

GUDE LANDFILL REMEDIATION

GLCC/DEP MEETING NO. 7

DATE: January 14, 2010
TIME: 7:30 PM to 9:00 PM
LOCATION: Montgomery County Transfer Station

ATTENDANCE:

<u>Name</u>	<u>Organization</u>	<u>Designation</u>
Dean Dozier	Gude Landfill Concerned Citizens (GLCC)	Member
Laszlo Harsanyi	Gude Landfill Concerned Citizens (GLCC)	Member
Julia Tillery	Gude Landfill Concerned Citizens (GLCC)	Member
Peter Karasik	Montgomery County Dept. of Env. Protection (DEP)	Section Chief
Steve Lezinski	Montgomery County Dept. of Env. Protection (DEP)	Engineer III
Barb Roeper	EA Engineering, Science, and Technology, Inc. (EA)	DEP Consultant
Pete Lekas	EA Engineering, Science, and Technology, Inc. (EA)	DEP Consultant

The Meeting Agenda is included as Attachment 1.
Contact information for attendees is included as Attachment 2.
Other Attachments are referenced within the text.

MINUTES:

- 1) Dean Dozier, Laszlo Harsanyi and Julia Tillery of GLCC explained that the objective and mission of GLCC are being reviewed and formalized. The group will continue to attend meetings and pass information to the homeowners associations (HOAs). The HOA boards will be asked to recognize the standing GLCC committee and affirm the HOA presidents as the representatives appointed to GLCC. GLCC will expect DEP to communicate directly with the HOAs and the residents, including letters and website updates. Ms. Tillery mentioned that the existing GLCC website will be removed in lieu of the County's comprehensive webpage. Existing email notification procedures through the GLCC web address (GLCC@hollybrooke.org) will remain intact as the HOA presidents are included within the distribution chain.
- 2) DEP presented a draft letter regarding the landfill remediation project and field activities associated with the proposed groundwater well locations, which will be distributed to the Community at a future date. DEP requested comments from meeting attendees. It was agreed that there should be a statement regarding the possibility of temporary nuisances to the residents, including dirt, dust, and noise. The letter will be sent to the HOA presidents (Nick Radonic, Laszlo Harsanyi and Dave Peterson), and the HOAs will distribute the letter via place it in their respective newsletters. After the HOAs are notified, DEP will send a separate letter to the individual residents in the immediate vicinity of the proposed activities.

- 3) Steve Lezinski of DEP requested approval of the minutes from GLCC/DEP Meeting No. 6 (December 10, 2009). He noted that the minutes include a list of action items, which was requested during a prior meeting. GLCC approved the meeting minutes.
- 4) Julia Tillery inquired if the offsite removal of purge/development water was still planned for during groundwater well construction and if this implied that the water is already known to be harmful. Peter Karasik of DEP explained that offsite removal of the water is not required and is not practiced by the County during its quarterly sampling events for existing groundwater monitoring wells. For the new groundwater wells, offsite water disposal is a conservative measure until chemical concentrations of the groundwater are reported by the laboratory. In addition, the presence of the water and any sediment on the ground surface may be aesthetically undesirable at offsite well locations.
- 5) Pete Lekas of EA presented and discussed the proposed groundwater monitoring well location map and field notes, which is included as Attachment No. 3. Pete Lekas and Steve Lezinski visited the well locations on January 7, 2010 to identify potential issues with respect to well placement and access. Some adjustments were made. MW-9 is to be located just beyond the curb in the grassy area. MW-10 and MW-11A/B are located on M-NCPPC property and would be accessed from Bettendorf Court; DEP will coordinate with M-NCPPC for access. The location of MW-12 was not finalized; since no HOA common property was identified, the well may be placed in the court. DEP will coordinate with the County Department of Permitting Services. Access for MW-5 (proposed for WSSC property) is still under review; this well may require more coordination for stream crossing and may be eliminated if access proves too difficult. The wells proposed within the landfill footprint are expected to be data collection wells (waste/soil logging and groundwater grab sample), rather than permanent monitoring wells. Steve Lezinski stated that the map and notes will be submitted to MDE for comment by the end of January. Peter Karasik noted that well permits and access agreements are still required before drilling would proceed.
- 6) Steve Lezinski presented a summary of the December 21, 2009 meeting with MDE regarding the Gude Landfill Remediation project, which is included as Attachment No. 4. DEP provided a status update to MDE on Phase 0 and Phase 1 work, including a summary of the waste delineation activities. Based on the presence of waste offsite (on M-NCPPC property), MDE stated that the best approach for the County would be to gain control of the impacted M-NCPPC property for purposes of long-term maintenance and access. DEP will review legal access agreements or potential property purchase and exchange options.

DEP submitted the Quarterly Landfill Gas Monitoring Report to MDE; no exceedences were noted during the monitoring event. In accordance with the MDE approved Landfill Gas Monitoring Plan, the County shall install 24 new perimeter gas monitoring wells along the Landfill property boundary. The gas monitoring wells will be placed in two phases (landfill property and offsite, once access is established), starting by the end of March. MDE also required interim corrective measures for recently-confirmed leachate seeps; the objective is to direct any surface flow of leachate back into the Landfill waste mass. DEP has three items to submit by the end of January 2010: (1) proposed locations for new ground water monitoring wells; (2) planned interim corrective

measures for the seeps on the northwest slope and (3) the waste delineation study.

- 7) Steve Lezinski stated that dioxin/furan testing of the gas-to-energy engine at the Gude Landfill is scheduled for the first week of March 2010. The flare was previously tested. All of the data will be provided at the same time.
- 8) The list of action items was reviewed and updates are provided below.
- 9) GLCC/DEP meetings will continue to be held on the second Thursday of each month. The next meeting will be held on Thursday, February 11, 2010 from 7:30 to 9:00 PM at the Transfer Station.

Action and Follow-up Items

- 5-01 DEP and EA to research the existence of a comprehensive database for closed landfill reuse options.
Status: Closed. EA provided a list of landfill reuse resources, which is included as Attachment 5.
- 5-02 GLCC to schedule next Derwood Community Meeting; second quarter 2010.
Status: Closed. GLCC noted that the Community will continue to be welcome at the monthly meetings, and these will be included in the DEP letter to the HOAs and the residents. Therefore, GLCC does not plan to schedule another community meeting at this time.
- 5-03 DEP to contact MDE regarding the spring and northwest slope surface water sampling, and leachate seep repairs on northwest slope.
Status: Closed. DEP and MDE met on December 21, 2009 and discussed these issues. Refer to Attachment No. 4.
- 5-04 DEP to post the recent aerial survey of the Gude Landfill on the remediation project website.
Status: Open. DEP to obtain the final file from EA for posting.
- 5-05 DEP to evaluate if Biochemical and Chemical Oxygen Demand (BOD/COD) can be included for analysis purposes in surface water samples.
Status: Open. After further discussion, GLCC agreed that BOD sampling would not be conducted, since it would be difficult to discern whether the results were affected by the landfill. DEP agreed to collect samples for COD analysis. The objectives and plan for COD sampling will be developed by DEP and EA for presentation at the next GLCC meeting.
- 5-06 DEP to reschedule the dioxin/furan testing of the Gude Landfill gas-to-energy engine.
Status: Closed. DEP scheduled the testing for the first week of March 2010.

- 5-07 EA to provide a list of the chemical analytes that were detected in the Gude Landfill groundwater/surface water sampling that are carcinogens.
Status: Closed. EA provided a summary of risk and carcinogenic effects for chemical analytes, which is included as Attachment No. 6. It was noted that the list only summarizes the published effects of these chemicals; it does not imply that the concentrations reported in samples from the Gude Landfill are expected to cause these effects. Risks from these chemicals are calculated on a site-specific basis, using information on complete pathways and reported analytical concentrations.
- 6-01 DEP and EA to create a list of open agenda items (i.e., action and follow-up items).
Status: Closed. This list is included in these minutes and will be carried into subsequent minutes.
- 6-02 DEP and EA to finalize more precise locations of the new monitoring wells. Follow-up work with permitting agencies, utility locators, and adjoining property owners will be conducted.
Status: Open. Additional location information finalized. DEP to continue follow-up on access agreements and permitting.
- 6-03 GLCC/DEP/EA to finalize an approach to communicate all aspects of the expanded monitoring well program to the Derwood Community.
Status: Closed. Initial letters to be sent to the HOAs, with follow-up letters to residents in the immediate area of proposed intrusive activities.

New Action and Follow-up Items

- 7-01 DEP to complete interim measures for leachate redirection at seep locations.
- 7-02 DEP to finalize and send letter to HOA regarding the landfill remediation project and proposed groundwater monitoring well locations within the Community.
- 7-03 DEP to obtain dioxin/furan test results for flare and engine.

The above summation is the writer's interpretation of the items discussed at the meeting. Comments involving differences in understanding of any of the meeting items will be received for a period of thirty (30) days from the date of these meeting minutes. Clarifications will be made, as deemed necessary. If no comments are received within the specified time period, the minutes will remain as written.

ATTACHMENT 1



**Gude Landfill Remediation
Gude Landfill Concerned Citizens
Monthly Meeting No. 7**

Meeting Agenda

- 1. Proposed Changes to GLCC's Objectives and Mission**
- 2. Review and Approval of GLCC/DEP Meeting Minutes (Meeting No. 6)**
- 3. Proposed Groundwater Well Locations**
 - a. Proposed Well Location walk through on 1-7-10
 - b. Summary of Field Notes
- 4. Notification to Community regarding Well Drilling and Remediation Assessment**
 - a. DEP Draft Letter
 - b. DEP to Send Letter to Individual Homeowners (With Proximity to Well Locations)
 - c. GLCC to Distribute Letter to Applicable HOAs for inclusion in HOA Newsletters with Copy to County (Optional)
- 5. Next Meeting/Action Items**

**Gude Landfill Remediation
Gude Landfill Concerned Citizens
Monthly Meeting No. 7**

Meeting Agenda

Possible Second Meeting in January (28th)

- 1. MDE/DEP Meeting 12-21-09**
 - a. See Attached Meeting Summary

- 2. Future Correspondence with M-NCPPC**
 - a. Waste Delineation Study Findings
 - b. Groundwater and Landfill Gas Well Installation

- 3. Review of applicable GLCC/DEP Meeting Action & Follow-up Items**

ATTACHMENT 2

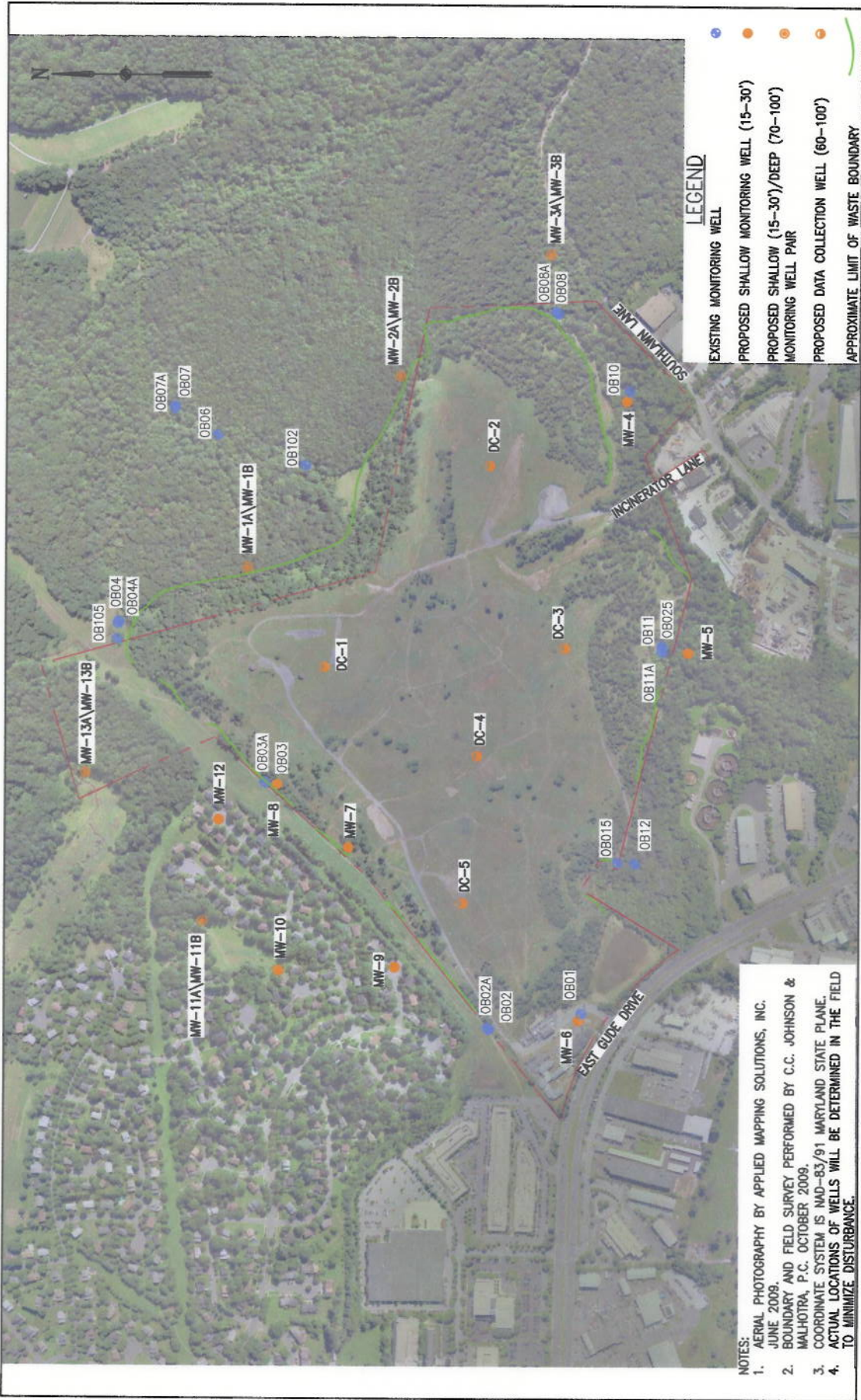


Date	January 14, 2010
Time	7:30 - 9:00 PM
Meeting	Gude Landfill Remediation: GLCC/DEP

Name	Affiliation	Phone	Email	Address
Stephen Lezak	DEP	240-777-6590	—	—
Barb Roper	EA	410 329 5150	—	—
Peter Lekas	EA	410 329-5117	—	—
Peter Karasik	DEP	240-777-6569		
LABELLO HARSANYI	GLCC/PSH0A2	301-840-3822		
Julia Tillery	GLCC	8202.329.8740		
Dean Dezier	"	—		

ATTACHMENT 3





LEGEND

- EXISTING MONITORING WELL
- PROPOSED SHALLOW MONITORING WELL (15-30')
- PROPOSED SHALLOW (15-30')/DEEP (70-100') MONITORING WELL PAIR
- PROPOSED DATA COLLECTION WELL (60-100')
- APPROXIMATE LIMIT OF WASTE BOUNDARY

NOTES:

1. AERIAL PHOTOGRAPHY BY APPLIED MAPPING SOLUTIONS, INC. JUNE 2009.
2. BOUNDARY AND FIELD SURVEY PERFORMED BY C.C. JOHNSON & MALHOTRA, P.C. OCTOBER 2009.
3. COORDINATE SYSTEM IS NAD-83/91 MARYLAND STATE PLANE.
4. ACTUAL LOCATIONS OF WELLS WILL BE DETERMINED IN THE FIELD TO MINIMIZE DISTURBANCE.

PROPOSED GROUNDWATER MONITORING WELL LOCATION MAP
SCALE: 1"=500'



**GUDE LANDFILL
PROPOSED GROUNDWATER & DATA COLLECTION WELL LOCATIONS**

FIELD NOTES FROM 1-7-10 SITE VISIT

MW-1A/MW-1B

- Northeastern Landfill Boundary, on M-NCPPC Property.
- ±200 ft. from landfill access road to Property Line Stake (B), near access point.
- ±20 ft. access between two larger diameter trees.
- ±180 ft. down slope from access point to proposed groundwater well location.
- Potential slope concerns for well drilling equipment.
- Potential tree removal = 0-2 small diameter (4-6 inch).
- Removal of downed trees.

MW-2A/MW-2B

- Eastern Landfill Boundary, on M-NCPPC Property.
- ±185 ft. from Survey Marker (614) down landfill access road to access point.
- ±20-25 ft. access between two larger diameter trees.
- ±50 ft. from access point to proposed groundwater well location.
- Potential slope concerns for well drilling equipment.
- Potential tree removal = 0-3 small diameter (4 inch).
- Removal of downed trees.

MW-3A/MW-3B

- Southeastern Landfill Boundary, on M-NCPPC Property (near Well 8/8A).
- Access from landfill access road off of concrete pad area.
- Rip rap ditch crossing concern for well drilling equipment.
- ±20-25 ft. access between two large diameter trees.
- ±170 ft. from access point to proposed groundwater well location.
- Removal of downed trees only.
- Avoid watered-in manhole type structure.

MW-4

- Southeastern Landfill Boundary, on County Property (near Well 10).
- Access from Southlawn Lane near Survey Pin (044).
- ±30 ft. access between set boulders.
- ±215 ft. from Property Line Stake (V) to proposed groundwater well location.
- Removal of downed trees and boulders only.
- Stream setback.
- Avoid WSSC manhole.
- Traffic concern upon initial access from Southlawn Lane.

**GUDE LANDFILL
PROPOSED GROUNDWATER & DATA COLLECTION WELL LOCATIONS**

FIELD NOTES FROM 1-7-10 SITE VISIT

MW-5

- Southern Landfill Boundary, on WSSC Property (near Wells 11 & 25).
- Access from Incinerator Lane to landfill access road.
- Access point potential to east and west of existing groundwater wells.
- East Access Location
 - Small/Large diameter tree removal and ramp building.
 - ±130 ft. from access point to stream crossing.
 - Stream crossing permit and engineered bridge (less significant).
 - ±150 ft. to proposed groundwater well location.
- West Access Location
 - Minimal to no tree removal.
 - ±15 ft. from access point to stream crossing.
 - Stream crossing permit and engineered bridge (more significant).
 - ±50-75 ft. to proposed groundwater well location.
- Stream setback.
- Avoid WSSC manholes.
- Avoid existing groundwater monitoring wells.

MW-6

- Southwestern Landfill Boundary, on County/MCCH Property (near Well 1).
- Access from 600 E. Gude Drive Entrance to proposed groundwater well location.
- Avoid new pond construction and underground utilities/pipes.
- Traffic coordination for exiting the site with Men's Shelter.

MW-7

- Northwestern Landfill Boundary, on County Property (down slope of Soil Stockpile).
- Access from Gude Drive to Transcontinental/Columbia Gas ROW.
- Avoid damage to ROW ground surface.
- Fence cutting and re-wiring to gain access to proposed groundwater well location.
- Minimal tree and shrub removal.
- Removal of downed trees.

MW-8

- Northwestern Landfill Boundary, on County Property (near Well 3).
- Access from Gude Drive to Transcontinental/Columbia Gas ROW.
- Avoid damage to ROW ground surface.
- Fence cutting and re-wiring to gain access to proposed groundwater well location.
- Minimal tree and shrub removal.
- Removal of downed trees.

**GUDE LANDFILL
PROPOSED GROUNDWATER & DATA COLLECTION WELL LOCATIONS**

FIELD NOTES FROM 1-7-10 SITE VISIT

MW-9

- Off Landfill Property to West. Derwood Station South (near Dubuque Ct.).
- County ROW off curb line (need to confirm).
- ±25 ft. clear access point to proposed groundwater well location.
- Minimal land disturbance (depending on standpoint of nearby homeowner).
- Avoid underground utilities/pipes.
- Traffic concern with Community upon work performance.

MW-10

- Off Landfill Property to Northwest, on M-NCPPC Property (near Bettendorf Ct.).
- Cleared land appears to be stormwater drainage area.
- County/M-NCPPC ROW access off curb line to M-NCPPC Property (need to confirm).
- Proposed groundwater well location outside of stormwater drainage area.
- No anticipated tree removal.
- Minimal land disturbance; ground cover is low grasses.
- Avoid underground utilities/pipes.
- Traffic concern with Community upon initial entrance.

MW-11A/MW-11B

- Off Landfill Property to Northwest, on M-NCPPC Property (near Bettendorf Ct.).
- Cleared land appears to be stormwater drainage area.
- County/M-NCPPC ROW access off curb line to M-NCPPC Property (need to confirm).
- Proposed groundwater well location outside of stormwater drainage area.
- Potential Washington Gas Line/ROW (need to investigate).
- No anticipated tree removal.
- Minimal land disturbance; ground cover is low grasses.
- Avoid underground utilities/pipes.
- Traffic concern with Community upon initial entrance.

MW-12

- Off Landfill Property to Northwest. Derwood Station South (near Grinnell Terrace).
- County ROW off curb line (need to confirm).
- Not County Property, then proposed groundwater well location will be in homeowner's front or side yard.
- Homeowner's #15537 and 15538 face the proposed groundwater well location and back up to the Transcontinental/Columbia Gas ROW.
- Minimal land disturbance (depending on standpoint of nearby homeowner).
- Avoid underground utilities/pipes.
- Traffic concern with Community upon work performance.

**GUDE LANDFILL
PROPOSED GROUNDWATER & DATA COLLECTION WELL LOCATIONS**

FIELD NOTES FROM 1-7-10 SITE VISIT

MW-13A/MW-13B

- Northwestern County Property Boundary, (near Property Corner).
- Access from Gude Drive to Transcontinental/Columbia Gas ROW to WSSC access road through County property.
- ±20-25 ft. access road.
- ±15-20 ft. access point between small diameter trees.
- ±40 ft. from access point to proposed groundwater well location.
- Potential slope concerns for well drilling equipment on access road.
- Stream and wetlands set backs.
- Avoid WSSC manholes on shoulder of access road.

Data Collection Well (DC-1)

- Located N.E. portion of Landfill in proximity to Airplane Park.

Data Collection Well (DC-2)

- Located S.E. portion of Landfill in proximity to Soil Stockpile.

Data Collection Well (DC-3)

- Located South portion of Landfill in proximity to Tree Line.

Data Collection Well (DC-4)

- Located Center portion of Landfill in proximity to Interior Access Road.

Data Collection Well (DC-5)

- Located West portion of Landfill in proximity to Perimeter Access Road.

ATTACHMENT 4



Gude Landfill Remediation MDE & MC DEP Meeting December 21, 2009

Meeting Summary

Attendees

- Martha Hynson, MDE
- Kassa Kebede, MDE
- Andrew Grenzer, MDE
- Edward Carlson, MDE
- Peter Karasik, MC DEP
- Stephen Lezinski, MC DEP

Overview - positive meeting with MDE regarding progress of Nature and Extent Study and awareness of issues that impact site management and community relations.

Remediation Approach Update

- The County provided a status update on Phase 0 and Phase 1 of the Nature and Extent Study.
- Discussed County approach to mitigate waste placement beyond the Landfill property boundary, especially with regard to waste that was placed several hundred feet onto M-NCPCC property northeast of the landfill.
- Primary (preferred) option from MDE's perspective is for the County to be in control of the entire waste disposal footprint of the Landfill. This could be achieved through purchasing the adjacent property or some type of property swap.
- Secondary option for the County is to have a long term access and maintenance agreement such as a license agreement with contiguous property owners of impacted areas.
- These options are also applicable to the installation of groundwater and landfill gas wells along the Landfill property boundary.
- MDE did not see the benefits of drilling groundwater monitoring wells within the landfill. The County stated the wells would provide data to profile the Landfill: depth of waste, depth to water, baseline leachate data, waste and subsurface characterization, etc. County to review data needs with EA Engineering. (Possibly consider these wells primarily for data collection and convert to landfill gas wells).
- * - County Action Item – formally submit waste delineation study to MDE by end 1/2010.
- * - County Action Item – formally submit proposed groundwater well locations to MDE by end 1/2010.

Landfill Gas Monitoring & Reporting

- MDE was comfortable with delaying the permanent LFG Monitoring Wells along the areas of the Landfill where waste was placed beyond the property boundary.
- * - County Action Item – MDE directed the County to proceed with the installation of LFG Monitoring Wells along the remainder of the Landfill property, where there is no waste beyond the property line. This will be initiated by end of 3/2010.
- Installation of LFG Monitoring Wells to occur in two phases, phase I (wells that can be installed on existing County property) and phase II (wells requiring the purchase of property or the drafting and execution of long-term license agreements to assure access).
- MDE did not have any review comments on the LFG Monitoring Quarterly Report (submitted on 9/30/09)

**Gude Landfill Remediation
MDE & MC DEP Meeting December 21, 2009**

Meeting Summary

Site Conditions on the Northwest Slope

- The County provided a status update on the conditions along the Northwest Slope of the Landfill.
- MDE did not have any formal comments on the Spring and Northwest Slope Surface Water Sampling (submitted via email on 9/11/09).
- Reviewed proposed groundwater monitoring well locations vs. the two exceedences noted off-site in Springs 1 & 2. The County must submit a formal letter to MDE on the proposed locations for the new ground water monitoring wells in January 2010 for review.
- With respect to the Areas of Concern sampling and corrective actions for leachate seeps, MDE directed the County to perform interim repairs to the Northwest Slope and any leachate seeps on the Landfill.
- * - County Action Item – formally submit proposed corrective action plan and timeline for areas of the northwest slope impacted by leachate seeps by end 1/2010.

ATTACHMENT 5



**Gude Landfill Remediation
Gude Landfill Concerned Citizens
Monthly Meeting No. 6**

Action Item 5-01

LANDFILL REUSE RESOURCES

EPA Resources:

Superfund Redevelopment - <http://nsdi.epa.gov/superfund/programs/recycle/info/index.html>

Brownfields and Land Revitalization - <http://www.epa.gov/swerosps/bf/index.html>

EPA, Office of Emergency and Remedial Responses, Reuse of CERCLA Landfill and Containment Sites, OSWER 9375.3-05P, September 1999

Additional Resources:

Waste Age Magazine - <http://wasteage.com/>

Interstate Technology & Regulatory Council (ITRC) - <http://www.itrcweb.org/>

MSW Management - <http://www.mswmanagement.com/>

MassDEP Renewable Energy Projects at Closed Landfills - <http://www.mass.gov/dep/energy/landfill.htm>

ATTACHMENT 6



**Gude Landfill Remediation
Gude Landfill Concerned Citizens
Monthly Meeting No. 6**

Action Item 5-07

Potential risks or hazards for human exposure to media of concern at the Gude Landfill are determined based upon complete exposure pathways or exposure routes. An exposure pathway or exposure route describes a mechanism by which a population or individual may be exposed to chemicals present at a site. A completed exposure pathway or route requires the following four components:

- A source and mechanism of chemical release to the environment
- An environmental transport medium for the released chemical
- A point of potential human contact with the contaminated medium
- A human exposure route at the point of exposure

All four components must exist for an exposure pathway or route to be complete and for exposure to occur. Incomplete exposure pathways do not result in actual human exposure and are not contributors to potential risks or hazards to humans.

An evaluation of the potential carcinogenic chemicals detected within groundwater and surface water at the Gude Landfill was completed. The following table details the cancer characterization for chemicals detected in groundwater and surface water at the Gude Landfill. Chemical cancer characterizations describe a chemical's potential to cause cancer in humans and the conditions under which the carcinogenic effects may be expressed.

Chemical	Notes
<i>Carcinogenic to Humans</i>	
Arsenic	Inorganic arsenic only. Carcinogenic through oral and inhalation routes.
Benzene	Carcinogenic through oral and inhalation routes.
Chromium, hexavalent (Cr ⁺⁶)	Carcinogenic through inhalation routes only.
Trichloroethene	Carcinogenic through oral and inhalation routes. ¹
Vinyl Chloride	Carcinogenic through oral and inhalation routes.
<i>Likely to Be Carcinogenic to Humans</i>	
Beryllium	Carcinogenic responses through inhalation routes only. Limited evidence of carcinogenicity in humans exposed to airborne beryllium (lung cancer) and sufficient evidence of carcinogenicity in animals.
Cadmium	Carcinogenic responses through inhalation routes only. Limited evidence of carcinogenicity in humans exposed to cadmium dust and sufficient evidence of carcinogenicity in animals.
Tetrachloroethene	Carcinogenic responses through inhalation routes only. Limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in animals. ²

Chemical	Notes
<i>Suggestive Evidence of Carcinogenic Potential</i>	
Bis(2-ethylhexyl)phthalate	Carcinogenic responses through oral and inhalation routes. Sufficient evidence of carcinogenic in animals but inadequate data for human exposure.
1,2-Dibromoethane	Carcinogenic responses through oral and inhalation routes. Sufficient evidence of carcinogenic in animals but inadequate data for human exposure.
1,2-Dichloroethane	Carcinogenic responses through oral and inhalation routes. Sufficient evidence of carcinogenic in animals but no data for human exposure.
Heptachlor	Carcinogenic responses through oral and inhalation routes. Sufficient evidence of carcinogenic in animals but inadequate data for human exposure.
Gamma- Hexachlorocyclohexane	Carcinogenic responses through oral and inhalation routes. Sufficient evidence of carcinogenic in animals but inadequate evidence in humans. ²
Methylene Chloride	Carcinogenic responses through oral and inhalation routes. Sufficient evidence of carcinogenic in animals but inadequate data for human exposure.
1,2,3-Trichloropropane	Carcinogenic responses through oral routes only. Sufficient evidence of carcinogenic in animals but no data for human exposure.
<i>Inadequate Information to Assess Carcinogenic Potential</i>	
Hexachlorobutadiene	Carcinogenic responses through oral and inhalation routes. Some evidence of carcinogenicity in animals but no data for human exposure.
1,1,2,2-Tetrachloroethene	Carcinogenic responses through oral and inhalation routes. Some evidence of carcinogenicity in animals but no data for human exposure.
1,1,2-Trichloroethane	Carcinogenic responses through oral and inhalation routes. Some evidence of carcinogenicity in animals but no data for human exposure. Classified as carcinogen based upon structural similarity to 1,2-dichloroethane.
<i>Not Likely to Be Carcinogenic to Humans</i>	
1,2-Dichloropropane	No data for carcinogenic responses to humans and limited evidence of carcinogenicity in animals. ²

Source: United States Environmental Protection Agency (USEPA). 2010. *Integrated Risk Information System*. Database provided at: <http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showSubstanceList>.

Notes:

- 1) Trichloroethene is identified as a “confirmed human carcinogen” by the USEPA in a Draft Toxicological Profile. However, this classification will not be finalized until mid-2010.
- 2) The USEPA does not classify the carcinogenicity of this chemical. Carcinogenic potentials are taken from the International Agency for Research on Cancer, World Health Organization.