

2021 Green For Life (GFL) Environmental Emerald Park Landfill Year End Compliance Officer Report and Audit Summary

TO: Advanced Disposal Services Emerald Park Standing Committee
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JSA Environmental (JSA) has been acting as the Emerald Park Landfill Standing Committee's (Committee) Landfill Compliance Officer since 1999. JSA conducts weekly audits of the Emerald Park Landfill's operations and construction activities. The results of these audits are recorded and presented to the Committee, in addition to being posted on the World Wide Web (WWW) for the public on the City of Muskego's web site.

Throughout 2021, as in previous years, JSA has reported to the Committee; providing the following services

- Attendance to all Committee Meetings
- Auditing of the Operations and Construction of the Emerald Park Landfill Site
- Review and recording of all documents publicly released by Emerald Park Landfill, Wisconsin Department of Natural Resources (WDNR), Host Communities, or public entities relating to the Emerald Landfill Site.
- Archiving of Emerald Park Landfill, WDNR, and Host Communities' documents.

Summary of Audits

JSA Environmental (JSA) performed fifty one (51) Operational audits of Emerald Park Landfill and Ten (10) Construction audits were conducted in 2021. Audits are conducted on a weekly basis with one excused for the Christmas Holiday. EPL was adequately staffed and available for all audits in 2021.

Audits were conducted in the presence of Chad Siegle; Operations Manager, Dan Otzelberger; General Manager, and Scott Croft; Gas Plant Manager through out 2021. Audits were performed during operational hours of the facility, no audits were conducted on the weekends.

Audits are recorded on "Audit Forms", approved by the Committee and EPL. The form is reviewed by both auditor and a EPL representative at the end of each audit prior to signing by both parties. Audit observations are supported by photographs taken in conjunction with the audit. When a compliance issue is observed, it is recorded as an "Action Item" and included on a tallying list of

action items for the year. In addition to the audit form, audit photographs, and action item list; a summary of the audit observations is created and included in the final deliverable document.

Weather Conditions

The weather conditions during the audit were recorded visually and from the weather stations near the area of the landfill. All of the weather readings were done with stations monitored by the National Oceanic and Atmospheric Administration (NOAA). EPL has installed and is operating a weather station at the site, data was not used from it for Audits.

Poor weather conditions have an impact on all landfills, EPL is no exception; daily cover is a mix of Auto-Fluff, foundry sands, site soils, tipped soils, and tarps. Extended poor weather conditions can have an affect on daily and intermediate cover. Dry weather conversely, can have an impact on gas collection and destruction. Weather conditions also impact the intermediate cover, an additional twelve inches of soil over previously placed daily cover. There is no alternative intermediate cover.

Weather conditions aid in the identification of potential odor sources, trail paths, and travel times.

Equipment Used in Landfill Operation

EPL had one compactor and two bulldozers in operation on the working face of the landfill for the majority of audits through out 2021. Waste volumes control working face size and number, which in turn dictates equipment needs. Waste volumes have been slow to increase over the past year, but often the site operates an extra working face for the placement of soils which requires that operation of an additional bulldozer.

The site operated throughout 2021 with appropriate equipment as defined by the Plan of Operations, a compactor was used for compaction and a bulldozer to place daily cover. During periods of high soil volumes across the scale, or recovering soil previously tipped in Phases 3 & 4; or tipped on Phase 7 in areas outside of the working face.

EPL also made use of excavators and haul trucks (articulated dump truck) to excavate future expansion space and stock piles to provide intermediate cover to the active area. One water truck was available and used during dry dusty conditions.

Equipment does require maintenance and at times does fail, there were no recorded incidents of the site not having suitable equipment active to conduct operational activities. The facility has not employed a staff mechanic since 2012, all equipment repairs are done by third party or minor work by capable staff.

In cold weather, frozen conditions the site excavator is used to dig out frozen loads. The backhoe was also implemented again for this purpose.

The Emerald Park facility does not possess a street sweeper, however they have maintained a contract with a sweeping company to sweep US 45, and site roads as EPL requires. The sweeping events do not occur every week, however there were no Action Items pertaining to road conditions; though ten (10) incidents of tracking and of road debris; primarily debris in the turn lanes and median; were recorded. Emerald Park addresses street sweeping as far North as the intersection of US 45 and Loomis Road. In an answer to dealing with the site road conditions, especially the site entrance, the facility implemented the use of a back hoe to fill and grade pot holes with crushed stone; this condition extends back to 2017.

Working Face

EPL maintains a working face that is approximately one half ($\frac{1}{2}$) acre in size or smaller. Waste volumes dropped off in 2008 and the site volumes have fluctuated since, with additional volume lost in the transition from Advanced Disposal to GFL. The volume balance of ~1,000 tons per day (TPD) supports the working face size. Weather conditions impact the working face size as well; during inclement weather the working face would be smaller. EPL operated working faces in Phases 7 North and 7 South for the receipt of MSW, special wastes, liquid loads, and C & D wastes; along with Phase 3 for the tipping of soil and bio-soils (soil contaminated with treatable Gasoline Range and Diesel Range Organics (GRO) and (DRO)).

The soils, bio and landfill direct, working faces have been located on top of Phases 2 & 3 for more than ten years. The bio soil pile is in active remediation for future use on the site. Special wastes (Asbestos) are tipped in designated pits, within the MSW working face until filled and a new pit is established.

Cover Material

The MSW working faces require the placement of daily cover. The facility employs soil and/or permitted alternative daily covers(ADC). The ADCs used at Emerald Park are auto-fluff, poly-fluff, compost, processed bio-soil, landfill direct soil, foundry sand, paper board, compost wood seconds, and tarps. Since late 2013 auto-fluff has been rarely available to the facility for ADC; in July of 2020 it became available again, with a drop off in November of 2021.

When possible C&D materials are used prior to cover to support the placement of cover and improve travel conditions within the active area. Wood chips, waste wood, unusable compost, etc are used in poor weather to improve travel upon the active area, but are not a part of cover.

The site must also maintain Intermediate cover over areas that are not in use or are not going to be in use. Intermediate cover is an additional twelve inches (12") upon the previously placed daily cover and there is no alternative intermediate cover. Intermediate cover requirements were all met and the primary focus location for intermediate cover was the West and South slope of Phase 7. At the end of 2021, Intermediate cover development started at the end of 2021 with the expectation of waste placement in the New Cell, Phase 7 Southwest (SW).

If the site did not have soils stockpiled from previous tipping, soil would be excavated from the future cell locations West of Phase 7.

Leachate Management

EPL has the ability to recirculate leachate through a pipe system, buried in the waste, along with disposing of excess volumes through a MMSD force main. Relative leachate volumes and repairs to the leachate system were recorded through out 2021. No activities occurred to develop or maintain the current re-circulation system. Emerald Park has not recirculated leachate in many years.

The site has been in compliance with the DNR regarding the leachate volumes at the site and its operation of its collection system. However, Leachate Vault 12 and 14 continue to be at high levels. The site added a frack tank directly downstream of the vaults to provide filtering of leachate before discharge to the force main. This has shown an impact on vault elevations, but has not restored them to expected and necessary norms.

Though several seeps occurred on the West slope of Phase 7 in 2020, which were difficult to repair due to weather conditions at the time; there were no recorded seeps in 2021. The site produces 35,000 gallons per day (GPD) of leachate, which is reduced from 2020; however the volume goes up over time as the landfill size increases. Leachate production should drop again when Phase 7 is capped.

Traditionally, landfills generate leachate from rainfall and the moisture already present in the waste. In design and operations the moisture content is rated at 25%, so ¼ of the tipped waste is water. There is a certain amount of evaporation that happens at the working face, but that drops off as cover is placed and is non-existent after the placement of another lift of waste. The site has not received liquid wastes since May of 2020, additionally 2021 has been a “dry” year in comparison to expected rainfall and the very wet years of 2018 thru 2020.

Gas Monitoring & Management System

In 2012, EPL completed the construction of the “Gas Building”. The new facility at the site prepares the landfill gas(LFG) for distribution to MMSD via a pipeline. To make the gas usable at the target end of the pipeline, it must be cleaned, dried, and compressed. The facility removes the impurities from the LFG so that the pipeline is only carrying Methane. The construction of the facility included the relocation of the flare for destruction of the gas when the pipeline is not in use and an enclosed flare that is used to destruct contaminants.

During the majority of audits, JSA recorded that the facility was delivering gas to MMSD and the volume of gas received has been controlled and limited by MMSD restricting receipt of LFG. Halts on delivery of gas by EPL occurred during filter media changes, improvements and additions to the gas collection system, and when the gas did not meet MMSD specifications.

The facility installed new gas wells in one project in 2021. Most wells are installed with pumps to remove leachate, which flows into the well or is deposited by condensation. The gas plant delivers and/or destroys 2,300 to 2,500 cubic feet per minute (cfm) on average, with the volume dropping during 2021. The reduction in moisture is the most likely cause of the gas volume leveling off with some decline. The addition of the new cell will raise gas volumes before a significant difference occurs.

2019 and 2020 have had the highest incidence of odor about Emerald Park. Odor complaints in 2021 were greatly reduced with the last complaint occurring in March of 2021. Odors recorded off site were predominantly gas in nature. In February of 2021 the Operations Manager identified an area of release at a vault and applied sealants to the issue, the new vault created for Phase 7 SW was also sealed.

Surface Water Management

EPL maintains four drainage basins and two temporary sedimentation basin¹ along with several thousand feet of conveyances. Emerald Park has maintained the conveyances and basins on an as needed basis. The ditches that collect runoff from Closures I thru III are well vegetated and maintained. Basin 1 had been cleaned and a new control structure placed in 2019. Basin #2 cleaning was started in June of 2021; but not yet completed, however the basin has enough capacity to meet its needs.

Basin #3 receives runoff from Closure areas II and III, the largest runoff values currently onsite due to the caps. The basin is in good shape and control structure is clear. The other basins received lesser volumes of stormwater runoff as several acres are uncapped in their contributing watershed.

The temp sed basin was remodeled in June thru August of 2020 to restore and improve its operations after it was contaminated by a seep. The new configuration is deeper and wider with more gradual topography; it is drained to the North by a six inch pump. A similar designed

1 Excavation along South and West slope of Phase 7

temporary sedimentation basin was added to the South along Phase 7 Southwest and is drained to the South by its own six inch pump.

The first quarter of 2021 the pump for the Northern Temp Sed Basin was offline, but was repaired and reinstalled before there was flowing water to remove from the temp sed basin. The site had no issue draining temp sed basins during 2021/

JSA records erosion conditions under stormwater management. The site conducts erosion repairs as weather permits equipment on slopes. The site has managed erosion on the South and West slopes of Phase 7 through out 2021. The North slope of Phase 4 however has trenching and erosion created via the surface damage done by vehicular and equipment traffic up and down the slope. The erosion is expected to be repaired after site thaw in 2022.

EPL has not met the requirements of the City of Muskego Chapter 35 Stormwater Ordinance. EPL has not submitted a Schedule of Maintenance.

Odor Control

Auditors record the presence of off site and on site odors during an audit, this is separate from odor complaints made to the City of Muskego, Emerald Park, and/or JSA. In 2021 there were ten (10) occurrences of off site odors and eighteen (18) on site odors. The off site odors were garbage odors or the smell of Auto-fluff. The majority of on site odors were the detection of LFG odors on the access road to the working face in Phase 7.

In addition to the odors recorded in audits, JSA Environmental recorded forty (40) odors; predominantly gas odors; the complaints were made over eighteen (18) separate days. Complaints only occurred January thru March. In 2020 there were one hundred sixty eight (168) individual complaints on one hundred twenty eight days (128). The odor complaints in 2019 one hundred thirteen (113) individual complaints, which occurred on sixty five (65) separate days. 2021 gas and odor management is a vast improvement over the last two years.

There were Garbage Odor complaints made in last June and early July of 2021; JSA attributed them to The Metro Security Landfill; which is recorded in their Annual Summary.

The site implemented many changes to deal with odors, but the sealing of the vault in February of 2021 appears to have been the most effective or last required.

Special Waste Handling

Waste profiles, sampling, and protocols are done off site from the EPL Facility. This item remains on the audit should a new waste be accepted.

EPL receives asbestos, soils, and liquids as special wastes. EPL ceased receiving liquid wastes as of May 28th, 2020.

Litter Control

EPL implements two types of litter fences about the active area. Stationary fences are installed at the top of slopes and at the base of slopes and where possible prior to the boundary or perimeter fences. Mobil fences are moved by bulldozer to intercept litter blown by the wind. EPL also hires litter pickers to gather litter both on and off site.

One of the impact of COVID-19 has been to reduce the available temporary labor services and the need to minimize labor active in small areas or enclosed spaces, such as a truck cab. EPL maintained two pickers for most days of operations and had difficulty acquiring additional laborers when needed. The lack of laborers only impacted on site litter and not off site.

The mobile fencing was used in the active area throughout 2021. Off site litter is recorded, if present, during an audit. If the litter is present in the subsequent audit an Action Item is issued. The site employs one picker daily and additional pickers are hired when needed. Litter in trees occasionally occurs on site and it may take several weeks for the facility to provide contractors to adequately remove the litter.

In 2021 off site litter was recorded eleven times, primarily in road side ditches or median of US 45. There were incidents of litter being noted in consecutive audits, but the materials present appeared to be different from previous audits.

Vehicle Impacts

EPL sweeps US 45 when required by road conditions. When sweeping is done, EPL sweeps as far North as the intersection of US 45 and Loomis Road to address concerns by the residents along that stretch and motorists. Emerald Park also enforces sweeping to be done by the second party excavators during back hauls and clay removals.

There were instances of debris and tracking on Highway 45 during the operational history of 2021, ten instances (mostly debris in the turn lanes) but no Action Items. Similarly, the roads of the facility are experiencing wear especially at the entrance. The potholes at the entrance of the facility were becoming progressively larger and harder for the operation to maintain with crushed stone.

On October 14, 2021 the site began to restore the entrance of the site with construction of a new gate. The site implemented new asphalt at the entrance and scale prior to the October 28th audit. The site also implemented gravel along the entrance drive, the public side of the gate, to reduce tracking onto US 45.

Inspection of incoming waste

Emerald Park uses several cameras, visible to the scale operator in addition to recording manifests, to monitor both truck activities and contents. Each equipment operator on the working face is able to observe the waste components when tipped from the haul vehicles. EPL does not make use of spotters nor does it have working faces that are not monitored by EPL staff.

All Wisconsin permitted landfills are required to perform a random load inspection for every 5,000 tons of waste received; the Host Agreement requires a minimum of two Random Load Inspections per week. The random loads inspections were routinely performed once per week throughout 2021, a minimum of two was not conducted. The the site may not have averaged 5,000 or higher tons per week, weekly random loads were conducted.

Rejected Loads

Rejected loads have become very infrequent; not just at Emerald Park, but also within the industry; due to improved manifests, waste screening, and overall integrated waste management. No loads were rejected in 2021.

Contractors Audit

In 2021 EPL engaged the services of Environmental Sampling Corp. (ESC), Mueller Excavating, Terra, New Berlin Excavating, Tetra Tech, Landfill Pipe and Drilling, and a couple sweeping contractors to aid in the construction and maintenance at the site. The activities of all contractors were recorded during audits.

Action Items

There were No Action Items recorded in 2021

Construction Audits

Between June 1, 2021 and September 21, 2021 contractors were active on site constructing a new Cell, Phase 7 Southwest. The site had been excavating the cell footprint for several years when clay was need for back haul or site activities. Contractors continued the excavation along with:

- Compaction of a clay liner
- Deployment and welding of a plastic, High Density Polyethylene (HDPE), liner
- Placement of piping and stone to form the leachate collection system for the new cell
- Testing of constructed components and reporting to DNR.

The new cell was completed without incident or issue on September 21, 2021. The site management opted to not place waste in the cell until January of 2022 when their preferred cover, Auto-Fluff, was available with out issue.