



S2L, INCORPORATED
531 Versailles Drive, Suite 202
Maitland, Florida 32751-7301
407-475-9163 Fax 407-475-9169

Incident Report

TO: Tom Lubozynski, P.E., FDEP Central District
FROM: Bob Mackey, P.E.
DATE: November 10, 2010
RE: Unauthorized Discharge at Tomoka Landfill

On Tuesday, November 9, 2010, between 4:10 a.m. and 7:00 a.m., there was a discharge at the Tomoka Farms Road Landfill in Volusia County. The discharge occurred just west of the North Class I cell and east of the leachate surface impoundments. The discharge occurred from a leachate force main that runs from the North cell to the surface impoundments. Almost all of the discharge was contained within the dry stormwater swale that runs along the western perimeter of the North cell. A small quantity was not contained by this swale, discharging via culvert into the north stormwater management pond. The history of events, quantity of leachate, and Volusia County's remediation response are detailed below.

It should be made clear that the release referred to as "discharge" or "leachate" throughout this incident report is actually treated leachate. Under dry weather conditions, leachate generation within the landfill cell is inadequate for optimum leachate treatment plant operations. During such periods, treated leachate that is stored within the leachate impoundment is used to supplement the flow of untreated leachate. It is the supplemental flow of treated leachate that was released and subsequently recovered.

History

On Monday, November 8, 2010, County personnel excavated the 8-inch leachate force main from the North cell, just outside the perimeter of the landfill cell. The purpose of this excavation was to install a flow meter on the force main, in order to better document leachate generation volumes from within the landfill cell. County personnel were unable to complete the work on Monday and the force main was left unconnected/open.

The County did not consider leaving the pipe open an item of concern. The pump station(s) from the North cell that utilize the force main were turned off, and therefore were incapable of discharging leachate from the landfill cell.

Interconnecting piping, isolation valves, and a surge relief valve are installed farther along the force main, adjacent to the leachate impoundments. The purpose of this valving is to allow either raw leachate to be directed to the treatment facility or leachate stored in the pond to be directed to the treatment facility. Although the force main from the North cell to leachate impoundments and the force main from the pumps in the surface impoundments to the leachate treatment facility have some common piping and interconnections, the County believed that this surge valve would eliminate backflow into the force main. It is the County's belief that either this

surge valve failed, or a yet to be determined interconnection valve was left open, allowing the backflow of leachate from the surface impoundment into the open force main.

The County has estimated the period of leachate flow started sometime past 4:10 a.m. and continued until it was discovered at 7:00 a.m. by County personnel. The exact start time of the flow has yet to be determined. The estimated 4:10 a.m. start of flow is based on recorded time of the leachate treatment facility operation. The treatment plant initiated the draining of a treatment tank at 4:00 a.m. After the tank is drained, the facility sends a signal to the pumps in the surface impoundment to start pumping leachate to the treatment plant. The flow path to the open area of the force main offered less resistance in comparison to the flow path to the leachate treatment plant. Thus, the pumps intended to feed the treatment plant instead fed the breach in the force main where the flow meter was to be installed.

S2L, Incorporated (S2Li) and their subconsultant are currently attempting to develop a better estimate of the volume of leachate discharged during a more defined timeframe. Based only on the 4:10 a.m. to 7:00 a.m. period, our current rough “estimate” of leachate volume discharged is approximately 100,000 gallons.

Timeline:

4:10 a.m. – Potential start of leachate discharge.

7:00 a.m. – County personnel discover leachate being discharged and take immediate action to discontinue flow.

7:00 a.m. – County starts immediate response to mitigate the impact of leachate discharged (detailed below).

8:55 a.m. – County contacts FDEP to notify them of the leachate discharge and current County remediation efforts.

9:00 a.m. – County contacts S2Li and requests assistance to quantify the volume of leachate discharge, discover the source of the problem, and provide additional guidance in the remediation.

County Remediation Efforts

The following is a list of actions taken by the County to mitigate the impact of the leachate discharge:

- The County placed soil in the swale to prevent the flow of any additional leachate from the swale into the culvert that discharges to the north stormwater management pond.
- The County found an area of discolored water within the southwest corner of the north pond. This was evidence that some leachate flow had occurred into the pond. The discolored water appeared to be contained within an area defined by a floating turbidity barrier, which had previously been placed by the County around the culvert discharge location. Utilizing a vacuum truck, the County removed the discolored liquid from the pond until there was no discolored water present in the pond. Approximately 7,500 gallons of liquid were removed.
- By 11:00 a.m., November 9, 2010, most free-standing leachate had already been removed from the swale, also by vacuum truck, and the County began removing all saturated soil from within the swale, hauling it to the Class I waste cell (North cell).
- As of 8:00 a.m. on November 10, 2010, all liquid had been removed from the swale.

- As of 11:00 a.m. on November 10, 2010, all moist soil (approximately 55 cubic yards) had been removed from the swale.
- As of 11:00 a.m., November 10, 2010, the County had vacuumed approximately 100,000 gallons of leachate from the pond and swale, based on vacuum truck load counts.
- The County will backfill the western swale with clean fill and sod the western swale beginning November 12, 2010.
- Water quality samples of the pond (within and beyond the turbidity barrier) and within the swale were obtained at approximately 2:00 p.m. on November 9, 2010. Samples are to be analyzed for parameters as recommended by FDEP.

S2Li Assessment

S2Li and their subconsultant are still investigating the cause of the leachate discharge. The piping in the area of the leachate impoundments has been modified and adapted to meet the County's past and future operations requirements. S2Li believes the cause will soon be determined.

S2Li performed a preliminary assessment of the area of impact and possible volume of discharge to the north stormwater management pond. Based on the approximately 62,000 square feet area of ponded leachate within the western swale, S2Li believes that this area is capable of containing the initially estimated 100,000 gallons of leachate discharge. S2Li also concurs with the County's assessment that only a small volume of leachate was able to migrate to the north pond.

The County's quick response to block leachate flow, vacuum away any standing leachate, and excavate the saturated soil greatly inhibited the ability of the leachate to percolate through the soil and down into the site's groundwater table. This is supported by the large surface area of the impacted western swale and limited depth of leachate at the deepest point of the swale, estimated at less than 1-foot. The limited head (1-foot) of pooling leachate would not be sufficient to drive the leachate down through the soil matrix in the timeframe of this event.

Conclusion

On November 9, 2010, between 4:10 a.m. and 7:00 a.m., approximately 100,000 gallons of leachate was discharged into a swale west of the North Class I cell at the Tomoka Farms Road Landfill in Volusia County. The County took immediate action to shut off the flow of leachate and alleviate impacts to the north stormwater management pond. Leachate was removed from the spill area via vacuum truck. The saturated soils in this area were excavated and placed within the currently operating Class I cell.

The County is continuing their investigation of this event. The County will report to FDEP the exact cause of this event and more clearly define the volume of the discharge as soon as this data becomes available.

* * * * *