Countywide Recycling & Disposal Facility

Odor Control Plan

Revised: June, 2007

Countywide Recycling & Disposal Facility
Division of Republic Waste Services of Ohio
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June 28, 2007

Mr. Chris Korleski, Director
Ohio Environmental Protection Agency – Central Office
Division of Solid and Infectious Waste Management
PO Box 1049
Columbus, Ohio 43216 -1049

Subject: REVISION OF ODOR CONTROL PLAN
COUNTYWIDE RECYCLING & DISPOSAL FACILITY
STARK COUNTY, OHIO

Dear Mr. Korleski

Enclosed is a revised Odor Control Plan (Plan) for Countywide Recycling & Disposal Facility (Countywide). This Plan addresses OEPA comments dated June 8, 2007. We feel that the enclosed Plan meets your objective of containing mandatory procedures that can, and will, be implemented by Countywide to the benefit of the surrounding community.

Since the last revision of this Plan, Countywide, and the surrounding community, have seen marked success in reduction of odors. This is due to the great effort that Countywide has made to enlarge the gas collection system, and apply Best Management Practices, thereby reducing fugitive emissions. The attached chart illustrates this effect. Since completion of the capping and gas system expansion activities (mid-January 2007), odors are almost entirely attributable to short-term intrusive activities associated with implementation of the Orders. In fact, we believe that, overall, the odors are comparable or better than those normally associated with an active landfill.

We expect that the requirements of this Plan will be eliminated or significantly modified once a Certification of Completion is submitted per Order 10 of the March 28, 2007 Director's Findings and Orders.

Please do not hesitate to contact me at (330) 874-3855 should you have any questions or concerns regarding this plan.

Sincerely,
Countywide Recycling & Disposal Facility

Todd K. Hamilton, P.E. FOR TMV

Tim Vandersall, P.E.
General Manager

cc: Todd Hamilton, Countywide
Dan Aleman, CCHD
Kurt Princic - OEPA
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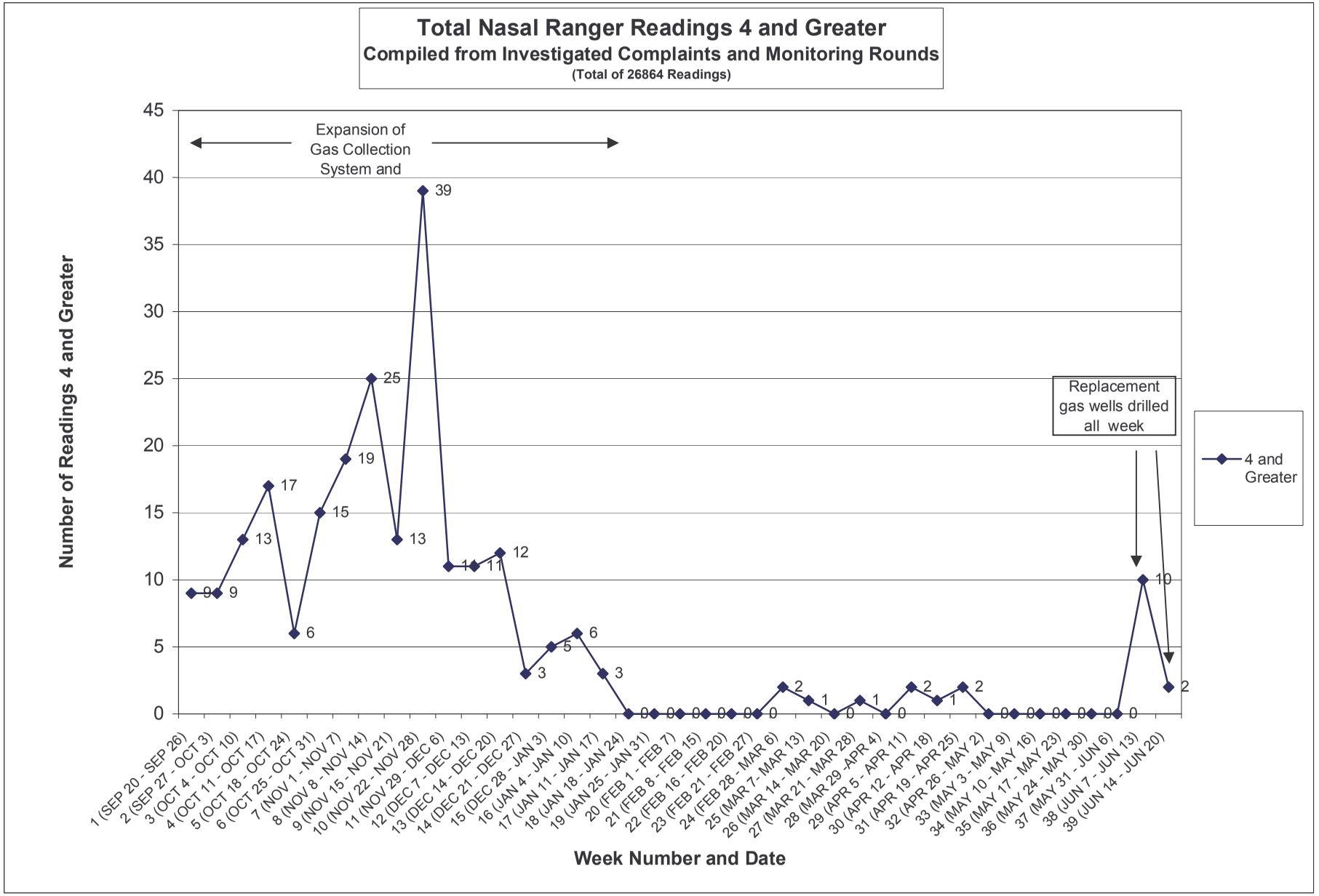
Total Nasal Ranger Readings 4 and Greater
Compiled from Investigated Complaints and Monitoring Rounds
(Total of 26864 Readings)
Number of Readings 4 and Greater
Week Number and Date
Expansion of Gas Collection System and
Replacement gas wells drilled all week
4 and Greater
1 (SEP 20 - SEP 26)
2 (SEP 27 - OCT 3)
3 (OCT 4 - OCT 10)
4 (OCT 11 - OCT 17)
5 (OCT 18 - OCT 24)
6 (OCT 25 - OCT 31)
7 (NOV 1 - NOV 7)
8 (NOV 8 - NOV 14)
9 (NOV 15 - NOV 21)
10 (NOV 22 - NOV 28)
11 (NOV 29 - DEC 6)
12 (DEC 7 - DEC 13)
13 (DEC 14 - DEC 20)
14 (DEC 21 - DEC 27)
15 (DEC 28 - JAN 3)
16 (JAN 4 - JAN 10)
17 (JAN 11 - JAN 17)
18 (JAN 18 - JAN 24)
19 (JAN 25 - JAN 31)
20 (FEB 1 - FEB 7)
21 (FEB 8 - FEB 15)
22 (FEB 16 - FEB 20)
23 (FEB 21 - FEB 27)
24 (FEB 28 - MAR 6)
25 (MAR 7 - MAR 13)
26 (MAR 14 - MAR 20)
27 (MAR 21 - MAR 28)
28 (MAR 29 -APR 4)
29 (APR 5 - APR 11)
30 (APR 12 - APR 18)
31 (APR 19 - APR 25)
32 (APR 26 - MAY 2)
33 (MAY 3 - MAY 9)
34 (MAY 10 - MAY 16)
35 (MAY 17 - MAY 23)
36 (MAY 24 - MAY 30)
37 (MAY 31 - JUN 6)
38 (JUN 7 - JUN 13)
39 (JUN 14 - JUN 20)

Odor Control Plan
Countywide Recycling & Disposal Facility

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1. INTRODUCTION

1.1 Objective

The objective of this Odor Control Plan is to be a good neighbor and to apply sound and consistent procedures to assessing odors and/or odor complaints.

1.2 Purpose of this Plan

The purpose of this Odor Control Plan is to outline procedures that facility personnel shall use to address odor issues at Countywide.

It is important to remember that no landfill is odor free, but with proper operational management and continued efforts by the operator and by the public these odor related issues can be minimized.

1.3 Site History Related to Odors

Countywide has been receiving waste (both Municipal Solid Waste (MSW) and non-MSW) since 1991. Since Countywide's initial operations in 1991, the surrounding area continues to prosper and several new neighbors have moved into the area. Currently Countywide has approximately 15 neighbors within a half-mile radius of the Countywide property. Most of which are located to the north and east of the facility. A recreational campground is also located within 500-feet of the Countywide property to the north.

Countywide sometimes generates a unique odor caused by the rapid thermal decomposition of municipal solid waste in the original 88-acre portion of the site. Sometimes Countywide's odor stems from the receipt of odoriferous waste and sometimes the odor from Countywide can be attributed to the odor suppressant system that consists of a misting system that is installed on perimeter fencing. Usually there is no odor at all leaving Countywide.

2. ODOR MANAGEMENT

The most appropriate method of odor management is strongly influenced by the odor source. Odor control is generally best accomplished by a phased process of implementing simple housekeeping and operational fixes first and using effective odor control techniques to treat remaining odors in a timely manner. Remember that landfills are not odor free (nor are they required to be). Odors are however, by OAC rule 3745-27-19(B)(3) to be strictly controlled so as not to cause a nuisance or a health hazard.

In general, in order to control odors Countywide starts with operational controls such as additional cover soils or cover systems, and then moves to active (or enhanced) landfill gas extraction. Lastly, an odor control remediation program is implemented. Some examples of odor control techniques are presented on the pages following. Note that not every suggestion will apply or be feasible to implement at all times at Countywide.

Table 2 - Variables Impacting Odors

Factors Influencing Odor Generation	**Factors Influencing Odor Transport**	**Factors Influencing Odor Reception**
Amount and rate of solid waste processing.	Wind direction, variation, & speed.	Olfactory sensitivity of complainants.
Location of processing operations.	Relative humidity.	Length of exposure.
Time of day that processing takes place.	Atmospheric conditions.	Odor intensity.
Duration and frequency of odor releases.	Climate.	Time of day.
Chemical reactions related to waste characteristics.	Precipitation.	Time of year.
Size, location, aerial extent of odor producing operations.	Local topography.	Work and recreational patterns.
Odor characteristics of odorous discharges.	Seasonal variations in local climate.	Exposure history of complainant.
Amount of LFG being collected and ignited.	Temperature.	Location of complainants' property.
Type of daily cover.		Psychological conditioning of complainants, political issues, other odor-producing industries in the area.
Open landfill face area.		
Activities in the Community (Mining, Animal Farms, Oil & Gas wells, agricultural activities, etc).		(ref: Oxford University Press, Odor Perception And Beliefs About Risk, Pamela Dalton)
Opening LFG wellheads for repairs/sampling.		
Drilling new or replacement LFG wells.		
Leachate pump placement and leachate sampling.		
Soil cover maintenance.		
Fugitive odors from subsurface high pressures and temperature variations.		

2.1 Waste Screening

The municipal solid waste stream is made up of waste from all sectors of society. People often categorize waste by its source or its characteristics. Regardless of how the type of solid waste is received at the landfill facility, a management decision must be made on how to effectively handle that waste and or reject/accept them for disposal. Countywide encourages screening and management of odorous waste materials in order to ensure that all that can be done to minimize odors is accomplished.

The issue with odors from incoming wastes is probably the hardest to prevent. If these types of odors become an issue, it may be necessary to place these loads in to a portion of the cell where they can be covered as soon as possible (with soil or other wastes). Sometimes, these types of loads result from an on-going commercial process. Examples might include dead animals and/or animal wastes, food processing by-products, restaurant waste, wastewater sludges, etc. Countywide's current waste screening policy for special wastes (non-MSW) addresses this issue by considering odor and allowing approval for disposal to be contingent upon special handling requirements. This way Countywide is prepared to handle these upon arrival at the site.

In extreme instances, it may be necessary to treat these waste materials to minimize or mask their odors at the Generator, or require that specialty transportation equipment (i.e. closed containers, etc.) and handling techniques be utilized to minimize the impact these waste materials may have on the operations. Countywide's current waste inspection program observes the effectiveness of these measures.

If in the event that treatment at the source, special handling at the site, or any odor control system that may be in-place proves to be ineffective, a given waste stream may be restricted (i.e. tons per day, delivery times, etc.) or ultimately rejected. Keep in mind that a rejected waste at Countywide may end up at another landfill for disposal.

2.2 Operations

In many cases it is possible to modify site operations based on time of day, wind direction and speed, to significantly reduce odor release or to manage odor releases to reduce odor migration.

The first step in this management process is to identify the odor and its source. Consideration of modifying site operations for identified

odorous wastes should be the next step in the development and implementation of an odor control program.

2.2.1 Current Activities Implemented by Countywide

Best Management Practices (BMPs) currently implemented at Countywide and planned for the future include the following:

- Pre-screening of waste (non-MSW or special waste);
- Waste Inspection;
- Minimizing working face size(s);
- Use of soil covers thicker than regulatory minimums, to allow increased soil oxidation and reduction of odors;
- Immediate cover of odorous waste streams with other waste materials or soils;
- Minimal possible hours of operation;
- A temporary geosynthetic cap installed in 2006;
- Daily odor monitoring;
- Formal odor complaint investigation procedures;
- Neighborhood meetings
- 2006 expansion(s) of the active gas collection system; and
- Meeting with generators/customers to identify issues and implement potential solutions at the point of generation.
- Non-acceptance of aluminum process waste material (including intermediate materials)
- Use of odor suppression systems.
- Cover materials and the use of waste materials to cover special wastes,
- Timely burial of special wastes,
- Working with Countywide's customers to implement BMP's at the generators,
- Working with Countywide's customers to implement BMP's with the transporters,
- An on-going, long-term capital investment on the landfill control systems (e.g. gas system modifications, etc.)
- Pre-screening of waste (non-MSW or special waste);
- Waste Inspection;
- Minimizing working face size(s);
- Use of odor suppression systems.
- Timely repairing tears in the FML cap
- Notification to the regulatory agencies and the public of an upset condition;
- Scheduling and notification of planned intrusive work.

Notes:

1.) Countywide encourages the interaction of all regulating agencies with the implementation of these BMPs and will continue to use and update these BMP's in the future as conditions on-site change.

2.) Countywide may in the future have to expand or remove the temporary cap according to odors and conditions at the site. Prior approval from the OEPA is required before the cap maybe removed or expanded.

2.2.2 Completed Activities by Countywide (since 2003)

Countywide took several measures to control odors since this plan was originally prepared in 2003, including the installation of an odor neutralizing system in 2004. In early 2006, a unique reaction was discovered within the original 88 acre area of the landfill which caused odors to be released into the atmosphere. Countywide completed an extensive amount of work during 2006 to abate these odors. A list of this work has been well documented during progress reports and numerous meetings with OEPA, CCHD, and SCHD. A complete list of all work is not repeated here; however, in general the following work was completed by Countywide in 2006 & 2007:

- Hiring of several landfill gas and odor experts,
- Installation of nearly 6000 feet of odor suppressant systems,
- Installation of additional landfill gas collectors (from 64 collectors at the beginning of 2006 to 182 collectors by the end of the year),
- Installation of two temporary geomembrane caps on the south slope,
- Numerous studies and research by experts to determine the causes and extent of the reaction that caused the reaction as well as management techniques to be employed,
- Installation of seven (7) additional landfill gas flares and associated equipment,
- Installation of over 14,000 linear feet of header and lateral gas collection lines,
- Mobilization of a full time 3rd party team to monitor and report odors, respond to complaints, and document results,
- Training of the Nasal Ranger Olfactometer for the regulatory community and neighbors,
- Completion of an air quality study to identify possible odor constituents and verify that no health risks are caused by the odors.

- Implementation of a proactive public relations program to relate ongoing progress to the media and community.
- Installation and anchorage of a 30 acre HDPE cap over the reaction area.
- Training of facility personnel on odor management and identification via Nasal Ranger Training.
- Landfill gas collection system expansion during 2007 construction season.
- Continued education of facility personnel, regulators, and neighbors on odors and odor management system.

2.2.3 Planned Activities to be Implemented by Countywide (as of July 2007)

Management practices and activities currently planned for implementation at Countywide will include the following:

- Implementation of the Interim Action Plan
- Additional odor control measures (if necessary) such as gas wells, leachate pumps in some LFG wells, additional cap, etc. to maintain odor control.
- Review of all of the above once per year or more often if necessary.

3.0 ODOR COMPLAINT MANAGEMENT AND ANALYSIS

The main purpose of this section of the odor control plan is to document a system by which Countywide will:

1. Measure odor levels off-site using the Nasal Ranger,

2. Determine the general area and specific source within the landfill from which the odor is generated,

3. Take expeditious corrective actions to eliminate or minimize off-site odors,

4. Gage the effectiveness of the corrective actions and the progress toward control of odors, and

5. Revise this plan, if necessary, on a regular basis.

3.1 Routine Facility Boundary Odor Monitoring

In accordance with Directors Findings and Orders of September 6, 2006 and as part of Countywide's on-going community out-reach program to work with our neighbors, Republic had identified staff from Diversified Engineering Inc. as the designated odor surveyor. Staff from Diversified Engineering Inc. have been trained in the use of odor instruments and have agreed to follow the procedures in this Plan. From time to time others may conduct the odor survey (if necessary) but they too will have been trained in the use of the odor instruments and have read and agreed to follow this Plan.

Beginning in September, 2006 Republic's odor surveyor monitored odors several times daily, using a Nasal Ranger Ofactometer as manufactured by St. Croix Sensory. Refer to Appendix A for manufacturers' information on the Nasal Ranger. As of July 2007, the existing odor complaint management and analysis program will be replace with the following approach.

A. Odor Monitoring

Daily, except Sundays, Countywide will perform one facility boundary odor monitoring trip in the morning and at least one in the afternoon. Monitoring will include travel by the "odor surveyor" around the perimeter boundary (Figure 1) to determine when and if odor is present at any intensity level. If odor is detected the odor surveyor will stop and measure the odor intensity at the point or points where the odor is present and perceived to be the strongest.

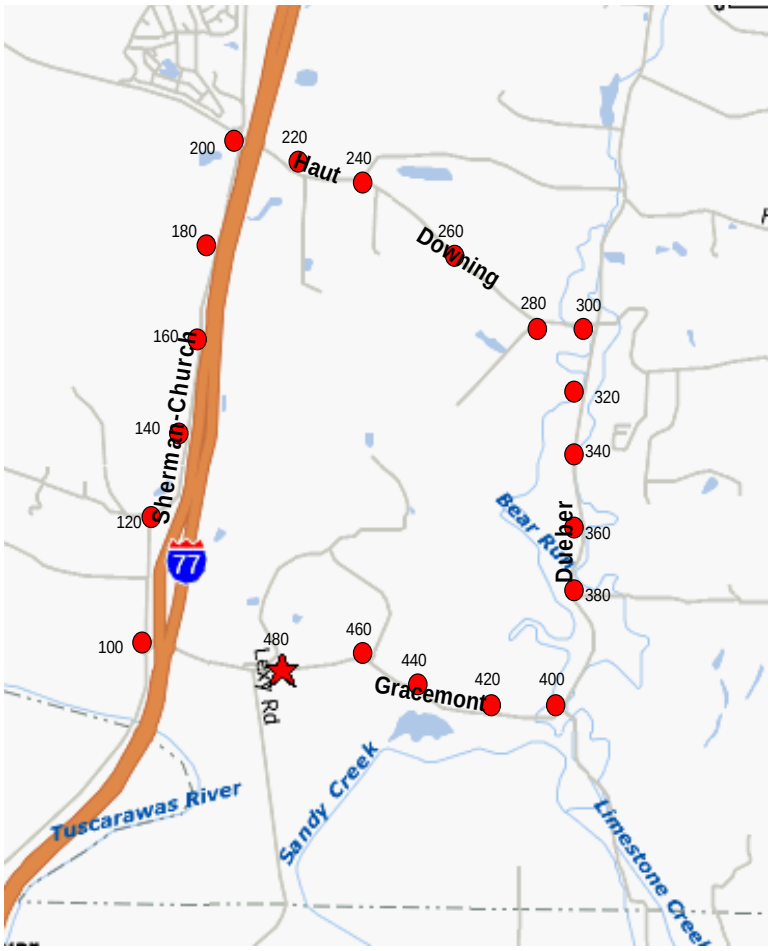


Figure 1 – Facility Boundary Odor Monitoring Locations

Facility Boundary Odor Monitoring Survey Form #1 will be completed to document the results of the survey, including odor intensity, dilution to threshold (D/T) ratio, location, wind direction and other pertinent data. The top section of Form #1 will be completed for each monitoring trip where an odor is not detected.

B. Countywide's Response To Odor

1. If during routine facility boundary odor monitoring a landfill odor is detected, even an odor with a dilution to threshold (D/T) ratio of less than 2 on the Nasal Ranger the odor surveyor will attempt to determine from which area of the landfill the odor is coming. Within one hour of the measurement of the odor, the odor surveyor shall complete appropriate portions of Odor Monitoring Survey Form #1 and contact a responsible Countywide representative.

2. The Countywide representative will investigate to determine what landfill issues are causing or significantly contributing to the odor.

Corrective actions will be taken to reduce odors as soon as practical.

3. When a corrective action is taken in accordance with the above paragraph, the next time that the odor surveyor is performing a routine survey, a check to confirm the effectiveness of the corrective action will be completed. The facility Boundary Odor Monitoring Survey Form #1 shall be completed to document any landfill conditions contributing to the odor, the corrective action(s) taken (or planned for future implementation).

C. Periodic effectiveness review and revisions of odor management program.

1. Countywide will review the effectiveness of the odor management program at least once every calendar month. If the review indicates that more effective methods and corrections are needed or site conditions have changed Countywide will modify their odor management program.

2. To analyze the effectiveness of the odor management program, Countywide will monthly 1) collate and review the measured odor intensity ratios, 2) Collate and compare the effectiveness of the individual types of corrective actions taken, and 3) perform any other analysis as maybe necessary. This analysis will include the preparation of statistics required for the monthly report described below and any other types of analyses as may be necessary.

D. Record Keeping & Reports

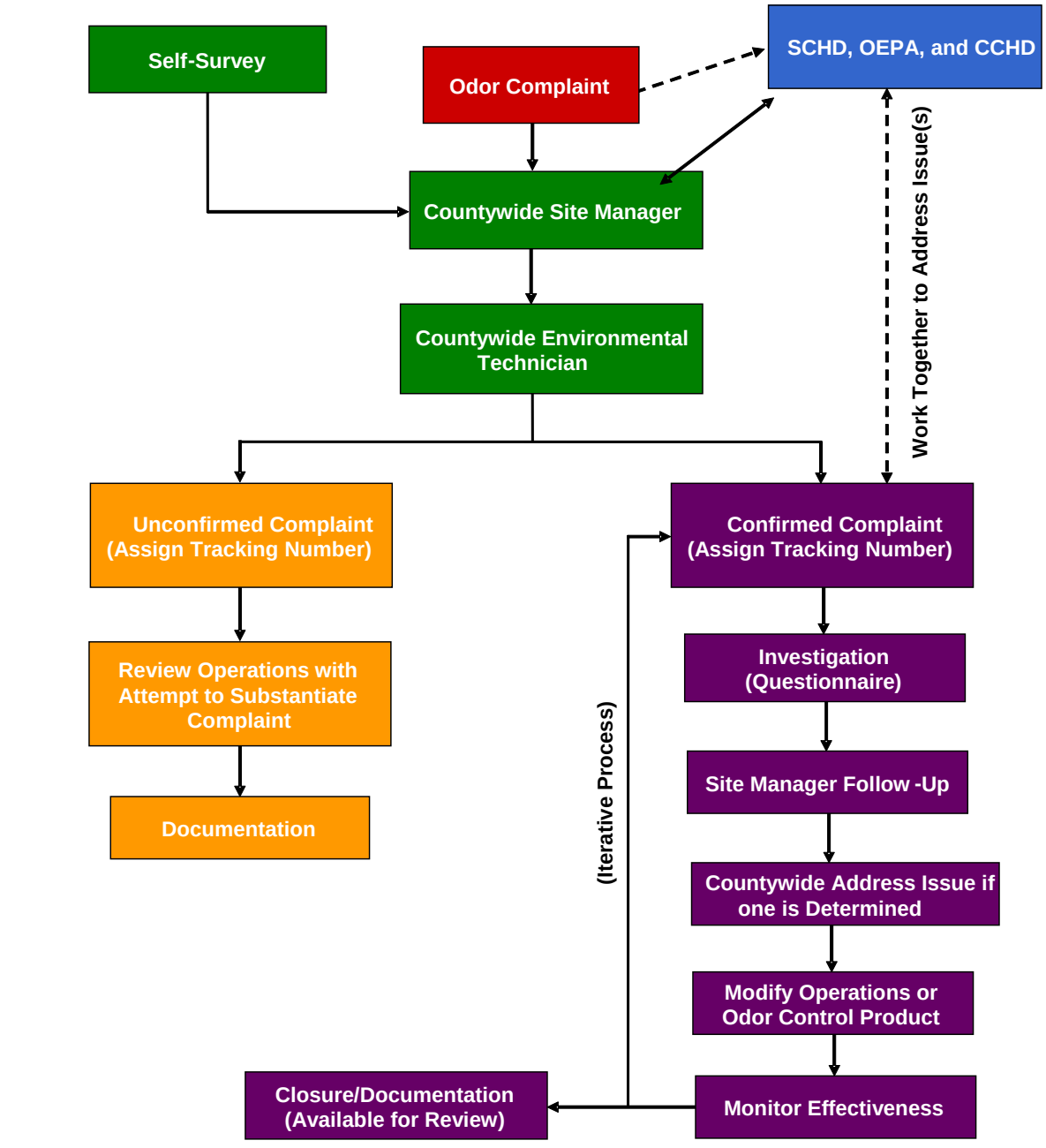
1. All odor monitoring data and records will be on file for five years at Countywide and available for inspection by Stark County Health Department, Ohio EPA and Ohio EPA representative(s), including the City of Canton Department of Health

2. Whenever a landfill odor is measured by Countywide during routine facility boundary monitoring with the Nasal Ranger and the odor has a D\T of 4 or more, Countywide will make a report of fugitive odors using the Facility Boundary Odor Monitoring Survey Form #1. As time permits, the form should include additional information such as the probable cause of the odors, and the actions being taken to control the odors. The report will be sent to the agencies indicated in Figure 2. The report will be emailed or faxed within 3 hours of the measurements of a D\T ratio of 4 or greater unless the measurement was made after 6

p.m., in which case the report shall be submitted by 9 a.m. the next business day.

Figure 2
Odor Management Organizational Chart

Countywide Recycling and Disposal Facility



Countywide RDF

3.2 Community Out-Reach

As part of Countywide's on-going community out-reach program to work with our neighbors to become a partner in the community, it is very important that if a neighbor says that they smell an odor, so the complaint can be confirmed or unconfirmed that the source of the odor is from the landfill.

Odor complaints usually begin with one or more persons that may be more sensitive to odors or may be closest to the site boundary. The most common factors that cause neighbors to file odor complaints are:

- The intensity of the odor
- The duration and frequency of odorous emissions
- Lack of attempts and progress on the part of the site in mitigating odorous discharges.
- A belief that no one cares
- The negative attitude of the site concerning the issue
- Not involving the neighbors in a solution
- Other issues – such as political concerns such as adversarial groups who identify odor as a subjective issue that is difficult for landfills to address

The most effective initial course of action is to adopt a strong proactive program to address odor complaints. The following are elements of an effective proactive odor control program that will be implemented by Countywide.

- Immediately respond via a formal documentation report and investigation.
- Respond to complaints by personal visit (determine if the complaint is confirmed or unconfirmed).
- Avoid adversarial relationships.
- Establish a single point of contact and/or a center of responsibility for dealing with odor complaints (refer to Figure 2 for an organizational flow chart) establishing and implementing a formal odor complaint management program and complaint response system.
- Build a team composed of a key operations person, the "point of contact" (for Countywide this has been assigned to the Environmental Specialist), and the General Manager of the facility.
- Develop an aggressive program and schedule to address the potential issue. Activities under this program that Countywide will

implement include:

- Set up a meeting or a series of meetings with local authorities, complainants, and community leaders and create a reliable response system to complaints. (Complainants and authorities need to know that something is being done).
- Set up training for site personnel to use the Nasal Ranger Ofactometer to identify intensity and type of odor.
- Enlist the neighbors to help to identify and report issues about odor directly to the site.
- As necessary, enlist the help of qualified consultants and vendors who can assist your odor control efforts.
- Document efforts to mitigate any identified issue.
- Document what operational activities were being performed at the time the odor occurred (e.g. sludge unloading, removal of cover materials, etc.)
- Let the communities know about progress or change meant to improve the odor issue.
- Set up a complaint response system for site personnel to investigate all possible complaints.
- Creating a web page or telephone line where citizens can call to be informed of what corrective actions are being taken.

3.3 Setting Up and Managing an Odor Complaint Logging System

Countywide odor monitoring system is set up so that as the number of complaints decreases Countywide may conduct the monitoring instead of a third party consultant. Also as the number of complaints decreases the frequency of odor monitoring may decrease accordingly, if the revised frequency is approved in advance by the Ohio EPA.

3.3.1 Complaint Sources

Odor complaints are received in a number of ways including:

- Direct call in or e-mail from complainant(s);
- Calls referred to the site from local officials such as Mayors, City Council members, County commissioners, other governmental officials, fire departments, etc.;
- Calls and letters from City, County, Regional, or State or Federal regulatory officials;
- Written reports from officials that have investigated complaints; and/or
- Written reports from assigned site personnel that investigate complaints.

3.3.2 Complaint Logging

There are numerous ways to set up and manage an odor complaint system. The goal of any system is to create a logical method of recording and maintaining a history of complaints. The system should be established to record the following basic information:

- Complainant – name, sex and age
- Complainant – address
- Complainant – location of complaint
- Complainant –date of complaint
- Complainant –time of day of complaint
- Complainant –weather conditions (at the time of the complaint)
- Complainant –wind direction and speed (at the time of the complaint)
- Duration of odor
- Characteristic of odor (What did it smell like)
- Intensity of odor (very weak, weak, moderate, strong, very strong)
- Characteristic of wind (steady, variable, swirling)
- Any other general observations

3.3.3 Confirmed and Unconfirmed Complaints

In addition to the above basic information, the complaint record should indicate the type and source of the complaint. It is helpful to distinguish the difference between a "confirmed" and "unconfirmed" complaint.

- "Confirmed Complaints" are complaints where a second party* (other than the complainant) was present at the complaint location during the time of the odorous discharge and perception and filed a form in Appendix B.

  * Note: For the purposes of this plan the definition of a second party includes any of the following:

    - A Countywide employee (or 3rd party designee)
    - A Regulatory Agent
    - An official from Pike Township or Stark County

- "Unconfirmed Complaints" are complaints from a single person that could not be confirmed with the nasal ranger by Countywide odor surveyor or were not investigated at the time the complaint was received.

The odor complaint record system should include the type and source of complaint as:

- Single complaint call in
- Referred complaint
- Field investigated complaint

3.3.4 Complaint Analysis

Complaint forms have been developed by Countywide and are provided in Appendix B. These forms will be utilized to record information and to analyze potential odor issues. Several formats may be utilized for this analysis, these include:

- By time of day, time of year, monthly totals
- By wind direction
- As a function of site processing activities
- Seasonal changes in weather and prevailing wind
- As a function of implementation of odor control practices

3.4 Investigation and Response by Countywide

Once an odor complaint is received, an odor survey will commence expeditiously in accordance with the Nasal Ranger Olfactometer manufacturer's procedures found in Appendix A. The odor survey will be recorded on forms found in Appendix B and saved for five years. If a landfill odor is confirmed, the surveyor shall investigate the probable source(s) of the odor. If the odor is determined to originate from the landfill the surveyor shall complete the Complaint Odor Survey Form #2 and Investigated Complaint Form #3 or #4 and record the odor intensity and, if possible, duration. If the complaint is investigated during normal landfill operation hours, the completed Complaint Odor Survey Form #2 shall be given within one hour of the measurement of the odor to the appropriate site personnel responsible to identify the cause and source of the odor.

Countywide shall investigate to determine what landfill conditions are causing or significantly contributing to the odor. Countywide will determine what type of odor control corrective action or actions need to be taken and will initiate and expeditiously complete the corrective actions.

During the subsequent routine facility boundary monitoring event, the odor surveyor shall note the effectiveness of corrective actions by completing Form #1 and report unsatisfactory mitigation (even if odor with a dilution to threshold (D/T) ratio of less than 2 on the Nasal Ranger is detected) to responsible site personnel.

All odor monitoring data and records shall be kept on file at Countywide for 5 years and available for inspection by Stark County Health Department, Ohio EPA and Ohio EPA representative(s), including the City of Canton Health Department.

Whenever a complaint is confirmed at a D\T of 4 or more, Countywide will email or fax Forms 2, 3, and 4, to the agencies indicated in Figure 2, within 3 hours of the measurements of a D\T ratio of 4 or greater unless the measurement was made after 6 p.m., in which case the report shall be submitted by 9 a.m. the next business day.

Refer to Figure 2 for an organizational flow chart and Appendix B for standard forms that will be utilized by Countywide to track each reported complaint (confirmed or unconfirmed) that is received by the facility as part of implementing this plan. The following forms will be utilized:

- Complaint Odor Survey Form #2
- Investigated Complaint Form #3
- Non-Investigated Complaint Form #4

3.5 Mitigation (if Applicable) by Countywide

Once a complaint is confirmed during the verification process, Countywide will investigate the potential source of that odor and make all reasonable attempts to mitigate the odor at the source if it is determined to originate from the Countywide facility. The Best Management Practices (BMPs) as stated in section 2.2.1 and utilized at Countywide will be reviewed and modified as necessary. This may include the use additional BMPs as deemed necessary by facility personnel.

If the source of the odor is determined not to be from the Countywide facility, this information will also be logged and communicated to all involved parties.

3.6 Follow-up by Countywide

Each confirmed odor complaint or unconfirmed, but probable, complaint will be followed-up by Countywide to determine the source and or corrective action. This may be an iterative process by which on-going modifications to facility operations will be tracked with complainants in order to track progress. It is Countywide's goal to document each incident and keep this documentation for 5 years to allow future analysis or review.

4.0 ODOR MITIGATION PRODUCTS AND APPLICATION

Odor control products and their application are primarily used as the final step in the odor mitigation process and are usually only used as the only remaining option. Eighty percent (80%) or more of odor issues can be addressed through modified operational procedure. A very small fraction of odor issues are directly addressed through odor control chemicals.

For an odor control product and application system to be effective the following questions must be answered:

- What odor(s) is a facility trying to mitigate?
- What odor control product and application methodology will be best suited for the identified odor(s) and odor related issue(s)?
- Where will the system be located and how will it be operated to effectively address the issue?

Once these questions have been answered, an odor control system can be effectively chosen to assist in the mitigation of the odor issue. In absence of a probable source, an odor control system installed prematurely may be ineffective and may further complicate identifying the root cause of the issue.

4.1 Equipment and Hardware

The effective odor control program actually comes in two parts, (1) the right product for the application and (2) the right equipment to apply it with. The second part and perhaps even more important than the chemical is the choice of application equipment. No matter how good the odor control product, if it is not applied with the proper equipment and sufficiently misted into the atmosphere it will not effectively reduce odor. In fact the right system can make even a mediocre product work better. But the converse is not true; a bad system may make a good product fail. The success of an odor control program hinges on being able to deliver the right dosage into the atmosphere in a consistent and reliable manner.

The four basic rules for a successful vapor phase application are:

(1) Choose and use the right product (chemistry) for your specific application.
(2) Make sure the distribution system is sized correctly, situated to give good coverage, delivers the needed flows and is economical to operate.
(3) Make sure the dosage control is correct.
(4) A trained and responsible party for the system. Ongoing monitoring, adjustments and maintenance assure effective and economical results.

The systems commonly used for dispersing counteractants into the atmosphere can vary widely. Countywide is continuing to evaluate it's current system and others that maybe appropriate for it's situation.

Other vapor phase dispersion systems being considered by Countywide, include individual or a combination of the following:

1) Tractor mounted sprayers (used for small area application, such as working face);
2) High-pressure wand systems used to treat as needed at the working face, usually mounted to a truck or trailer with small volume working tank;
3) Backpack sprayers used to treat very small areas; and/or
4) Portable high pressure systems (may be skid or trailer mounted)

Delivery systems may be operated continuously depending upon circumstances such as wind direction; time of day or other factors. Intermittent operation of a system can be achieved with a timer, manual control or more sophisticated controls such as wind directional sensors that shut the system down when the wind is favorable.

4.2 System Design

A system design must take into account the following:

- Nozzle placement (i.e elevation and distance from odor source);
- Nozzle spacing;
- Optimum mix of the counteract ant with the odorous air plume;
- Local site conditions (topography, location of neighbors, etc.); and

- Local climate (e.g. freezing conditions, prevailing winds).

4.3 Weather Station

Countywide currently maintains a weather station at the facility. The weather station provides a means of recording data on time and date, precipitation, wind direction, wind speed, barometric pressure, relative humidity, and temperature. It is anticipated that the odor control system that may again be connected to the odor chemistry delivery system so that, for example, the system is shut down when the wind is from a certain direction. Occasionally it has been found that the systems bounce on and off due to wind fluctuation so a combination of wind sensor with a delay or timer function is typically beneficial.

4.4 Description of Countywide Existing Odor Neutralizing System

Countywide installed an initial odor neutralizing system in 2004. This system consisted of approximately 1500 linear feet of pole mounted spray system on the west berm of the landfill.

In 2006, Countywide greatly expanded the size of this system to assist in controlling odors as classified previously. As of January 2007, this system was expanded to nearly 6000 linear feet of neutralizer system. These system are split to two separate areas 1) the expanded west berm and 2) through the middle of 88 acre landfill footprint.

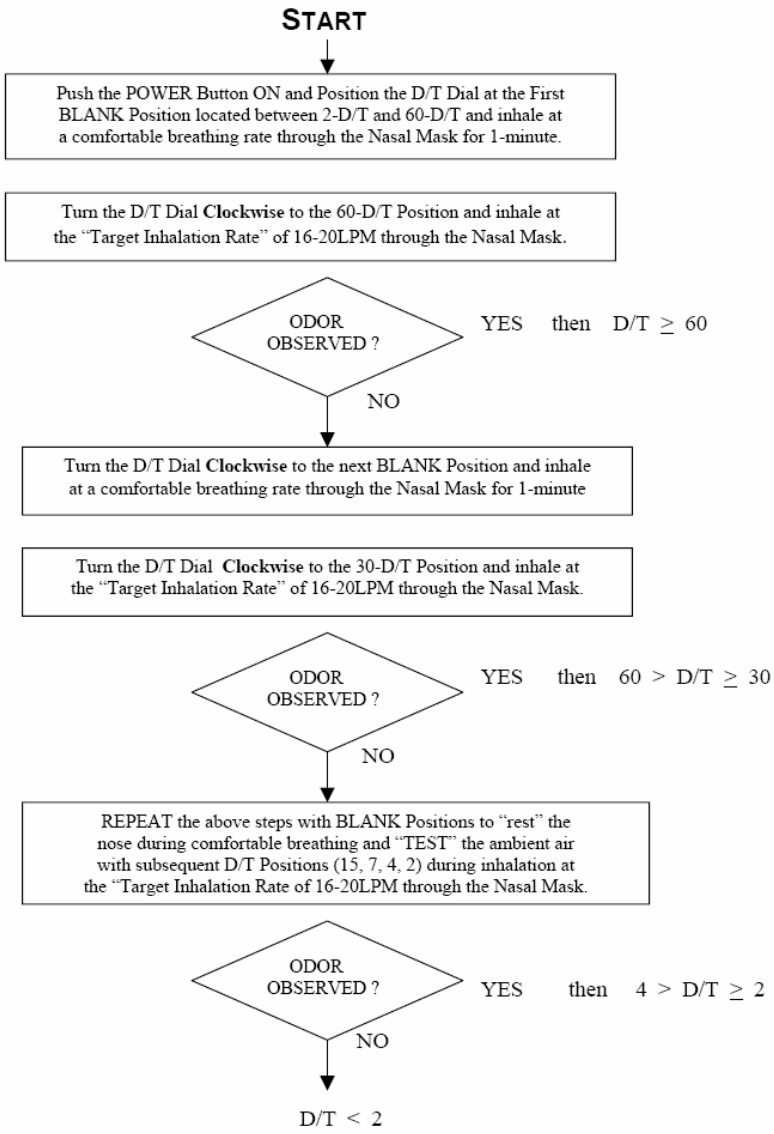
These two systems essentially surround the reaction zone identified during 2006 so that odors that emanate from this zone may be neutralized by these systems. The misting of odor neutralizing agent with water will not impact underground reactions of waste because the amount of water/agent is far less than common rainfall and most of the water/agent drifts off-site, thus neutralizing odors.

APPENDIX A

NASAL RANGER MANUFACTURERS DATA

NASAL RANGER® FIELD OLFACTOMETER

TEST PROCEDURE FLOW CHART



Nasal Ranger® Field Olfactometer

QUICK START GUIDE

The Nasal Ranger® Field Olfactometer, a portable odor detecting and measuring device developed by St. Croix Sensory, Inc., is the "state-of-the-art" in field olfactometry for confidently measuring and quantifying odor strength in the ambient air using the Operating Principle of mixing odorous ambient air with odor-free filtered air in discrete volume ratios called "Dilution-to-Threshold" ratios (D/T ratios).

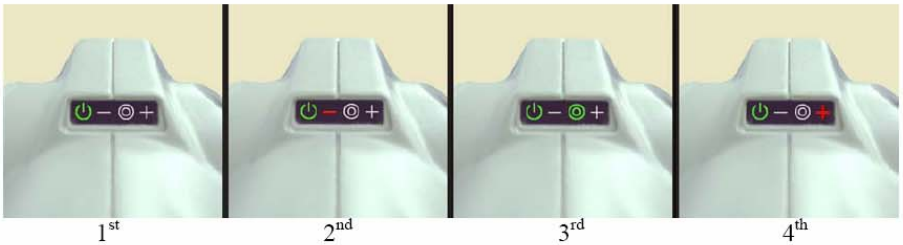
Field olfactometry with the Nasal Ranger® Field Olfactometer is a cost effective means to quantify odor strength. Facility operators, community inspectors, and neighborhood citizens can confidently monitor odor strength at specific locations around a facility's property line and within the community.

The following information allows an informed user to quickly understand the operation of the Nasal Ranger Field Olfactometer. It assumes the user has some familiarity with field olfactometry and odor monitoring concepts. [See also "Operation Principles" and "Application Guide"]

1. Hold the Nasal Ranger Field Olfactometer parallel to the ground and press the power button which is located below the nasal mask. All four LED lights should illuminate for one second, and then the 1st (left) Power LED will stay illuminated.

2. Follow the Test Procedure Flow Chart for the sequenced testing procedure.

3. The LED's on the Nasal Ranger Field Olfactometer provide feedback for the user to inhale at the "factory calibration flow rate". The LED's are labeled as follows:



1st	2nd	3rd	4th
Power ON	Inhalation Rate too low Need to increase Inhalation Rate	Correct Inhalation Rate 16-20 LPM	Inhalation Rate too high Need to decrease Inhalation Rate

4. After 45 seconds of non-use, the 1st LED will blink slowly in a "Power Save" mode.

5. After five minutes of non-use, the Power will automatically turn OFF.

6. To turn off the Nasal Ranger Field Olfactometer manually, press and hold the power button for 3 seconds. All four LEDS will illuminate and then power off. The Nasal Ranger Field Olfactometer is now OFF.

Thank you for joining the ranks of Nasal Ranger® owners. The Nasal Ranger® Field Olfactometer is a precision calibrated tool and will yield reliable odor strength results for your monitoring and measurement needs.

APPENDIX B

Forms

FACILITY BOUNDARY ODOR SURVEY FORM #1

DAILY ODOR MONITORING DATA SHEET

COUNTYWIDE RECYCLING AND DISPOSAL FACILITY

DATE: _____

TIME	LOCATION	60	30	15	7	4	2	<2	ND	DESCRIPTORS & HT	COMMENTS
	CP-100										
	CP-120										
	CP-140										
	CP-160										
	CP-180										
	CP-200										
	CP-220										
	CP-240										
	CP-260										
	CP-280										
	CP-300										
	CP-320										
	CP-340										
	CP-360										
	CP-380										
	CP-400										
	CP-420										
	CP-440										
	CP-460										
	CP-480										

Weather Conditions

Mostly Sunny
Partly Cloudy
Mostly Cloudy
Overcast
Hazy

Precipitation

None
Fog
Rain
Sleet
Snow

Wind Direction

N
NW
NE
W
E
SW
SE
S

Wind Speed

Calm
1-5 mph
5-15 mph
15-higher

Temperature: _____ F

Relative Humidity: _____ %

Barometric Pressure: _____

Notes:

_____

_____

_____

Did an investigation of the source of odors occur? Yes / No

If no investigation occurred explain why: _____

Results of the investigation: _____

Summarize corrective actions planned or taken by Countywide: _____

_____ _____ _____

DATE NAME SIGNATURE

COMPLAINT ODOR SURVEY FORM #2

COUNTYWIDE RECYCLING AND DISPOSAL FACILITY

DATE: _____

Date of Sampling:		**Weather Conditions**	
Sampler Name:		Direction that the wind is blowing from	
		Air Temperature (F)	
		Weather Description	
		Wind Speed (mph)	

Sampling Results

Time	**Location (also reference on a map)**	**Subjective 0 to 4 scale**	**Nasal Ranger D/T Reading**	**Identify Source if at Landfill**	**Remedies Planned To Reduce Odor at the Landfill Source**

Comments:

Did an investigation of the source of odors occur? Yes / No

If no investigation occurred explain why: _____

Results of the investigation: _____

Summarize corrective actions planned or taken by Countywide: _____

Countywide Recycling and Disposal Facility
Investigated Complaint Form #3

Date: _____ Time of Complaint: _____ Time of Inspection: _____

Name of Inspector: _____

Name of Complainant: _____

Age: _____Sex: _____

Address: _____

GPS Location: _____ N _____W

Vector to Landfill _____

Level of Odor (Complainant) Scale 0-4 _____

Nasal Ranger Reading _____

Duration of Odor: _____ days _____ hours _____ minutes

Characteristic of Odor: _____

Weather Conditions:
- Temperature: _____
- Barometric Pressure: _____
- Wind Direction: _____
- Wind Speed: _____mph
- Precipitation: _____
- Humidity: _____%

Notes: _____

_____

_____

Did an investigation of the source of odors occur? Yes / No

If no investigation occurred explain why: _____

Results of the investigation: _____

Summarize corrective actions planned or taken by Countywide: _____

Countywide Recycling and Disposal Facility
Non-Investigated Complaint Form #4

Date: _____ Time of Complaint: _____

Name of Complainant: _____

Age: _____Sex: _____

Address: _____

Level of Odor (Complainant) Scale 0-4 _____

Duration of Odor: _____ days _____ hours _____ minutes

Characteristic of Odor: _____

Weather Conditions:

Temperature: _____

Barometric Pressure: _____

Wind Direction: _____

Wind Speed: _____mph

Precipitation: _____

Humidity: _____%

Notes: _____

_____

_____

Did an investigation of the source of odors occur? Yes / No
If no investigation occurred explain why: _____
Results of the investigation: _____
Summarize corrective actions planned or taken by Countywide: _____

APPENDIX C

Countywide Odor Control System
Malfunction Prevention & Abatement Plan

Appendix C
Countywide RDF Odor Control System
Malfunction Prevention & Abatement Plan
Table of Contents

1. BACKGROUND

This malfunction prevention and abatement plan (MP&A Plan) was prepared in response to a request made by the OEPA in their December 29, 2006 letter to Countywide RDF. The request stated as follows:

"Additionally, Ohio EPA requests that Countywide submit, for the Director's approval, a preventive maintenance and malfunction abatement plan (plan) for all landfill flares and other control measures and to expeditiously implement the plan. The plan shall be designed to prevent, detect, and correct any malfunctions or equipment failures prior to their occurrence. It shall include, but is not limited to, a comprehensive preventative maintenance program that addresses the items and or conditions that will be inspected, the frequency of the inspections and/or repairs and the quantity and type of replacement parts that will be maintained in inventory for quick replacement. The plan will also contain a list of the monitoring parameters that will be used to detect and aid in the prevention of a malfunction or equipment failure, the normal range of these parameters, the monitoring frequency, and recording and retaining of the monitoring and repairs records, as well as the procedure to be followed to aid in the prevention and correction of a malfunction or equipment failure.

Finally, the plan will describe the corrective procedures that will be taken in the event of a malfunction or equipment failure that will used to expeditiously as practicable correct the event. Malfunction as used herein shall not necessarily have the same meaning as a malfunction defined in OAC 3745-15-06."

As such, this MP&A Plan documents recommended procedures and actions that are suggested to prevent, detect, and correct malfunctions which may negatively impact the odor control measures that have been taken to date.

The Countywide RDF is located in Stark County, Ohio. The facility is owned and operated by Republic Services of Ohio II, LLC. The total permitted area for waste disposal is 258.4 acres. The landfill has a total design capacity of 84.4 million cubic yards or approximately 48.0 million tons of municipal solid waste (MSW), depending on the waste density. Countywide RDF is a subtitle D municipal solid waste landfill that is permitted and licensed to accept both municipal solid waste and industrial waste. Waste placement at Countywide RDF began in 1991 and is expected to continue through 2030 given the current rate of waste acceptance. Countywide currently operates an active landfill gas collection & control system (GCCS). During the first week of December 2006, the GCCS was flaring an average of 6588 scfm of landfill gas. This landfill gas flow has increased over the past several months due to a variety of construction activities that have expanded the GCCS.

The odor control measures taken at Countywide RDF consist of several different components, including, but not limited to:

- Gas collection and control system (GCCS),
- Intermediate cover system (including soil and geomembrane covers),
- Leachate removal system, and
- Odor suppressant system.

The MP&A Plan addresses these four main systems.

Federal regulations (40 CFR Part 60 Subpart WWW and 40 CFR Part 63 Subpart AAAA lay out the current requirements which must be followed by Countywide RDF with respect to shutdowns and malfunctions. It is important to note that the regulations anticipated periodic shutdowns of control equipment at landfills and according to the preamble contained in the recent proposed NSPS regulations, the USEPA did not anticipate that a landfill would be required to maintain "back-up control devices in the event of a malfunction." Since periodic malfunctions, unforeseen circumstances, and short duration maintenance activities are anticipated by the regulations, Countywide RDF believes they have implemented a program consistent with these requirements. A Malfunction Prevention & Abatement Plan is typically required in an instance when the OEPA Director has determined that "excessive or unduly prolonged malfunctions of any emission source, air pollution control equipment or related facility have occurred". Countywide RDF does not believe that "excessive or unduly prolonged malfunctions" have occurred at this facility and understands that this plan focuses on the practical aspects of addressing odor concerns, as opposed to the technical requirements contained in the regulations cited above.

This plan is designed to address temporary break downs of control devices that may be experienced. However, in an effort to avoid the impacting odor control, Countywide has implemented a plan of redundancy which provides proactive contingencies in an effort to avoid the impacts that may be experienced if the redundancies installed by Countywide were not present. Countywide has installed redundant flares, geomembrane cap, additional gas collectors, etc to address conditions at the landfill. This plan has been written in and effort to further enhance and develop procedures to address possible malfunctions including suggested parts lists, recommended inspections, recommended inspection frequencies, and other measures intended to prevent malfunctions and shutdown events as much as possible.

2. RESPONSIBLE PERSONNEL

The list below identifies site personnel and consultants currently responsible for inspecting, maintaining, and repairing the odor control system. Regulatory contacts are also provided. This list is expected to change over time and will be updated as necessary to reflect new personnel.

2.1 REPUBLIC SERVICES PERSONNEL

Name	Firm or Title	Phone Number
Larry Elliott	Operations Manager	330-874-3855
Randy Lane	Maintenance Manager	330-874-3855
Todd Hamilton	Area Engineer	330-874-3855
Jim Steigerwald	Environmental Specialist	330-874-3855
Tim Vandersall	General Manager	330-874-3855

2.2 REGULATORY CONTACTS

Bud Keim	CCHD	330-489-3327
Dan Aleman	CCHD	330-489-3327
Scott Winkler	OEPA	330-963-1220
Kirk Norris	SCHD	330-493-9904

2.3 OUTSIDE CONSULTANTS

Mike Michels	Cornerstone Environmental	877-294-9070
Mike Contestabile	Cornerstone Environmental	412-287-0549
Jim Walker	Cornerstone Environmental	630-633-5857
Jim Helmick	AEGL	330-659-5930
Darrin Hartman	AEGL	330-659-5930
Josh Nepsa	AEGL	330-659-5930
Mark Levin	CM Odor Control	201-513-2591
Josh McDonald	Diversified Engineering	330-340-1631
Mike Beaudoin	Earth Tech	734-779-2816

3. PREVENTION, DETECTION AND CORRECTION OF MALFUNCTIONS AND DISRUPTIONS

The following sections detail procedures intended to address the prevention of malfunctions, detection of malfunctions, and correction of malfunctions and disruptions of each of the odor control system components at the landfill.

3.1 Gas Collection & Control

3.1.1 Description of the Gas Collection and Control System

Countywide RDF operates an active gas collection and control system (GCCS). As of January 10, 2007 the GCCS consisted of 182 landfill gas (LFG) collectors (154 vertical wells and 28 “other collectors”), interconnecting piping, blowers and flares. The existing vertical extraction wells have a well spacing ranging from 100-300 feet throughout the fill area. An as-built drawing of the GCCS as of December 12, 2006 was submitted to OEPA on December 13, 2006.

Interim or supplemental horizontal LFG collectors, connection to leachate cleanouts, connections under intermediate FML cap, and connections to leachate sideslope risers (collectively referred to as “other LFG collectors”) are for interim odor control. These other LFG collectors allow extraction of LFG from areas that are not easily accessible to vertical wells.

Lateral and header pipes are installed above and below ground surface and are typically constructed of high-density polyethylene (HDPE) pipe. LFG is currently conveyed through this pipe network to a number of landfill gas blower / utility flare skids (As of January 10, 2007, 8 B/F skids are in place). The number of LFG blower / utility flare skids is subject to change depending on the need to collect and control odors.

3.1.2 Prevention and Detection

Table 1 shows the recommended GCCS items and/or conditions that are inspected, the recommended frequency of the inspections, the procedures designed to aid in the prevention of a malfunction, recommended monitoring parameters that may be used to detect and/or prevent a malfunction and/or equipment failure, and the normal range of these parameters. As the systems evolve, inspection and monitoring frequencies are subject to change.

Table 1
Countywide RDF
List of GCCS Prevention / Detection Items

Item or Conditions to Be Inspected	Approximate Frequency of Inspection /Monitoring	Procedures to be Followed to Aid in the Prevention of Malfunctions	Monitoring Parameter To Be Used to Detect a Malfunction & The Normal Range of The Parameter
Overview of Each B/F Skid	Weekdays	Visual observation for excessive vibration, leaks, abnormal noises, damage, etc…	Pass/Fail
Each Blower	Once per week	Measure and record the blower hours	Increasing hours from the last measurement
Blower Lubrication	Once per week	Check oil/grease levels and lubricate only if needed	Pass/Fail
Each Flame Arrestor	Once per month	Remove cleanout cover and perform visual inspection of arrestor	Pass/Fail
Pressures at Each B/F skid	Once per week	Measure and record the blower inlet vacuum and outlet pressure, and compare to historic readings	Confirm range of vacuum between -25" to -70" WC. Confirm range of pressure between 0" to +15" WC
Condensate Knockout Pot	Once per week	Check differential pressure across KOP demister pad and clean as necessary	Confirm range of differential pressure is less than 5" water column
Propane	Once per week	Confirm that adequate amounts of propane are available to fuel the flare pilot	Confirm range is 20 to 100 % full
Flow to the Flare	Once per week	Visually inspect flow output panel or chart recorder to confirm proper operation	Confirm range is 10% to 100% of the flare design capacity (scfm)
Flare Operation	Once per month	Shut down and restart flare to verify proper operation of pilot/ignition system	Pass/Fail
Flare Temperature	Once per week	Visually inspect temperature output or chart recorder to confirm proper operation	Confirm range is > 400 degrees F
Header Vacuum	Once per Quarter	Conduct Header Vacuum Survey at every LFG well connection or other access port	Confirm range is >5" WC vacuum in all headers
Wellheads	Once per Month	Visually inspect wellheads for cracked fittings, broken sample ports, missing caps and damaged flex hoses	Pass/Fail
Well Casing	Once per Month	Visually observe if waste settlement is stressing the well casing or if the well casing is getting too tall to facilitate monitoring	Pass Fail
Diesel Powered Electric Generators	Once per week	Check lubrication	Pass/Fail

B/F = Blower/Flare Station

Table 2 contains a list of parts that are recommended to be maintained on site so as to facilitate quick repair and replacement of parts causing a shutdown or malfunction. Inventory may vary from time to time.

Table 2
Countywide RDF
GCCS Recommended Spare Parts Inventory

Part	Recommended Quantity to be Maintained in Inventory
Spark plug igniter for the flare[1]	2 total
Blower lubricant	5 quarts total
4” dia SDR 17 HDPE Lateral Pipe	200 feet
6” dia SDR 17 HDPE Lateral Pipe	100 feet
8” dia SDR 17 HDPE Lateral Pipe	100 feet
10” dia SDR 17 HDPE Header Pipe	100 feet
Flare Thermocouple	2 total
Flare UV sensor	2 total
Flare arrestor insert core	1 for each operational flare
Blower belts	1 extra set for each belt driven blower that is operational
Blower bearings	1 extra set for each blower that is operational
Thermal pen for flare chart recorders	3 pens total
2” Landtec Wellheads	3 total
3” Landtec Wellheads	1 total
¼” Wellhead sample ports and caps	25 total
Wellhead Hose	100 feet
Fuji PXZ temperature controller	2 total
Idec 4PDT relay	2 total
H3C Omron Timer	1 total
Honeywell flame detection relay w/ amplifier	1 total
1/2" Propane solenoid valve	1 total

3.1.3 Correction

Table 3 contains the procedures to be followed to correct a malfunction or failure of the GCCS. Table 3 also outlines procedures with respect to recording / retaining repair and replacement records.

[1] In the unlikely event that the automatic spark re-ignition system fails to operate normally, the flare can be restarted and operated manually until the automatic ignition system can be repaired.

Table 3
Countywide RDF
List of Recommended GCCS Malfunction Correction Procedures

Description of Malfunction	Recommended Procedures to be Followed to Correct the Malfunction	Record & Retain Records as Required (see below)
Broken Blower Bearing or Other Blower Problem	Replace bearing, replace blower, or install and operate a backup blower/flare skid	5 years
Clogged Flame Arrestor	Remove and clean with a water pressure washer or replace the arrestor with a new one	5 years
Lack of Inlet Blower Vacuum	Inspect and repair or replace blower	5 years
Excessive Blower Discharge Pressure	Inspect and clean or replace the flame arrestor	5 years
Excessive Differential Pressure Across the Condensate Knockout Pot	Clean the demister pad and drain condensate	5 years
Flame Temperature and/or Flow is Not Recording at Control Panel	Check that the pens are working properly and replace pens if necessary. Check the instrumentation and control in the panel and repair if necessary. Check flow probe and clean is necessary. Check flame thermal couple and replace if necessary.	5 years
More than -5" WC header pressure	Pinpoint the reason for excessive pressure in the headers (such as a sagged header, improperly functioning drip trap, etc..) and repair	5 years
Broken Leachate Pump	Repair or replace the pump	5 years
Leaking LFG header, lateral, or connections	Repair the leak	5 years
Malfunctioning blower/flare skid	Repair the equipment on the skid or open valves to the redundant blower/flare skid nearby and start up the redundant skid	5 years
Non-functioning Diesel Powered Electric Generator	Repair the Generator	5 years

3.2 Intermediate Cover

3.2.1 Description of the Intermediate Cover System

Countywide RDF's intermediate cover system assists with odor control by reducing fugitive LFG from potentially migrating into the atmosphere. The cover system at Countywide RDF varies but is either minimum 12" thickness of soil or an HDPE geomembrane cover. This section of the Plan focuses on malfunction and disruption prevention, and repairs of these intermediate covers.

3.2.2 Prevention and Detection

Table 4 shows the intermediate cover items or conditions recommended to be inspected, the recommended frequency of the inspections, the recommended procedures designed to prevent a malfunction, the recommended monitoring parameters used to detect and aid in the prevention of a malfunction or equipment failure.

Table 4
Countywide RDF
List of Intermediate Cover Prevention / Detection Items

Item or Conditions to Be Inspected	Approximate Frequency of Inspection /Monitoring	Procedures to be Followed to Aid in the Prevention of Malfunctions	Monitoring Parameter To Be Used to Detect a Malfunction & The Normal Range of The Parameter
Cracks / Separation of the Soil Cover	Once per Week	Visual observation for cracks, erosion, etc.. in the soil cover	Pass/Fail
Rip or Tear in the Geomembrane Cover	Once per Week	Visual observation of tear, rip, or stress in the geomembrane cover	Pass/Fail
Non-uniform Waste Decomposition	Once per Day	Visual observation for stormwater ponding	Pass/Fail
Liquids Under the Geomembrane Cover	Once per Week	Visual observation for bulging of the geomembrane cover near the toe of slopes	Pass/Fail
Geomembrane Boot Connected to Gas Well Casing or Other Structures	Once per Week	Visual observation of stressed geomembrane	Pass/Fail
Gas Under the Geomembrane Cover	Once per Week	Visual observation to confirm the absence of gas build-up under the geomembrane cover	Pass/Fail
Perimeter anchor integrity of the Geomembrane Cover	Once per Week	Visual observation to confirm the integrity of perimeter anchor of the geomembrane cover	Pass/Fail

To facilitate quick replacement of the intermediate cover (including temporary geomembrane cap), it is recommended that the materials identified in Table 5 be maintained on site. Inventory may vary from time to time.

Table 5
Countywide RDF
Intermediate Cover Spare Parts Inventory

Description	Recommended Quantity/Volume to be Maintained
HDPE geomembrane	1/2 roll total
Silty or clayey cover soils	1000 cubic yards
4" or 6" SDR 17 HDPE Pipe	200 feet

3.2.3 Correction

Table 6 contains the procedures to be followed with respect to intermediate cover malfunctions. Countywide will implement these procedures to correct the event.

Table 6
Countywide RDF
Intermediate Cover Malfunction Correction Procedures

Description of Malfunction	Procedures to be Followed to Correct the Malfunction
Cracks / Separation of the Soil Cover	Fill cracks and separations with more soil and compact in place in 12" lifts finishing the surface with a smooth drum roller (within 5 business days of discovery, weather dependant)
Rip or Tear in the Geomembrane Cover	Replace the geomembrane cover with a new piece of geomembrane and fusion or extrusion weld all edges to an air tight seal. Other sealants may be used if welding equipment is not immediately available. Alternately cover the location with a minimum of 24" thickness of clayey or silty soils or use GCL. (within 5 business days of discovery, weather dependant)
Ponding water on top of the Cover	Fill the area to promote sheet flow or install a stormwater pump in the low area to remove the water. (within 5 business days of discovery, weather dependant)
Liquids Under the Geomembrane Cover	Cut the geomembrane, collect the liquids and treat as appropriate, then install a pipe and boot for future liquids accumulation in the area is managed automatically. (within 5 business days of discovery, weather dependant)
Failure of the geomembrane boot at a gas well or structure	Cut the boot and repair the failure by patching in more geomembrane. (within 5 business days of discovery, weather dependant)
Gas Build-up under the Geomembrane Cover	Increase vacuum extraction of LFG near the floating cover or install cap gas collectors and boot them to the geomembrane and route the LFG to the collection system (within 5 business days of discovery, weather dependant)

3.3 Leachate Removal

3.3.1 Description of the Leachate Removal System

Leachate is removed from some LFG wells at Countywide RDF via leachate pumps in LFG wells. Leachate removal from the LFG can sometimes maximize LFG collection and contribute to minimizing odors. The location of leachate pumps in LFG wells varies based on liquid levels in the LFG wells, odor control needs and other issues. The exact number of these pumps in LFG wells varies over time and will be utilized as needed. This section of the Plan focuses on malfunction prevention of these pumping systems. It is important to note that leachate pumping from LFG wells is a temporary measure that is not expected to be an ongoing component of odor control measures at the site.

3.3.2 Prevention and Detection

Table 7 shows the leachate removal items or conditions that are to be inspected, the frequency of the inspections, the procedures to be followed, and monitoring parameters that are used to detect and aid in the prevention of a malfunction or equipment failure.

Table 7
Countywide RDF
Leachate System Prevention / Detection Items

Item or Conditions to Be Inspected	Frequency of Inspection /Monitoring	Procedures to be Followed to Aid in the Prevention of Malfunctions	Monitoring Parameter To Be Used to Detect a Malfunction & The Normal Range of The Parameter
Leachate Temperature	Once per Quarter	Temperature measurement of the leachate piping at each sideslope riser while actively discharging leachate from the **sideslope risers**	Confirm Range is < 140 degrees F
Pump Operation	Once per Week	Visual observation of leachate pump installed in a LFG well to confirm its proper operation	Pass/Fail
Leachate Level in LFG Wells	Semi-Annually	Manually measure leachate level in all LFG wells that do not have remote wellheads	Normal range is < 50% of the well screen is covered with leachate

To facilitate quick replacement of the leachate removal system, the spare or replacement materials shown in Table 8 are to be maintained on site. Inventory may vary from time to time.

Table 8
Countywide RDF
Leachate Removal System Spare Parts Inventory

Description	Quantity to be Maintained in Inventory
Leachate pump with hoses and cables	2
4" SDR 17 HDPE leachate pipe	200 feet
2" SDR 11 HDPE air pipe	1000 feet

3.3.3 Correction

Table 9 contains the recommended procedures to be followed to correct a malfunction or failure of the leachate removal system. Countywide will implement these procedures to correct the malfunction as applicable.

Table 9
Countywide RDF
List of Leachate Removal System Malfunction Correction Procedures

Description of Malfunction	Procedures to be Followed to Correct the Malfunction
Pump Does Not Operate Properly	Repair or replace the pump.
Excessive Leachate Levels in LFG Well	If the well has a leachate pump in it, confirm the pump is working properly, pump the leachate out, and continue to monitor the liquid levels. If the well has no pump installed, then install a pump in this locations.

3.4 Odor Suppressant

3.4.1 Description of the Odor Suppressant System

The odor suppressant system at Countywide RDF consists of a misting system that is installed on perimeter fencing. The system consists of more than 5800 feet of misting hose and nozzles hung on fencing and posts. The odor suppressant is mixed with water, pumped under pressure, and transported via tubing to spray nozzles. In addition a separate mobile system exists that delivers the odor suppressant via mobile trailer(s). The mobility of the trailers allows the odor suppressant to be applied at precise locations.

The odor suppressant systems will be operated as determined by CWRDF management depending on many factors including odor monitoring results, weather, and wind direction, effectiveness of various systems, etc.

3.4.2 Prevention and Detection

The odor suppressant systems will be inspected regularly as needed to ensure they are working properly including the items shown in Table 10. Pumps and hoses will be checked as needed (more often in the winter) to aid in the prevention of a

malfunction. Pumps should be operational and able to pump liquid. If the system is down during inspection the pumps will be turned on temporarily to confirm normal operation is possible.

Table 10
Countywide RDF
Odor Suppressant System Prevention/Detection Items

Items or Conditions to be Inspected	Frequency of Inspection/Monitoring	Procedures to be Followed to and in the Prevention of Malfunctions	Monitoring parameter to be Used to Detect a Malfunction & the Normal Range of the Parameter
Is the odor suppressant visibly being sprayed out of the nozzles?	Twice per Day if the system is in operation	Visual observation of whether flow is present in each independent section of the system	Flow or No Flow

To facilitate quick replacement of the odor suppressant system, it is recommended that the spare or replacement materials shown in Table 11 be maintained on site. Inventory may vary from time to time.

Table 11
Countywide RDF
Recommended Odor Suppressant System Recommended Spare Parts Inventory

Description	Recommended Quantity to be Maintained in Inventory
Anti-freeze	20 gallons (winter months only)
Nozzles	20
Liquid pump	1
Hoses	200 feet

3.4.3 Correction

CWRDF will correct a malfunction or failure of the odor suppressant system by repairing or replacing broken pumps and repairing cracks in hoses.

3.5 General Provisions

CWRDF will maintain monthly records of all malfunctions detected as a result of these inspections, the corrective actions taken, and the date each problem was corrected. CWRDF will submit quarterly reports to the regulatory community (Ohio EPA, Stark County and Canton City Health Department) that summarize the above mentioned information. Also as previously noted, CWRDF will maintain records of all preventive and routine maintenance conducted under this plan.