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REMEDIAL BUREAU E

November 7, 2013

Mr. Payson Long
New York State Department of Environmental Conservation
Division of Environmental Remediation
525 Broadway
Albany, NY 12233

**Re: Review of Landfill Operations – Calendar Year 2012
Town of Conklin Landfill
Conklin, New York
SCE No. R09357.05**

Dear Mr. Long:

Shumaker Consulting Engineering & Land Surveying, D.P.C. (SCE) has been contracted by the Town of Conklin (Town) to assist, monitor, and report on the ongoing Operations and Maintenance activities at the Town of Conklin Landfill site.

The current Operations and Maintenance Plan for the Landfill was prepared by Rust Environment and Infrastructure, and presented in the document entitled *Operation, Maintenance, and Monitoring Plan, Conklin Landfill, Conklin, New York*, dated June 27, 1996 (O&M Plan). The plan calls for submission of an annual report summarizing activities at the landfill within the past year. According to the O&M Plan the annual report is to include:

- The results of all groundwater, surface water, and leachate quality data acquired in the past year.
- The amount of leachate from the landfill that was collected from the leachate collection trench and recovery wells.
- The results of leachate analytical results and the amount of leachate discharged to the sanitary sewer.
- Any alterations from the approved report, plans, and specifications or permit conditions, including justification for the change.
- A recent United States Environmental Protection Agency (USEPA) requirement to the Annual Report includes a certification that no groundwater wells have been installed on the landfill site, pursuant to the approved Institutional controls.

This report has been prepared by SCE on behalf of the Town in support of the annual report commitment promulgated by the O&M Plan. The data collected as part of this study is presented herein.

BINGHAMTON, NY
143 Court Street
Binghamton, NY 13901
607-798-8081 • Fax 798-8186

UTICA, NY
430 Court Street, Suite 101
Utica, NY 13502
315-724-0100 • Fax 724-3715

ALBANY, NY
1510 Central Avenue, Suite 330
Albany, NY 12205
518-452-5730 • Fax 452-9230

MONTROSE, PA
78 Public Avenue
Montrose, PA 18801
570-432-0024 • Fax 432-0024

1.0 SITE HISTORY

Two (2) landfill areas originally existed at the "Conklin Dumps Site." The areas, referred to as the upper and lower landfills, operated during the 1960s and 1970s. The areas were studied extensively in the 1980s and were subsequently nominated to the National Priorities List (NPL). A remedial action plan was selected for the site. The plan ultimately called for excavating the lower landfill and placing it on top of the upper landfill. The combined landfill was then capped and a leachate collection system was installed.

Since the remedial activities at the landfill were completed in the mid-1990s, post-closure monitoring and maintenance has been conducted under the O&M Plan, which has been in effect since that date. To date, the O&M Plan has received no authorized modifications; however, will be revised soon under an approved Site Management Plan.

2.0 ANNUAL INSPECTION OF LANDFILL

SCE technicians performed a visual inspection of the entire landfill site on September 5, 2013.

The landfill was inspected for:

- Condition of the perimeter fence and access roads.
- Brief inspection of the leachate collection system (trench manholes, pump station, storage tank, treatment building).
- Condition of the landfill cover for areas of instability, subsidence, erosion, discoloration, etc.
- Inspection of surface water drainage features for washouts, excessive sediment or debris in ditches, dislodged rip-rap, erosion, etc.
- Observed the gas venting system to determine if the vents have been damaged or disturbed.
- Condition of the monitoring and leachate recovery wells.

Overall, the site and landfill cap appears to be in good condition. Visual Inspections and Maintenance at the landfill has been performed at least monthly by Town forces; however, a formal record of inspections and repair work performed is not maintained. The mowing schedule appears to be maintaining the integrity of the short rooted vegetative cover. Access roads were noted to be slightly overgrown but easily traversable. The site entrance was maintained and accessible; however, the southeastern entrance would be difficult to access with a vehicle. The security fence was observed to be in good condition. Surface drainage features appear to be in good condition; however, a portion of the vegetated swale on the western side seems to be collecting water and is recommended to be re-graded to prevent water accumulation.

Monitoring wells and gas vents appeared to be in generally good repair. All monitoring wells are equipped with dedicated bailers and covers that are locked. The tree close to MW-12 has been cut down and a clear path to MW-12 has been cleared. MW-2, a well used for groundwater depth measurements only, is reported to have a blockage proximately 19-feet below the top and, therefore, no water level was recorded during the inspection. The blockage at MW-2 does not seem to be impacting the overall quality of data collected from the site.

During the site inspection water level measurements were taken at the wells using an electronic water level detector. These water levels were then used to create a groundwater contour map included as Figure 1.

The leachate recovery system was observed during this field visit. Based on control panel observations, the pumps, level monitors, and controls appeared to be functioning normally. No abnormal groundwater contaminant concentrations or levels suggest that the leachate recovery system is not functioning per design.

The leachate handling system was also inspected in support of this report. The exterior of the building that houses the leachate handling system was noted to be in good condition and no major structural or plumbing deficiencies were noted on the interior components. The exterior of the building shows signs of weathering and the soffit fascia on the west side appears to be deteriorating. The leachate collection tank has paint peeling and some rust spots showing. However, it was observed that the secondary containment for the leachate tank has accumulated some stormwater due to a failed rain skirt. Also, the valve that drains the secondary containment is cracked and will need to be replaced. It is recommended that the rain skirt and valve be replaced, and that the containment dike be drained periodically during the monthly visual inspection by the Town.

The building is equipped with a sump pit as a form of containment. The pit contained several inches of accumulated water, and it was apparent that the sump pump was not functioning as designed. The float for the sump pump had been caught and once dislodged the pump began to run.

3.0 LEACHATE DISCHARGES

The Site is equipped with a leachate collection system that includes leachate recovery wells and trenches. Leachate is temporarily stored in a pump station prior to being transferred to a 30,000-gallon aboveground storage tank (AST). The leachate is stored in the tank until it is sampled and submitted for laboratory analysis. After analytical results are received the leachate is discharged to the sewer system. As previously noted, the discharge of the leachate is regulated through an IWPP Permit with the Binghamton-Johnson City Joint Sewage Board (BJCJSB). The permit was most recently updated in September 2009.

Leachate is generally discharged once a year. The Town has coordinated discharge of the leachate with the annual inspection of the facility conducted by the BJCJSB. The Town utilizes the analytical data gathered by the BJCJSB to determine if the leachate is within their permitted effluent limitations prior to discharging to the sewer system. The Town then reports to the BJCJSB when they discharge the leachate.

On November 26, 2012, a total of 24,808 gallons of leachate was discharged into the sanitary sewer system. This discharge was a 2-year accumulation because in 2011, by the time the Town was given authorization by the BJCJSB to discharge the leachate, the contents of the leachate collection tank had become frozen. The discharge report from the Town is included as an attachment herein as Appendix A.

At this time, the Town does not track the amount of leachate recovered from each of the three (3) recovery wells. However, the Town does regularly monitor the leachate level in the storage tank to ensure that the tank is not in danger overflow. A tank level detector has been installed and is part of the tank level monitoring system.

4.0 GROUNDWATER AND SURFACE WATER QUALITY ASSESSMENT

The landfill is required to sample a selection of monitoring wells and a surface water (Carlin Creek) every quarter. One (1) round each year must be analyzed for Part 360 baseline parameters.

The Town has contracted with Benchmark Analytics, Inc. (Benchmark) to perform the quarterly sampling. The site was assessed and sampled by a representative from Test Assured Network, a subcontractor to Benchmark on:

- March 12, 2012
- June 20, 2012
- September 20, 2012
- November 8, 2012

The laboratory narratives for the sampling events do not indicate any problems with the sampling or analysis. A correction for the November report was sent in order to correct a small error on the Ammonia for MW-4. A summary of laboratory analytical data and full laboratory reports for 2011-2012 are attached as Appendix B.

4.1. GROUNDWATER QUALITY ASSESSMENT

None of the wells sampled during the Benchmark Sampling Events on March 22, 2012, indicated that concentrations of the identified leachate marker compounds Chloroethane, 1,2-Dichloropropane, Methylene Chloride, or Xylenes were present above detection limits in any of the samples.

The upgradient well, MW-1 exhibited elevated concentrations of Sodium in the March sample. Although no specific source has been identified, the source for Sodium is speculated to be road salt from nearby roadway surfaces and parking lots.

All of the downgradient wells contained elevated levels of inorganics including Iron, Manganese, Lead, and Thallium. In many instances, the concentrations exceed the New York State Department of Environmental Conservation (NYSDEC) drinking water standards. Since very few of these contaminants are present in the upgradient well MW-1, and none of the contaminants have been detected in the downgradient surface water samples at Carlin Creek, it may be suspected that the increased concentrations are caused by the chemical reduction zone under the landfill or by the acidification of silt in the water sample during preservation. During the upcoming 2013 sampling rounds, filtered and unfiltered inorganic samples will be collected for comparison. Filtering may greatly reduce the potential impact of silt on the analytical results.

Iron and Manganese were the two (2) most commonly found inorganics and were present in elevated levels in all downgradient wells. Overall, there seems to be less Lead and Thallium in this year's samples compared to previous years; however, both MW-38D and MW-3 had samples with elevated levels of lead.

Throughout the year, the well containing the most parameters in excess of NYSDEC drinking water standards was MW-38D. MW-38D was found to contain consistently high levels of Lead, Magnesium, and Sodium. High levels of Chromium, Copper, Magnesium, Nickel, and Lead were also found in the baseline sample in March. There are no upgradient samples which correlate with these contaminant concentrations; however, it has been noted that MW-38D also contained a significant buildup of accumulated silt within the well.

4.2. SURFACE WATER QUALITY ASSESSMENT

The quarterly surface water samples collected from the Carlin Creek do not contain any of the contaminants detected in the groundwater monitoring program. All Part 360 parameters collected from Carlin Creek are below state standards, and do not appear to be trending higher over time. The only contaminant found to exceed state standards in Carlin Creek in 2012 is Sodium. Although no specific source has been identified, the source for Sodium is speculated to be road salt from nearby roadway surfaces and parking lots. Additionally, the sample taken in June had a pH of 6.39 which is below the guidance value of 6.5

No volatile organic compounds (VOC) were detected in the Benchmark analysis at the Carlin Creek sampling point.

5.0 POTENTIAL RE-USE EVALUATION

Currently, there is no guidance available at the NYSDEC for potential re-use scenarios for capped landfill sites. Many landfill sites are re-used for municipal solid waste facilities, equipment storage sites, cellular antennae sites, or for other municipal functions such as police department shooting ranges and training facilities. A promising re-use as a solar energy collection site has been evaluated; however, the land slope makes that alternative impractical. Following an objective evaluation of the very steep slopes on the Conklin landfill site, there are few reasonable re-use alternatives readily identified for the site. This is especially true because of the readily available Greenfield sites in the Town which make development options in the former landfill less desirable.

6.0 CERTIFICATION OF INSTITUTIONAL CONTROLS

In accordance with the Institutional Controls, the site was inspected and no evidence of new groundwater wells or other disruptive activities were observed. The Institutional Controls prohibit any activities that could damage the landfill cover including digging, construction, and excavation without prior consent of the USEPA. Additionally, no groundwater wells for drinking water are allowed on any portion of the upper landfill. No activities regulated by the Institutional Controls were observed or authorized for this site.

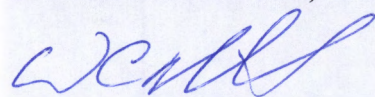
7.0 RECOMMENDATIONS

Based on the observations of the past year of landfill operations, SCE recommends the following:

- Accumulated silt in MW-38D may be suspected for impacting the measured water quality from this well. Further, the analytical laboratory should filter the analytical sample to prevent the dissolution of metal contaminants during sample preservation.
- Repair the rain skirt from the leachate tank secondary containment structure. Periodically inspect and drain the accumulated stormwater from the secondary containment structure.
- The vegetated swale on the western side should be regarded so that water does not accumulate in those areas.
- The valve on the secondary containment dike and should be replaced.
- Exterior painting and restoration of the pump house.
- Fill any animal burrows and eradicate the animals.
- More frequent inspections of the sump pump to ensure the float switch does not become stuck in the on or off position.

Very truly yours,

**SHUMAKER CONSULTING ENGINEERING
& LAND SURVEYING, D.P.C.**



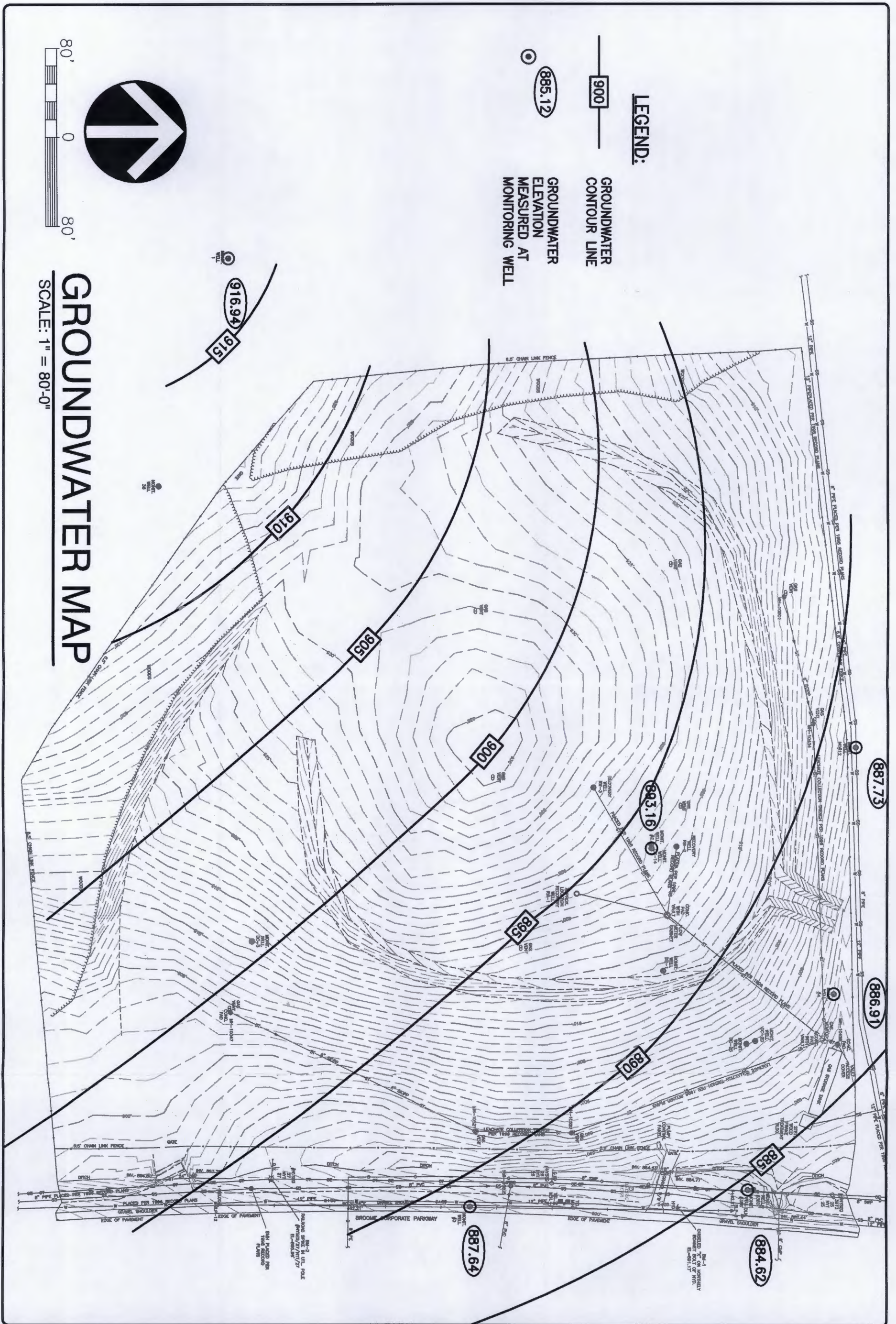
W. Curtis Nichols, P.E., LEED-AP
Managing Engineer

WCN/krf

Enclosures

cc: James Finch, Town of Conklin
Tom Delamarter, Town of Conklin
George Jacobs, USEPA

FIGURE 1
GROUNDWATER CONTOUR MAP



CONKLIN LANDFILL
FOLLOW-UP REPORT

1271 CONKLIN ROAD
CONKLIN, NEW YORK

DRAWING TITLE
JULY 2008
GROUNDWATER
POTENTIOMETRIC MAP

Drawn By: FRC
Checked By: WCN
Project Mgr: WCN
Date: 11/04/13
Project No: R09357

FIGURE
1

APPENDIX A
DISCHARGE REPORT



1271 Conklin Road • P.O. Box 182 • Conklin, New York 13748
Phone (607) 775-4114 • Fax (607) 775-1434

November 26, 2012

Binghamton-Johnson City Joint Sewage Board
4480 Old Vestal Road
Vestal, NY 13850

Attn: Catherine Aingworth

Dear Mrs. Aingworth,

The Town of Conklin on November 26, 2012, discharged approximately 24,808 gallons of leachate from the Town of Conklin Landfill into the sewage system. Time of discharge was 9:00 a.m.

Very truly yours,

A handwritten signature in black ink that reads "Thomas P. DeLamarter". The signature is written in a cursive style with a large, prominent initial "T".

Thomas P. DeLamarter
Water & Sewer Superintendent

APPENDIX B

LABORATORY REPORTS

Shumaker Consulting Engineering and Land Surveying, P.C.
Analytical History for the Conklin Landfill
SCE Project 08126.00

Analyte (Note 1)	Units	Date Sampled: Guidance Value	3/17/2008	6/24/2008	3/17/2009	6/3/2009	8/19/2009	10/21/2009	3/10/2010	6/2/2010	9/20/2010	12/28/2010	3/30/2011	6/29/2011	8/31/2011	11/29/2011	3/22/2012	6/20/2012	9/20/2012	11/8/2012
			Value																	
Chloroethane	ug/l	5	-	<0.005	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-
1,2-Dichloropropane	ug/l	1	-	<0.005	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-
Methylene chloride	ug/l	5	-	<0.005	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-
o-Xylene	ug/l	5	-	<0.005	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-
m,p-Xylene	ug/l	5	-	<0.005	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-
Alkalinity as CaCO3	mg/l		236	232	242	238	253	246	230	254	26	242	244	134	258	246	222	254	254	250
Ammonia as N	mg/l	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Biochemical Oxygen Demand-5 Chloride	mg/l	250	1.6	1.23	1.74	1.85	2.97	2.49	2.36	2.24	1.57	1.23	0.94	1.32	1.52	1.20	1.72	<10.0	<10.0	<10.0
Chemical Oxygen Demand	mg/l		<10	<10	47	<10	<10	<10	<10	<10	24	14	28	<10	<10	21	<10	<10	11	32
Hexavalent Chromium	mg/l		-	<0.01	-	-	<0.01	-	-	-	-	<0.01	<0.01	-	-	-	<0.01	-	-	-
Nitrate as N	mg/l	10	0.11	0.1	0.05	<0.05	0.18	0.07	<0.05	<0.05	0.39	0.2	0.15	0.10	0.08	0.07	<0.05	<0.05	0.06	0.07
pH	pH Units	6.5-8.5	8.22	7.7	7.71	7.69	7.54	7.69	7.21	7.77	7.39	7.58	7.44	7.75	7.68	7.47	7.16	7.74	7.51	7.44
Phenol	mg/l	0.001	<0.025	<0.025	<0.025	<0.025	0.039	<0.025	0.084	<0.025	0.077	<0.025	0.029	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Total Dissolved Solids	mg/l	500	260	250	218	205	443	372	228	284	275	233	303	226	244	227	291	238	262	225
Sulfate as SO4	mg/l	250	5.76	6.21	5.8	5.67	6.15	6.1	7.75	6.6	14.3	10.2	11.4	11.1	10.3	9.52	8.16	<10.0	<10.0	<10.0
Total Kjeldahl Nitrogen	mg/l		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Organic Carbon	mg/l		1.3	0.7	<0.5	<0.5	0.7	<0.5	0.6	0.5	0.6	<0.5	<0.5	0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
Total Hardness as CaCO3	mg/l		203	206	192	207	205	211	220	238	260	219	232	223	230	215	218	227	196	221
Color	Color Units	5	-	<5	-	-	<5	-	-	-	-	<5	<5	-	-	-	<5	-	-	-
Cyanide	mg/l	0.2	-	<0.010	-	-	<0.010	-	-	-	-	<0.010	<0.010	-	-	-	<0.010	-	-	-
Bromide	mg/l	2	<0.050	<0.25	<0.050	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.20	<0.20	<0.20
Mercury	mg/l	0.0007	-	<0.0002	-	-	<0.0002	-	-	-	-	<0.0002	<0.0002	-	-	-	<0.0002	-	-	-
Silver	mg/l	0.05	-	<0.002	-	-	<0.002	-	-	-	-	<0.002	<0.002	-	-	-	<0.002	-	-	-
Aluminum	mg/l		-	<0.050	-	-	0.567	-	-	-	-	<0.050	7.65	-	-	-	<0.025	-	-	-
Arsenic	mg/l	0.025	-	<0.025	-	-	<0.025	-	-	-	-	<0.025	<0.025	-	-	-	<0.010	-	-	-
Boron	mg/l	1	-	<0.100	-	-	<0.100	-	-	-	-	<0.100	<0.100	-	-	-	0.075	-	-	-
Barium	mg/l	1	-	0.013	-	-	0.026	-	-	-	-	0.023	0.078	-	-	-	0.022	-	-	-
Beryllium	mg/l	0.03	-	<0.001	-	-	<0.001	-	-	-	-	<0.001	<0.001	-	-	-	<0.001	-	-	-
Calcium	mg/l		<0.001	51.4	47.6	52.2	53.4	52.1	55.9	60.8	61.7	56	60.6	56.8	61.0	55	56.1	59.9	50.3	58.1
Cadmium	mg/l	0.005	50.3	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/l		-	<0.010	-	-	<0.010	-	-	-	-	<0.010	<0.010	-	-	-	<0.002	-	-	-
Chromium	mg/l	0.05	-	<0.010	-	-	<0.010	-	-	-	-	<0.010	0.010	-	-	-	<0.002	-	-	-
Copper	mg/l	0.2	-	<0.010	-	-	<0.010	-	-	-	-	<0.010	0.029	-	-	-	<0.002	-	-	-
Iron	mg/l	0.3	0.126	<0.020	0.949	<0.020	0.865	<0.020	0.048	18.2	12.5	0.064	14.2	0.170	0.066	0.047	0.026	0.084	0.019	0.023
Potassium	mg/l		2.19	2.25	1.88	1.74	1.6	1.84	1.77	3.09	4.9	1.62	2.85	1.95	1.66	1.58	1.53	1.51	1.44	1.49
Magnesium	mg/l	35	18.7	18.9	17.8	18.7	17.4	19.6	19.3	21	20.6	19.1	19.6	19.8	19	18.9	18.9	18.7	17.1	18.5
Manganese	mg/l	0.3	0.634	0.074	0.079	0.011	0.067	0.017	0.111	0.753	0.449	0.133	0.592	0.067	0.251	0.080	0.092	0.047	0.008	0.011
Sodium	mg/l	20	15	16.7	12.9	18.2	20.9	19.3	21.5	22.5	26	20.4	23.6	24.1	21.5	19.3	20.8	19.6	16.4	21.4
Nickel	mg/l	0.1	-	<0.010	-	-	<0.010	-	-	-	-	<0.010	0.012	-	-	-	<0.002	-	-	-
Lead	mg/l	0.025	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Antimony	mg/l	0.03	-	<0.020	-	-	<0.020	-	-	-	-	<0.020	<0.020	-	-	-	<0.020	-	-	-
Thallium	mg/l	0.0005	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Vanadium	mg/l		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	0.012	0.018	<0.010	0.011	<0.010	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	mg/l	2	0.008	<0.005	0.011	<0.005	0.008	<0.005	<0.005	0.055	0.036	0.008	0.043	0.014	<0.005	0.010	0.006	<0.005	<0.005	<0.005
Selenium	mg/l	0.01	-	<0.040	-	-	<0.040	-	-	-	-	<0.040	<0.040	-	-	-	<0.040	-	-	-

Notes
1. Full analytical reports for the Target Compound List were analyzed but were not detected. Contaminants of concern plus Organic compounds listed herein are for the Methylene Chloride, which has been detected above standards in one sampling event.
2. Highlighted cell indicates compound detected above applicable regulatory limit.

Shumaker Consulting Engineering and Land Surveying, P.C.
Analytical History for the Conklin Landfill
SCE Project 08126.00

Monitoring Well 3 Analyte (Note 1)	Units	Date Sampled: Guidance Value	3/17/2008	6/24/2008	3/17/2009	6/3/2009	8/19/2009	10/21/2009	3/10/2010	6/2/2010	9/20/2010	12/28/2010	3/30/2011	6/29/2011	8/31/2011	11/28/2011	3/22/2012	6/20/2012	9/20/2012	11/8/2012
			Value																	
Chloroethane	ug/l	5	-	<0.005	-	-	<0.001	-	-	-	-	<0.005	-	-	-	-	<0.005	-	-	-
1,2-Dichloropropane	ug/l	1	-	<0.005	-	-	<0.001	-	-	-	-	<0.005	-	-	-	-	<0.005	-	-	-
Methylene chloride	ug/l	5	-	<0.005	-	-	<0.001	-	-	-	-	<0.005	-	-	-	-	<0.005	-	-	-
<i>o</i> -Xylene	ug/l	5	-	<0.005	-	-	<0.001	-	-	-	-	<0.005	-	-	-	-	<0.005	-	-	-
<i>m,p</i> -Xylene	ug/l	5	-	<0.005	-	-	<0.001	-	-	-	-	<0.005	-	-	-	-	<0.005	-	-	-
Alkalinity as CaCO3	mg/l		172	148	168	82	105	144	122	140	140	126	154	126	128	122	124	124	122	122
Ammonia as N	mg/l	2	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Biochemical Oxygen Demand-5	mg/l		<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Chloride	mg/l	250	366	120	20.6	20.4	16.3	15.3	11.2	11.4	11.7	13.5	14.2	12.1	10.2	11.1	7.88	<10	<10.0	<10
Chemical Oxygen Demand	mg/l		53	108	23	23	70	<10	13	<10	58	114	92	69	91	36	29	<10	<10	120
Hexavalent Chromium	mg/l		-	<0.01	-	-	<0.01	-	-	-	-	<0.01	<0.01	-	-	-	<0.01	-	-	-
Nitrate as N	mg/l	10	0.15	0.05	<0.05	0.03	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	0.07	<0.05	<0.05	<0.05	<0.05	<0.05
pH	pH Units	6.5-8.5	7.77	6.89	6.74	6.45	6.49	6.71	6.51	6.61	6.36	6.52	6.45	6.68	6.46	6.32	6.54	6.4	6.37	6.13
Phenol	mg/l	0.001	<0.025	<0.025	<0.025	<0.025	<0.025	0.074	<0.025	<0.025	0.036	<0.025	<0.025	<0.025	0.138	<0.025	<0.025	<0.025	<0.025	<0.025
Total Dissolved Solids	mg/l	500	784	304	70	242	16,200	370	163	290	189	208	212	-	196	133	154	122	140	148
Sulfate as SO4	mg/l	250	20.6	19.3	18.6	15.9	16	14.2	12.2	14.5	13.4	10.8	11.1	11.5	11.6	11.1	10.5	<10.0	<10	<10.00
Total Kjeldahl Nitrogen	mg/l		<1.0	1.9	2	<1.0	<1.0	<1.0	<1.0	<1.0	3.9	<1.0	<1.0	1.2	1.7	<1.0	<1.0	<1.0	<1.0	1.1
Total Organic Carbon	mg/l		2.3	2.2	2.1	2	2	2	1.8	2	1.9	1.8	1.6	1.7	1.6	1.5	1.4	1.5	1.6	4.1
Total Hardness as CaCO3	mg/l		155	217	2099	290	289	354	197	694	140	203	237	156	279	198	255	319	116	146
Color	Color Units	5	-	8	-	-	<5	-	-	-	-	15	12	-	-	-	100	-	-	-
Cyanide	mg/l	0.2	-	<0.010	-	-	<0.010	-	-	-	-	<0.010	<0.010	-	-	-	<0.010	-	-	-
Bromide	mg/l	2	<0.25	<0.25	0.11	0.09	0.11	0.12	0.09	<0.05	0.09	0.09	0.09	0.09	0.08	0.07	0.16	<0.20	<0.20	<0.20
Mercury	mg/l	0.0007	-	<0.0002	-	-	<0.0002	-	-	-	-	<0.0002	<0.0002	-	-	-	<0.0002	-	-	-
Silver	mg/l	0.05	-	<0.002	-	-	0.002	-	-	-	-	0.005	<0.002	-	-	-	<0.002	-	-	-
Aluminum	mg/l		-	13	-	-	61.5	-	-	-	-	44.6	58.5	-	-	-	76.6	-	-	-
Arsenic	mg/l	0.025	-	<0.025	-	-	0.039	-	-	-	-	0.032	0.040	-	-	-	0.06	-	-	-
Boron	mg/l	1	-	<0.100	-	-	<0.1	-	-	-	-	<0.100	<0.100	-	-	-	0.053	-	-	-
Barium	mg/l	1	-	0.289	-	-	0.868	-	-	-	-	0.217	0.293	-	-	-	0.308	-	-	-
Beryllium	mg/l	0.03	-	<0.001	-	-	0.004	-	-	-	-	0.002	0.003	-	-	-	0.003	-	-	-
Calcium	mg/l		47.2	56.8	205	69.5	65.2	51.9	40.5	90.6	96.6	42.3	48.1	38.8	49.0	40.4	43.3	47.4	32.5	35.8
Cadmium	mg/l	0.005	<0.001	<0.001	0.034	<0.001	<0.001	<0.005	<0.001	<0.009	<0.009	<0.001	0.002	<0.001	0.002	<0.001	0.002	<0.005	<0.001	<0.001
Cobalt	mg/l		-	0.012	-	-	0.071	-	-	-	-	0.4	0.053	-	-	-	0.076	-	-	-
Chromium	mg/l	0.05	-	0.021	-	-	0.065	-	-	-	-	0.054	0.074	-	-	-	0.105	-	-	-
Copper	mg/l	0.2	-	0.067	-	-	0.132	-	-	-	-	0.071	0.094	-	-	-	0.167	-	-	-
Iron	mg/l	0.3	4.04	31.5	1970	97.3	114	302	94.1	627	628	96.2	125	36.9	182	97.3	181	336	4.95	33.4
Potassium	mg/l		1.34	3.15	34.3	4.98	5.69	6.32	4.36	10.3	10.7	4.54	4.73	1.98	5.35	4.24	5.4	6.86	1.13	2.49
Magnesium	mg/l	35	8.98	18.1	366	28.3	30.6	54.7	23.3	114	112	23.5	28.3	14.4	38.2	23.5	35.8	48.7	8.53	13.6
Manganese	mg/l	0.3	5.17	12.5	74.5	4.77	3.47	3.49	1.18	10.1	7.92	1.25	1.52	0.631	2.1	1.23	2.11	3.26	0.273	0.71
Sodium	mg/l	20	227	38.3	22.9	12.4	14.9	12.8	11.7	13.6	11.8	12	10.7	12.1	11.1	11.0	10.4	10.3	11.3	11.3
Nickel	mg/l	0.1	-	0.023	-	-	0.119	-	-	-	-	0.09	0.116	-	-	-	0.176	-	-	-
Lead	mg/l	0.025	<0.010	0.021	1.33	0.064	0.077	0.121	0.041	0.309	0.292	0.038	0.054	0.012	0.082	0.039	0.07	0.098	<0.010	0.015
Antimony	mg/l	0.03	-	<0.020	-	-	<0.02	-	-	-	-	<0.020	<0.020	-	-	-	<0.020	-	-	-
Thallium	mg/l	0.0005	<0.025	<0.025	<0.425	0.072	<0.025	<0.125	0.034	0.313	<0.225	<0.225	<0.025	<0.025	<0.025	<0.025	<0.025	<0.125	<0.025	<0.025
Vanadium	mg/l		<0.010	<0.020	1.1	0.067	0.078	0.157	0.056	0.308	0.317	0.054	0.080	0.021	0.098	0.052	0.106	0.183	<0.005	0.016
Zinc	mg/l	2	0.015	0.087	6.32	0.505	0.33	0.733	0.226	1.52	1.44	0.226	0.304	0.105	0.446	0.244	0.444	0.809	<0.019	0.089
Selenium	mg/l	0.01	-	<0.040	-	-	<0.040	-	-	-	-	<0.040	<0.040	-	-	-	<0.040	-	-	-

Notes

1. Full analytical reports for the Target Compound List were analyzed but were not detected. Contaminants of concern plus Organic compounds listed herein are for the Methylene Chloride, which has been detected above standards in one sampling event.
2. Highlighted cell indicates compound detected above applicable regulatory limit.

Shumaker Consulting Engineering and Land Surveying, P.C.
Analytical History for the Conklin Landfill
SCE Project 08126.00

Monitoring Well 12	Analyte (Note 1)	Units	Date Sampled:	3/17/2009	6/3/2009	8/19/2009	6/21/2009	3/10/2010	6/2/2010	9/20/2010	12/29/2010	3/30/2011	6/29/2011	8/31/2011	11/29/2011	3/22/2012	6/20/2012	9/20/2012	11/8/2012	
			Guidance Value																	
	Chloroethane	ug/l	5	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-	
	1,2-Dichloropropane	ug/l	1	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-	
	Methylene chloride	ug/l	5	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-	
	o-Xylene	ug/l	5	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-	
	m,p-Xylene	ug/l	5	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-	
	Alkalinity as CaCO3	mg/l		66	98	120	98	68	116	114	100	104	126	80	88		96	146	116	92
	Ammonia as N	mg/l	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Biochemical Oxygen Demand-5 Chloride	mg/l		<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	
	Chemical Oxygen Demand	mg/l	250	5.67	4.79	6.35	5.23	6.09	8.77	9.58	5.6	5.83	8.37	10.3	5.97	5.21	<10.0	<10.0	<10	
	Hexavalent Chromium	mg/l		-	-	<0.01	-	-	-	-	<0.01	<0.01	-	-	-	<0.01	-	-	-	
	Nitrate as N	mg/l	10	<0.05	<0.05	0.08	0.19	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	0.06	<0.05	<0.05	0.07	<0.05	<0.05	
	pH	pH Units	6.5-8.5	6.51	6.25	6.53	6.66	5.88	6.33	6.25	6.34	6.38	6.50	-	6.11	5.99	6.29	6.12	5.99	
	Phenol	mg/l	0.001	<0.025	<0.025	0.06	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	
	Total Dissolved Solids	mg/l	500	25	52	553	276	128	169	160	553	178	100	152	134	172	160	147	93	
	Sulfate as SO4	mg/l	250	14.6	13.4	15.7	13.9	11.2	12.3	11.1	190	14.1	14.2	13.1	14.0	13.7	14.3	13.6	1	
	Total Kjeldahl Nitrogen	mg/l		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	Total Organic Carbon	mg/l		1.4	1.3	3.2	2.2	0.9	1.2	1.7	1.1	1.3	1.5	1.2	1.1	0.8	1.2	1	0.8	
	Total Hardness as CaCO3	mg/l		144	38.5	217	124	30.2	116	116	702	95.2	133	101	86.6	48	146	75	39.1	
	Color	Color Units	5	-	-	<5	-	-	-	-	18	<5	-	-	-	<5	-	-	-	
	Cyanide	mg/l	0.2	-	-	<0.010	-	-	-	-	<0.010	<0.010	-	-	-	<0.010	-	-	-	
	Bromide	mg/l	2	0.22	0.19	0.27	0.25	<0.05	0.24	0.22	0.23	0.25	0.41	0.14	0.20	0.33	0.29	0.31	<0.20	
	Mercury	mg/l	0.0007	-	-	0.0002	-	-	-	-	<0.0002	<0.0002	-	-	-	<0.0002	-	-	-	
	Silver	mg/l	0.05	-	-	0.004	-	-	-	-	<0.002	<0.002	-	-	-	<0.002	-	-	-	
	Aluminum	mg/l		-	-	60.9	-	-	-	-	11.3	5.78	-	-	-	0.177	-	-	-	
	Arsenic	mg/l	0.025	-	-	0.102	-	-	-	-	<0.025	<0.025	-	-	-	<0.010	-	-	-	
	Boron	mg/l	1	-	-	<0.100	-	-	-	-	<0.100	<0.100	-	-	-	<0.025	-	-	-	
	Barium	mg/l	1	-	-	0.449	-	-	-	-	0.1	0.055	-	-	-	0.01	-	-	-	
	Beryllium	mg/l	0.03	-	-	0.003	-	-	-	-	<0.001	<0.001	-	-	-	<0.001	-	-	-	
	Calcium	mg/l		31.9	9.49	43.2	26	7.39	29.9	31.9	263	23.9	33	25.2	22.1	12.1	37.5	19.2	9.79	
	Cadmium	mg/l	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Cobalt	mg/l		-	-	0.048	-	-	-	-	<0.01	<0.010	-	-	-	<0.002	-	-	-	
	Chromium	mg/l	0.05	-	-	0.066	-	-	-	-	0.015	<0.010	-	-	-	<0.002	-	-	-	
	Copper	mg/l	0.2	-	-	0.151	-	-	-	-	<0.01	0.016	-	-	-	<0.002	-	-	-	
	Iron	mg/l	0.3	45.8	2.67	138	61.9	1.57	2.19	1.2	23.5	10.3	13.6	17.1	5.33	0.216	12.4	0.15	0.877	
	Potassium	mg/l		3.19	0.847	5.53	3.17	0.747	0.713	0.948	2.06	1.28	1.32	1.85	0.977	<0.500	1.48	<0.500	<0.500	
	Magnesium	mg/l	35	15.5	3.6	26.5	14.4	2.85	10.1	9.43	10.8	8.64	12.1	9.17	7.63	4.34	12.6	6.57	3.56	
	Manganese	mg/l	0.3	5.55	0.525	12.4	5.37	0.286	0.317	0.421	2.72	1.39	2.45	3.01	1.12	0.05	1.57	0.032	0.15	
	Sodium	mg/l	20	10.5	6.58	10.2	9.5	5.67	9.73	9.39	10.3	9.47	11.0	8.22	9.97	7.6	11.2	8.95	7.32	
	Nickel	mg/l	0.1	-	-	0.108	-	-	-	-	0.021	<0.010	-	-	-	<0.002	-	-	-	
	Lead	mg/l	0.025	0.02	<0.010	0.075	0.027	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
	Antimony	mg/l	0.03	-	-	<0.020	-	-	-	-	<0.020	<0.020	-	-	-	<0.020	-	-	-	
	Thallium	mg/l	0.0005	0.072	<0.025	<0.025	0.083	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	
	Vanadium	mg/l		0.026	<0.010	0.065	0.031	<0.010	<0.010	<0.010	0.014	<0.010	0.007	0.011	<0.005	<0.005	0.01	<0.005	<0.005	
	Zinc	mg/l	2	0.099	0.008	0.3	0.136	0.006	0.011	<0.005	0.055	0.021	0.036	0.037	0.025	<0.005	0.028	<0.005	<0.005	
	Selenium	mg/l	0.01	-	-	<0.040	-	-	-	-	<0.040	<0.040	-	-	-	<0.040	-	-	-	

- Notes**
1. Full analytical reports for the Target Compound List were analyzed but were not detected.
Contaminants of concern plus Organic compounds listed herein are for the Methylene Chloride, which has been detected above standards in one sampling event.
2. Highlighted cell indicates compound detected above applicable regulatory limit.

Shumaker Consulting Engineering and Land Surveying, P.C.
Analytical History for the Conklin Landfill
SCE Project 08128.00

Carlin Creek	Date Sampled:	Units	Guidance Value	3/17/2009	6/3/2009	8/19/2009	10/21/2009	3/10/2010	6/2/2010*	12/29/2010	3/30/2011	6/29/2011	8/31/2011	11/29/2011	3/22/2012	6/20/2012	9/20/2012	11/8/2012
Chloroethane	ug/l	5	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-
1,2-Dichloropropane	ug/l	1	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-
Methylene chloride	ug/l	5	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-
o-Xylene	ug/l	5	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-
m,p-Xylene	ug/l	5	-	-	<0.001	-	-	-	-	<0.005	<0.0050	-	-	-	<0.0050	-	-	-
Alkalinity as CaCO3	mg/l		18	48	57	50	30	50	28	22	66	36	30	34	46	52	36	
Ammonia as N	mg/l	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Biochemical Oxygen Demand-5	mg/l		<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Chloride	mg/l	250	41.3	28.6	48	44.9	80.4	34.9	27.5	56.1	31.4	23.3	15.8	42.2	30.3	38.2	22.5	
Chemical Oxygen Demand	mg/l		37	11	8	<10	<10	<10	<10	18	<10	16	17	<10	23	16	35	
Hexavalent Chromium	mg/l		-	-	<0.01	-	-	-	<0.01	<0.01	-	-	-	<0.01	-	-	-	
Nitrate as N	mg/l	10	0.36	0.08	<0.05	0.16	0.53	<0.05	<0.05	<0.05	<0.05	0.38	0.11	0.18	<0.05	0.1	0.06	
pH	pH Units	6.5-8.5	7.31	7	6.88	7.23	7.26	7.77	0.37	7.34	6.79	6.9	7.41	7.07	6.39	7.35	7.31	
Phenol	mg/l	0.001	<0.025	<0.025	<0.025	<0.025	0.138	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Total Dissolved Solids	mg/l	500	92	11	240	160	203	130	170	135	90	85	56	130	79	158	85	
Sulfate as SO4	mg/l	250	10.3	8.86	10.4	10.9	8.24	8.86	9.09	8.75	8.24	8.98	7.66	8.77	<10.0	<10.0	<10.0	
Total Kjeldahl Nitrogen	mg/l		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	
Total Organic Carbon	mg/l		1.6	2.2	1.6	18	2.8	1.9	2	1.2	3.3	2.7	2.0	1.8	1.9	4.2	2.2	
Total Hardness as CaCO3	mg/l		36.2	48	57	50	62.1	48.7	38	37.8	48.4	37.4	-	44.1	50.3	49.9	37.4	
Color	Color Units	5	-	-	<5	-	-	-	<5	<5	-	-	-	<5	-	-	-	
Cyanide	mg/l	0.2	-	-	<0.010	-	-	-	<0.010	<0.010	-	-	-	<0.010	-	-	-	
Bromide	mg/l	2	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.20	<0.20	<0.20	
Mercury	mg/l	0.0007	-	-	<0.0002	-	-	-	<0.0002	<0.0002	-	-	-	<0.0002	-	-	-	
Silver	mg/l	0.05	-	-	<0.002	-	-	-	<0.002	<0.002	-	-	-	<0.002	-	-	-	
Aluminum	mg/l		-	-	0.625	-	-	-	0.053	0.098	-	-	-	0.096	-	-	-	
Arsenic	mg/l	0.025	-	-	<0.025	-	-	-	<0.025	<0.025	-	-	-	<0.010	-	-	-	
Boron	mg/l	1	-	-	<0.100	-	-	-	<0.100	<0.100	-	-	-	<0.025	-	-	-	
Barium	mg/l	1	-	-	0.05	-	-	-	0.01	0.011	-	-	-	0.01	-	-	-	
Beryllium	mg/l	0.03	-	-	<0.001	-	-	-	<0.001	<0.001	-	-	-	<0.001	-	-	-	
Calcium	mg/l		10.6	11.9	21.5	18.2	17.8	13.9	10.8	10.8	13.6	10.7	9.64	12.6	14.1	14.1	10.6	
Cadmium	mg/l	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	mg/l		-	-	<0.010	-	-	-	<0.010	<0.010	-	-	-	<0.002	-	-	-	
Chromium	mg/l	0.05	-	-	<0.010	-	-	-	<0.010	<0.010	-	-	-	<0.002	-	-	-	
Copper	mg/l	0.2	-	-	<0.010	-	-	-	<0.010	<0.010	-	-	-	<0.002	-	-	-	
Iron	mg/l	0.3	0.11	0.024	3.19	<0.020	<0.020	<0.020	0.079	0.1	0.715	0.200	0.138	0.198	0.022	0.204	0.094	
Potassium	mg/l		1.16	1.4	3.99	1.72	1.69	1.68	1.36	1.06	2.72	1.87	1.08	1.34	1.31	1.6	0.956	
Magnesium	mg/l	35	2.24	2.75	5.01	4.28	4.27	3.41	2.67	2.63	3.49	2.59	2.25	3.05	3.64	3.55	2.64	
Manganese	mg/l	0.3	0.003	0.003	0.654	0.006	0.02	0.018	0.01	0.004	0.085	0.018	0.044	0.06	0.177	0.021	0.027	
Sodium	mg/l	20	22.1	21	26.6	25	43.8	24.5	17.6	30.1	20.2	16.7	11.8	24.7	20.7	24.5	15.9	
Nickel	mg/l	0.1	-	-	<0.010	-	-	-	<0.010	<0.010	-	-	-	<0.002	-	-	-	
Lead	mg/l	0.025	<0.010	<0.010	<0.010	0.328	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Antimony	mg/l	0.03	-	-	<0.020	-	-	-	<0.020	<0.020	-	-	-	<0.020	-	-	-	
Thallium	mg/l	0.0005	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	
Vanadium	mg/l		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Zinc	mg/l	2	<0.005	<0.005	0.012	1.6	0.041	<0.005	0.006	<0.005	0.007	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	
Selenium	mg/l	0.01	-	-	<0.040	-	-	-	<0.040	<0.040	-	-	-	<0.040	-	-	-	

Notes

- Full analytical reports for the Target Compound List were analyzed but were not detected. Contaminants of concern plus Organic compounds listed herein are for the Methylene Chloride, which has been detected above standards in one sampling event.
- Third Quarter Analysis, 2010 not conducted.