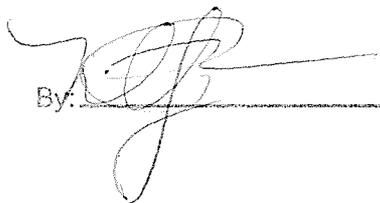


I certify this to be a true and accurate copy of the official documents as filed in the records of the Ohio Environmental Protection Agency.

By:  Date: 3/18/10

OHIO E.P.A.

MAR 18 2010

ENTERED DIRECTOR'S JOURNAL



## **Team Rumpke - Action Plan**

**March 12, 2010**

# Table of Contents

March 12, 2010.....	1
Table of Contents .....	2
1.0 Team Administration .....	3
1.1 Assumptions.....	3
1.2 Parties Represented on the Team .....	3
1.3 Team Leaders .....	4
Table 1. Team Rumpke Team Leaders.....	4
1.4 Communications Protocol.....	4
Table 2 . File names to use when communicating with Ohio EPA.....	5
2.0 Technical Goals for Addressing the Rumpke Incident .....	6
2.1 Affected and Unaffected Areas Included in this Incident .....	7
Table 3. Characteristics indicating likely involvement in incident.....	7
2.2 Monitoring.....	8
Table 4. Affected area monitoring requirements.....	8
2.3 Activities .....	9
Table 5. Activities and deadlines.....	9
3.0 Data Quality and Reporting .....	19
4.0 Action Plan Revision Process.....	19
5.0 Incident Cessation.....	20
6.0 Team contact info.....	21
Hamilton County Department of Environmental Services .....	21
Hamilton County Public Health.....	21
Colerain Township Fire Service.....	22
US EPA, Region 5.....	22
Ohio EPA, SWDO .....	23
Ohio EPA, Central Office.....	23
Rumpke Sanitary Landfill.....	24
Appendix I.....	25

## **1.0 Team Administration**

The incident at Rumpke Sanitary Landfill is a challenging situation from a variety of perspectives including:

- Involvement of multiple agencies, contractors, and consultants
- Monitoring, data gathering, interpretation
- Safety
- Communications (internal and external)
- Engineering and technical
- Legal and authorizations

For this reason, as the project advances, we must do so in a manner that maximizes the coordination and cooperation of the multiple parties involved, regardless of their affiliation, involvement, or history with the facility.

### **1.1 Assumptions**

- Everyone involved has a role to play and value to add to the project.
- We are better off sharing information, coordinating efforts, and working together to resolve the complex issues facing the facility.
- The resolution of these issues will require a team effort, with everyone bringing their respective information, expertise, talents, and ideas to the table.

### **1.2 Parties Represented on the Team**

- Rumpke and their consultants
- Ohio EPA Central Office, DAPC, DSIWM, PIC
- Ohio EPA Southwest District Office, DSIWM
- Hamilton County Department of Environmental Services
- Hamilton County Public Health
- Colerain Township Fire Department & Trustees
- US EPA

### 1.3 Team Leaders

Table 1. Team Rumpke Team Leaders

Agency	Employee
Ohio EPA	Russ Brown, SWDO, DSIWM, Field lead and local coordination
	Scott Heidenreich, CO, DSIWM Project Management & Technical Support
	Bruce McCoy, CO, DSIWM, Compliance and Enforcement Management
US EPA	Paul Ruesch
Hamilton County Department of Environmental Services	Bradley Miller
Hamilton County Public Health	Chuck DeJonckheere
Rumpke Sanitary Landfill	Larry Riddle, General Manager
	John Butler, Hughes Road LF Engineer
	Jay Roberts, Director of Engineering & Environmental Affairs

### 1.4 Communications Protocol

To foster good communications and minimize misunderstandings during this project the following Team Rumpke communications protocol is recommended. Each individual group represented on the team may also want to have its own internal communications protocol.

1. Regular update meetings are held – 10:30 am Thursday mornings. The meetings are held via teleconference using the following bridge line. All team members are welcome to participate.

The call in number is 1-888-619-1583. Contact Russ Brown for the passcode if you don't have it.

2. The Hamilton County Department of Environmental Services (HCDOES) is regularly briefing the Hamilton County Solid Waste Management District program manager on the status of this project.
3. The Hamilton County Public Health (HCPH) is providing updates at the Hamilton County Solid Waste Management Policy meetings.

4. Written communications. Each group represented on Team Rumpke needs to ensure the public records generated as part of this project are managed in a manner that complies with Ohio's public records law.
- a. To assist Ohio EPA in managing our public records for this project we request all team members to do the following when sending electronic or paper documents to Ohio EPA.
    - i. Include Greg Nichols, DSIWM, CO in the cc:
    - ii. Scan or create PDFs of all hard copy submittals and e-mail them to Ohio EPA
    - iii. On the first line of each e-mail identify which file the document belongs to as follows: "**Rumpke:[file name]**" (See Table 2 . File names to use when communicating with Ohio EPA)

Table 2 . File names to use when communicating with Ohio EPA

<b>File Name</b>
<b>Correspondence to/from USEPA</b>
<b>Correspondence to/from Hamilton County</b>
<b>Correspondence to/from Rumpke</b>
<b>Correspondence to/from Citizen Groups</b>
<b>Correspondence to/from SWMD</b>
<b>Correspondence to/from Other Parties</b>
<b>E-mails to/from USEPA</b>
<b>E-mails to/from Hamilton County</b>
<b>E-mails to/from Rumpke</b>
<b>E-mails to/from Citizen Groups</b>
<b>E-mails to/from SWMD</b>
<b>E-mails to/from Other Parties</b>
<b>IOCs</b>
<b>Memos to File</b>
<b>Meeting Notes</b>
<b>Field Notes</b>
<b>Inspection Logs</b>
<b>Sample Results/Interpretative Reports</b>
<b>Air Monitoring Results</b>
<b>Action Plans and comments</b>
<b>Engineered Component Evaluation Submittals</b>

<b>Odor Complaints</b>
<b>Press Releases</b>
<b>Public Notices</b>
<b>Confidential Attorney/Client Privileged documents</b>

- b. All communications to Ohio EPA should have the following people included: Paul Pardi, Russ Brown, Tracy Buchanan, Holly Hillyer, Joleen Cook, Bruce McCoy, Joe Goicochea, Scott Heidenreich, Scott Hester, Greg Nichols, Chuck DeJonckheere, and Brad Miller.
- c. All communications to Rumpke should include John Butler.
- d. Rumpke has established a website as a depository for updated data.

(See contact information in Section 6.0 Team contact info for e-mail addresses)

## **2.0 *Technical Goals for Addressing the Rumpke Incident***

The overall goal of the action plan is to protect human health, safety and the environment and prevent a nuisance. The practical means of attaining that goal is focusing on the following technical goals and the actions developed to achieve them.

1. Ensure slope stability
2. Maintain the integrity of engineered components
3. Define the nature, rate and extent of the incident
4. Control odors
5. Manage the gas, pressure, leachate, and condensate properly
6. Prepare for contingencies to reduce response time
7. Ensure health and safety of regulators and Rumpke employees
8. Prevent the incident from spreading
9. Return the affected area to normal conditions as quickly as possible
10. Ensure compliance with permits, authorizing actions, and other regulatory obligations (Note: all activities associated with this plan would apply to the goal of maintaining compliance).

## **2.1 Affected and Unaffected Areas Included in this Incident**

Rumpke will create and maintain a map that clearly delineates affected and non-affected areas of the landfill. The map and any subsequent revisions to the map made by Rumpke will be submitted to Ohio EPA, HCPH, HCDOES, and US EPA upon completion of each revision. For the purposes of this document “affected” means the entire northern expansion area comprised of Existing Phase IV, Phase V, Phase VI, and Phase VII depicted on the drawing titled “Affected Area North End Engineering Support”

Some portions of the affected area exhibit the characteristics listed in Table 3. The affected area also includes a number of gas extraction wells or monitoring points, sufficient to determine the lateral extent of the affected area, that do not exhibit these characteristics.

Table 3. Characteristics indicating likely involvement in incident.

<b>Characteristic</b>
<b>Increased gas extraction well head or other monitoring probe gas temperatures in excess of 150 degrees Fahrenheit or a trend of increasing temperatures, even if temperatures are below 150 degrees Fahrenheit</b>
<b>CH<sub>4</sub> less than 45%</b>
<b>Carbon monoxide above 100 ppmv</b>
<b>CH<sub>4</sub>:CO<sub>2</sub> ratios less than 1</b>
<b>Hydrogen greater than 5.0 percent by volume</b>
<b>Unusually increased settlement</b>
<b>Leachate BOD and COD are currently not a quantifiable characteristic, but may be included later based on leachate analysis</b>

If additional locations in the landfill contiguous to the affected area exhibit any combination of one or more of the characteristics listed in Table 3 so as to indicate likely involvement, Rumpke will revise the map to incorporate the additional locations into the map. Alternatively, Ohio EPA may request the affected area to be changed and Rumpke will revise the map to show the requested change. If Ohio EPA requests a change to the affected area shown on the map, Rumpke may request a meeting to discuss the change prior to revising the map. Rumpke will submit the revised map to Ohio EPA, HCPH, HCDOES, and US EPA within five working days of a request.

All other areas of the landfill are unaffected areas for the purpose of this action plan.

## 2.2 Monitoring

Rumpke Sanitary Landfill (RSL) will monitor all gas extraction wells, sumps, shallow collector lines, monitoring points and other locations that can be properly monitored within the affected area at the frequency established in Table 4. Rumpke will post the results, at the reporting frequency, to the file transfer website (<http://ra.rumpke.com/guest>) that has been established for that purpose. Monitoring frequency is established by evaluating existing data and demonstrating a trend which exhibits whether the quality of the gas is good or poor and whether the well monitoring results are stable or unstable. Wells that exhibit characteristics that are unstable with gas quality that is not improving will be monitored more frequently. Table 4 includes the general monitoring frequency plan, and Appendix I includes the rationale for establishing the monitoring frequency for a well, identifies all wells that are monitored and their specific monitoring frequency and the criteria for increasing or decreasing a well's monitoring frequency.

Table 4. Affected area monitoring requirements.

Measurement	Measurement Frequency	Reporting Frequency
<b>Wellhead temperature &amp; pressure (T&amp;P)</b>	Weekly readings except for unstable, poor quality wells which will be 2X per week	Uploaded weekly to file transfer website (Wednesday)
<b>Temperature in well at depth of 10ft, ½ of well depth and bottom/above liquid level</b>	Monthly only for sentinel monitoring points. Increase frequency to weekly if gas quality becomes poor	Uploaded with T&P readings during weeks when monitored
<b>Six gases, CH<sub>4</sub>, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO<sub>2</sub> &amp; CO via field GC</b>	Same as wellhead temp & pressure	Uploaded weekly with T&P readings
<b>Well pumping - Status and cumulative pumping hours</b>	Daily readings	Uploaded weekly with T&P readings
<b>Topographic survey (Including settlement cracks)</b>	Monthly on-the-ground survey	submitted monthly
<b>Stability pin monitoring (lateral measurement &amp; elevation)</b>	Surveyed weekly and every 2 weeks after soil buttress is installed	submitted weekly until soil buttress is installed then submitted monthly
<b>NSPS compliance monitoring for affected and unaffected area</b>	Monthly in accordance with 40 CFR 60.756 requirements	submitted monthly

## 2.3 Activities

The following activities, included in Table 5, are tasks that are intended to provide greater insight and information into the subsurface incident taking place at RSL as well as support the technical goals established in Section 2.0. These activities establish a beginning to the investigation process and are not necessarily exhaustive. RSL will complete the activities and actions in accordance with the schedule established in Table 5. Any document or plan described in Table 5, below, that has been or will be submitted to Ohio EPA is hereby incorporated into this Action Plan, including any revisions made to the plan.

Table 5. Activities and deadlines.

Act No.	Activity	Reason	Goal Supported	Due Date	Rumpke Action
1	Evaluate RSL's waste profiling and disposal records and try to identify if any waste could be creating an exothermic reaction.	If a waste that generates an exothermic reaction is identified, the information will aid in understanding the possible scope of the reaction and can be used to identify other areas of the landfill where this waste was also disposed.	3, 6, 8,9	Report was submitted 2/24/2010.	Utilize RSL special waste approval and scale house waste receipt databases to identify quantities and characteristics of significant industrial waste volumes disposed in the affected area during 1997 through 2005. RSL will prepare a report and submit it to Ohio EPA, to summarize the evaluation and identify any waste streams of concern. At a minimum all loads from industrial solid waste customers who disposed more than 5,000 tons per year, particularly those that contain high cellulose, iron oxide, aluminum, glycols, or wastes that may produce exothermic reactions at standard temperature and pressure, under increased temperature and pressure, or increased moisture should be identified.

Act No.	Activity	Reason	Goal Supported	Due Date	Rumpke Action
2	Measure the quantity of leachate, condensate, and liquids removed over time using pump run-time from the leachate collection system and gas extraction system.	Flow trend graphs over time can be used to evaluate intensity of the incident; ensure that pumps, piping, and storage tanks are of sufficient size; ensure that the leachate system and gas extraction system function properly; give early indications of liquid levels, movement, and saturation that may adversely affect slope stability.	1, 2, 3, 5, 6	First report, for reporting month of 1/2010 and historical data, was submitted on 2/12/2010 and subsequent reports are due monthly on the 15 <sup>th</sup> thereafter.	RSL monitors pump run times for all leachate pumps in Phase IV-VII and has a master flow meter that records total flow to the MSD wastewater collection system. Average daily flow to the sewer is approximately 100,000 gpd and there is no volume limitation on the permitted discharge. RSL will prepare reports plotting historical pump run times compared to weekly recordings to identify any upward trends in leachate production from the affected area. Additionally, daily flow measurements will be taken of the two existing and any future landfill gas condensate discharge lines to monitor condensate flow rates.
3	Evaluate gas extraction boring logs and create cross sections through the landfill and identify when the wells were constructed.	Provides information to understand the rate and extent of the incident and timing for when different parts of the landfill were put into gas production relative to when the incident started/was noticed.	3	Plan and cross section drawings submitted 1/20/2010.  Boring logs and summary table submitted on 2/01/2010.	RSL will compile all gas well borings and well construction logs from the affected area, and prepare a summary table, identifying well installation date, surface elevation, bottom elevation, screened interval, and landfill liner elevation. Plan and cross section drawings will be prepared depicting liner, 1997 through 2004 annual topography waste grades and existing waste grades; landfill gas well locations; and leachate collection system locations.
4	Provide cross-sections, especially N-S, that show cell bottom, barrier layers, and waste/waste interfaces to identify how far south the incident can move and where such movement could occur.	This information will provide a better understanding of the possibility for the incident to spread south and help identify early warning monitoring locations and the location for an isolation break or some other prophylactic to prevent incident from spreading.	2, 3, 6, 8	Cross sections submitted 1/22/2010.	Plan and cross section drawings will be prepared depicting liner, 1997 through 2004 annual topography waste grades and existing waste grades; landfill gas well locations; and leachate collection system locations.

Act No.	Activity	Reason	Goal Supported	Due Date	Rumpke Action
5	Characterize the leachate, condensate, and liquids removed from the gas extraction wells and the leachate collection system in the affected area. Do the same characterization from unaffected areas of the landfill for comparison purposes.	Provides an understanding of chemical changes being created by the incident; can be used to understand whether liquids being removed from the gas extraction wells are leachate or condensate; can be used to identify parameters peculiar to the liquids from the incident area that can be monitored over time to evaluate the intensity of the incident; provides testing to ensure that POTWs will not be adversely affected by the liquids from the incident area; provides information for chemical compatibility evaluations to ensure existing materials and new materials used in engineered components will function properly; ensures appropriate PPE is used when exposure to these liquids is possible.	2, 3, 5, 6, 7	Samples were obtained on 2/1/2010 to characterize leachate from a sump in a non-affected area and the affected area; and condensate from the gas extraction system in the affected area and non-affected areas. Test results were received on 2/17/2010 and the results of the analyses were submitted 2/26/2010.	Collect at least one sample from each of the following locations and analyze for OAC 3745-27-10 Appendix 1 parameters and BOD, COD, pH, alkalinity, temperature, DO, phenolic/organic acids, anions, cations, ammonia and redox potential (parameters analyzed for March, 2009 anti-scaling study and parameters that may indicate biological activity): Phase V Leachate Sump Phase 2 Vertical Expansion Leachate Sump Gas Condensate from Phase V LFG Well condensate pumping system. Samples should be taken from a place that limits turbulence/off-gassing of VOCs and as near the source as is safe. A reduced list may be created based on the results of this first round of testing.
6	Evaluate the slope stability analysis in the PTI.	Provides for revisiting the assumptions of the original slope stability analysis and updating them as needed to ensure a good understanding of the existing stability of the affected area.	1	SWDO reports that as of 12/11/2009 their review of the assumptions used in the PTI slope stability analysis are correct. However, assumptions for the incident must be adjusted to account for reduced waste strength and increased pressures and moisture content due to the effects of the incident. Results of analyses were submitted 2/12/2010.	Complete a slope stability analysis of the exterior slope of Phase V/VI: 1.) utilizing PTI stability assumptions and 2.) using conservative estimates of waste strength assuming accelerated waste decomposition, increased pressure, and liquid content. Utilize the results of the stability analysis to complete Activity 13.

Act No.	Activity	Reason	Goal Supported	Due Date	Rumpke Action
7	Complete borings in the affected area to obtain cores and temperature readings.	Provides a visual inspection of the waste; identifies the vertical and lateral extent of the incident; can provide information that may be useful for proposing control measures; can be used to understand changes in waste strength due to the incident.	1, 3, 6	Drilling began 2/17/2010.	RSL will complete at least two borings in the affected area to better define vertical extent of incident. The borings will be advanced to a depth that passes through the area or layer where the heating incident is occurring but not closer than 20 feet to the top of the leachate drainage layer. One boring may be converted to an inclinometer following further research. Both borings will have thermocouples installed at intervals of 25-foot depths.
8	Convert borings in affected area to incident monitoring probes. The probes would be to a depth that extends below the incident. The probes would have thermocouples every 25 feet.	Provides vertical heat profile of waste in a manner that does not cause exposure of staff measuring down-hole temperatures; provides direct monitoring of the temperatures of the affected area to determine intensity trends over time.	3, 6, 7, 8, 9	Will be completed simultaneously with Activity 7. Boring 2 has been converted Borings 1 & 3 are in progress.	See 7 Above.
9	Install surface trenches as needed for intercepting gas and leachate.	Provides some odor control and increase slope stability by reducing liquids in slope.	1, 4, 5, 8	Ongoing installation as needed to control odors, pressure, and leachate outbreaks. Rumpke re-evaluated its design using information provided by US EPA and submitted a written recommendation that included the design and installation on 2/12/2010.	RSL will continue to install surface trenches as necessary to control odors. The decision to install surface trenches and their location will be determined by the results of landfill cover inspections and surface emissions scans. The results of these inspections and surface scans will be recorded in the daily inspection log for the affected area. Since the scanning of the surface is to expand surface trenches and in effect the gas collection system, surface scanning for this activity is separate and not subject to NSPS reporting.

Act No.	Activity	Reason	Goal Supported	Due Date	Rumpke Action
10	Establish temperature monitoring of leachate sumps and laterals.	Provides an understanding of the rate and extent of the incident and allows monitoring of temperature exposure for liner/LCS.	2, 3, 5	<p>Thermocouples were installed 1/19/2010.</p> <p>Frequency established by initial monitoring results, reported monthly. The first report, for reporting month of 1/2010 and historical data, was submitted on 2/12/2010. Subsequent reports are due monthly on the 15<sup>th</sup> thereafter.</p>	<p>RSL will install two thermocouples in Phase VD2 cleanout riser, on the floor of Phase V, and beneath LFG wells W-135 and DW-2. A temperature reading will be taken initially and monitored at least monthly thereafter. Also, at a minimum, 1 temperature reading will be obtained from each sump in each phase of the affected area. Should the temperature monitoring beneath W-135 and DW-2 show a significant increase or exceed 140 degrees F an increased frequency for monitoring and inspections of the leachate collection system (see activity 12) will be established. Should temperature monitoring beneath W-135 and DW-2 show a significant temperature increase, within 14 days, RSL will install thermocouples in the other leachate sumps and lateral lines in the affected area.</p>
11	Evaluate and improve replacement and maintenance frequencies for gas and leachate collection components in the affected area.	Provides information for determining the number of replacement parts to have on hand and how often to swap out degraded parts prior to failure.	2, 4, 5, 6	Plan submitted on 2/12/2010.	<p>RSL will submit a plan summarizing the existing components of the LFG collection system for the affected area. Required replacement parts assuming a worst-case scenario of LFG system failure will be developed, a replacement part material list developed and the required materials obtained and stored on-site</p>

Act No.	Activity	Reason	Goal Supported	Due Date	Rumpke Action
12	Create and implement a leachate system inspection protocol.	Ensures that the leachate collection system is operating properly and has not been crushed or adversely affected by increased temperatures, leachate flow, or sediments from the incident.	2, 3, 5	System was inspected 1/8/2010. Report was submitted 1/8/2010.	The 2009 leachate line cleaning and inspection was completed in September, 2009 and no problems were identified. Prior to installing thermocouples in Phase VD2 cleanout, this cleanout will be cleaned and televised to identify any existing integrity issues. Based on results of monitoring conducted in action item 10, inspections and monitoring may be expanded and frequency may increase.
13	Identify stockpiles of soils and other items needed to buttress the exterior slope of Phase V and create shovel ready design for soil buttress so that it can be implemented at a moment's notice.	Provides a plan and materials to react quickly (within minutes or an hour) if evidence of a failure occurs.	1, 2, 4, 5, 6, 7	Buttress design was submitted to Ohio EPA on 1/6/2010.  Buttress construction at the toe of Phase V slope as a preventive measure was completed to elevation 840 2/5/10. Certification report of construction will be submitted by 3/15/10.	RSL is proceeding with installation of a buttress in the area of the horizontal displacement pins up to an elevation of approximately 840. Additionally, RSL is considering the installation of an inclinometer.
14	Maintain a protocol and general standards for dewatering gas extraction wells that will increase gas flow and reduce the likelihood of slope failure by removing liquid but not exacerbate the incident.	Provides for a planned approach to balancing the need for slope stability with the need for limiting oxygen and removing gas to prevent excessive pressures and reduce odors.	1, 4, 5, 6, 8	A revised gas well dewatering protocol was submitted on 2/28/2010. The revised protocol includes pumping status and hours with weekly temperature & pressure uploads. Rumpke will summarize changes in dewatering status in each Monthly Report (Activity 25).	RSL will evaluate and revise the existing well pumping protocol to include consideration of historical and current gas parameters, water levels, temperatures, flow rates and surface scan results in determining changes in pumping status. The rationale for any changes to the dewatering status will be included in the Monthly Report.

Act No.	Activity	Reason	Goal Supported	Due Date	Rumpke Action
15	Sample landfill gas to establish fingerprint for gas coming from the affected area versus unaffected areas.	Allows appropriate parameters to be selected for off-site air monitoring of emission from the affected area. Provides data to inform public of what is in air emissions.	4, 5	Sampling was conducted on 01/21/2010.  The results of the analysis were submitted 2/16/2010.	One gas sample will be obtained from the following wells: W-135 (affected area) and W-1 and 310 (unaffected area) Laboratory analyses will be completed for: VOC, Method TO15 Aldehyde/keytones, and Carbonyl compounds using Method TO-11a Sulfur Compounds, ASTM 5504.
16	Create a health and safety plan for all employees, regulatory personnel, contractors, etc. who will be entering the affected area and train them.	Reduce the likelihood of injury or death of persons entering the affected area.	7	Training of regulators was conducted 1/28/2010.	RSL has drafted an updated HASP and ERP that will be forwarded to Ohio EPA, <u>US EPA, HCPH, and HCDOES</u> when finalized. Training of on-site personnel has been completed and will be completed for individuals that will be working/visiting the affected area.
17	Provide emergency response training for all employees, regulatory personnel, contractors, etc. who will be entering the affected area.	Ensures persons entering the affected area understand how they will be notified of need to evacuate the site, rally locations, and resources available to respond.	7	Training of first responders was conducted 2/25/2010.	See Item 16.
18	Continue to implement an odor control and response plan.	Ensures reduction in odor emissions off-site and ensures employees are responsive to citizens who file odor complaints. Provides Rumpke with documentation on verifiable off-site odors if they occur. (Note: this is in addition to and can be conducted in conjunction with any complaint response protocol implemented by Ohio EPA, US EPA, or HCPH, HCDOES).	4,7	Odor response plan submitted 1/20/2010.  Submit odor control plan by 3/31/2010.	Rumpke anticipates no changes to the odor complaint response plan currently utilized by HCPH/HCDOES/Rumpke.

Act No.	Activity	Reason	Goal Sup-ported	Due Date	Rumpke Action
19	Prepare a narrative history of the sequence of events that preceded and occurred during the discovery of the incident.	This information will be helpful in documenting what happened when to provide an understanding of this occurrence and provide information that may be useful in recognizing conditions that may lead to such occurrences in the future at Rumpke or other landfills. This should include the years waste was disposed; when the wells were installed; conditions of the wells becoming watered in, dewatered, and put into production; history of elevated temps; and other indications of a incident occurring in the area. If a reactive waste is identified, then filling history, volumes, and locations would also be included.	3, 7, 8	Submitted 2/26/2010.	RSL will prepare a narrative history of the sequence of events that preceded and occurred during the discovery of the incident.
20	Record foaming events at gas wells and in the leachate collection system.	May provide an understanding of extent of incident. May provide information for protecting workers if foam is indication of working with an affected well. Escaped foam may cause water pollution if not controlled.	3, 7	Record foaming events at all gas extraction wells or shallow collector lines when they are observed. As of 12/18/2009 this is occurring. Observations of foaming are noted in the <i>Visual comments</i> column of the well field data submittal.	RSL will note all gas well foaming events in the comments column of the Wellhead T&P report spreadsheet.
21	Create a contingency plan for the location, conceptual design, installation trigger conditions, and implementation of an isolation break based on the information gathered from other activities.	The location and conceptual design of the isolation break should be used to determine where to put the IMPs for use as an early warning of the incident moving towards the area where the isolation break would be constructed if ever needed.	3, 6, 8	Conceptual plan for the location and design was submitted 2/12/2010.  Installation trigger conditions and implementation plan was submitted 2/28/2010.	RSL will develop drawings depicting the geometry of the isolation break in the area between phases 2 and phase 4 (south of sentinel monitoring points). RSL will propose, to Ohio EPA, conditions detected in the affected area and/or the sentinel wells that will trigger the installation of the isolation break. RSL will calculate volume of material to be removed, plan for removal and ultimate disposal location for material should an isolation break become necessary.

Act No.	Activity	Reason	Goal Supported	Due Date	Rumpke Action
22	Establish a line of sentinel monitoring points between the hot portion of the affected area and the conceptual location of the isolation break.	This sentinel line of monitoring points would be used to determine if the incident is moving toward where the conceptual isolation break would be located. The goal being that the monitoring points would be located far enough away from the location of the conceptual isolation break that sufficient time would be provided to install the IB before the incident reaches the construction area.	3, 6, 8, 10	Wellhead T&P monitoring and down well temperature monitoring as established in Table 4 began 1/21/2010.	RSL will utilize existing gas wells, 117R, 120R2, 224, 223, 148, 149 and 157R as sentinel monitoring points. Wells will be maintained as free of liquid as possible to provide representative temperature results. Results of boring activity in action item 7 may cause revision to sentinel monitoring points. Monitor sentinel points as established in table 4 and Appendix I. Wells will be modified to allow for down hole temperature measurements and minimize well disturbance by having to disassemble the wellhead.
23	Prepare and update a map that depicts the affected area and includes all gas extraction well, gas header, shallow gas collector, and shallow leachate collector locations.	This map will ensure that the team is kept up-to-date as to the extent of the incident and will be used to determine where the affected area monitoring requirements will be implemented.	3, 6, 5	Submitted 01/29/2010 (Revise and submit as required in Section 2.1).	RSL will prepare a map that depicts the affected area and includes all gas extraction well, gas header, shallow gas collector, and shallow leachate collector locations.
24	Produce aerial infrared imaging maps.	This map will provide qualitative information for the surface and near surface temperatures of the landfill, identify heat flow through the gas extraction system, identify locations where heat may be escaping through the cover, and provide comparisons from one period to the next of thermal changes occurring at the landfill.	3, 6, 8	TBD	RSL will discuss conditions and predicted usefulness with flight company and imaging companies and consider obtaining at least one infrared imaging map to provide a baseline and evaluate its utility for the future.
25	Prepare monthly Progress Report.	This report will list the activities for the previous month that were conducted by Rumpke to contain and eliminate the incident. This report should include the status of the activities in this action plan.	10	First report submitted 2/12/10 for reporting month of January 2010. Subsequent reports due by the 15 <sup>th</sup> of each month thereafter.	Examples will be provided to RSL. Create and submit plan monthly.

Act No.	Activity	Reason	Goal Supported	Due Date	Rumpke Action
26	Prepare a data quality control plan.	This plan will provide the data quality standards that are to be used by RSL for field sampling and analysis, lab analysis, data reduction and reporting, and chain of custody. Necessary to ensure that data reported relating to this incident are accurate and valid. The data quality control plan should also include a data revision protocol that will be used to meet the requirements of Section 3.0 Data Quality and Reporting.	10	Submit by 3/31/2010.	Create and submit plan.

The operational requirements of OAC 3745-27-19 state that corrective actions or other such activities that occur at a landfill facility are to be noted in the daily operational log. To avoid recording activities conducted pursuant to this action plan in two different places, the daily logs should have a standard notation indicating that activities being conducted per this action plan are being reported to Ohio EPA, HCPH, and HCDOES in accordance with the action plan and are not required to be repeated in the Daily Log of Operations.

RSL will submit all documents required by this action plan to Ohio EPA, HCPH, HCDOES, and US EPA.

### **3.0 Data Quality and Reporting**

Rumpke will take all necessary actions to ensure that the data being collected, analyzed, and reported meet standard data quality objectives and validation procedures. Appropriate chain-of-custody will be obtained and made available upon request. Due to the quick turn-around time needed to obtain data to make decisions regarding this incident, it is understood that data errors may be discovered after submittal to Ohio EPA, HCPH, HCDOES, or US EPA. Rumpke will conduct due diligence to prevent that from occurring and to discover data errors and resubmit corrected data as quickly as possible while the action plan is being implemented.

### **4.0 Action Plan Revision Process**

This action plan is intended to be a “living” document. As described in this action plan most activities are to be self-implemented by Rumpke with infrequent need for authorizations or changes. Over the life of this work, site features will change; gas wells will need to be replaced and piping rerouted; air delivery lines and liquid transmission lines will need to be added or moved; etc. Such changes will be reflected in revised as-built drawings, which will be kept up-to-date at the facility and submitted annually or upon request to regulatory agencies. For routine maintenance issues which do not fundamentally alter or extend a feature’s purpose or function, maintenance records will be kept at the facility to be available for inspection by regulatory agencies.

Rumpke-initiated changes to procedures or requirements that are part of this action plan will be submitted to Ohio EPA HCPH, HCDOES or US EPA for review. The proposed changes will be considered effective if no comment is received within 30 days. However, if Ohio EPA concurs with the revisions in writing to Rumpke the revisions shall take effect as of the date of Ohio EPA’s written concurrence.

Action plan revisions to be submitted for review include but are not limited to: revisions to data collection, fundamental process changes, proposed decreases in certain maintenance tasks, etc. Revisions will be issue-focused and submitted in a way which allows identifying revisions (*e.g.*, a revision block on a drawing, colored paper or forms in the plan, revision date in the corner, etc.) Likewise, Ohio EPA may request or require changes to the action plan. Such changes may be discussed at the Team Rumpke meetings or at special meetings requested by Ohio EPA.

An up-to-date action plan will be kept by Rumpke, at the facility, and complete copies of updated plans will be submitted upon request to regulatory agencies or posted by Rumpke to the file transfer website to which team members listed in Section 6.0 Team contact info, have been given access.

Note that changes to the action plan may result in alterations or modifications to the facility. Notwithstanding any provision of this action plan, no change to the action plan that results in an alteration or modification shall be implemented by Rumpke until Rumpke has obtained the necessary approvals from Ohio EPA. Rumpke will provide engineering certification reports and drawings upon completion of each work activity in this action plan as is required to comply with Ohio laws and regulations and reporting requirements of this plan.

## **5.0 Incident Cessation**

This incident will be considered ended and Rumpke may request that the additional monitoring and control measures implemented pursuant to this action plan cease, when the chief of the Division of Solid and Infectious Waste Management concurs in writing that the following criteria are acceptable for all portions of all affected areas:

- Waste and gas extraction well, gas temperatures.
- Settlement and stability of the waste mass.
- Stability of gas quality.

## **6.0 Team contact info**

### ***Hamilton County Department of Environmental Services***

Bradley Miller  
Permits and Enforcement Section Supervisor  
Hamilton County Department of Environmental Services  
250 William Howard Taft Road, 1<sup>st</sup> Floor  
Cincinnati, Ohio 45219  
Direct Line: 513-946-7731  
FAX: 513-946-7778  
[Brad.Miller@hamilton-co.org](mailto:Brad.Miller@hamilton-co.org)

Kerri Castlen  
Permits and Enforcement Area Supervisor  
Hamilton County Department of Environmental Services  
250 William Howard Taft Road, 1<sup>st</sup> Floor  
Cincinnati, Ohio 45219  
Direct Line: 513-946-7738  
FAX: 513-946-7778  
[Kerri.Castlen@hamilton-co.org](mailto:Kerri.Castlen@hamilton-co.org)

### ***Hamilton County Public Health***

Chuck DeJonckheere, R.S.  
Director, Division of Waste Management Services  
Hamilton County Public Health  
250 William Howard Taft Road, 2nd Floor  
Cincinnati, OH 45219  
Direct Line: 513-946-7875  
Fax: 513-946-7890  
[chuck.dejonckheere@hamilton-co.org](mailto:chuck.dejonckheere@hamilton-co.org)

Megan Hummel  
Public Affairs Specialist  
Direct Line: 513-946-7808  
250 William Howard Taft Rd.  
Cincinnati, OH 45219  
[Megan.Hummel@hamilton-co.org](mailto:Megan.Hummel@hamilton-co.org)

Brad Johnson, R.S.  
Public Health Sanitarian, Division of Waste Management Services  
Office: 513-946-7876  
[Brad.Johnson@hamilton-co.org](mailto:Brad.Johnson@hamilton-co.org)

Matthew LeMaster, R.S.  
Public Health Sanitarian, Division of Waste Management Services  
Office: 513-946-7877  
[Matthew.LeMaster@hamilton-co.org](mailto:Matthew.LeMaster@hamilton-co.org)

### ***Colerain Township Fire Service***

Rick Niehaus  
4200 Springdale Road  
Cincinnati, Ohio 45251  
(513) 825-6143  
[niehaus@coleraintwp.org](mailto:niehaus@coleraintwp.org)

### ***US EPA, Region 5***

Paul Ruesch  
USEPA REGION 5  
77 West Jackson Boulevard  
Mail Code: LM-8J  
Chicago, IL 60604-3507  
312-886-7898  
[ruesch.paul@epa.gov](mailto:ruesch.paul@epa.gov)

Chad McEvoy  
USEPA REGION 5  
77 West Jackson Boulevard  
Mail Code: AT-18J  
Chicago, IL 60604-3507  
312-886-6084  
[mcevoy.chad@epa.gov](mailto:mcevoy.chad@epa.gov)

***Ohio EPA, SWDO***

**401 East Fifth Street  
Dayton, Ohio 45402**

Russ Brown  
937-285-6357  
[Russ.brown@epa.state.oh.us](mailto:Russ.brown@epa.state.oh.us)

Tracy Buchanan  
937-285-6357  
[Tracy.buchanan@epa.state.oh.us](mailto:Tracy.buchanan@epa.state.oh.us)

Joleen Cook  
937-285-6357  
[Joleen.cook@epa.state.oh.us](mailto:Joleen.cook@epa.state.oh.us)

Holly Hillyer  
937-285-6357  
[Holly.hillyer@epa.state.oh.us](mailto:Holly.hillyer@epa.state.oh.us)

Paul Pardi, Env. Manager  
937-285-6357  
[Paul.pardi@epa.state.oh.us](mailto:Paul.pardi@epa.state.oh.us)

***Ohio EPA, Central Office***

**P.O. Box 1049  
Columbus, OH 43216-1049**

Joe Goicochea, Env. Supervisor, DSIWM  
614-728-5349  
[Joe.goicochea@epa.state.oh.us](mailto:Joe.goicochea@epa.state.oh.us)

Scott Heidenreich, Env. Manager, DSIWM  
614-728-5333  
[Scott.heidenreich@epa.state.oh.us](mailto:Scott.heidenreich@epa.state.oh.us)

Scott Hester, Env. Supervisor, DSIWM  
614-728-5359  
[Scott.hester@epa.state.oh.us](mailto:Scott.hester@epa.state.oh.us)

Paul Koval, Toxicologist, DAPC  
614-644-3615  
[Paul.koval@epa.state.oh.us](mailto:Paul.koval@epa.state.oh.us)

Heather Lauer, PIC  
614-728-0039  
[Heather.lauer@epa.state.oh.us](mailto:Heather.lauer@epa.state.oh.us)

Bruce McCoy, Env. Manager, DSIWM  
614-728-5345  
[Bruce.mccoy@epa.state.oh.us](mailto:Bruce.mccoy@epa.state.oh.us)

Greg Nichols  
614-728-5318  
[Greg.nichols@epa.state.oh.us](mailto:Greg.nichols@epa.state.oh.us)

Erika Wiggins, PIC  
614-728-0049  
[Erika.wiggins@epa.state.oh.us](mailto:Erika.wiggins@epa.state.oh.us)

### ***Rumpke Sanitary Landfill***

**10795 Hughes Road  
Cincinnati, Ohio 45251**

Larry Riddle, General Manager  
513-851-0122 ext. 3526  
513-741-5223 (Fax)  
[larry.riddle@rumpke.com](mailto:larry.riddle@rumpke.com)

John Butler  
Senior Site Engineer  
513-851-0122 ext 3152  
513-623-0534- cell phone  
513-825-4983- fax  
[john.butler@rumpke.com](mailto:john.butler@rumpke.com)

Jay Roberts  
Director of Engineering & Environmental Affairs  
Phone: (513) 851-0122 (Ext. 3141)  
Fax: (513) 825-4983  
[jay.roberts@rumpke.com](mailto:jay.roberts@rumpke.com)

## Appendix I

### Section 2.2 Monitoring

#### MONITORING FREQUENCY RATIONALE:

Rumpke Sanitary Landfill (RSL) will monitor all gas extraction wells, sumps, shallow collector lines, monitoring points and other locations that can be properly monitored within the affected area at the frequency established in Table 4. Monitoring frequency is established by evaluating existing data and demonstrating a trend which exhibits whether the quality of the gas is good or poor and whether the well monitoring results are stable or unstable. Wells that exhibit characteristics that are poor and unstable will be monitored more frequently at twice per week for wellhead temperature, pressure, and the six gases of CH<sub>4</sub>, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CO<sub>2</sub>, and CO via field GC. Gas well characteristics that are poor and unstable shall be defined as any well in the affected area whose most recent monitoring round has the ratio of CH<sub>4</sub>/CO<sub>2</sub> at <1.00, and whose ratio has fallen by >0.20 since the prior round. A well being monitored twice per week will revert to weekly monitoring when its current round has not declined 0.20 from the prior round. Once methane has fallen to <10%, the prescribed ratio trigger of 1.00 and decline of 0.20 is no longer applicable since conditions will have stabilized at that point, and weekly monitoring shall suffice again.

Less frequent monitoring than that prescribed by Table 4 will be allowed when results become sufficiently stable that further deterioration of gas characteristics is unlikely based on the stability of results recorded over the prior month. RSL can apply for approval of less frequent monitoring, based on a case that stable results have been achieved and are likely to continue, and that a sudden further significant deterioration in results is unlikely to occur quickly, within the timeframe between two monitoring rounds.

The Affected Area monitoring points and monitoring frequency effective February 22, 2010 are identified on the following table.

**RSL Action Plan**  
**Affected Area Monitoring Points**

<b>Location</b>	<b>Description</b>	<b>Frequency as of 2/22/10</b>
DW1	Gas extraction well	Weekly

W149	Sentinel gas extraction well	2X Weekly
W150R	Gas extraction well	Weekly
W151R	Gas extraction well	Weekly
W152	Gas extraction well	Weekly
W153	Gas extraction well	Weekly
W154	Gas extraction well	Weekly
W155R	Gas extraction well	Weekly
W156	Gas extraction well	Weekly
W157A	Gas extraction well	Weekly
W157R	Sentinel gas extraction well	Weekly
W215	Gas extraction well	Weekly
W216	Gas extraction well	Weekly
W217R	Gas extraction well	Weekly
W218	Gas extraction well	Weekly
W219R	Gas extraction well	Weekly
W220	Gas extraction well	Weekly
W221	Gas extraction well	Weekly
W222	Gas extraction well	2X Weekly
W223	Sentinel gas extraction well	Weekly
W224	Sentinel gas extraction well	Weekly
WPH7	Gas extraction well	Weekly
WPH7A	Gas extraction well	Weekly
WPH7B	Gas extraction well	Weekly
WSE	Gas extraction well	Weekly

DW2	Gas extraction well	Weekly
DW3	Gas extraction well	Weekly
DW4	Gas extraction well	2X Weekly
GAT1	Gas extraction well	Weekly
GAT1B	Gas extraction trench	Weekly
GAT2	Gas extraction trench	Weekly
GAT3	Gas extraction trench	Weekly
GAT3A	Gas extraction trench	Weekly
GAT3B	Gas extraction trench	Weekly
GAT4	Gas extraction trench	Weekly
PH5GAT	Gas extraction trench	Weekly
PH4CO	Cleanout	Weekly
PH5ACO	Cleanout	Weekly
PH7ACO	Cleanout	Weekly
T15	Gas extraction trench well	Weekly
TW16	Gas extraction trench well	Weekly
TW28	Gas extraction trench well	Weekly
TW29	Gas extraction trench well	Weekly
W117R	Sentinel gas extraction well	Weekly
W120R2	Sentinel gas extraction well	Weekly
W121R2	Gas extraction well	Weekly
W122R2	Gas extraction well	Weekly
W123R2	Gas extraction well	Weekly
W124R2	Gas extraction well	2X Weekly
W125R2	Gas extraction well	Weekly
W126R2	Gas extraction well	Weekly
W128R	Gas extraction well	Weekly
W130R	Gas extraction well	Weekly
W131	Gas extraction well	Weekly
W132	Gas extraction well	Weekly
W133	Gas extraction well	Weekly
W134R	Gas extraction well	Weekly
W135	Gas extraction well	Weekly
W136	Gas extraction well	Weekly
W137R	Gas extraction well	Weekly
W141	Gas extraction well	Weekly
W144	Gas extraction well	Weekly
W148	Sentinel gas extraction well	Weekly