



**Environmental
Protection Agency**

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

INTEROFFICE COMMUNICATION

TO: Cozart Landfill File, Athens County
Steve Rine, Manager, DMWM/SEDO
Rich Fox, Supervisor, DMWM/SEDO

FROM: ^{JOC} Joe Holland, SEDO-DMWM Inspector

SUBJECT: June 2, 2011, Site Visit Documentation

DATE: June 29, 2011

On June 2, 2011, a site visit was conducted at the closed Cozart Landfill to determine the overall site conditions of the landfill including any observed violations, maintenance issues with the cap or other engineering components, and/or recommendations for general improvements that could be made at the site. Present for the visit were Mark Mansfield and Elizabeth Herron, DMWM/SEDO, and myself. Steve Saines and Joe Laughery of the Division of Drinking & Ground Water were also on site sampling ground water monitoring wells. Following is a summary of the site conditions at the time of this visit.

Access

The gate to the landfill is locked and site access is restricted. Lester Green, a nearby property owner, maintains a key to the site and is under contract by DMWM to be the caretaker for the facility.

Vegetation Cover

The quality of vegetation ranges from thick and dense to a few barren spots. Most of the barren areas appear to be off the landfill cap in what appears to be a borrow area for the landfill. However, the southern outslope of the landfill has a number of barren spots that have facilitated some erosion (see below). These areas are identified in the attached IOC from Mark Mansfield. The site continues to be mowed at least twice a year by Mr. Green.

Erosion

Some areas of erosion exists on out slopes of the landfill. One severe cut continues to exist in the rock channel above the south leachate collection tank just north of the access road and on the landfill cap. Efforts to add a concrete mixture within the rock channel have been ineffective and allowed water to channel underneath the concrete and rock and erode the cap. The attached IOC from Mr. Mansfield geo-locates all problem areas observed at the time of this visit.

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Explosive Gas System

Ten passive gas vents are located in a 200 square foot grid on the landfill cap surface. During our visit, Mr. Mansfield and I measured and recorded water levels in the gas vents. In addition, the vents were geo-located on an aerial photograph. Please see the attached IOC for both the water level data and geo-locations.

At least four or more structures are located within 1000 feet of the footprint of waste. Prior to this visit, no explosive gas monitoring had been conducted at the facility and no reports had been submitted to the district office.

At the time of this visit, and based on the presence of structures within 1,000 feet of the landfill, explosive gas monitoring was conducted at six punch bar locations surrounding the landfill. The locations and monitoring results are documented in Mr. Mansfield's attached IOC.

Ground Water Monitoring

Five ground water monitoring wells are at the site. One monitoring well, MW-2, is a low yield well that does not allow the collection of a representative groundwater sample. DDAGW/SEDO is tasked to collect samples biannually at the landfill. Reports are filed with DMWM, CO and SEDO. During this visit, the samples were collected from four monitoring wells and a surface spring that was found to the northeast of the landfill. All locations were geo-located during the sampling event.

Leachate

Two ten thousand gallon tanks collect leachate at the landfill. One tank is at the base of the north drainage pattern and one tank is at the base of the south drainage pattern. Leachate is collected via perforated pipe laid beneath the waste that funnels leachate to the tanks by gravity. On top of each tank is a by-pass valve that has in the past allowed leachate to flow to the tanks or by-pass the tanks and discharge to the ravines. These pipes were capped in or around 2008. However, at the time of our visit, Ms. Herron observed and documented that the bypass pipe at the south tank appeared to be leaking and leachate was discharging to the ravine.

During the visit, the landfill cap and perimeter were walked to view and geo-locate any cap drain outlet pipes and to identify any problem areas associated with the landfill. The location of the cap drain outlets and identified problem areas are documented in Mr. Mansfield's attached IOC.

JH/jg

Attachment

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**ATHENS COUNTY
FAC – COZART LANDFILL**

INTEROFFICE COMMUNICATION

TO: Joe Holland, SEDO-DMWM
FROM: *mm* Mark Mansfield, SEDO-DMWM
SUBJECT: Cozart Landfill – June 2, 2011 Site Visit
DATE: June 6, 2011

On June 2, 2011, I accompanied you to the Cozart Landfill in Athens County to provide engineering assistance in the evaluation of several aspects of this closed landfill. This evaluation included explosive gas monitoring, geo-location of site details (gas vents, monitoring wells, punch bar locations, cap drain outlets, etc.), determination of leachate levels in the existing gas vents, and a survey of conditions of the cap and drainage structures.

EXPLOSIVE GAS MONITORING

Using an RKI GX-2003 Multi-Gas Meter, we measured explosive gas concentrations at six locations surrounding the landfill. Locations were selected as near the facility property line as possible and directly between the landfill and any structures located within 1,000 feet. Please see the enclosed map for punch bar locations. The field log is also enclosed.

Punch Bar Data

Name	Latitude	Longitude	% of Lower Explosive Limit
PB1	39.23131	-81.84912	0%
PB2	39.23117	-81.84896	1%
PB3	39.22971	-81.84961	2%
PB4	39.22879	-81.84915	6%
PB5	39.22875	-81.84825	0%
PB6	39.22878	-81.84685	2%

Methane is explosive in concentrations between 5% (Lower Explosive Limit) and 15% (Upper Explosive Limit) by volume. As such, 100% of the Lower Explosive Level (LEL) would equate to 5% methane by volume. As seen from the above data, the highest reading found was 6% of the LEL (0.3% by volume).

GAS VENTS

Ten gas vents were identified atop the landfill cap. These vents were geo-located (map enclosed) and the water levels within the vents were measured using a Solinst Water Level Meter, Model 101. Data is presented in the table below.

Gas Vent Data

Name	Latitude	Longitude	Ground Elev. (est) (ft)	Base of Waste Elev. (est) (ft)	Water Level (ft)	Base of Well (ft)	Standpipe Height (ft)	Water Level (bgs) (ft)	Base of Well (bgs) (ft)	Water Height in Well (ft)
GV1	39.22942	-81.84743	894	870	6.8	14.4	4.0	2.8	10.4	7.6
GV2	39.22941	-81.84670	879	857	16.3	16.7	4.8	11.5	11.9	0.4
GV3	39.22986	-81.84628	874	848	20.5	27.1	6.2	14.3	20.9	6.6
GV4	39.23037	-81.84559	856	839	28.9	30.5	3.5	25.4	27.0	1.6
GV5	39.23041	-81.84486	855	838	15.9	19.5	5.2	10.7	14.3	3.6
GV6	39.23095	-81.84559	873	850	19.7	23.4	3.8	15.9	19.6	3.7
GV7	39.23095	-81.84627	871	838	20.4	22.2	3.2	17.2	19.0	1.8
GV8	39.23039	-81.84698	882	846	22.2	25.4	4.5	17.7	20.9	3.2
GV9	39.22986	-81.84716	890	857	16.9	17.1	4.6	12.3	12.5	0.2
GV10	39.23097	-81.84696	862	837	15.4	22.1	2.8	12.6	19.3	6.7

As noted above, the water (leachate) levels within the gas vents ranged from 0.2 feet to 7.6 feet. As a percentage of the well depth, the levels ranged from 1.6% to 73.1%.

GROUND WATER MONITORING WELLS & Northeast Seep

The site ground water monitoring wells were geo-located (map is enclosed). In addition, a seep to the northeast of the landfill was also geo-located. The following table provides the geo-location data.

Ground Water Monitoring Well & Seep Data

Name	Latitude	Longitude
MW1	39.22998	-81.84956
MW1R	39.22985	-81.84959
MW2	39.23008	-81.84312
MW3	39.22878	-81.84683
MW4	39.23141	-81.84827
MW5	39.23157	-81.84533
Northeast Seep	39.23264	-81.84389

CAP DRAIN OUTLET PIPES

The cap drainage layer is drained via 4-inch white corrugated pipes spaced intermittently around the perimeter of the landfill. The perimeter was walked and all visible outlet pipes were geo-located (map is enclosed). As SEDO does not have a set of as-built plans from the site's closure, it is unclear if additional outlet pipes are present and not readily visible.

Cap Drain Outlet Pipe Data

Name	Latitude	Longitude
CD1	39.22896	-81.84682
CD2	39.22952	-81.84525
CD3	39.22965	-81.84503
CD4	39.23046	-81.84394
CD5	39.23075	-81.84383
CD6	39.23137	-81.84531
CD7	39.23162	-81.84610
CD8	39.23141	-81.84718
CD9	39.23131	-81.84766
CD10	39.23094	-81.84834
CD11	39.22910	-81.84795

PROBLEM AREAS

Finally, the landfill was surveyed for problem areas (erosion, ponding, lack of vegetation, etc.). Geo-location data was obtained and is included in the enclosed map.

Problem Areas

Area	Latitude	Longitude	Comment
1	39.22894	-81.84703	Hillside Erosion
2	39.22916	-81.84570	Unexplained Wet Area in Perimeter Ditch
3	39.22960	-81.84508	Surface Water Undercutting Downshute
4	39.23024	-81.84409	Ponding in Surface Water Ditch
5	39.23036	-81.84402	Hillside Erosion
6	39.23157	-81.84658	Erosion in Perimeter Ditch
7	39.22993	-81.84782	Barren Spot (No Vegetation)

Additionally, many of the cap drain outlets were partially blocked by soil and/or moss. These outlets should be repaired such that free flow of water out of the cap drainage layer is maximized. Also, a few of the metal gas vent cap/spinners were rusted or not free spinning. Our survey specifically noted GV3, GV4, and GV10. It was also noted that GV6 was missing its side cap.

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If you have any questions, please let me know.

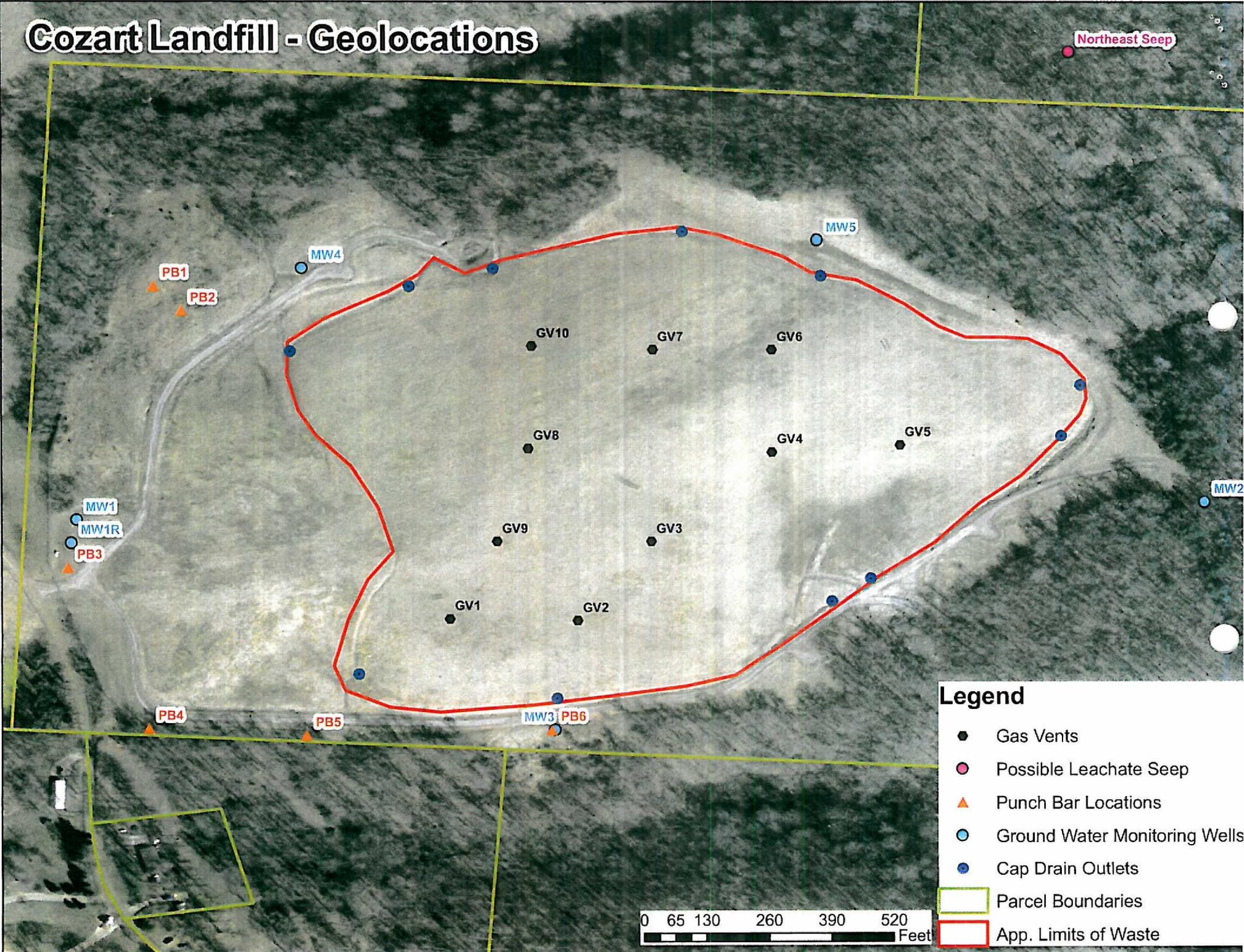
Enclosures (3)

Mark

MM/jg

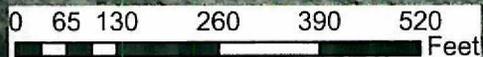
cc: Rich Fox, SEDO-DMWM (w/enclosures)

Cozart Landfill - Geolocations



Legend

- Gas Vents
- Possible Leachate Seep
- ▲ Punch Bar Locations
- Ground Water Monitoring Wells
- Cap Drain Outlets
- ▭ Parcel Boundaries
- ▭ App. Limits of Waste



EXPLOSIVE GAS MONITORING PUNCH BAR STATION REPORT

Sanitary Landfill: Cozart Ldf Location (County): Athens

Tested By: Mark Mansfield / Joe Holland Date: 6/2/11

Gas Instrument Type: Multi Gas Meter Model No.: RKI GX-2003

Last Calibrated: 6/1/11 Calibration Gas: ^{50% LEL,} 100% Methane (by V) Detection Limit: 1% LEL - 100% (V)

Sampling Method: Bar Hole Probe

Test Method (Punch Bar/Other): Punch Bar

Station Designation	Time	Explosive Gas % Volume of <u>% LEL</u> (circle one)	Threshold Limit	% Gas is higher/lower than threshold	Punch Bar Hole Depth
PB 1	8:50 AM	0%	100%	Lower	36"
PB 2	9:00 AM	1%	100%	Lower	36"
PB 3	9:05 AM	2%	100%	Lower	36"
PB 4	9:10 AM	6%	100%	Lower	36"
PB 5	9:15 AM	0%	100%	Lower	36"
PB 6	9:20 AM	2%	100%	Lower	36"

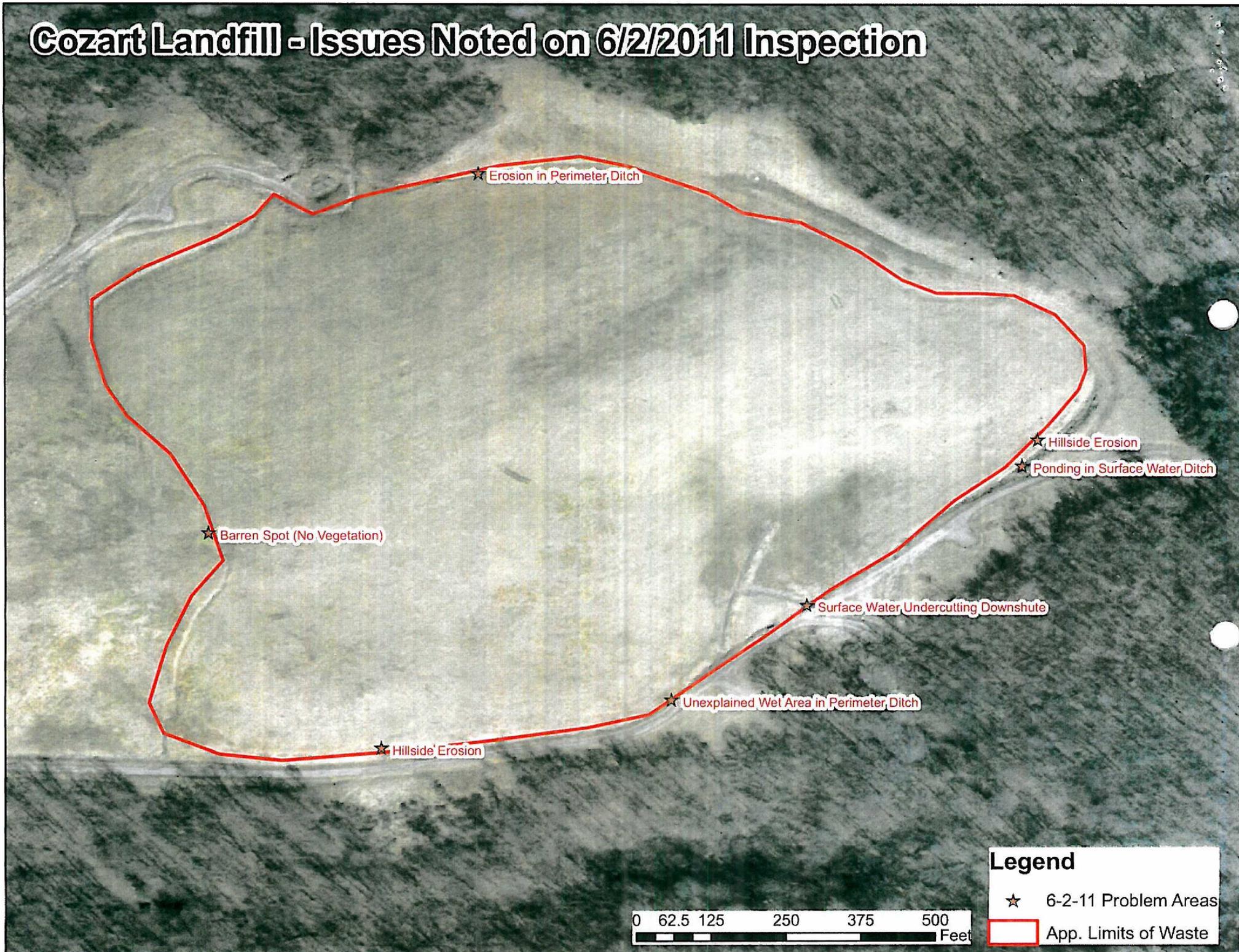
Weather Conditions: Sunny / Warm Odors Present? Yes No

Barometric Pressure: _____ Relative Humidity: _____ Outside Air Temperature: 75°

Soil Conditions: Moist

Comments: _____

Cozart Landfill - Issues Noted on 6/2/2011 Inspection



Closed Cozart Sanitary Waste Landfill Facility Inspection Checklist

Inspector(s): Elizabeth Herron, Joe Holland, and Mark Mansfield

Date: June 2, 2011

Site conditions: Sunny, 85F, no rain in the last 48 hours

According to OAC 3745-27-14, closed sanitary landfills must be inspected to assure that the leachate management, surface water management and ground water management systems are performing adequately. In addition, the cap of the landfill must be maintained in order to prevent infiltration.

Landfill Security
1) Is the condition of the locks, gates and fences adequate to prevent access? If not, what corrective action is recommended? Yes, the condition is adequate to prevent access.
2) Is signage indicating a closed landfill present and visible? Yes.
3) Are there any indications of vandalism or trespass? If so, note the location and describe the condition. Is corrective action necessary? There was no indication of vandalism or trespass.
General Site/Cap Maintenance
1) Is there excessive erosion on the haul roads or are they damaged and in need of repair? There is some erosion on the haul road near the South tank that should be repaired.
2) Is there any excessive erosion around the leachate collection tanks that needs attention? There is some erosion around the pad of the North Leachate tank that should be assessed.
3) Are there any animal burrows that can damage the cap or leachate collection system? If so, describe the location and indicate if the burrows need immediate attention. No damaging animal burrows were observed.
4) Are there any noticeable indications of settlement or slumping of the cap? If so, note the location(s) and describe the condition. Is corrective action necessary? No, settling or slumping of the cap was noted. There were, however, two areas of hillside erosion and one area of surface water undercutting a down chute that should be addressed. See the attached aerial photo with locations noted on it.

No.

Groundwater Monitoring Network

- 1) Can monitoring wells be accessed (i.e. roads are navigable and vegetation hasn't obscured the well)? If not, indicate what maintenance is needed.

All monitoring wells were accessible.

- 2) Are monitoring wells locked? Are cap locks in good condition?

Some of the wells were missing locks and other locks were functioning poorly. Arrangements have been made to purchase new locks at the start of the fiscal year.

- 3) Are bladder pumps in good working condition?

Yes.

- 4) Are wells in need of refurbishment or redevelopment? If so, specify the well and its condition. What actions are recommended?

MW-2 is not able to be sampled because it does not recover in a suitable amount of time after it has been purged. An attempt to surge the well in March 2011 and unblock it appears to have been unsuccessful. No course of action has been determined. The Division of Drinking and Ground Waters should be consulted.

General

- 1) Are there any inhabited structures within 1000 feet of waste placement? If so, this indicates a need for a soil gas monitoring plan.

Based on review of a 2007 aerial photo, it appears that maybe as many as 6 residences within 1000 feet of waste placement. The photo with the 1000 buffer marked on it is attached.

- 2) Are there are concerns or conditions not previous identified in this checklist that needs attention or maintenance?

Mark Mansfield also prepared an interoffice communication dated June 6, 2011 to Joe Holland with information about the June 2, 2011 inspection of Cozart. This memo contains some additional information about a punch bar data that was collected and water levels that were taken in the gas vents.