 7:19	0	0.5	40		
BRLCS-4A	12/26/2008 7:22	0	-0.9	45	<1	until compliant pressure achieved
BRLCS-5A	7/15/2008 7:30	1.8	-50.1	88		
BRLCS-5A	7/28/2008 12:14	0.1	-37	100		
BRLCS-5A	8/4/2008 14:43	0	8.7	100		
BRLCS-5A	8/4/2008 14:47	0	1.4	100		
BRLCS-5A	8/5/2008 8:07	0	-47.1	95	1	until compliant pressure achieved
BRLCS-5A	8/22/2008 7:23	0	-47.8	90		
BRLCS-5A	9/4/2008 10:15	0	-48.2	80		
BRLCS-5A	9/16/2008 12:13	0.4	-47.8	95		
BRLCS-5A	10/2/2008 13:26	0	-47.1	82		
BRLCS-5A	10/20/2008 14:40	0	-49	85		
BRLCS-5A	11/13/2008 11:06	0	-47.7	78		
BRLCS-5A	11/26/2008 13:29	0	-47.2	80		
BRLCS-5A	12/10/2008 7:48	0	-49	55		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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PL1 - 0563140

Bridgeton Landfill Wellfield Data

DeviceID*	Date/Time	O2 (Oxygen) (%by vol)	Initial Static Pressure (inches H2O)	Initial Temperature (deg F)	Duration Until Compliance Was Achieved (days)	Notes
BRLCS-5A	12/26/2008 7:34	0	-50.4	60		
BRLCS-6A	7/14/2008 18:16	0	-0.6	115		
BRLCS-6A	7/28/2008 11:40	0	-0.3	110		
BRLCS-6A	8/4/2008 13:42	0	-0.4	118		
BRLCS-6A	8/21/2008 14:34	0	-0.1	109		
BRLCS-6A	9/4/2008 10:19	0	-0.3	90		
BRLCS-6A	9/16/2008 12:09	0	-0.2	110		
BRLCS-6A	10/2/2008 13:31	0	-0.2	105		
BRLCS-6A	10/20/2008 14:44	0	-0.3	110		
BRLCS-6A	11/13/2008 11:02	0	-0.1	90		
BRLCS-6A	11/26/2008 13:26	0	-0.2	102		
BRLCS-6A	12/10/2008 7:42	1.7	-0.7	60		
BRLCS-6A	12/10/2008 7:44	1.9	-0.6	55		
BRLCS-6A	12/26/2008 7:31	0.8	-0.2	40		

*Standard operating procedure requires immediate action to be taken in instances that exceedances are monitored. Corrective action taken < 1 day.

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PL1 - 0563141

APPENDIX I

FOSS-SMITH PERSONAL COMMUNICATION

Hi Tony

Further to our phone conversation on Tuesday.

Firstly, the Action between Indian Harbor and Republic was settled out of court last night and I have been dismissed as an expert witness as a result. This means that the following can be made more relevant to you:

---

1. Landfills produce H_2:
    a. Water shift - Fuel (Char / CO) + H_2O →← CO_2 + H_2
    b. By reaction between H_2S and certain metals. H_2S is produced by microbiological action on Gypsum. Records of deposits at Bridgeton include significant deposits of gypsum as plasterboard / dry lining. It is possible that some H_2 arisings are not caused by water shift alone.
    c. Acetogenic / anaerobic phase generate around 0.2% rising to 1.5% H_2 around a hot spot and up to 20% (well above the LEL for H_2) near a hot spot particularly where a failed / sunken cap has admitted rainwater or where insufficient water has been used to cool hot carbonaceous material - see photo 'Hot Char' where high H_2 readings were noticed a couple of weeks after a bowser was used to try to put out a fire in this area.
2. Maximum H_2, produced by water shift, occurs at a temperature of around ±350°C. There are *suspicions* held by the UK Fire College, the UK Environment Agency and me, that initiation of the reaction is *possible* at a temperature as low as ±100°C on small particles (ie having a large surface area) in the presence of saturated steam / vapour / aerosol when driven by the advancing pyrolysis front. Small particles could include for example, de-volatilised unburned carbon as soot (5 to 50µ). The reaction seems to be a continuum which doesn't start and stop suddenly but is unpredictable and dependent on a number of variables.
3. Hydrogen is a light molecule with great penetrative ability. Able to progress forward faster than volatiles. Reaction can be sustained by presence of chlorinated compounds for example, hot PVC. Dissipates quickly so can't be pinpointed to a particular spot beyond about 20m. Measured concentration dies back within 2 to 3 weeks. Landfill gas consultant in UK is about to be commissioned to see if there is any correlation between H_2 gas readings at different wells to pinpoint source (ie triangulation). Daft idea.
4. H_2 reacts with O_2 to form pyroligneous water forming an available moisture source. At Bridgeton, the oxygen readings exceed the trigger levels in a high proportion of the readings. The reaction has been noticed in O_2 concentrations as low as 5% - In confidence please - of the 59,000 measurements I've seen at Bridgeton 23% of the measurements were over 5% and 43% of the results are suspiciously at 0%. No analyses of hydrogen have been seen (just methane, carbon dioxide, , oxygen). Not sure why H_2 was not measured since the portable instruments (GEM range) used had the capability to measure hydrogen. Would consider hydrogen concentration of 1.5% to indicate a hot spot.
5. More likely to occur nearer the surface in areas where the cap has failed and rainwater has contacted material likely to char (wood). Not much information on deeper reactions but it's possible that a fire in a zone wetted by leachate might also give rise to the reaction particularly near gas extraction / monitoring wells where the seals have failed.
6. H_2 arising from water shift reaction is as a result of a hot spot rather than the other way round. Hydrogen has a high ignition point (around 400°C) and is unlikely to spontaneously ignite.

If you were to ask me if a water gas reaction is playing a significant role at Bridgeton, I would say yes, it most probably is.

I hope this tells you what you need to know, Tony.

Do let me know if you, or anyone needs some other background support on the Bridgeton site - I have a mountain of information on the subject.

Lastly, I have attached a CV and Capability Statement

All the best

Patrick



Patrick Foss-Smith MSc MInstRE MCIWM
Landfill Fire Engineer
Office 01202 822478
Cell 07841 929860
Email landfillfire@aol.com
Web: Landfill-fire.eu.com

APPENDIX J

LEACHATE CHEMISTRY REPORT

April 29, 2015

Chris Boldt
Missouri Dept. of Natural Resources
PO Box 176
Jefferson City, MO 65102

Dear Chris Boldt:

Please find enclosed the analytical results for the sample(s) the laboratory received on **4/10/15 9:20 am** and logged in under work order **5041721**. All testing is performed according to our current TNI certifications unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Vice President , John LaPayne with any feedback you have about your experience with our laboratory.

Sincerely,

Lisa Grant
Project Manager
(309) 692-9688 x1764
lgrant@pdclab.com

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

ANALYTICAL RESULTS

Sample: 5041721-01
Name: 152187
Matrix: Leachate - Grab

Sampled: 04/09/15 10:03
Received: 04/10/15 09:20

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Anions - PIA							
Chloride	1200	mg/L		04/21/15 11:19	04/21/15 11:19	TAS	EPA 300.0
Sulfate	270	mg/L		04/21/15 11:03	04/21/15 11:03	TAS	EPA 300.0
General Chemistry - PIA							
Alkalinity - total as CaCO3	2800	mg/L		04/14/15 12:45	04/14/15 12:45	LAZ/B	SM 2320B
COD	32000	mg/L		04/15/15 12:49	04/15/15 12:55	SJW	SM 5220D
Cyanide	< 0.0050	mg/L		04/13/15 09:47	04/14/15 11:16	lgsjf	SM 4500-CN C - EPA 335.4
Fluoride	0.398	mg/L		04/23/15 13:26	04/23/15 13:26	TCH	SM 4500-F C
pH	5.59	pH Units	H	04/20/15 11:31	04/20/15 11:31	pdcad	SM 4500-H B - EPA 150.1 - SW 9040
Solids - total dissolved solids (TDS)	18000	mg/L		04/15/15 13:47	04/15/15 14:35	TIN	SM 2540C
Total Organic Carbon (TOC)	350	mg/L		04/15/15 12:30	04/15/15 21:07	BRS	SM 5310C
Nutrients - PIA							
Ammonia-N	260	mg/L		04/15/15 07:51	04/15/15 09:30	BRS	OIA/PAI-DK03 & EPA 350.1
Nitrate/Nitrite-N	0.23	mg/L		04/15/15 15:16	04/15/15 15:16	lgsjf	EPA 353.2 - SM 4500-NO3 F - QC 10-107-04-1-C
Total Metals - PIA							
Hardness	7600	mg/L		04/13/15 11:45	04/16/15 12:38	JMW	[CALC]
Aluminum	3.4	mg/L		04/13/15 11:45	04/16/15 12:24	JMW	SW 6010
Antimony	< 60	ug/L		04/13/15 11:45	04/16/15 13:11	JMW	SW 6020
Arsenic	340	ug/L		04/13/15 11:45	04/16/15 13:11	JMW	SW 6020
Barium	1800	ug/L		04/13/15 11:45	04/16/15 13:11	JMW	SW 6020
Beryllium	< 20	ug/L		04/13/15 11:45	04/16/15 13:11	JMW	SW 6020
Boron	12000	ug/L		04/13/15 11:45	04/17/15 09:14	JMW	SW 6020
Cadmium	< 20	ug/L		04/13/15 11:45	04/16/15 16:47	JMW	SW 6020
Calcium	2600	mg/L		04/13/15 11:45	04/16/15 12:38	JMW	SW 6010
Chromium	140	ug/L		04/13/15 11:45	04/16/15 16:47	JMW	SW 6020
Cobalt	< 40	ug/L		04/13/15 11:45	04/16/15 13:11	JMW	SW 6020
Copper	< 60	ug/L		04/13/15 11:45	04/16/15 13:11	JMW	SW 6020
Iron	610	mg/L		04/13/15 11:45	04/16/15 12:39	JMW	SW 6010
Magnesium	250	mg/L		04/13/15 11:45	04/16/15 12:21	JMW	SW 6010
Manganese	33000	ug/L		04/13/15 11:45	04/16/15 16:47	JMW	SW 6020
Mercury	12	ug/L		04/13/15 11:45	04/16/15 13:11	JMW	SW 6020
Nickel	< 100	ug/L		04/13/15 11:45	04/16/15 16:47	JMW	SW 6020
Phosphorus	1600	ug/L		04/13/15 11:45	04/16/15 16:47	JMW	SW 6020*
Potassium	280	mg/L		04/13/15 11:45	04/16/15 12:21	JMW	SW 6010
Selenium	52	ug/L		04/13/15 11:45	04/17/15 11:29	JMW	SW 6020
Silver	< 100	ug/L		04/13/15 11:45	04/16/15 13:11	JMW	SW 6020
Sodium	1100	mg/L		04/13/15 11:45	04/16/15 12:21	JMW	SW 6010
Strontium	12	mg/L		04/13/15 11:45	04/16/15 12:39	JMW	SW 6010
Thallium	< 20	ug/L		04/13/15 11:45	04/16/15 16:47	JMW	SW 6020

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2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

ANALYTICAL RESULTS

Sample: 5041721-01
Name: 152187
Matrix: Leachate - Grab

Sampled: 04/09/15 10:03
Received: 04/10/15 09:20

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Vanadium	< 100	ug/L		04/13/15 11:45	04/16/15 16:47	JMW	SW 6020
Zinc	6200	ug/L		04/13/15 11:45	04/16/15 16:47	JMW	SW 6020
Volatile Organics - PIA							
1,1,1,2-Tetrachloroethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,1,1-Trichloroethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,1,2,2-Tetrachloroethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,1,2-Trichloroethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,1-Dichloroethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,1-Dichloroethene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,2,4-Trichlorobenzene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,2,4-Trimethylbenzene	410	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,2-Dibromoethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,2-Dichlorobenzene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,2-Dichloroethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,3-Dichloropropene- Total	< 750	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,2-Dichloroethene- Total	< 500	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,2-Dichloropropane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,3,5-Trimethylbenzene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,3-Dichlorobenzene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
1,4-Dichlorobenzene	510	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
2-Hexanone	1700	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
4-Methyl-2-pentanone (MIBK)	2100	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Xylenes- Total	< 750	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Acetonitrile	< 5000	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Acrolein	< 2500	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Acrylonitrile	< 2500	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Benzene	910	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Bromodichloromethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Bromoform	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Bromomethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Carbon disulfide	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Carbon tetrachloride	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
cis-1,2-Dichloroethene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
cis-1,3-Dichloropropene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Chlorobenzene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Chloroethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Chloroform	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Chloromethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
DBCP	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Dibromochloromethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
trans-1,2-Dichloroethene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
trans-1,3-Dichloropropene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B

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ANALYTICAL RESULTS

Sample: 5041721-01
Name: 152187
Matrix: Leachate - Grab

Sampled: 04/09/15 10:03
Received: 04/10/15 09:20

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Dichlorodifluoromethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Ethylbenzene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
MTBE	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Methylene chloride	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Styrene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Tetrachloroethene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Toluene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Trichloroethene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Trichlorofluoromethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Vinyl acetate	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Vinyl chloride	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
o-Xylene	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
m,p-Xylene	< 500	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B
Dichlorofluoromethane	< 250	ug/L	Pc	04/14/15 00:00	04/14/15 13:38	JMB	SW 8260B*

Sample: 5041721-01RE1
Name: 152187
Matrix: Leachate - Grab

Sampled: 04/09/15 10:03
Received: 04/10/15 09:20

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Volatile Organics - PIA							
2-Butanone	87000	ug/L	Pc	04/15/15 00:00	04/15/15 14:32	MAB	SW 8260B
Acetone	140000	ug/L	Pc	04/15/15 00:00	04/15/15 14:32	MAB	SW 8260B
n-Butanol	< 2000000	ug/L	Pc	04/15/15 00:00	04/15/15 14:32	MAB	SW 8260B*

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2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

ANALYTICAL RESULTS

Sample: 5041721-02
Name: 152188 (Trip Blank)
Matrix: Leachate - Trip Blank

Sampled: 04/09/15 00:00
Received: 04/10/15 09:20

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Volatile Organics - PIA							
1,1,1,2-Tetrachloroethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,1,1-Trichloroethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,1,2,2-Tetrachloroethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,1,2-Trichloroethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,1-Dichloroethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,1-Dichloroethene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,2,4-Trichlorobenzene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,2,4-Trimethylbenzene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,2-Dibromoethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,2-Dichlorobenzene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,2-Dichloroethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,3-Dichloropropene- Total	< 15	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,2-Dichloroethene- Total	< 10	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,2-Dichloropropane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,3,5-Trimethylbenzene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,3-Dichlorobenzene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
1,4-Dichlorobenzene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
2-Butanone	< 10	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
2-Hexanone	< 10	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
4-Methyl-2-pentanone (MIBK)	< 10	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Xylenes- Total	< 15	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Acetone	< 10	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Acetonitrile	< 100	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Acrolein	< 50	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Acrylonitrile	< 50	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Benzene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Bromodichloromethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Bromoform	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Bromomethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Carbon disulfide	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Carbon tetrachloride	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
cis-1,2-Dichloroethene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
cis-1,3-Dichloropropene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Chlorobenzene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Chloroethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Chloroform	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Chloromethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
DBCP	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Dibromochloromethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
trans-1,2-Dichloroethene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
trans-1,3-Dichloropropene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

ANALYTICAL RESULTS

Sample: **5041721-02**
Name: 152188 (Trip Blank)
Matrix: Leachate - Trip Blank

Sampled: 04/09/15 00:00
Received: 04/10/15 09:20

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
Dichlorodifluoromethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Ethylbenzene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
MTBE	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Methylene chloride	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
n-Butanol	< 1000	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B*
Styrene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Tetrachloroethene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Toluene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Trichloroethene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Trichlorofluoromethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Vinyl acetate	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Vinyl chloride	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
o-Xylene	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
m,p-Xylene	< 10	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B
Dichlorofluoromethane	< 5.0	ug/L		04/14/15 00:00	04/14/15 11:41	JMB	SW 8260B*

PDC Laboratories, Inc.
2231 West Altorfer Drive
Peoria, IL 61615
(800) 752-6651

NOTES

Specific method revisions used for analysis are available upon request.

Certifications

PIA - Peoria, IL
- TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100230
- Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17553
- Missouri Department of Natural Resources Certificate of Approval for Microbiological Laboratory Service No. 870
- Drinking Water Certifications: Iowa (240); Kansas (E-10338); Missouri (870)
- Wastewater Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
- Hazardous/Solid Waste Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338); Wisconsin (998284430)

SPMO - Springfield, MO
- USEPA DMR-QA Program

STL - St. Louis, MO
- TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389
- Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
- Drinking Water Certifications: Missouri (1050)
- Missouri Department of Natural Resources

* Not a TNI accredited analyte

Qualifiers

H	Test performed after the expiration of the appropriate regulatory/advisory maximum allowable hold time.
Pc	Chemical preservation discrepancy noted at the time of analysis

Certified by: Lisa Grant, Project Manager

PDC Laboratories, Inc.
2231 W. Altorfer Dr
Peoria, IL 61615

CHAIN OF CUSTODY RECORD

State where samples were collected MO

Phone: (800) 752-6651
Fax: (309) 692-9689
www.pdclab.com

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

1 CLIENT	P.O. NUMBER	PROJECT NAME	DATE SHIPPED	3 ANALYSIS REQUESTED	4 WORK ORDER (FOR LAB USE ONLY)
Missouri Attorney General			4/9/15		LOGIN #: 041721-2
ADDRESS: 207 W. High St.	PHONE: (573) 751-3321	EMAIL	MEANS SHIPPED: UPS		LOGGED BY:
CITY: Jefferson City / STATE: MO / ZIP: 65102	SAMPLER (PLEASE PRINT): Chris Ratcliffe		MATRIX TYPES: WW - WASTE WATER; DW - DRINKING WATER; GW - GROUND WATER; WWSL - SLUDGE; NAS - SOLID; LCHT - LEACHATE; OTHER:		PROJECT:
CONTACT PERSON: Andrew Blackwell	SAMPLER'S SIGNATURE: CLR				PROJ MGR:

2 SAMPLE DESCRIPTION AS YOU WANT TO REPORT	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	pH; Total Alkalinity; TDS; Chlorides; Fluoride; Sulfate	COD; Ammonia; Nitrate/ Nitrite	TOC	Total Cyanide	Metals(Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn Hg,	Na, Sr, Tl, V, Zn);Hardness; Total Phosphorus	VOA	REMARKS
152187	4/9/15	1003	X		LCHT	8	X	X	X	X	X	X	X	
152188 Trip Blank			X		Water	2							X	

5 TURNAROUND TIME REQUESTED (RUSH TAT IS SUBJECT TO APPROVAL AND SURCHARGE) ☑ NORMAL ☐ RUSH

DATE RESULTS NEEDED

6 *The sample temperature will be measured upon receipt at the lab. By initialing this area, you request that we notify you before proceeding with analysis if the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area, you allow the lab to proceed with analytical testing regardless of the sample temperature.*

7		DATE		RECEIVED BY (SIGNATURE)	DATE	8 COMMENTS (FOR LAB USE ONLY)
RELINQUISHED BY (SIGNATURE)	CLR	4/9/15	H Catlin Caldwell		4/9/15	
		TIME 1315			TIME 1315	
RELINQUISHED BY (SIGNATURE)		DATE	RECEIVED BY (SIGNATURE)		DATE	SAMPLE TEMPERATURE UPON RECEIPT: 3.0 °C
		TIME			TIME	CHILL PROCESS STARTED PRIOR TO RECEIPT: Y OR N
RELINQUISHED BY (SIGNATURE)		DATE	RECEIVED BY (SIGNATURE)		DATE 4/10/15	SAMPLE(S) RECEIVED ON ICE: Y OR N
		TIME			TIME 9:30 a	PROPER BOTTLES RECEIVED IN GOOD CONDITION: Y OR N
						BOTTLES FILLED WITH ADEQUATE VOLUME: Y OR N
						SAMPLES RECEIVED WITHIN HOLD TIME(S) (EXCLUDES TYPICAL FIELD PARAMETERS): Y OR N
						DATE AND TIME TAKEN FROM SAMPLE BOTTLE

11 of 11 pp

APPENDIX K

CHEMICAL EXPERT REPORTS

2018 Quilchena Crescent,
Vancouver, B.C.
V6M 1E3,
August 20. 2015.

Dr. Tony Sperling, P.Eng.
President, Sperling Hansen Associates Inc.
Landfill Fire Control Inc.
8-1225 East Keith Road
North Vancouver B.C.
V7J 1J3

Dear Dr. Sperling:

As requested by you, I am sending you some information on some gas phase reactions that may be of importance in the Bridgeton Landfill. I also comment below on whether these reactions might provide possible explanations for the high-temperature front that, as demonstrated by the temperature and concentration data shared with me, is advancing in the Landfill sub-surface.

As a chemical engineer, I have had to consider these reactions in the context of reactors designed to produce hydrogen and synthesis gas, as well as in gasification and combustion of carbonaceous fuels. In these contexts, the reactions take place at significantly higher temperatures and in reactors with well defined contents, geometry and operating conditions, compared with the conditions in landfills. My comments should be seen in this context.

The following gas-phase reactions in the absence of oxygen are of possible relevance with respect to the Bridgeton Landfill:

A) **Torrefaction/Pyrolysis**: Torrefaction is the breakdown (low-temperature pyrolysis) of solid hydrocarbons in an inert atmosphere at temperatures below about 600°F (316°C leading to the production and release of volatile gases (mainly CO, CO_2, CH_4, H_2, H_2O), as well as char, a solid residue of higher density than the original solid hydrocarbon. It is an endothermic process.

B) **Water-Gas Shift (WGS) Reaction:** $CO + H_2O \leftrightarrows CO_2 + H_2$. This is a reversible mildly exothermic process. Industrially, it is carried out at high temperatures (e.g. in excess of 1500°F (816°C), as well as in low-temperature shift reactors at temperatures as low as 392°F (200°C). As an exothermic reaction, its equilibrium constant increases with decreasing temperature, meaning that more reaction would occur if equilibrium were to be achieved. However, the kinetic rate constants for the reaction decrease with decreasing temperature. In industrial reactors, the reaction is catalysed by various metals and metal oxides, with copper oxide (CuO) and platinum most commonly deployed as catalysts in low-temperature WGS reactors. Various catalyst poisons (in particular sulphur compounds, chlorides and some heavy metals) can lead to the deactivation of catalysts. Because there is no change in the total number of moles in this reaction, the equilibrium conversion is independent of the total pressure.

C) **Steam Gasification:** $C_{(s)} + H_2O \rightarrow CO + H_2$:. Sometimes referred to as the "Water-Gas Reaction", this endothermic and essentially irreversible reaction converts carbon and steam into a synthesis gas. Its rate is dependent on the nature of the carbonaceous solid, as well as the temperature and steam concentration.

D) **Boudouard Reaction**: $CO_2 + C_{(s)} \leftrightarrows 2CO$. This reversible reaction provides a route by which carbon monoxide can be produced from carbon dioxide and vice versa. The kinetics of this reaction depend heavily on the specific hydrocarbon represented by the "C", as well as on the temperature. In the direction shown, the reaction is endothermic, so that it is less favoured thermodynamically at low temperatures. The reverse reaction could be relevant in the landfill as it is more favoured at lower temperatures.

E) **Methanation Reactions**: $CO_2 + 4H_2 \leftrightarrows CH_4 + 2H_2O$ and $CO + 3H_2 \leftrightarrows CH_4 + H_2O$. These are exothermic reactions, the reverse of the steam reforming reactions used widely in industry to produce hydrogen, usually with nickel oxide catalysts, but various other metals can also act as catalysts. Both these reactions are exothermic, and hence equilibrium conversions are higher at lower temperatures. Once again, various poisons can reduce the activity of the catalysts, with sulphur compounds being especially important catalyst poisons in industrial reactors. Given the decrease in the number of moles for both of these reactions as written, equilibrium conversions are favoured by increased pressure. In addition, both would decrease the total pressure locally, leading to some infiltration of gases from the surrounding area.

F) **Oxidation reactions:** Of the compounds involved in the other reactions identified above, hydrogen, carbon monoxide, methane and carbon can all be oxidized by air/oxygen: $H_2 + ½O_2 \rightarrow H_2O$; $CO + ½O_2 \rightarrow CO_2$; $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$; and $C_{(s)} + O_2 \rightarrow CO_2$. All of these reactions are strongly exothermic. At the relatively low temperatures of interest, oxidation catalysts such as the noble metals platinum and palladium would need to be present, in addition to intruding oxygen, for these reactions to be playing a major role.

Data collected at the Bridgeton Landfill suggest that temperatures in some gas samples approach the boiling point of water (212°F/100°C). It is likely that local temperatures exceed this temperature, with the result that steam is being produced from the abundant liquid water derived from the waste materials, as well as groundwater. Hence there is an ample source of steam to participate in reactions like C and D above. The rates (kinetics) of these various reactions depend on the availability and nature of catalytic materials, as well as temperature and the presence of deactivating agents (catalyst poisons). I would expect that a wide assortment of metallic (and metal oxide) surfaces would be available from the discarded constituents of the landfill, including iron, copper and nickel. These surfaces would be available for catalyzing the suite of reactions. Reactions B and C could explain the surprisingly high concentrations of hydrogen detected in the gas sampling. The methanation (E) reactions could be supplementing the biogenic production of methane.

Whatever mechanism was responsible for the first "hot spot" or "hot spots" that initiated the current situation, a key question now is whether exothermic reactions can generate enough heat to make the reactions self-sustaining, allowing the reaction "front"

inside the landfill to continue to advance as heat is also being lost to the surroundings, used up in steam generation and consumed due to endothermic reactions. At the temperatures encountered in the sub-surface, (~212°F/100°C) and less, the gas-phase reactions outlined above, even with heterogeneous catalytic surfaces present, will proceed very slowly, much more slowly than rates of interest to chemical engineers in designing and operating reactors. But the time scales of interest in the landfill are much longer – weeks and even months compared with seconds for chemical reactors in which gases are being reacted.

No useful quantitative estimates can be made which would help to answer the above question. This is because the precise in situ temperatures, concentrations and catalytic surfaces are unknown, and because, in any case, the kinetics at the sub-surface temperatures are too low to have been of interest to chemists and chemical engineers who perform such measurements. One can speculate, however, that, in the absence of oxygen, there are sufficient metallic surfaces originating from the discarded wastes within the landfill to ensure that the exothermic WGS reaction proceeds, with production of hydrogen and generation of sufficient heat to sustain the advancement of the reaction front. This could be aided by some oxygen diffusing to the reaction area to promote some (exothermic) oxidation of CO, H_2, CH_4 and $C_{(s)}$.

If these gas-phase reactions are indeed important in facilitating the continuation of sub-surface hot-front migration, then it is useful to speculate about a possible method of extinguishing the reactions and regaining control. The reactions could be slowed by lowering the temperature (to decrease the reaction kinetic rates), removing heat as it is generated, reducing the concentration of reactants, or, in the case of reversible reactions, increasing the concentration of product compounds. Varying the total pressure could also have some effect on reversible reactions, as predicted by Le Châtelier's principle, but feasible changes in pressure level are very likely too small in the sub-surface to play a significant role.

As a possible remedy, some attention should be given to the injection of cool inert and/or product gases at the reaction front. For example, natural gas could be burnt with stoichiometric air, with the flue gas then cooled by heat exchangers to condense water and the cool product gas (predominantly nitrogen and CO_2) then injected along the front. This would cool the critical sub-surface region, promote the reverse-WGS reaction (endothermic in the reverse direction), while also favouring the endothermic Boudouard reaction and inhibiting (exothermic) oxidation reactions. While exothermic methanation would be promoted, the extents of these reactions are likely to be limited because hydrogen production would decrease as a result of slowing and even reversing the water-gas shift reaction.

Please let me know if you have questions or would like me to clarify any of the points made in this letter.

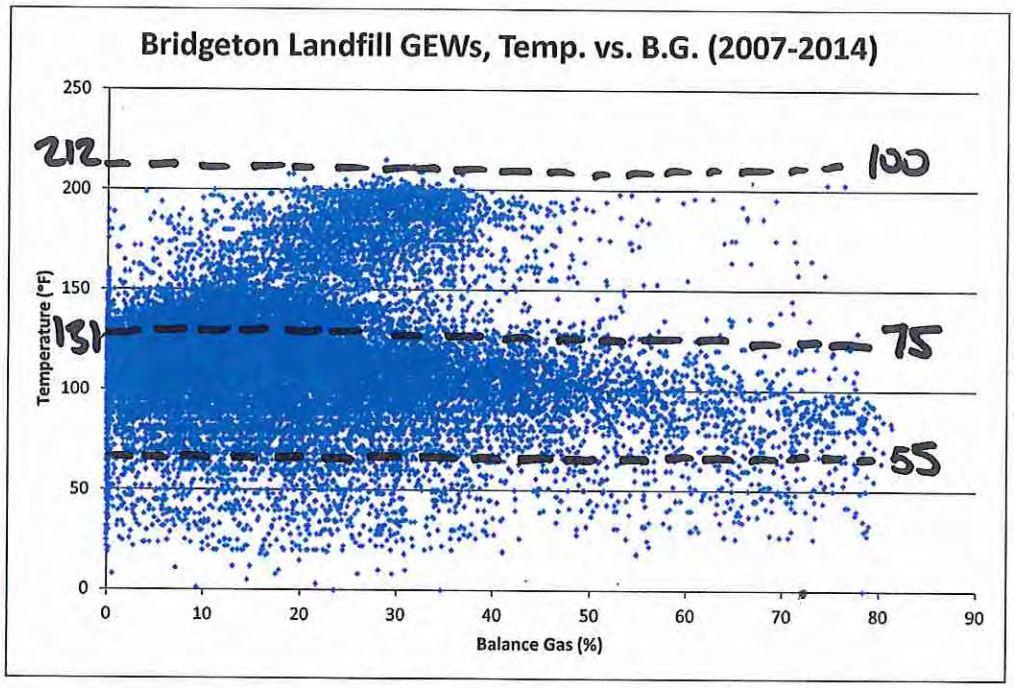
Yours truly,

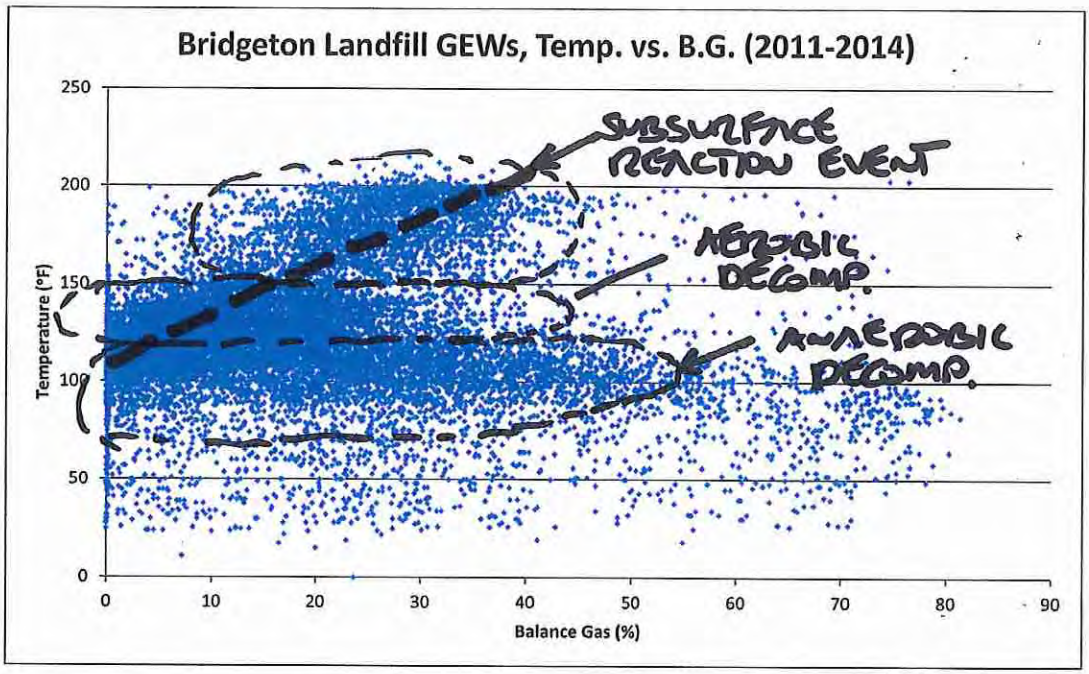


John R. Grace, P.Eng., Ph.D.

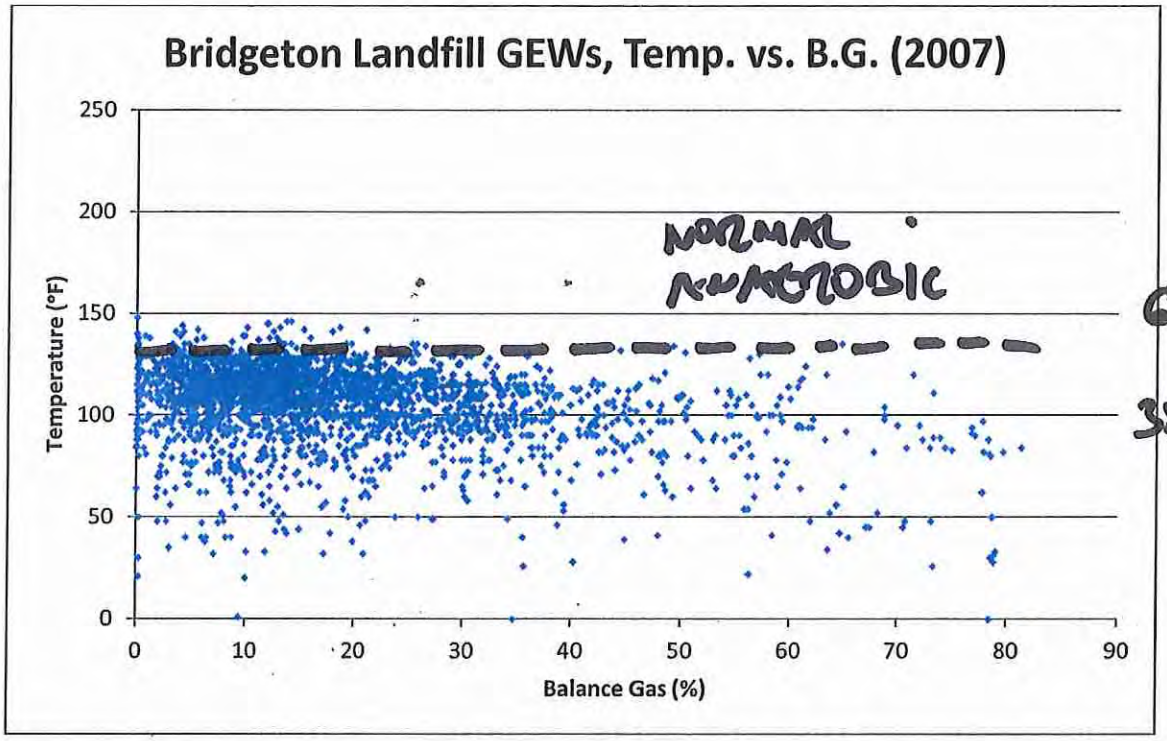
APPENDIX L

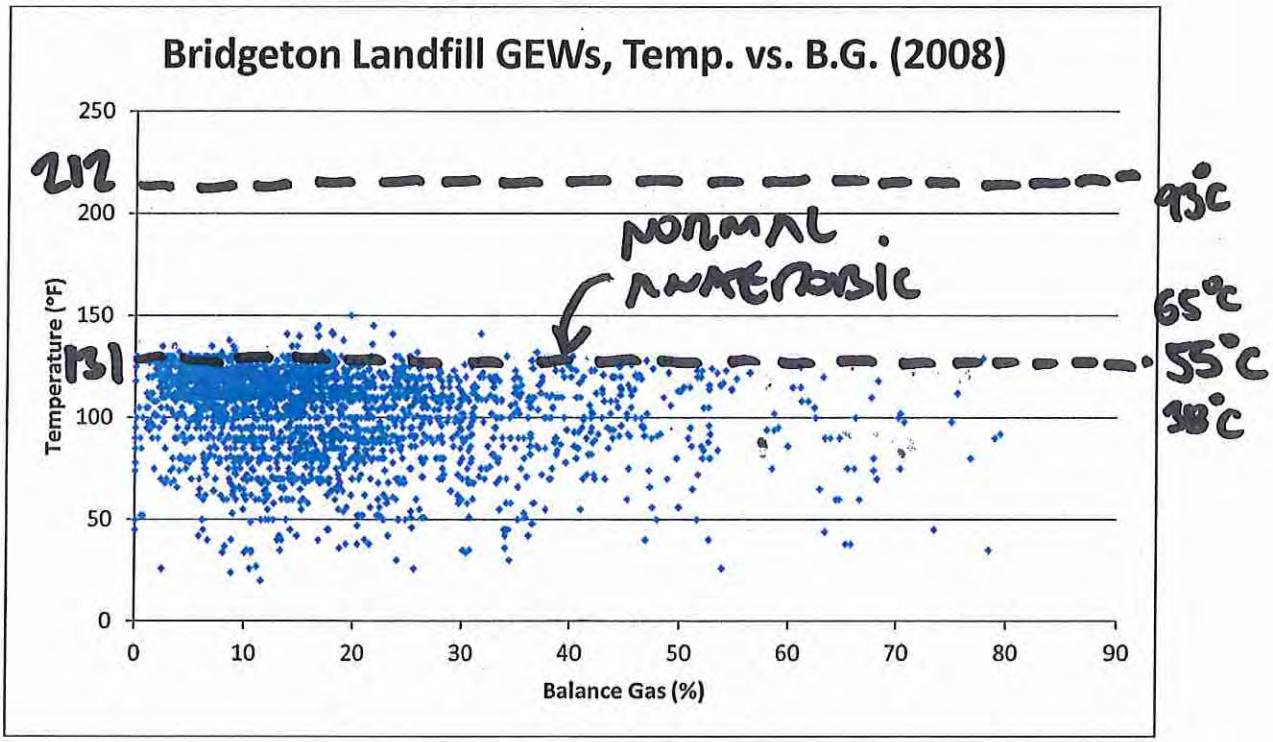
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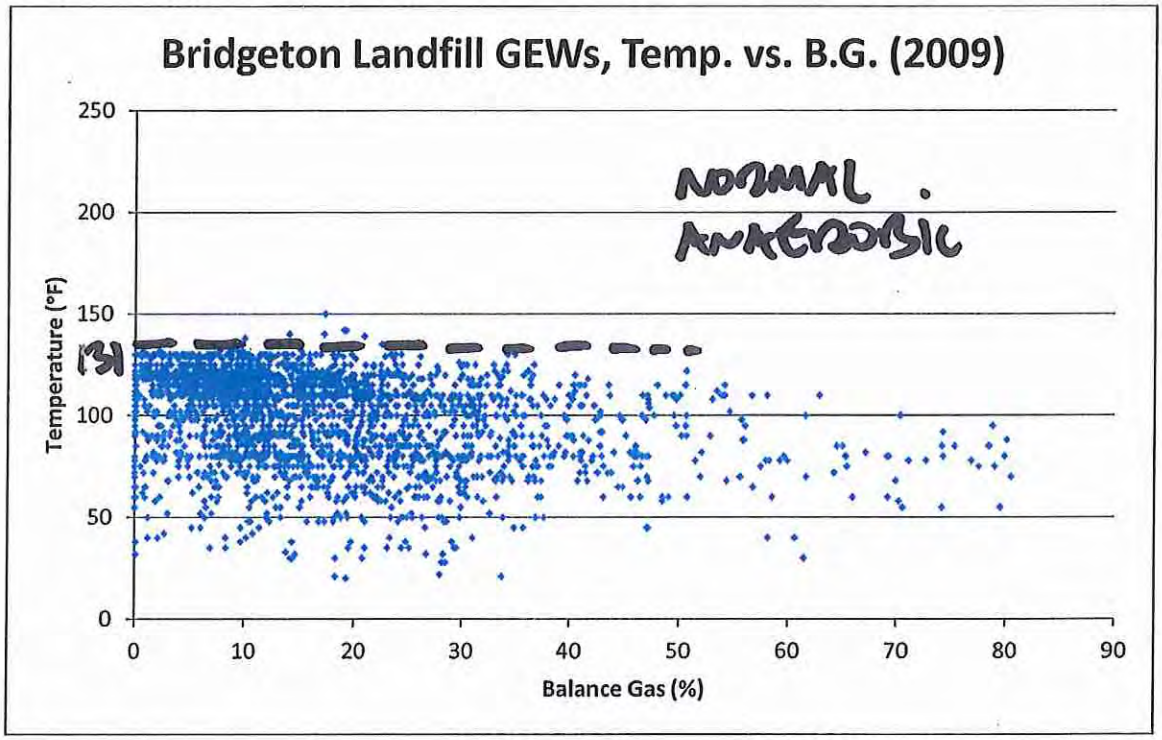

Bridgeton Landfill GEWs, Temp. vs. B.G. (2007-2014)
Temperature (°F)
250
200
150
100
50
0
212
131
100
75
55
0
10
20
30
40
50
60
70
80
90
Balance Gas (%)

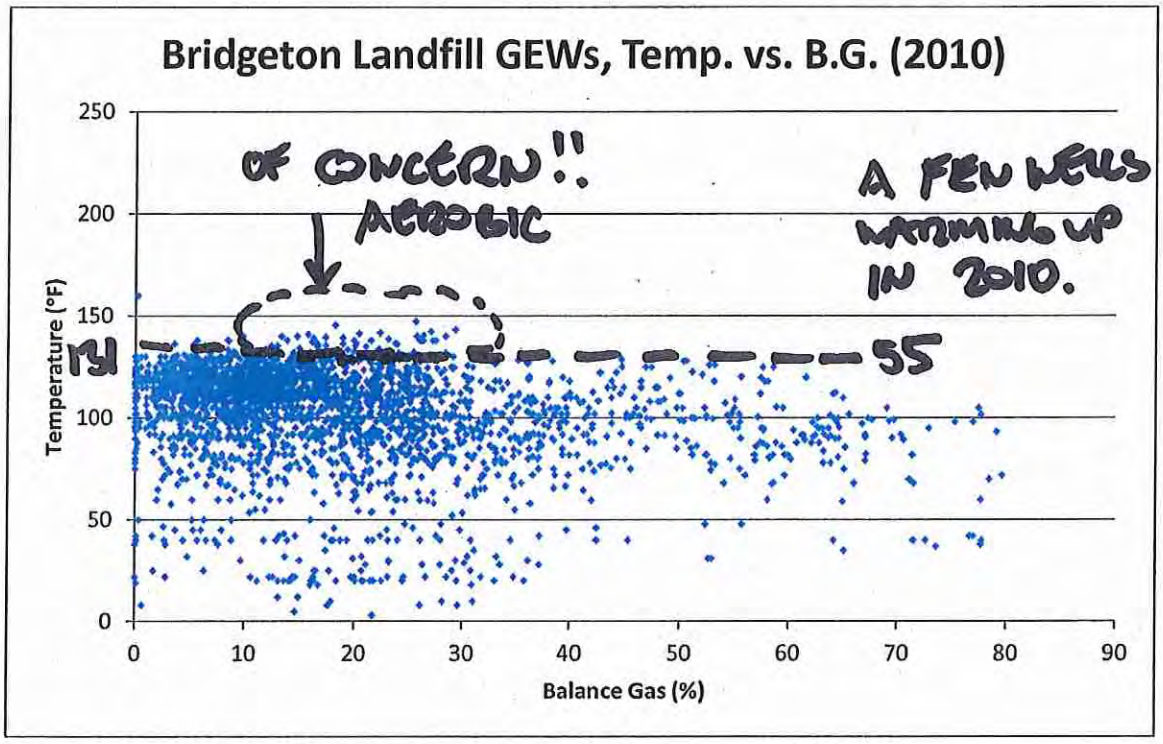


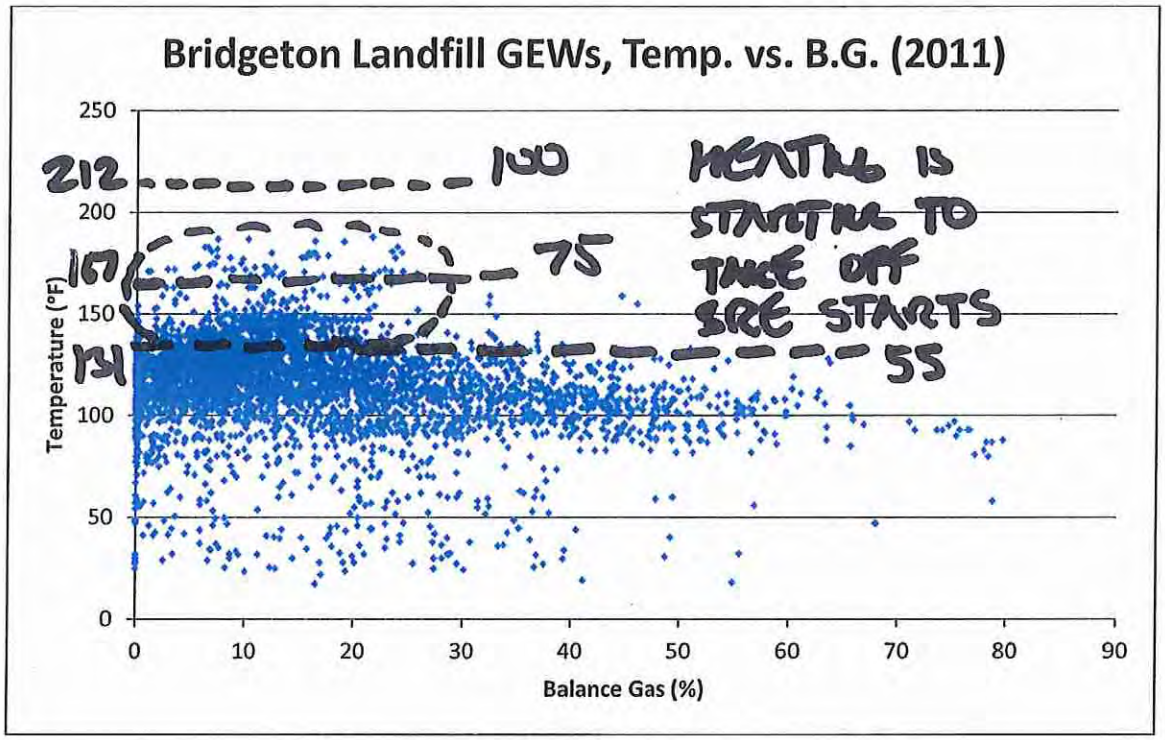
- - - - CORRELATION BETWEEN BALANCE GAS & TEMP.

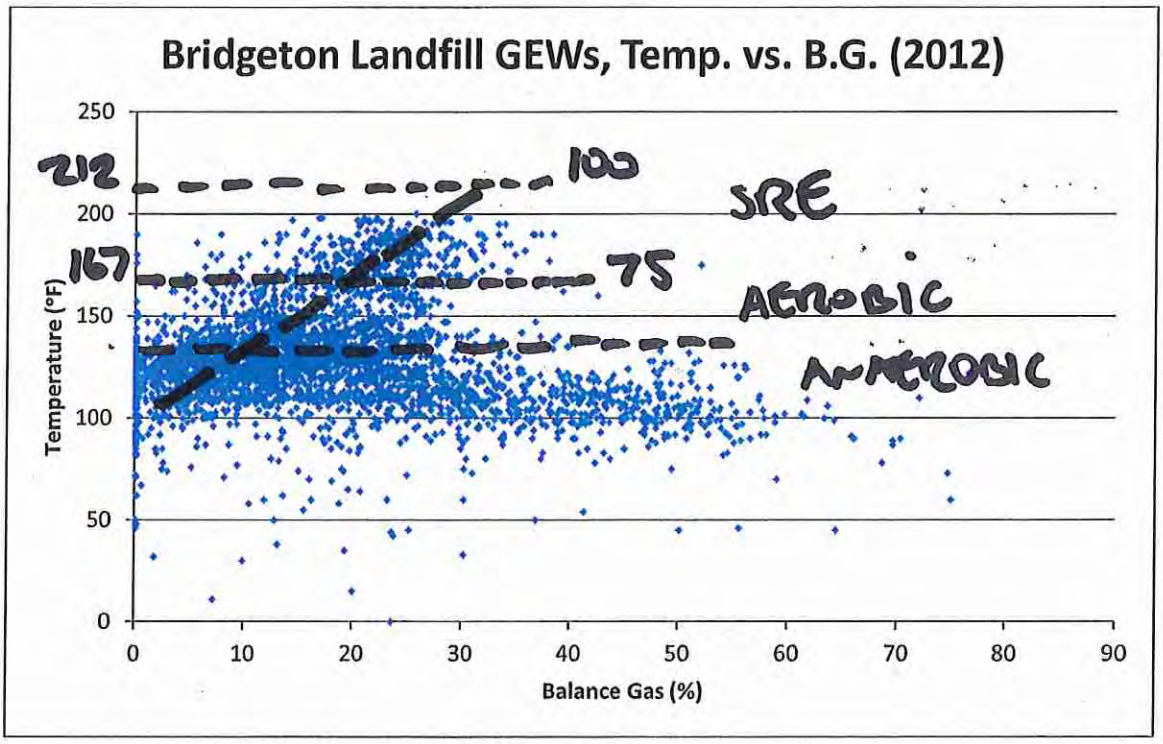

Bridgeton Landfill GEWs, Temp. vs. B.G. (2007)
Temperature (°F)
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
Balance Gas (%)
NORMAL
ANAEROBIC
65°C
38°C

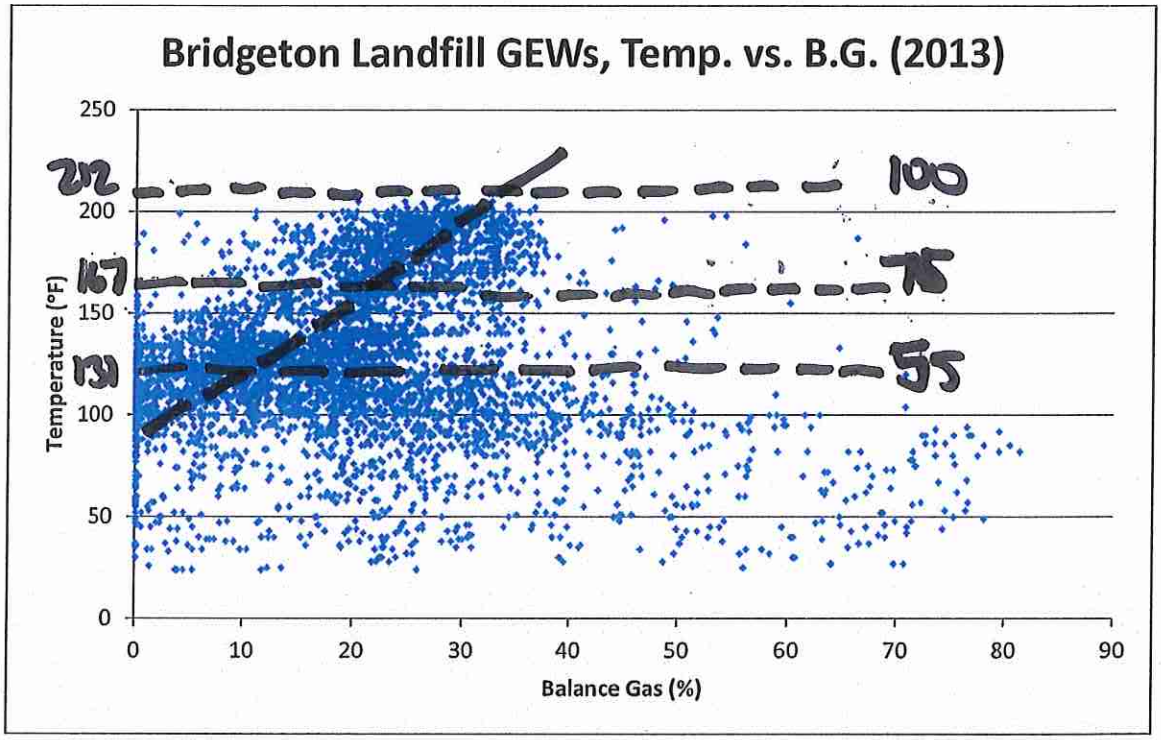

Bridgeton Landfill GEWs, Temp. vs. B.G. (2008)
Temperature (°F)
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
Balance Gas (%)
212
131
NORMAL
ANAEROBIC
93C
65°C
55°C
38°C

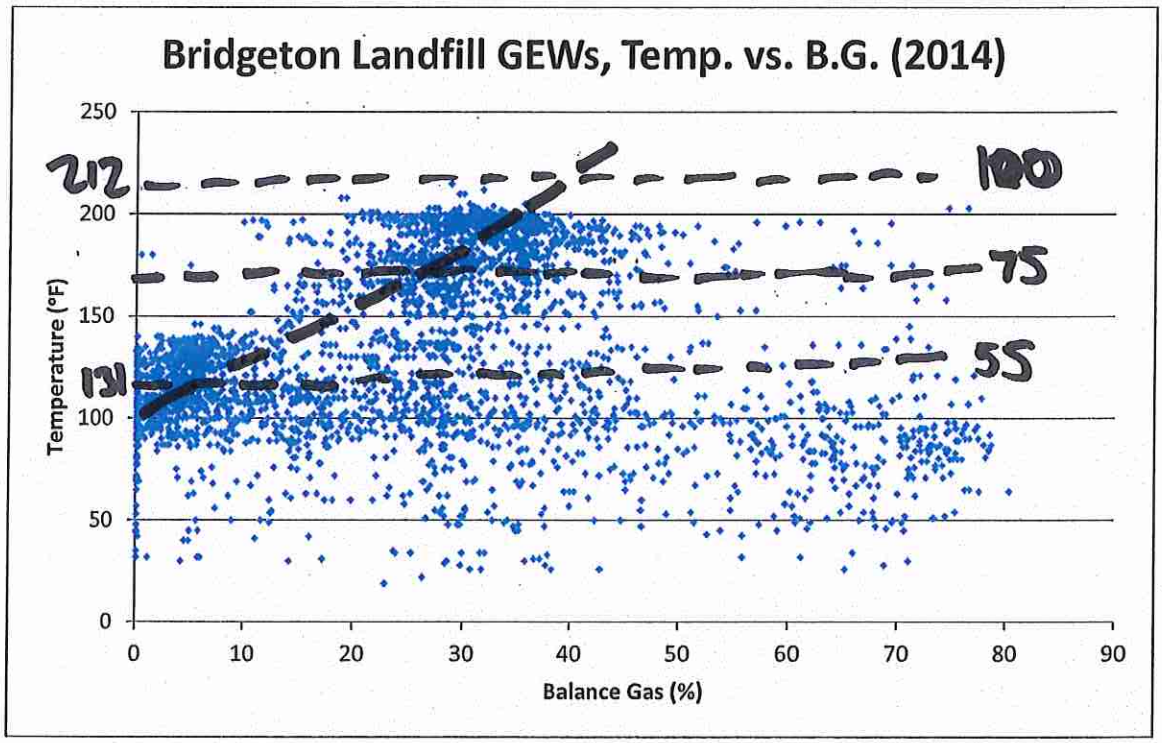

Bridgeton Landfill GEWs, Temp. vs. B.G. (2009)
NORMAL
ANAEROBIC
131
Temperature (°F)
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
Balance Gas (%)


Bridgeton Landfill GEWs, Temp. vs. B.G. (2010)
OF CONCERN!!
AEROBIC
A FEW WELLS
WARMING UP
IN 2010.
131
55
Temperature (°F)
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
Balance Gas (%)

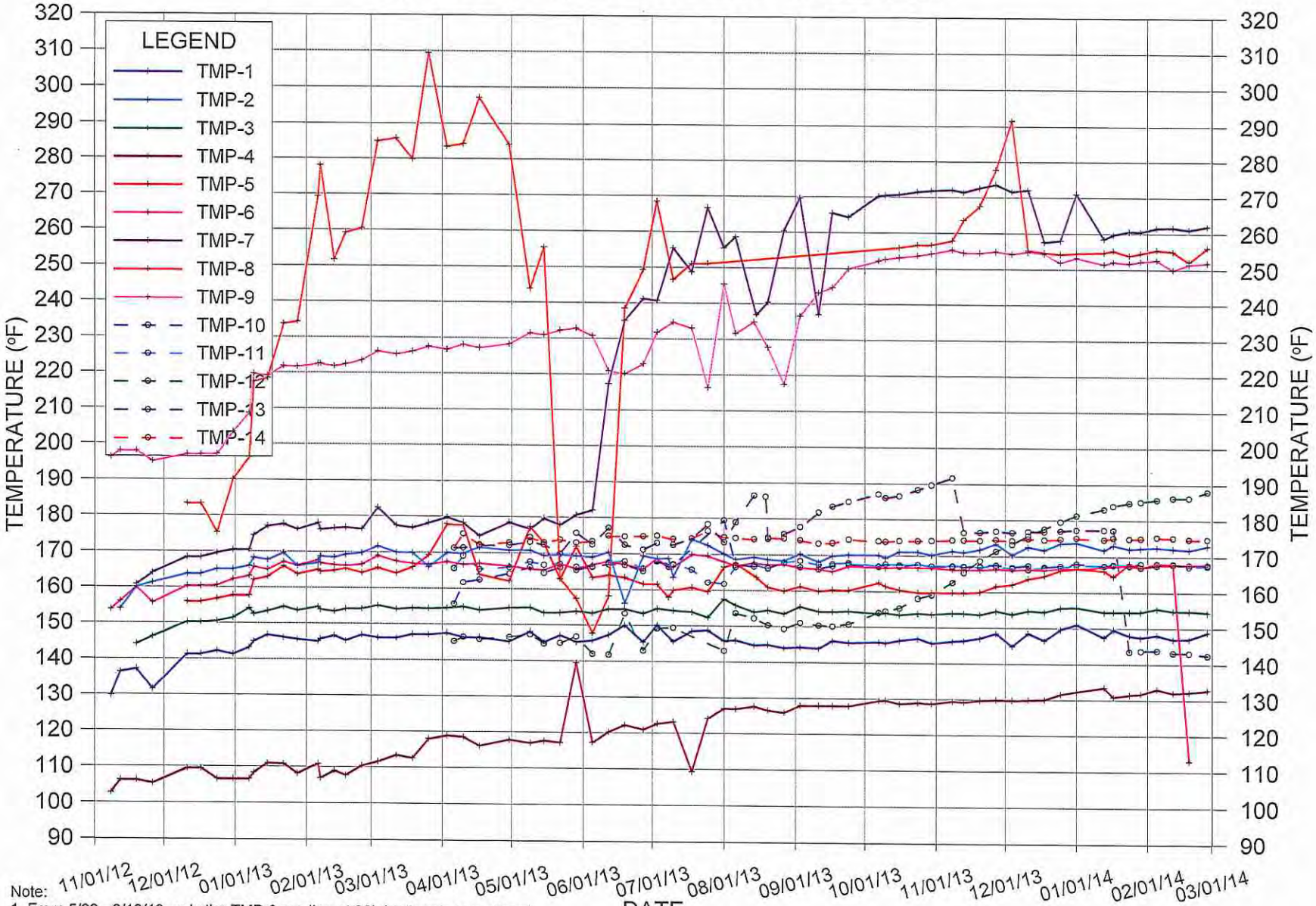

Bridgeton Landfill GEWs, Temp. vs. B.G. (2011)
Temperature (°F)
Balance Gas (%)
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
212
167
134
100
75
55
METHANE IS STARTING TO TAPER OFF SRE STARTS


Bridgeton Landfill GEWs, Temp. vs. B.G. (2012)
Temperature (°F)
Balance Gas (%)
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
212
167
100
75
SRE
AEROBIC
ANAEROBIC


Bridgeton Landfill GEWs, Temp. vs. B.G. (2013)
Temperature (°F)
Balance Gas (%)
212
167
131
100
75
55
0
50
100
150
200
250
0
10
20
30
40
50
60
70
80
90


Bridgeton Landfill GEWs, Temp. vs. B.G. (2014)
Temperature (°F)
Balance Gas (%)
212
131
100
75
55
0
50
100
150
200
250
0
10
20
30
40
50
60
70
80
90

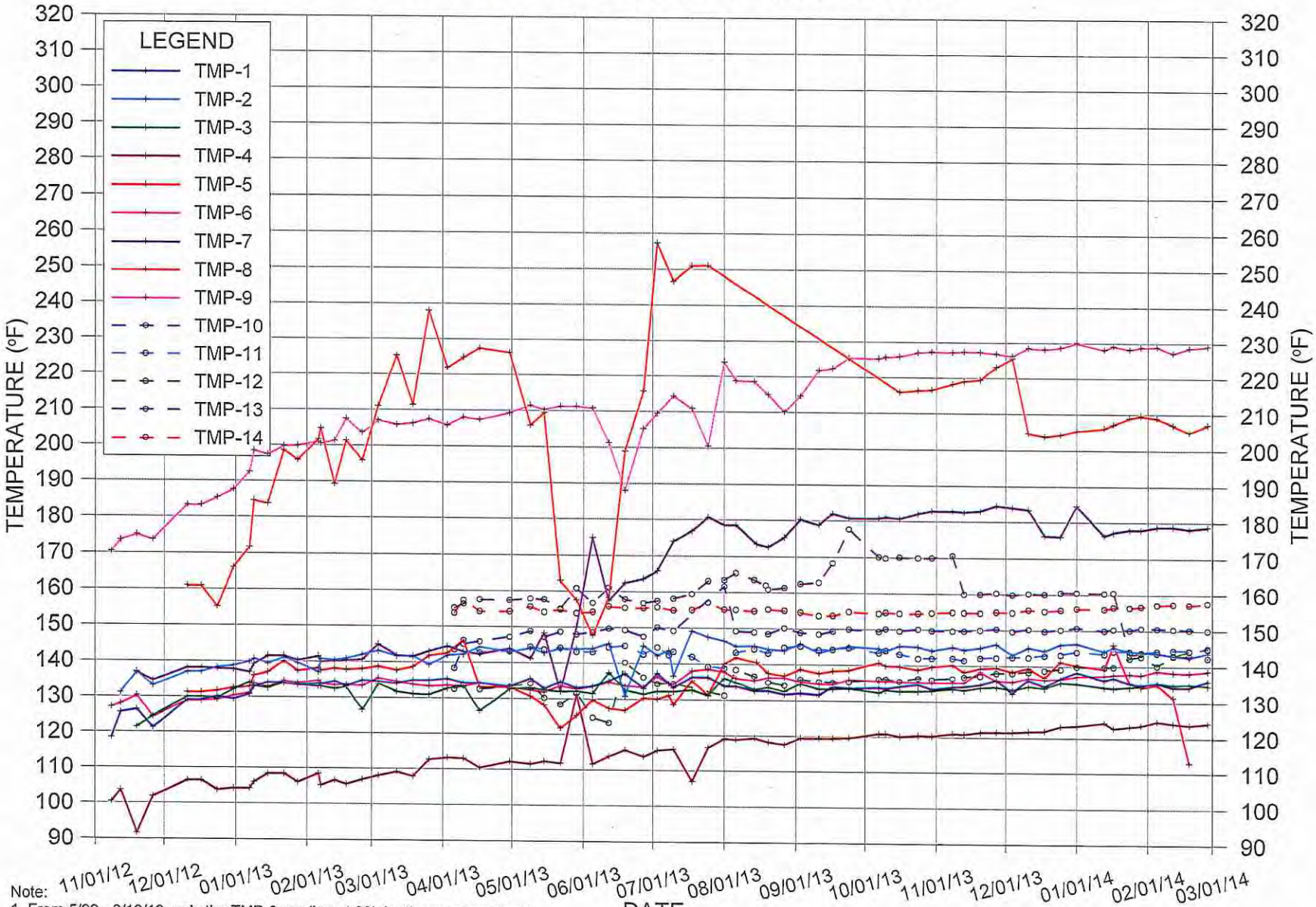
MAXIMUM TEMPERATURES



Note:
1. From 5/22 - 6/12/13, only the TMP-8 reading at 20' depth was operational. No valid readings were obtained for TMP-8 from 8/1 to 10/10/2013. Valid readings from 20' to 40' resumed on 10/16/2013.
2. A new OMEGA dial was installed at TMP-7R on 6/12/2013 enabling more vaild readings.
3. No valid readings were obtained for TMP-10 and TMP-12 on 7/18/2013 or 7/25/2013.
4. End terminals were replaced just prior to the 8/6/2013 readings with type T Omega connectors (part # SMPW-CC-T-M) on all TMPs except for TMP-8.

TEMPERATURE VS TIME
BRIDGETON LANDFILL

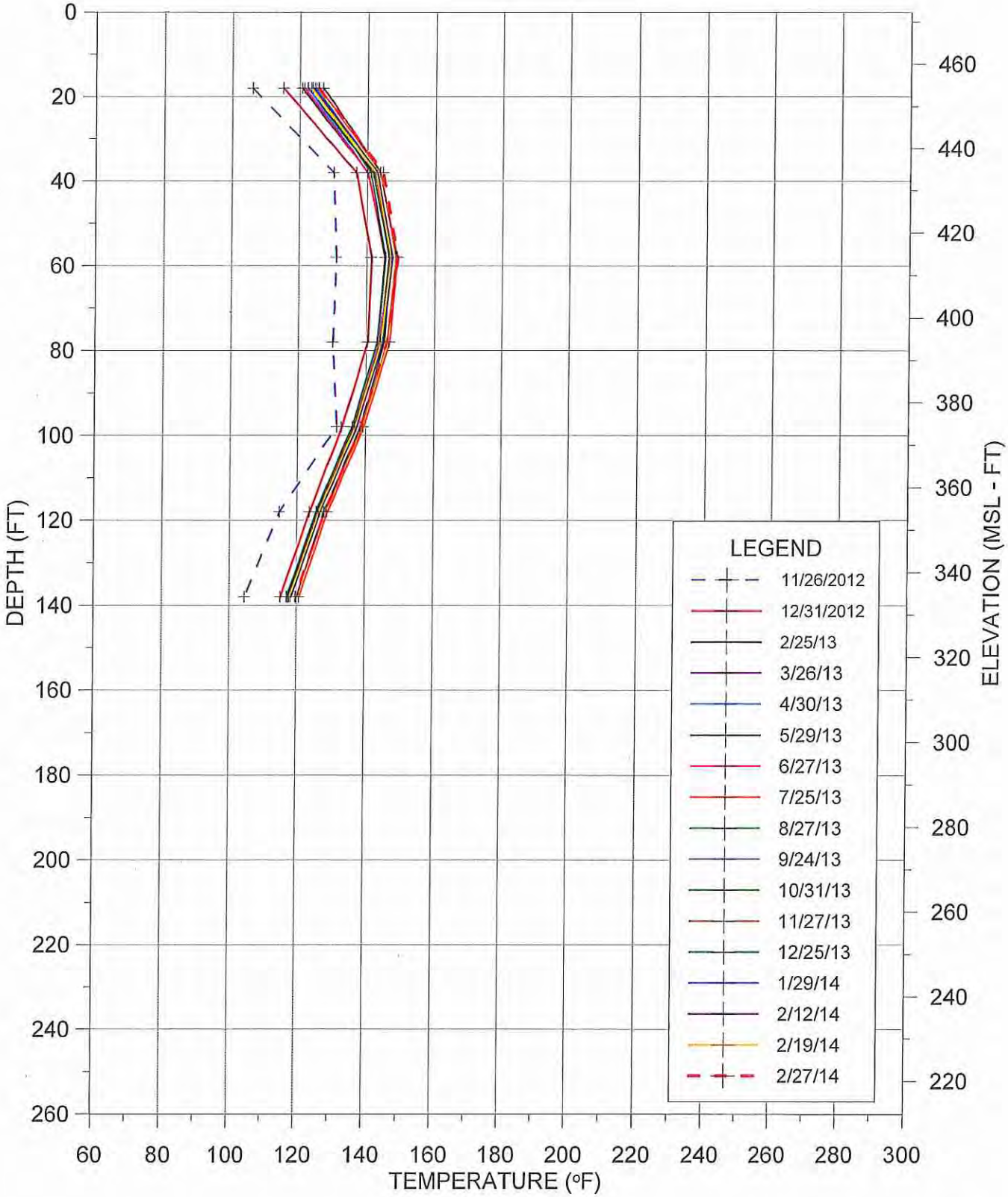
AVERAGE TEMPERATURES



Note:
1. From 5/22 - 6/12/13, only the TMP-8 reading at 20' depth was operational. No valid readings were obtained for TMP-8 from 8/1 to 10/10/2013. Valid readings from 20' to 40' resumed on 10/16/2013.
2. A new OMEGA dial was installed at TMP-7R on 6/12/2013 enabling more vaild readings.
3. No valid readings were obtained for TMP-10 and TMP-12 on 7/18/2013 or 7/25/2013.
4. End terminals were replaced just prior to the 8/6/2013 readings with type T Omega connectors (part # SMPW-CC-T-M) on all TMPs except for TMP-8.

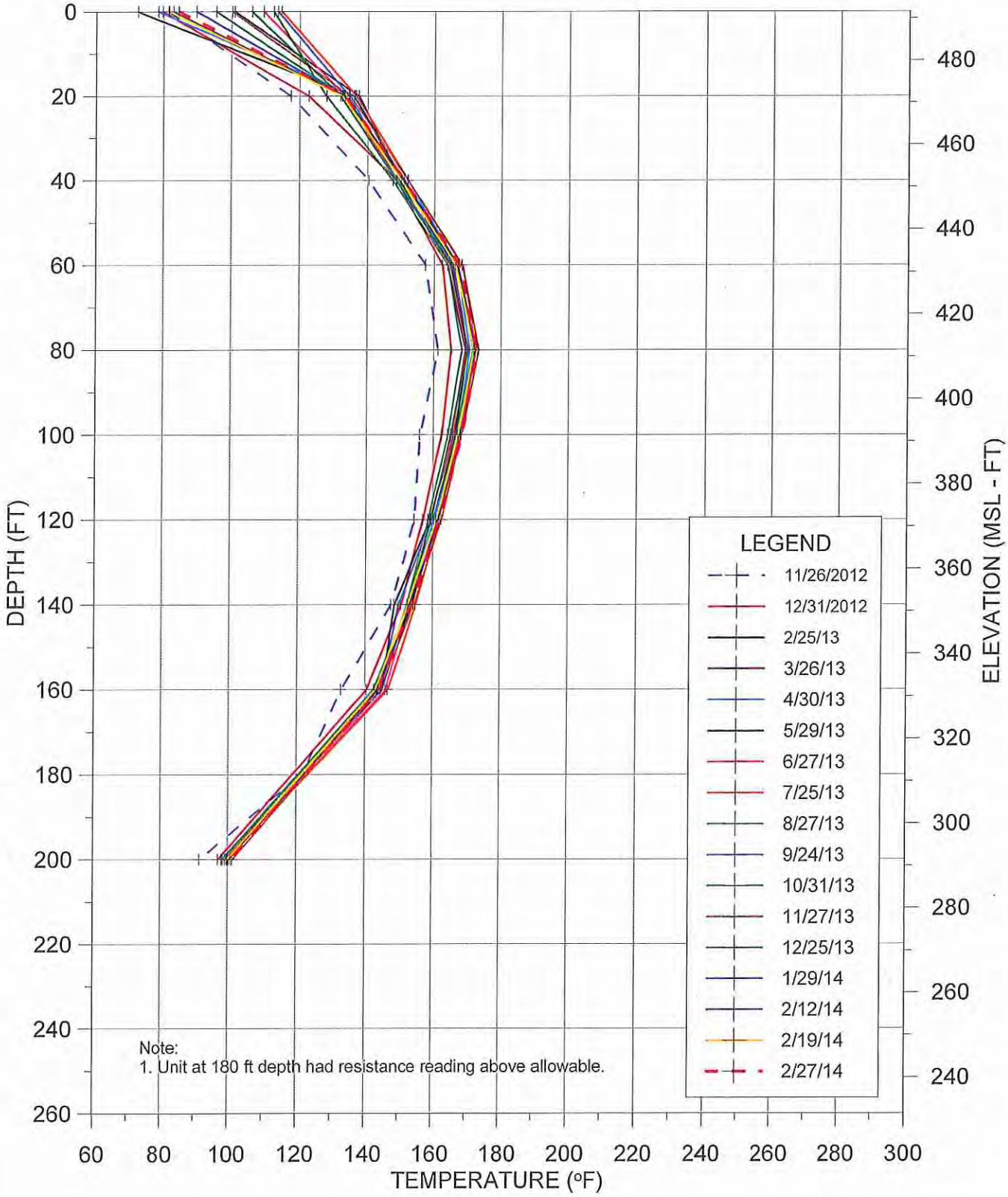
TEMPERATURE VS TIME
BRIDGETON LANDFILL

TMP-1



TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

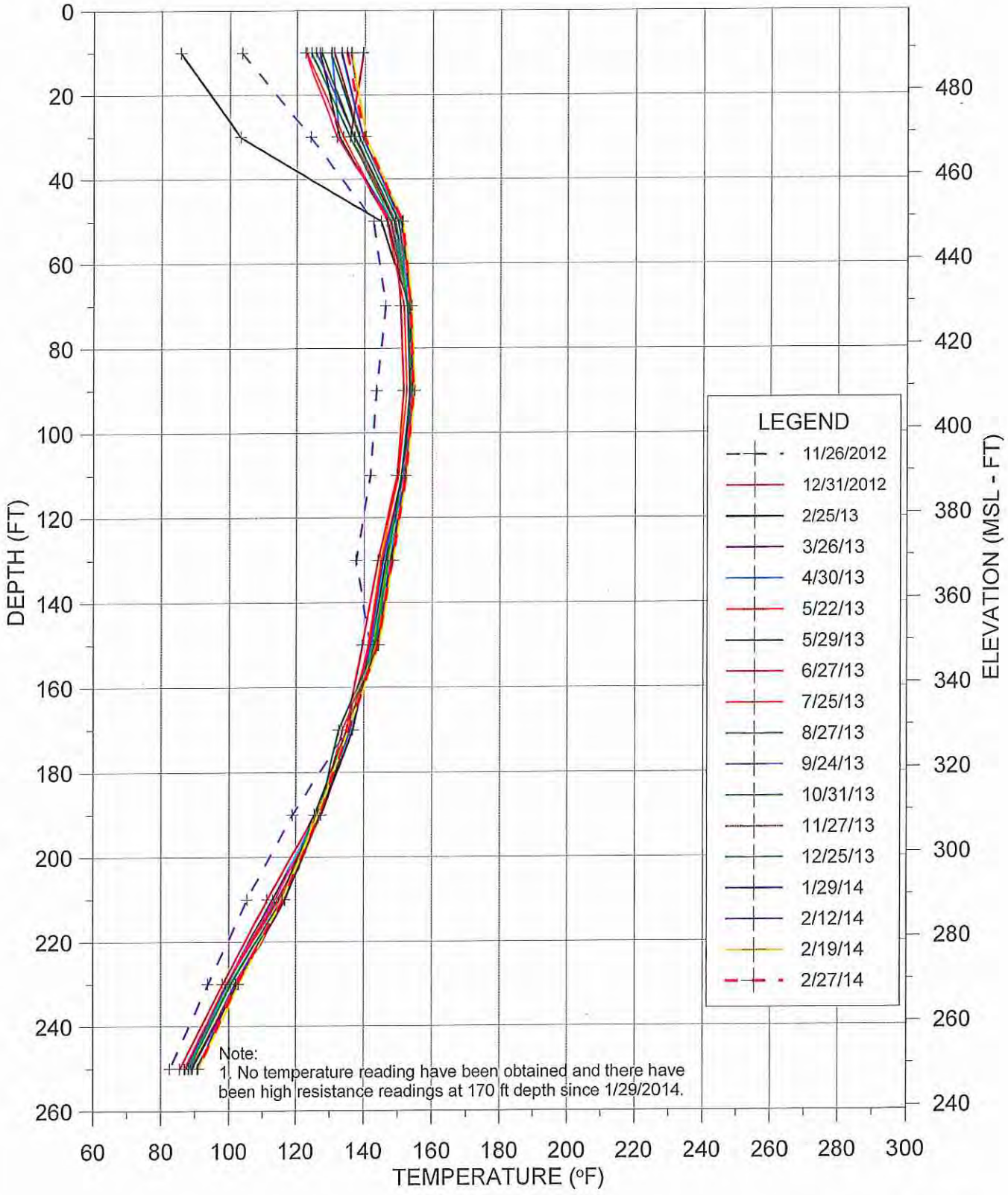
TMP-2



TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

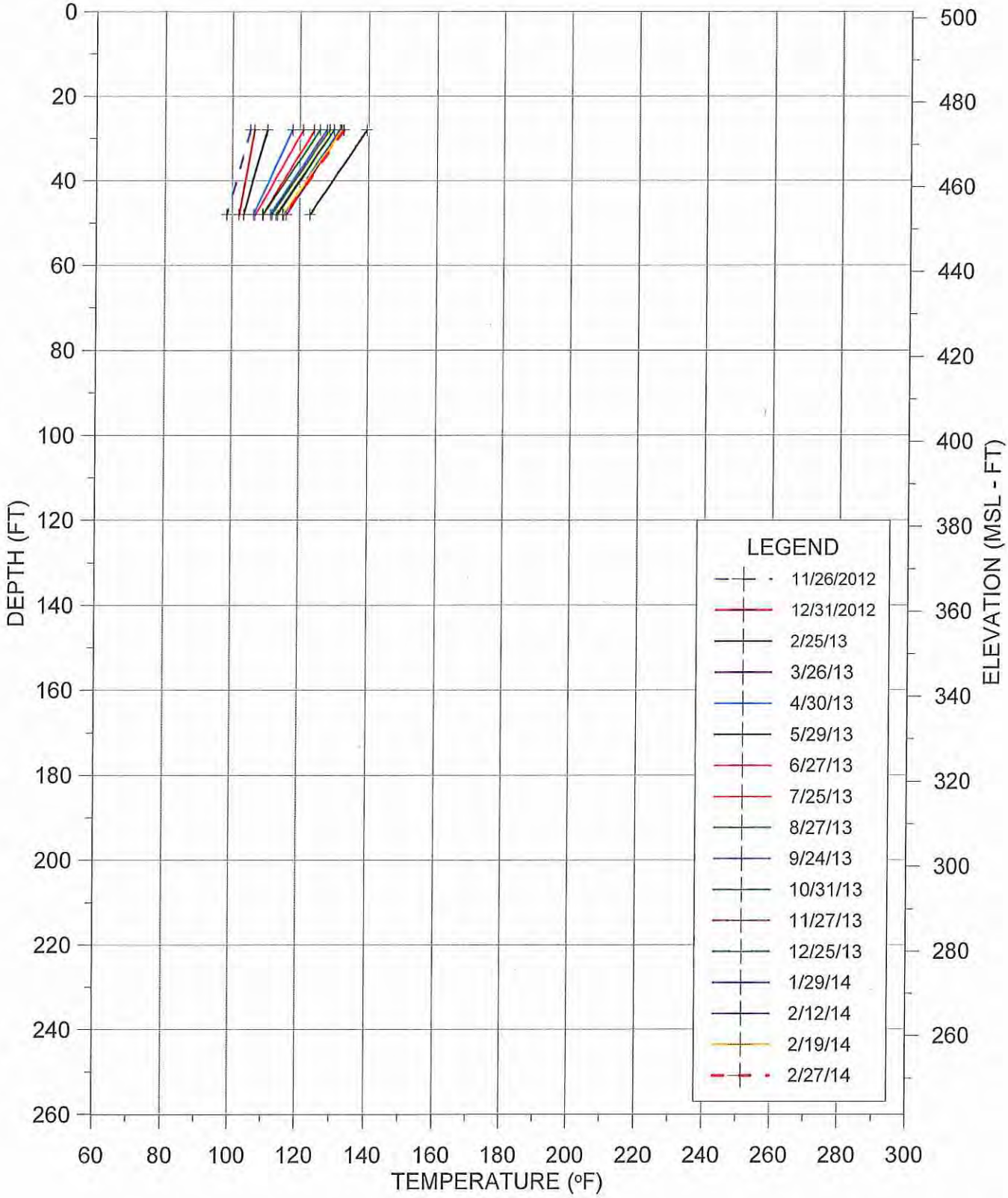
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000505

TMP-3



TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

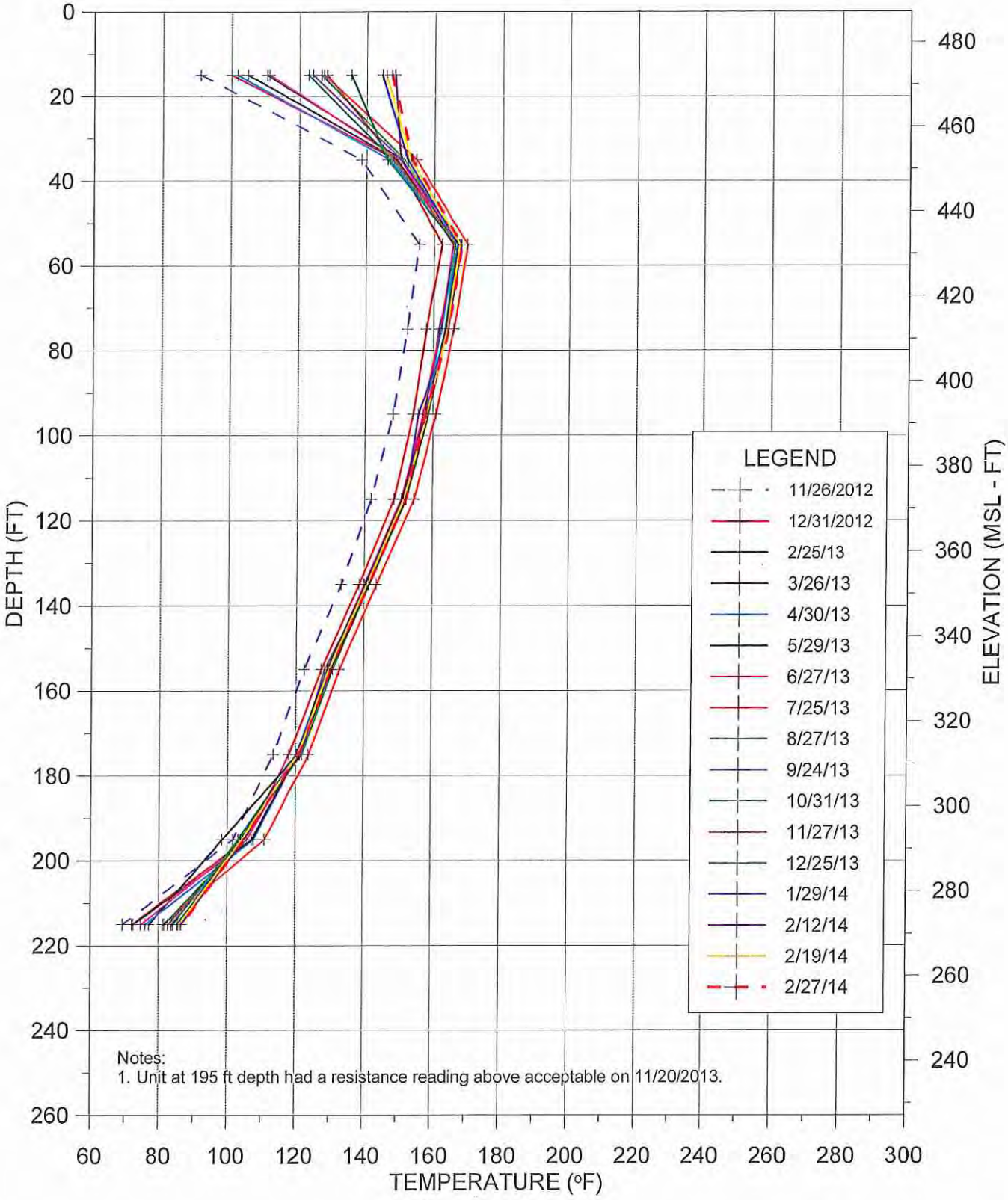
TMP-4



TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

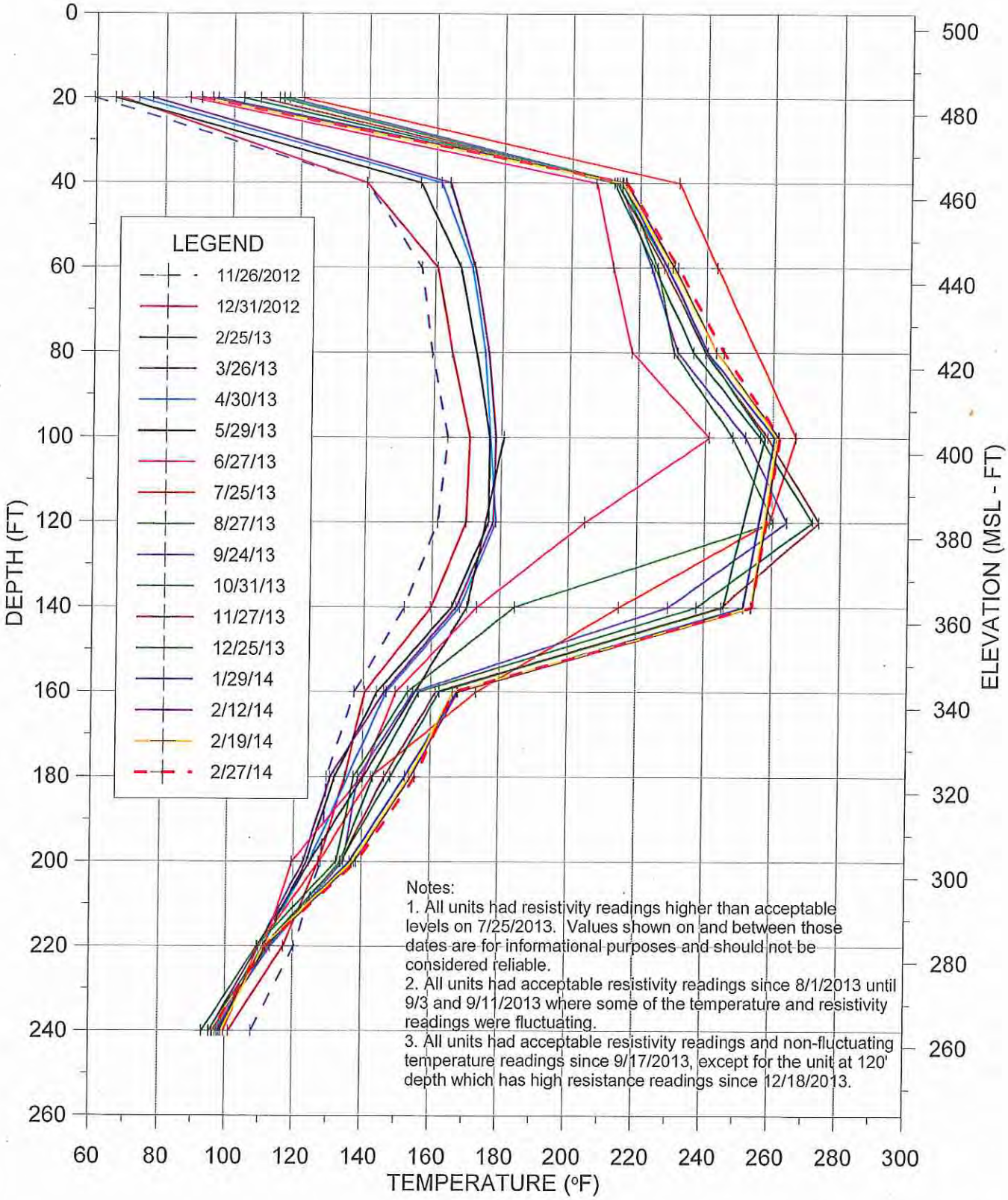
State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000507

TMP-6



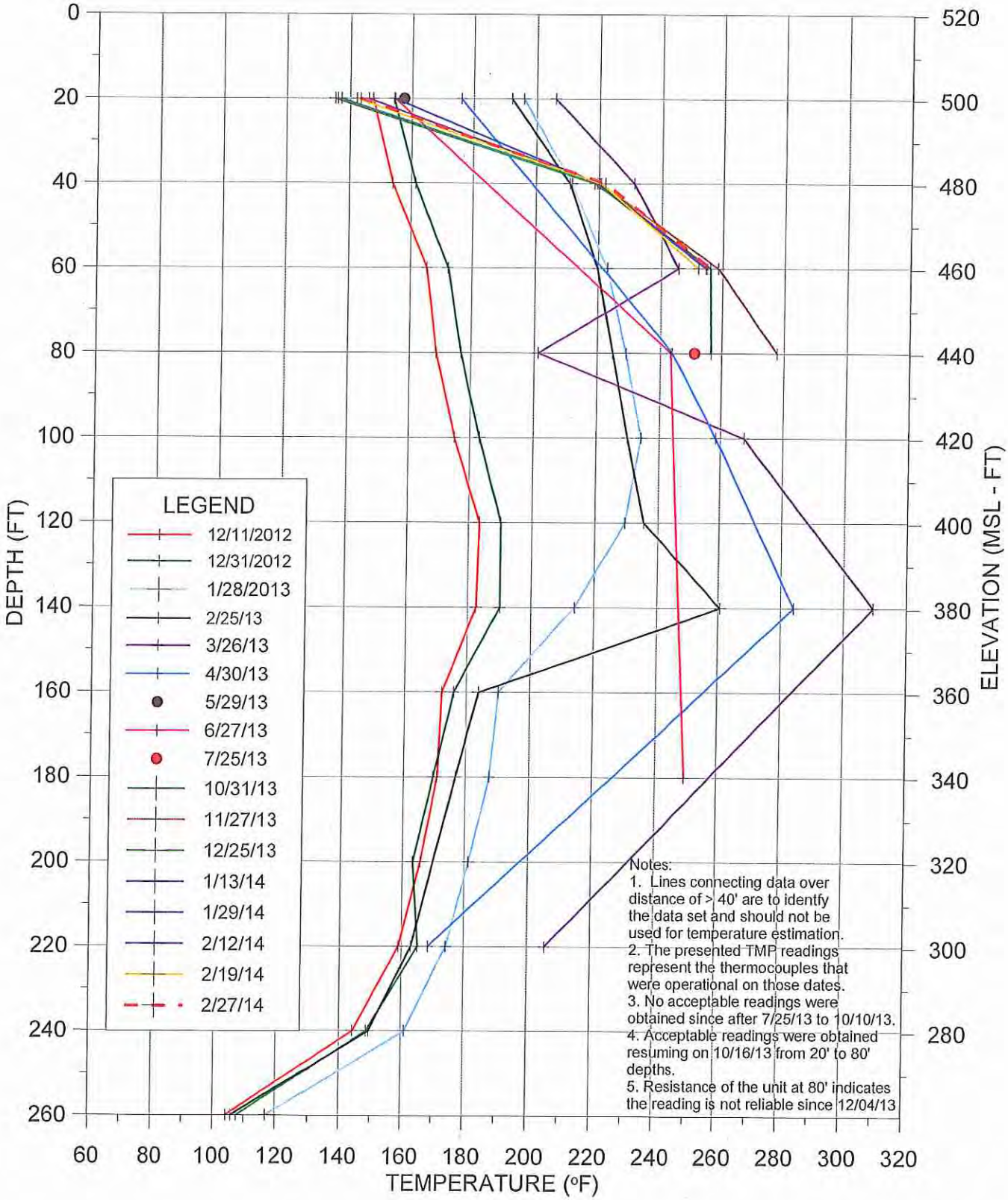
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-7R



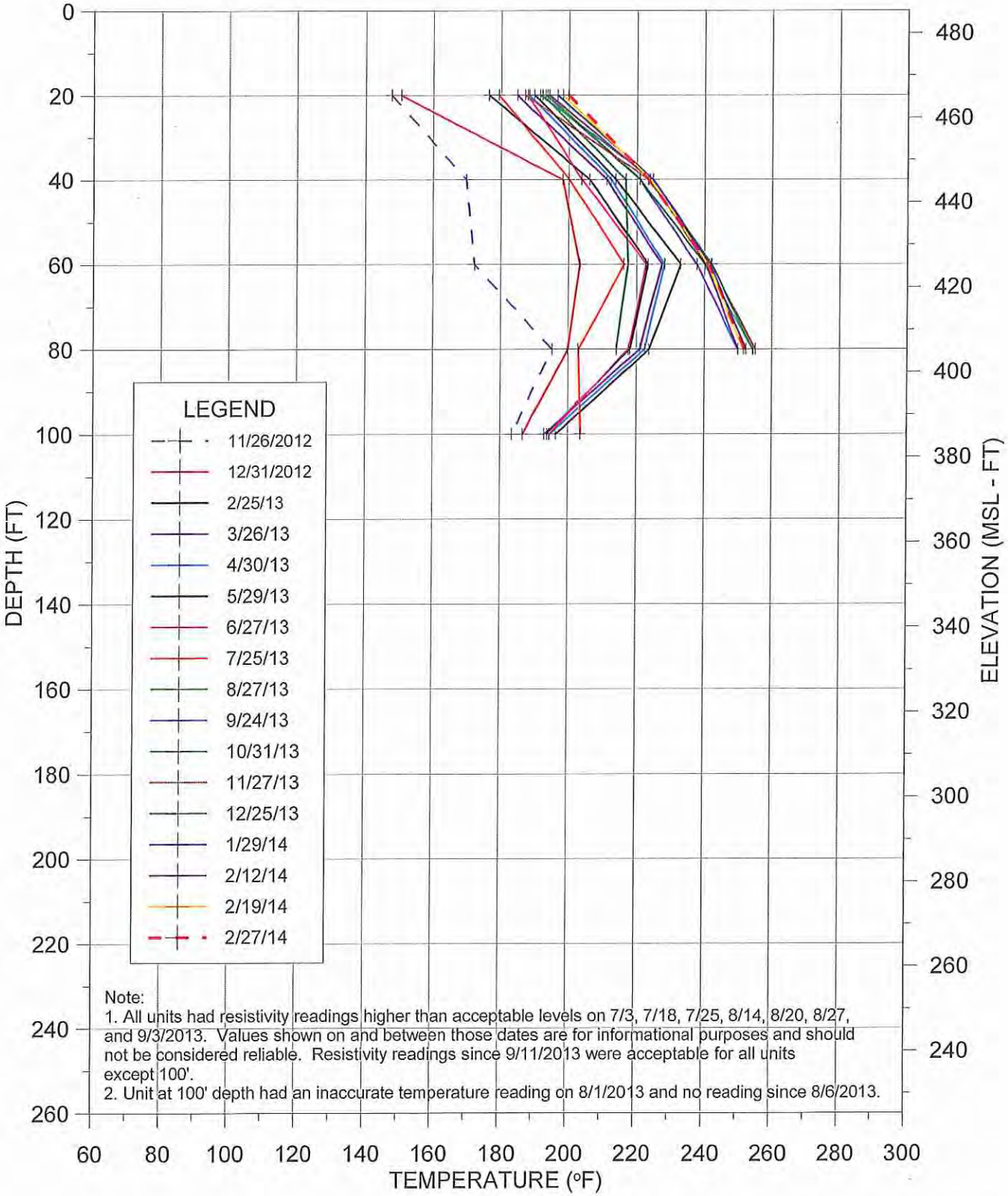
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-8



TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

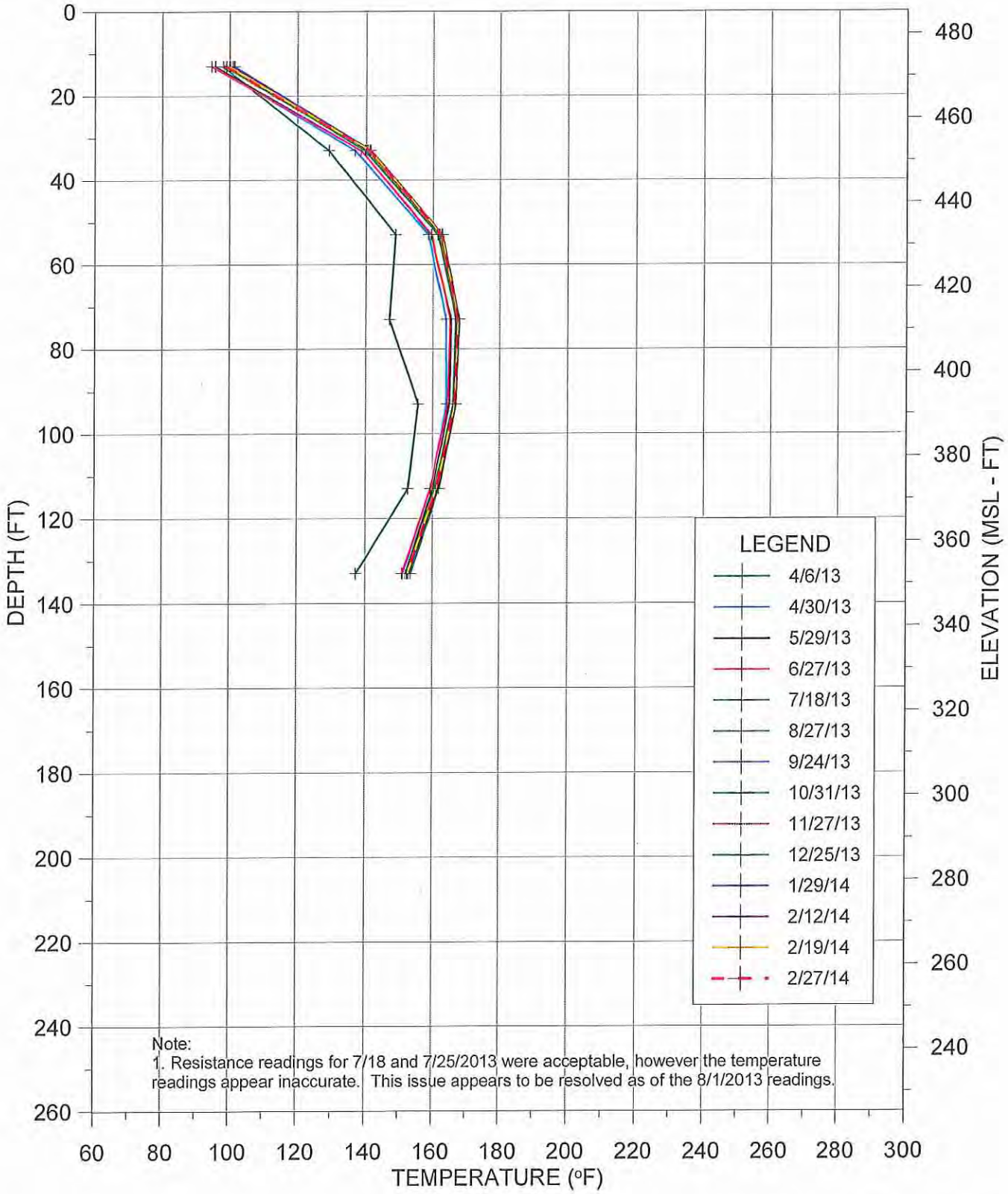
TMP-9



Note:
1. All units had resistivity readings higher than acceptable levels on 7/3, 7/18, 7/25, 8/14, 8/20, 8/27, and 9/3/2013. Values shown on and between those dates are for informational purposes and should not be considered reliable. Resistivity readings since 9/11/2013 were acceptable for all units except 100'.
2. Unit at 100' depth had an inaccurate temperature reading on 8/1/2013 and no reading since 8/6/2013.

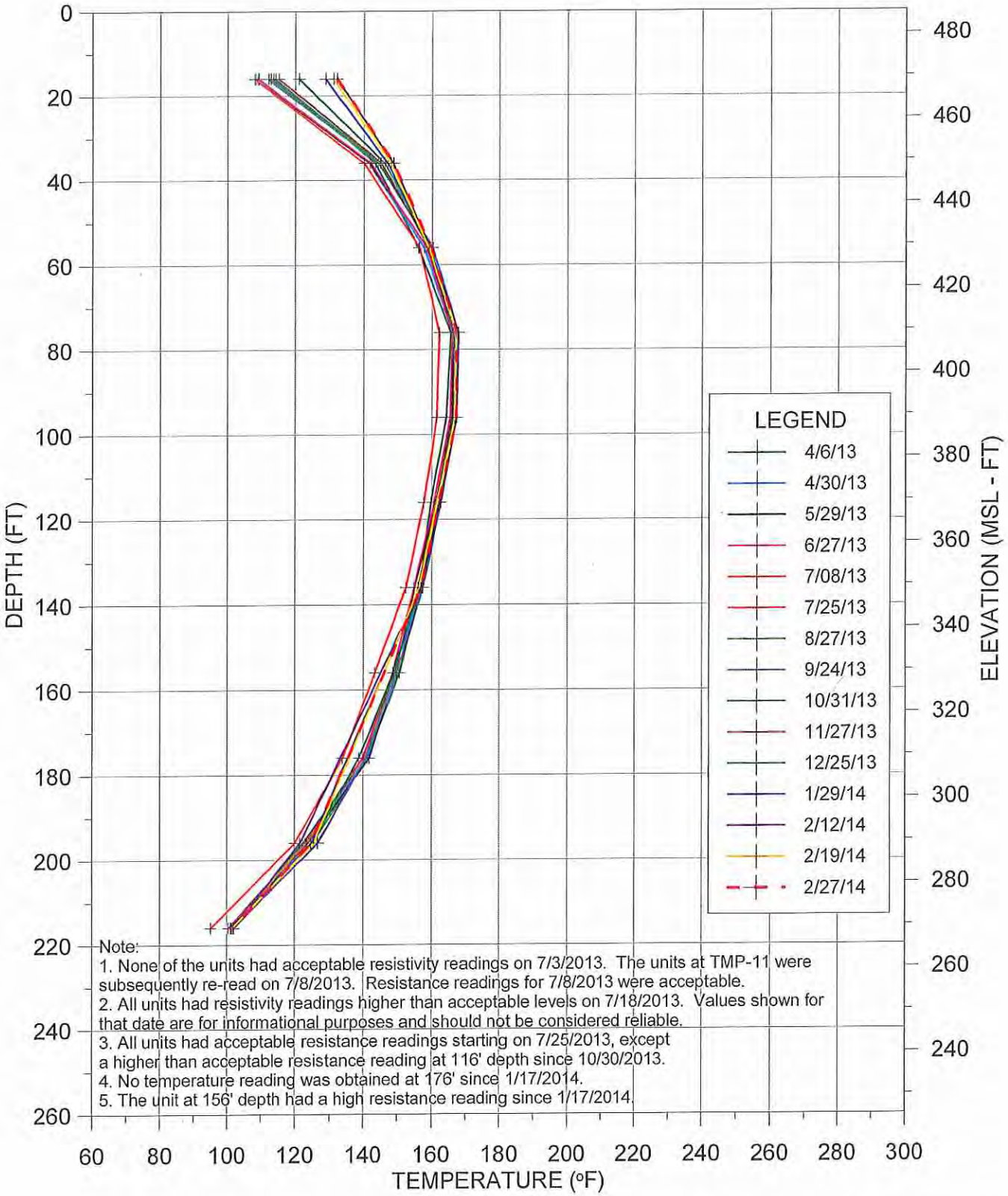
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-10



TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

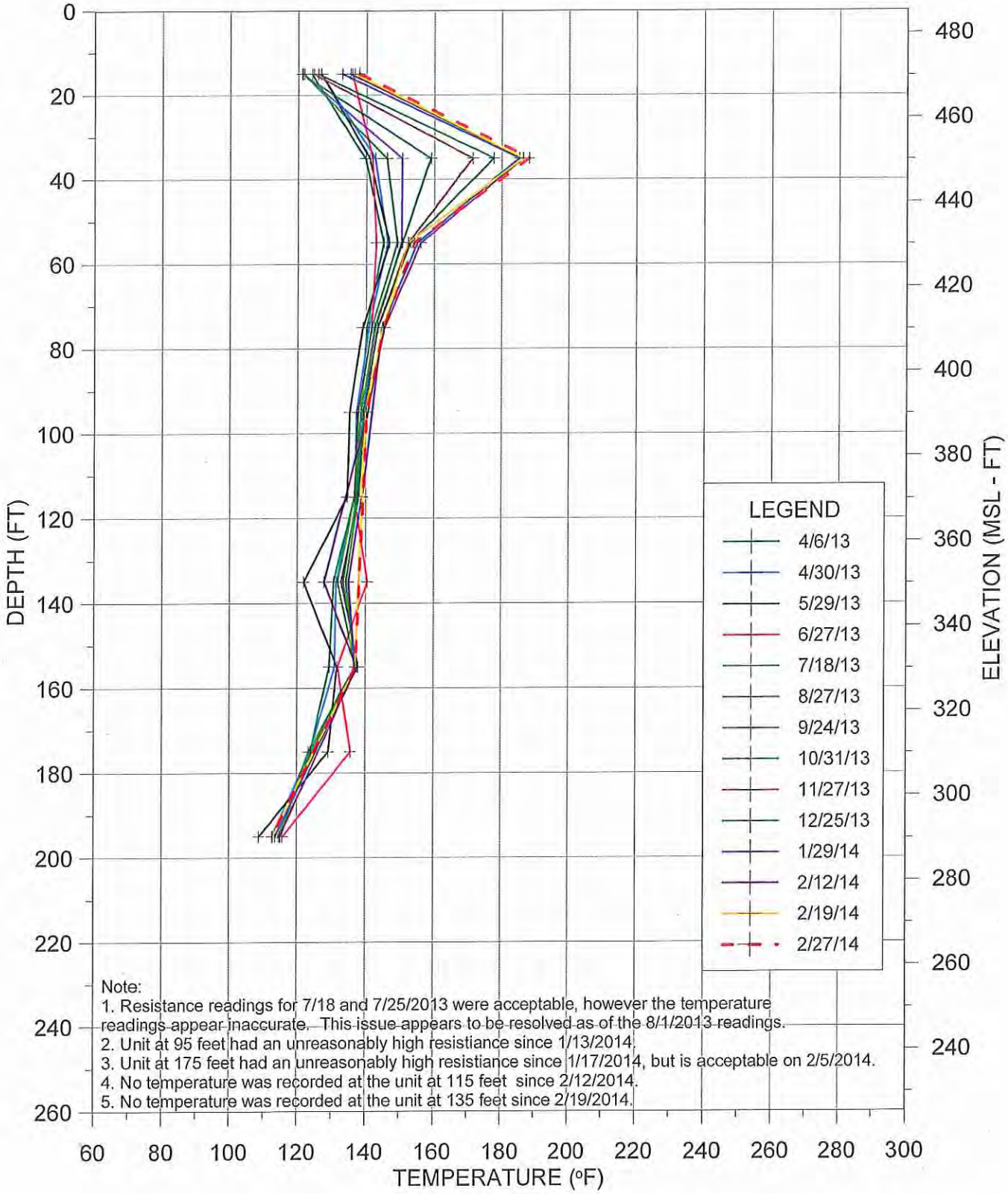
TMP-11



Note:
1. None of the units had acceptable resistivity readings on 7/3/2013. The units at TMP-11 were subsequently re-read on 7/8/2013. Resistance readings for 7/8/2013 were acceptable.
2. All units had resistivity readings higher than acceptable levels on 7/18/2013. Values shown for that date are for informational purposes and should not be considered reliable.
3. All units had acceptable resistance readings starting on 7/25/2013, except a higher than acceptable resistance reading at 116' depth since 10/30/2013.
4. No temperature reading was obtained at 176' since 1/17/2014.
5. The unit at 156' depth had a high resistance reading since 1/17/2014.

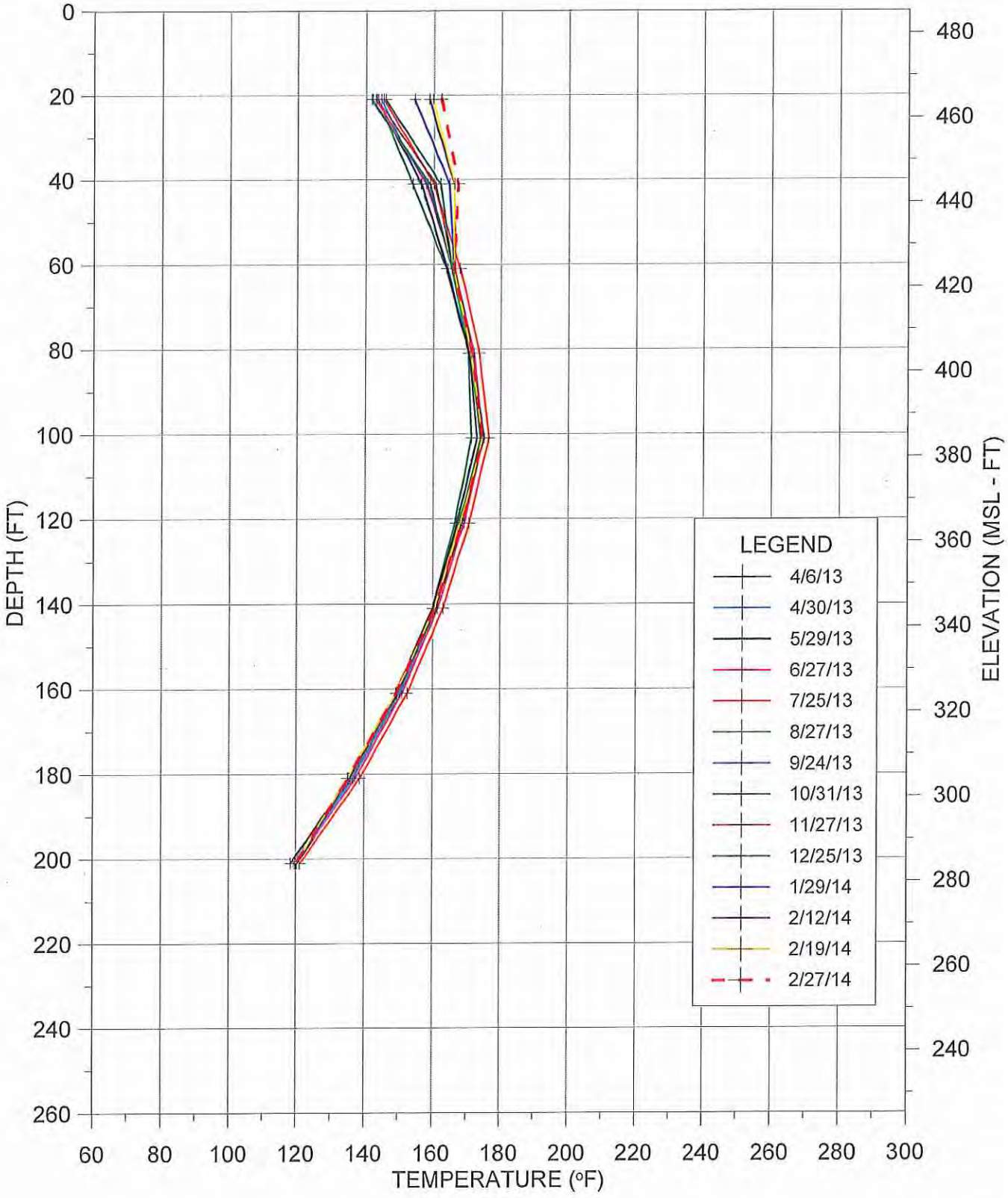
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-12



TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

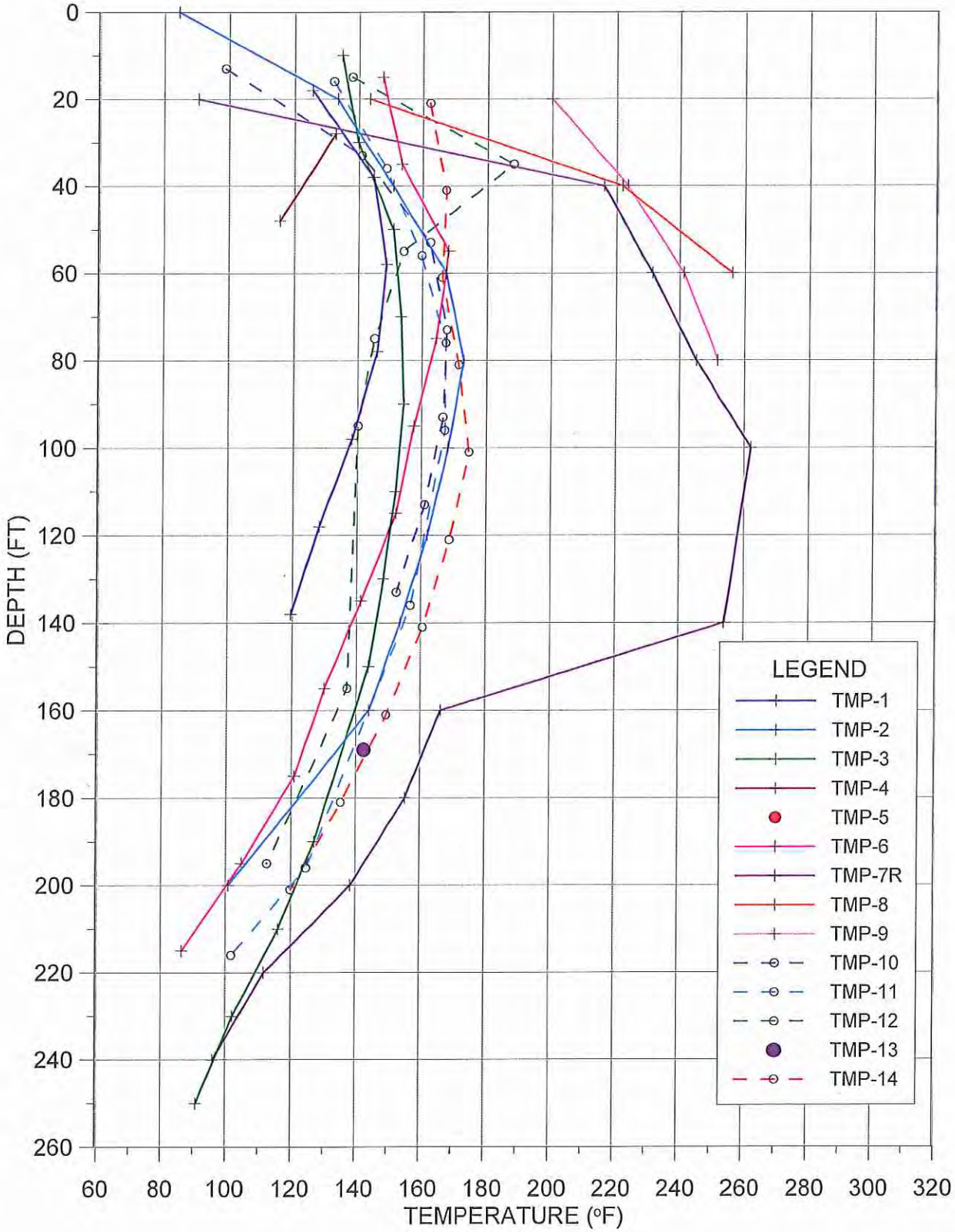
TMP-14



TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000515

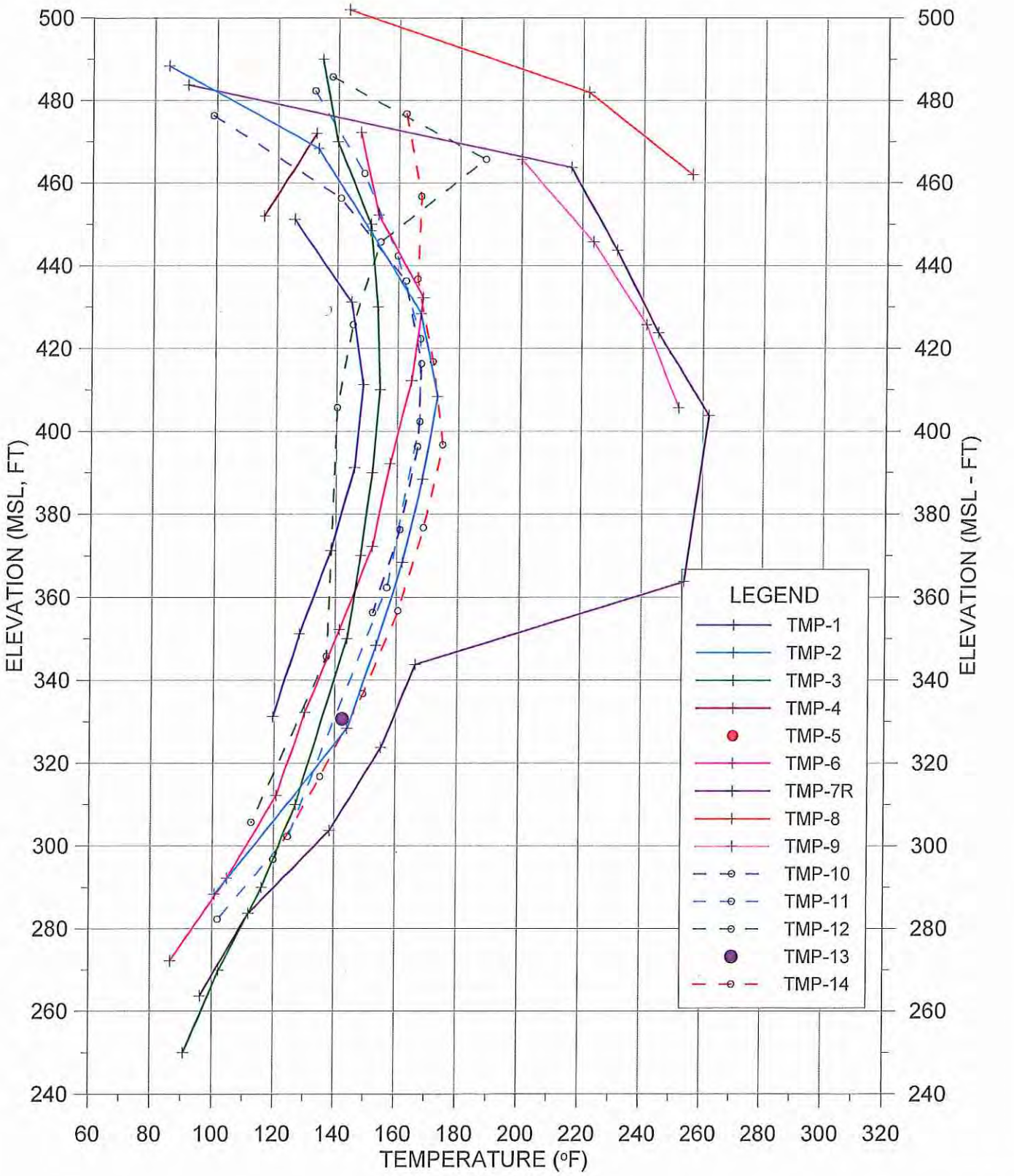
02/27/2014 -DEPTH



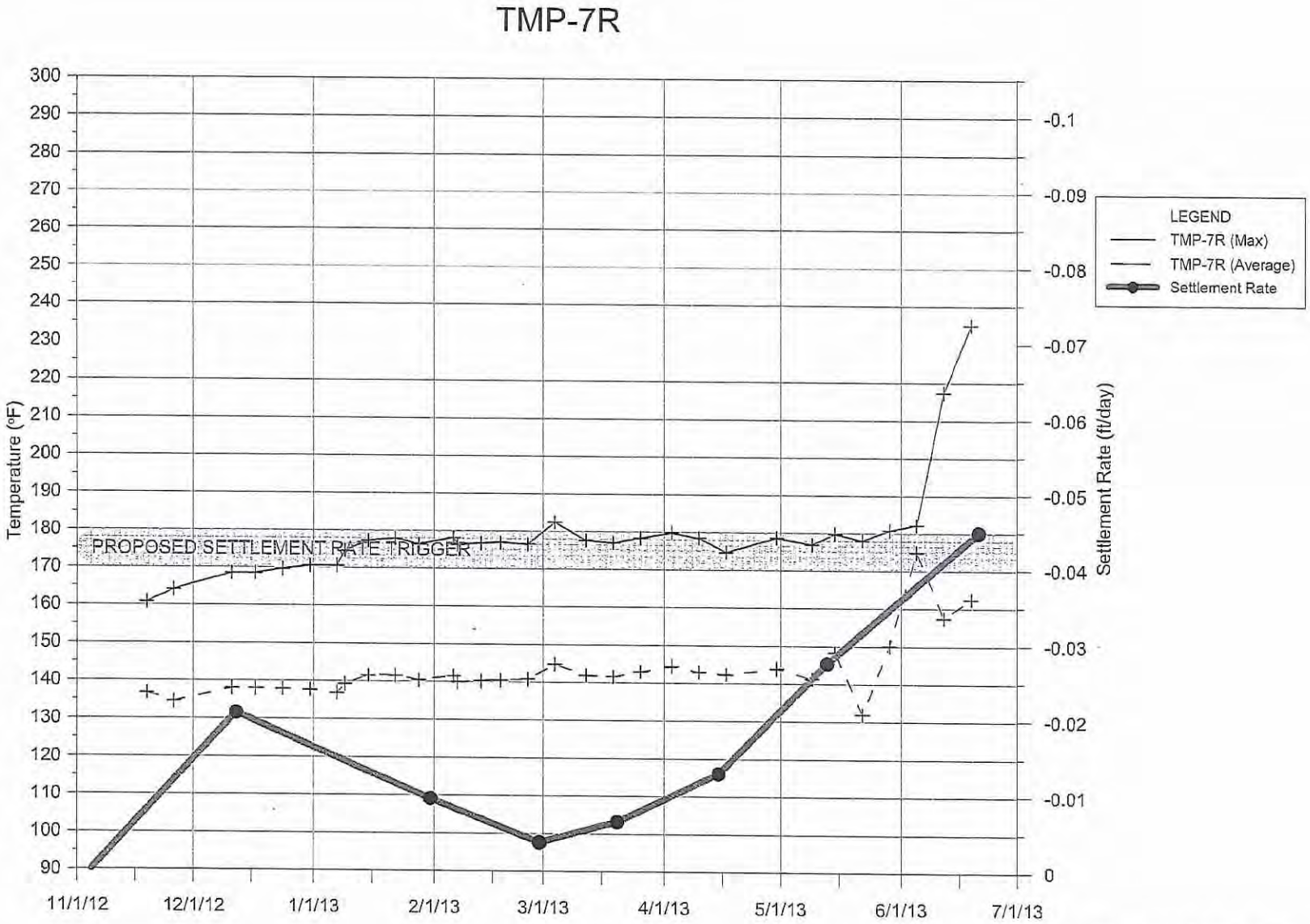
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

State of MO v. Republic Services, Inc. et al
Sperling/Abedini - 0000516

02/27/2014 - ELEVATION



TEMPERATURE VS ELEVATION
BRIDGETON LANDFILL



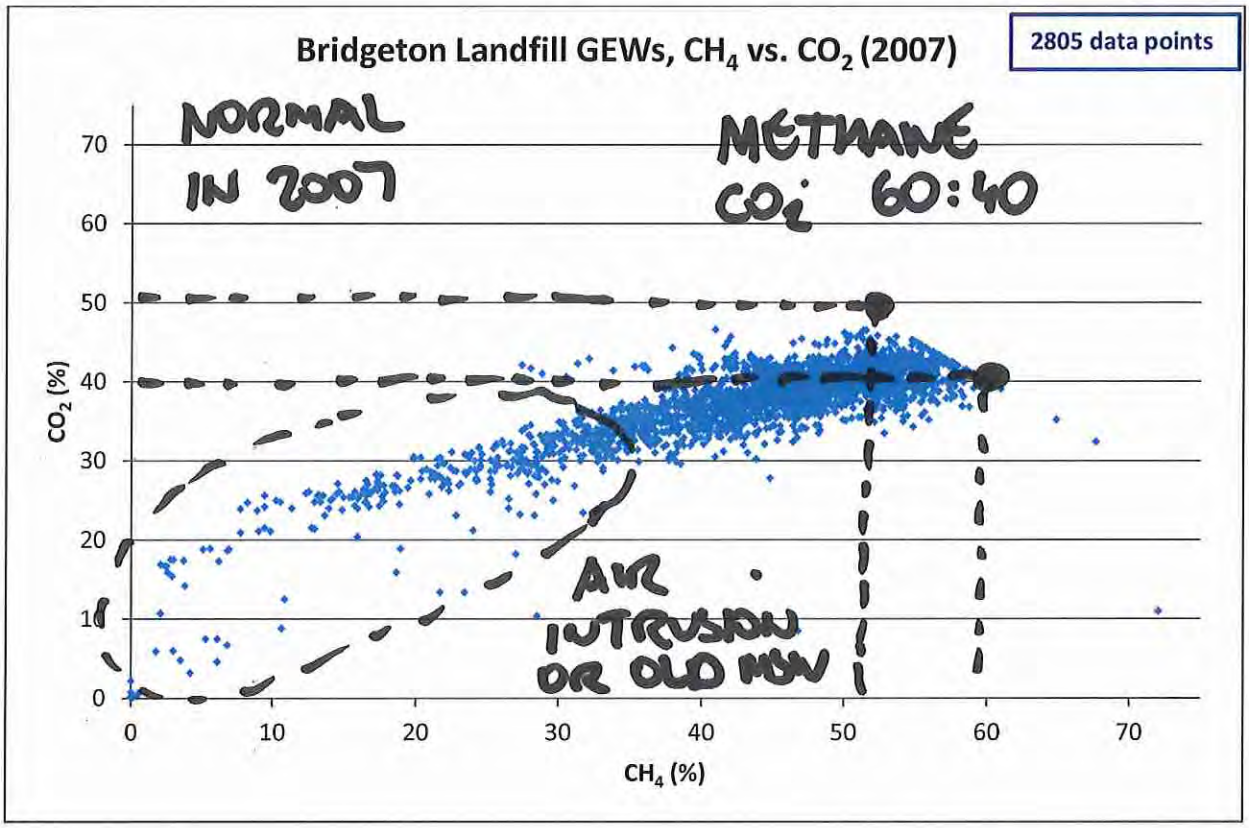
TMP TEMPERATURE AND SETTLEMENT RATE BRIDGETON LANDFILL

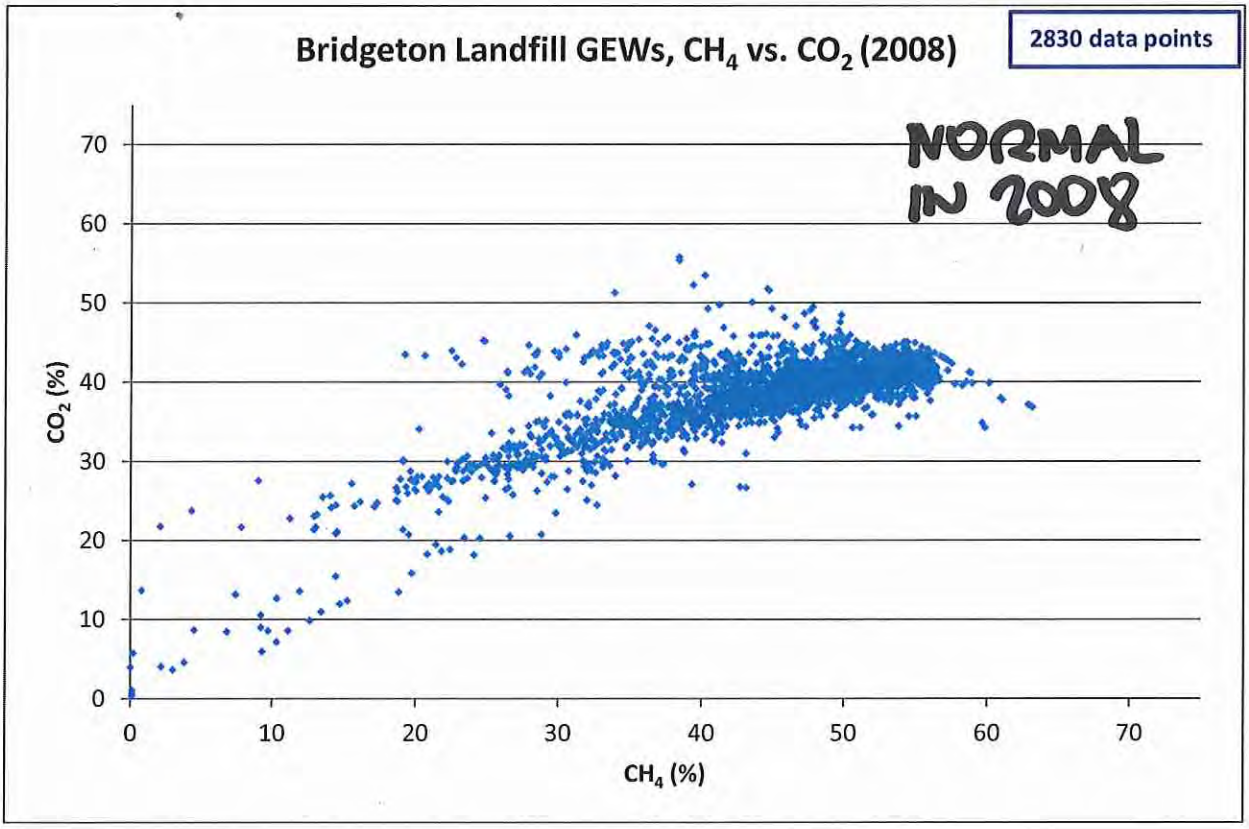
FIGURE E-7

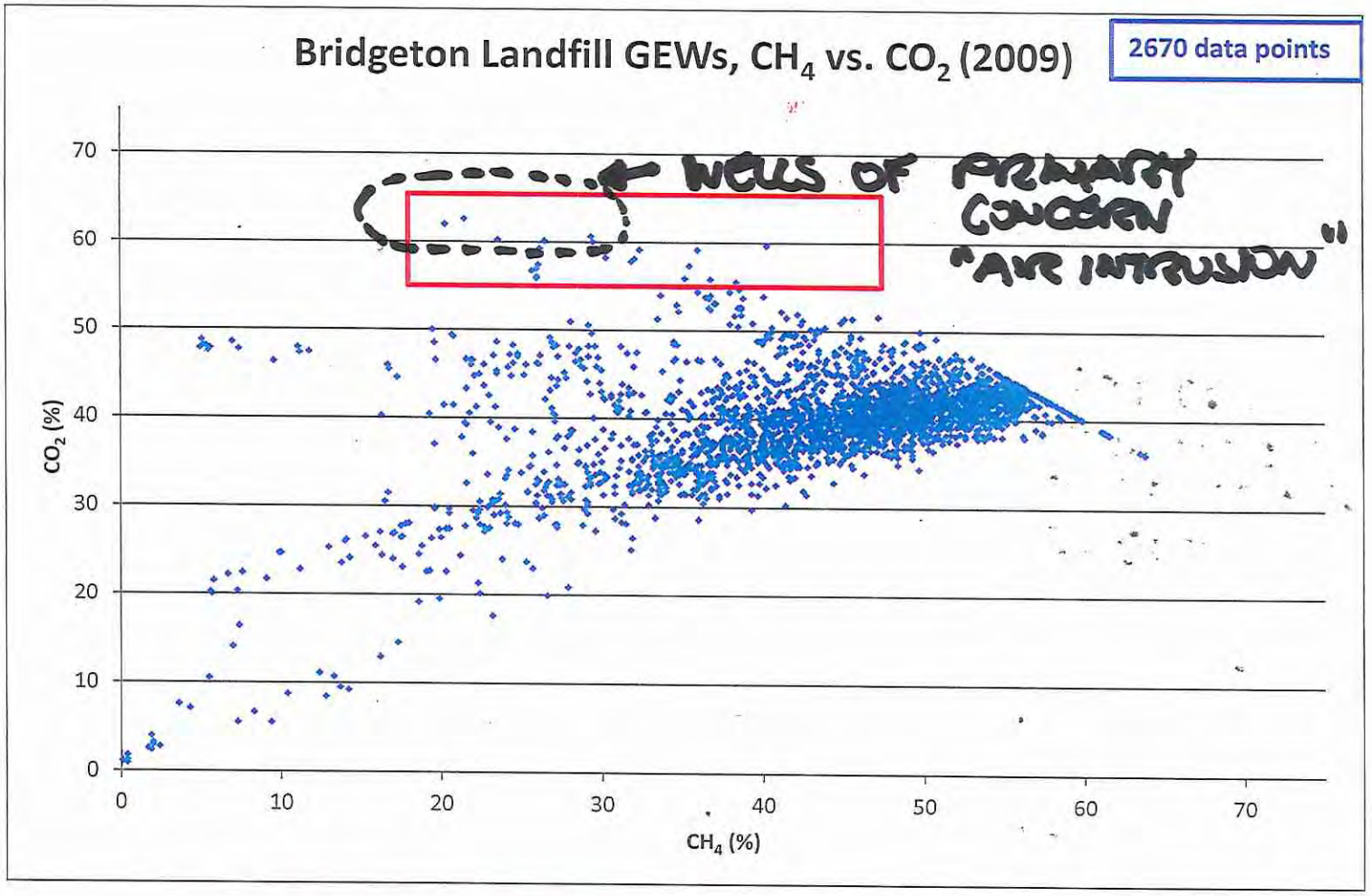
BSL_001_0000490

APPENDIX M

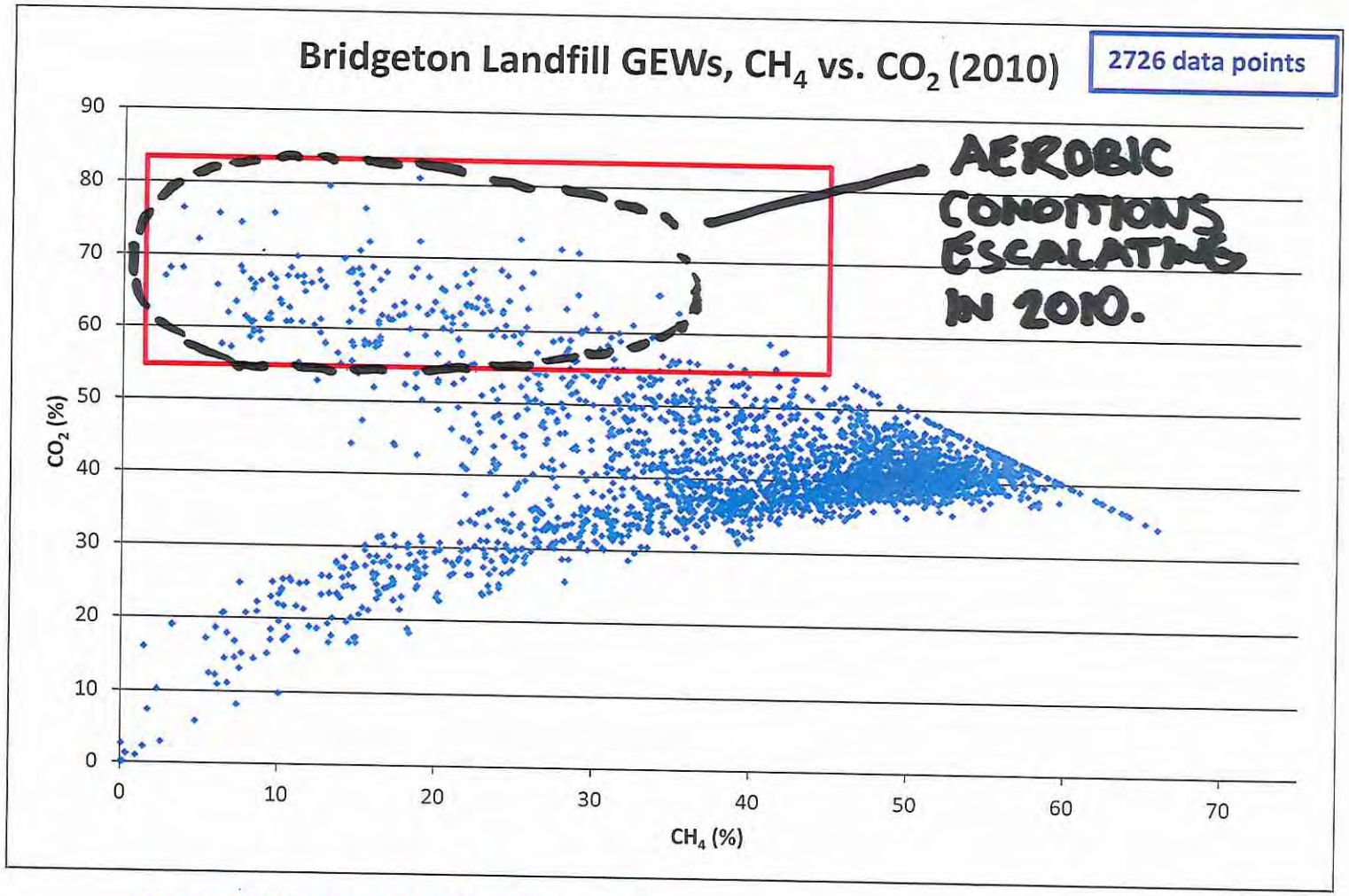
CO_2 AND CH_4 X-Y SCATTER PLOTS


Bridgeton Landfill GEWs, CH4 vs. CO2 (2007)
2805 data points
NORMAL IN 2007
METHANE CO2 60:40
AIR INTRUSION OR OLD MSW
CO2 (%)
CH4 (%)
0
10
20
30
40
50
60
70

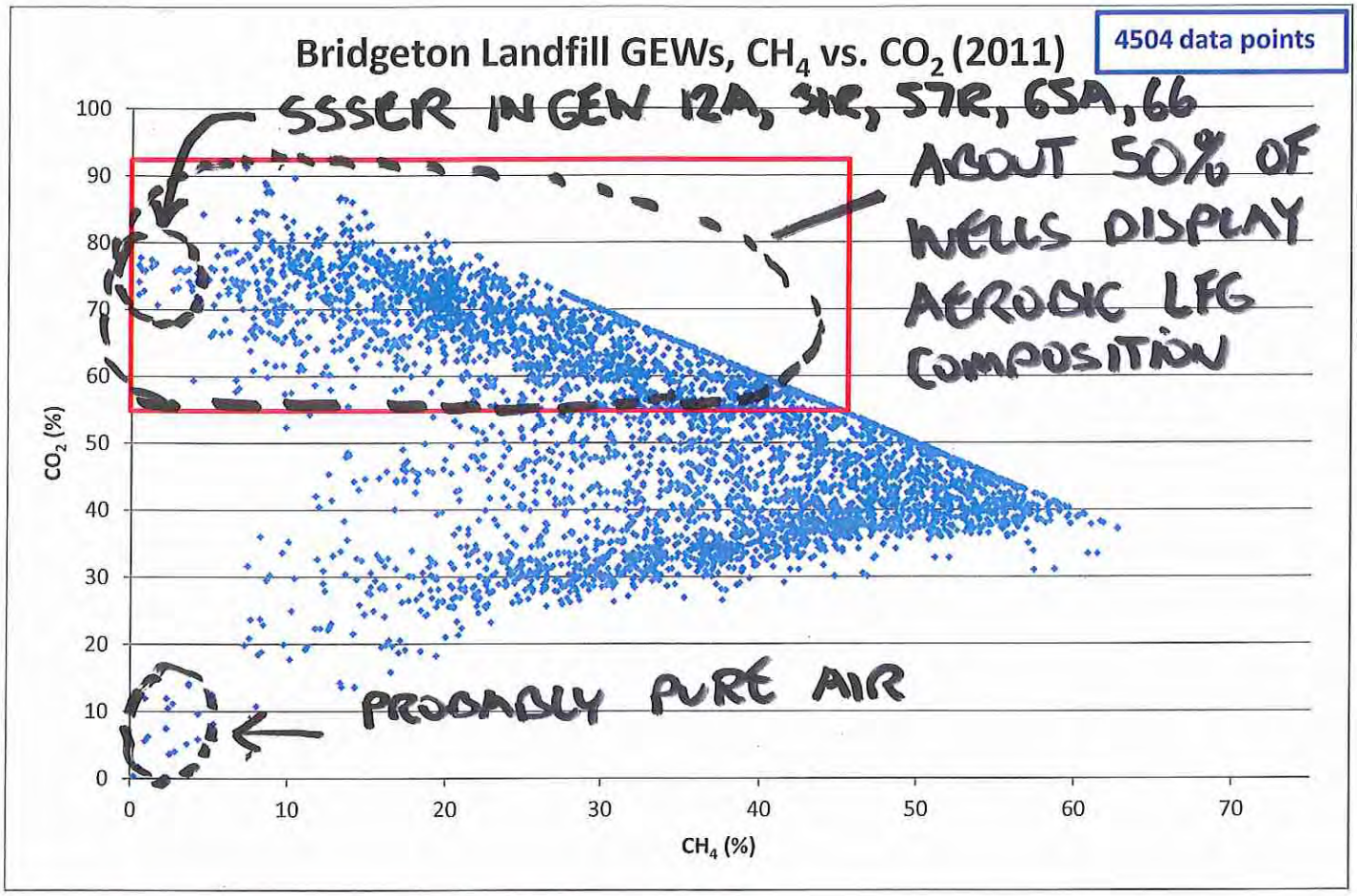

Bridgeton Landfill GEWs, CH4 vs. CO2 (2008)
2830 data points
NORMAL IN 2008
CO2 (%)
CH4 (%)
0
10
20
30
40
50
60
70



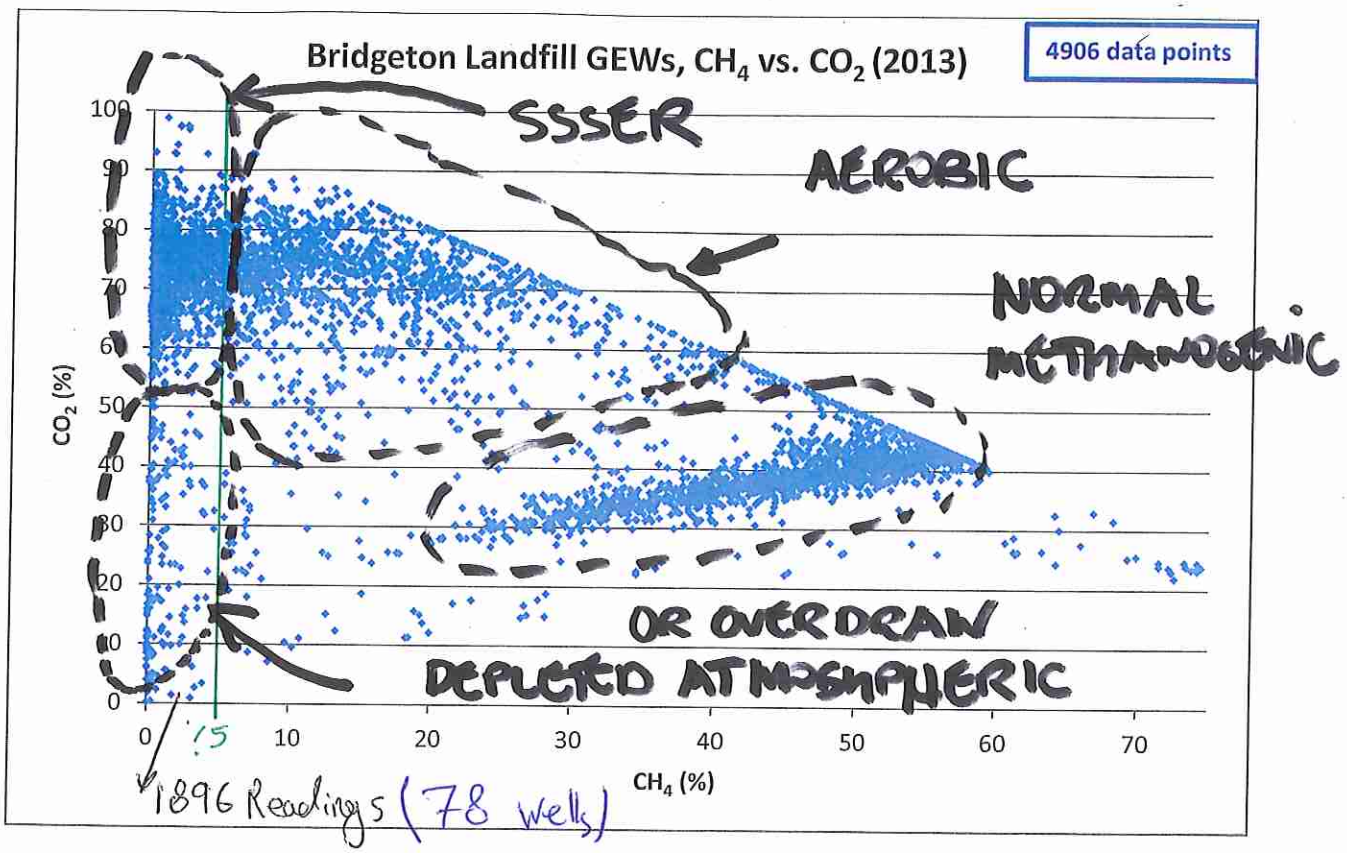
Number of Wells with CO2 > 55%: 4

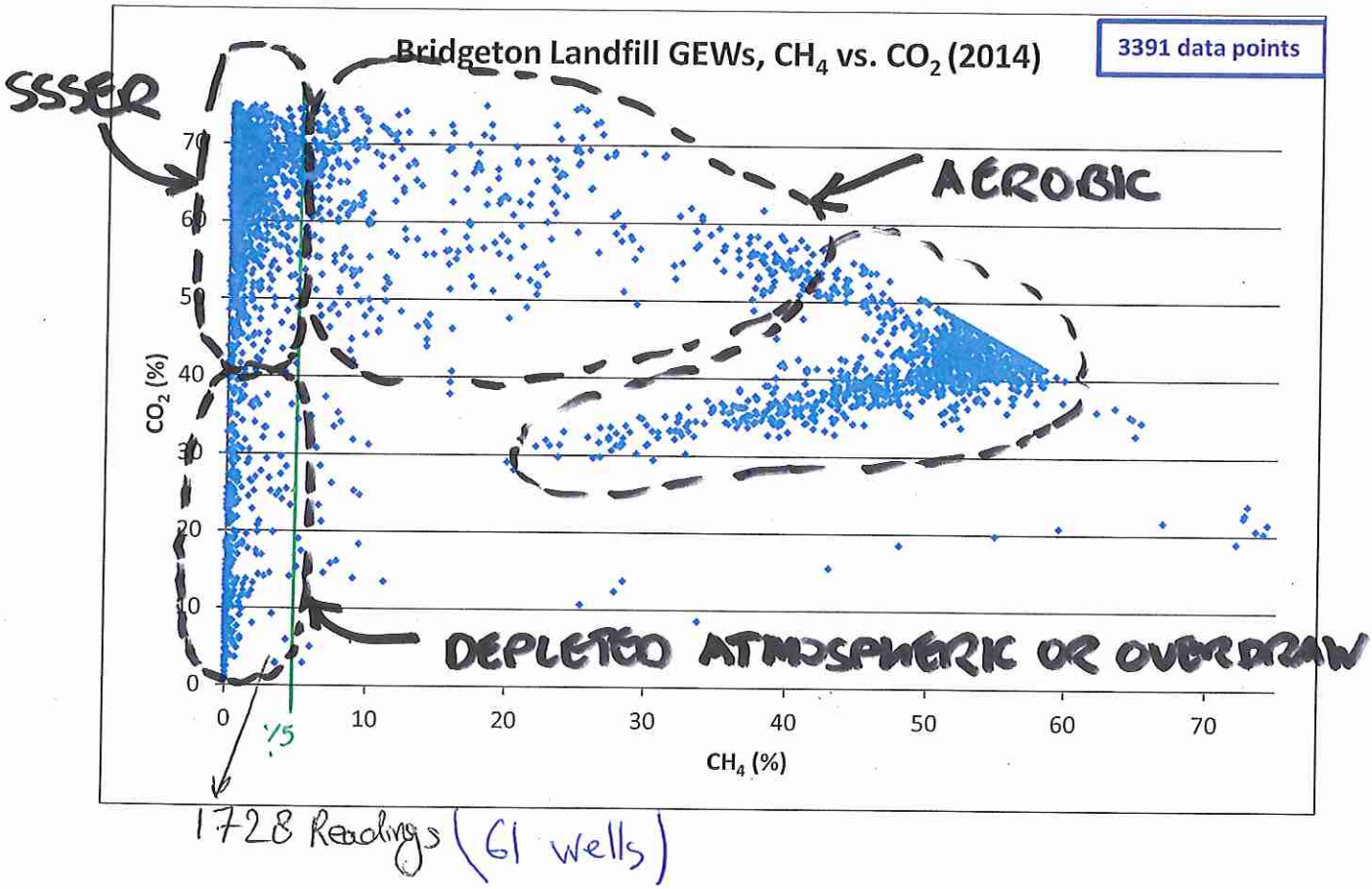


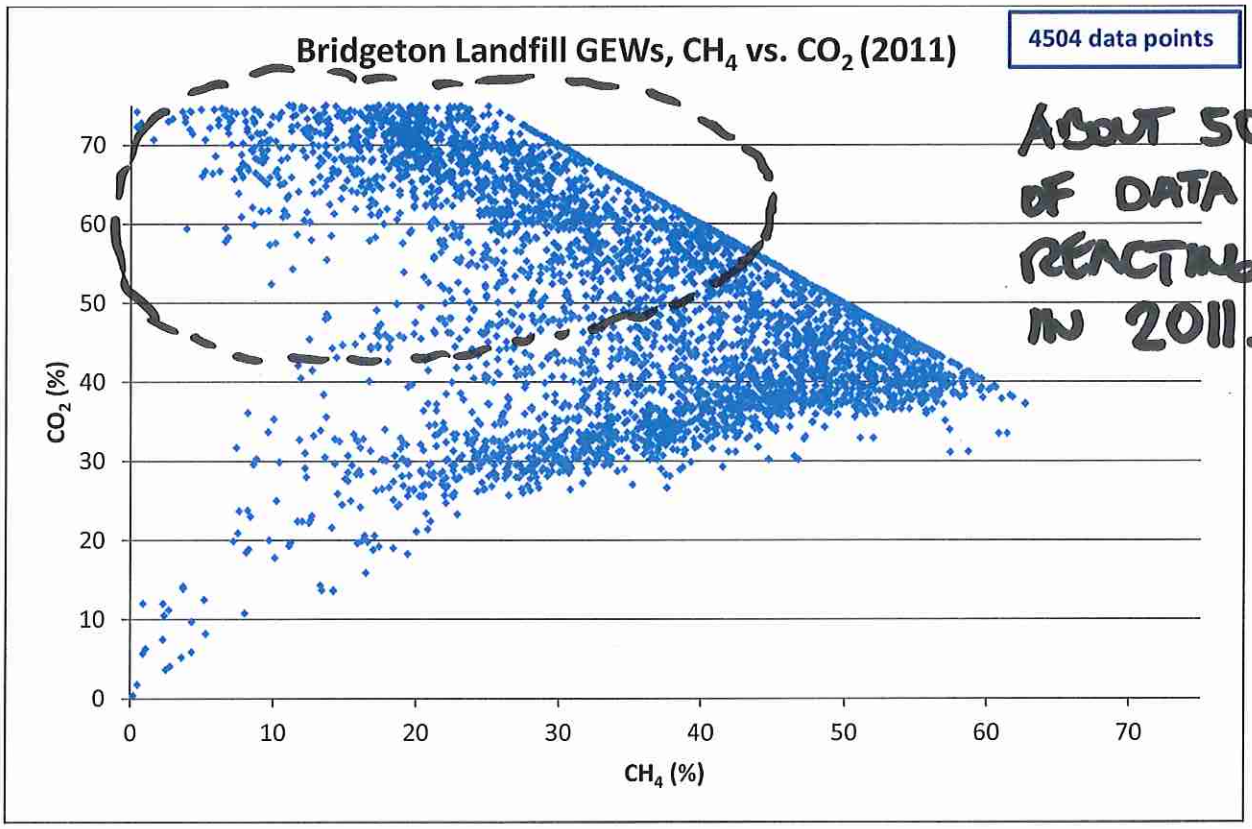
Number of Wells with CO2 > 55%: 17

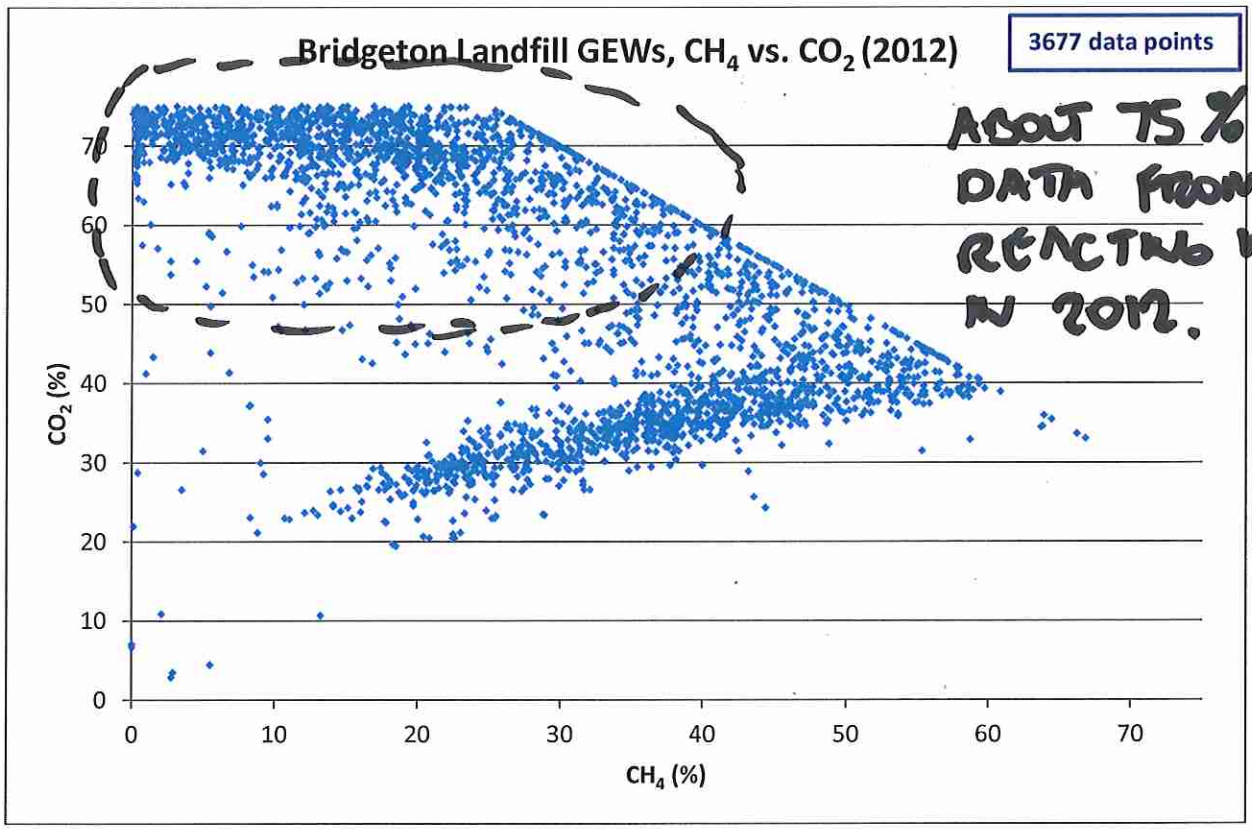


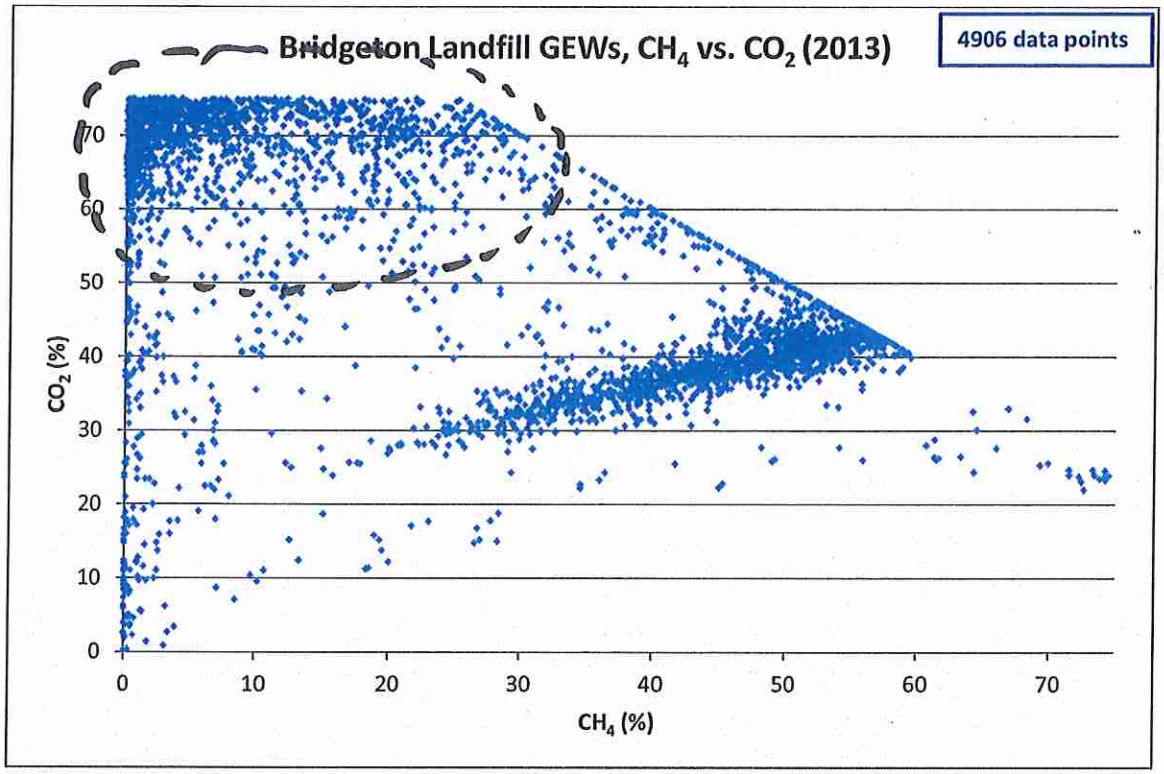
Number of Wells with CO2 > 55% in 2011 : 34

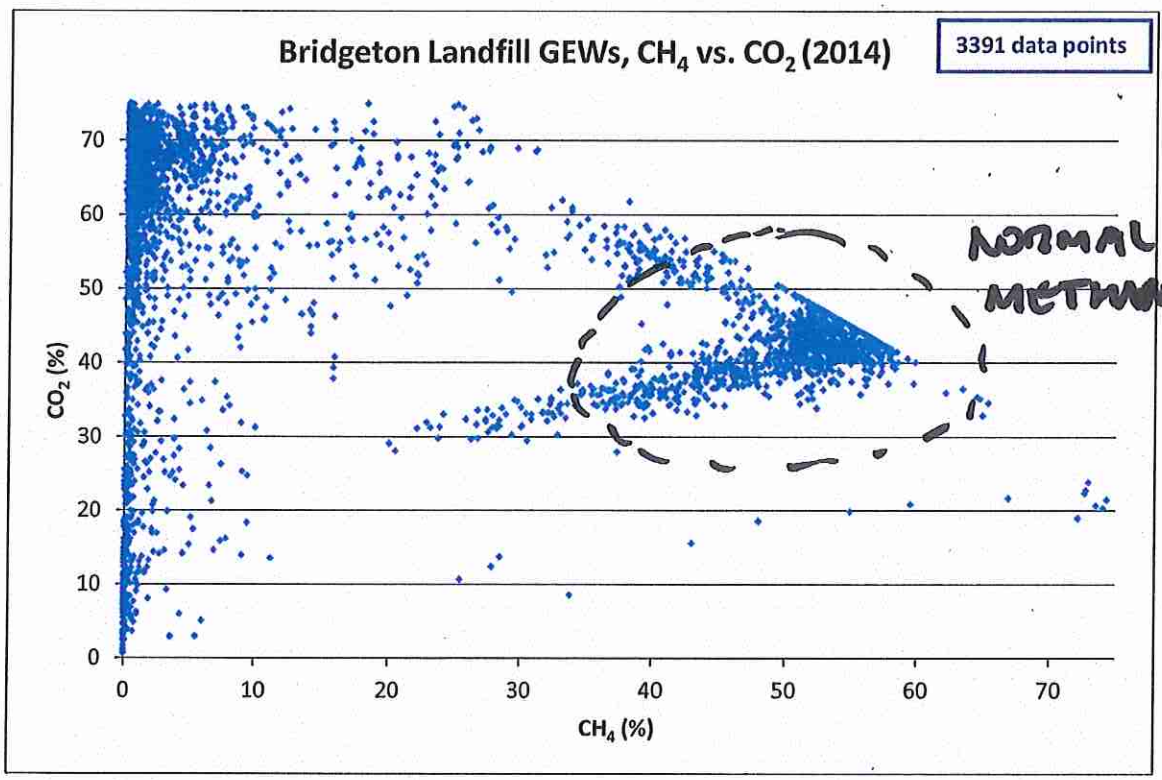

Bridgeton Landfill GEWs, CH_4 vs. CO_2 (2013)
4906 data points
SSSER
AEROBIC
NORMAL METHANOGENIC
OR OVERDRAW
DEPLETED ATMOSPHERIC
CO_2 (%)
CH_4 (%)
0
10
20
30
40
50
60
70
80
90
100
15
1896 Readings (78 wells)

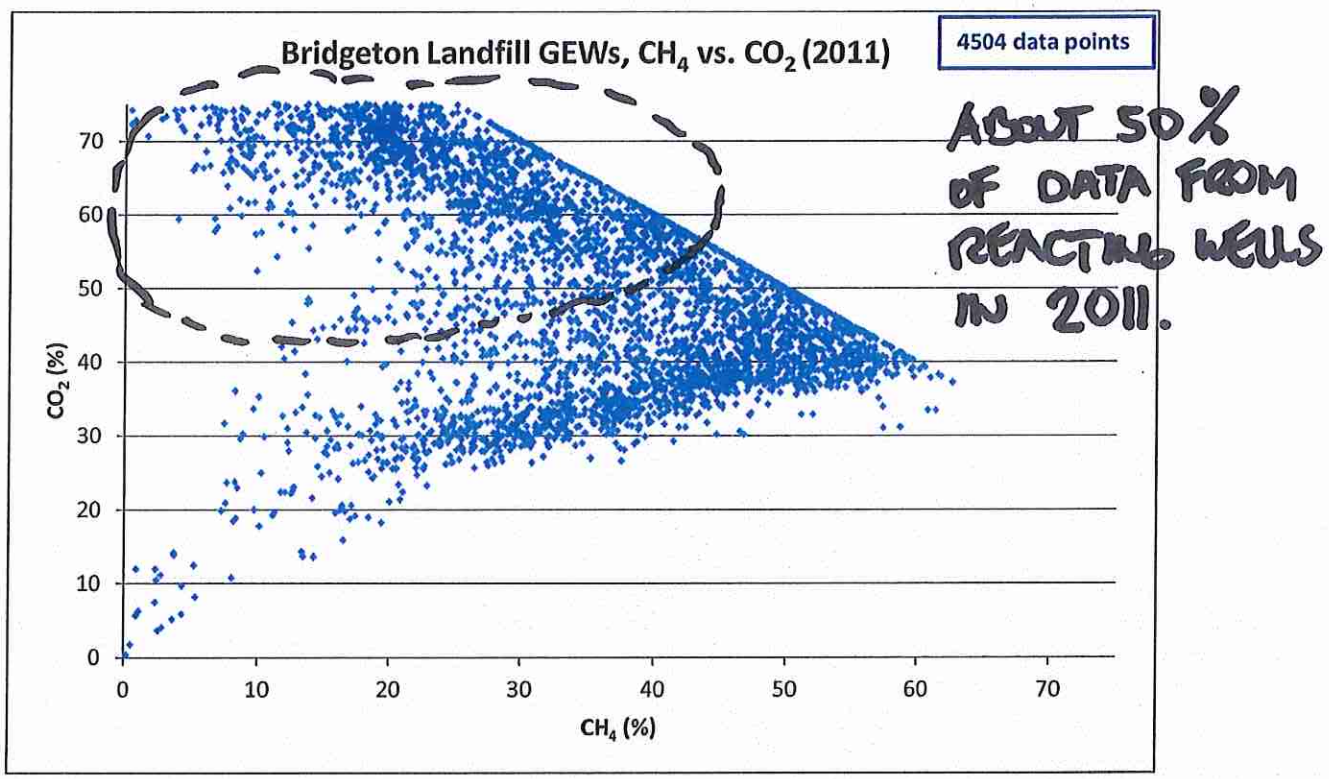

Bridgeton Landfill GEWs, CH_4 vs. CO_2 (2014)
3391 data points
SSSER
AEROBIC
DEPLETED ATMOSPHERIC OR OVERDRAW
CO_2 (%)
CH_4 (%)
0
10
20
30
40
50
60
70
15
1728 Readings (61 wells)

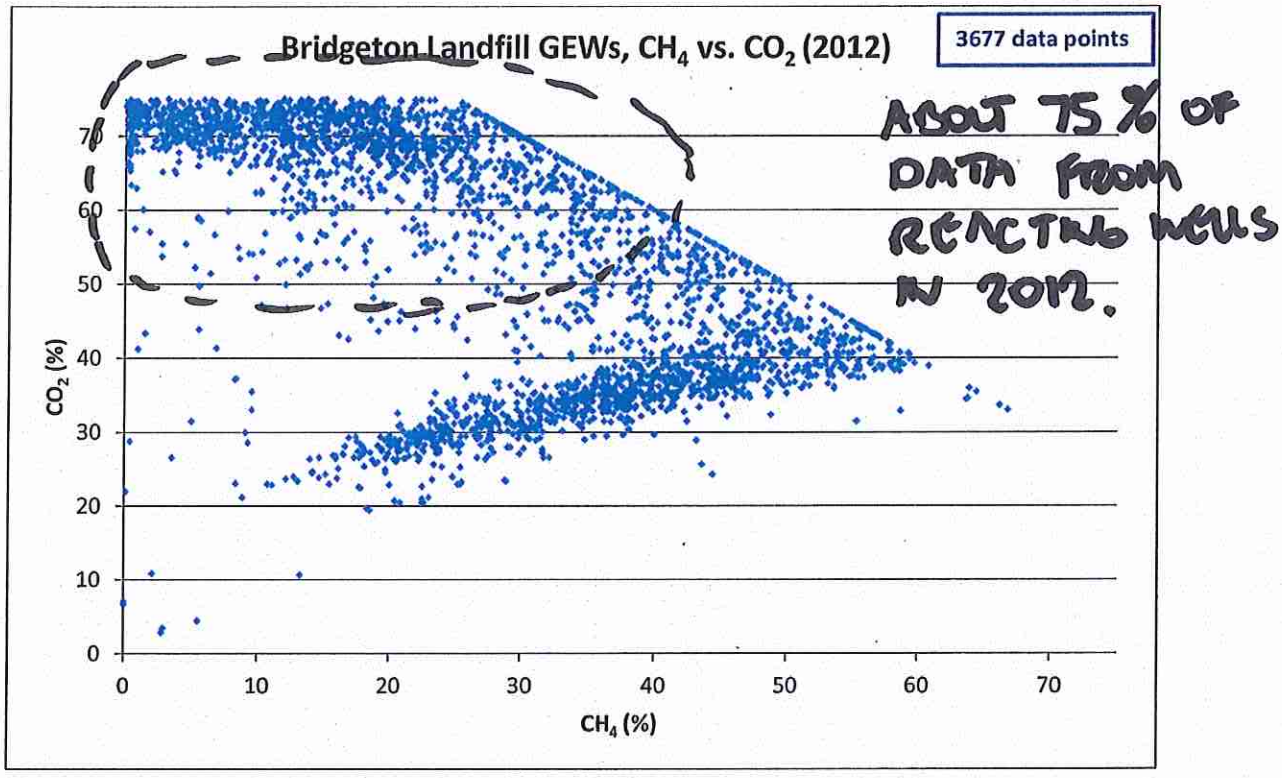

Bridgeton Landfill GEWs, CH_4 vs. CO_2 (2011)
4504 data points
ABOUT 50% OF DATA FROM REACTING WELLS IN 2011.
CO_2 (%)
CH_4 (%)
0
10
20
30
40
50
60
70

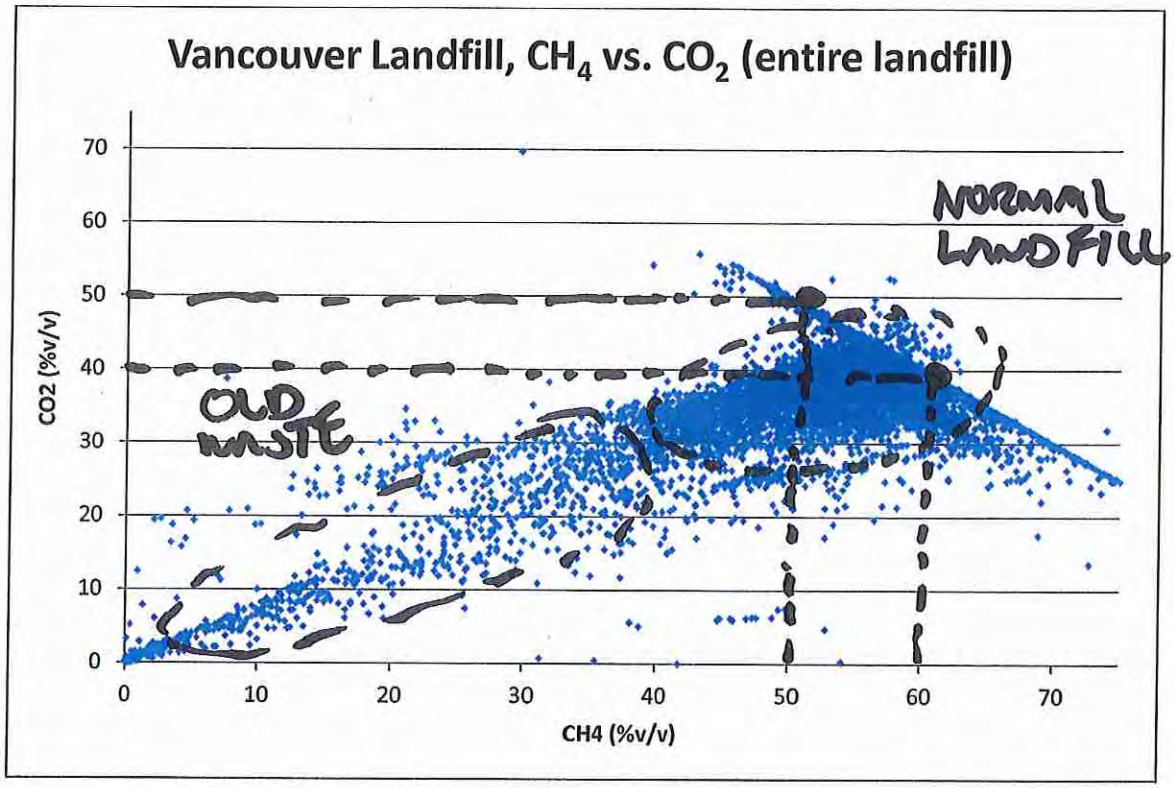

Bridgeton Landfill GEWs, CH_4 vs. CO_2 (2012)
3677 data points
ABOUT 75% OF DATA FROM REACTING WELLS IN 2012.
CO_2 (%)
CH_4 (%)
0
10
20
30
40
50
60
70

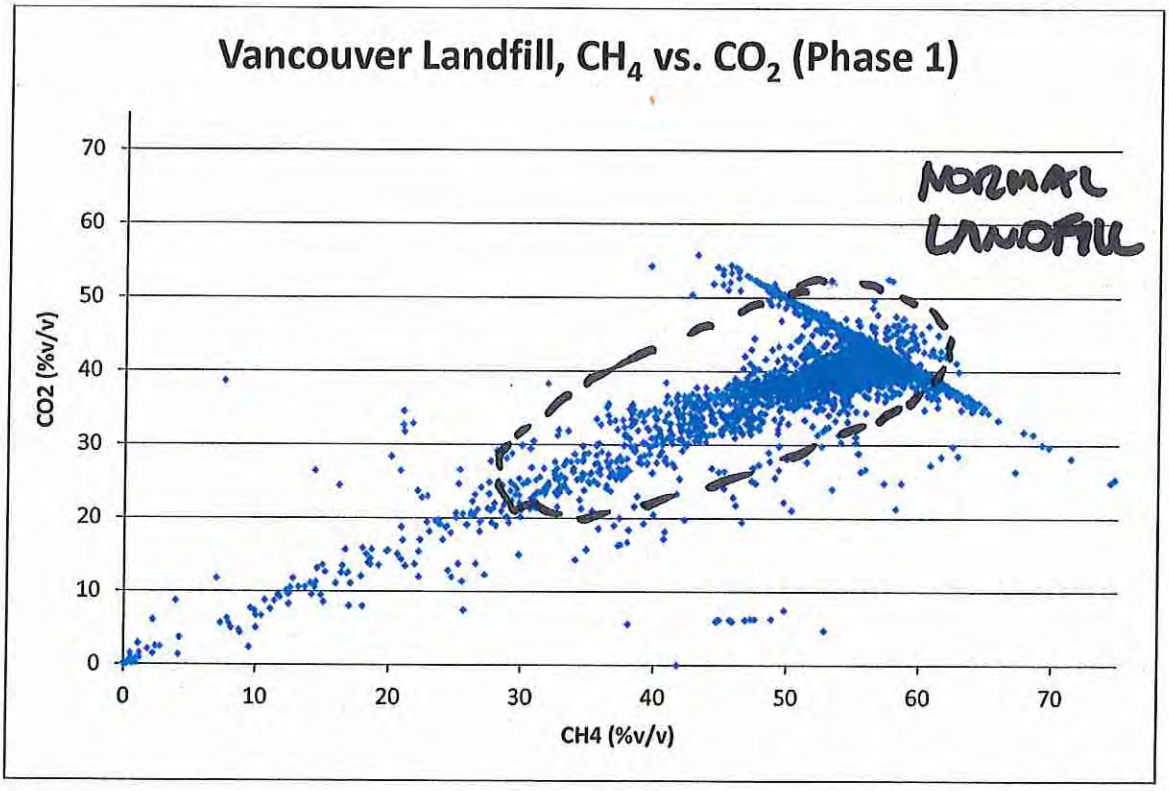

Bridgeton Landfill GEWs, CH_4 vs. CO_2 (2013)
4906 data points
CO_2 (%)
CH_4 (%)
0
10
20
30
40
50
60
70

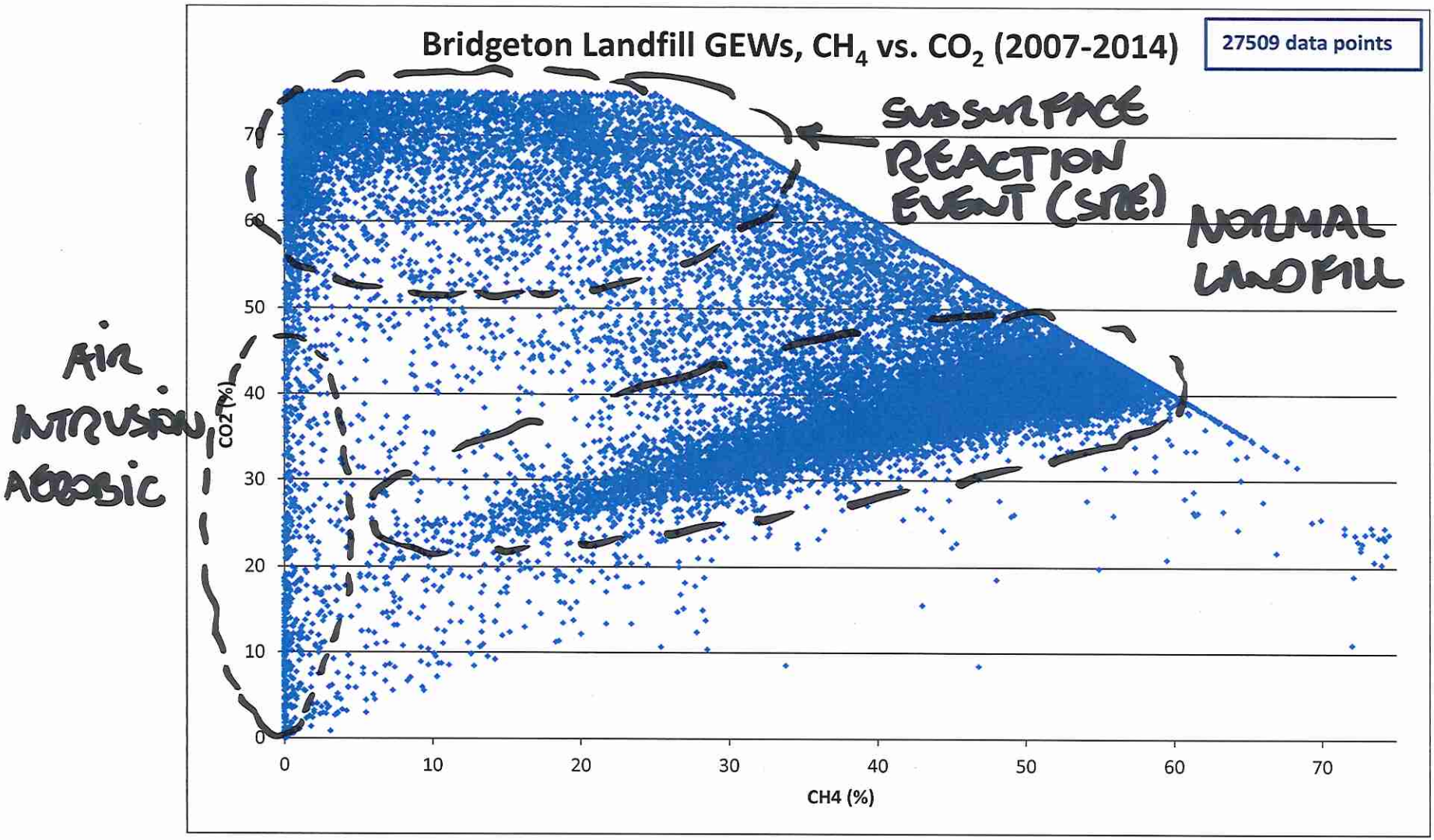

Bridgeton Landfill GEWs, CH_4 vs. CO_2 (2014)
3391 data points
NORMAL
METHANOGENESIS
CO_2 (%)
CH_4 (%)
0
10
20
30
40
50
60
70

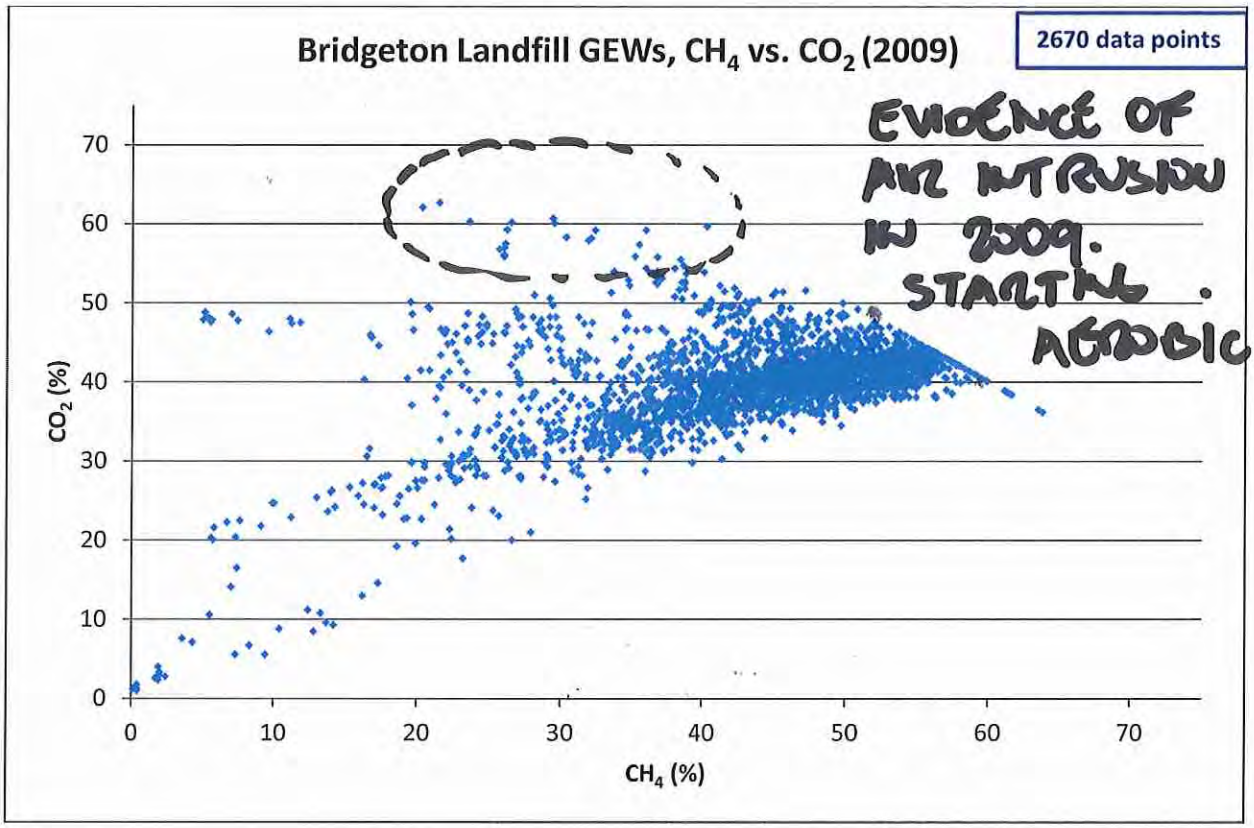

Bridgeton Landfill GEWs, CH_4 vs. CO_2 (2011)
4504 data points
ABOUT 50% OF DATA FROM REACTING WELLS IN 2011.
CO_2 (%)
CH_4 (%)
0
10
20
30
40
50
60
70

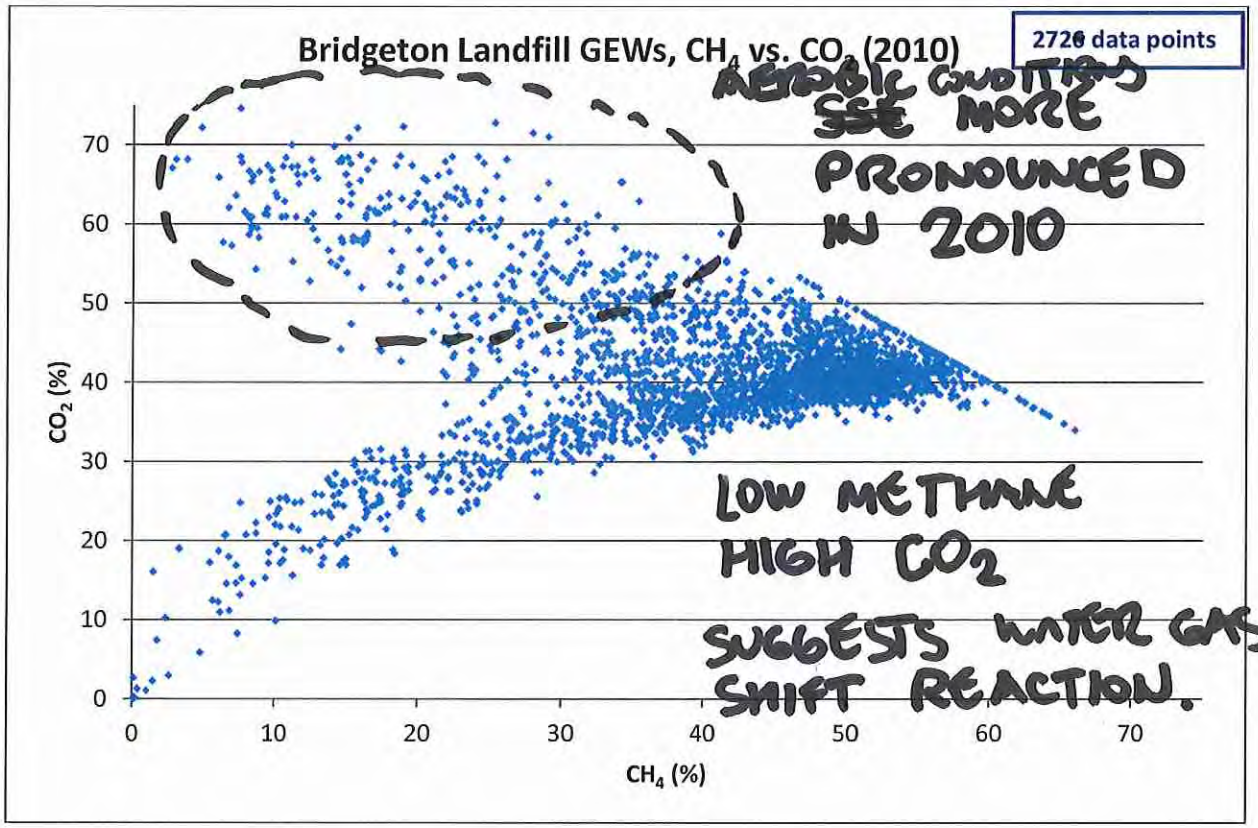

Bridgeton Landfill GEWs, CH_4 vs. CO_2 (2012)
3677 data points
ABOUT 75% OF DATA FROM REACTING WELLS IN 2012.
CO_2 (%)
CH_4 (%)
0
10
20
30
40
50
60
70

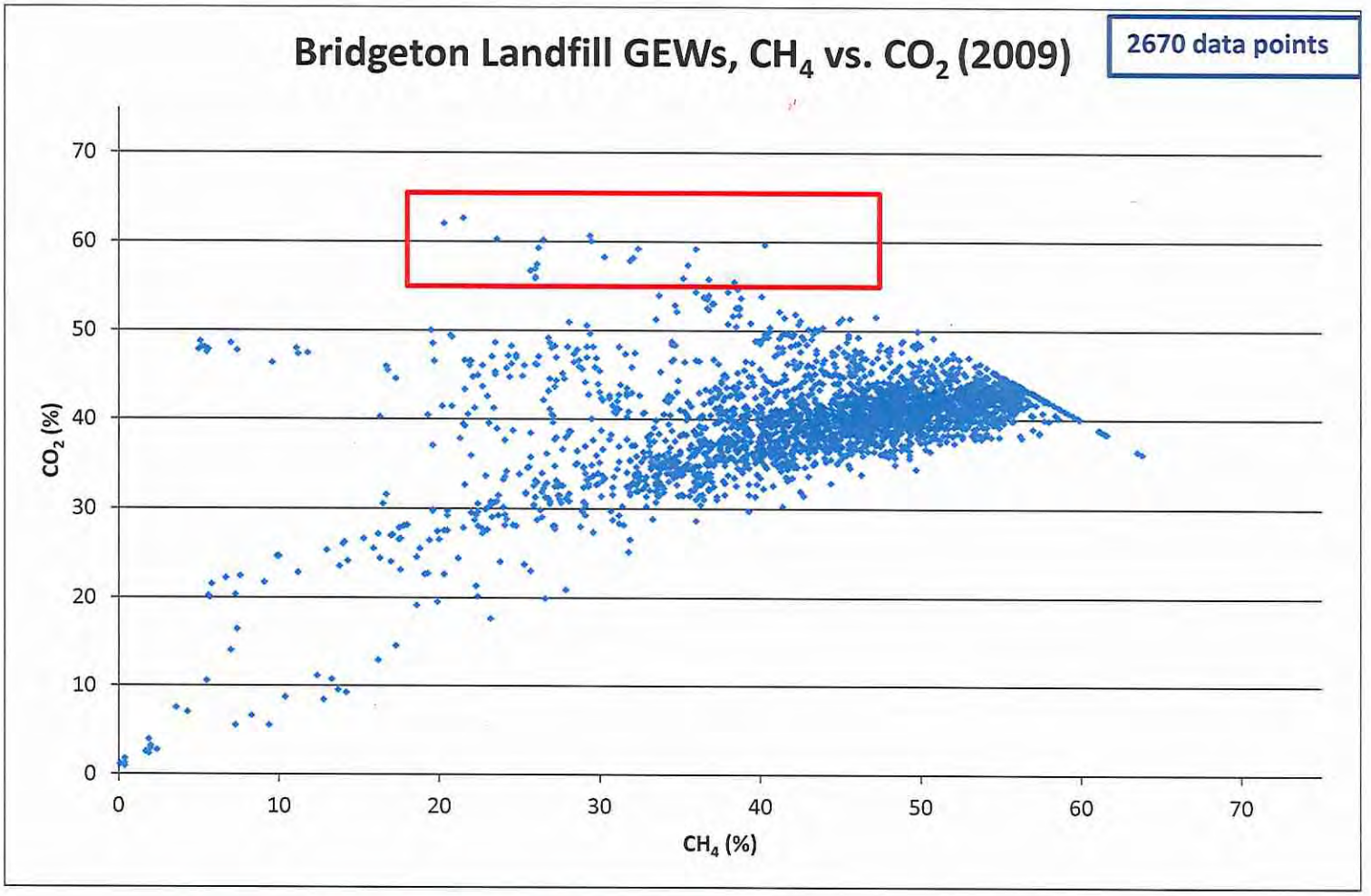

Vancouver Landfill, CH4 vs. CO2 (entire landfill)
NORMAL LANDFILL
OLD WASTE
CO2 (%v/v)
CH4 (%v/v)
0
10
20
30
40
50
60
70


Vancouver Landfill, CH4 vs. CO2 (Phase 1)
NORMAL LANDFILL
CO2 (%v/v)
CH4 (%v/v)
0
10
20
30
40
50
60
70


Bridgeton Landfill GEWs, CH4 vs. CO2 (2007-2014)
27509 data points
SUBSURFACE REACTION EVENT (SRE)
NORMAL LANDFILL
AIR INTRUSION, AEROBIC
CO2 (%)
CH4 (%)
0
10
20
30
40
50
60
70


Bridgeton Landfill GEWs, CH_4 vs. CO_2 (2009)
2670 data points
EVIDENCE OF AIR INTRUSION IN 2009. STARTING AEROBIC
CO_2 (%)
CH_4 (%)
0
10
20
30
40
50
60
70

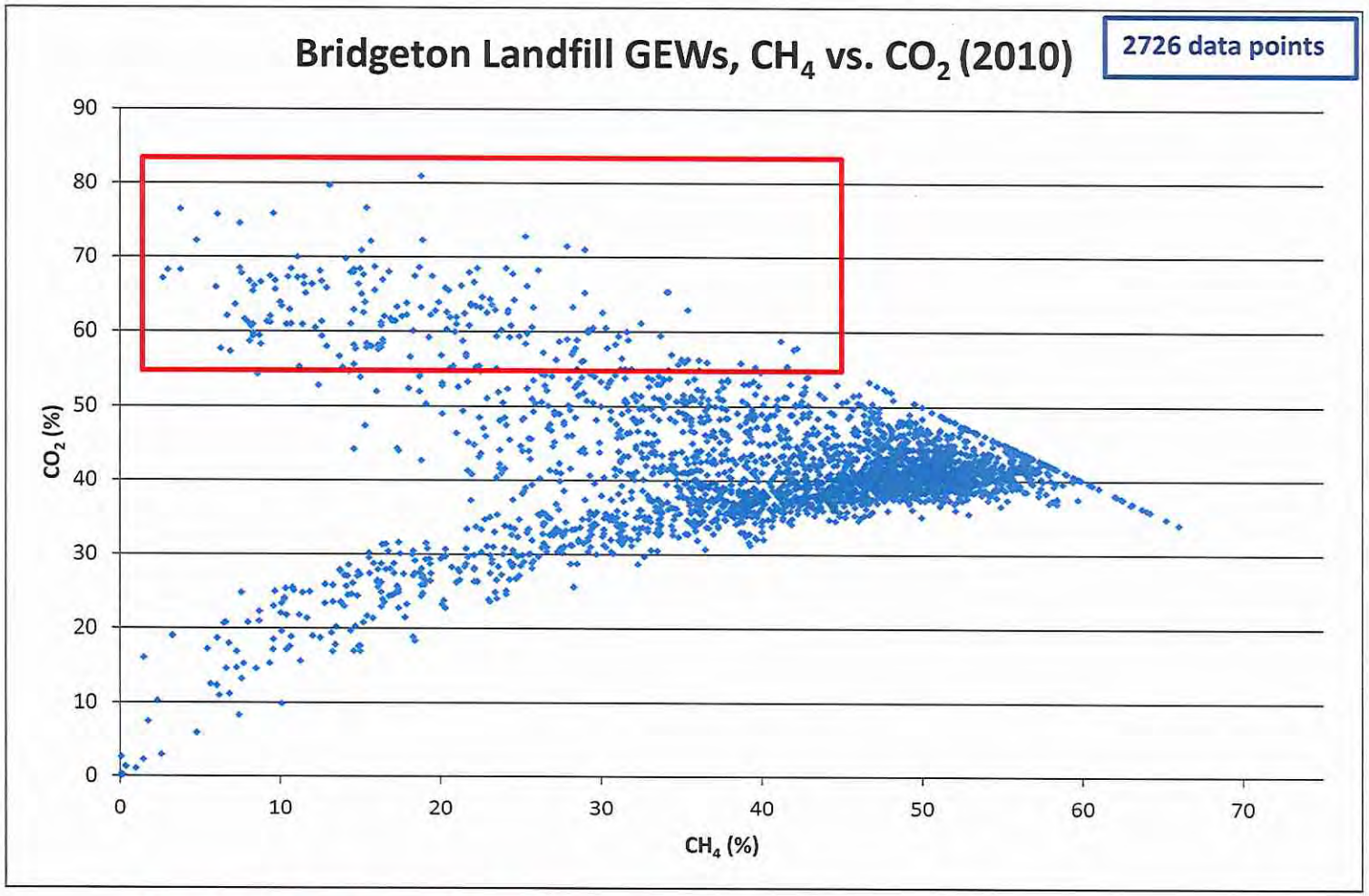

Bridgeton Landfill GEWs, CH_4 vs. CO_2 (2010)
2726 data points
AEROBIC CHARACTERS SEE MORE PRONOUNCED IN 2010
LOW METHANE HIGH CO_2
SUGGESTS WATER GAS SHIFT REACTION.
CO_2 (%)
CH_4 (%)
0
10
20
30
40
50
60
70



Number of Wells with CO2 > 55%: 4

HIGH CO_2 WELLS IN 2009

Point Name	Date Time	CH_4	CO_2	O_2	Bal	Adj Temp	Adj Flow	Adj Static Press	System Pressure	CH_4/CO_2
GEW-36	22/04/2009 11:00	32.1	58.2	0	9.7	78	0	0		0.55
GEW-36	22/04/2009 11:02	31.9	57.9	0	10.19	82	0	-0.1		0.55
GEW-16	12/05/2009 15:37	36	59.2	0	4.79	80	0	0.4		0.61
GEW-16	12/05/2009 15:42	40.3	59.7	0	0	72	0	-0.2		0.68
GEW-36	13/05/2009 10:16	32.4	59.2	0	8.39	118	1	0.5		0.55
GEW-36	13/05/2009 10:22	35.5	57.4	0	7.09	130	17	-0.1		0.62
GEW-36	17/07/2009 7:13	23.6	60.3	0	16.1	65	0	0.3		0.39
GEW-36	17/07/2009 7:17	26.5	60.2	0	13.29	102	8	-0.1		0.44
GEW-37	17/07/2009 7:21	26	56.1	0	17.9	82	0	0		0.46
GEW-37	17/07/2009 7:24	26	55.9	0	18.09	115	4	-0.1		0.47
GEW-16	05/08/2009 10:02	36.8	55.8	0	7.4	85	0	-1		0.66
GEW-36	05/08/2009 13:10	29.4	60.7	0	9.89	125	7	-0.6		0.48
GEW-36	05/08/2009 13:15	29.5	60.1	0	10.4	122	0	-0.1		0.49
GEW-36	17/08/2009 13:59	26.2	59.3	0	14.5	105	1	1.5		0.44
GEW-36	17/08/2009 14:03	30.3	58.3	0	11.39	130	30	-0.1		0.52
GEW-37	27/10/2009 15:52	25.7	56.8	0	17.5	100	0	0.6		0.45
GEW-37	27/10/2009 15:54	26.1	57.5	0	16.4	130	0	-0.2		0.45
GEW-35	07/12/2009 15:11	38.4	55.5	0	6.09	110	0	-0.3		0.69
GEW-36	07/12/2009 15:15	20.3	62.1	0	17.59	62	0	-0.1		0.33
GEW-37	07/12/2009 15:20	26	57	0	17	115	0	-0.1		0.46
GEW-35	21/12/2009 14:57	35.2	55.9	0	8.9	108	23	-0.2		0.63
GEW-36	21/12/2009 15:01	21.5	62.7	0	15.8	105	17	-0.1		0.34



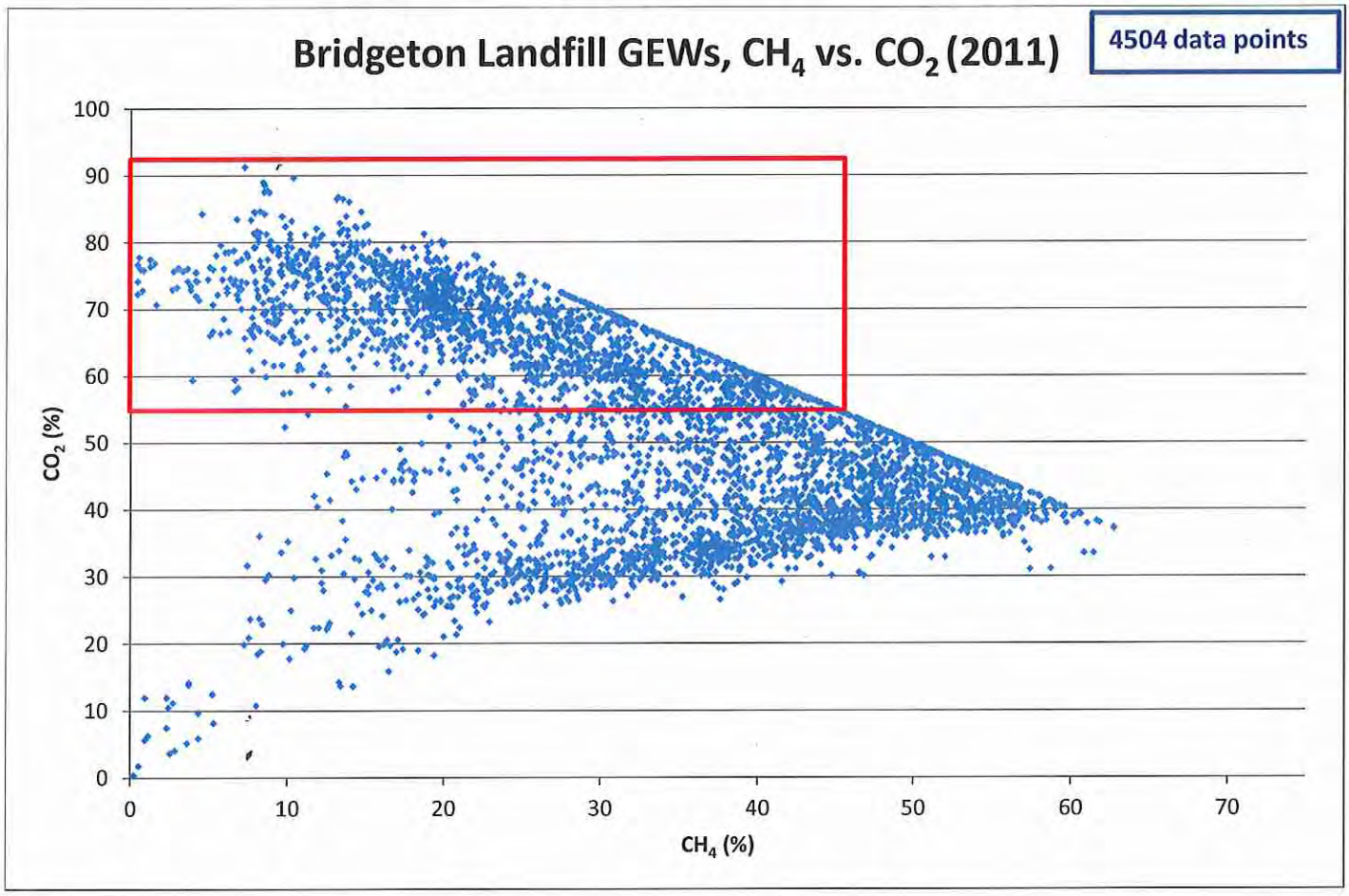
Number of Wells with CO2 > 55%: 17

Point Name	Date Time	CH4	CO2	O2	Bal	Adj Temp	Adj Flow	Init Static Press	Adj Static Press	System Pressure	CH4/CO2
GEW-36	12/01/2010 9:16	28.5	58.9	0	12.6	120	24	-0.9	-0.9		0.48
GEW-36	12/01/2010 9:18	27.9	59	0	13.1	118	23	-0.8	-0.8		0.47
GEW-36	20/01/2010 14:24	21.8	60.8	0	17.39	118	0		1		0.36
GEW-36	20/01/2010 14:27	23.8	60.2	0	15.99	130	23		-0.1		0.40
GEW-36	17/02/2010 14:10	36.1	56.2	0	7.7	118	13		-1.9		0.64
GEW-36	17/02/2010 14:12	35	56.3	0	8.7	118	9		-1.7		0.62
GEW-58	22/02/2010 8:09	41.2	58.8	0	0	38	0		-2		0.70
GEW-57R	22/02/2010 8:17	42	57.6	0	0.4	98	2		-2.8		0.73
GEW-57R	22/02/2010 8:19	42.2	57.8	0	0	102	12		-3.1		0.73
GEW-35	05/03/2010 8:44	41.6	55.2	0	3.2	115	4		-2.2		0.75
GEW-35	05/03/2010 8:45	41.6	55.4	0	3	110	0		-1.8		0.75
GEW-36	05/03/2010 8:49	29.2	60.2	0	10.6	120	5		-2.3		0.49
GEW-36	05/03/2010 8:50	29.2	59.9	0	10.9	120	1		-2.1		0.49
GEW-12A	17/03/2010 14:00	39.6	55.3	0	5.1	88	0		-1.1		0.72
GEW-36	17/03/2010 17:24	27.9	71.5	0	0.59	115	1		-0.1		0.39
GEW-36	17/03/2010 17:26	29	71	0	0	122	3		-0.4		0.41
GEW-37	17/03/2010 17:29	34.1	65.3	0	0.59	120	1		-0.4		0.52
GEW-37	17/03/2010 17:31	34.2	65.3	0	0.5	125	4		-0.6		0.52
GEW-36	27/04/2010 16:27	20.05	56.79	0	23.16	124.6	0	-0.69		-37.76	0.35
GEW-36	27/04/2010 16:29	19.27	59.25	0	21.48	115.2	0	-0.43		-37.46	0.33
GEW-36	10/05/2010 15:37	15.38	57.86	0	26.77	59.5	0	2.74		-51.49	0.27
GEW-36	10/05/2010 15:39	18.12	56.62	0	25.27	130.6	30.83	-0.05		-50.07	0.32
GEW-36	12/07/2010 11:41	28.2	57	0	14.8	125.1	0	-0.32		-50.54	0.49
GEW-35	23/07/2010 10:22	28.26	63.23	0	8.52	100	0	0.75		-49.19	0.45
GEW-35	23/07/2010 10:23	30.11	62.51	0	7.37	105	0	-0.01		-48.5	0.48
GEW-36	23/07/2010 10:26	15.41	76.68	0	7.91	110	0	0.73		-48.8	0.20
GEW-36	23/07/2010 10:27	15.67	72.15	0	12.18	112	0	-0.02		-48.46	0.22
GEW-35	27/08/2010 10:26	34.81	55.62	0	9.57	116.5	8.5	-0.39		-50.61	0.63
GEW-36	27/08/2010 10:29	24.21	62.87	0	12.93	131.8	0	-0.25		-50.52	0.39
GEW-36	27/08/2010 10:31	21.3	66.13	0	12.57	130.5	0	-0.11		-50.86	0.32
GEW-58	30/08/2010 10:41	30.39	57.8	0	11.81	100.7	3.86	-0.16		-50.56	0.53
GEW-35	13/09/2010 14:36	31.5	55	0	13.4	122	18.43	-0.01		-50.36	0.57
GEW-36	13/09/2010 14:41	12.9	58	0	29.1	130	4.12	0.94		-50.4	0.22
GEW-36	13/09/2010 14:42	14.6	58.2	0	27.2	138	0	-0.1		-50.19	0.25
GEW-36	13/09/2010 14:44	14.7	57.7	0	27.5	138	12.37	-0.01		-51	0.25
GEW-35	18/10/2010 13:42	26.4	57.2	0	16.4	119.1	17.13	-0.02		-47.7	0.46
GEW-36	18/10/2010 13:45	10.7	61	0	28.4	131.8	0	1.42		-47.74	0.18
GEW-36	18/10/2010 13:48	12.6	61.3	0	26.1	138.7	12.06	-0.01		-47.7	0.21
GEW-35	02/11/2010 15:23	25.3	58.4	0	16.3	116.3	24.6	-0.52		-49.71	0.43
GEW-35	02/11/2010 15:25	24.9	59.4	0	15.7	113.5	15.04	-0.02		-50.4	0.42
GEW-36	02/11/2010 15:34	21.6	56.7	0	21.7	129.9	12.09	-0.01		-49.37	0.38
GEW-58	03/11/2010 9:26	23.5	59.4	0	17.1	129.4	13.65	-0.02		-49.8	0.40
GEW-57R	03/11/2010 9:43	15.4	58.4	0	26.2	112.8	22.82	-0.02		-49.54	0.26
GEW-31R	17/11/2010 14:40	33.7	59.5	0	6.7	120.8	7.64	-0.38		-37.1	0.57
GEW-33R	17/11/2010 14:48	31.6	60	0	8.4	138.3	14.59	-0.28		-37.79	0.53
GEW-33R	17/11/2010 14:50	27.2	56.2	0	16.6	136	10.7	-0.02		-41.22	0.48
GEW-36	17/11/2010 15:31	20.4	60.3	0	19.3	133.4	15.11	-0.67		-49.5	0.34
GEW-36	17/11/2010 15:34	16.3	57.9	0	25.8	130.8	8.48	-0.24		-49.75	0.28
GEW-58	18/11/2010 14:17	20.6	55.1	0.3	24.1	128.7	0	-0.33		-52.16	0.37
GEW-57R	18/11/2010 14:25	22.2	55.3	0	22.5	116.3	0	-0.41		-51.38	0.40
GEW-26R	01/12/2010 14:30	24.3	59.3	0	16.4	122.3	0	0.26		-48.77	0.41
GEW-26R	01/12/2010 14:33	21.6	57	0	21.4	128.1	23.87	-0.01		-49.07	0.38
GEW-30R	01/12/2010 14:49	36.6	55.9	0	7.4	125.1	0	0.48		-49.45	0.65
GEW-30R	01/12/2010 14:52	34.4	56.9	0	8.6	130.7	12.82	-0.02		-48.94	0.60

Point Name	Date Time	CH4	CO2	O2	Bal	Adj Temp	Adj Flow	Init Static Press	Adj Static Press	System Pressure	CH4/CO2
GEW-31R	01/12/2010 14:56	21.9	63.7	0	14.3	120.2	0	1.92		-39.46	0.34
GEW-31R	01/12/2010 14:58	22.6	64.6	0	12.8	130.8	33.59	-0.03		-50.57	0.35
GEW-35	01/12/2010 15:20	20.5	65.5	0	14	112.8	0	2.11		-50.44	0.31
GEW-35	01/12/2010 15:21	17.9	63.8	0	18.2	117.5	0	-0.01		-49.67	0.28
GEW-36	01/12/2010 15:24	10.5	67.3	0	22.2	133	0	1.89		-49.41	0.16
GEW-36	01/12/2010 15:26	11.1	70	0	18.9	139.3	10.6	-0.07		-50.44	0.16
GEW-37	01/12/2010 15:29	21.4	58.8	0	19.9	132.7	0	0.41		-48.77	0.36
GEW-37	01/12/2010 15:31	29.5	60.5	0	10	135.6	22.48	-0.03		-50.1	0.49
GEW-58	02/12/2010 11:53	20.9	60	0	19.1	125	12.16	-0.03		-51.69	0.35
GEW-57R	02/12/2010 12:05	10.1	63.4	0	26.5	120	0	1.1		-51.47	0.16
GEW-57R	02/12/2010 12:08	12.5	68.1	0	19.4	128	40.01	-0.01		-50.78	0.18
GEW-33R	15/12/2010 17:36	17.6	62	0	20.4	141.3	45.37	-0.27		-53.31	0.28
GEW-33R	15/12/2010 17:38	15.2	62.5	0	22.3	141.8	72.5	-0.07		-51.16	0.24
GEW-36	15/12/2010 17:49	21.9	63.5	0	14.6	127.5	31.28	-1.55		-52.15	0.34
GEW-26R	20/12/2010 11:04	25.3	72.8	0	1.9	120	8.39	0.36		-46.37	0.35
GEW-26R	20/12/2010 11:10	20.3	65.8	0	14	125	20.98	-0.06		-47.01	0.31
GEW-30R	20/12/2010 12:38	25.8	63.2	0	11	120	0	1.28		-46.67	0.41
GEW-30R	20/12/2010 12:39	25.4	66.1	0	8.5	138	28.46	-0.01		-46.71	0.38
GEW-30R	20/12/2010 12:41	26.1	68.2	0	5.6	138	38.07	-0.01		-46.02	0.38
GEW-31R	20/12/2010 12:44	18.4	67.4	0	14.2	122	0	0.12		-46.02	0.27
GEW-31R	20/12/2010 12:46	18.7	68.6	0	12.6	125	38.49	-0.03		-36.84	0.27
GEW-33R	20/12/2010 12:51	16.5	62	0	21.5	138	46.83	-0.95		-47.05	0.27
GEW-33R	20/12/2010 12:53	17.9	62.2	0	19.9	138	62.2	-2.09		-44.22	0.29
GEW-34	20/12/2010 12:56	28.3	57.4	0	14.2	120	23.04	-1.59		-46.75	0.49
GEW-35	20/12/2010 12:58	19.5	67.4	0	13.1	120	45.2	-2.3		-47.52	0.29
GEW-36	20/12/2010 13:01	24.4	60.8	0	14.8	120	19.24	-2.01		-46.8	0.40
GEW-58	21/12/2010 9:12	17	61.4	0	21.6	118	14.27	-2.31		-47.35	0.28
GEW-57R	21/12/2010 9:29	16.8	68	0	15.3	110	11.49	-3.15		-47.01	0.25
GEW-65A	21/12/2010 9:55	12.6	59.4	0	28	122	15.14	-1.1		-47.65	0.21
GEW-30R	21/12/2010 20:35	23.5	55.1	1.1	20.3	128	18.17	-1.33		-47.35	0.43
GEW-30R	21/12/2010 20:37	24.2	62.5	0.3	13	120	0	-0.35		-47.05	0.39
GEW-31R	21/12/2010 20:41	22.1	66.6	0	11.3	112	31.64	-1.82		-37.23	0.33
GEW-31R	21/12/2010 20:42	21.5	62.4	0	16.2	105	0	-0.04		-47.05	0.34
GEW-33R	21/12/2010 20:50	18.8	63.2	0	18	125	50.43	-4.5		-39.8	0.30
GEW-33R	21/12/2010 20:52	14.4	61	0	24.6	118	0	-0.83		-47.05	0.24
GEW-34	21/12/2010 20:56	28.4	57.8	0	13.8	112	24.32	-3.46		-48.34	0.49
GEW-34	21/12/2010 20:57	28.9	56.1	0	15	102	0	-1.15		-47.4	0.52
GEW-35	21/12/2010 21:00	20.6	61.9	0	17.5	100	43.76	-4.51		-48.77	0.33
GEW-35	21/12/2010 21:02	19.9	63.9	0	16.2	92	0	-1.62		-48.43	0.31
GEW-36	21/12/2010 21:05	25.7	60.6	0	13.7	110	22.46	-4.05		-49.75	0.42
GEW-36	21/12/2010 21:07	25.4	59.8	0	14.8	100	0	-2.26		-48.73	0.42
GEW-14A	21/12/2010 22:25	38.7	55.8	0	5.5	98	0	-0.08		-48.43	0.69
GEW-58	21/12/2010 22:38	17.3	63.3	0	19.4	110	13.59	-1.92		-49.03	0.27
GEW-58	21/12/2010 22:39	15.9	68.7	0	15.4	100	0	-1.28		-48.08	0.23
GEW-57R	21/12/2010 22:46	17.2	61.4	0	21.4	102	35.8	-3.01		-48.73	0.28
GEW-57R	21/12/2010 22:48	14.9	66.3	0	18.8	98	0	-1.68		-49.58	0.22
GEW-66	21/12/2010 23:02	21	61.9	0	17.1	92	0	-1.2		-44.99	0.34
GEW-65A	21/12/2010 23:06	15.1	65	0	19.9	120	14.02	-1.28		-49.33	0.23
GEW-65A	21/12/2010 23:07	14.6	67.9	0	17.5	110	0	-0.83		-49.07	0.22
GEW-37	22/12/2010 14:36	16.4	58.5	0	25.1	91.9	0	1.26		-49.44	0.28
GEW-37	22/12/2010 14:38	16.4	58.9	0	24.7	81.9	0	1.32		-49.79	0.28
GEW-36	22/12/2010 14:42	12	66.3	0	21.6	53.7	0	2.89		-49.61	0.18
GEW-35	22/12/2010 14:45	23.4	62.9	0	13.6	43.1	0	4.02		-50.3	0.37
GEW-34	22/12/2010 14:48	31.2	55	0	13.8	75.5	0	4.07		-49.79	0.57

Point Name	Date Time	CH4	CO2	O2	Bal	Adj Temp	Adj Flow	Init Static Press	Adj Static Press	System Pressure	CH4/CO2
GEW-34	22/12/2010 14:50	31.3	56.4	0	12.3	67.5	0	4.3		-49.79	0.55
GEW-33R	22/12/2010 14:58	8.3	65.4	0	26.3	140.4	0	4.48		-49.96	0.13
GEW-33R	22/12/2010 15:00	8.4	66.1	0	25.5	126	0	4.94		-50.13	0.13
GEW-31R	22/12/2010 15:29	14.4	67.9	0	17.8	119.1	0	2.51		-44.72	0.21
GEW-31R	22/12/2010 15:31	14.6	68.3	0	17	104.6	0	3.09		-49.79	0.21
GEW-30R	22/12/2010 15:35	21.8	67.9	0	10.3	116.7	0	0.77		-49.66	0.32
GEW-30R	22/12/2010 15:39	22.3	68.5	0	9.2	95.5	0	1.06		-50.13	0.33
GEW-65A	22/12/2010 15:50	11.6	65.1	0.2	23.2	29.5	0	2.52		-49.83	0.18
GEW-57R	22/12/2010 15:59	2.7	67.1	0	30.2	108.8	0	3.11		-50.17	0.04
GEW-57R	22/12/2010 16:02	3	68.2	0	28.8	86.1	0	3.24		-50.13	0.04
GEW-58	22/12/2010 16:10	6	65.9	0	28.1	48	0	2.89		-49.87	0.09
GEW-14A	22/12/2010 16:55	35.2	55.9	0	8.8	81.4	0	0.58		-50.13	0.63
GEW-14A	22/12/2010 16:57	35.4	56.3	0	8.3	66.7	0	0.67		-50.13	0.63
GEW-30R	23/12/2010 10:36	22.5	63.2	0	14.2	20	0	1.83		-49.41	0.36
GEW-31R	23/12/2010 10:38	15.1	70.9	0	14	20	0	4.47		-49.71	0.21
GEW-33R	23/12/2010 10:43	9.4	67.4	0	23.2	30	0	6.57		-48.73	0.14
GEW-35	23/12/2010 10:48	23.1	64.3	0	12.6	22	0	5.5		-50.36	0.36
GEW-36	23/12/2010 10:50	14.1	69.8	0	16.1	20	0	4.58		-50.4	0.20
GEW-37	23/12/2010 10:53	14.6	62.9	0	22.5	20	0	2.63		-50.1	0.23
GEW-14A	23/12/2010 11:18	32.5	61.1	0	6.3	25	0	2.06		-49.71	0.53
GEW-58	23/12/2010 11:36	7.6	67.8	0	24.6	22	0	5.15		-49.88	0.11
GEW-57R	23/12/2010 11:41	3.8	68.2	0	28	28	0	5.54		-49.37	0.06
GEW-66	23/12/2010 11:48	8.8	58.3	0	33	20	0	1.98		-45.89	0.15
GEW-65A	23/12/2010 11:50	11.1	67.2	0	21.8	20	0	4.76		-49.8	0.17
GEW-68	23/12/2010 11:55	31.9	55	0	13.1	20	0	4		-49.37	0.58
GEW-12A	26/12/2010 12:20	22.4	55.4	0.5	21.7	40		3.9	3.9	-41.05	0.40
GEW-66	26/12/2010 12:56	7.5	68.5	0	24	40		1.7	1.7	-41.22	0.11
GEW-83	26/12/2010 13:00	35.4	62.9	0	1.7	110		0.2	0.4	-41.34	0.56
GEW-65A	26/12/2010 13:04	6.1	75.8	0	18.1	40		4.9	4.9	4.97	0.08
GEW-68	26/12/2010 13:08	28.8	56	0.2	15	30		4.2	4.2	4.21	0.51
GEW-31R	26/12/2010 13:19	13.1	79.7	0.7	6.5	40		5.1	5.1	5.12	0.16
GEW-30R	26/12/2010 13:22	18.8	81	0.1	0.1	40		2.4	2.4	2.45	0.23
GEW-57R	26/12/2010 13:31	3.8	76.5	0.4	19.3	40		5.9	5.8	5.89	0.05
GEW-59R	26/12/2010 13:46	27.4	58.7	0	13.9	40		2.4	2.4	2.43	0.47
GEW-58	26/12/2010 13:53	4.8	72.2	0	23	45		5.5	5.5	5.5	0.07
GEW-33R	26/12/2010 13:59	7.5	74.6	0	17.9	40		7.4	7.4	7.42	0.10
GEW-37	26/12/2010 14:21	12.9	65.8	0	21.3	40		3.1	3.1	3.15	0.20
GEW-36	26/12/2010 14:24	9.6	75.9	1.6	12.9	40		5.3	5.4	5.4	0.13
GEW-35	26/12/2010 14:27	18.9	72.3	0	8.8	50		6.3	6.3	6.37	0.26
GEW-34	26/12/2010 14:30	30.3	60.5	0.4	8.8	40		6.7	6.7	6.77	0.50
GEW-14A	26/12/2010 14:42	29	65.2	0.1	5.7	40		2.2	2.2	2.27	0.44
GEW-30R	27/12/2010 8:26	22.9	62.5	0	14.6	5	0	2.24		-44.65	0.37
GEW-31R	27/12/2010 8:39	16.3	61.2	0.8	21.7	3	0	3.54		-44.95	0.27
GEW-33R	27/12/2010 9:02	8.2	60.7	0	31	10	0	8.16		-43.92	0.14
GEW-35	27/12/2010 9:20	21	61	0	17.9	10	0	6.19		-44.95	0.34
GEW-36	27/12/2010 9:30	10	63.9	0	26.1	8	0	5.46		-45.51	0.16
GEW-37	27/12/2010 9:40	13.7	56.7	0	29.6	8	0	2.77		-45.64	0.24
GEW-58	27/12/2010 13:11	6.3	57.7	0	36.1	30	0	6.49		-44.65	0.11
GEW-57R	27/12/2010 13:27	6.7	62.1	0	31.2	62	0	6.83		-43.96	0.11
GEW-65A	27/12/2010 14:01	8.1	58.7	0	33.2	32	47.36	6.19		-45.29	0.14
GEW-30R	28/12/2010 10:41	24.6	64.2	0	11.2	20	0	2.83		-43.92	0.38
GEW-31R	28/12/2010 10:44	16.4	66.9	0	16.7	18	0	5.8		-44.22	0.25
GEW-33R	28/12/2010 10:49	9.4	61.2	0	29.4	30	0	7.56		-43.92	0.15
GEW-35	28/12/2010 10:59	22.2	63.4	0	14.4	22	0	6.87		-44.56	0.35

Point Name	Date Time	CH4	CO2	O2	Bal	Adj Temp	Adj Flow	Init Static Press	Adj Static Press	System Pressure	CH4/CO2
GEW-36	28/12/2010 11:04	12.6	66.7	0	20.7	25	0	6.01		-44.22	0.19
GEW-37	28/12/2010 11:07	15.7	58	0	26.3	28	0	3.64		-44.26	0.27
GEW-58	28/12/2010 12:02	8.3	60.9	0	30.8	25	0	6.53		-44.14	0.14
GEW-57R	28/12/2010 12:08	7.8	61.6	0	30.5	32	0	7.22		-43.92	0.13
GEW-66	28/12/2010 12:16	11.2	55.3	0	33.5	28	0	3.53		-40.1	0.20
GEW-65A	28/12/2010 12:19	9.4	62	0	28.6	22	0	6.83		-44.61	0.15
GEW-30R	29/12/2010 8:25	23.2	63.6	0	13.1	12	0	3.21		-43.54	0.36
GEW-31R	29/12/2010 8:36	15.3	63.9	0.2	20.7	20	0	6.23		-43.92	0.24
GEW-33R	29/12/2010 8:51	8.3	59.8	0.1	31.8	22	0	8.93		-43.24	0.14
GEW-35	29/12/2010 9:07	18.3	60.1	0.1	21.5	20	0	7.6		-44.31	0.30
GEW-36	29/12/2010 9:15	10.7	68.4	0	20.9	20	0	6.92		-43.92	0.16
GEW-37	29/12/2010 9:22	13.9	55.2	0	30.9	18	0	4.05		-44.22	0.25
GEW-58	29/12/2010 11:24	6.9	57.3	0	35.8	20	0	3.05		-43.92	0.12
GEW-57R	29/12/2010 11:37	7.2	63.6	0	29.1	25	0	8.16		-43.92	0.11
GEW-65A	29/12/2010 12:04	9.2	61.3	0	29.5	20	0	7.9		-43.71	0.15
GEW-30R	31/12/2010 7:01	24.5	67.7	0	7.8	80.4	0	2.73		-44.29	0.36
GEW-30R	31/12/2010 7:04	24.1	68.5	0	7.5	76.8	0	2.79		-43.64	0.35
GEW-31R	31/12/2010 7:19	15.9	65.5	0	18.6	63	0	5.71		-43.6	0.24
GEW-31R	31/12/2010 7:22	15	68.4	0	16.6	93.6	12.24	4.9		-39.13	0.22
GEW-31R	31/12/2010 7:24	15.2	67.6	0	17.2	83.4	0	5.8		-45.06	0.22
GEW-58	31/12/2010 7:36	8	61.2	0	30.8	40	0	6.19		-43.62	0.13
GEW-33R	31/12/2010 7:37	8.1	66.7	0	25.2	77.1	0	8.2		-43.34	0.12
GEW-33R	31/12/2010 7:41	8.4	66.1	0	25.4	132.1	30.38	7		-43.64	0.13
GEW-33R	31/12/2010 7:44	8.8	66.6	0	24.6	121.2	0	7.21		-43.69	0.13
GEW-58	31/12/2010 7:45	8.3	59.4	0	32.3	75	0	5.15		-43.24	0.14
GEW-58	31/12/2010 7:47	8.7	59.5	0	31.7	70	0	5.84		-43.24	0.15
GEW-57R	31/12/2010 8:05	9.7	65.6	0	24.7	48	0	6.53		-43.79	0.15
GEW-57R	31/12/2010 8:09	10.4	60.9	0	28.8	100	19.37	5.84		-43.54	0.17
GEW-57R	31/12/2010 8:10	10.6	62.9	0	26.5	80	0	6.53		-42.94	0.17
GEW-34	31/12/2010 8:12	28.5	55	0	16.4	63.5	0	7.26		-44.03	0.52
GEW-35	31/12/2010 8:17	19.4	62.2	0	18.4	67.2	0	6.87		-44.67	0.31
GEW-35	31/12/2010 8:19	19.7	62.8	0	17.5	93.2	0	6.14		-43.43	0.31
GEW-35	31/12/2010 8:21	20.4	62.6	0	17	84.1	0	6.87		-43.04	0.33
GEW-36	31/12/2010 8:25	9.7	66.8	0	23.5	63.1	4.09	5.84		-42.74	0.15
GEW-36	31/12/2010 8:27	11.5	66.3	0	22.2	123.8	0	4.65		-43.38	0.17
GEW-66	31/12/2010 8:27	14.6	55.6	0	29.8	45	0	3.01		-40.49	0.26
GEW-36	31/12/2010 8:29	11.5	67.3	0	21.3	100.9	0	5.84		-43.34	0.17
GEW-66	31/12/2010 8:32	20.8	55.4	0	23.8	80	0	2.81		-39.46	0.38
GEW-37	31/12/2010 8:33	12.2	60.5	0	27.3	63.3	0	3.37		-43.34	0.20
GEW-65A	31/12/2010 8:35	11.4	60.9	0	27.6	42	0	6.19		-43.24	0.19
GEW-37	31/12/2010 8:35	16.1	58.2	0	25.7	122.9	0	2.55		-43.08	0.28
GEW-37	31/12/2010 8:37	16.1	57.6	0	26.3	104.7	0	3.3		-43.34	0.28
GEW-65A	31/12/2010 8:39	16.3	60.8	0	22.9	100	20.33	5.5		-42.89	0.27
GEW-65A	31/12/2010 8:40	16.9	61.7	0	21.5	80	0	5.88		-43.62	0.27
GEW-14A	31/12/2010 9:12	30.9	58.3	0	10.8	63.8	0	2.26		-43.94	0.53
GEW-14A	31/12/2010 9:14	31.7	58.9	0	9.4	96.4	14.96	1.53		-43.21	0.54
GEW-14A	31/12/2010 9:16	31.1	59.4	0	9.6	86.8	0	2.1		-43.38	0.52



Number of Wells with CO2 > 55% in 2011 : 34

APPENDIX N

GAS EXTRACTION OPERATION ANOMALIES

Example of improper field operation (extracted from LFG Database – BL_004_0002789)

GEW-016 & 016R

Point Name	Date Time	CH4	CO2	O2	Bal	Adj Temp	Init Flow	Adj Flow	Init Static Press	Adj Static Press	Init Diff Press	Adj Diff Press	System Pressure	Comments
GEW-016R	30/09/2009 11:09	1.7	2.6	16.7	79	75	0	0		-0.2		0		SLIGHTLY OPEN;V
GEW-016R	30/09/2009 11:12	23.4	30.7	0	45.9	80	0	0		-0.3		0		SECOND READING
GEW-016R	05/10/2009 11:19	39.2	36.2	0	24.59	98	0	0		-0.1		0		NO ADJUSTMENT
GEW-016R	27/10/2009 13:23	50.9	41.7	0	7.39	105	0	0		0.6		0		SLIGHTLY OPEN
GEW-016R	27/10/2009 13:26	51.3	42	0	6.7	120	24	24		-0.1		0.22		SECOND READING
GEW-016R	11/11/2009 10:44	27.6	30.7	1.8	39.9	110	29	29		-2.6		0.3		SLIGHTLY CLOSED
GEW-016R	11/11/2009 10:47	18.6	24.6	3.8	53	108	0	0		-1.7		0		SECOND READING
GEW-016R	23/11/2009 10:36	4.3	7.1	13.3	75.29	85	1	0		-1.5		0		SLIGHTLY OPEN
GEW-016R	23/11/2009 10:41	18.6	19.2	8.2	54	110	22	22		-2.2		0.17		SECOND READING
GEW-016R	07/12/2009 11:52	30.8	28.8	2.6	37.8	108	0	0		-2.5		0		NO ADJUSTMENT
GEW-016R	21/12/2009 13:09	36.5	33.1	1.1	29.3	110	26	26	-1.6	-1.7	0.175	0.172		NO ADJUSTMENT,
GEW-016R	04/01/2010 12:07	47.3	40.2	0	12.5	102	38	43	-0.1	-0.1	0.351	0.445		NO ADJUSTMENT,
GEW-016R	20/01/2010 11:15	23.5	26.5	4.2	45.8	110	38	38		-4		0.5		SLIGHTLY CLOSED
GEW-016R	20/01/2010 11:19	14.4	19.7	6.5	59.39	105	12	12		-2.8		0.06		SLIGHTLY OPEN
GEW-016R	20/01/2010 11:22	24.3	26.6	4.6	44.5	112	51	51		-4.8		0.89		SECOND READING
GEW-016R	03/02/2010 10:48	17.8	21.5	5.3	55.4	102	30	30		-5.7		0.3		SLIGHTLY OPEN
GEW-016R	03/02/2010 10:51	20.3	22.8	4.7	52.19	105	44	44		-6.4		0.63		SECOND READING
GEW-016R	17/02/2010 11:16	23	23.9	3.4	49.69	105	24	24		-6.3		0.21		SLIGHTLY OPEN
GEW-016R	17/02/2010 11:18	24.1	24.7	3.3	47.9	108	30	30		-6.5		0.32		SECOND READING
GEW-016R	04/03/2010 12:55	23.4	24.9	3.6	48.1	108	54	54		-6.8		0.94		SLIGHTLY OPEN
GEW-016R	04/03/2010 12:57	24.1	25.1	3.6	47.2	108	59	59		-7.1		1.12		SECOND READING
GEW-016R	17/03/2010 14:16	28.1	28.7	2.7	40.5	110	51	51		-6.8		0.89		SLIGHTLY OPEN
GEW-016R	17/03/2010 14:17	28.5	28.7	2.8	40	110	56	56		-7.2		1.04		SECOND READING
GEW-016R	12/04/2010 9:44	19.37	26.39	5.78	48.46	109.3	66.94	66.94	-7.9		0.953		-36.77	Closed > 1 turn; A
GEW-016R	12/04/2010 9:46	11.67	21.4	8.12	58.8	105.4	20.44	20.44	-5.84		0.087		-36.9	Second reading;

- insisting on overpull continues and pushes the reaction towards aerobic
- significant LFG dilution with air is observed (See 07/12/2009)
- and applied vacuum continues to increase (See adjusted Static Pressure in 2010 till Mid-March)

Obvious over-pull (Fig.1) and LFG dilution (Fig.2). The well was continuously stressed out, perhaps caused localized high temperature pockets. However, the collected LFG temperature was cooled down by dilution. Second reaction (chemical?) started around end of 2011.

Complete vacuum loss in 2013 (perhaps due to settlement, sag in the header/ lateral pipe, maybe elevated leachate level in the well, or both). System vacuum became available Nov. 2013 and flow jumps to 60 and then to above 100 scfm! (Fig. 3)

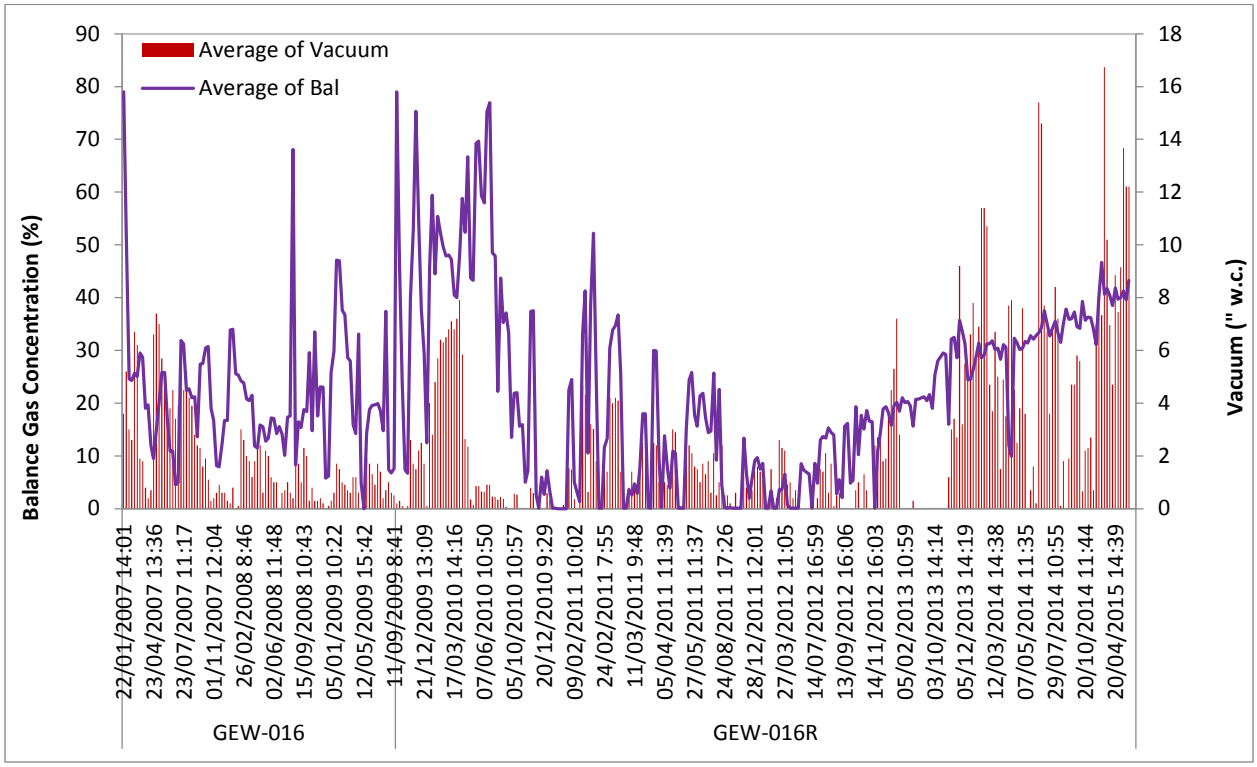


Figure 1. Vacuum and Balance Gas

Balance gas (N2) concentrations in 2010 shows significant air intrusion, Oxygen was mainly below threshold as it was being consumed by aerobic bacteria. Ration of CH4:CO2 (slightly below 1) indicates there is aerobic and anaerobic degradation occurring in 2011 with aerobes becoming more dominant. Temperature was below the NSPS threshold as the collected LFG was diluted by ambient air.

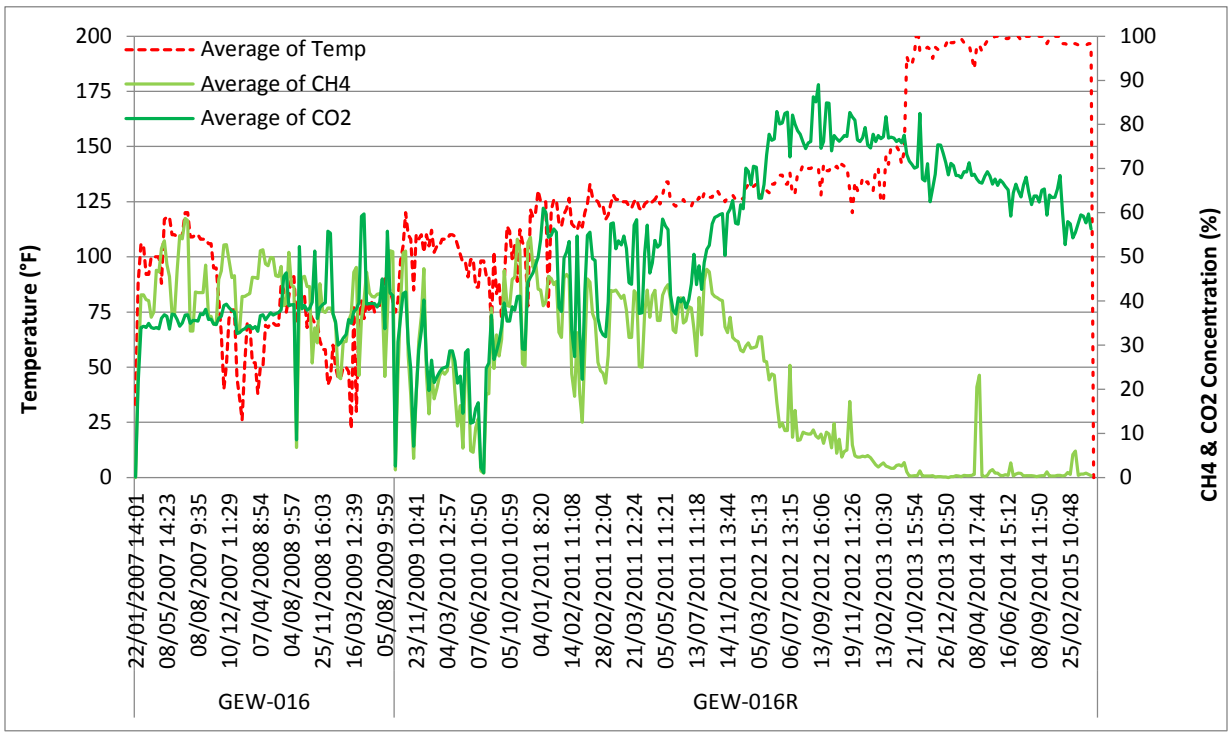


Figure 2. Gas Quality and Temperature

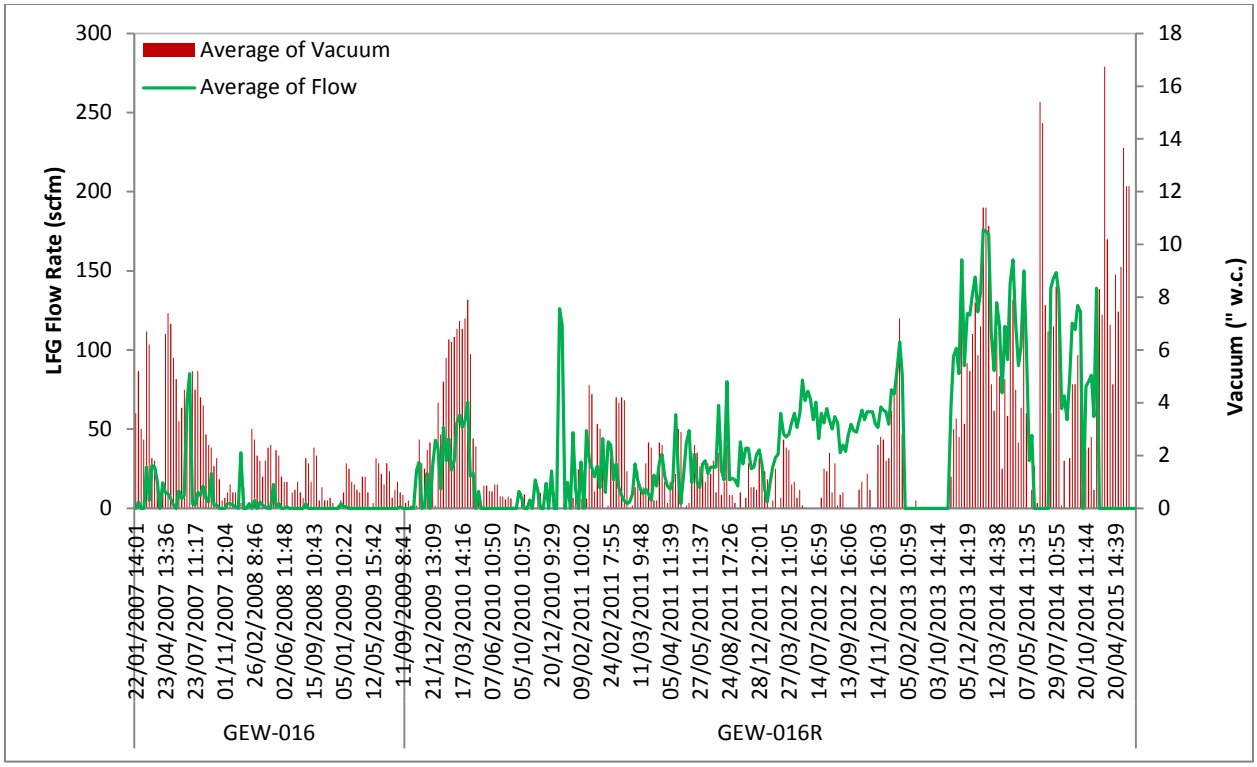


Figure 3. Applied Vacuum and LFG Flow Rate

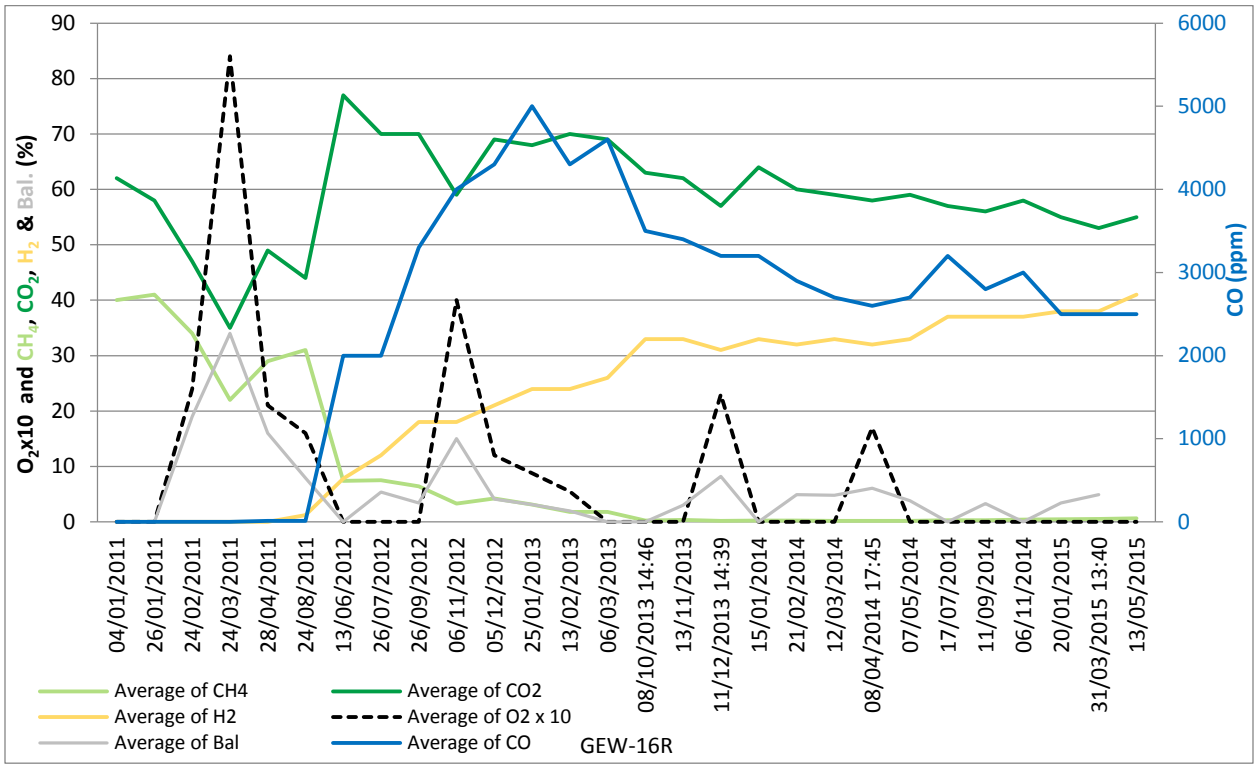


Figure 4. Lab Data Results

Example of improper field operation (extracted from LFG Database – BL_004_0002789)

GEW-070R

Point Name	Date Time	CH4	CO2	O2	Bal	Adj Temp	Init Flow	Adj Flow	Init Static Press	Adj Static Press	Init Diff Press	Adj Diff Press	System Pressure	Comments
GEW-070R	21/03/2011 13:26	24.3	26.2	5.2	44.3	118	23	20	-0.4	-0.4	0.141	0.115		NO ADJUSTMEN
GEW-070R	23/03/2011 14:01	24.8	30.2	4.2	40.8	120	10	9	-0.6	-0.5	0.03	0.027		NO ADJUSTMEN
GEW-070R	24/03/2011 17:00	5.2	12.5	10.8	71.5	93			-1.6	-1.7	-0.048	-0.02		NO ADJUSTMEN
GEW-070R	24/03/2011 17:08	4.3	9.7	12.4	73.6	93	12	16	-1.7	-1.7	0.04	0.071		SECOND READI
GEW-070R	28/03/2011 14:17	14.1	21.6	7.6	56.7	109	12	11	-0.9	-0.9	0.043	0.038		NO ADJUSTMEN
GEW-070R	30/03/2011 13:35	23	30.3	4	42.7	118	11	2	-0.3	-0.3	0.035	0.001		NO ADJUSTMEN
GEW-070R	05/04/2011 14:48	20.3	25.6	5.7	48.4	108	9	13	-0.6	-0.5	0.024	0.053		NO ADJUSTMEN
GEW-070R	05/04/2011 14:50	20.2	25.6	5.7	48.5	108	9	10	-0.6	-0.6	0.026	0.029		SECOND READI
GEW-070R	13/04/2011 12:55	16.2	19.9	7.4	56.5	108	10	8	-0.9	-0.9	0.032	0.019		NO ADJUSTMEN
GEW-070R	13/04/2011 12:56	15.9	19.6	7.5	57	108	7	14	-0.9	-0.9	0.017	0.058		SECOND READI
GEW-070R	21/04/2011 17:21	31.3	36.9	0.1	31.7	115	2	2	0	0	0.001	-0.004		SLIGHTLY OPEN
GEW-070R	21/04/2011 17:23	31.6	37	0	31.4	120	17	17	-0.1	-0.1	0.084	0.088		SECOND READI
GEW-070R	28/04/2011 16:36	4.3	5.9	15.7	74.1	93	9	9	-5.1	-5.1	0.025	-0.014		SLIGHTLY CLOSI
GEW-070R	28/04/2011 16:42	3.6	5.2	15.8	75.4	90			-4.8	-4.8	-0.001	-0.004		SECOND READI
GEW-070R	05/05/2011 12:40	25.9	31	2.7	40.4	119	11	10	0	0	0.036	0.031		SLIGHTLY OPEN
GEW-070R	05/05/2011 12:41	26.5	31.2	2.6	39.7	125	28	30	-0.1	-0.1	0.223	0.256		SECOND READI

Notes:

- Highlighted dates show obvious air intrusion (See lab data illustrated in Figure 1). These conditions require immediate closure of the well or proper adjustment with a “next-day” re-visit.
- Comparison between Bal (N_2) and O_2 indicates O_2 is partially consumed (i.e. aerobic conditions created)
- Ratio of CH_4:CO_2 (being close to 1) indicates this well is still “somewhat” healthy, perhaps started to warm up, though the temperature was kept below the NSPS threshold by “diluting” the collected gas with ambient air. This well’s temperature goes above the NSPS threshold in Sep. 2011 (see graphs Figures 2 to 4 extracted from the LFG Database).

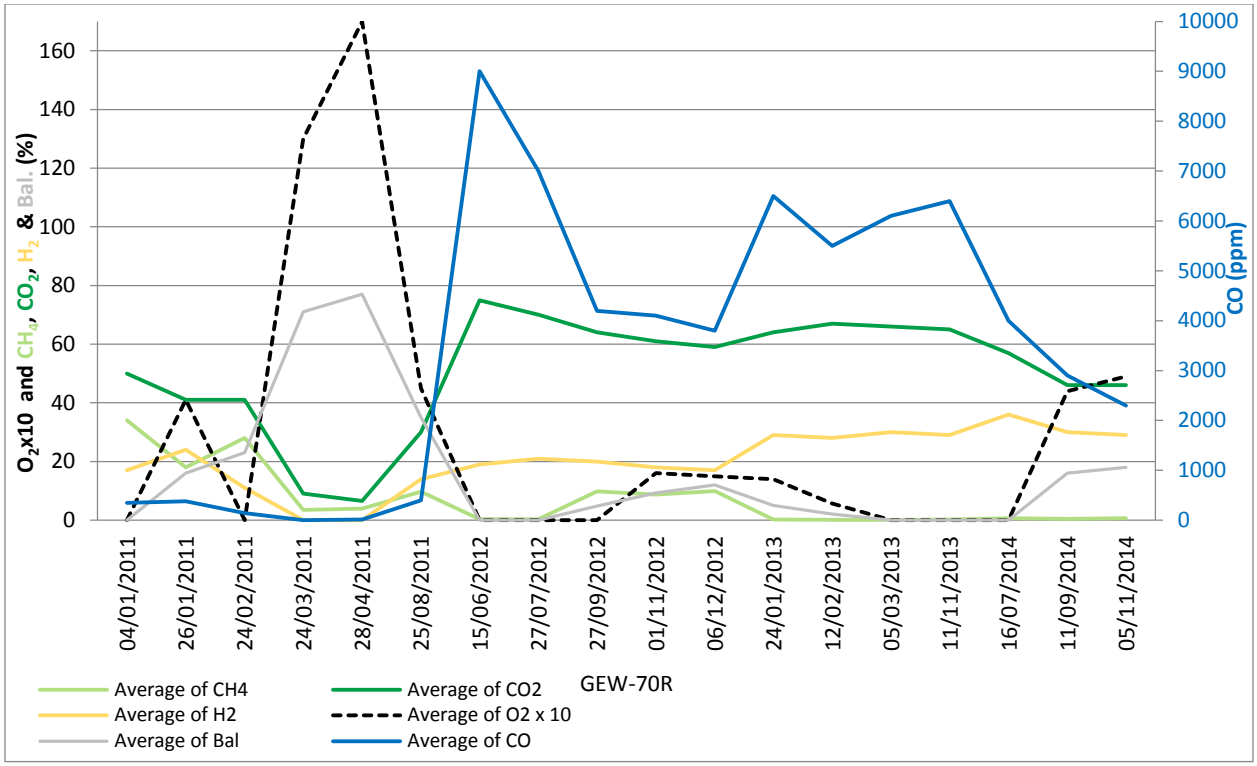


Figure 1 – Lab Analysis Results for GEW-70R

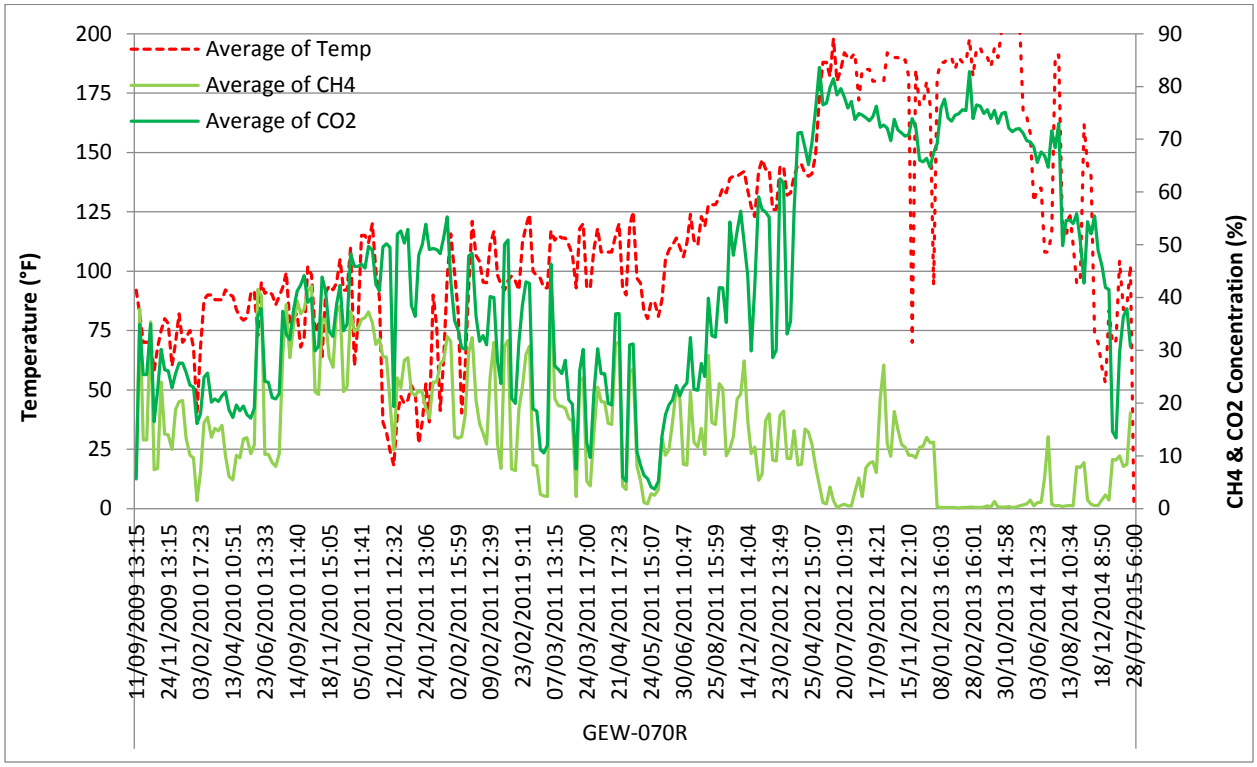


Figure 2 – LFG Filed Data, Methane, Carbon Dioxide and Temperature at GEW-70R

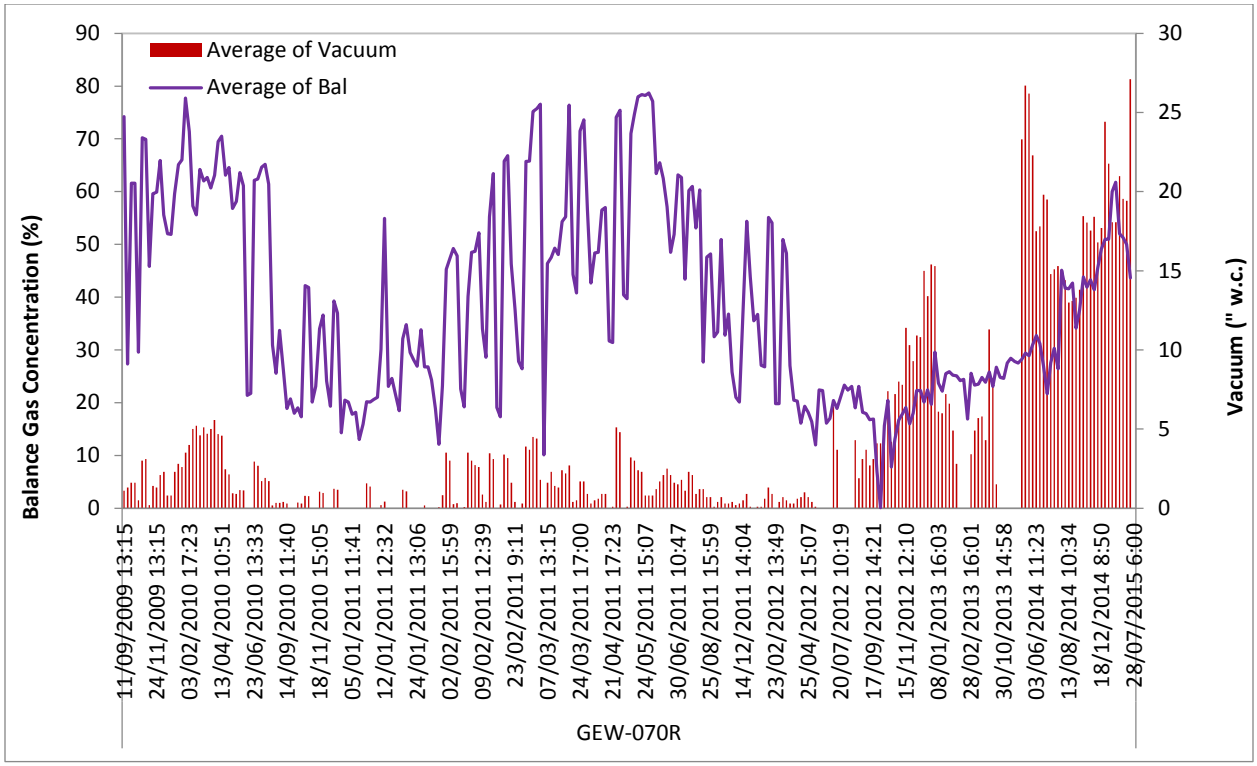


Figure 3 – LFG Filed Data, Applied Vacuum and Balance Gas Concentration at GEW-70R

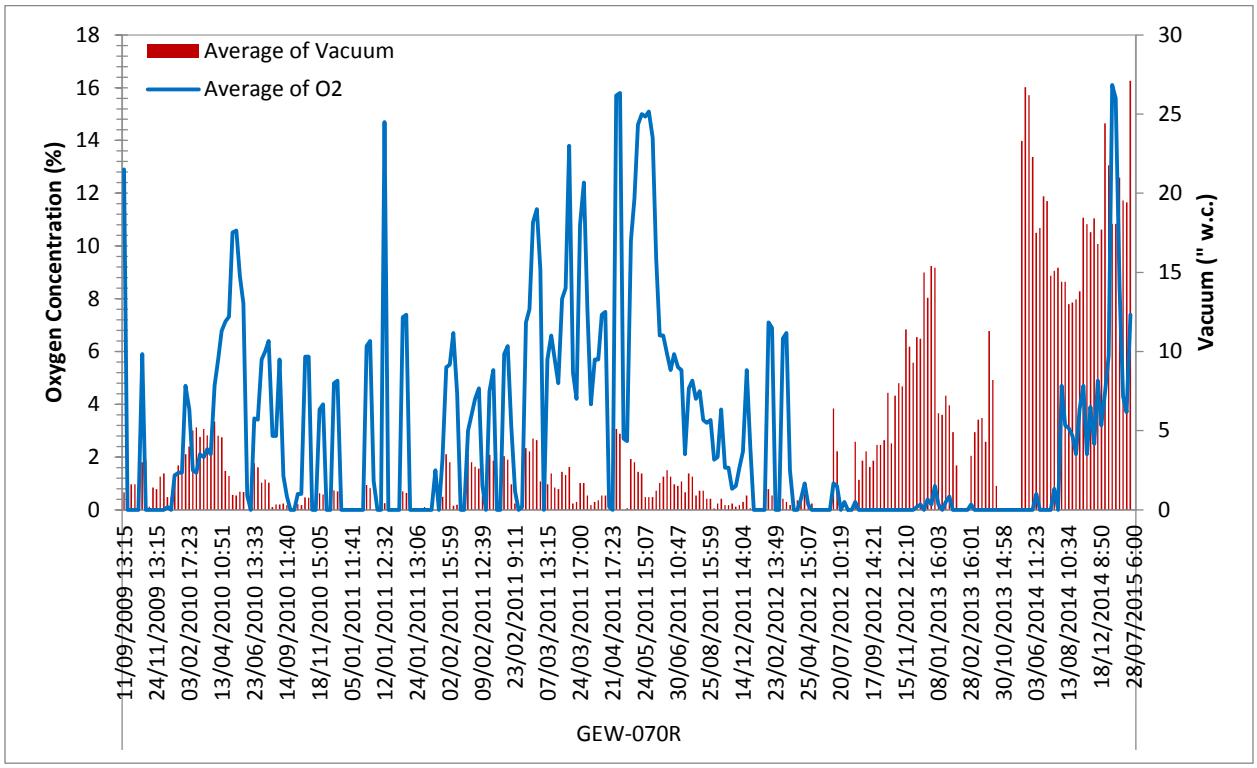


Figure 4 – LFG Filed Data, Applied Vacuum vs. Oxygen Concentration at GEW-70R

Example of improper field operation (extracted from LFG Database – BL_004_0002789)

GEW-107

Point Name	Date Time	CH4	CO2	O2	Bal	Init Flow	Adj Flow	Init Static Press	Adj Static Press	Init Diff Press	Adj Diff Press	System Pressure
GEW-107	30/07/2014 10:59	2.7	14.2	16.5	66.6	244	248	-15.3	-14.8	15.115	15.598	-15.38
GEW-107	30/07/2014 11:00	3.1	14.6	16.2	66.1	235	251	-14.6	-15	13.997	15.885	-14.9
GEW-107	13/08/2014 14:30	1.6	26.6	8.4	63.4	316	322	-26.3	-27.4	26.964	28.118	-27.97
GEW-107	13/08/2014 14:31	1.9	25.2	8.5	64.4	246	279	-15.4	-17.8	15.948	20.508	-17.8
GEW-107	26/08/2014 11:17	18.3	62.3	0.5	18.9	197	205	-12.8	-13	12.619	13.69	-13.14
GEW-107	26/08/2014 11:17	19.2	62.5	0.3	18	204	206	-13.2	-13.7	13.501	13.865	-13.35
GEW-107	09/09/2014 13:42	0.2	11.7	16.1	72			-19.96	-19.47	19.881	19.394	-20.18
GEW-107	09/09/2014 13:46	0.2	24.2	12.2	63.4			-19.96	-21.98	20.028	22.323	-20.67
GEW-107	26/09/2014 9:37	11.2	13.6	19.6	55.6			-22.16	-24.05	22.608	24.242	-21.71
GEW-107	26/09/2014 9:37	4.3	6	19.5	70.2			-23.69	-22.1	24.05	22.736	-25.57
GEW-107	07/10/2014 11:25	2	63.5	0.1	34.4			-8.73	-8.49	8.843	8.669	-21.47
GEW-107	07/10/2014 11:25	2.9	64.8	0.1	32.2			-8.85	-7.02	8.926	7.3	-21.65
GEW-107	20/10/2014 16:24	5.8	65.5	0	28.7	222	235	-18.6	-18.6	18.072	20.308	-20.83
GEW-107	20/10/2014 16:24	5.6	65.4	0	29	234	235	-20	-19.1	20.254	20.381	-19.46
GEW-107	07/11/2014 10:36	0.2	7.9	19.3	72.6	281	292	-18.8	-19.2	18.785	20.238	-19.62
GEW-107	07/11/2014 10:40	0.1	5.7	20	74.2	276	294	-18.7	-19.7	17.968	20.444	-20.05
GEW-107	18/11/2014 10:31	0.2	49.7	1.9	48.2			-12.15	-12.7	12.057	12.415	-12.05
GEW-107	16/12/2014 14:31	0.4	48.2	4.5	46.9			-17.83	-17.83	18.062	18.062	-18.1
GEW-107	20/01/2015 10:02	0.3	65.7	0.8	33.2	174	172	-8.5	-7.8	8.801	8.608	-8.8

September 9th 2014, applied vacuum 22" w.c., [O_2] = 12%,
Next reading September 26th, vacuum 23" w.c. and [O_2] = 19%
Note: Although database shows no flow conditions in these dates, there is a lab data point labeled September 11th, 2014 (perhaps sampled September 9th) showing [O_2] = 13%, and [CO] = 1500ppm. One would think that summa canister samples are collected from open wells

- Continues application of excessive vacuum and Oxygen intrusion (Fig.1)
- High balance gas levels (Fig.2) confirmed by lab data (Fig.3 – September and November 2014)

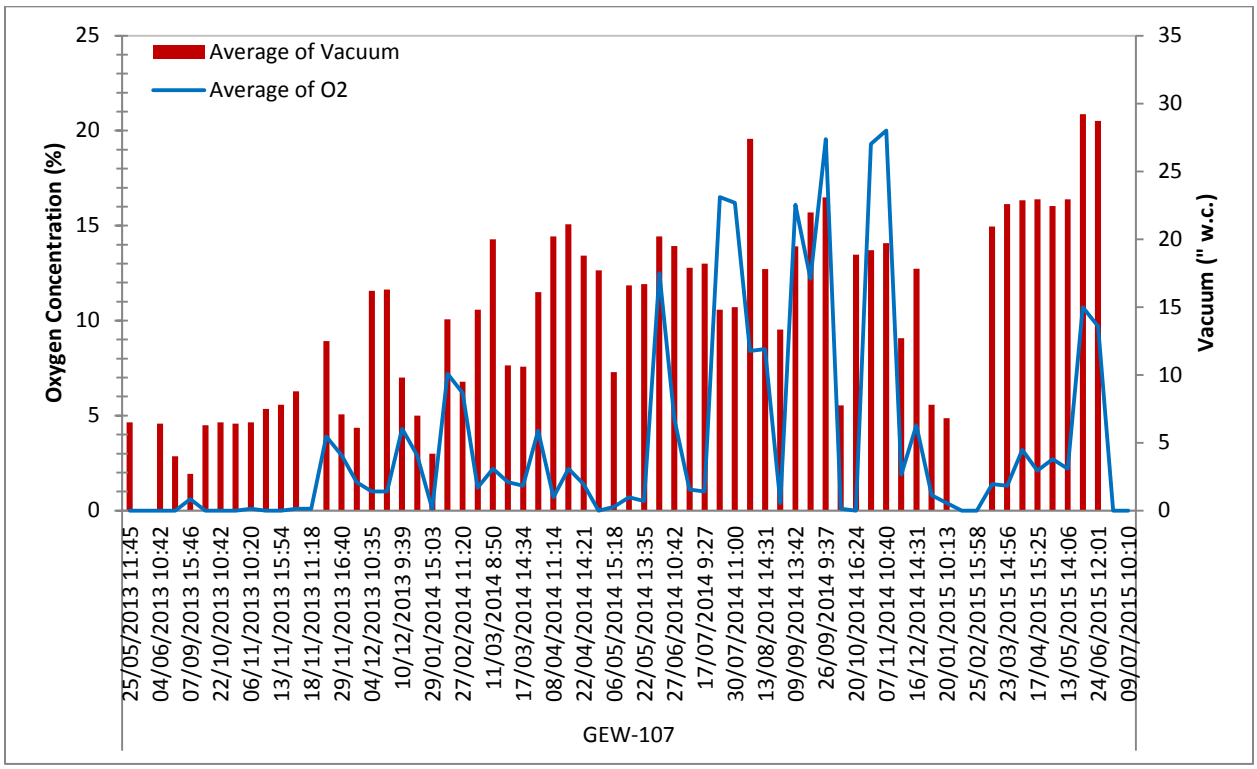


Figure 1.

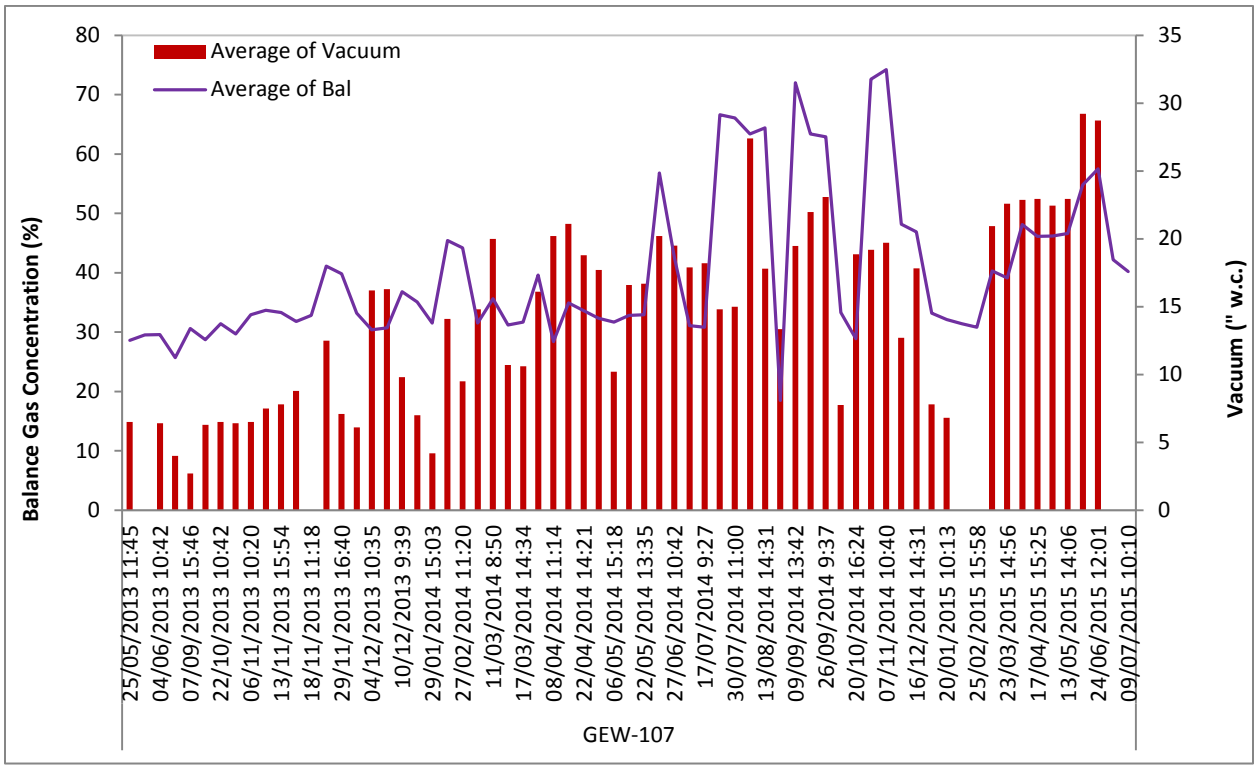


Figure 2.

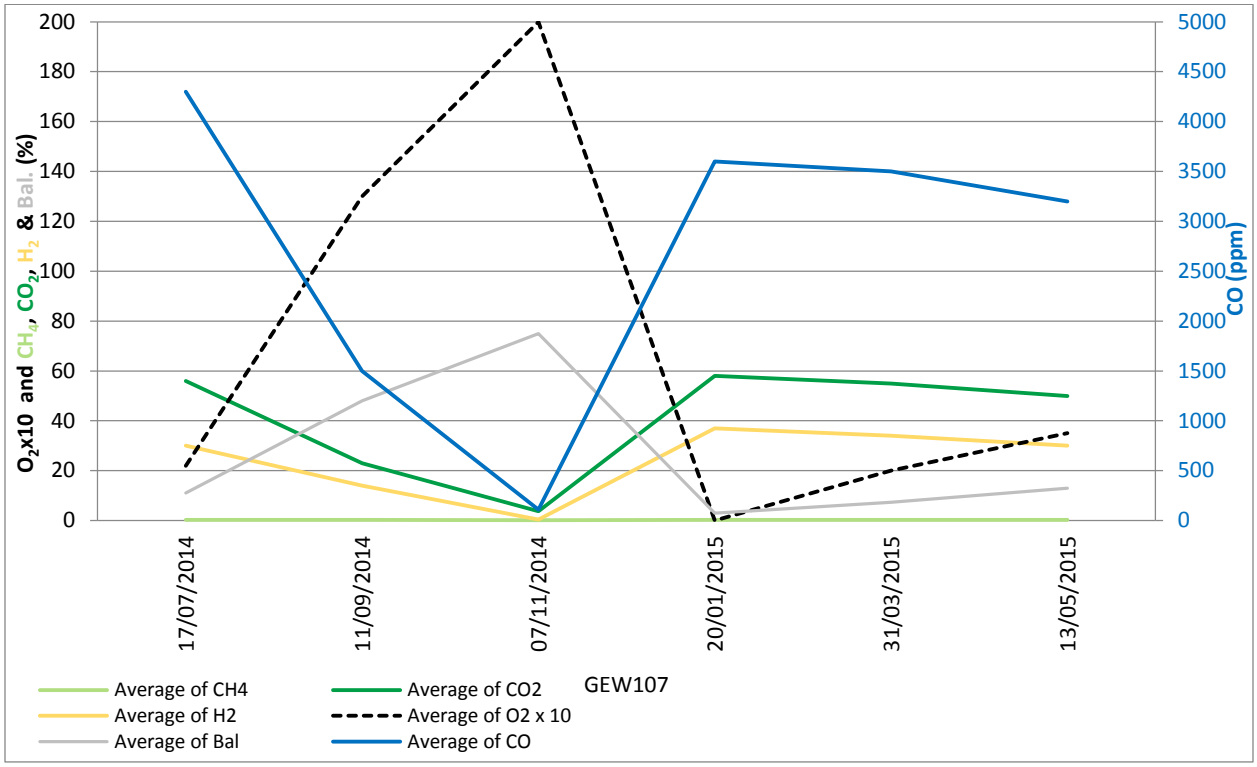


Figure 3



Figure 4

APPENDIX O

EXPERTS CURRICULUM VITAE (CVs)



DR. TONY SPERLING, P.Eng.

President SHA / Landfill Design Engineer
Landfill Fire Control Specialist

PROFILE:

1978 - 1983	B.A.Sc. Geological Engineering, UBC, Geotechnical Option
1981 - 1982	(Summer) Engineering Student and Drill Inspector, B.C. Hydro
1983	(Summer) Mine Geologist, Brenda Mines Ltd.
1984 - 1985	M.A.Sc. Mining Engineering, UBC, Rock Mechanics
1984	(Summer) Geotechnical Engineer, Equity Silver Mines Ltd.
1985 - 1986	(Summer) Geological Engineer, Trigg, Woollett, Olson Consulting Ltd.
1986 - 1990	Ph.D., Geological Engineering, UBC, Ground Water Hydrogeology
1987 - 1988	(Summer) Geotechnical Engineer, Highland Valley Copper
1987 - 1989	Engineering Software Consultant, Sperling GeoComp Inc.
1989 - 1993	Geological Engineer, Gartner Lee Limited
1993 - 1995	Senior Geological Engineer, Gartner Lee Limited
1994 - Present	Lecturer in Solid Waste Management, B.C.I.T.
1995 - 1996	Senior Engineer / President Sperling Engineering Services Inc.
1996 - Present	President and Chief Engineer, Sperling Hansen Associates Inc.
2000 – Present	President Landfill Fire Control Inc.

EXPERIENCE: ***Landfill Fires:*** Dr. Sperling has been responsible for techniques at a cost of $400,000.



Dr. Sperling has also developed fire response plans and prevention strategies for a number of municipal and industrial clients including Weyerhaeuser, Metro Waste in Des Moines, Iowa, , the City of Penticton, the County of Colchester in Nova Scotia and the City of Kamloops, Bahamian Govt., Israel Ministry of Environment, amongst others.

To disseminate SHA's knowledge in landfill fire control and prevention, Dr. Sperling has prepared a one day course on fire management that has been presented in Vancouver, Calgary, Prince George, San Diego, Truro, Mexico, Panama, Comox, Peterborough, Barry, Truro and Kamloops.

Solid Waste Management: As a landfill design specialist, in the past 25 years Dr. Sperling has concentrated on providing state-of-the-art engineering services relating to the design, operation, monitoring and closure at municipal landfills. He has completed over 1,000 geotechnical assessments, design and operations plans and closure plans for more than 150 landfills, including both large municipal sites such as the Vancouver Landfill in Burns Bog and the Hartland Landfill in Victoria, as well as numerous small rural sites in the Thompson Nicola Regional District, the Regional District of Bulkley Nechako, the Regional District of Okanagan Similkameen and the Regional District of Kitimat Stikine, amongst others. Flagship projects have included design of the Hartland Landfill PVC closure system, design of the Whistler Landfill Expansion lining and leachate collection system and design of slopes and landfill expansion for a large landfill expansion at the Bailey Road Landfill in Chilliwack. A complete list of projects is included overleaf.

Dr. Sperling is also very active in disseminating the art of landfill engineering in B.C. He is a Director of the B.C. SWANA Pacific Chapter and Chair of their Training Committee. He is also a member of SWANA's MOLO faculty. He has taught SWANA's flagship Manager of Landfill Operations

(MOLO) course on four occasions. As well, he has specialty courses on landfill operations at Salmon Arm, Smithers, Kamloops and in Burns Lake B.C and three invited courses on groundwater issues to the MoELP waste managers throughout B.C. As well, he has developed and taught two courses on landfill design at the British Columbia Institute of Technology.



Mining: Projects completed in the mining industry include the design of the Valley Pit Dewatering System for Highland Valley Copper, pit design of the Main Zone Pit at Equity Silver Mines for Placer Dome Mines, a technical assessment of acid mine drainage control at Equity, a technical review of ground water control measures for the Lelydorp III bauxite mine in Suriname, South America for N.V. Billiton Maatschappij, a hydrogeological feasibility assessment of developing a diamond mine beneath a lake in Canada's Arctic for Canamera Resources, and most recently, a hydrogeologic review of ARD seepage from Island Copper's sub-marine waste dumps.

Ground Water Modeling: Dr. Sperling has been involved in the development of several computer models for assessing ground water flow. He has developed *COAST*, a sophisticated pre and post processor program for *MODFLOW*, with Dr. R. A. Freeze. Development of this software has resulted in numerous spin-off assignments including three successful modeling courses for nearly 100 regional staff at the B.C. Ministry of Environment, Lands and Parks. He has taught courses on ground water modeling at the University of British Columbia, University of Washington, the University of Wisconsin, and in house courses for ERM in Houston, Texas.

- **Hydrogeotechnical Studies**

  Port Clements Landfill, Queen Charlotte Islands
  Lillooet Landfill Hydrogeologic Investigation
  Hartland Landfill Hydrogeologic Investigation and Leachate Management Concepts
  Knockholt Sub-Regional Landfill Hydrogeotechnical Assessment, Houston
  Thornhill Landfill Hydrogeotechnical Study, Terrace
  Hydrogeological Assessment, City of Vancouver Landfill, Burns Bog, Delta
  Bailey Road Landfill, District of Chilliwack
  Crown Packaging Landfill, Vancouver

- **Design and Operations Plans**

  Port Clements Landfill
  Campbell Mountain Landfill, Penticton
  Summerland Landfill
  Foothills Boulevard Landfill, Prince George
  Lillooet Landfill
  Hartland Landfill, Victoria
  Salmon Arm Landfill
  Bailey Road Landfill, District of Chilliwack
  Hope Landfill
  Burns Lake Landfill, RDBN
  Granisle Landfill, RDBN
  Manson Creek Landfill, RDBN
  Lower Nicola Landfill, TNRD
  Chase Landfill, TNRD
  Clearwater Landfill, TNRD
  Heffley Creek Landfill, TNRD
  Barriere Landfill, TNRD
  Westwold Landfill, TNRD
  Iskut Landfill, RDKS
  Rosswood Landfill, RDKS
  Fort St. James Landfill, RDBN
  Smithers Landfill, RDBN
  Fraser Lake Landfill, RDBN
  Vanderhoof Landfill, RDBN

- **Closure Plans**

  Squamish Landfill
  Whistler Landfill
  Logan Lake Landfill, TNRD
  Clinton Landfill, TNRD

Final Cover Test Pad Program, Hartland Landfill
Premier Landfill, North Vancouver
Toppley Landfill, RDBN
Old Smithers Landfill, RDBN
Perow Landfill, RDBN
Ootsa Lake Landfill, RDBN
Endako Landfill, RDBN
Topley Landing Landfill, RDBN
Lytton Landfill, TNRD
Brookmere Landfill, TNRD
Clucluz Lake Landfill, RDBN
Tatalrose Landfill, RDBN
Fort Fraser Landfill, RDBN
Old Houston Landfill, RDBN
Palling Landfill, RDBN
City of Vancouver Landfill

- **Engineering Design and Construction**

South Face Closure Design, Hartland Landfill
Underdrain Design Concept, Hartland Landfill
West Perimeter Diversion Ditch Design, Hartland
Hope Landfill Leachate Collection System Detailed Design
North and East Face Closure, Hartland
North Ravine Closure Campbell Mountain
Bailey Road Phase II Expansion, Chilliwack

- **Stability Assessments**

Fort Fraser Landfill Stability Assessment
Hope Landfill Stability Assessment

- **Environmental Monitoring**

Annual Monitoring, Hartland Landfill, Victoria (1990-1994)
Hope Landfill Annual Monitoring, (1995-1997)
Thornhill Landfill Annual Monitoring (1996-1997)
Transition Plan and Environmental Monitoring
Landfill Gas Assessment, Campbell Mountain Landfill, Penticton

Geotechnical Engineering: Dr. Sperling has participated in a number of geotechnical investigations throughout western Canada and the Arctic. His experience includes geotechnical investigation of dam foundations, concrete aggregate resources and stream diversions on B.C. Hydro's Liard, Iskut and Stikine and Hat Creek projects, construction supervision of a rock fill tailings dam for Equity Silver Mines and slope stability studies for Equity Silver, Brenda Mines, Township of Langley, and Town of Hope. He was the geotechnical engineer responsible for an innovative project that involved excavation and drying of 150,000 m^3 of very wet lake bottom peat deposits in Heal Basin. He has also completed a number of stability assessments at landfill sites at Fort St. James, Hope and Chilliwack.

Environmental: Dr. Sperling has managed Phase II contaminated site investigations for B.C. Hydro, Fletcher Challenge and MacMillan-Bloedel. Typically, the work involves a field program consisting of drilling and sampling, laboratory testing, data interpretation and report preparation.

EDUCATION: Ph.D., Geological Engineering - Ground Water Hydrogeology, The University of British Columbia, 1990. Thesis Topic: A Risk-Cost-Benefit Framework for the Design of Dewatering Systems in Open Pit Mines.

Post Graduate Course Work, The University of Arizona, 1989. Courses in hydrogeology and risk based engineering design.

M.A.Sc., Mining Engineering, The University of British Columbia, 1985. Thesis topic: Slope Stability and Dewatering in Main Zone Pit at Equity Silver Mine.
B.A.Sc., Geological Engineering, Geotechnical Option, The University of British Columbia, 1983. Thesis Topic: Avalanche Control in Allison Pass.

Scholarships: Placer Development Ltd. Scholarship, 1981
Victor A. Olacke Memorial Bursary, 1981

British Columbia Hydro Scholarship, 1982
Cy Keyes Memorial Scholarship, 1983, 1984
National Research Council Scholarship, 1985, 1986
University Graduate Research Fellowship, 1987

COMPUTER: Dr. Sperling routinely uses the latest computer software to carry out state-of-the-art technical analyses and enhance the quality of technical reports and presentations. Software that he routinely uses include the Microsoft Office Suite of applications, AutoCad 13, AutoCad Lite, Surfer, BOSS Groundwater Modeling System, TimeLine, ModView, ModFlow, and HELP.

As well, he is a proficient computer programmer in Quick Basic and Fortran languages. He specializes in the development of user-friendly, graphic intensive software that helps him carry out complex technical analyses efficiently. He has developed a comprehensive library of software for geotechnical, hydrogeological and mining applications as well as several custom software products for a number of corporate clients. These include:

COAST:	Pre and post-processor to Modflow ground water flow model.
SG-Slope:	Slope stability analysis via Sarma's method.
SG-Pump:	Software for analysis for pumping tests.
SG-Volmod:	Landfill Volume Terrain Modeling System
SG-Settle:	Landfill Settlement Model
SG-Veneer:	Landfill Cover Stability Model

AFFILIATIONS:

Solid Waste Association of North America (SWANA) - Director of B.C. Chapter
COAST Waste Management Association
Northern Waste Management Association (NWMA) - Founding Member
Association of Professional Engineers and Geoscientists of British Columbia
Canadian Geotechnical Society
North American Geosynthetics Society (NAGS)
International Geosynthetics Society (IGS)

PUBLICATIONS AND PRESENTATIONS:

A Risk-Cost-Benefit Framework for the Design of Dewatering Systems in Open Pit Mines. 28th U.S. Symposium on Rock Mechanics, Tucson, Arizona, pp. 999-1007. T. Sperling and R.A. Freeze, 1987.

Ground Water Control at Highland Valley Copper. International Journal of Surface Mining. Vol. 3, No. 3, T. Sperling, W.K. Munro and R.A. Freeze, 1989.

Dewatering the Overburden at Highland Valley Copper. 41st Canadian Geotechnical Conference, Kitchener, Ontario, 1988, T. Sperling, W.K. Munro, R.A. Freeze, 1989.

Hydrogeological Decision Analysis: 1. A Framework. Ground Water, Vol. 28, No. 5, R.A. Freeze, J. Massmann, L. Smith, T. Sperling and B. James, Sept. 1990.

Using Risk-Cost-Benefit Analysis to Design a Dewatering System at Highland Valley Copper. 43rd Canadian Geotechnical Conference, Quebec City, Quebec, T. Sperling, 1990.

Hydrogeological Decision Analysis: 2. Applications to Ground-Water Contamination. Ground Water, Volume 29, Number 4, J. Massmann, R. A. Freeze, L. Smith, T. Sperling and B. James, 1991.

Hydrogeological Decision Analysis: 3. Application to Design of A Ground-Water Control System at an Open Pit Mine. Ground Water Volume 30, Number 3, T. Sperling, R. A. Freeze, J. Massmann, L. Smith and B. James, 1992.

Site Preparation at Hartland's Phase II Landfill, B.C. Water and Waste Annual Conference, Vernon, B.C., T. Sperling, A de Meulles, S. Pitt, 1993.

Controlling Leachate at Landfills without Costly Liners, GLOBE 94 Conference, Vancouver, B.C., T. Sperling, 1994

Design and Operations Plans for Municipal Landfills, B.C. Water and Waste Annual Conference, Victoria, B.C., T. Sperling and M. Budzik, 1994

The Application of Geosynthetics at Hartland Landfill, Geosynthetics 95, Nashville Tennessee, T. Sperling and A. Jones, 1995

New Trends in Landfill Design, 1995 Canadian Waste Management Conference, Quebec City, M. Sungalia and T. Sperling, 1995.

Leachate Management at Victoria's Hartland Landfill, Public Works and the Human Environment Conference, Seattle, Washington, M. Budzik and T. Sperling, 1995

Geosynthetics Pass the Test, Waste, Washington, D.C., T. Sperling and A. Jones, August, 1995.

Hydrogeological Assessment of the City of Vancouver Landfill, 12th Annual Northwest Regional Symposium, T. Sperling, R. Dickin and P. Henderson, April, 1996.

Landfill Closure in British Columbia, Solid Waste Association of North America, British Columbia Pacific Chapter Meeting, T. Sperling, October, 1996.

Landfill Siting, Operation and Closure, Southern Interior Waste Managers Association Meeting, T. Sperling, March 1997.

Final Closure at Hartland Landfill, 1997 Solid Waste Association of North America, Solid Waste Symposium, T. Sperling and B. Hansen, April 1997.

Land Reclamation at Municipal Landfill Sites, 21st Annual Mine Reclamation Symposium, Cranbrook, B.C. B. Hansen and T. Sperling, September, 1997.

From Dumps to Sanitary Landfills – Upgrading Solid Waste Management Systems in British Columbia. 1999 SWANA Northwest Regional Symposium, Portland, Oregon, April, 1999.

Extinguishing the Delta Shake and Shingle Landfill Fire. Waste Age Magazine, Atlanta, Ga. November, 2000.

Vancouver Landfill Demolition Fire. MSW Management Magazine Vol. 11, No. 4, Santa Barbara, California, July/August, 2001

Understanding and Controlling Landfill Fires. SWANA 6th Annual Landfill Symposium, San Diego, California, T. Sperling, June, 2001.

Issues to Remember when Dealing with Landfill Fires – Canadian Corner: MSW Solutions, SWANA, Silver Spring, Maryland, March, 2002.

When a Fire Occurs at your Facility will you be ready? SWANA Training Center, Palm Springs, CA, Dr. Tony Sperling, P.Eng., April, 2008.

Extinguishing the Vancouver Landfill Fire. SWANA Landfill Symposium and Planning & Management Conference, Reno, Nevada. | Dr. T. Sperling and S. McCracken, April 12-13, 2010.

Controlling the Cerro Patacon Landfill Inferno, Panama: SWANA's 19th Annual Landfill Symposium, New Orleans, LA, Dr. T. Sperling, 2015

ALI ABEDINI, Ph.D.
Landfill Gas Specialist

PROFILE:

2008-Present	Senior Environmental Consultant Landfill Gas Specialist Sperling Hansen Associates, North Vancouver, B.C.
2006-2011	Research and Teaching Assistant Department of Civil Engineering, The University of British Columbia, Vancouver, B.C.,
2005-2006	Environmental Specialist, The World Bank
2005-2006	Environmenatl Specialist, The World Bank Project Office Ministry of Interior, Tehran, Iran
2003-2005	Project Manager, Tehran SWM Project The Wold Bank Project, OWRC, Municipality of Tehran, Iran
2001-2003	Civil & Environmental Engineer Parsconsult Consulting Engineers, Tehran, Iran
1999-2001	Civil Engineer Kheradmand Engineering Co., Tehran, Iran



EXPERIENCE:

Ali Abedini received his B.Sc. (1999) in Civil Engineering from IUT (Isfahan University of Technology) and his M.Sc. (2003) in Civil & Environmental Engineering from University of Tehran (thesis entitled "Feasibility Study of Municipal Solid Waste Recycling in Zanjan Province"), and his PhD in Civil Engineering from University of British Columbia (thesis entitled "Integrated Approach for Accurate Quantification of Methane Generation at Municipal Solid Waste Landfills").

He joined the Recycling Organization of the Municipality of Tehran as the head of research deputy and was soon appointed as the Manager of a World Bank funded project consisting of eight solid waste management projects within the framework of the Tehran's Integrated Solid Waste Management Project, including (i) Landfill Preparation Study, (ii) Integrated Waste Management Strategy and Implementation Plan, (iii) Design of Waste Separation and Recycling in Transfer Station , (iv) Social Assessment Study, (v) Pilot for Health Care Waste Management in Tehran, (vi) Environmental Impact Assessment (EIA) Study for the Sanitary Landfill, (vii) EIA Study for the Waste Sorting Pilot Plant in Transfer Station and (viii) Kahrizak Landfill Gas Extraction Project (the first Carbon Fund and Landfill Gas extraction project in the country).

In 2005 Mr. Abedini joined the World Bank as a freelance consultant (environmental safeguard policy specialist) and worked on several projects in Iran. In 2006 he moved to Canada to pursue his PhD degree at UBC in the area of Solid Waste Management under supervision of Professor J. W. Atwater.

Ali joined Sperling Hansen Associates (SHA) in 2008. His main focus at SHA is designing LFG management and GHG emission control systems. He has more than 14 years of experience in the field solid waste management with his main focus on landfill and LFG collection system design.

KEY QUALIFICATIONS:

- Landfill gas specialist and technical expert in designing landfill gas management and control systems.

- Expert in the field of solid waste management.
- Technical expert in the areas of Solid Waste Recycling, Composting, Landfilling, Bio-filters and Waste-to-Energy.
- Experienced in landfill fire controls and fire risk reductions.
- Experienced manager for planning and organizing of tasks and for working with people and resolving problems.
- Experienced in international procurement procedures and especially with the World Bank procedures for selection of consultants.
- Experienced in developing GHG emission reduction initiatives and CDM projects.

EDUCATION:

Ph.D., Civil and Environmental Engineering, University of British Columbia (UBC), Vancouver, Canada, 2014. Thesis entitled "Integrated Approach for Accurate Quantification of Methane Generation at Municipal Solid Waste Landfills".

M.Sc., Civil and Environmental Engineering, Tehran, University of Tehran (UoT), Iran, 2003. Thesis entitled "Feasibility Study of Municipal Solid Waste Recycling in Zanjan Province".

B.Sc., Civil Engineering, Isfahan University of Technology (IUT), Isfahan, Iran, 1999.

PROFESSIONAL AFFILIATION:

- Solid Waste Association of North America (SWANA)
- International Solid Waste Association (ISWA)

PUBLICATIONS:

- Quantifying Methane Oxidation at Municipal Landfills Cover Soil Using the Stable Isotope Technique and Flux Chambers, under review for publication.
- Effects of Recycling Activities on Waste Disposal Options: Case Study of the Metro Vancouver, British Columbia, Canada, Oral Presentation at the 2012 World Solid Waste Congress, Florence, Italy.
- Effect of Recycling Activities on the Heating Value of Solid Waste: Case Study of the Greater Vancouver Regional District (Metro Vancouver), Journal of Waste Management and Research, August 2012.
- Estimating GHG emissions from Waste Water Treatment Plants, Course paper, Department of Civil Engineering, the University of British Columbia, April 2007.
- Healthcare Waste Management Strategy, Case Study of Tehran Metropolitan, Accepted and Published, 2nd National Clean Earth Day and Waste Management Conference, April 2006.
- World Bank Safeguard Policies and its interaction with EIA, Accepted and Published, 3rd Iranian National Conference in Environmental Impact Assessment, Tehran, Iran, February 2006.
- Kahrizak Landfill Carbon Collection and Closure Strategy: case study of Iran's largest landfill, Accepted in 10th International Waste Management and Landfill Symposium, Cagliari, Italy, October 2005
- Integrated Waste Management Strategy, M.Sc. Thesis Advisor, University of Tehran, 2005.
- Feasibility Study for PET Recycling in Iran, Case Study of PET Recycling in District #13, M.Sc. Thesis Advisor, University of Tehran, 2005.
- Feasibility Study on Recycling Potentials in Zanjan Province, M.Sc. Thesis, University of Tehran, Iran, 2003

RESEARCH INTERESTS:

- Landfill gas emissions and greenhouse gas emissions from landfills
- Measurement of fugitive methane emissions from landfills
- Assessment of LFG collection efficiency and GHG emission from Landfills
- Organic waste diverion and waste to energy initiatives
- (APEGBC).

Name	**Patrick Foss-Smith** MSc, MInstRE, CMIWM
Age	62
Higher Education	Southampton College of Technology. HND Marine Engineering. Royal Military Academy, Sandhurst. Graduate Royal School of Military Engineering. Graduate (civil / military engineering) University of Southampton. MSc Graduate Sustainable Waste Management

1985-2014 — Freelance Environmental Consulting Services.

Examples of my waste management work include:

- Principal landfill fire detection and treatment consultant for a fire at an illegal landfill (current task for the Israeli Ministry of Environment)
- Detection and treatment of various deep-seated municipal landfill fires (Norfolk County Council, Biffa, Viridor and others)
- Detection and treatment of a deep seated tyre fire in Wales (Sir William Halcrow and partners)
- Detailed design and implementation of an integrated waste collection, recycling, incineration and landfill system in Mauretania (MCE Mauretania)
- Conducted a detailed review into the scope of likely residual hazardous wastes to be found in obsolete naval vessels including appropriate ship breaking and waste pre-treatment techniques (White Young Green Environmental for UK Ministry of Defence)
- A technical review of the status of Plasma Conversion as a means of disposing of hazardous wastes. Works included a comparative technology / economic review of alternative technologies (White Young Green Environmental for UK Ministry of Defence)
- Drafting fire avoidance Conditions for inclusion in landfill site permits (various Local Authorities and the Environment Agency)
- Expert Witness for Professional Indemnity insurers regarding landfilled asbestos under a housing development located on a former RAF airfield (Bureau Veritas UK).
- Expert Witness for a planning application hearing for a landfill, at risk of a landfill fire, in the Republic of Ireland (White Young Green Environmental plc)
- Expert Witness for appeal against refusal of a permit application for a landfill, considered to be at risk of a landfill fire, in the Republic of Ireland (White Young Green Environmental plc)
- Expert Witness for appeal against the enforced closure of a landfill site (Alexander Metals)
- Expert Witness to assist the Arbitrator to assess the validity of a claim for unpaid Landfill Tax arising from incinerator waste (for Wolverhampton City Council).

1980-1985 — George Wimpey plc

Managing Director of Wimpey Laboratories' operations in Saudi Arabia. Responsible for the business profitability and technical output. Responsible for negotiating turn-key contracts for water and environmental engineering, waste disposal engineering (landfill & treatment) and associated laboratory services to ARAMCO and other clients.

1975 - 1980 — Army Officer, Royal Engineers, UK Ministry of Defence

1970 - 1975 — Marine Engineer Officer, P&O Shipping Company

Papers:

Paper: ***Mixtures for the Adsorption and Storage of Radionuclides Contained in Nuclear Waste and Contaminated Groundwater****. Authors: Patrick Foss-Smith, Brimac Carbon Services, Ltd. (UK); Ray Lidzey, Brimac Carbon Services, Ltd. (UK) ; James H.P. Watson, University of Southampton (UK) ; Derek Elwood, University of Southampton (UK).*

Paper: ***Understanding Landfill Fires*** *Waste Management World.*

Paper; ***Detection and Diagnosis of Deep Seated landfill Fires*** *Journal of the Chartered Institute of Wastes Management*

Article, ***Igniting Caution*** *Journal of the Chartered Institute of Wastes Management*

Guest Speaker on behalf of the Royal Geographical Society, on the subject of renewable energy

Capability Statement

Patrick Foss-Smith MSc, MInstRE, MCIWM
Landfill Fire Specialist

Summary of career experience:

- Qualified, indentured, mechanical engineer
- Qualified civil / military engineer arising from commissioned service with Royal Engineers
- Employed by waste management / landfill operator from 1980 to 1985
- Self-employed waste management consultant from 1985 to present

Academic and Publications

- MSc (Sustainable Waste Management) at University of Southampton – Dissertation research into landfill fires
- Member of the Chartered Institute of Waste Management
- Paper: Understanding Landfill Fires Waste Management World.
- Paper; Detection and Diagnosis of Deep Seated Landfill Fires Journal of the Chartered Institute of Wastes Management

Examples of Experience:

1984 – General Manager of a consultancy in Saudi Arabia contracted to extinguish a surface fire in Jubail and another in Jeddah.
1988 – Diagnosis and treatment of an underground tyre fire in Wales including survey, thermal imaging and Site Investigation. Project management of treatment works based on cryogenic gas injection.
1998 – Risk Assessment of an underground fire adjacent to a buried WWII explosives dump, in the Ukraine, on behalf of World Bank.
2009 / 10 – Attachment to the US EPA (OEPA) to research and learn from, USA best practice. Attendance at a number of fires in support of PhD research.
2010 – Forensic investigation to provide evidence of arson on behalf of a UK insurance company.
2010 – Drafting fire risk reduction measures for inclusion in a site permit application
2011 – Second Opinion on the treatment method proposed for a surface fire at an illegal municipal waste landfill in Ireland.
2011 – Expert Witness on behalf of a landfill operator defending the fire resistance measures proposed for a DAC lined landfill near Dublin.
2011 – Forensic investigation into the initiation of a municipal waste landfill fire at a Local Authority landfill.
2011 – Project management of a deep-seated fire below the cap of a municipal waste landfill in East Anglia, using inert gas; having negotiated the treatment method with the Environment Agency.
2011 / 12 – Site investigation and excavation methodology for an illegal municipal waste landfill fire in Israel on behalf of the Israeli Department of Environment.

Related Skill Sets

- Design and assembly of down-the-hole temperature profiling arrays and data-loggers.
- Interpretation of aerial thermal scans
- Construction of 3D visualisations of underground conditions using data integration techniques (topographical anomaly, thermal imagery, temperature profiling, gas analysis, etc)
- Risk Assessment of treatment works
- Works planning and supervision

Faculty of Applied Science

Chemical and Biological Engineering



John R. Grace (http://chbe.sites.olt.ubc.ca/profile/john-grace/)

Professor Emeritus
Former Canada Research Chair in Clean Energy Processes

Fluidization, Reactor Design, Fluid-Particle Systems, Biomass, Coal, Combustion, Two-Phase Flow, Fluid

john.grace@ubc.ca (mailto:jo%68n%2eg%72a%63%65%40ubc.%63%61)

Education

University of Western Ontario, 2003, D.Sc. (Hon.)
Cambridge University, 1968, Ph.D. Chemical Engineering
University of Western Ontario, 1965, B.E.Sc.

Research Interests

Dr. Grace's primary research interests are concerned with fluidized bed reactors and related multi-phase systems. Fluidized beds are used for a wide variety of chemical and physical purposes, for example in catalytic, gas-solid and three-phase reactors, drying, coating and thermal treatment.

Working closely with graduate students, fellow faculty members and other research associates, Dr. Grace has investigated a wide range of problems which are fundamental in nature, but which have practical application. Some of the topics studied in the recent past include transient forces on immersed tubes, heat transfer in circulating fluidized beds, hydrodynamics and mixing in high velocity beds, effects of particle size distribution, reactor modelling, scale-up issues, attrition, electrostatics, non-uniformity of flow through parallel channels, computational fluid dynamics, comparison of alternative techniques for voidage and velocity measurements, and dispersion and inversion phenomena in liquid-fluidized beds. Applications studied include fluidized bed combustion and gasification of biomass and coal, a novel process for steam reforming of natural gas to make pure hydrogen, and greenhouse gas capture. While most work is on gas-solid fluidization, some work is also done on spouted beds and on liquid-solid and gas-liquid-solid fluidized beds. Many of the projects are motivated by direct industrial interest. The research is funded by government and by industrial sources.

The U.B.C. group has unique facilities for the study of fluidization. For example, the group operates a pilot-scale circulating fluidized bed gasification unit in which both fundamental and applied data have been obtained. There are also a number of other units of different scales and a wide variety of related equipment for characterizing particles and obtaining in-bed measurements.

Dr. Grace is also involved, often in collaboration with researchers from other departments and industry, in the factors leading to the spread of brominated and fluorinated compounds in the environment, improvement in the properties of perm-selective membranes, removal of contaminants from waste streams, mixing in the pulp and paper industry, and development of unique clay resources of British Columbia.

Publications

J.R. Grace Publications, 2012- June 2015

1. Xu WJ, Li LY and Grace JR, Regeneration of natural Bear River clinoptilolite used to remove Zn from acid mine drainage in a slurry bubble column, Applied Clay Sciences, **55**, 83-87 (2012).
2. Li TW, Grace JR, Bi HT, Reid K and Wormsbecker M, Numerical investigation of Fluid CokingÔ units, Part I: Hydrodynamics of a scaled cold flow model, Can. J. Chem. Eng., **90**(2), 442-456 (2012).
3. Li TW, Grace JR, Bi HT, Reid K and Wormsbecker M, Numerical investigation of Fluid CokingÔ

units, Part II: Modelling of feed vaporization, Can. J. Chem. Eng.,**90**(2), 457-471 (2012).
4. Yenjaichon W, Grace JR, Lim CJ and Bennington C, In-line jet mixing of liquid-pulp fibre suspensions: Effect of concentration and velocities, Chem. Eng. Sci., **75**, 167-176 (2012).
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CHBE 251 **Transport Phenomena I (Fluid Mechanics)**

CHBE 344 **Unit Operations I**

CHBE 351 **Transport Phenomena II (Heat/Mass Transfer)**

CHBE 452 **Environmental Process Design Project**

CHBE 455 **Kinetics and Reactor Design**

CHBE 456 **Heterogeneous Catalysis and Advanced Reactor Design**

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CHBE 559 **Topics in Chemical Engineering**

CHBE 561 **Particulate and Multiphase Systems**

APSC 261 **Technology and Society**

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