

3.23.4 WYOMING LANDFILL

Facility Name: Wyoming Closed Landfill

A.K.A. Wyoming Sanitary Landfill

Location: Situated in Wyoming's Oak Park, which is located east of Oak Avenue and northeast of the Crosley Avenue intersection in Wyoming, Ohio.

Parcel(s): 59200060013

Lat, Long: 39.234889 -84.465193

Region: Wyoming, OH 45215

Owner: City of Wyoming

Operation (yrs): mid 1950's – 1979 (based on records)



FACILITY OVERVIEW

The closed landfill is bounded by the West Branch of the Mill Creek on the west and south and by a CSX railroad line to the east. North of the closed landfill, the West Branch of the Mill Creek and the railroad converge forming a relatively thin strip of wooded land. The site was operated by the city as a municipal landfill from the mid-1950s to 1979.

Topographically, the property was once a generally low-lying area adjacent to the West Branch of the Mill Creek. Today, the ground surface of the property is generally at the level of the previously (before landfill use) built up railroad line across most of the site. While the majority of the closed landfill is primarily flat, steep slopes are present along the south, east, and west sides of the property.

The City of Wyoming began operating the landfill sometime in the mid-1950's. Based on historic information and discussions with City personnel, the landfill was used to dispose of typical household waste (garbage), yard waste (grass cuttings, branches, leaves, etc.) and some hard fill type material (concrete, rubble, etc.). Lime from the public water treatment plant was also reportedly deposited in the northern portion of the landfill. Figure 3.23.4-A is an aerial from 1973 showing fill activities at the site. Figure 3.23.4-B is an aerial from 1986 after the area was developed as a park.

FIGURE 3.23.4-A



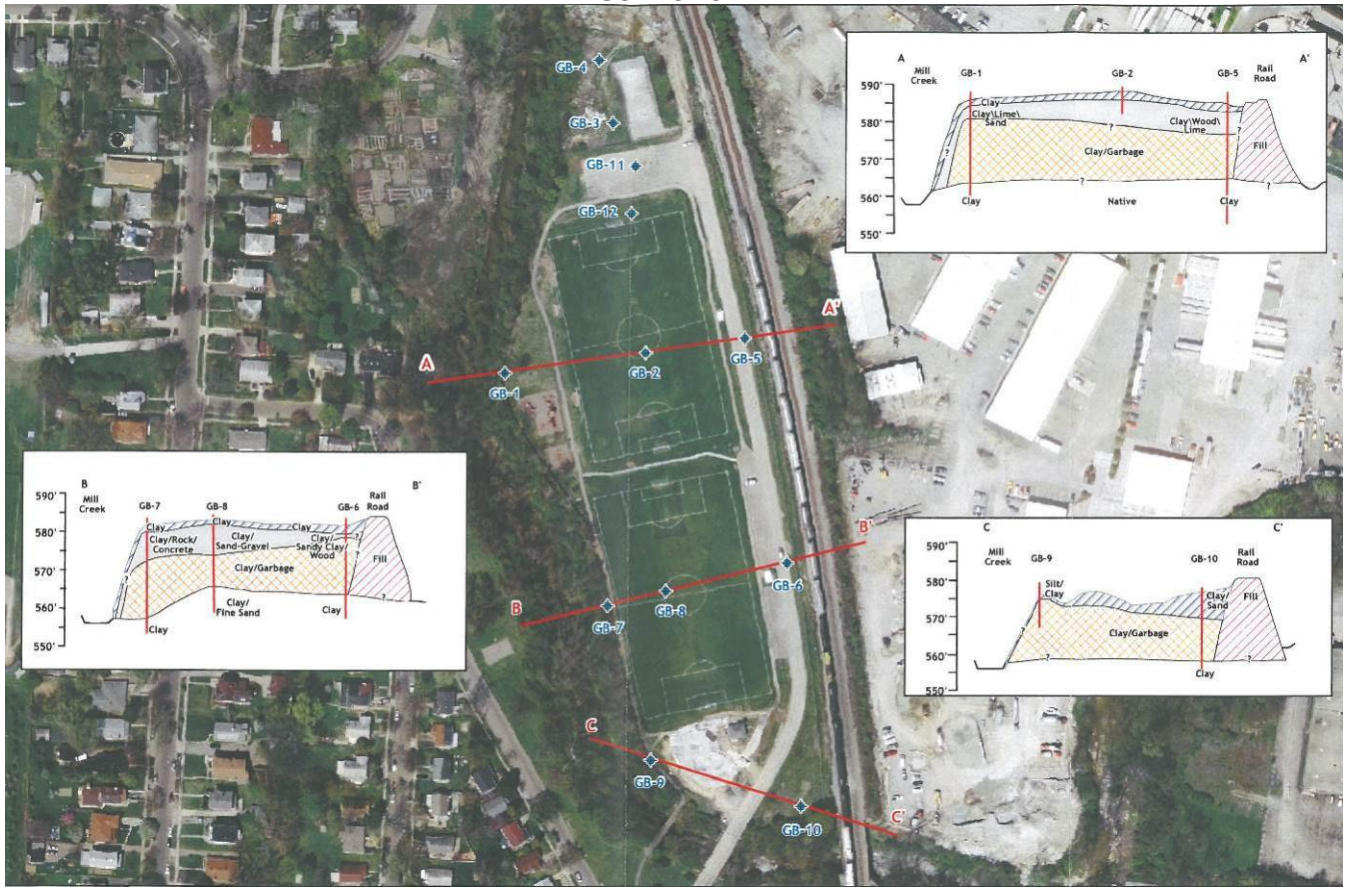
FIGURE 3.23.4-B



Studies performed by BHE Environmental, Inc. (during 2006 and 2007) found the horizontal extent of waste placement is bound to the south and west by the West Branch of the Mill Creek, by the railroad embankment to the east, and terminated in the area of the current basketball court to the north. The investigation also found that the observations of material encountered during soil borings support the historic information that suggested waste was built up from the former ground surface and that the bottom of the waste corresponds to the approximate pre-landfill ground surface. Survey data combined with stratigraphic information indicates that along the western boundary of Oak Park, the depth of waste placement is above the level of the Mill Creek. Along the eastern boundary of Oak Park, the depth of waste placement appears to be above the ground surface east of the railroad along the northern portion of Oak Park; however, within the southern portion of Oak Park the depth of waste placement appears to be below the current ground surface on the east side of the railroad tracks.

On August 15 and 16, 2007, twelve soil borings were completed by BHE Environmental Inc. at the landfill to determine if a formal explosive gas monitoring plan (EGMP) was needed. In a report submitted on November 27, 2007, BHE used these borings to approximate both the horizontal and vertical limits of debris placement within the landfill (Figure 3.23.4-B). In a letter dated December 14, 2007, the OEPA concurred with the consultant's findings and determined that an EGMP would not be required.

FIGURE 3.23.4-B

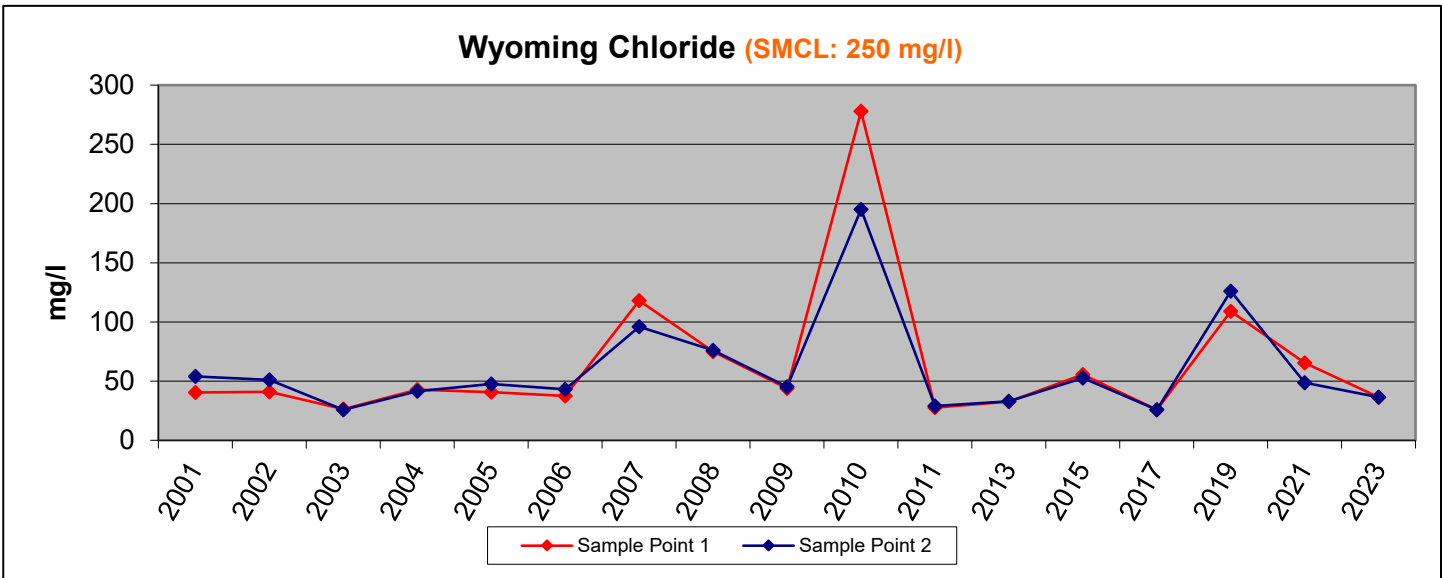
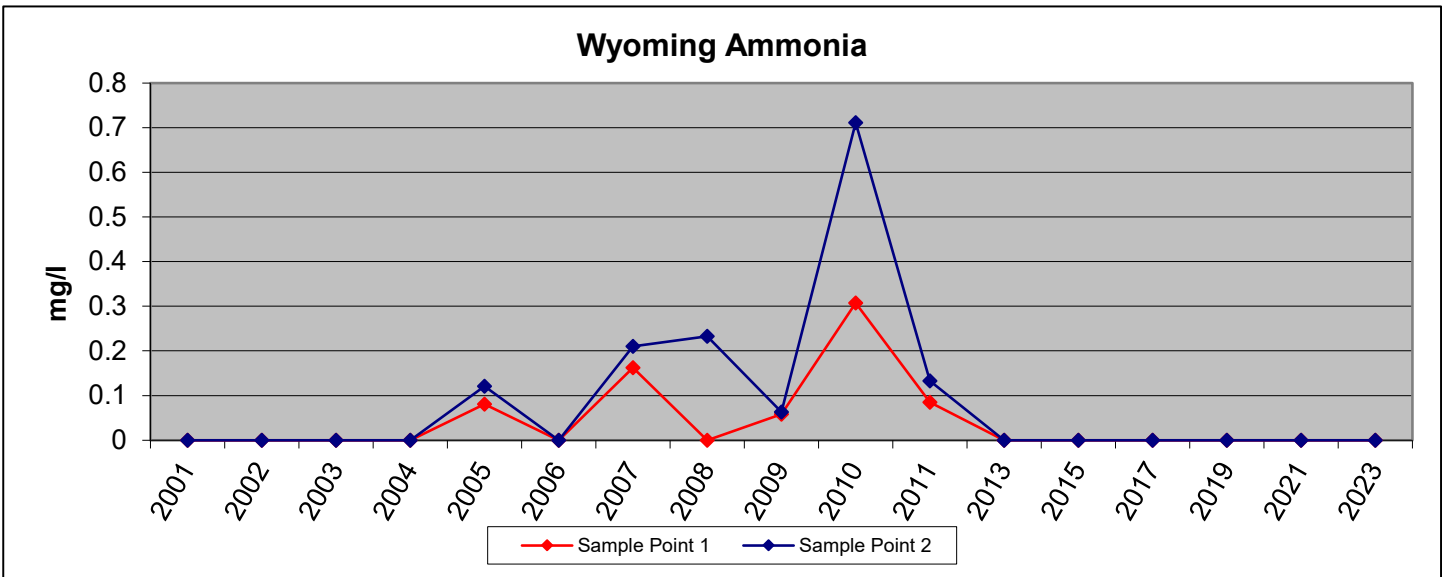
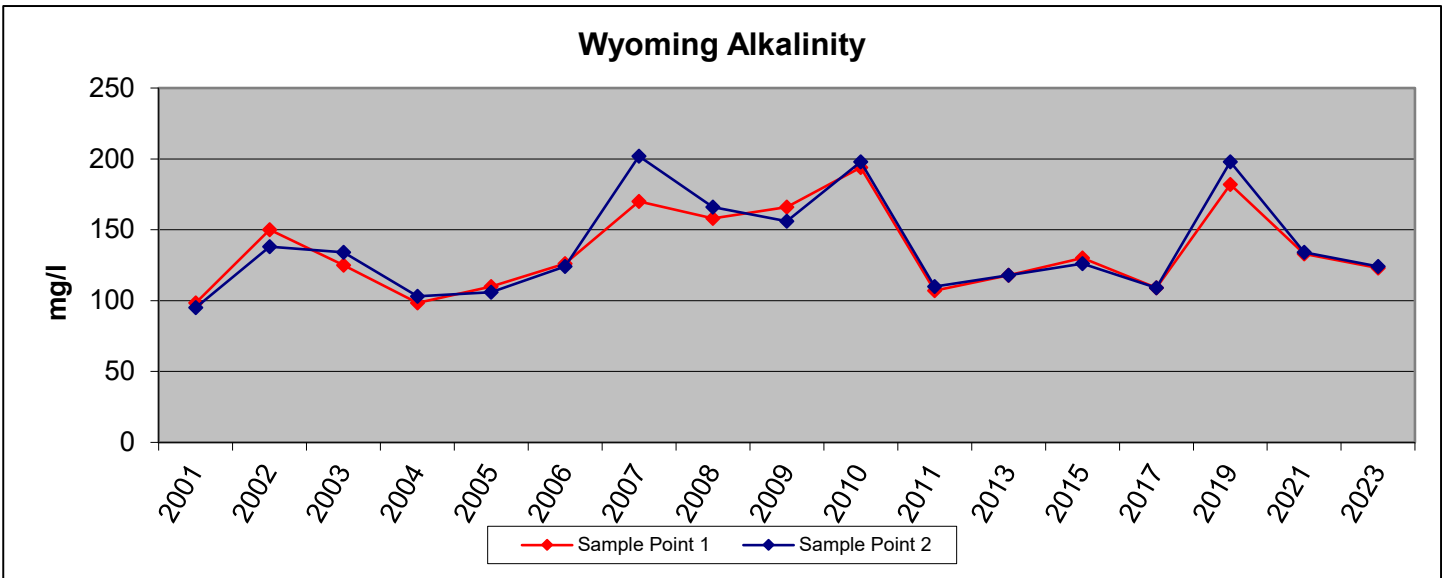


In March of 2016 a request for a rule 13 authorization was submitted on behalf of the city. The request was for planned maintenance on the bike path, driveways, parking lots, basketball court, and soccer fields. Also included was fence/fence post replacement and demolishing an old bridge abutment. Ohio EPA approved the request in August of 2016.

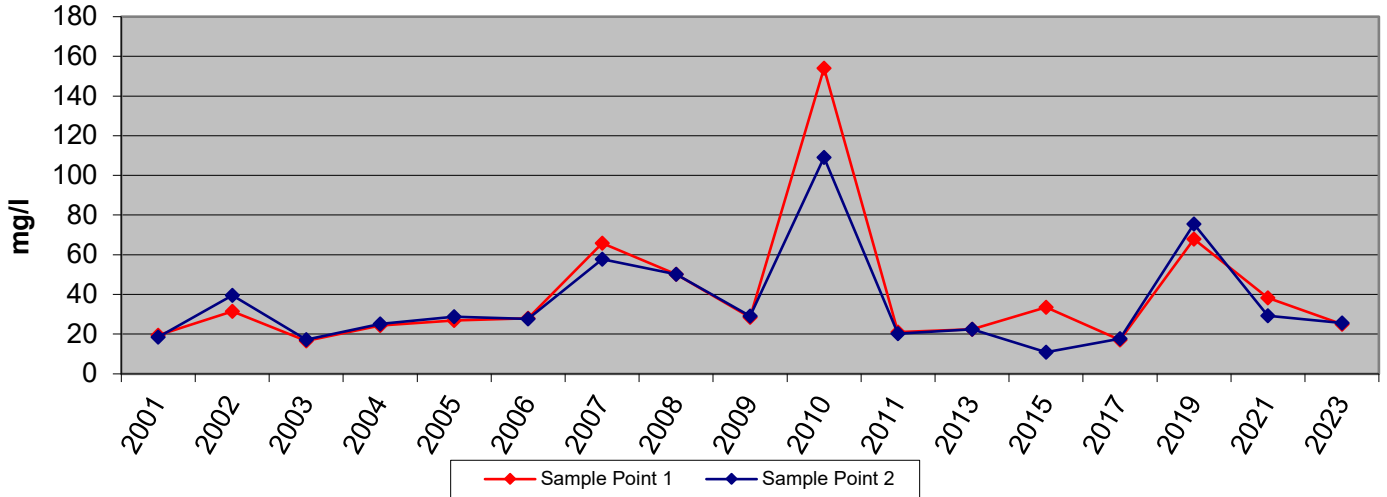
SAMPLING RESULTS

The West Fork of the Mill Creek flows along the west and south side of the Wyoming Landfill. Samples are taken above (S-1) and below (S-2) the landfill. Samples around Wyoming Landfill were collected on November 6, 2023 (Appendix A). The samples were collected during above average flow. The S-1 sample location consisted of a series of pools and gravelly/rocky riffles located adjacent to the landfill. The Wyoming S-2 sample location is the same as the Lockland Shepherd Lane (S-1) sample location consisting of pools with a gravel/rocky bottom. The referenced locations are shown on Figure 3.23.4-C.

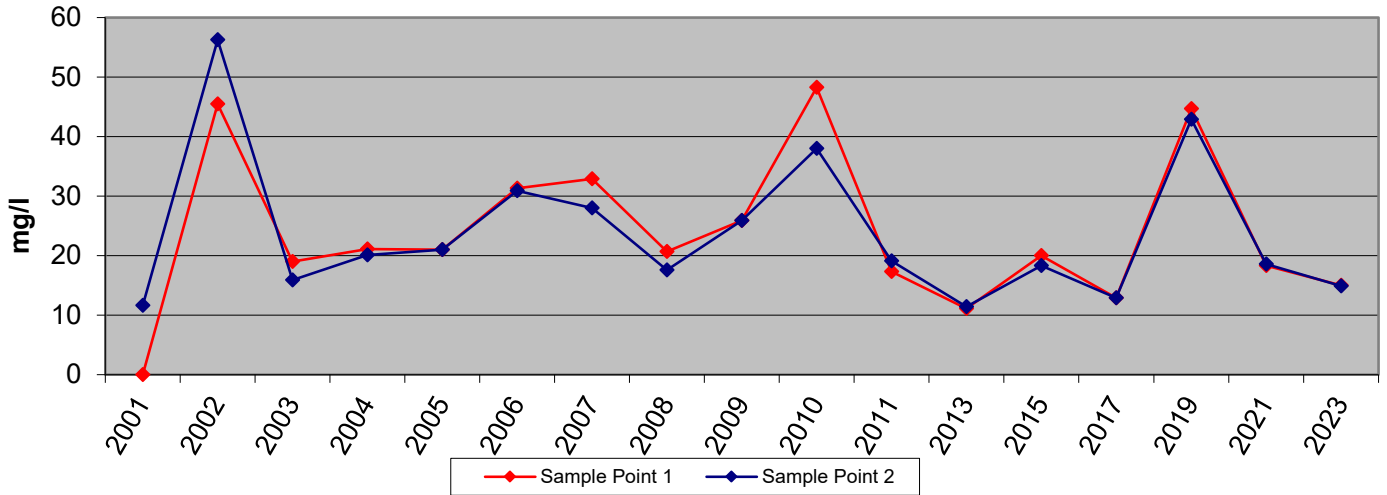
In 2010, alkalinity, chloride, sodium, sulfate, TDS, ammonia, conductivity, and barium all exhibited highest levels since sampling began for both upstream and downstream samples. During subsequent sampling events from 2011 through 2017 concentrations of all the above-mentioned compounds returned to previously observed levels. In 2019 sampling, results again increased to concentrations approaching those observed during 2010. During subsequent sampling events in 2021 and 2023, concentrations have trended downward and generally returned within ranges historically observed. Alkalinity, chloride, sodium, sulfate, sodium, and TDS all showed a decreasing trend when comparing 2019 data to 2021 and 2023 data. Additionally, all remained below their respective SMCL's. Iron exceeded the SMCL of 0.3 mg/L at sampling points 1 (0.326 mg/L) and 2 (0.325 mg/L). Iron has exceeded the SMCL at sample point 1 during each sampling event since it was added as a parameter in 2010. Both sample locations exceeded the SMCL for manganese (0.05 mg/L). Manganese has exceeded the SMCL at each sampling point since it was added as a parameter in 2010. The Health District staff will continue to monitor the water quality in this area for any changes. Surface water chemical data is illustrated for Wyoming Landfill in the graphs below.



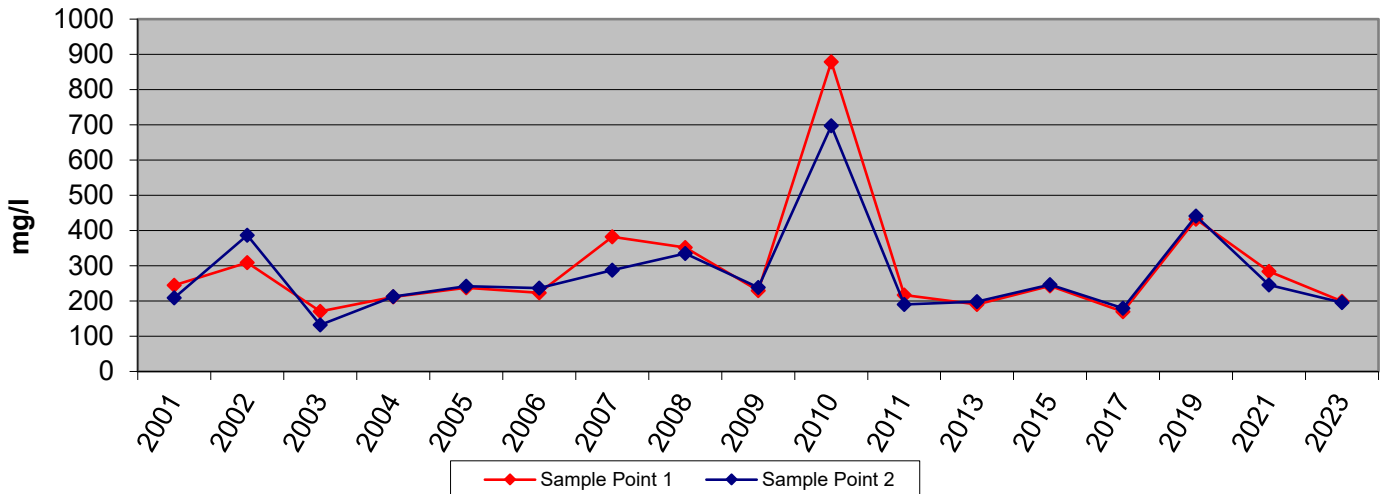
Wyoming Sodium (SMCL: 250 mg/l)



Wyoming Sulfate (SMCL: 250 mg/l)



Wyoming TDS (SMCL: 500 mg/l)



The Wyoming Closed Landfill was monitored by HCPH for explosive gas on December 22, 2023 (Table 3.23.4-B). Monitoring took place along the southern and eastern perimeter of the property (Figure 3.23.4-D). Methane has been detected along the eastern boundary and around the northern parking area every year since 2007. However, in 2022 there was a significant decrease in both the number of detections and the concentrations observed when compared to previous monitoring events. In fact, 2022 monitoring was the first time in 10+ years that no detections of 100% LEL were observed at the site. Monitoring completed in 2023 resulted in 9 locations with methane detected. All locations where methane was detected were low concentrations of <25% LEL except for sample point 28 which had a concentration of 100% LEL. Sampling further out away the suspected location of waste (sample point 28B) resulted in no methane detected. During 2023 monitoring carbon monoxide (CO) was detected at 20 of the sampling locations with concentrations between 2 and 81 ppm. This is similar to CO results for past monitoring events.

TABLE 3.23.4-B (12/22/2023)

Sample #	O2 %	LEL %	CH4%	CO ppm	NH3 ppm	H2S ppm
1	20.9%	0	0	2	0	0
2	20.9%	0	0	2	0	0
3	20.4%	0	0	2	0	0
4	20.9%	0	0	0	0	0
5	20.9%	0	0	3	0	0
6	20.8%	0	0	3	0	0
7	20.8%	0	0	6	0	0
8	20.3%	0	0	0	0	0
9	20.2%	10	0.5	81	0	0
10	14.1%	9	0.45	11	0	0
11	16.7%	4	0.2	9	0	0
12	19%	2	0.1	7	0	0
13	20.8%	0	0	0	0	0
14	11.3%	6	0.3	3	0	0
15	20.5%	1	0.05	8	0	0
16	20.9%	0	0	0	0	0
17	20%	0	0	2	0	0
18	20.6%	3	0.15	18	0	0
19	20.4%	0	0	3	0	0
20	20.9%	0	0	0	0	0
21	20.8%	0	0	0	0	0
22	18.3%	2	0.1	3	0	0
23	20.8%	0	0	0	0	0
24	20.6%	0	0	6	0	0
25	20.8%	0	0	0	0	0
26	20.8%	0	0	0	0	2
27	20.7%	0	0	0	0	0
28	9%	100	5	3	0	0
28 B	19.9%	0	0	2	0	0
29	20.8%	0	0	2	0	0
30	20.9%	0	0	0	0	0
31	20.8%	0	0	0	0	0

The parking area at the north end of the park is likely located over waste. Punch bar sampling in this area has consistently indicated methane production and detection of carbon monoxide gas subsurface during sampling. Since 2006, WM staff have conducted additional sampling around the parking area at the north end of the park prior to the City of Wyoming using this area for fireworks launching in July. Samples denoted with an "S" were taken using a 1 liter bottle placed over an area of ground (7 sq.in.). Pressure is applied to the bottle to form a semi-tight seal. A hole in the bottle allowed the sampling probe to draw from inside the bottle for 1 minute, and the measurement is recorded. The results of the sampling are provided to the City of Wyoming prior to the event. The 2023 fireworks sampling locations are shown in Figure 3.23.4-E. The results of the June 2023 sampling are in Table 3.23.4-C. (*Sampling data for this landfill is in the files at Hamilton County Public Health*).

TABLE 3.23.4-C (6/22/2023)

Sample Number	Time	Hydrogen Sulfide (ppm)	Carbon Monoxide (ppm)	LEL (%)	Methane (%)	Oxygen (%)
1	2:55 PM	0	4	2	0.1	20.7
1S	2:56 PM	0	0	0	0	20.9
2	2:58 PM	0	2	2	0.1	19.8
2S	3:59 PM	0	0	0	0	20.8
3	3:01 PM	0	4	3	0.15	19.2
3S	3:02 PM	0	0	0	0	20.8
4	3:04 PM	0	0	4	0.2	18.6
4S	3:05 PM	0	0	0	0	20.9
5	3:07 PM	0	7	2	0.1	19.8
5S	3:08 PM	0	0	0	0	20.9
6	3:10 PM	0	0	3	0.15	19.2
6S	3:11 PM	0	0	0	0	20.9
7	3:13 PM	0	0	0	0	20.4
7S	3:14 PM	0	0	0	0	20.9
8	3:16 PM	0	0	0	0	20.6
8S	3:17 PM	0	0	0	0	20.9
9	3:19 PM	0	2	0	0	20.7
9S	3:20 PM	0	0	0	0	20.9
10	3:22 PM	0	0	3	0.15	19.3
10S	3:23 PM	0	0	0	0	20.9
11	3:25 PM	0	0	0	0	20.2
11S	3:26 PM	0	0	0	0	20.9
12	3:28 PM	0	0	0	0	20.4
12S	3:29 PM	0	0	0	0	20.9
13	3:31 PM	0	0	0	0	20.3
13S	3:31 PM	0	0	0	0	20.8
14	3:40 PM	0	0	0	0	20.9
15	3:42 PM	0	0	0	0	20.9
16	3:44 PM	0	0	0	0	20.9
17	3:46 PM	0	0	0	0	20.9
18	3:48 PM	0	0	0	0	20.9
19	3:34 PM	0	0	0	0	20.9
20	3:36 PM	0	0	0	0	20.9
21	3:38 PM	0	0	0	0	20.9

Ohio EPA conducted an explosive gas investigation at the landfill on October 28, 2021. Gas monitoring was conducted at 30 punch bar locations around the former landfill. Methane was detected at 9 locations in concentrations ranging from 0.1 – 15.5% methane.

SITE INSPECTIONS

The site was inspected by HCPH on December 22, 2023. No violations, nuisance conditions, or maintenance issues were observed on the site.

SITE PRESENT DAY

In 1985 the property was developed into the current day Oak Park recreational facility, owned and operated by the City of Wyoming. The park includes two soccer athletic fields, a skateboard park, basketball courts, an asphalt walking trail, a picnic area with a children's playground, and associated parking areas and green space.



Figure 3.23.4-C
Wyoming Closed Landfill

- ◆ = Surface Water Sampling Location
- = Approximate Limits of Waste



Figure 3.23.4-D
Wyoming Fall
Gas Sampling





-  = Approximate Gas Monitoring Location
-  = Approximate Limits of Waste



Figure 3.23.4-E
Wyoming Fireworks
Gas Sampling

-  = Approximate Gas Monitoring Location
-  = Approximate Limits of Waste

