LEACHATE AND SURFACE WATER REPORT

SANITARY TRANSFER AND LANDFILL

DELAFIELD, WI

Prepared by: Environmental Sampling Corporation

June 24, 2019

ENVIRONMENTAL SAMPLING CORPORATION
"Dedicated to Environmental Monitoring, Science & Technology"

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June 24, 2019

Mr. Jason Lowery
Wisconsin Department of Natural Resources
Site Assessment Team Leader
101 S. Webster Street,
Madison, WI 53707

Dear Jason,

RE: **DELAFIELD SANITARY LANDFILL - Report on Leachate, Gas Condensate and Water Infiltration, Collection and Treatment Evaluations**

Background

The Delafield Sanitary Landfill has a leachate collection and removal system that has been operational since the late 1970's. The leachate collection system has several components that have been modified over the years. To date, the amount of leachate produced by the landfill was not well quantified. The leachate analytical characteristics were also not well documented. The site historic Leachate/Gas Condensate monitoring data files are very limited from January 2000 thru April 2017 - only 9 events and results were uploaded. Private Well Data, Ground Water Data, Gas Probe Data and Gas Blower Data is also very limited from January 2000 thru April 2017 and no Gas Well Monitoring Data existed in the WDNR GEMS Database prior to July 2017.

WDNR requested that ESC review the data and project files, collect quantitative and qualitative samples and perform a leachate treatment alternative analysis. WDNR was looking at ways to reduce the environmental risk of the facility and to also reduce the ongoing long-term care costs associated with the facility. The following provides a summary of the work performed, discussion of the issues and alternatives, and provides a list of recommendations. The recommendations present actions that can be taken to improve and simplify the operations, reduce the operational costs, reduce the environmental impact and reduce the ongoing environmental risk of the facility.

Facility Description

The Delafield Sanitary Landfill has a leachate collection system that collects liquids generated from the following three sources.

1. A landfill liner and leachate collection system collect and extracts landfill leachate from an approximate 10-acre clay lined area of the southeast portion of the landfill. The leachate is pumped from one collection manhole into the main 10,000-gallon underground storage tank (UST).
2. Landfill gas condensate generated by the active gas collection system is collected from three condensate sumps and is also pumped into the 10,000-gallon underground storage tank.
3. Surface water collects and ponds in the area around the leachate storage tank and load out pad. Ponded surface water, and perched ground water infiltrate into the 10,000-gallon underground storage tank as a result of ponded water and ground water infiltration.

These three sources of liquids have produced approximately 1 to 2.6 million gallons of leachate per year over the last 20 to 30 years. In 2018, 929,613 gallons of leachate was hauled and treated. The amount of leachate collected is controlled by the number of leachate truck loads. In 2019, these liquids are removed from the main underground storage tank and loaded out several times per week via a third-party 6,000-gallon capacity pumper truck. The liquid is then transported and discharged to the Waukesha WWTP. The cost of trucking and treatment is approximately $0.0314 per gallon, which equates to an approximate annual cost of $31,000 per year, assuming 1M gallons per year.
A licensed tanker septic pumper truck connects to an above ground 4-inch diameter galvanized steel pipe, which is connected to the main 10,000-gallon UST. The liquids are vacuumed out of the tank, into the truck and hauled to the Waukesha WWTP. During wet times of the year the UST is typically at capacity at the time of the first truck load for the day. When the tank is full, leachate is accumulated in the landfill, and backed up into the landfill. From 2017 to the present the leachate load-out area has had several overflow issues with the iron stained water discharging to the north and east toward the localized depression/infiltration pond. See the attached photograph.

The leachate collection system and associated tank and pump controls have had periodic maintenance performed over the last three decades. The current collection system and operation has been performed in the same general manner over the last several decades.

The liner and leachate collections system were installed prior to waste placement in the late 1970's and early 1980's. The landfill closed in 1982.

A WDNR file search and field investigation was performed to better understand the landfill's leachate collection system. Quantitative and qualitative data was gathered and evaluated. The findings of the work are presented in this report.

Based on WDNR file information and the initial field investigative work, there are two steel underground storage tanks (UST's) on site that are currently part of the active leachate collection system. Starting at the leachate extraction manhole, leachate is pumped to a single walled steel 6,000-gallon UST. This UST currently has pumped leachate passing through it. Up until October 2018, this tank was used for temporary leachate storage when the larger downstream 10,000-gallon UST was full. The electrically operated leachate control valve was removed on October 11th, 2018 due to malfunctioning concerns and leachate overflow issues at the lower tank and load out areas. Temporary leachate storage in the upper 6,000-gallon UST provided no operational benefit, added complexity and added maintenance costs. The 6,000-gallon UST also created greater environmental risk due to potential overtopping, and the integrity of the tank was unknown. The single walled UST was installed in the late 1970's and had no leak detection capabilities. For the above reasons the electrically actuated valve was removed, and the leachate pumping and storage system operation was simplified in October 2018. Currently, Leachate flows through the 6,000-gallon UST to the lower 10,000-gallon UST.

The main 10,000-gallon steel double walled underground leachate storage tank was installed in 1992. A construction documentation report indicates that this tank was installed with a high level of construction quality control and should be performing as designed. See the attached UST diagram. The surface area above the tank has not been maintained. In addition, the interstitial monitoring port is not present, and has not been maintained or monitored. The area directly above the tank has historically had ponded water above the tank and the tank is directly accessible and open to the atmosphere at the high-level electric float/alarm. The electric wiring for the float was previously located below the ponded

water/ice. The electric junction box remains below grade and does not meet electric code or standards of practice. The 3-inch schedule 40 PVC riser is exposed and is at risk. See attached photos. Typically, a steel tank would have a significant and solid pipe connection that is robust, would extend above grade, and would not be directly accessible to the atmosphere.

The upper 6,000-gallon tank visually appears to be a salvaged steel pressure tank and has on open steel grated manway. There is a disconnected float level and/or switch in the 6,000-gallon UST. There are several diagrams/drawings that show the location and piping associated with the 6,000-gallon UST.

In addition to the 6,000- and 10,000-gallon UST and based on the WDNR file review, there appears to be an abandoned 2,000-gallon UST located approximately 50 feet north of the main 10,000-gallon UST.

Observations and Recent Remedial efforts

The area around the main UST is located at the base of the southeast edge of the existing landfill. The area is lower in elevation and is fairly flat. This area has been observed (2017 – 2019) to be wet and has had liquids seeping from the ground in and around the leachate tank load out area. In the Winter of 2017/2018, the area above and around the main UST was flooded and iced over with an approximate 6 inches to a foot of water depth. During the first half of 2018, there had been several times where the collection system had overtopped the load out pad back drain, and discolored liquid overflowed the road and ran over land toward the east. On May 15th, 2019, leachate seeps were observed approximately 100 feet south of the 10,000-gallon UST. (see photos attached 5/15/19).

In June 2018, Tom Wentland and a third-party electrician investigated the shut off floats and controls on the underground storage tanks (upper 6,000-gallon UST and the lower 10,000-gallon capacity main UST), the electrically actuated shutoff valve and the leachate collection manhole pump. At that time, the high-level float control wiring in the 10,000-gallon UST was repaired and this appeared to temporarily correct the overflow conditions.

On July 19th, 2018, Todd Watermolen (ESC), Tom Wentland and Jerry Demers (WDNR) met on site to perform a site visit regarding the operation of the leachate collection system i.e. leachate pump, collection manhole, underground storage tanks, float controls and piping/electrical infrastructure. Tom explained the system and how the leachate extraction pump and controls operated. The leachate extraction pump was controlled by float switches in the 4-foot diameter leachate extraction manhole and in both UST's. When the leachate level increased in the manhole, the float switches would activate the pump and first fill the lower main 10,000-gallon UST. When the 10,000-gallon UST was filled a float switch would activate the electrically actuated valve located between the upper and lower UST's. The valve would shut, and the pump would then fill up the upper 6,000-gallon capacity UST. When both tanks were full, the level indicator in the upper tank would shut off the leachate extraction pump. When both tanks were full, the system had approximately 16,000 gallons of leachate stored. The lower tank would be pumped out by the tanker truck and as the lower tank had capacity the upper tank would be refilled by the upper tank and/or the leachate extraction pump. The leachate manhole extraction pump, wiring and controls had recently been upgraded/replaced (Fall, 2017). Per Tom Wentland, the leachate extraction pump was rated to pump at approximately 40 gallons per minute. The tank was partially full at the time of the site visit. Running water was heard entering the 10,000-gallon UST even though the leachate extraction pump was not running. The leachate extraction system appeared to be functioning

as designed, in that the pump cycled, the electric actuated valve was operating and open, and the two underground storage tanks (upper 6,000 gallon and the main 10,000 gallon) had storage capacity available. Tom did not know how the collected gas condensate entered the 10,000-gallon UST. Several areas around the 10,000-gallon UST were iron stained. These areas included the load out pad, and ground surfaces east and south of the pad. Dead vegetation was present in the area directly above the 10,000-gallon UST. There was a consensus that more investigation and subsurface exploration was warranted. The following issues were noted: 1) the leachate collection system needed to be better understood, 2) the system needed some remedial work so as to not allow iron stained water to discharge over land and 3) surface and shallow ground water infiltration needed to be minimized and/or eliminated. Tom indicated that the highest leachate depth that he had ever observed was approximately 17 feet below the manhole rim (Elevation 1004 feet). This occurred when the leachate pump was not operational. The leachate extraction pump is activated by a float switch, which is set at 32 feet below the manhole rim. A second pump float switch turns the pump off at approximately 36.3 feet.

On July 30th, 2018, and on several days on and around October 16th, 2018 the leachate load-out area was again flooded, and iron stained water was running off the pad and flowing over land to the east.

On October 10th and 11th, 2018 the electrically actuated valve was disconnected and removed from the valve manhole located between the upper 6,000 UST and the lower 10,000 UST. The valve was located in a 4-foot diameter concrete manhole. A 4-inch diameter PVC spool piece was installed to reconnect the piping. This confined space remedial work was done to simplify the leachate extraction and storage operation, and to remove the electrically actuated valve. The valve was not operational and needed repair at that time.

On November 20th, 2018, the WDNR commissioned ESC to install a 4-inch diameter drain tile above the UST. The purpose of the drain tile was to drain off the ponded surface water that was collecting above the UST and to dry the area out. In the winter 2018/2019 and spring 2019, no ponded surface water or iced over conditions were observed in the area of the main tank, thus the drain tile installation was effective.

A leachate pump running time meter was installed by ESC on April 24, 2019 at approximately 7:00 a.m. The purpose of the running time meter is to track the amount of leachate extracted from the landfill. The amount of run time multiplied by the flow rate will provide data for landfill operations and environmental management. On May 15, 2019, Todd Watermolen performed a pump test on the leachate extraction pump and determined the output flow rate to be approximately 55 gpm. By tracking the pumps run time meter and multiplying the pump flow rate, the total amount of leachate collected and pumped to the 10,000-gallon UST can be calculated. This computed volume can then be compared to the volume trucked and discharged to the WWTP.

WDNR File Search

The available WDNR project files were investigated. The WDNR Waukesha office project files were very limited, not well organized and appeared to be missing large amounts of technical information, including technical reports, technical plan sets, environmental investigations and regulatory correspondence. There were numerous references to technical documents and reports that had been generated in the

late 1970's and early 1980's. There also was a large amount of regulatory and third-party consultant work that was referenced for the site. Previous investigations and remedial work were a result of the landfill having significant environmental impacts that included ground water contamination and offsite subsurface gas migration. The WDNR was also pursuing enforcement action against the owner operator from the late 1970's up until the early 1990's.

The only facility regulatory files that were located, were found at the WDNR Waukesha office and those files were sporadic and incomplete. The WDNR Central office could not locate any historic project files. The regional Milwaukee office was also contacted, and no files were found or available per WDNR Milwaukee staff.

The following summarizes some of the pertinent technical information regarding the in-place leachate collection system at the landfill.

Landfill liner and leachate collection system

The Delafield Landfill has liner and a leachate collection in place that is approximately 10 acres in areal extent. Based on limited project file documentation, there is evidence that a five-foot thick clay liner was constructed in 7 construction phases. There were a series of leachate collection pipes (4 and 8-inch diameter PVC) that were trenched into the clay liner. In addition, there were references to a sand drainage layer above the clay liner. The leachate collection pipes were sloped to the south and connected to the leachate collection manhole. The liner and leachate collection system is much more robust than what was reported in more recent landfill background information.

(No liner system had been referenced in recent landfill descriptions). The five-foot clay liner was installed over an approximate 10-acre area in the late 1970's and early 1980's. The clay liner followed fairly rigorous quality assurance measures that were established by WDNR landfill environmental standards at that time. Leachate collection trenches and PVC piping were installed to gravity drain leachate to the 4-foot diameter concrete extraction manhole. The total depth of the leachate manhole was measured to be 38 feet from the manhole top to the base. The manhole base consists of a poured in place concrete footing.

The main 10,000-gallon steel, double walled underground storage tank was installed in 1992. A construction documentation report indicates that the tank construction was robust and was installed with a high level of construction quality control.

An electrically actuated valve was in place in a 4-foot diameter concrete manhole just down gradient form the 6,000-gallon UST. The electrically actuated valve was removed on October 11th, 2018, after it failed. The valve was removed in order to simplify the leachate collection system. The electric shutoff valve and the 6,000-gallon UST provided no benefit and increased the environmental risk of the system. The upper 6,000 gallon is made of steel, is single walled, has a caged steel access manway, is simplistic, and appears to be intact. The tank has no integrity monitoring. The purpose of the tank appears to be for additional short-term leachate storage capacity.

Based on the file review and onsite reconnaissance, a third 2,000-gallon single wall steel underground storage tank is referenced on some plans and appears to be in place, based on an existing concrete

manway and PVC pipe at the ground surface in this area. The 2,000-gallon UST is not functional and appears to have been left in place/abandoned. It is unknown what piping is associated with this tank. Ground water seeps have been observed in the area of this tank during wet times of the year. The 2,000 UST is referenced on old plans as a breather tank. The 2,000 and the 6,000-gallon UST's were installed in the 1970's. The manufacture of these two tanks are unknown.

Landfill Final Cover

The file search also indicated that the southern - southeast portion of the landfill also has a significant 2-foot thick clay final cover plus rooting zone soil in place. There were references to fairly extensive clay cover capping construction documentation both in thickness and soil quality. The files however were incomplete and large amounts of construction documentation information was referenced but were not found in the WDNR project files. Based on the documented clay cover and slope in this portion of the landfill the amount of precipitation infiltration would be limited. Case studies in WI would suggest that infiltration rates are in the range of 2 to 6 inches with moderate slopes and 2 feet of fairly consistent, high quality low permeability clay cover soils. Infiltration modeling of final cover clay caps historically predicted higher rates of infiltration (6.5 inches historic Warzyn Engineering report for this site) but technical case study information suggests lower infiltration rates. The landfill final cover also has a good to excellent vegetative cover.

Leachate Generation

In order to estimate the amount of leachate that would be generated and collected in this lined portion of the landfill, several assumptions were made which include a 3 to 4-inch annual percolation rate over the estimated 10-acre lined area. Based on the sloped 5-foot thick high-quality clay liner referenced in the file literature, and to simplify the leachate generation estimate, 100 % collection was assumed. A rough estimate of leachate generation would range from 810,000 to 1,100,000 gallons.

In addition to the above estimate of leachate production, ESC installed a new running time meter on the leachate pump in order to gather actual leachate generation data. Based on the new running time meter from 4/24/19 to 5/15/19 (22 days) and using a measured pumping rate of 55 gpm, the amount of leachate extracted was 77,000 gallons or 3,500 gallons per day. This was during the 2019 Spring weather, with significant rainfall (above average), recent snowmelt and no evapotranspiration. Leachate extraction pumping was limited due to the storage tank being full. Long term data will provide a much better estimate of leachate production.

The total volume transported to the WWTP during this short time period was reported (WDNR) to be 105,000 gallons. The difference in these volumes (28,000 gallons), could approximate the amount of surface and ground water infiltration during this time period. The other liquid input would be gas condensate, but these volumes would be negligible. This equates to approximately 36% of the total volume of liquid hauled would be from infiltration, during this short and discreet time period. The amount of leachate generated would be higher if the tanks were immediately emptied when at capacity, and liquids were not allowed to overflow the capacity of the UST.

Historical leachate production indicates higher leachate generation (120,000 gallons per month) during April and May of recent years. Leachate hauling has however been limited by the hauling, which decreased the amount of leachate collected and treated. Leachate collection is limited because the leachate hauling is performed on a set schedule rather than on an as needed basis. WDNR landfill

regulations require leachate to be pumped on an as needed basis. As a result of pumping on a set schedule, leachate pumping does not keep up to leachate generation several times per year. This results in periodic higher leachate heads, which correspondingly results in increased leakage rates to the local hydrogeologic system. This condition likely contributes to the down gradient leachate seeps and ponding conditions that have been observed near the 10,000-gallon UST and loadout area. This condition would also increase the environmental impacts to the area ground water.

The amount of leachate hauled and discharged to the Waukesha WWTP for 2018 was 929,613 gallons. From 2010 to the present, the site has averaged approximately 1,000,000 gallons of leachate hauling and treatment per year. The leachate generation appears to be limited by the hauling schedule rather than by the amount of leachate being generated. WDNR file review indicated that 1.7 M gallons of leachate was treated in 1995/1996 (K Singh and Associates O&M Report) and 2.2 M gallons in 1992. The annual precipitation from 1990 to 1997 fell within the normal range and was approximately 32 inches per year for southeast WI. The 1990 leachate generation rates should be similar to the 2000's. The annual precipitation in 2008 was a large anomaly with approximately 44 inches. The approximate annual precipitation for Delafield in 2018 was 35 inches. Leachate generation should vary directly with the annual precipitation amounts.

Leachate Characteristics

Leachate samples were collected from both the leachate manhole and the leachate tank. See the attached analytical data. In general, the leachate has low to moderate levels of contaminants, which is consistent with other MSW landfills sites that were closed in the early 1980's. The contaminant levels are above the WDNR ground water standards.

Gas Condensate Volumes

The landfill gas condensate system consists of three landfill perimeter condensate sumps (CS-1, CS-2 and CS-3). The sumps and associated pneumatic pumping system extracts condensate from the active gas extraction system and delivers the condensate to the existing 10,000-gallon underground storage tank. In 2018 ESC installed cycle counters on the condensate pneumatic pumps. Based on 2018 and 2019 cycle counter data collected by ESC, the amount of condensate generated was calculated and projected to produce approximately 6,400 gallons per year. This amount assumes the condensate pumps outputs, are at manufacturer specifications. Regardless, this would be a conservative (high end) number. Based on case history of old landfills (cold) with low LFG flow rates (200 cfm) the amount of condensate would be low (500 to 3,000 gallons per year), which compares reasonably well with the cycle counters total volume calculation. Note that the landfill gas system run time in 2108/2019 was approximately 80% as compared to 20% average run time for 1995 to 2015. Gas condensate volumes would be 4 times higher in 2018/2019 than the previous decade or two. In summary 6,000 gallons of gas condensate liquid generation in 2018/2019 is almost negligible compared to the annual 1,000,000-gallon leachate generation.

Please note that this estimate would be the most conservative in that it assumes every cycle counted, effectively pumped or ejected a rated volume of liquid into the condensate force main. The condensate force main will, in some locations, have some static pressure to overcome in order to inject condensate into the force main.

There is little to no documentation on where and how the gas condensate force main (1-inch diameter HDPE) is connected to the main 10,000-gallon UST, other than a simple line indicating that it is discharging to the UST.

In summary the gas condensate volume is negligible in comparison to the leachate volume that is generated.

Gas Condensate characteristics

The landfill gas condensate was sampled and analyzed. The results are attached. In general, the condensate is acidic (5 pH) and has moderate levels of VOC and inorganic contaminants. The contaminant levels are above WDNR ground water standards. Representative samples of gas condensate was sampled and analyzed. The analytical data is attached.

The gas condensate does not meet ground water standards and should be collected and treated. WDNR regulations also require this.

Surface and Ground Water Infiltration

Surface water and ground water are infiltrating into the lower 10,000 UST via the load out pad concrete sump and piping. Water was observed seeping into the concrete sump in 2018 and 2019 during wet times of the year. During the dryer times of the year the sump is dry and there does not appear to be shallow ground water seepage. The concrete sump is approximately 2 feet below the surrounding ground elevation. Precipitation and surface water run on during large storm events and enters the concrete pad drain and flows into the main UST.

Based on the limited pump running time data to date and the pump only running when tank capacity is available, it is difficult to assess how much ground water infiltration is occurring Based on the initial pump run data and the leachate hauling data, it would appear that approximately 36% of the liquids generated at the landfill during parts of April and May , 2019, are a result of surface and ground water infiltration into the system. In summary leakage is occurring, the amount is hard to quantify without long term leachate pumping and hauling data, and the leaks in the system should be eliminated (financial cost with no benefit).

There may be other sources of infiltration. Another area that is suspect is the existing 10 and 4-inch diameter schedule 40 PVC riser pipes above the UST. The seepage rates are likely, highly dependent on rainfall events. From July 2017 to the present there were several breaches in the storage tank area and surface water overflow/discharges were observed. The overflow discharge condition would also decrease the amount of leachate collected and hauled to the WWTP.

As additional leachate pump running time is monitored, a more accurate leachate generation rate can be obtained. Comparing leachate pumped volume to the total volume hauled will provide a good estimate of liquids generated from surface and ground water infiltration.

Leachate Treatment Options

Three leachate treatment options were evaluated and consist of: 1) direct discharge to the nearby sanitary sewer system, 2) on site treatment/natural attenuation and 3) continue to haul and discharge the leachate to the Waukesha WWTP.

Todd Watermolen contacted the area Delafield Hartland WWTP facility Manager - Scott Luczak. The plant has the capacity to take additional users and currently operates between 1.85 and 3.2 MGD. Scott estimated the up-front one-time connection charges to be approximately $202,500. The user charges would be $2,500 per quarter ($10,000 annually) plus user charges, which he estimated at $70,000 to $90,000 per year based on the historic leachate generation numbers (1,000,000 gallons per year). Bottom line, it makes no economic sense to pursue a direct connection to the area sanitary sewer system.

The leachate quality does not meet ground water standards, if leachate was not collected and treated, leachate would build up in the landfill, eventually over topping the liner system and be released to the ground water. This condition may be occurring at times now, when the leachate pump is shut off due to the UST being at capacity. Observed leachate seeps are indicative of this condition. The natural sand and gravel hydrogeological environment have a low natural attenuation potential. Case history indicates that ground water migration is moderate to fast in this setting. The landfill facility has only two ground water wells that monitor the ground water quality near the site, thus assessing the impacts to the ground water would not be possible with the existing ground water monitoring program. The WDNR solid waste regulations and policy require collected leachate to be withdrawn and treated unless it can be shown that ground water quality can be met by natural attenuation. Natural attenuation of the collected leachate does not appear to be a viable option. The leachate exceeds ground water standards and would impact ground water if it were not collected and treatment. Discharge of the leachate as a surface water would require an onsite treatment process. The landfill property is very limited or not available, and the capital and operational cost of a simple biological treatment system would be difficult and fairly expensive (>$50,000 per year). The winters in WI make this type of system difficult to operate. On site surface water discharge would require additional monitoring to demonstrate that the infiltrating surface water would meet ground water standards. It is highly unlikely that a simplistic onsite treatment system could achieve this threshold. There are no current WDNR approved and operating biological on site landfill leachate treatment systems in Wisconsin. For the reasons stated above, on site leachate treatment does not appear to be viable.

The existing haul and treat process is effective at removing collected leachate from the landfill, is simple, relatively inexpensive (less than $0.04 per gallon) and is currently the only cost-effective treatment option. In conclusion, the leachate collected at the Delafield landfill should continue to be hauled and treated at the Waukesha WWTP.

Recommendations:

1. Continue to collect, haul and treat landfill leachate generated at the landfill. This process is simple, straight forward and is a low-cost treatment option.
2. Continue to treat the leachate at the Waukesha Waste Water Treatment Plant.
3. Remove and or plug the back drainpipe from the load out pad, as surface water and shallow perched ground water are entering the system. Use the pad as a limited volume secondary load out containment. If leachate spillage occurs during load out operations have the vac truck suck it up. This will also reduce or eliminate surface water discharge from the load out pad area.
4. The interstitial monitoring of the underground storage tank should be repaired/re-established, monitored on an annual basis, and documented for environmental integrity (reducing environmental risk).
5. Remove the 4 inch and 10-inch PVC access ports of the 10,000-gallon UST. Replace with watertight and steel (robust) piping. Upgrade the electric wiring on the high-level alarm float so as to meet electric code and limit accessibility. Install a leak free UST vent pipe, 6 to 8 feet above grade.
6. Remove the upper 6,000-gallon UST and re- connect the existing 4-inch diameter leachate transfer pipe from the leachate collection manhole to the main 10,000-gallon UST. Backfill with clean fill and establish vegetation.
7. Investigate and remove the existing non-functioning 2000-gallon UST and associated access covers and piping. Backfill excavation with clean fill and establish vegetation.
8. Properly dispose of steel tanks and appurtenances and perform clean up in area.
9. Perform a confirmatory flow test between condensate sump number CS-1 and the 10,000-gallon UST.
10. Install a permanent six-foot high woven wire fencing enclosure with a 3-strand barb wire top, around the leachate collection manhole and electric controls. The enclosure would be signed and have a locked gate. Perform clean up in the area.
11. Install a subsurface drain tile at a lower elevation and trench to daylight to the east depression area. The drain tile elevation would be established at the top of the tank elevation. This would further remove shallow perched surface water; help minimize winter frost penetration and the associated damage to shallow piping systems. Property boundary issues may need to be investigated to pursue this remedial work.
12. Continue to monitor the leachate pump running time meter and confirm correlation with leachate load out pumping records.
13. Increase leachate load frequency so that leachate hauling keeps up with leachate generation and low leachate heads are maintained in the landfill (In compliance with WDNR landfill operational standards).
14. Monitor leachate head levels in the leachate collection manhole to confirm that leachate pumping is keeping up with leachate collection.

The conclusions and recommendations presented in this report will further reduce costs, provide a higher level of environmental compliance, reduce the Health and safety risk, and reduce the environmental risk of the facility.

Please contact us with any questions or comments that you may have.

Sincerely,

B. Todd Watermolen, P.E.
Environmental Engineer

Frank Perugini
Director of Operations
Environmental Sampling Corporation

cc: Gerald DeMers, P.E. (WDNR)
Tom Wentland (WDNR)
ESC File
Delafield Project File

Attachments

1. 10,000-Gallon UST Plans
2. Leachate and Condensate Analytical Data
3. Pictures

LEACHATE COLLECTION AND UST SYSTEM

- **10,000-Gallon UST Plans**
- **Leachate Collection and Monitoring System**
- **Detail "A"**
    - **Leachate Collection and UST Plan**

Delafield Landfill

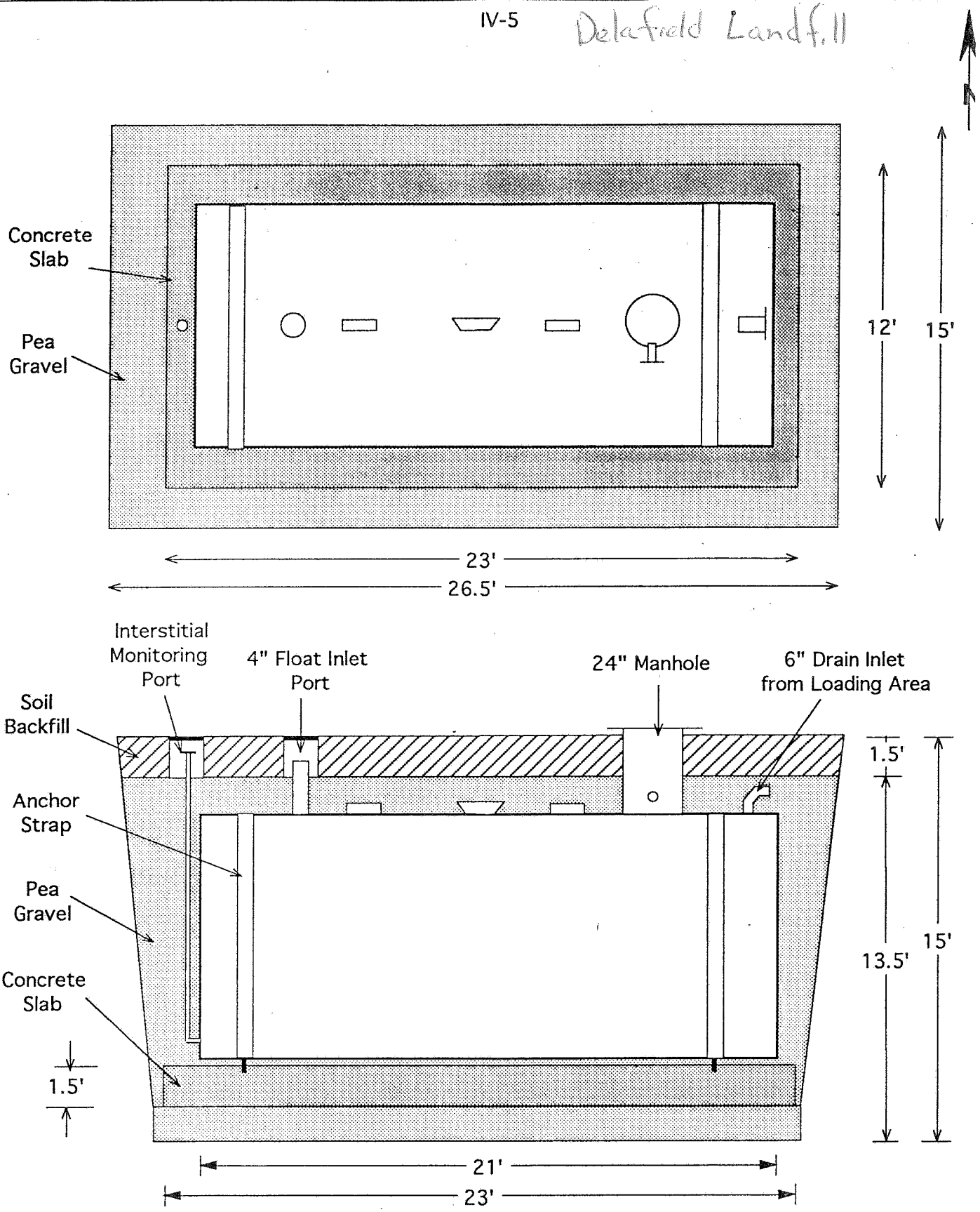


Figure 42. Plan and Elevation of Tank Excavation, Concrete Slab and Bedding

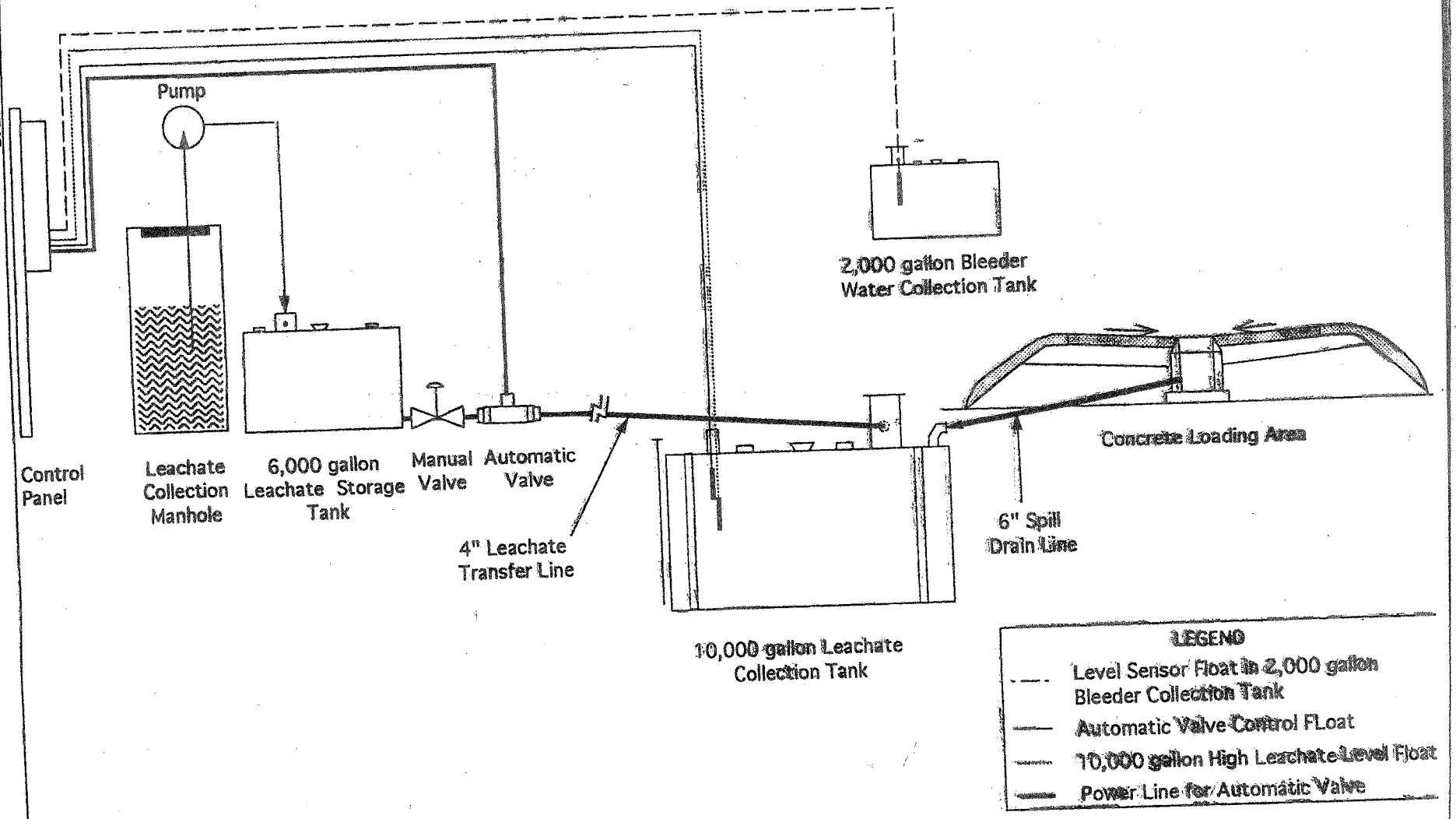
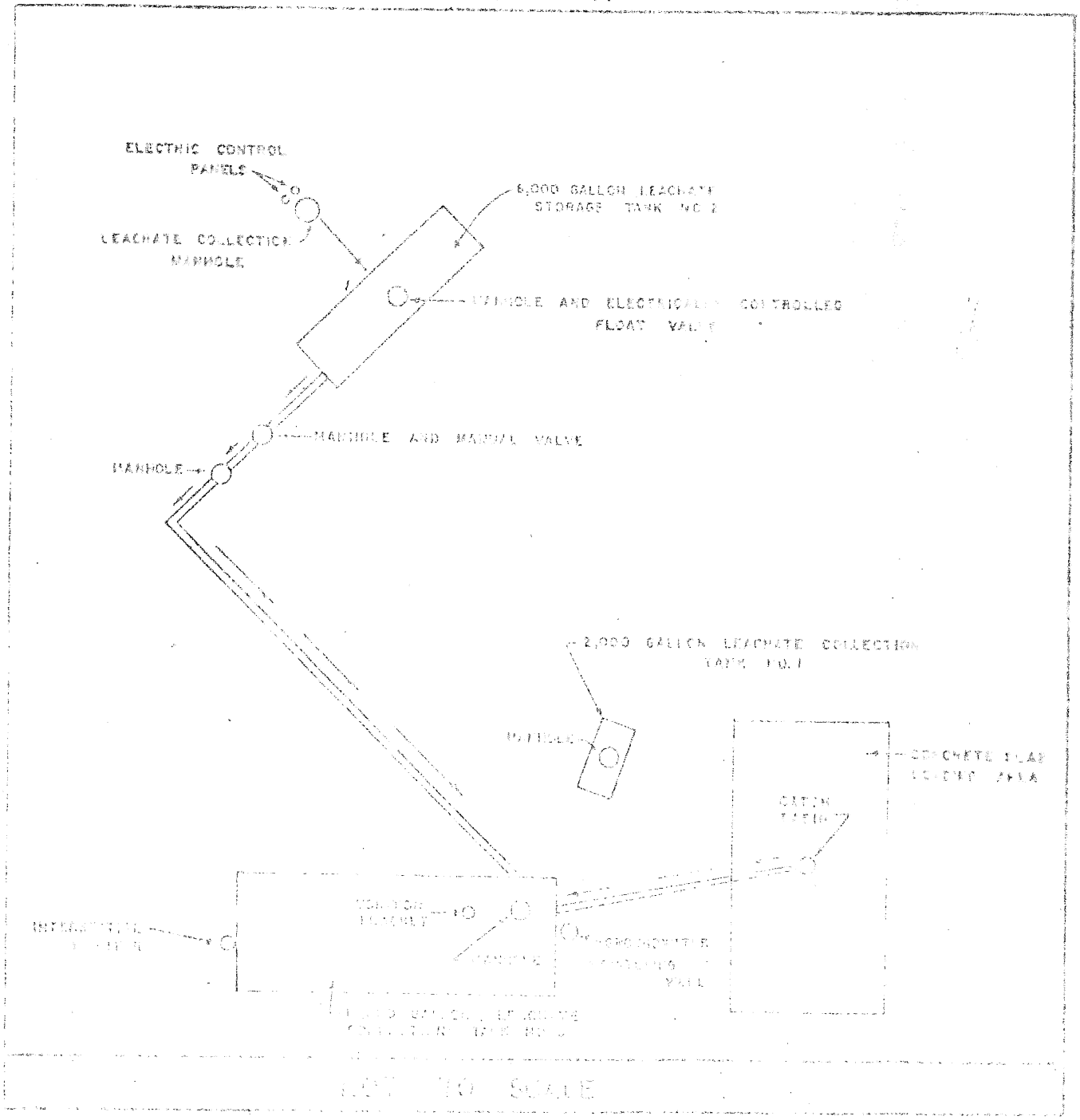


Figure 4. Schematic of Leachate Collection and Monitoring System

Delafield Landfill

Delafield Landfill

DETAIL "A"



Leachate and Surface Water Report - Sanitary Transfer and Landfill
Delafield, WI
June 24, 2019

DELAFIELD LEACHATE AND CONDENSATE ANALYTICAL DATA

- **Leachate Wet Well**
  10,000 UST Leachate Load Out Tank

- **CS01**
  Condensate Sump 01

- **Leachate MH**
  Leachate Collection Manhole

Leachate and Surface Water Report - Sanitary Transfer and Landfill
Delafield, WI
June 24, 2019

LEACHATE WET WELL

(10,000 UST Leachate Load Out Tank)

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ANALYTICAL REPORT

ENVIRONMENTAL SAMPLING CORP.
FRANK PERUGINI
W125 S9808 NORTH CAPE ROAD
MUSKEGO, WI 53150

Project Name: DELAFIELD LF
Project Phase:
Project #: 04-2019
Folder #: 144664
Purchase Order #:
Contract #: 3123

Arrival Temperature: See COC
Report Date: 05/21/2019
Date Received: 04/30/2019
Reprint Date: 05/21/2019

CT LAB#: 273778 Sample Description: LEACHATE WET WELL DNR License/Well #: 00719/339 Sampled: 04/29/2019 1415

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Field Results										
Color (Field)	SLIGHT		N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Conductivity (Field)	5920	umhos/cm	N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Odor (Field)	SLIGHT		N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
pH (Field)	7.23	S.U.	N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Temperature (Field)	10.8	Deg. C	N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Turbidity (Field)	LOW		N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Inorganic Results										
Total Kjeldahl Nitrogen	190	mg/L	2.3	7.6	10	M	05/01/2019 12:00	05/03/2019 15:22	CLB	EPA 351.2
Total Cyanide	0.0038	mg/L	0.0030	0.0090	1	J M	05/10/2019 12:00	05/13/2019 16:23	SAW	EPA 9012A
Total Chloride	850	mg/L	100	320	100			05/14/2019 03:47	TMG	EPA 300.0
Total Sulfate	2.7	mg/L	0.80	2.5	1			05/14/2019 02:40	TMG	EPA 300.0
Alkalinity	2700	mg/L	4.0	4.0	1			05/09/2019 15:00	HLB	SM 2320B
Nitrate+Nitrite Nitrogen Total	1.7	mg/L	0.057	0.19	1			05/07/2019 09:45	HLB	EPA 353.2
Metals Results										
Total Antimony	3.3	ug/L	3.0	9.0	1	J	05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB#: 273778 Sample Description:LEACHATE WET WELL DNR License/Well #: 00719/339 Sampled: 04/29/2019 1415

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Total Arsenic	3.1	ug/L	3.0	10	1	J	05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Barium	251	ug/L	1.0	3.3	1		05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Beryllium	<0.29	ug/L	0.29	0.97	1	U	05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Cadmium	<0.30	ug/L	0.30	1.1	1	U	05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Calcium	81.8	mg/L	0.024	0.079	1		05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Chromium	9.8	ug/L	5.0	17	1	J	05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Copper	12.2	ug/L	4.4	15	1	J	05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Lead	<1.4	ug/L	1.4	4.6	1	U	05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Magnesium	135	mg/L	0.016	0.055	1		05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Manganese	77.0	ug/L	3.4	11	1		05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Selenium	4.6	ug/L	4.0	13	1	J B	05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Thallium	4.5	ug/L	2.2	7.5	1	J	05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Zinc	6.9	ug/L	2.8	9.4	1	J	05/02/2019 10:22	05/08/2019 03:45	NAH	EPA 6010C
Total Sodium	690	mg/L	0.50	1.8	5	M	05/02/2019 10:22	05/09/2019 12:31	MDS	EPA 6010C
Total Hardness	760	mg/L	0.13	0.42	1		05/02/2019 10:22	05/08/2019 03:45	NAH	SM2340B/6010C

Organic Results

Qualifiers applying to all Analytes of Method EPA 8260C: T

1,1,1,2-Tetrachloroethane	<0.60	ug/L	0.60	1.9	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,1,1-Trichloroethane	<0.50	ug/L	0.50	1.8	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,1,2,2-Tetrachloroethane	<0.70	ug/L	0.70	2.4	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,1,2-Trichloroethane	<0.40	ug/L	0.40	1.5	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,1-Dichloroethane	<0.30	ug/L	0.30	1.1	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,1-Dichloroethene	<0.40	ug/L	0.40	1.5	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,1-Dichloropropene	<0.70	ug/L	0.70	2.2	1	U		05/02/2019 11:14	RLD	EPA 8260C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB#: 273778 Sample Description:LEACHATE WET WELL DNR License/Well #: 00719/339 Sampled: 04/29/2019 1415

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Qualifiers applying to all Analytes of Method EPA 8260C: T										
1,2,3-Trichlorobenzene	<0.80	ug/L	0.80	2.6	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,2,3-Trichloropropane	<0.60	ug/L	0.60	1.9	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,2,4-Trichlorobenzene	<0.50	ug/L	0.50	1.7	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,2,4-Trimethylbenzene	3.0	ug/L	0.40	1.2	1			05/02/2019 11:14	RLD	EPA 8260C
1,2-Dibromo-3-chloropropane	<0.70	ug/L	0.70	2.4	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,2-Dibromoethane	<0.60	ug/L	0.60	1.8	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,2-Dichlorobenzene	<0.60	ug/L	0.60	1.9	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,2-Dichloroethane	<0.26	ug/L	0.26	0.87	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,2-Dichloropropane	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,3,5-Trimethylbenzene	0.60	ug/L	0.40	1.3	1	J		05/02/2019 11:14	RLD	EPA 8260C
1,3-Dichlorobenzene	<0.50	ug/L	0.50	1.8	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,3-Dichloropropane	<0.50	ug/L	0.50	1.6	1	U		05/02/2019 11:14	RLD	EPA 8260C
1,4-Dichlorobenzene	4.0	ug/L	0.60	2.0	1			05/02/2019 11:14	RLD	EPA 8260C
2,2-Dichloropropane	<0.50	ug/L	0.50	1.6	1	U		05/02/2019 11:14	RLD	EPA 8260C
2-Butanone	<4.0	ug/L	4.0	14	1	U		05/02/2019 11:14	RLD	EPA 8260C
2-Chlorotoluene	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:14	RLD	EPA 8260C
2-Hexanone	<7.0	ug/L	7.0	24	1	U		05/02/2019 11:14	RLD	EPA 8260C
4-Chlorotoluene	<0.40	ug/L	0.40	1.5	1	U		05/02/2019 11:14	RLD	EPA 8260C
4-Methyl-2-pentanone	<6.0	ug/L	6.0	19	1	U M		05/02/2019 11:14	RLD	EPA 8260C
Acetone	<9.0	ug/L	9.0	30	1	U		05/02/2019 11:14	RLD	EPA 8260C
Benzene	4.1	ug/L	0.24	0.81	1			05/02/2019 11:14	RLD	EPA 8260C
Bromobenzene	<0.60	ug/L	0.60	1.9	1	U		05/02/2019 11:14	RLD	EPA 8260C
Bromochloromethane	<0.80	ug/L	0.80	2.5	1	U		05/02/2019 11:14	RLD	EPA 8260C
Bromodichloromethane	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:14	RLD	EPA 8260C

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CT LAB#: 273778 Sample Description:LEACHATE WET WELL DNR License/Well #: 00719/339 Sampled: 04/29/2019 1415

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Qualifiers applying to all Analytes of Method EPA 8260C: T										
Bromoform	<0.70	ug/L	0.70	2.3	1	U		05/02/2019 11:14	RLD	EPA 8260C
Bromomethane	<0.70	ug/L	0.70	2.4	1	U		05/02/2019 11:14	RLD	EPA 8260C
Carbon disulfide	<0.50	ug/L	0.50	1.6	1	U		05/02/2019 11:14	RLD	EPA 8260C
Carbon tetrachloride	<0.50	ug/L	0.50	1.6	1	U		05/02/2019 11:14	RLD	EPA 8260C
Chlorobenzene	11	ug/L	0.50	1.5	1			05/02/2019 11:14	RLD	EPA 8260C
Chloroethane	1.4	ug/L	0.50	1.6	1	J		05/02/2019 11:14	RLD	EPA 8260C
Chloroform	<0.30	ug/L	0.30	0.90	1	U		05/02/2019 11:14	RLD	EPA 8260C
Chloromethane	<0.70	ug/L	0.70	2.5	1	U		05/02/2019 11:14	RLD	EPA 8260C
cis-1,2-Dichloroethene	<0.30	ug/L	0.30	1.0	1	U		05/02/2019 11:14	RLD	EPA 8260C
cis-1,3-Dichloropropene	<0.40	ug/L	0.40	1.2	1	U		05/02/2019 11:14	RLD	EPA 8260C
Dibromochloromethane	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:14	RLD	EPA 8260C
Dibromomethane	<0.80	ug/L	0.80	2.5	1	U		05/02/2019 11:14	RLD	EPA 8260C
Dichlorodifluoromethane	<0.40	ug/L	0.40	1.5	1	U		05/02/2019 11:14	RLD	EPA 8260C
Diisopropyl ether	0.61	ug/L	0.29	0.97	1	J		05/02/2019 11:14	RLD	EPA 8260C
Ethylbenzene	0.58	ug/L	0.30	1.1	1	J		05/02/2019 11:14	RLD	EPA 8260C
Hexachlorobutadiene	<0.90	ug/L	0.90	2.9	1	U		05/02/2019 11:14	RLD	EPA 8260C
Isopropylbenzene	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:14	RLD	EPA 8260C
m & p-Xylene	10	ug/L	0.50	1.8	1			05/02/2019 11:14	RLD	EPA 8260C
Methyl tert-butyl ether	0.70	ug/L	0.30	1.1	1	J		05/02/2019 11:14	RLD	EPA 8260C
Methylene chloride	<0.50	ug/L	0.50	1.7	1	U		05/02/2019 11:14	RLD	EPA 8260C
n-Butylbenzene	<0.40	ug/L	0.40	1.2	1	U		05/02/2019 11:14	RLD	EPA 8260C
n-Propylbenzene	<0.50	ug/L	0.50	1.8	1	U		05/02/2019 11:14	RLD	EPA 8260C
Naphthalene	<0.70	ug/L	0.70	2.2	1	U		05/02/2019 11:14	RLD	EPA 8260C
o-Xylene	6.0	ug/L	0.40	1.4	1			05/02/2019 11:14	RLD	EPA 8260C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB#: 273778 Sample Description:LEACHATE WET WELL DNR License/Well #: 00719/339 Sampled: 04/29/2019 1415

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Qualifiers applying to all Analytes of Method EPA 8260C: T										
p-Isopropyltoluene	0.55	ug/L	0.50	1.5	1	J		05/02/2019 11:14	RLD	EPA 8260C
sec-Butylbenzene	<0.40	ug/L	0.40	1.3	1	U		05/02/2019 11:14	RLD	EPA 8260C
Styrene	<0.50	ug/L	0.50	1.7	1	U		05/02/2019 11:14	RLD	EPA 8260C
tert-Butylbenzene	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:14	RLD	EPA 8260C
Tetrachloroethene	<0.50	ug/L	0.50	1.8	1	U		05/02/2019 11:14	RLD	EPA 8260C
Tetrahydrofuran	190	ug/L	3.0	10	1			05/02/2019 11:14	RLD	EPA 8260C
Toluene	0.80	ug/L	0.30	1.1	1	J		05/02/2019 11:14	RLD	EPA 8260C
trans-1,2-Dichloroethene	<0.60	ug/L	0.60	1.9	1	U		05/02/2019 11:14	RLD	EPA 8260C
trans-1,3-Dichloropropene	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:14	RLD	EPA 8260C
Trichloroethene	<0.30	ug/L	0.30	1.0	1	U		05/02/2019 11:14	RLD	EPA 8260C
Trichlorofluoromethane	<0.30	ug/L	0.30	1.1	1	U		05/02/2019 11:14	RLD	EPA 8260C
Vinyl chloride	<0.19	ug/L	0.19	0.64	1	U		05/02/2019 11:14	RLD	EPA 8260C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

Notes: All LOD/LOQs are adjusted to reflect dilution, percent solids, and any differences in the sample weight / volume as compared to standard amounts. "U" qualifier indicates concentration of analyte was below the detection limit. "J" qualifer indicates an estimated value between the LOD and LOQ.

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.

Submitted by: Brett M. Szymanski
Project Manager
608-356-2760

QC Qualifiers

Code	Description
B	Analyte detected in the associated Method Blank.
C	Toxicity present in BOD sample.
D	Diluted Out.
E	Safe, No Total Coliform detected.
F	Unsafe, Total Coliform detected, no E. Coli detected.
G	Unsafe, Total Coliform detected and E. Coli detected.
H	Holding time exceeded.
I	Incubator temperature was outside acceptance limits during test period.
J	Estimated value.
L	Significant peaks were detected outside the chromatographic window.
M	Matrix spike and/or Matrix Spike Duplicate recovery outside acceptance limits.
N	Insufficient BOD oxygen depletion.
O	Complete BOD oxygen depletion.
P	Concentration of analyte differs more than 40% between primary and confirmation analysis.
Q	Laboratory Control Sample outside acceptance limits.
R	See Narrative at end of report.
S	Surrogate standard recovery outside acceptance limits due to apparent matrix effects.
T	Sample received with improper preservation or temperature.
U	Analyte concentration was below detection limit.
V	Raised Quantitation or Reporting Limit due to limited sample amount or dilution for matrix background interference.
W	Sample amount received was below program minimum.
X	Analyte exceeded calibration range.
Y	Replicate/Duplicate precision outside acceptance limits.
Z	Specified calibration criteria was not met.

Current CT Laboratories Certifications

Wisconsin (WDNR) Chemistry ID# 157066030
Wisconsin (DATCP) Bacteriology ID# 105-289
Louisiana NELAP (primary) ID# ACC20160002
Illinois NELAP Lab ID# 200073
Kansas NELAP Lab ID# E-10368
Virginia NELAP Lab ID# 460203
Maryland Lab ID# WI00061
ISO/IEC 17025-2005 A2LA Cert # 3806.01
DoD-ELAP A2LA 3806.01
GA EPD Stipulation ID ACC20160002

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ANALYTICAL REPORT

ENVIRONMENTAL SAMPLING CORP.
FRANK PERUGINI
W125 S9808 NORTH CAPE ROAD
MUSKEGO, WI 53150

Project Name: DELAFIELD LF
Project Phase:
Project #: 04-2019
Folder #: 144664
Purchase Order #:
Contract #: 3123

Arrival Temperature: See COC
Report Date: 05/21/2019
Date Received: 04/30/2019
Reprint Date: 05/21/2019

CT LAB#: 273786 Sample Description: LEACHATE WET WELL DNR License/Well #: 00719/339 Sampled: 04/29/2019 1415

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Metals Results										
Dissolved Iron	2.56	mg/L	0.059	0.20	1			05/07/2019 15:21	NAH	EPA 6010C
Dissolved Manganese	78.7	ug/L	2.2	7.3	1			05/07/2019 15:21	NAH	EPA 6010C

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Notes: All LOD/LOQs are adjusted to reflect dilution, percent solids, and any differences in the sample weight / volume as compared to standard amounts. "U" qualifier indicates concentration of analyte was below the detection limit. "J" qualifer indicates an estimated value between the LOD and LOQ.

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.

Submitted by: Brett M. Szymanski
Project Manager
608-356-2760

QC Qualifiers

Code	Description
B	Analyte detected in the associated Method Blank.
C	Toxicity present in BOD sample.
D	Diluted Out.
E	Safe, No Total Coliform detected.
F	Unsafe, Total Coliform detected, no E. Coli detected.
G	Unsafe, Total Coliform detected and E. Coli detected.
H	Holding time exceeded.
I	Incubator temperature was outside acceptance limits during test period.
J	Estimated value.
L	Significant peaks were detected outside the chromatographic window.
M	Matrix spike and/or Matrix Spike Duplicate recovery outside acceptance limits.
N	Insufficient BOD oxygen depletion.
O	Complete BOD oxygen depletion.
P	Concentration of analyte differs more than 40% between primary and confirmation analysis.
Q	Laboratory Control Sample outside acceptance limits.
R	See Narrative at end of report.
S	Surrogate standard recovery outside acceptance limits due to apparent matrix effects.
T	Sample received with improper preservation or temperature.
U	Analyte concentration was below detection limit.
V	Raised Quantitation or Reporting Limit due to limited sample amount or dilution for matrix background interference.
W	Sample amount received was below program minimum.
X	Analyte exceeded calibration range.
Y	Replicate/Duplicate precision outside acceptance limits.
Z	Specified calibration criteria was not met.

Current CT Laboratories Certifications

Wisconsin (WDNR) Chemistry ID# 157066030
Wisconsin (DATCP) Bacteriology ID# 105-289
Louisiana NELAP (primary) ID# ACC20160002
Illinois NELAP Lab ID# 200073
Kansas NELAP Lab ID# E-10368
Virginia NELAP Lab ID# 460203
Maryland Lab ID# WI00061
ISO/IEC 17025-2005 A2LA Cert # 3806.01
DoD-ELAP A2LA 3806.01
GA EPD Stipulation ID ACC20160002

Leachate and Surface Water Report - Sanitary Transfer and Landfill
Delafield, WI
June 24, 2019

CS-01

(Condensate Sump 01)

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ANALYTICAL REPORT

ENVIRONMENTAL SAMPLING CORP.
FRANK PERUGINI
W125 S9808 NORTH CAPE ROAD
MUSKEGO, WI 53150

Project Name: DELAFIELD LF
Project Phase:
Project #: 04-2019
Folder #: 144664
Purchase Order #:
Contract #: 3123

Arrival Temperature: See COC
Report Date: 05/21/2019
Date Received: 04/30/2019
Reprint Date: 05/21/2019

CT LAB#: 273791 Sample Description: CS-01 DNR License/Well #: 00719/X01 Sampled: 04/29/2019 1430

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Field Results										
Color (Field)	CLEAR		N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Conductivity (Field)	612	umhos/cm	N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Odor (Field)	SLIGHT		N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
pH (Field)	5.12	S.U.	N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Temperature (Field)	8.8	Deg. C	N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Turbidity (Field)	NONE		N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Organic Results										
1,1,1,2-Tetrachloroethane	<0.60	ug/L	0.60	1.9	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,1,1-Trichloroethane	<0.50	ug/L	0.50	1.8	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,1,2,2-Tetrachloroethane	<0.70	ug/L	0.70	2.4	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,1,2-Trichloroethane	<0.40	ug/L	0.40	1.5	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,1-Dichloroethane	<0.30	ug/L	0.30	1.1	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,1-Dichloroethene	<0.40	ug/L	0.40	1.5	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,1-Dichloropropene	<0.70	ug/L	0.70	2.2	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,2,3-Trichlorobenzene	<0.80	ug/L	0.80	2.6	1	U		05/02/2019 11:44	RLD	EPA 8260C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB#: 273791 Sample Description:CS-01 DNR License/Well #: 00719/X01 Sampled: 04/29/2019 1430

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
1,2,3-Trichloropropane	<0.60	ug/L	0.60	1.9	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,2,4-Trichlorobenzene	<0.50	ug/L	0.50	1.7	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,2,4-Trimethylbenzene	1.2	ug/L	0.40	1.2	1			05/02/2019 11:44	RLD	EPA 8260C
1,2-Dibromo-3-chloropropane	<0.70	ug/L	0.70	2.4	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,2-Dibromoethane	<0.60	ug/L	0.60	1.8	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,2-Dichlorobenzene	<0.60	ug/L	0.60	1.9	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,2-Dichloroethane	<0.26	ug/L	0.26	0.87	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,2-Dichloropropane	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,3,5-Trimethylbenzene	0.46	ug/L	0.40	1.3	1	J		05/02/2019 11:44	RLD	EPA 8260C
1,3-Dichlorobenzene	<0.50	ug/L	0.50	1.8	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,3-Dichloropropane	<0.50	ug/L	0.50	1.6	1	U		05/02/2019 11:44	RLD	EPA 8260C
1,4-Dichlorobenzene	2.4	ug/L	0.60	2.0	1			05/02/2019 11:44	RLD	EPA 8260C
2,2-Dichloropropane	<0.50	ug/L	0.50	1.6	1	U		05/02/2019 11:44	RLD	EPA 8260C
2-Butanone	<4.0	ug/L	4.0	14	1	U		05/02/2019 11:44	RLD	EPA 8260C
2-Chlorotoluene	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:44	RLD	EPA 8260C
2-Hexanone	<7.0	ug/L	7.0	24	1	U		05/02/2019 11:44	RLD	EPA 8260C
4-Chlorotoluene	<0.40	ug/L	0.40	1.5	1	U		05/02/2019 11:44	RLD	EPA 8260C
4-Methyl-2-pentanone	<6.0	ug/L	6.0	19	1	U		05/02/2019 11:44	RLD	EPA 8260C
Acetone	<9.0	ug/L	9.0	30	1	U		05/02/2019 11:44	RLD	EPA 8260C
Benzene	0.26	ug/L	0.24	0.81	1	J		05/02/2019 11:44	RLD	EPA 8260C
Bromobenzene	<0.60	ug/L	0.60	1.9	1	U		05/02/2019 11:44	RLD	EPA 8260C
Bromochloromethane	<0.80	ug/L	0.80	2.5	1	U		05/02/2019 11:44	RLD	EPA 8260C
Bromodichloromethane	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:44	RLD	EPA 8260C
Bromoform	<0.70	ug/L	0.70	2.3	1	U		05/02/2019 11:44	RLD	EPA 8260C
Bromomethane	<0.70	ug/L	0.70	2.4	1	U		05/02/2019 11:44	RLD	EPA 8260C
Carbon disulfide	<0.50	ug/L	0.50	1.6	1	U		05/02/2019 11:44	RLD	EPA 8260C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB#: 273791 Sample Description:CS-01 DNR License/Well #: 00719/X01 Sampled: 04/29/2019 1430

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Carbon tetrachloride	<0.50	ug/L	0.50	1.6	1	U		05/02/2019 11:44	RLD	EPA 8260C
Chlorobenzene	<0.50	ug/L	0.50	1.5	1	U		05/02/2019 11:44	RLD	EPA 8260C
Chloroethane	<0.50	ug/L	0.50	1.6	1	U		05/02/2019 11:44	RLD	EPA 8260C
Chloroform	<0.30	ug/L	0.30	0.90	1	U		05/02/2019 11:44	RLD	EPA 8260C
Chloromethane	<0.70	ug/L	0.70	2.5	1	U		05/02/2019 11:44	RLD	EPA 8260C
cis-1,2-Dichloroethene	<0.30	ug/L	0.30	1.0	1	U		05/02/2019 11:44	RLD	EPA 8260C
cis-1,3-Dichloropropene	<0.40	ug/L	0.40	1.2	1	U		05/02/2019 11:44	RLD	EPA 8260C
Dibromochloromethane	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:44	RLD	EPA 8260C
Dibromomethane	<0.80	ug/L	0.80	2.5	1	U		05/02/2019 11:44	RLD	EPA 8260C
Dichlorodifluoromethane	<0.40	ug/L	0.40	1.5	1	U		05/02/2019 11:44	RLD	EPA 8260C
Diisopropyl ether	<0.29	ug/L	0.29	0.97	1	U		05/02/2019 11:44	RLD	EPA 8260C
Ethylbenzene	<0.30	ug/L	0.30	1.1	1	U		05/02/2019 11:44	RLD	EPA 8260C
Hexachlorobutadiene	<0.90	ug/L	0.90	2.9	1	U		05/02/2019 11:44	RLD	EPA 8260C
Isopropylbenzene	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:44	RLD	EPA 8260C
m & p-Xylene	3.8	ug/L	0.50	1.8	1			05/02/2019 11:44	RLD	EPA 8260C
Methyl tert-butyl ether	<0.30	ug/L	0.30	1.1	1	U		05/02/2019 11:44	RLD	EPA 8260C
Methylene chloride	<0.50	ug/L	0.50	1.7	1	U		05/02/2019 11:44	RLD	EPA 8260C
n-Butylbenzene	<0.40	ug/L	0.40	1.2	1	U		05/02/2019 11:44	RLD	EPA 8260C
n-Propylbenzene	<0.50	ug/L	0.50	1.8	1	U		05/02/2019 11:44	RLD	EPA 8260C
Naphthalene	1.8	ug/L	0.70	2.2	1	J		05/02/2019 11:44	RLD	EPA 8260C
o-Xylene	2.6	ug/L	0.40	1.4	1			05/02/2019 11:44	RLD	EPA 8260C
p-Isopropyltoluene	<0.50	ug/L	0.50	1.5	1	U		05/02/2019 11:44	RLD	EPA 8260C
sec-Butylbenzene	<0.40	ug/L	0.40	1.3	1	U		05/02/2019 11:44	RLD	EPA 8260C
Styrene	<0.50	ug/L	0.50	1.7	1	U		05/02/2019 11:44	RLD	EPA 8260C
tert-Butylbenzene	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:44	RLD	EPA 8260C
Tetrachloroethene	<0.50	ug/L	0.50	1.8	1	U		05/02/2019 11:44	RLD	EPA 8260C

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CT LAB#: 273791 Sample Description:CS-01 DNR License/Well #: 00719/X01 Sampled: 04/29/2019 1430

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Tetrahydrofuran	270	ug/L	3.0	10	1			05/02/2019 11:44	RLD	EPA 8260C
Toluene	0.34	ug/L	0.30	1.1	1	J		05/02/2019 11:44	RLD	EPA 8260C
trans-1,2-Dichloroethene	<0.60	ug/L	0.60	1.9	1	U		05/02/2019 11:44	RLD	EPA 8260C
trans-1,3-Dichloropropene	<0.40	ug/L	0.40	1.4	1	U		05/02/2019 11:44	RLD	EPA 8260C
Trichloroethene	<0.30	ug/L	0.30	1.0	1	U		05/02/2019 11:44	RLD	EPA 8260C
Trichlorofluoromethane	<0.30	ug/L	0.30	1.1	1	U		05/02/2019 11:44	RLD	EPA 8260C
Vinyl chloride	<0.19	ug/L	0.19	0.64	1	U		05/02/2019 11:44	RLD	EPA 8260C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

Notes: All LOD/LOQs are adjusted to reflect dilution, percent solids, and any differences in the sample weight / volume as compared to standard amounts. "U" qualifier indicates concentration of analyte was below the detection limit. "J" qualifer indicates an estimated value between the LOD and LOQ.

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.

Submitted by: Brett M. Szymanski
Project Manager
608-356-2760

QC Qualifiers

Code	Description
B	Analyte detected in the associated Method Blank.
C	Toxicity present in BOD sample.
D	Diluted Out.
E	Safe, No Total Coliform detected.
F	Unsafe, Total Coliform detected, no E. Coli detected.
G	Unsafe, Total Coliform detected and E. Coli detected.
H	Holding time exceeded.
I	Incubator temperature was outside acceptance limits during test period.
J	Estimated value.
L	Significant peaks were detected outside the chromatographic window.
M	Matrix spike and/or Matrix Spike Duplicate recovery outside acceptance limits.
N	Insufficient BOD oxygen depletion.
O	Complete BOD oxygen depletion.
P	Concentration of analyte differs more than 40% between primary and confirmation analysis.
Q	Laboratory Control Sample outside acceptance limits.
R	See Narrative at end of report.
S	Surrogate standard recovery outside acceptance limits due to apparent matrix effects.
T	Sample received with improper preservation or temperature.
U	Analyte concentration was below detection limit.
V	Raised Quantitation or Reporting Limit due to limited sample amount or dilution for matrix background interference.
W	Sample amount received was below program minimum.
X	Analyte exceeded calibration range.
Y	Replicate/Duplicate precision outside acceptance limits.
Z	Specified calibration criteria was not met.

Current CT Laboratories Certifications

Wisconsin (WDNR) Chemistry ID# 157066030
Wisconsin (DATCP) Bacteriology ID# 105-289
Louisiana NELAP (primary) ID# ACC20160002
Illinois NELAP Lab ID# 200073
Kansas NELAP Lab ID# E-10368
Virginia NELAP Lab ID# 460203
Maryland Lab ID# WI00061
ISO/IEC 17025-2005 A2LA Cert # 3806.01
DoD-ELAP A2LA 3806.01
GA EPD Stipulation ID ACC20160002

Leachate and Surface Water Report - Sanitary Transfer and Landfill
Delafield, WI
June 24, 2019

LEACHATE MH

(LEACHATE COLLECTION MANHOLE)

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ANALYTICAL REPORT

ENVIRONMENTAL SAMPLING CORP.
FRANK PERUGINI
W125 S9808 NORTH CAPE ROAD
MUSKEGO, WI 53150

Project Name: DELAFIELD LF
Project Phase:
Project #: 04-2019
Folder #: 144664
Purchase Order #:
Contract #: 3123

Arrival Temperature: See COC
Report Date: 05/21/2019
Date Received: 04/30/2019
Reprint Date: 05/21/2019

CT LAB#: 273792 Sample Description: LEACHATE MH DNR License/Well #: 00719/292 Sampled: 04/29/2019 1420

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Field Results										
Color (Field)	CLOUDY		N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Conductivity (Field)	6130	umhos/cm	N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Odor (Field)	SLIGHT		N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
pH (Field)	6.94	S.U.	N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Temperature (Field)	11.3	Deg. C	N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Turbidity (Field)	LOW		N/A	N/A	1			04/29/2019 00:00	SUB	FIELD
Organic Results										
Volatile Organic Compounds 8260 Comments: Elevated Reporting Limits due to necessary dilution of a foaming sample.										
Qualifiers applying to all Analytes of Method EPA 8260C: T,V										
1,1,1,2-Tetrachloroethane	<6.0	ug/L	6.0	19	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,1,1-Trichloroethane	<5.0	ug/L	5.0	18	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,1,2,2-Tetrachloroethane	<7.0	ug/L	7.0	24	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,1,2-Trichloroethane	<4.0	ug/L	4.0	15	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,1-Dichloroethane	<3.0	ug/L	3.0	11	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,1-Dichloroethene	<4.0	ug/L	4.0	15	10	U		05/02/2019 12:14	RLD	EPA 8260C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB#: 273792 Sample Description:LEACHATE MH DNR License/Well #: 00719/292 Sampled: 04/29/2019 1420

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Volatile Organic Compounds 8260 Comments: Elevated Reporting Limits due to necessary dilution of a foaming sample.										
Qualifiers applying to all Analytes of Method EPA 8260C: T,V										
1,1-Dichloropropene	<7.0	ug/L	7.0	22	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,2,3-Trichlorobenzene	<8.0	ug/L	8.0	26	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,2,3-Trichloropropane	<6.0	ug/L	6.0	19	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,2,4-Trichlorobenzene	<5.0	ug/L	5.0	17	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,2,4-Trimethylbenzene	7.3	ug/L	4.0	12	10	J		05/02/2019 12:14	RLD	EPA 8260C
1,2-Dibromo-3-chloropropane	<7.0	ug/L	7.0	24	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,2-Dibromoethane	<6.0	ug/L	6.0	18	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,2-Dichlorobenzene	<6.0	ug/L	6.0	19	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,2-Dichloroethane	<2.6	ug/L	2.6	8.7	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,2-Dichloropropane	<4.0	ug/L	4.0	14	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,3,5-Trimethylbenzene	<4.0	ug/L	4.0	13	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,3-Dichlorobenzene	<5.0	ug/L	5.0	18	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,3-Dichloropropane	<5.0	ug/L	5.0	16	10	U		05/02/2019 12:14	RLD	EPA 8260C
1,4-Dichlorobenzene	<6.0	ug/L	6.0	20	10	U		05/02/2019 12:14	RLD	EPA 8260C
2,2-Dichloropropane	<5.0	ug/L	5.0	16	10	U		05/02/2019 12:14	RLD	EPA 8260C
2-Butanone	<40	ug/L	40	140	10	U		05/02/2019 12:14	RLD	EPA 8260C
2-Chlorotoluene	<4.0	ug/L	4.0	14	10	U		05/02/2019 12:14	RLD	EPA 8260C
2-Hexanone	<70	ug/L	70	240	10	U		05/02/2019 12:14	RLD	EPA 8260C
4-Chlorotoluene	<4.0	ug/L	4.0	15	10	U		05/02/2019 12:14	RLD	EPA 8260C
4-Methyl-2-pentanone	<60	ug/L	60	190	10	U		05/02/2019 12:14	RLD	EPA 8260C
Acetone	<90	ug/L	90	300	10	U		05/02/2019 12:14	RLD	EPA 8260C
Benzene	5.7	ug/L	2.4	8.1	10	J		05/02/2019 12:14	RLD	EPA 8260C
Bromobenzene	<6.0	ug/L	6.0	19	10	U		05/02/2019 12:14	RLD	EPA 8260C
Bromochloromethane	<8.0	ug/L	8.0	25	10	U		05/02/2019 12:14	RLD	EPA 8260C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB#: 273792 Sample Description:LEACHATE MH DNR License/Well #: 00719/292 Sampled: 04/29/2019 1420

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Volatile Organic Compounds 8260 Comments: Elevated Reporting Limits due to necessary dilution of a foaming sample.										
Qualifiers applying to all Analytes of Method EPA 8260C: T,V										
Bromodichloromethane	<4.0	ug/L	4.0	14	10	U		05/02/2019 12:14	RLD	EPA 8260C
Bromoform	<7.0	ug/L	7.0	23	10	U		05/02/2019 12:14	RLD	EPA 8260C
Bromomethane	<7.0	ug/L	7.0	24	10	U		05/02/2019 12:14	RLD	EPA 8260C
Carbon disulfide	<5.0	ug/L	5.0	16	10	U		05/02/2019 12:14	RLD	EPA 8260C
Carbon tetrachloride	<5.0	ug/L	5.0	16	10	U		05/02/2019 12:14	RLD	EPA 8260C
Chlorobenzene	<5.0	ug/L	5.0	15	10	U		05/02/2019 12:14	RLD	EPA 8260C
Chloroethane	<5.0	ug/L	5.0	16	10	U		05/02/2019 12:14	RLD	EPA 8260C
Chloroform	<3.0	ug/L	3.0	9.0	10	U		05/02/2019 12:14	RLD	EPA 8260C
Chloromethane	<7.0	ug/L	7.0	25	10	U		05/02/2019 12:14	RLD	EPA 8260C
cis-1,2-Dichloroethene	<3.0	ug/L	3.0	10	10	U		05/02/2019 12:14	RLD	EPA 8260C
cis-1,3-Dichloropropene	<4.0	ug/L	4.0	12	10	U		05/02/2019 12:14	RLD	EPA 8260C
Dibromochloromethane	<4.0	ug/L	4.0	14	10	U		05/02/2019 12:14	RLD	EPA 8260C
Dibromomethane	<8.0	ug/L	8.0	25	10	U		05/02/2019 12:14	RLD	EPA 8260C
Dichlorodifluoromethane	<4.0	ug/L	4.0	15	10	U		05/02/2019 12:14	RLD	EPA 8260C
Diisopropyl ether	<2.9	ug/L	2.9	9.7	10	U		05/02/2019 12:14	RLD	EPA 8260C
Ethylbenzene	7.1	ug/L	3.0	11	10	J		05/02/2019 12:14	RLD	EPA 8260C
Hexachlorobutadiene	<9.0	ug/L	9.0	29	10	U		05/02/2019 12:14	RLD	EPA 8260C
Isopropylbenzene	35	ug/L	4.0	14	10			05/02/2019 12:14	RLD	EPA 8260C
m & p-Xylene	20	ug/L	5.0	18	10			05/02/2019 12:14	RLD	EPA 8260C
Methyl tert-butyl ether	<3.0	ug/L	3.0	11	10	U		05/02/2019 12:14	RLD	EPA 8260C
Methylene chloride	<5.0	ug/L	5.0	17	10	U		05/02/2019 12:14	RLD	EPA 8260C
n-Butylbenzene	<4.0	ug/L	4.0	12	10	U		05/02/2019 12:14	RLD	EPA 8260C
n-Propylbenzene	<5.0	ug/L	5.0	18	10	U		05/02/2019 12:14	RLD	EPA 8260C
Naphthalene	17	ug/L	7.0	22	10	J		05/02/2019 12:14	RLD	EPA 8260C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

CT LAB#: 273792 Sample Description:LEACHATE MH DNR License/Well #: 00719/292 Sampled: 04/29/2019 1420

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Volatile Organic Compounds 8260 Comments: Elevated Reporting Limits due to necessary dilution of a foaming sample.										
Qualifiers applying to all Analytes of Method EPA 8260C: T,V										
o-Xylene	6.4	ug/L	4.0	14	10	J		05/02/2019 12:14	RLD	EPA 8260C
p-Isopropyltoluene	<5.0	ug/L	5.0	15	10	U		05/02/2019 12:14	RLD	EPA 8260C
sec-Butylbenzene	<4.0	ug/L	4.0	13	10	U		05/02/2019 12:14	RLD	EPA 8260C
Styrene	<5.0	ug/L	5.0	17	10	U		05/02/2019 12:14	RLD	EPA 8260C
tert-Butylbenzene	<4.0	ug/L	4.0	14	10	U		05/02/2019 12:14	RLD	EPA 8260C
Tetrachloroethene	<5.0	ug/L	5.0	18	10	U		05/02/2019 12:14	RLD	EPA 8260C
Tetrahydrofuran	220	ug/L	30	100	10			05/02/2019 12:14	RLD	EPA 8260C
Toluene	<3.0	ug/L	3.0	11	10	U		05/02/2019 12:14	RLD	EPA 8260C
trans-1,2-Dichloroethene	<6.0	ug/L	6.0	19	10	U		05/02/2019 12:14	RLD	EPA 8260C
trans-1,3-Dichloropropene	<4.0	ug/L	4.0	14	10	U		05/02/2019 12:14	RLD	EPA 8260C
Trichloroethene	<3.0	ug/L	3.0	10	10	U		05/02/2019 12:14	RLD	EPA 8260C
Trichlorofluoromethane	<3.0	ug/L	3.0	11	10	U		05/02/2019 12:14	RLD	EPA 8260C
Vinyl chloride	<1.9	ug/L	1.9	6.4	10	U		05/02/2019 12:14	RLD	EPA 8260C

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

Notes: All LOD/LOQs are adjusted to reflect dilution, percent solids, and any differences in the sample weight / volume as compared to standard amounts. "U" qualifier indicates concentration of analyte was below the detection limit. "J" qualifer indicates an estimated value between the LOD and LOQ.

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.

Submitted by: Brett M. Szymanski
Project Manager
608-356-2760

QC Qualifiers

Code	Description
B	Analyte detected in the associated Method Blank.
C	Toxicity present in BOD sample.
D	Diluted Out.
E	Safe, No Total Coliform detected.
F	Unsafe, Total Coliform detected, no E. Coli detected.
G	Unsafe, Total Coliform detected and E. Coli detected.
H	Holding time exceeded.
I	Incubator temperature was outside acceptance limits during test period.
J	Estimated value.
L	Significant peaks were detected outside the chromatographic window.
M	Matrix spike and/or Matrix Spike Duplicate recovery outside acceptance limits.
N	Insufficient BOD oxygen depletion.
O	Complete BOD oxygen depletion.
P	Concentration of analyte differs more than 40% between primary and confirmation analysis.
Q	Laboratory Control Sample outside acceptance limits.
R	See Narrative at end of report.
S	Surrogate standard recovery outside acceptance limits due to apparent matrix effects.
T	Sample received with improper preservation or temperature.
U	Analyte concentration was below detection limit.
V	Raised Quantitation or Reporting Limit due to limited sample amount or dilution for matrix background interference.
W	Sample amount received was below program minimum.
X	Analyte exceeded calibration range.
Y	Replicate/Duplicate precision outside acceptance limits.
Z	Specified calibration criteria was not met.

Current CT Laboratories Certifications

Wisconsin (WDNR) Chemistry ID# 157066030
Wisconsin (DATCP) Bacteriology ID# 105-289
Louisiana NELAP (primary) ID# ACC20160002
Illinois NELAP Lab ID# 200073
Kansas NELAP Lab ID# E-10368
Virginia NELAP Lab ID# 460203
Maryland Lab ID# WI00061
ISO/IEC 17025-2005 A2LA Cert # 3806.01
DoD-ELAP A2LA 3806.01
GA EPD Stipulation ID ACC20160002

Leachate and Surface Water Report - Sanitary Transfer and Landfill
Delafield, WI
June 24, 2019

PICTURES

- Leachate extraction manhole
- 10,000 UST leachate tank float manhole
- 10,000-gallon UST leachate load out tank before drain tile installed (November 2018)
- 10,000-gallon UST leachate load out tank after drain tile installed (December 2018)
- Leachate seep near leachate load-out area (May 2019)
- Leachate load-out pad spill (July 2018)
- 2,000-gallon UST near leachate load out area (May 2019)

Leachate Extraction Manhole and electrical pump panel (May 2019)

Leachate and Surface Water Report - Sanitary Transfer and Landfill
Delafield, WI
June 24, 2019

10,000 gallon UST leachate tank flat manhole

Leachate and Surface Water Report - Sanitary Transfer and Landfill
Delafield, WI
June 24, 2019

10,000 gallon UST leachate load out tank before drain tile installed (November 2018)

Leachate and Surface Water Report - Sanitary Transfer and Landfill
Delafield, WI
June 24, 2019

10,000 gallon UST leachate load out tank after drain tile installed (December 2018)

Leachate and Surface Water Report - Sanitary Transfer and Landfill
Delafield, WI
June 24, 2019

Leachate seep near leachate load-out area (May 2019)

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Delafield, WI
June 24, 2019

Leachate load-out pad spill (July 2018)

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Delafield, WI
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2,000 gallon UST near leachate load out area (May 2019)