Five-Year Review Report

Third Five-Year Review Report

for

Folkertsma Refuse Site

Walker

Kent County, Michigan

November, 2008

PREPARED BY:

U.S. Environmental Protection Agency
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Approved by:

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U.S. EPA

Date: 11-25-08

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List of Acronyms

CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
CFR - Code of Federal Regulations
EPA - United States Environmental Protection Agency
FRSD - Folkertsma Refuse Settling Defendants
GP - Gas Probe
GSI - Groundwater Surface Water Interface
IC - Institutional Control
LEL - Lower Explosive Limit
MCLs - Maximum Contaminant Levels
MW - Monitoring Well
NCP - National Contingency Plan
ND - Not Detected
NPL - National Priorities List
PAHs - Polynuclear Aromatic Hydrocarbons
PRP - Potentially Responsible Party
O&M - Operation and Maintenance
QAPP - Quality Assurance Project Plan .
ug/L - Micrograms per Liter
RA - Remedial Action
RAOs - Remedial Action Objectives
RCRA - Resource Conservation and Recovery Act
RD - Remedial Design
RA - Remedial Action
RDW - Residential Drinking Water
RI - Remedial Investigation
RI/FS - Remedial Investigation/Feasibility Study
ROD - Record of Decision
RSL - Regional Screening Level
SVOCs - Semivolatile Organic Compounds
SW - Surface Water
SWRAU - Site Wide Ready for Anticipated Use
UU/UE - Unlimited Use/Unrestricted Exposure
VOCs - Volatile Organic Compounds

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Executive Summary

The selected remedy for the Folkertsma Refuse site is a limited commercial/industrial containment remedy. The remedy eliminates or reduces the risks posed by the site using engineering and institutional controls. The remedy was completed in 1994-1995 and included the following major components:

- Relocating on-site pallet company operations to off-site areas;
- Excavating and solidifying contaminated sediments; consolidating sediments with landfilled materials;
- Converting on-site ditches into permeable underground drains to help isolate landfill materials from groundwater; and replacing Indian Mill Creek drain pipe with open channel;
- Constructing solid waste clay cap over landfill, including drainage, root zone and topsoil layers to prevent direct contact with waste materials;
- Abandoning groundwater monitoring wells/installing replacement monitoring wells;
- Installing gas probes;
- Conducting long-term groundwater, surface water, and landfill gas monitoring;
- Constructing fence with locking gates around site perimeter;
- Implementing restrictive covenant prohibiting drinking water wells from being installed on landfill and any disturbance of cap or landfilled materials on landfill property deed.
- Long-term maintenance and repairs
- Statutory five-year reviews

EPA's first five-year review of the Folkertsma Refuse site was in February 1999, five years after the start of remedial action. EPA's second five-year review was in February 2004, five years after the first five-year review.

This third, 2008 five-year review confirms the landfill cover system and underground drains are effective and that the remedy continues to function as intended. Long-term monitoring data indicates combustible gas is no longer a concern at the site and chemical concentrations in groundwater and surface water have been eliminated or decreased. Long-term groundwater and surface water monitoring also indicates any remaining chemicals in groundwater or surface water are not moving out beneath the landfill at unacceptable concentrations.

The perimeter fence is intact and the 1995 restrictive covenant has been effective in prohibiting activities from being conducted on the landfill that could pose a threat to human health and the environment or impair the effectiveness of the remedy. The landfill property is vacant and water supply wells have not been installed at the site.

Operation and maintenance (O&M) records do not indicate any significant problems with maintenance or repairs (e.g., erosion), and O&M costs continue to decrease as the monitoring programs are reduced.

Groundwater at and immediately downgradient of the site is not used as a source of drinking water. The commercial well used for washing trucks and equipment at the transfer station for a rendering company south of the site has been filled. The buildings at the transfer station were razed and the only structures on the property are temporary storage containers for rendering waste.

The residential area south of the site, south of Indian Mill Creek is serviced by the Grand Rapids water supply. However, there are about 8 homes about 0.5 miles southeast of the site on Lookout and Garfield streets in Walker that are not serviced by public water. These homes are in the general downgradient direction of the site.

The 2004-2008 monitoring data indicates the landfill gas, groundwater and surface water monitoring programs can be suspended consistent with the 2001 O&M Plan. However, EPA recommends collecting landfill gas, groundwater and surface water samples from the site six to twelve months before the next five-year review in 2013 to confirm the underground drains and containment remedy are continuing to function as intended. The groundwater and surface water samples should be analyzed for inorganic chemicals including arsenic and volatile organic compounds.

The remedy at the Folkertsma Refuse site is protective of human health and the environment, and all exposure pathways that could result in unacceptable risks are being controlled. Regular site inspections, routine maintenance and statutory five-year reviews will continue to confirm the continued effectiveness of the remedy.

Long-term protectiveness requires compliance with effective institutional controls. Long-term stewardship will ensure effective institutional controls are maintained, monitored and enforced with other remedy components. EPA is updating the 1995 restrictive covenant for the site to increase the long-term effectiveness of this institutional control. EPA will provide the updated restrictive covenant to the Folkertsma Refuse Settling Defendants to implement and record by the current property owner(s).

The Operation and Monitoring Plan will be updated to include specific components for long-term stewardship to ensure effective institutional controls for the site are maintained, monitored and enforced.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Folkertsma Refuse Site		
EPA ID *(from WasteLAN)*: MID980609366		
Region: 5	**State:** MI	**City/County:** Walker, Kent County

SITE STATUS	
NPL status: ☐ Final X Deleted ☐ Other (specify)	
Remediation status (choose all that apply): ☐ Under Construction ☐ Operating X Complete	
Multiple OUs?* ☐ YES X NO	**Construction completion date:** 09/15/1994
Has site been put into reuse? ☐ YES X NO	

REVIEW STATUS	
Lead agency: X EPA ☐ State ☐ Tribe ☐ Other Federal Agency	
Author name: Karen Cibulskis	
Author title: Remedial Project Manager	**Author affiliation:** EPA
Review period:** 07/15/2008 to 11/15/2008	
Date(s) of site inspection: 08/11/2008	
Type of review	X Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion
Review number: ☐ 1 (first) ☐ 2 (second) X 3 (third) ☐ Other (specify)	
Triggering action: ☐ Actual RA Onsite Construction at OU #____ ☐ Construction Completion ☐ Other (specify)	☐ Actual RA Start at OU#____ X Previous Five-Year Review Report
Triggering action date *(from WasteLAN)*: 02/12/2004	
Due date *(five years after triggering action date)*: 2/12/2009	

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

1. Monitoring results indicate routine landfill gas, groundwater and surface water monitoring may be suspended. Conduct a round of sampling prior to the next five-year review to confirm conditions are unchanged.

2. Semiannual site inspections do not specifically identify changes in land and groundwater use at the site or on adjacent properties.

3. 1995 restrictive covenant needs to be updated to increase the long-term effectiveness of institutional controls.

4. Long-term stewardship must be assured which includes maintaining, monitoring and enforcing effective ICs.

Recommendations and Follow-up Actions:

1. Update 2001 Operation and Maintenance Plan to indicate landfill gas, groundwater and surface monitoring will be suspended. Collect a round of landfill gas, groundwater and surface water samples six to twelve months before 2013 review to confirm remedy remains effective.

2. Update 2001 Operation and Maintenance Plan to indicate semiannual site inspections will specifically note whether there are any changes in land or groundwater use at the Folkertsma Refuse site and other adjacent properties.

3. Work with the Michigan Department of Environmental Quality to update the 1995 restrictive covenant for the site.

4. Update the 2001 Operation and Maintenance Plan to ensure long-term stewardship which includes maintaining, monitoring and enforcing effective institutional controls.

Protectiveness Statements(s):

The remedy at the Folkertsma Refuse site is protective of human health and the environment, and all exposure pathways that could result in unacceptable risks are being controlled. Regular site inspections, routine maintenance and statutory five-year reviews will continue to confirm the continued effectiveness of the remedy.

Long-term protectiveness requires compliance with effective institutional controls. Long-term stewardship will ensure effective institutional controls are maintained, monitored and enforced with other remedy components. EPA is updating the 1995 restrictive covenant for the site to increase the long-term effectiveness of this institutional control. The updated restrictive covenant will be implemented by the Folkertsma Refuse Settling Defendants and recorded by the current property owners(s).

The Operation and Maintenance Plan will be updated to include specific components for long-term stewardship to ensure effective institutional controls for the site are maintained, monitored and enforced.

Other Comments: None.

Five-Year Review Report

I. Introduction

The Purpose of the Review

The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and recommendations to address them.

Authority for Conducting the Five-Year Review

U.S. Environmental Protection Agency (EPA) conducted this five-year review pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

EPA interpreted this requirement further in the National Contingency Plan (NCP); 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

Who Conducted the Five-Year Review

EPA Region 5 conducted this five-year review of the remedial action implemented at the Folkertsma Refuse site in Walker, Michigan. EPA conducted this statutory review from July, 2008 through November, 2008. This report documents the results of EPA's review. Monitoring data and other operation and maintenance information for this

review was provided by the Folkertsma Refuse Settling Defendants (FRSD) and their contractor RMT, Inc.

Other Review Characteristics

This is the third five-year review for the Folkertsma Refuse site. The triggering action for this review is the date of the second five-year review, shown in EPA's WasteLAN database: February 12, 2004. EPA conducted this review because hazardous substances, pollutants, and contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

A summary of the site chronology, including a history of operational and regulatory activities from 1965 to 2008 is in Table 1:

Table 1: Chronology of Site Events

Event	Date
Folkertsma Refuse site was muck farm	Prior to 1965
Site owner/operators accepted industrial waste for disposal in landfill on southern two-thirds of property	1965-1972
EPA notified of past waste disposal activities at site	1981
EPA preliminary assessment concluded on-site investigation needed	1983
EPA field investigation team sampled groundwater and drainage ditch sediment	1984
Michigan Department of Natural Resources (now Michigan Department of Environmental Quality) reported landfill contains approximately 40,000 cubic yards of waste including foundry sand, chemical products, construction debris and other industrial waste from heavy manufacturing.	1985
Potentially responsible party (PRP) search	February 15, 1986
Site proposed to National Priorities List (NPL)	June 10, 1986
Special notice letters to conduct Remedial Investigation/Feasibility Study (RI/FS) sent to 12 PRPs	August 1987
PRP negotiations conclude without agreement	October 1987
EPA initiates fund-lead RI/FS	1989
NPL Listing	March 31, 1989
RI/FS complete	1990

Table 1: Chronology of Site Events *(continued)*

Event	Date
Folkertsma Refuse Settling Defendants (FRSD) enter into RD/RA consent decree including past response costs	August 1992
Remedial design starts	May 1992
Operation, Maintenance, and Monitoring (O&M) Plan	June 17, 1993
Quality Assurance Project Plan (QAPP) for Environmental Monitoring	September 22, 1993
Remedial design approved	September 1993
Start remedial action construction	April 1994
Preliminary Close Out Report	September 15, 1994
Final site inspection	October 27, 1994
Remedial Action Completion Report	March 1995
Site deleted from NPL	April 10, 1996
First five-year review	February 17, 1999
O&M Plan revised. Changes from 1993 O&M Plan include: • Groundwater and surface water samples compared to Michigan Part 201 generic groundwater surface water interface (GSI) criteria and Rule 57 water quality criteria instead of background concentrations. • Polynuclear aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs) and beryllium eliminated from groundwater and surface water monitoring. • Frequency of groundwater and surface water sampling reduced from quarterly to semiannually for 9 metals and annually for 10 metals. • Collect groundwater samples using low flow (1 liter/minute or less) methods with updated stabilization criteria. Perform mercury analyses using updated low-level method in QAPP.	April-May 2001
EPA approves reducing landfill gas monitoring from quarterly to semiannually. EPA approves landfill gas monitoring, groundwater and surface water monitoring and site inspections be conducted in March/April and September/October.	July 16, 2001
EPA approves reducing landfill groundwater and surface water sampling parameters. O&M changes include: • Arsenic, cadmium, cobalt, mercury, nickel, and selenium eliminated from monitoring program. • Monitoring frequency for copper, lead, manganese, silver, and zinc reduced from semiannual to annual. Groundwater and surface water monitoring conducted annually.	April 1, 2003
Second five-year review. EPA approves FRSD request to abandon landfill gas monitoring probe GP-3 in second five-year review.	February 12, 2004
Continue semiannual site inspections and landfill gas monitoring. Conduct annual groundwater and surface water monitoring.	2004 – 2008

Table 1: Chronology of Site Events *(continued)*

Event	Date
FRSD Draft Institutional Controls Study	June 6, 2007
EPA Site Wide Ready for Anticipated Use Determination	September 20, 2007
EPA issues five year review notice in Grand Rapids Press	August 4, 2008
EPA inspects site for third five-year review	August 12, 2008

III. Background

Physical Characteristics

The Folkertsma Refuse site is a former industrial landfill located south of 1426 Pannell Road N.W. in Walker, Michigan (Figure 1). Walker is in Kent County and borders the northwest side of Grand Rapids.

The site is about 1,000 feet long by about 400 feet wide and covers approximately 8 acres (Figure 2). The landfill contains approximately 57,000 cubic yards of low-level organic and inorganic waste material, most of which is foundry sand. The surface of the landfill rises about 8 to 10 feet above the surrounding area. A drainage ditch along the west property line and an underground drain through the center of the site join at the south end of the site and empty into Indian Mill Creek about 150 feet south of the site. Indian Mill Creek flows to the east and discharges into the Grand River about 2 miles downstream of the site.

Groundwater at the site flows generally to the south-southeast. Shallow groundwater discharges to the drainage ditch, the underground drain and Indian Mill Creek. Deeper groundwater flows southward beneath Indian Mill Creek toward the Grand River.

Land and Resource Use

The Folkerstma Refuse site was a muck farm until 1965. In 1965, the owners/operators began to accept industrial waste for disposal in a landfill on the southern two-thirds of the property. Disposal operations ceased in 1972 and the site was used by a pallet repair and manufacturing company. Pallet operations on the landfill were relocated to property north and east of the landfill when the site was capped. The site is fenced and has been vacant since the remedial action in 1994-1995.

The Folkertsma Refuse site and the properties surrounding the site are zoned industrial. There are, however, about 10 to 12 houses along the south side of Pannell Road in close proximity to the north end of the landfill. These homes obtain water from private wells which are upgradient of the site.

There are two residential areas about 0.3 miles south of the Folkertsma Refuse site and about 0.5 miles southeast of the site, south of Indian Mill Creek. The residential area 0.3 miles south of the site is serviced by the Grand Rapids Water Department (Figure 3). The residential area 0.5 miles southeast of the site includes about 8 homes on Lookout and Garfield in Walker. These homes are not serviced by public water.

The Folkertsma Refuse site is bordered by a pallet company to the north, undeveloped woodland to the east and a plant nursery and greenhouses to the west. South of the site, between the site and Indian Mill Creek is a transfer station for Darling Rendering Company.

Well records indicate there is a commercial well on Darling Rendering's property about 50 feet southeast of the site. In 1990, Darling Rendering stated this well is not used for drinking water. On October 20, 2008 EPA spoke with Bill Fritz, Vice President for Darling International's Eastern Region to determine if there is still a well at the property. Mr. Fritz stated that Darling Rendering uses the property infrequently, and that he does not think the well is being used. However, Mr. Fritz did not know if the well was sealed, but will check with Darling Rendering's Environmental Department. On October 21, 2008, EPA spoke with Darling Rendering employee John Gipson, who uses the property. Mr. Gipson confirmed the pump was pulled and the well was filled several years ago.

History of Contamination

The Folkertsma Refuse site operated as an industrial landfill from 1965 until 1972. In 1991 EPA was notified of past waste disposal activities at the site. EPA conducted a preliminary assessment of the site in 1983 and sampled groundwater and drainage ditch sediment at the site in 1984. The groundwater sample was not contaminated. The sediment sample contained elevated levels of semivolatile organic compounds (SVOCs) and inorganic chemicals.

In 1985 the Michigan Department of Natural Resources (now the Michigan Department of Environmental Quality or MDEQ) conducted an assessment of the site. The Michigan Department of Natural Resources reported there was approximately 40,000 cubic yards of waste at the site consisting of foundry sand, chemical products, construction debris and other industrial waste from heavy manufacturing operations.

Initial Response

EPA proposed the Folkertsma Refuse site to the National Priorities List (NPL) in 1986. In 1987 EPA attempted to negotiate with approximately 12 potentially responsible parties (PRPs) to conduct a remedial investigation and feasibility study (RI/FS) at the site. The PRPs did not submit a "good faith offer" and negotiations concluded. EPA began a fund-lead RI/FS at the site in 1988 and finalized the NPL listing in 1989. The

RI/FS was completed in 1990 and EPA issued a proposed cleanup plan for the site in 1991.

Basis for Taking Action

The Folkertsma Refuse site contains approximately 57,000 cubic yards of low-level organic and inorganic waste material, most of which is foundry sand. The RI identified unacceptable cancer risks to human health under worst case conditions for ingestion, direct contact and inhalation of landfilled materials. The calculated cancer risk was 2 additional cases of cancer for every 1,000 people similarly exposed.

The primary contaminants posing the risk are polynuclear aromatic hydrocarbons (PAHs) and chromium. Low levels of landfill contaminants were also detected in drainage ditch sediments and, to a limited extent in Indian Mill Creek. The RI did not identify any unacceptable health risks for exposure to landfill materials under probable case conditions.

Unacceptable potential future risks from ingesting unfiltered shallow groundwater beneath the landfill under probable and worst case conditions were also identified. The risks from shallow groundwater were 9 additional cases of cancer for every 1,000 people similarly exposed to 3 additional cases of cancer for every 100 people similarly exposed. The noncancer hazard indices were 1.62 to 29.7.

The risks from shallow groundwater were based on PAHs and high levels of arsenic detected in unfiltered groundwater samples collected directly beneath the landfill using a bailer. A comparison of filtered and unfiltered groundwater samples, and recollecting unfiltered samples with a bladder pump (after redeveloping one of the wells) indicates the PAHs and arsenic were not dissolved in the groundwater but mainly sorbed onto suspended sediments in the groundwater that were stirred up by the bailer. This indicates the PAHs and arsenic that were detected have a limited potential to migrate. PAHs and arsenic were also not detected in any downgradient groundwater samples.

The RI also identified unacceptable potential future risks for ingesting deep groundwater under worst case conditions. The risks were due to arsenic and other inorganic chemicals. The calculated risks were 6 additional cases of cancer for every 10,000 people similarly exposed and a noncancer hazard index of 2.54. The risks from deep groundwater were also based on unfiltered groundwater samples collected from directly beneath the landfill using a bailer. Arsenic was not detected when the well with the maximum chemical concentration posing the risk was resampled using a bladder pump.

IV. Remedial Actions

Remedial Action Objectives

EPA's remedial action objectives for the Folkertsma Refuse site are to:

- Prevent people and animals from being exposed to the landfilled materials and contaminated sediments in the on-site ditches and Indian Mill Creek;
- Prevent people from drinking contaminated groundwater beneath the landfill;
- Reduce contaminant migration to groundwater; and
- Prevent contaminated groundwater from moving out beneath the landfill beyond the waste boundary.

Selected Remedy

EPA's selected remedy for the Folkertsma Refuse site is based on the RI and is documented in the June 26, 1991 Record of Decision (ROD) for the site. EPA's remedy for the Folkertsma Refuse site includes the following major components:

- Excavate contaminated sediments from the on-site ditches and Indian Mill Creek and consolidate with landfilled materials;
- Convert on-site ditches to permeable underground drains to provide continued site drainage and help isolate landfilled materials from groundwater;
- Construct a landfill cap over contaminated sediments and landfilled materials consistent with Resource Conservation and Recovery Act (RCRA) Subtitle D and Michigan Solid Waste Management Act 641;
- Install passive gas vents to prevent buildup of VOCs and methane, if necessary;
- Cover clay cap with topsoil and vegetation;
- Install fence around site and implement institutional controls such as deed restrictions to prevent drinking water wells from being installed in landfill and to protect integrity of landfill cap;
- Conduct groundwater, surface water, and landfill gas monitoring to confirm effectiveness of remedial action.

The selected remedy for the Folkertsma Refuse site is a limited commercial/industrial containment remedy. This remedy eliminates or reduces the risks posed by the site using engineering and institutional controls. The large volume of low-level organic and inorganic waste material and contaminated sediment in the landfill is contained; and the potential for contaminants to spread into groundwater and for contaminated groundwater to move out from beneath the landfill is reduced.

Remedy Implementation

EPA entered into negotiations to conduct the Remedial Design and Remedial Action (RD/RA) with the Folkertsma Refuse site PRPs in July 1991. Negotiations concluded in March 1992 with a RD/RA Consent Decree, including payment for past costs. The Consent Decree was entered in August 1992. The RD started in May 1992, and was finished in September 1993.

RA construction activities began in April 1994 and included:

- Clearing, regrading, and relocating on-site pallet company operations to off-site areas;
- Excavating and solidifying contaminated sediments; consolidating sediments with landfilled materials;
- Converting on-site ditches into permeable underground drains and replacing Indian Mill Creek drain pipe with open channel;
- Constructing solid waste clay cap over landfill, including drainage, root zone and topsoil layers to prevent direct contact with waste materials;
- Abandoning groundwater monitoring wells/installing replacement monitoring wells;
- Installing gas probes for monitoring;
- Conducting long-term groundwater, surface water, and landfill gas monitoring;
- Constructing fence with locking gates around site perimeter;
- Implementing restrictive covenant prohibiting drinking water wells from being installed on landfill and any disturbance of cap or landfilled materials on landfill property deed.
- Long-term maintenance and repairs;

EPA conducted a pre-final inspection of the construction activities on August 25, 1994. During the pre-final inspection EPA determined the landfill cap and underground drains were constructed as designed and operational. A punch list of minor tasks to be completed (e.g., removing construction debris, seeding, fencing) was developed by the Folkertsma Refuse Settling Defendants' (FRSD's) construction quality assurance engineer and given to FRSD's contractor with a completion schedule. EPA verified the punch list items were complete during a final site inspection on October 27, 1994.

FRSD submitted a Remedial Action Construction Completion report to EPA in February 1995 documenting the completion of all remedial action activities. The report certifies the objectives of the remedial action have been met and all major components of the remedy are complete except long-term monitoring. EPA approved the Remedial Action Construction Completion report in March 1995.

Institutional Controls

The Folkertsma Refuse site requires institutional controls (ICs) to ensure the long-term protectiveness of the remedy. ICs are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for exposure to contamination and protect the integrity of a remedy. Compliance with ICs is required at the Folkertsma Refuse site to ensure long-term protectiveness for areas which do not allow for unlimited use or unrestricted exposure (UU/UE) (the entire site/landfill).

Required ICs

The objective of the Folkertsma Refuse site remedy is to contain the landfill materials and allow limited commercial/industrial use at the site. This remedy requires ICs to ensure these objectives are met.

The 1991 ROD requires ICs, such as deed restrictions, to be implemented to prevent drinking water wells from being installed within the landfill and to prevent the landfill materials and cover from being disturbed. The ROD also requires fencing to restrict access to the site.

The 1992 Consent Decree also requires ICs (Paragraph 9, "Conveyance of the Facility and Institutional Controls"). Specifically, the Consent Decree requires:

a. *Copy of Decree to be Recorded. Within thirty days of approval by the Court of this Decree, the Owner Settling Defendant shall record or cause to be recorded a copy of this Decree with the Recorder's Office, Kent County, State of Michigan, in the chain of title for each parcel of Facility property owned by the Owner Settling Defendant.*

b. *Alienation of Facility. The Facility may be freely alienated provided that at least sixty days prior to the date of such alienation, the Owner Settling Defendant shall notify the United States of such proposed alienation, the name of the grantee, and a description of the obligations, if any, to be performed by such grantee. In the event of such alienation, all of Settling Defendants' obligations pursuant to this Decree shall continue to be met by all Settling Defendants and the grantee.*

c. *Notice. Any deed, title or other instrument of conveyance regarding the Facility shall contain a notice that the Facility is the subject of this Consent Decree, setting forth the style of the case, case number, and Court having jurisdiction herein.*

d. *Institutional Controls. The U.S. EPA has determined that the institutional controls described in the SOW (Appendix 2) are necessary to effectuate the remedial action for the Facility and to protect the public health or welfare or the environment. The institutional controls determined to be necessary to effectuate the remedial action for the Facility and to protect*

the public health or welfare or the environment may include the filing of deed restrictions and shall prohibit any construction involving surface or subsurface excavation within the landfilled portion of the Facility and shall prohibit the installation of water wells within the landfilled portion of the Facility.

Implemented ICs

In February 1995 the property owner recorded a restrictive covenant with the deed to the landfill property. The restrictive covenant prohibits any disturbance or development within the landfill/capped area of the site in any manner that is inconsistent with or may impair the remedy, and prohibits drinking water wells from being installed within the landfill/capped area of the site. A copy of the restrictive covenant recorded at the site is in Attachment 1.

The Folkertsma Refuse site is zoned MH, Heavy Industrial.

Analysis of ICs

Compliance with effective ICs is ensured through long-term stewardship by implementing, maintaining, monitoring and enforcing effective ICs and other remedy components.

In September 2007 EPA determined the Folkertsma Refuse site was Site Wide Ready for Anticipated Use. EPA confirmed site ICs were implemented and effective, and that ICs addressed all non-UU/UE areas of the site.

To assist EPA in evaluating the ICs, EPA asked FRSD to conduct an IC Study. FRSD submitted a draft IC Study to EPA in June 2007. Based on the draft IC Study and other information, EPA determined additional measures may be needed to increase the long-term effectiveness of the IC and further ensure effective long-term stewardship of the site.

EPA's evaluation indicates that while site ICs are implemented and effective, the 1995 restrictive covenant should be revised to increase the reliability, enforceability and long-term stewardship of the IC. EPA is working with the MDEQ to update the restrictive covenant. EPA will give a copy of the restrictive covenant to FRSD to record once the updated IC is drafted. Additionally, EPA will request FRSD update the O&M Plan to further ensure long-term stewardship of the site. These actions are discussed further below.

Physical Area

In 2007, FRSD conducted an IC Study and confirmed:

1. The restrictive covenant is filed with the deed.
2. The property described in the restrictive covenant is concurrent with the landfill/capped area of the site.

The area of the Folkertsma Refuse site that does not support unlimited use and unrestricted exposure is shown in Figure 4 (the entire site/landfill). Figure 4 also shows this area remains vacant. Land and groundwater use at the landfill is checked by FRSD during semiannual site inspections. EPA also confirmed the Folkertsma Refuse site is fenced and vacant and that no water supply wells have been installed within the landfill during the August 2008 inspection.

IC Objectives

The objectives of the ICs for the restricted area of the site (entire site/landfill) are summarized in Table 2.

Table 2: IC Summary Table

Media, Engineered Controls and Areas that Do Not Support UU/UE Based on Current Conditions	IC Objective	Title of IC Instrument Implemented
Landfill - Area with RCRA Subtitle D/Michigan Solid Waste Cap. Identified as diagonally shaded area in Figure 4 (entire site/capped area).	Prohibit disturbance or development within the landfill/capped area in any manner that is inconsistent with or may defeat or impair effectiveness of remedy. Residential use and the installation of drinking water wells are not allowed.	Restrictive Covenant recorded in Liber 3610, pages 286-287, Kent County Recorder's Office February 21, 1995
Groundwater - Area where groundwater contamination may exceed safe drinking water levels (e.g., MCLs, Part 201 criteria, other risk-based levels). Identified as diagonally shaded area in Figure 4 (entire site/capped area).	Prohibit groundwater from being used as drinking water supply within the landfill/capped area	Restrictive Covenant recorded in Liber 3610, pages 286-287, Kent County Recorder's Office February 21, 1995

Long Term Stewardship

FRSD is responsible for inspecting and monitoring compliance with the land and groundwater use restrictions implemented at the site. This monitoring is conducted as part of O&M during the semiannual site inspections.

The O&M Plan requires FRSD to note whether the landfill cap and perimeter fencing remains intact or has been damaged. The O&M Plan and inspection forms, however, do not have specific requirements for noting whether the site remains vacant or if there have been any changes in land use; or whether water supply wells have been installed within the landfill. The O&M Plan does not include any specific provisions for notifying EPA or MDEQ immediately if either of these conditions are observed. However, contact information for EPA and MDEQ is included in Section 9, Emergency Contacts of the plan.

Planning for long-term stewardship is required since compliance with ICs is necessary to ensure the protectiveness of the remedy. Long-term stewardship involves implementing effective procedures to properly maintain and monitor the site. Long-term stewardship will ensure the site remedy, including effective ICs, is maintained and monitored so the remedy continues to function as intended. The O&M plan will be updated to include requirements for an annual certification to EPA that ICs are in place and effective. The development of a communications plan and the use of Michigan's one call system will also be explored.

Recording and Title Work

FRSD's IC Study of the Folkertsma Refuse site included a title search. FRSD's draft IC Study indicates there are no recorded encumbrances on the landfill property that would interfere with the EPA-required restrictions for the site.

Current Compliance

FRSD's semiannual site inspections, FRSD's draft IC Study and EPA's August 2008 site inspection confirm the site complies with all ICs. The landfill is fenced and vacant, and water supply wells have not been installed within the landfill. Long-term groundwater and surface water monitoring indicates groundwater contaminants are not moving beyond the site boundary at unacceptable concentrations.

IC Performance Assessment

EPA reviewed FRSD's draft IC Study and the ICs for the Folkertsma Refuse site in 2007. EPA's review and current site conditions indicate the 1995 restrictive covenant has been an effective IC. EPA is updating the restrictive covenant, however, to increase the long-term effectiveness of the IC.

In 2008 EPA prepared an updated restrictive covenant for the site which:

- Clarifies that no development or disturbance of the landfill/capped area of the site can occur without prior EPA approval;
- Clarifies the restrictive covenant is to run with the land;
- Adds a grantee; and
- Includes provisions for enforcement.

EPA provided a draft updated restrictive covenant to MDEQ for review on September 30, 2008. Following MDEQ review, EPA will give a copy of the restrictive covenant to FRSD to record.

Operation and Maintenance

Long term operation, maintenance and monitoring (O&M) at the Folkertsma Refuse site is conducted by FRSD under EPA and MDEQ oversight. Additional details concerning O&M may be found in the 1995 Remedial Action Construction Completion Report; the

April 2001 Operation, Maintenance and Monitoring Plan; the 2004, 2005, 2006 and 2007 Annual Reports; and Section VI, Five-Year Review Process of this report.

Landfill Cover

FRSD constructed the landfill cover in 1994 based on the RD. The cover consists of 2 feet of clay under a 6 inch sand drainage layer, a 1 foot rooting zone layer and 6 inches of topsoil. FRSD has performed regular inspections at the site since the cover was installed. The inspections include looking for evidence of stressed or sparse vegetation, erosion, settlement, and burrowing animals.

FRSD inspected the landfill cover semiannually 2004-2007. Inspection and repair and maintenance reports for 2004-2007 are provided in Attachment 2 and discussed in Section VI, Five-Year Review Process.

Perimeter Gas Monitoring

FRSD installed three perimeter gas probes along the north site property boundary during the RA. The gas probes are used to monitor potential off-site methane migration and were used to determine whether a passive gas collection system was needed (it is not). FRSD monitored the gas probes monthly from December 1994 to June 1995, and quarterly from September 1995 until July 2001.

In 2001, EPA and MDEQ determined gas monitoring could be conducted semiannually in April/May and September/October. In February 2004, EPA and MDEQ also approved FRSD's request to abandon GP-3 in the Second Five-Year Review Report.

FRSD conducted nine landfill gas monitoring events at the two perimeter gas probes during this five-year review period (2004-2008). The landfill gas monitoring includes measuring methane, carbon dioxide, and oxygen concentrations; and the pressure or vacuum in each probe. FRSD will conduct the next gas monitoring event in October 2008. The results of the gas monitoring events are in Attachment 3 and discussed in Section VI, Five-Year Review Process.

Groundwater and Surface Water Monitoring

FRSD monitors groundwater and surface water on a regular basis to confirm the Folkertsma Refuse site containment remedy is working and landfill contaminants are not migrating out beneath the landfill.

FRSD began groundwater and surface water monitoring in 1995 on a quarterly basis. The groundwater and surface water samples were analyzed for VOCs, SVOCs and inorganic chemicals and compared to background concentrations.

In 2001, EPA and MDEQ determined the groundwater and surface water monitoring programs could be modified as follows:

- Groundwater and surface water sample results will be compared to Michigan Part 201 generic Groundwater Surface Water Interface (GSI) criteria and Rule 57 water quality criteria instead of background concentrations.
- VOCs, SVOCs and beryllium will be discontinued from the groundwater and surface water monitoring programs.
- Frequency of groundwater and surface water sampling reduced from quarterly to semiannually for 9 metals and annually for 10 metals.
- Groundwater samples will be collected using low flow (1 liter/minute or less) methods with better stabilization criteria.
- Mercury analyses will be performed using updated low-level methods in approved QAPP.

In 2003 EPA and MDEQ approved additional changes in the groundwater and surface water monitoring programs including:

- Arsenic, cadmium, cobalt, mercury, nickel, and selenium eliminated from monitoring.
- Monitoring frequency for copper, lead, manganese, silver, and zinc reduced from semiannual to annual.
- Groundwater and surface water monitoring will be conducted annually.

FRSD's groundwater and surface water sample collection and data validation activities are performed under the 1993 O&M Plan and QAPP, as modified by EPA's 1999 and 2004 five-year review recommendations; the EPA-approved April 2001 O&M Plan; and minor EPA-approved revisions to the April 2001 O&M Plan in 2001 and 2003. Copies of FRSD and EPA correspondence concerning modifications are in Attachment 4.

FRSD collects groundwater samples from eight on and off-site monitoring wells: MW-106, MW-206, MW-107, MW-207, MW-108, MW-208, MW-109 and MW-201 (background well). FRSD collects two surface water samples: one upstream location and one location at the downstream edge of the site before discharging to Indian Mill Creek. The locations of the groundwater monitoring wells and surface water sampling locations are shown on Figure 2.

FRSD conducted five annual groundwater/surface water sampling events at the site during 2004-2008. The groundwater samples were analyzed for field parameters and inorganic chemicals. The groundwater/surface water results are provided in Attachment 5 and discussed in Section VI, Five-Year Review Process.

FRSD has inspected and maintained all groundwater monitoring wells since they were installed. Inspection reports, including descriptions of any maintenance 2004-2007 are provided in Attachment 2.

Current Operation and Maintenance

Operation and maintenance activities for the Folkertsma Refuse site 2004-2008 are summarized below:

- Semiannual site inspections. Identify maintenance actions, confirm site remains fenced and vacant, confirm water supply wells not on property.
- Restore damaged cover areas.
- Establish and cultivate vegetation. Fertilize as needed.
- Mow biannually.
- Remove sediment in drainage swales as needed.
- Restore damaged sections of drainage ditches as needed.
- Restore/replace damaged fencing, monitoring wells, and gas probes as needed.
- Semiannual landfill gas monitoring at two landfill gas probes (GP-1 and GP-2).
- Annual unfiltered groundwater and surface water sampling at eight groundwater monitoring wells for aluminum, barium, chromium, copper, iron, lead, magnesium, manganese, potassium, silver, sodium, thallium and zinc analyses.

O&M Costs

The O&M costs for the Folkertsma Refuse site from 2004 through August 2008 are in Table 3.

Table 3: Annual System Operations/O&M Costs

Dates		Total Cost rounded to nearest $1,000
From	To	
1/2004	12/2004	$20,000
1/2005	12/2005	$15,000
1/2006	12/2006	$24,000
1/2007	12/2007	$21,000 (1)
1/2008	8/2008	$7,000

(1) An additional $81,084.70 was paid in 2007 to EPA for an oversight bill received for 10 years of oversight costs dating back to 1997.

V. Progress Since Last Review

2004 Protectiveness Statement

The protectiveness statement in the 2004 five-year review was:

> *All immediate threats at the site have been addressed, and the remedy is protective to human health and the environment in the short-term. Long-term protectiveness will be achieved by continuing to maintain the clay cap, and by conducting long-term groundwater, surface water and gas monitoring. Long-term monitoring has demonstrated concentrations of the chemicals of concern have declined to close to or below cleanup goals.*

Issues, Recommendations and Follow-up Actions

Issues, recommendations and follow-up actions taken since the last five year review are summarized in Table 4 and discussed below.

Table 4: Actions Taken Since the Last Five-Year Review

Issues from Previous Review	Recommendations / Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
Continue site inspections	Inspect site regularly	FRSD	Semiannual	9 semiannual inspections conducted 2004-2008	04/2004 10/2004 05/2005 11/2005 04/2006 10/2006 04/2007 10/2007 04/2008
Maintain vegetation cover. Perform routine maintenance and repairs as needed	Continue mowing and fertilize as needed. Correct maintenance and repair issues identified during site inspections.	FRSD	Biannual mowing/ semiannual maintenance and repairs. Fertilize as needed.	Site mowed and fertilized annually or biannually. Missing locks on MW-108, MW-109 and south gate identified during EPA site inspection replaced. Broken hinge on MW-108 fixed.	Site fertilized 2004, 2007, 2008. Mowed 2004, 2005, 2007, 2008 FRSD replaced MW-109 lock during site inspection. Broken hinge on MW-108, missing MW-108 well lock and lock on south gate replaced 09/11/2008.

Table 4: Actions Taken Since the Last Five-Year Review *(continued)*

Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
Continue gas monitoring	Continue gas monitoring	FRSD	Semiannual	9 semiannual gas monitoring events 2004-2008	04/2004 10/2004 05/2005 11/2005 04/2006 10/2006 04/2007 10/2007 04/2008
Continue groundwater monitoring	Continue groundwater monitoring	FRSD	Annual	5 annual groundwater monitoring events 2004-2008	04/2004 04/2005 04/2006 04/2007 04/2008
Continue surface water monitoring	Continue surface water monitoring	FRSD	Annual	5 annual surface water monitoring events 2004-2008	04/2004 04/2005 04/2006 04/2007 04/2008
Put site into reuse	Conduct weight test Submit engineering plans and specifications for building on part of cap	Property Owner	2004	Owner decides not to build on cap. PRPs conduct IC Study. EPA reviews draft IC Study and annual reports. EPA issues Site-Wide Ready for Use (SWRFU) determination.	 Draft IC Study 06/07/2007 SWRFU 09/20/2007

Site Inspections and Monitoring

FRSD inspected the Folkertsma Refuse site and conducted landfill gas monitoring during nine semiannual events 2004-2008. A tenth site inspection/landfill gas monitoring event is scheduled for October 2008. FRSD also conducted five groundwater and surface water monitoring events 2004-2008.

GP-3

Consistent with EPA's 2004 Five-Year Review Report, FRSD abandoned GP-3 by pulling the casing and grouting the hole. The work was done by Mateco Drilling on April 23, 2004.

Routine Maintenance and Repairs

FRSD fertilizes and mows the Folkertsma Refuse site annually or biannually and the vegetation cover is well established (see site photos in Attachment 6).

Locks were missing from monitoring wells MW-108 and MW-109 and the south gate during the August 11, 2008 inspection. The hinge cap on MW-108 was also broken. FRSD replaced the lock on MW-109 during the site inspection. FRSD replaced the locks on MW-108 and the south gate, and fixed the hinge cap on MW-108 on September 11, 2008. FRSD provided EPA with photographs of the locked/fixed wells and gate which are in Attachment 6.

Site Reuse

In 2004 the owners of the Folkertsma Refuse site property indicated they wanted to asphalt over part of the landfill cover to use for storing pallets. The owners would conduct a weight test and develop construction specifications to confirm the integrity of the landfill cap would not be affected. The property owners eventually decided they would not build on the cover, and the weight test and construction specifications were never conducted/submitted.

In 2007 EPA requested FRSD conduct an IC Study for the Folkertsma Refuse site. FRSD conducted the study, including a title search, and submitted the draft IC Study to EPA on June 6, 2007. EPA reviewed the draft IC Study and other site records and issued a Site-Wide Ready for Use (SWRFU) determination for the site on September 20, 2007. EPA's SWRFU determination indicated the site IC (1995 restrictive covenant) should be updated to increase the long-term effectiveness of the IC.

VI. Five-Year Review Process

Administrative Components

EPA notified FRSD and MDEQ about the 2008 five-year review for the Folkertsma Refuse site on July 15, 2008. The 2008 five-year review was conducted by EPA Remedial Project Manger Karen Cibulskis. The 2008 five-year review is based on FRSD's monitoring data and inspection reports, EPA's August 11, 2008 site inspection, and other documents and reports (see list in Attachment 7).

MDEQ was not actively involved in conducting the 2008 five-year review for the Folkertsma Refuse site. MDEQ reviewed the draft Five-Year Review Report and provided EPA with comments before the report was finalized.

Other components associated with this review include:

- Community involvement
- Document review
- Data review
- Site inspection
- Five-year Review Report development and review.

Community Notification and Involvement

EPA published a notice announcing the 2008 five-year review in the Grand Rapids Press on August 4, 2008. A copy of EPA's notice is in Attachment 8.

EPA also attempted to involve the community in the five-year review by stopping at seven houses on Pannell Road closest to the site during the August 11, 2008 site inspection. One resident lived in the area for several years and remembered the RA. EPA provided this resident with current information about the site and answered questions. EPA will also send this resident a copy of the 2008 Five Year Review Report.

This resident is concerned about his well. However, the resident's well (1338 Pannell Road) is located upgradient and several hundred feet sidegradient to the landfill. EPA tested this well during the RI. The well contained a very low level of phenol (2 ug/L), which was not detected in any of the groundwater samples at the site and is significantly below the MDEQ Part 201 drinking water standard of 4,400 ug/L for phenol. A federal drinking water standard for phenol is not available.

Two residents moved to the area after the site was cleaned up and were not aware of the landfill. EPA provided these residents with basic information about the site and EPA's review. Four residents were not home.

EPA followed up with the residents on Pannell Road by sending them a copy of the NPL fact sheet for the site and a copy of the public notice. A copy of the 2008 Five-Year Review Report will also be available in the site file at the Kent County Public Library in Walker, Michigan.

EPA did not receive any other interest, comments or concerns from the public about the Folkertsma Refuse site or the 2008 five-year review.

Document Review

EPA reviewed all relevant documents for the Folkertsma Refuse site for the 2008 five-year review. Major documents EPA reviewed included:

- 2004 Five-Year Review Report
- 2004-2007 Annual Reports
- 1995-2003 Annual Reports
- 2001 O&M Report
- 1990 RI
- 1991 ROD
- 2007 Draft IC Study
- 1995 Restrictive Covenant

- 2007 SWRFU Determination
- Grand Rapids Water Supply Map (as of August 2008)
- Current MDEQ Generic Groundwater Surface Water Interface Criteria
- Current MDEQ Generic Residential Drinking Water Criteria

A complete list of all documents EPA reviewed for the 2008 five-year review is in Attachment 7.

Data Review

The landfill and contaminated sediments were contained with a solid waste landfill cover and underground drainage system in 1994. Since 1995, FRSD sampled landfill gas quarterly and semiannually; and groundwater and surface water quarterly, semiannually, and annually. Sampling locations are in Figure 2.

Landfill Gas

FRSD conducted nine landfill gas monitoring events at two perimeter gas probes 2004-2008. Methane was detected in GP-2 during the April 2005 event at 6% of the lower explosive limit (LEL) with 0.3% methane per volume. However, because there was not measurable positive pressure in GP-2, the contingency actions in the O&M plan were not triggered.

No combustible gas was detected in GP-1, or at any other time in GP-2. 2004-2008 landfill gas monitoring data is in Attachment 3.

Conclusion - The 2004-2008 landfill gas monitoring indicates landfill gas is no longer a concern at the Folkertsma Refuse site. Based on the 2004-2008 data and, consistent with the 2001 O&M Plan, EPA recommends reviewing the landfill gas data from the October 2008 sampling event and, if this data is consistent with the rest of the 2004-2008 landfill gas data, suspend the landfill gas monitoring program.

However, because there are residential homes in close proximity to the north end of the site, EPA recommends landfill gas be sampled in GP1 and GP2 six to twelve months before the next five-year review in 2013 to confirm site conditions have not changed.

Groundwater Monitoring

FRSD conducted five annual groundwater monitoring events in April 2004-2008. Unfiltered low-flow groundwater samples were collected from two shallow and two intermediate downgradient perimeter wells (MW-107 and MW-108 and MW–207 and MW-208), one shallow and one intermediate off-site downgradient well (MW-106 and MW-206), a shallow well within the landfill (MW-109), and an upgradient background well (MW-201).

The groundwater samples were analyzed for aluminum, barium, chromium, copper, iron, lead, magnesium, manganese, potassium, silver, sodium, thallium and zinc. The 2004-2008 groundwater data is provided in Attachment 5.

Consistent with the 2001 O&M Plan, groundwater samples are compared to MDEQ Part 201 Generic GSI Criteria. Per the O&M Plan, and as directed by MDEQ, a hardness of 225 mg/L CaCO3 for Indian Mill Creek in Kent County is used to calculate hardness-dependent GSI criteria.

Chemicals were not detected in any 2004-2008 groundwater samples above MDEQ GSI criteria. Seven chemicals: aluminum, chromium, copper, lead, silver, thallium and zinc were not detected (ND) in any on-site or downgradient wells. The other chemicals detected in the groundwater are discussed below.

Iron - Iron was detected above background concentrations in every well except MW-109 during all five sampling events. The highest concentrations of iron were detected in off-site shallow downgradient well MW-106. The iron concentrations in MW-106 ranged from 1,900 ug/L to 3,400 ug/L. The concentration of iron in MW-106 during the 2008 sampling event was 2,610 ug/L. Background concentrations of iron were ND to 300 ug/L.

MDEQ does not have a GSI criteria for iron and there is not a federal water quality standard for iron. MDEQ's Part 201 health-based criteria for iron is 2,000 ug/L for residential drinking water (RDW) and 5,600 ug/L for commercial/industrial drinking water (IDW). EPA's risk-based Regional Screening Level (RSL) for iron in drinking water is 26,000 ug/L.

The concentration of iron above background concentrations in the other wells ranged from 513 ug/L to 1,500 ug/L, with the exception of one detection of iron at a concentration of 2,300 ug/L in MW-207 in 2005.

Iron concentrations in groundwater have been steadily decreasing since the landfill was capped in 1994. In 1995, the first year of monitoring, the maximum concentration of iron in site groundwater was 28,800 ug/L. In 1996 the maximum concentration of iron was 21,500 ug/L, and in 1997 the maximum concentration of iron was 18,600 ug/L. The maximum concentration of iron detected 2004-2008 was 3,400 ug/L in MW-106 in 2004.

Barium - Barium was detected above background concentrations in MW-207 in all five sampling events. The concentration of barium in MW-207 was 210 ug/L to 220 ug/L and the background concentration of barium was 106 ug/L to 130 ug/L. The concentrations of barium in MAW-207 are below the MDEQ GSI criteria for barium (1,037 ug/L) and the MDEQ RDW criteria for barium (2,000 ug/L).

Barium was also detected slightly above background concentrations in MW-106, MW-107 and MW-109 (108 ug/L to 150 ug/L), but at concentrations below MDEQ GSI and RDW criteria.

Manganese - Manganese was detected above background concentrations in MW-106, MW-207 and MW-208 in all five sampling events. The concentrations of manganese in MW-106, MW-207 and MW-208 were 85 ug/L to 190 ug/L. The background concentration of manganese was 30 ug/L to 110 ug/L. The concentrations of manganese detected at the site are below the MDEQ GSI criteria for manganese (1079 ug/L) and the MDEQ Health-Based RDW criteria for manganese (860 ug/L).

Magnesium, Potassium and Sodium - Magnesium, potassium and sodium were detected above background concentrations in several wells. MDEQ does not have GSI or RDW criteria for these chemicals. Federal standards and risk-based screening levels for these chemicals are also not available.

Summary - The 2004-2008 groundwater data indicates the landfill cover system and underground drains are effective. Chemical concentrations in groundwater have decreased and any remaining chemicals in groundwater are not moving out beneath the landfill at unacceptable concentrations.

Chemicals were not detected in any 2004-2008 groundwater samples above MDEQ GSI criteria. Aluminum, chromium, copper, lead, silver, thallium and zinc were not detected in any on-site or downgradient wells. Barium, manganese, magnesium, potassium and sodium were detected above background concentrations, but at concentrations below MDEQ GSI and health-based RDW criteria, or are chemicals for which MDEQ GSI, Health-Based RDW, and federal standards or risk-based screening levels are not available.

Iron was detected above background levels in every groundwater monitoring well except MW-109. MDEQ does not have a GSI criteria for iron and there are no federal water quality standards for iron. The concentrations of iron in shallow off-site well MW-106 in the 2004-2005 and 2007-2008 sampling events, and in on-site perimeter intermediate well MW–207 in the 2005 sampling event exceed the MDEQ health-based RDW criteria for iron of 2,000 ug/L but not the MDEQ IDQ criteria for iron of 5,600 ug/L. The maximum concentration of iron detected in 2004-2008 groundwater samples was 3,400 ug/L, which is significantly below the EPA health-based RSL for iron of 26,000 (tap water, noncancer hazard index=1.0).

The groundwater in the vicinity of MW-106 and MW-207 is not used as a drinking water supply. The commercial well at Darling Rendering used for washing trucks and equipment was filled several years ago. The Darling Rendering property is used infrequently and there are no buildings or other facilities on the property other than temporary storage containers for rendering waste.

Shallow groundwater is expected to discharge to Indian Mill Creek, and the area immediately south of Indian Mill Creek is serviced by the Grand Rapids Water Supply.

Conclusion - Consistent with the 2001 O&M Plan and based on the 2004-2008 groundwater (and surface water) monitoring data, EPA recommends suspending groundwater monitoring at the Folkertsma Refuse site.

However, because the site IC does not extend to downgradient off-site areas, EPA recommends collecting groundwater samples from site wells six to twelve months before the next five-year review in 2013. The purpose of the sampling is to confirm the landfill cover system and underground drains are continuing to function as intended. The current downgradient well users closest to the site are residents in homes about 0.5 miles southeast of the site on Lookout and Garfield Streets in Walker that are not serviced by a public water supply.

The commercial well at the transfer station for the rendering company south of the site was filled several years ago and the property is used infrequently. The property does not have any buildings, only temporary storage containers for rendering waste. However, EPA did not identify any institutional controls that would prohibit a new well from being drilled at this location.

The residential area south of the site, south of Indian Mill Creek is supplied by the Grand Rapids Water Supply.

EPA recommends analyzing the 2013 five-year review groundwater samples for all inorganic parameters and VOCs exceeding background concentrations (including any degradation products) in any site media at the time of the ROD. Groundwater samples would not have to be analyzed for SVOCs (unless other information indicates the remedy may not be effective) because SVOCs were not detected during several years of quarterly groundwater monitoring following the RA (1995-2000).

VOCs were not detected or were detected infrequently at low concentrations during quarterly monitoring after the RA. However, EPA recommends analyzing 2013 five-year review groundwater samples for VOCs based on the toxicity of the VOCs detected during post-RA monitoring (e.g., trichloroethene) and to obtain current VOC data using updated and more representative low-flow sampling methods and stabilization criteria.

EPA recommends collecting unfiltered groundwater samples for the 2013 five-year review using low-flow sampling methods and stabilization criteria. EPA also recommends the groundwater samples be analyzed using analytical detection limits consistent with current MDEQ GSI criteria and health-based drinking water standards/levels. For example, based on the current MCL (10 ug/L) and risk-based screening criteria for arsenic (4.5 ug/L at a cancer risk of 1 x 10-4 and 11 ug/L at a noncancer hazard index equal to 1.0), the detection limit in groundwater for arsenic should be 1 ug/L, not 20 ug/L per the 2001 O&M Plan.

Surface Water Monitoring

FRSD conducted five annual surface water monitoring events in April 2004-2008. The unfiltered surface water samples were collected from one on-site downstream location before the water discharges to Indian Mill Creek and one upstream background location. The surface water samples were analyzed for aluminum, barium, chromium, copper, iron, lead, magnesium, manganese, potassium, silver, sodium, thallium and zinc. The 2004-2008 surface water data is provided in Attachment 5.

Consistent with the 2001 O&M Plan, surface water samples are compared to MDEQ Rule 57 Water Quality Criteria. For the chemicals at the Folkertsma Refuse site, the lowest relevant Rule 57 criteria are the generic GSI criteria. Per the O&M Plan, and as directed by MDEQ, a hardness of 225 mg/L CaCO3 for Indian Mill Creek in Kent County is used to calculate hardness-dependent GSI criteria.

Chemicals were not detected in the 2004-2008 surface water samples above MDEQ GSI criteria. Five chemicals: barium, chromium, lead, silver and thallium were not detected in any of the 2004-2008 surface water samples.

Five chemicals: aluminum, copper, iron, manganese and zinc, were detected above background concentrations in the 2005 duplicate surface water sample SW-1DUP. However, these chemicals were not detected in the other 1995 sample from this location (SW-1). The presence of non-detect chemicals in the duplicate sample lends some uncertainty to the actual presence and concentration of these chemicals at this location. These chemicals were also either not detected or were detected below background concentrations during the 2004 and 2006-2008 surface water sampling events.

Potassium was detected slightly above background concentrations in the 2008 surface water sample. The concentration of potassium was 31,200 ug/L in surface water sample SW-1 and 30,300 ug/L to 31,000 ug/L in the background and duplicate background surface water samples. This difference is not considered significant. Potassium was detected in the 2004-2007 surface water samples, but not above background concentrations.
Five chemicals - iron, magnesium, manganese, sodium and zinc were either not detected or detected in the surface water samples below background concentrations 2004–2008.

Conclusion - Consistent with the 2001 O&M Plan and based on the 2004-2008 surface water (and groundwater) monitoring data, EPA recommends surface water monitoring at the Folkertsma Refuse site be suspended. However, EPA recommends collecting a surface water sample and background surface water sample from the site six to twelve months before the next five-year review in 2013. The purpose of the sampling is to confirm the underground drains and containment remedy are continuing to function as intended. Because some site groundwater discharges to the drainage system, EPA

recommends the surface water samples be analyzed for the same chemicals as the groundwater samples (VOCs and inorganic chemicals).

Site Inspection

EPA inspected the Folkerstma Refuse site for the 2008 five-year review on August 11, 2008. The inspection was conducted by EPA Remedial Project Manger Karen Cibulskis and Phillip Mazor from FRSD. MDEQ did not attend the site inspection. A copy of EPA's Site Inspection Report is in Attachment 8.

EPA walked around the perimeter of the site to observe the fence, gates, drainage system and surrounding land uses. EPA inspected the 8 monitoring wells and 2 gas probes, and walked along the drainage swale running through the center of the site. EPA walked along the drainage ditch leading to Indian Mill Creek and down to the creek, and stopped to speak with residents at seven homes closest to the site and a worker dropping off rendering material at the rendering transfer station south of the site. EPA also drove up and down Pannell Road and through the residential area south of the site, south of Indian Mill Creek.

EPA observed the locks were missing from monitoring wells MW-108, MW-109 and the south gate. The hinge cap on MW-108 was also broken. FRSD replaced the lock on MW-109 during the site inspection. FRSD replaced the locks on MW-108 and the south gate, and fixed the hinge cap on MW-108 on September 11, 2008. FRSD provided EPA with photographs of the locked/fixed wells and gate which are in Attachment 6. EPA did not identify any other maintenance or repair issues.

The landfill vegetation was well established and EPA did not observe any erosion, ponding or subsidence during the inspection. The drainage ditches were running freely and appeared to be clear of debris and excessive sedimentation. The drainage swales did not have water in them and also appeared to be clear of debris and excessive sedimentation.

One small area (no more than 25 square feet) of vegetation on the central west side of the center drainage swale appeared slightly yellow. FRSD indicated the yellow color could be due to over-fertilizing when the spreading equipment was turned. The EPA project manager agrees this is what over-fertilized vegetation looks like. EPA did not observe any other discolored vegetation during the site inspection.

The site is fenced and vacant and there are no water supply wells on the landfill. Land use around the landfill has not changed. The pallet company and houses are on Pannell Road north of the site. Greenhouses and a plant nursery border the site to the west. The Darling Rendering transfer station is to the south (no buildings, only temporary storage containers for rendering waste); and undeveloped woodland is to the east.

Interviews

For the 2008 five-year review, EPA spoke with FRSD representative Phillip Mazor; Daria Devantier at MDEQ; 3 residents along Pannell Road closest to the site and an employee of the rendering company who was dropping off waste at the transfer station south of the site. EPA also spoke with a Darling Rendering manager concerning the commercial well at the company's property south of the site.

FRSD is satisfied with how the site is progressing and would like EPA to consider discontinuing the landfill gas, groundwater and surface water monitoring programs.

MDEQ will not be actively involved in the five-year review but will review the draft five year review report and assist EPA as needed. MDEQ did not submit any comments on the draft five year review report.

Two residents were not aware of the landfill and EPA provided them with basic information and additional information in the mail. The third resident remembered the RA. EPA provided this resident with a site update, answered his questions, provided him with additional information in the mail and will send him a copy of the 2008 Five-Year Review Report.

The Darling Rendering manager stated the company does not use the property south of the Folkertsma Refuse site very often, and that he did not think the commercial well is being used. The manager did not know if the well was sealed, but will check with the company's Environmental Department. Darling Rendering's manager is aware of the site but did not have any specific concerns.

The Darling Rendering employee is concerned that groundwater and surface water from the Folkertsma Refuse site is impacting Indian Mill Creek. Groundwater and surface water data collected 2004-2008, however, indicate that any remaining chemicals in groundwater and surface water are below MDEQ GSI criteria. The employee confirmed the commercial well at the property was used for washing trucks and equipment, not drinking water, and that well was filled several years ago.

VII. Technical Assessment

EPA's technical review section of this 2008 five-year review uses three questions to evaluate the protectiveness of Folkertsma Refuse site cleanup remedy. EPA's answers to these questions are based on information EPA obtained through the five-year review process, including document review, site inspection, interviews with parties involved with the site or concerned about the site, and analyzing and evaluating current and previous landfill gas, groundwater and surface water data.

Question A: Is the Remedy Functioning as Intended by the Decision Document?

YES. The remedy for the Folkertsma Refuse site is functioning as intended by the 1991 ROD. The landfill cover system and underground drains (which help keep the landfill materials isolated from groundwater) are effective. Long-term monitoring indicates combustible gas is no longer a concern at the site, and chemical concentrations in groundwater and surface water have been eliminated or decreased. Long-term groundwater and surface water monitoring also indicates any remaining chemicals in groundwater or surface water are not moving out beneath the landfill at unacceptable concentrations.

The site remains secure with perimeter fencing. The 1995 restrictive covenant has been effective in prohibiting activities from being conducted on the landfill that could pose a threat to human health and the environment or impair the effectiveness of the remedy. The landfill property is vacant and water supply wells have not been installed at the site.

Long-term protectiveness requires compliance with effective institutional controls. Long-term stewardship will ensure effective institutional controls are maintained, monitored and enforced with other remedy components. EPA is updating the 1995 restrictive covenant for the site to increase the long-term effectiveness of this institutional control. EPA will provide the updated restrictive covenant to the Folkertsma Refuse Settling Defendants to implement and record by the current property owner(s). The O&M Plan will also be updated to include specific components for long-term stewardship to ensure effective institutional controls for the site are maintained, monitored and enforced.

O&M records do not indicate any significant problems with maintenance or repairs (e.g., erosion), and O&M costs continue to decrease as the monitoring programs are reduced.

The site IC only applies to the landfill property and does not extend to downgradient off-site areas. EPA recommends collecting groundwater samples from site wells six to twelve months before the next five-year review as a precautionary measure to confirm the landfill cover system and underground drains are continuing to function as intended.

The current downgradient groundwater users closest to the site are residents in homes about 0.5 miles southeast of the site on Lookout and Garfield Streets in Walker that are not serviced by public water. However, groundwater contaminants have not been detected above MCLs or relevant health-based Michigan Part 201 criteria at or beyond the site boundary and there is no evidence indicating private well users have been affected by the site.

Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels and Remedial Action Objectives (RAOs) Used at the Time of the Remedy Still Valid?

NO. The ROD for the Folkertsma Refuse site was issued in 1991, before the development of Michigan Act 451, Part 201. In 2001, EPA and MDEQ determined it was more appropriate to compare groundwater and surface water concentrations detected during long-term monitoring to MDEQ Part 201 GSI criteria and Rule 57 Water Quality Values instead of background concentrations under the ROD.

In January 2006, 5 years after EPA and MDEQ determined it was more appropriate to compare groundwater and surface water concentrations to MDEQ GSI and Rule 57 criteria, the federal MCL for arsenic changed from 50 ug/L to 10 ug/L.

Groundwater at and immediately downgradient of the site is not used as a source of drinking water. The commercial well at the transfer station for the rendering company south of the site was filled several years ago and the property is used infrequently. The property does not have any buildings, only temporary storage containers for rendering waste. However, EPA did not identify any institutional controls that would prohibit a new well from being drilled at this location.

The residential area south of the site, south of Indian Mill Creek is supplied by the Grand Rapids water supply. There are, however, about 8 homes about 0.5 miles southeast of the site on Lookout and Garfield streets in Walker that are not serviced by public water. These homes are in the general downgradient direction of the site.

Arsenic was detected at concentrations significantly above the 10 ug/L MCL in groundwater samples collected from intermediate perimeter monitoring well MW-208 during the December 1997 sampling event, and from MW-208 and intermediate perimeter monitoring well MW-207 during the December 1998 sampling event. The concentration of arsenic in MW-208 in December 1997 was 40 ug/L to 56 ug/L. The concentration of arsenic in MW-207 and MW-208 during the December 1998 sampling event was 180 ug/L in MW-207 and 64 ug/L to 68 ug/L in MW-208. These concentrations were significantly above the background concentration of arsenic which was 2 ug/L in December 1997 and 1 ug/L in December 1998.

Arsenic was either not detected or was detected at concentrations at or below the 10 ug/L MCL in MW-207 and MW-208 in the other six quarterly groundwater sampling events conducted at the site 1998-1999. Based on these results, in 2000, EPA and MDEQ determined groundwater monitoring could be reduced to semiannual sampling, and the next sampling event for arsenic was in June 2000.

The GSI and Rule 57 criteria for arsenic is 150 ug/L. In 2000, based on EPA and MDEQ discussions to change the evaluation criteria for groundwater and surface water samples to GSI and Rule 57 criteria instead of background, FRSD changed the detection limit for arsenic from 1 ug/L to 20 ug/L.

Arsenic was not detected (at a detection limit of 20 ug/L) during the subsequent three years of semiannual monitoring. Based on this data, and consistent with the 2001 O&M Plan, EPA and MDEQ determined arsenic could be eliminated from the groundwater and surface water monitoring programs in 2003.

A complete review of arsenic data for the site going back to the RI indicates the high levels of arsenic detected in MW-207 and MW-208 in 1997 and 1998 could be due to excessive turbidity in the samples. In 2001 the O&M Plan was updated to include current low-flow sampling methods and revised stabilization criteria. Arsenic was not detected during any of the subsequent sampling events and the chemical was eliminated from the monitoring program in 2003. Although the detection limit for arsenic was increased to 20 ug/L, high concentrations of arsenic similar to the elevated concentrations in MW-207 and MW-208 would still have been detected.

Based on the 10 ug/L MCL, and because the site IC does not extend to downgradient off-site areas (i.e., rendering transfer station property and homes on Lookout and Garfield 0.5 miles southeast of site not serviced by public water supply), the groundwater and surface water samples collected for the 2013 five-year review should include arsenic analysis. The detection limit for the arsenic analysis should be consistent with current GSI criteria and drinking water standards/risk-based criteria (e.g., a detection limit of 1 ug/L instead of 20 ug/L).

Question C: Has Any Other Information Come to Light That Could Call Into Question the Protectiveness of the Remedy?

No. Other than the information discussed above, EPA is not aware of any other information that could call the protectiveness of the remedy into question.

Technical Assessment Summary

The Folkertsma Refuse site remedy is functioning as intended. The landfill cover system and underground drains are effective. Long-term monitoring indicates combustible gas is not a concern, and chemical concentrations in groundwater and surface water have been eliminated or decreased. Long-term groundwater and surface water monitoring also indicates any remaining chemicals in groundwater and surface water are not moving out beneath the landfill at unacceptable levels.

The perimeter fence is intact and the 1995 restrictive covenant has been effective in prohibiting activities from being conducted on the landfill that could pose a threat to human health and the environment or impair the effectiveness of the remedy. The landfill property is vacant and water supply wells have not been installed at the site. Also, EPA is updating the 1995 restrictive covenant to increase the long-term effectiveness of the IC.

O&M records do not indicate any significant problems with maintenance or repairs (e.g., erosion), and O&M costs continue to decrease as the monitoring programs are reduced.

It is appropriate to compare groundwater and surface water concentrations to MDEQ GSI and Rule 57 criteria. However, because the site IC does not extend to downgradient off-site areas, EPA recommends collecting groundwater samples from site wells six to twelve months before the next five-year review in 2013 to confirm the landfill cover system and underground drains continue to function as intended. The groundwater and surface water samples should be analyzed for inorganic chemicals and VOCs.

Current downgradient well users closest to the site are residents in homes about 0.5 miles southeast of the site on Lookout and Garfield Streets in Walker that are not serviced by a public water supply.

VIII. Issues

The issues EPA identified for the Folkertsma Refuse site in this 2008 five-year review are summarized in Table 5.

Table 5: Issues

Issue	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Monitoring results indicate routine landfill gas, groundwater and surface water monitoring may be suspended. Conduct a round of sampling prior to next five-year review to confirm conditions are unchanged.	N	Y
Semiannual site inspections do not specifically identify changes in land and groundwater use at the site or on adjacent properties.	N	Y
1995 restrictive covenant needs to be updated to increase the long-term effectiveness of institutional controls.	N	Y
Long-term stewardship for maintaining, monitoring and enforcing effective ICs must be ensured.	N	Y

IX. Recommendations and Follow-up Actions

EPA's recommendations and follow-up actions for the 2008 five-year review are summarized in Table 6:

Table 6: Recommendations and Follow-up Actions

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Monitoring results indicate routine landfill gas, groundwater and surface water monitoring may be suspended. Conduct a round of sampling prior to the next five-year review to confirm conditions are unchanged.	Update 2001 O&M Plan to suspend landfill gas, groundwater and surface water monitoring. Collect gas, groundwater and surface water samples six to twelve months before 2013 five-year review to confirm remedy is functioning as intended. Analyze groundwater and surface water samples for inorganic chemicals and VOCs. Consider drinking water standards and risk-based levels.	FRSD	EPA/ MDEQ	April 2009	N	Y
Semiannual site inspections do not specifically identify changes in land and groundwater use at the site or on adjacent properties	Update 2001 O&M Plan to indicate semiannual site inspections will specifically note whether there are any changes in land or groundwater use at the Folkertsma Refuse site and other adjacent properties.	FRSD	EPA/ MDEQ	April 2009	N	Y
1995 restrictive covenant needs to be updated to increase the long-term effectiveness of institutional controls.	Work with MDEQ to update the 1995 restrictive covenant for the site.	EPA/MDEQ/ FRSD	EPA/ MDEQ	November 2009	N	Y

Table 6: Recommendations and Follow-up Actions *(continued)*

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Long-term stewardship for maintaining, monitoring and enforcing effective ICs must be ensured.	Update 2001 O&M plan to include specific components for long-term stewardship to ensure effective ICs are maintained, monitored and enforced.	FRSD	EPA/ MDEQ	April 2009	N	Y

VII. Protectiveness Statement(s)

The remedy at the Folkertsma Refuse site is protective of human health and the environment, and all exposure pathways that could result in unacceptable risks are being controlled. Regular site inspections, routine maintenance and statutory five-year reviews will continue to confirm the continued effectiveness of the remedy.

Long-term protectiveness requires compliance with effective institutional controls. Long-term stewardship will ensure effective institutional controls are maintained, monitored and enforced with other remedy components. EPA is updating the 1995 restrictive covenant for the site to increase the long-term effectiveness of this institutional control. EPA will provide the updated restrictive covenant to the Folkertsma Refuse Settling Defendants to implement and record by the current property owner(s).

The O&M Plan will be updated to include specific components for long-term stewardship to ensure effective ICs for the site are maintained, monitored and enforced.

XI. Next Review

The next five-year review for the Folkertsma Refuse site will be completed within five years of the signature date of this five-year review.

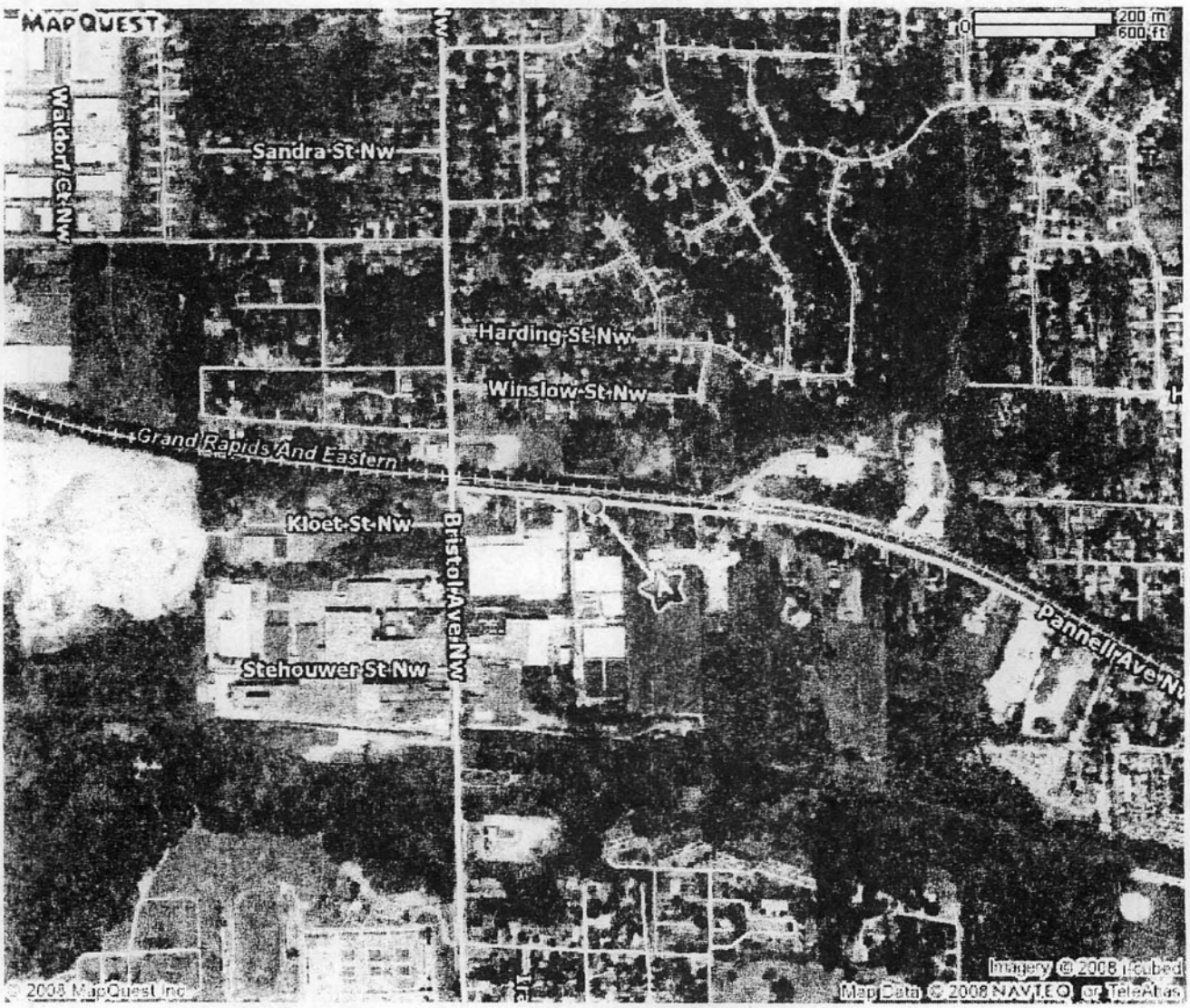
FIGURES

MAPQUEST

FIGURE 1

A - FOLKERTSMA REFUSE SITE
Rectanglar 1000' x 400' Property
South of 1476 Pannell Road, NW
Walker, MI 49504

A: 1476 Pannell Ave NW, Grand Rapids, MI 49504-8515



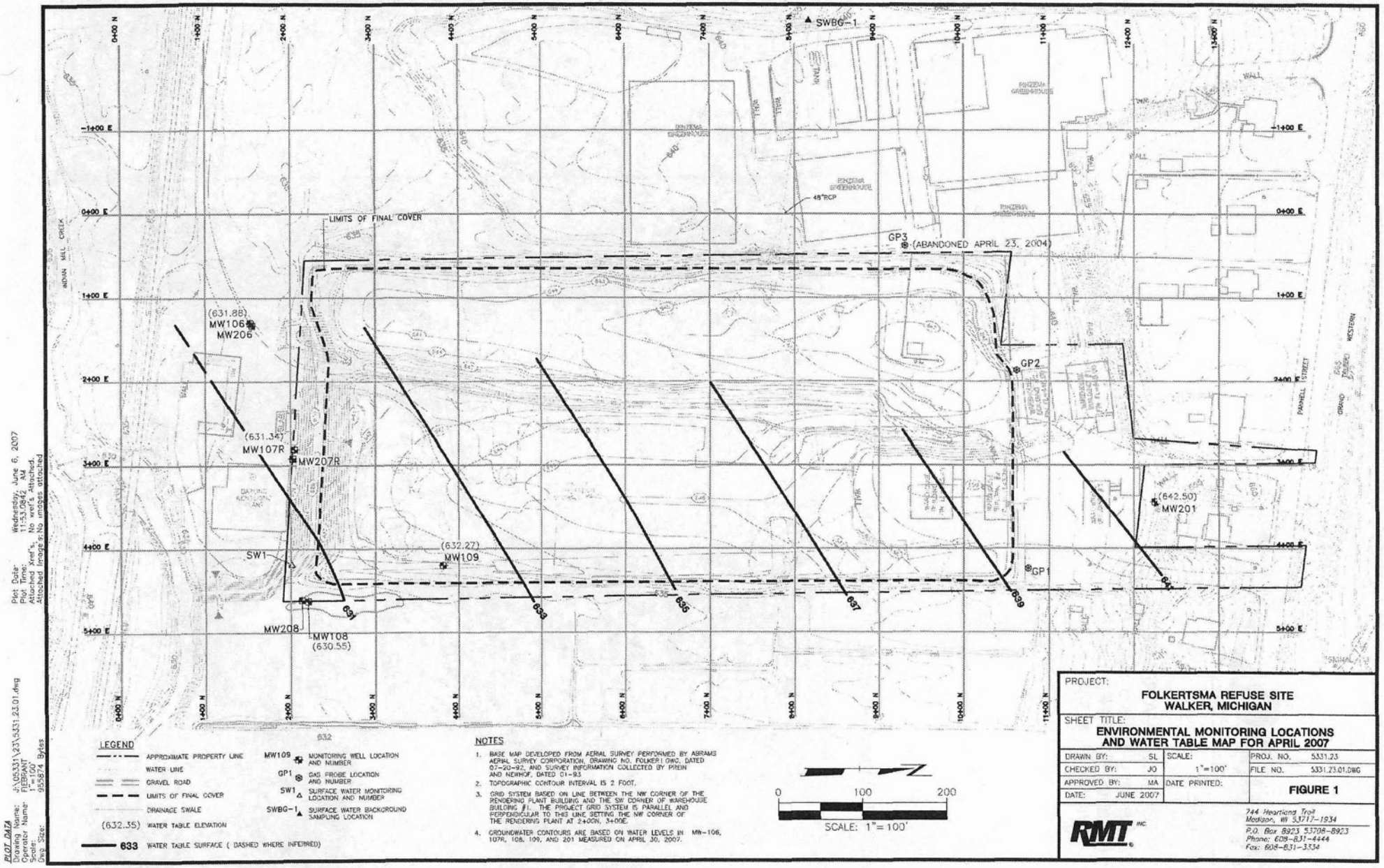


FIGURE 2 – SITE LAYOUT AND MONITORING LOCATIONS

FIGURE 3 – 2008 GRAND RAPIDS WATER SUPPLY MAP - WATER SUPPLY LINES YELLOW, RED AND GREEN. BROWN DOTS BILLING POINTS FOR WATER, SEWER OR BOTH

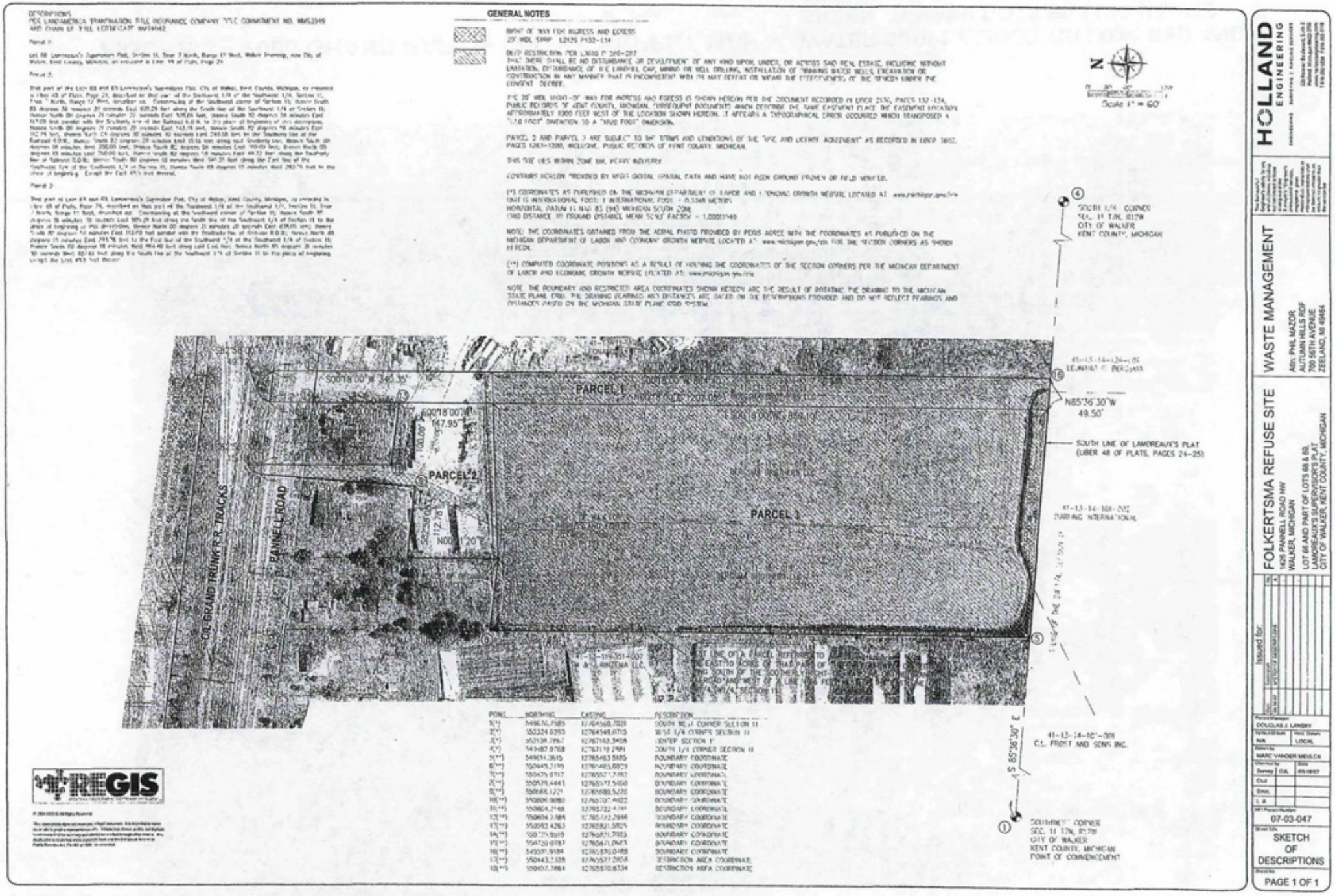


FIGURE 4 – AREA COVERED BY 1995 RESTRICTIVE COVENANT (CONSISTENT WITH LANDFILL/CAPPED AREA)

ATTACHMENT 1

1995 RESTRICTIVE COVENANT

262764

LIBER 3610 PG 286

DECLARATION OF
RESTRICTIVE COVENANT

KNOW ALL PEOPLE BY THESE PRESENTS, now comes Betty A. Bergsma, Independent Personal Representative of the Estate of Evert Folkertsma, Probate Court File No. 92-155,215-IE, of 1727 Acadia Drive, N.W., Grand Rapids, Michigan 49504, as owner of the herein described real estate, and pursuant to a Consent Decree, entered August 3, 1992, in the case of United States v American Seating Company et al, Case No. 1:82-CV-365 does hereby place of record the following restrictive covenant upon the real property, located in the City of Grand Rapids, Kent County, Michigan, commonly known as the Folkertsma Refuse Site and more particularly described in the attached Exhibit A.

That there shall be no disturbance or development of any kind upon, under, or across said real estate, including without limitation, disturbance of the landfill cap, mining or well drilling, installation of drinking water wells, excavation or construction in any manner that is inconsistent with or may defeat or impair the effectiveness of the remedy under the Consent Decree.

IN WITNESS WHEREOF, Betty A. Bergsma, Independent Personal Representative of the Estate of Evert Folkertsma, has caused her name to be subscribed hereto this 21 day of February, 1995.

WITNESSES:

Shelley L. Moreno

Lois J. Miller

Betty A. Bergsma, Independent Personal Representative of the Estate of Evert Folkertsma

STATE OF MICHIGAN)
)ss
COUNTY OF Kent)

Personally appeared Betty A. Bergsma, Independent Personal Representative of the Estate of Evert Folkertsma.

Shelley L. Moreno
* Shelley L. Moreno
Notary Public, ~~State~~ Kent County, MI
My Commission Expires: 5/2[illegible]

PREPARED BY:
Philip G. Henderson
CLARY, NANTZ, WOOD, HOFFIUS
RANKIN & COOPER
500 Calder Plaza
250 Monroe Avenue, N.W.
Grand Rapids, MI 49503
(616) 459-9487

01484(002)162648.

EXHIBIT A

DESCRIPTION FOR DEED RESTRICTION:

COMMENCING AT THE SOUTHWEST CORNER OF SECTION 11, T.7N., R.12W., CITY OF GRAND RAPIDS, KENT COUNTY, MICHIGAN, THENCE S85°36'20"E 905.29 FEET ALONG THE SOUTH LINE OF SAID SECTION 11 FOR POINT OF BEGINNING; THENCE N00°00'16"E 838.96 FEET; THENCE S82°58'10"E 113.00 FEET; THENCE N00°00'16"E 7.26 FEET; THENCE N87°24'37"E 293.55 FEET; THENCE S00°03'41"E 876.87 FEET ALONG THE EAST LINE OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4; THENCE N85°36'20"W 407.61 FEET ALONG SAID SOUTH SECTION LINE TO POINT OF BEGINNING.

ATTACHMENT 2

INSPECTION AND REPAIR AND MAINTENANCE REPORTS

2004 – 2007

Table D-1
Folkertsma Refuse Site, Walker, Michigan
Site Inspection Record
April 2004

Date: April 15, 2004 Temperature: 63°F

Inspector: B. Crawford Weather: Clear, sunny, and warm

USEPA/MDEQ Notified of Scheduled Inspection Date: _____ Ground Conditions: Dry

ITEM	Adequate	Requires Maintenance	Status	Comments
Final Cover:				
Vegetation	x			Coming in nicely after winter.
Erosion	x			
Settlement	x			
Drainage swales	x			
Grass mowed or fertilized	N/A			
Gas probes	x			
Groundwater monitoring wells	x			
Fencing	x			
Gates and locks	x			

Table D-2
Folkertsma Refuse Site, Walker, Michigan
Site Inspection Record
October 2004

Date: October 13, 2004 Temperature: 55°F

Inspector: C. Beall Weather: Cool, overcast, and foggy

USEPA/MDEQ Notified of Scheduled Inspection Date: Ground Conditions: Moist

ITEM	Adequate	Requires Maintenance	Status	Comments
Final Cover:				
Vegetation	x		Thick	
Erosion	x		None	
Settlement	x		None	
Drainage swales	x			
Grass mowed or fertilized	x		Good ground cover	No work needed.
Gas probes	x			GP-3 abandoned on April 23, 2004.
Groundwater monitoring wells	x			
Fencing	x			
Gates and locks	x			
Two ground hog holes identified east of MW-109.				

Table D-1
Folkertsma Refuse Site, Walker, Michigan
Site Inspection Record
April 2005

Date: April 19, 2005 Temperature: 68°F

Inspector: E. Vincke Weather: Clear, sunny and warm

USEPA/MDEQ Notified of Scheduled Inspection Date: March 1, 2005 Ground Conditions: Dry

ITEM	Adequate	Requires Maintenance	Status	Comments
Final Cover:				
Vegetation	x			
Erosion	x			
Settlement	x			
Drainage swales	x			
Grass mowed or fertilized	N/A			
Gas probes	x			
Groundwater monitoring wells	x			
Fencing	x			
Gates and locks	x			

Table D-2

Folkertsma Refuse Site, Walker, Michigan
Site Inspection Record
November 2005

Date: November 1, 2005 Temperature: 58 °F

Inspector: J. Overvoorde Weather: Partly cloudy

Ground Conditions: dry

ITEM	Adequate	Requires Maintenance	Status	Comments
Final Cover:				
Vegetation	x			
Erosion	x			
Settlement	x			
Drainage swales	x			
Grass mowed or fertilized	N/A			
Gas probes	x			
Groundwater monitoring wells	x			
Fencing	x			
Gates and locks	x			

Table D-1
Folkertsma Refuse Site, Walker, Michigan
Site Inspection Record
April 2006

Date: April 12, 2006 Temperature: 65°F

Inspector: C. Beall Weather: Overcast, rain

USEPA/MDEQ Notified of Scheduled Inspection Date: February 2006 Ground Conditions: Wet/Saturated

ITEM	Adequate	Requires Maintenance	Status	Comments
Final Cover:				No concerns
Vegetation	x			
Erosion	x			
Settlement	x			
Drainage swales	x			
Grass mowed or fertilized	N/A			
Gas probes	x			
Groundwater monitoring wells	x			
Fencing	x			
Gates and locks	x			

Table D-2

Folkertsma Refuse Site, Walker, Michigan
Site Inspection Record
November 2005

Date: October 10, 2006 Temperature: 52 °F

Inspector: S. Pawlukiewicz Weather: Clear, sunny

USEPA/MDEQ Notified of Scheduled Inspection Date: September 11, 2006 Ground Conditions: Dry

ITEM	Adequate	Requires Maintenance	Status	Comments
Final Cover:				
Vegetation	x			
Erosion	x			
Settlement	x			
Drainage swales	x			
Grass mowed or fertilized	x			
Gas probes	x			
Groundwater monitoring wells	x			
Fencing	x			
Gates and locks	x			

Appendix B
Folkertsma Refuse Site, Walker, Michigan
Site Inspection Record
April 2007

Date: April 30, 2007 Temperature: 60 °F

Inspector: E. Vincke Weather: Sunny

USEPA/MDEQ Notified of Scheduled Inspection Date: April 3, 2007 Ground Conditions: Good

ITEM	Adequate	Requires Maintenance	Status	Comments
Final Cover:				
Vegetation	✓			
Erosion	✓			
Settlement	✓			
Drainage swales	✓			
Grass mowed or fertilized	N/A			
Gas probes	✓			
Groundwater monitoring wells	✓			
Fencing	✓			
Gates and locks	✓			

Table D-2
Folkertsma Refuse Site, Walker, Michigan
Site Inspection Record
October 2007

Date: October 9, 2007 Temperature: 55 °F

Inspector: E. Vincke Weather: Mostly sunny

USEPA/MDEQ Notified of Scheduled Inspection Date: September 26, 2007 Ground Conditions: Good

ITEM	Adequate	Requires Maintenance	Status	Comments
Final Cover:				
Vegetation	✓			
Erosion	✓			
Settlement	✓			
Drainage swales	✓			
Grass mowed or fertilized	N/A			
Gas probes	✓			
Groundwater monitoring wells	✓			
Fencing	✓			
Gates and locks	✓			

"Mazor, Phil" <pmazor@wm.com>

To

10/20/2008 07:11 AM

Subject RE: THANKS!

History: This message has been replied to.

Karen

Here are what the records show for payment from the Trust account to mowing and fertilizing vendors. I must be getting a little old, my memory is not what it used to be.

2002 - Mow and fert
2003 - Fert
2004 - Mow and fert
2005 - Mow
2006 - Nothing
2007 - Mow and fert
2008 - Mow and fert

I hope this helps you.

phil

ATTACHMENT 3

GAS MONITORING DATA

2004 – 2007

Table B-1
Landfill Gas Monitoring Results
Folkertsma Refuse Site, Walker, Michigan
April 2004

GAS PROBE	COMBUSTIBLE GAS (% LEL)	%V/V			PRESSURE (in. WC)
		CH_4	CO_2	O_2	
GP1	0.0	0.0	5.3	4.8	0
GP2	0.0	0.0	0.6	19	0
GP3	0.0	0.0	1.0	18.7	0

Monitored by: J. Overvoorde
Date: 4/15/2004
Temperature: 63° F
Barometric Pressure: 30.15 inches, steady
Checked by: G. Schultz
Date: 5/17/2004

Table B-2
Landfill Gas Monitoring Results
Folkertsma Refuse Site, Walker, Michigan
October 2004

GAS PROBE	COMBUSTIBLE GAS (% LEL)	%V/V			PRESSURE (in. WC)
		CH_4	CO_2	O_2	
GP1	0.0	0.0	2.1	16.4	0
GP2	0.0	0.0	0.6	19.7	0
GP3[1]	NM	NM	NM	NM	NM

Notes:
[1] GP-3 was abandoned in April 2004

Monitored by:	C. Beall
Date:	10/13/2004
Temperature:	55°F
Conditions:	Cool, cloudy with fog
Barometric Pressure:	29.62 inches and falling
Checked by:	Jennifer Overvoorde
Date:	10/14/04

Table B-1
Landfill Gas Monitoring Results
Folkertsma Refuse Site, Walker, Michigan
April 2005

GAS PROBE	COMBUSTIBLE GAS (% LEL)	%V/V			PRESSURE (in. WC)
		CH_4	CO_2	O_2	
GP1	0.0	0.0	1.2	15.5	0
GP2	6.0	0.3	0.8	16.6	0
GP3[1]	NM	NM	NM	NM	NM

Notes:
(1) GP-3 was abandoned in April 2004.

Monitored by:	E. Vincke
Date:	4/19/2005
Temperature:	81°F
Conditions:	Clear, sunny and warm
Barometric Pressure:	29.98 inches
Checked by:	N. Braun
Date:	11/07/05

Table B-2
Landfill Gas Monitoring Results
Folkertsma Refuse Site, Walker, Michigan
November 2005

GAS PROBE	COMBUSTIBLE GAS (% LEL)	%V/V			PRESSURE (in. WC)
		CH_4	CO_2	O_2	
GP1	0.0	0.0	1.0	16.9	0
GP2	0.0	0.0	0.5	18.5	0
GP3[1]	NM	NM	NM	NM	NM

Notes:
[1] GP-3 was abandoned in April 2004.

Monitored by:	J. Overvoorde
Date:	11/1/2005
Temperature:	58°F
Conditions:	Partly cloudy
Barometric Pressure:	29.98 inches
Checked by:	N. Braun
Date:	11/07/05

Table B-1
Landfill Gas Monitoring Results
Folkertsma Refuse Site, Walker, Michigan
April 2006

GAS PROBE	COMBUSTIBLE GAS (% LEL)	%V/V			PRESSURE (in. WC)
		CH_4	CO_2	O_2	
GP1	0.0	0.0	1.2	13.4	0
GP2	0.0	0.0	0.2	19.7	0
GP3[2]	NM	NM	NM	NM	NM

Notes:
[1] LEL denotes Lower Explosive Limit.
[2] GP-3 was abandoned in April 2004.

Monitored by:	C. Beall
Date:	4/12/2006
Temperature:	58°F
Barometric Pressure:	29.81/Falling
Checked by:	C. Shaw
Date:	5/2006

Table B-2
Landfill Gas Monitoring Results
Folkertsma Refuse Site, Walker, Michigan
October 2006

GAS PROBE	COMBUSTIBLE GAS (% LEL)[1]	%V/V			PRESSURE (in. WC)
		CH_4	CO_2	O_2	
GP1	0.0	0.0	2.5	15.5	0
GP2[3]	0.0	0.0	1.9	17.2	0
GP3	NM[2]	NM	NM	NM	NM

Notes:
(1) LEL denotes Lower Explosive Limit.
(2) GP-3 was abandoned in April 2004.
(3) Large underground bees' nest at base of GP-2.

Monitored by:	S. Pawlukiewicz
Date:	10/10/2006
Temperature:	52°F
Barometric Pressure:	30.14/Steady
Checked by:	J. Overvoorde
Date:	10/10/2006

Table B-1
Landfill Gas Monitoring Results
Folkertsma Refuse Site, Walker, Michigan
April 2007

GAS PROBE	COMBUSTIBLE GAS (% LEL)[1]	CONCENTRATION (%V/V)			PRESSURE (in. WC)
		CH_4	CO_2	O_2	
GP-1	0.0	0.0	1.0	18.4	0.0
GP-2	0.0	0.0	0.3	19.4	0.0
GP-3	NM[2]	NM	NM	NM	NM

Footnote:

(1) LEL denotes Lower Explosive Limit.

(2) GP-3 was abandoned in April 2004

Monitored by:	E. Vincke
Date:	4/30/2007
Temperature:	60°F
Barometric Pressure:	30.04
Checked by:	J. Overvoorde
Date:	5/4/2007

Table B-2
Landfill Gas Monitoring Results
Folkertsma Refuse Site, Walker, Michigan
October 2007

GAS PROBE	COMBUSTIBLE GAS (% LEL)[1]	CONCENTRATION (%V/V)			PRESSURE (in. WC)
		CH_4	CO_2	O_2	
GP-1	0.0	0.0	4.7	14.6	0.0
GP-2	0.0	0.0	0.9	19.4	0.0
GP-3	NM[2]	NM	NM	NM	NM

Footnote:

(1) LEL denotes Lower Explosive Limit.

(2) GP-3 was abandoned in April 2004

Monitored by:	E. Vincke
Date:	10/9/2007
Temperature:	55°F
Barometric Pressure:	30
Checked by:	J. Overvoorde
Date:	10/11/2007

ATTACHMENT 4

LETTERS RE: O&M PLAN MODIFICATIONS

Appendix A
Correspondence with the USEPA

Table of Contents

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

4/1/2003

REPLY TO THE ATTENTION OF

SR-6J

RMT, Inc.
Mr. Michael J. Amstadt, P.E.
Project Manager
744 Heartland Trail
P. O. Box 8923
Madison, WI 53717-1915

Subject: Folkertsma Refuse Site, Walker, Michigan

Dear Michael:

The U.S. EPA and the Michigan Department of Environmental Quality are confirming your letter dated March 13, 2003. We are approving your request to revised the analytical program for the Folkertsma Refuse Site. This letter confirms our telephone conversation of April 1, 2003 and approves the March 13, 2003 revisions.

The March 13, 2003, letter regarding the analytical program provided and updated versions of all the changes that we agreed upon and they are listed below:

1. Eliminate arsenic, cadmium, cobalt, mercury, nickel, and selenium from all future monitoring events because these parameters were not detected at concentration above the detection limit within the last 3 years.

2. Reduce the monitoring frequency for copper, lead, manganese, silver, and zinc from semiannual to annually because these parameters were not detected at concentrations above their respective generic GSI criteria within the last 3 years.

If you have any questions or need further assistant, please feel free to contact Gladys Beard at (312) 886-7253.

Sincerely,

Gladys Beard

Gladys Beard

cc: Lisa Summerfield, MDEQ
Phill Mazor, Waste Management
Jim Forney, Waste Management
Jennifer Overvoorde, RMT, Inc.

RMT
Integrated Environmental Solutions

744 Heartland Trail 53717-1934
P.O. Box 8923 53708-8923
Madison, WI
Telephone: 608-831-4444
Fax: 608-831-3334
www.rmtinc.com

March 13, 2003

Ms. Gladys Beard
Associate Remedial Project Manager
U.S. Environmental Protection Agency
77 West Jackson Boulevard (SR-6J)
Chicago, IL 60604-3590

Subject: Folkertsma Refuse Site, Walker, Michigan
Request for a Revision to the List of Groundwater and Surface Water Sampling Parameters

Dear Ms. Beard:

RMT, Inc. (RMT), on behalf of the Folkertsma Settling Defendants, is submitting this request for a revision to the list of groundwater and surface water sampling parameters for the Folkertsma Refuse Site on the basis of the groundwater and surface water sampling data from 2000 through 2002. The following revisions to the analytical program are proposed:

- Eliminate arsenic, cadmium, cobalt, mercury, nickel, and selenium from all future monitoring events because these parameters were not detected at concentrations above the detection limit within the last 3 years (as shown in yellow in Table 1).
- Reduce the monitoring frequency for copper, lead, manganese, silver, and zinc from semiannual to annual because these parameters were not detected at concentrations above their respective generic GSI criteria within the last 3 years (as shown in blue in Table 1).

These revisions are based on Subsection 4.5 of the approved April 2001 OM&M Plan, which states that the groundwater and surface water sampling parameter list will be reviewed annually and revised according to the following:

- If a parameter is not detected for a minimum of 3 consecutive years of monitoring, or if reported concentrations are not environmentally significant (*i.e.*, the data are "u" qualified or are not reproducible), then that parameter may be eliminated from future monitoring events.
- If a parameter is detected in groundwater at a concentration that is less than the generic GSI criterion (or in surface water at a concentration that is less than the Rule 57 criterion) for a minimum of 3 consecutive years of monitoring, then the monitoring frequency for that parameter may be reduced to annual.
- If a parameter is detected in groundwater at a concentration that is greater than the generic GSI criterion (or in surface water at a concentration that is greater than the Rule 57 criterion) during a 3-year period of monitoring, then semiannual monitoring for that parameter will continue.

The data supporting these proposed revisions are located in the Folkertsma Refuse Site Annual Monitoring Reports for 2000, 2001, and 2002.

We request your written approval of the proposed revisions to maintain a clear administrative record for this site. The next scheduled sampling event is tentatively planned for the week of April 14, 2003; therefore, we would appreciate receiving written confirmation of these changes by March 31, 2003.

I will call you in a week to discuss these changes. If you would like to talk before this, please contact Phill Mazor, at (616) 688-5777, or me, at (608) 662-5271.

Sincerely,

RMT, Inc.

Michael J. Amstadt, P.E.
Project Manager

cc: Lisa Summerfield, MDEQ
Phill Mazor, Waste Management
Jim Forney, Waste Management
Jennifer Overvoorde, RMT, Inc.

Table 1
Folkertsma Refuse Site
Summary of Analytical Results for Years 2000 - 2002

Parameter	Units	Generic GSI Criteria[1]	Target Detection Limit[1]	Maximum Values Reported for Groundwater and Surface Water Samples						
				2000 Monitoring Period		2001 Monitoring Period			2002 Monitoring Period	
				May 2000	October 2000	December 2000	March 2001	September 2001	April 2002	September 2002
Aluminum	ug/L	NA	50	180	< 110[2]	110	210	74 f	NA	< 50
Arsenic	ug/L	150	20	< 20	< 20[2]	< 20	< 20	< 20	< 20	< 20
Barium	ug/L	1,037	100	220	220	210	210	220	NA	230 Ej
Beryllium	ug/L	19	< 1.0	< 1.0	< 5.0	< 1.1	< 5.0	D	D	D
Cadmium	ug/L	9	0.50	< 0.50	< 0.50[2]	< 0.50	< 0.50	< 0.50	NA	< 0.50
Chromium	ug/L	216	5	< 5.0	30	< 5.0	< 5.0	< 5.0	NA	< 5.0
Cobalt	ug/L	100	10	< 10	< 10[2]	< 10	< 10	< 10	NA	< 10
Copper	ug/L	27	5	53 f	< 5.0[2]	< 5.0	12	< 5.0	<5.0	< 5.6
Iron	ug/L	NA	100	1,900	1,300	1,400	1,700	1,200	NA	1,100
Lead	ug/L	107	3	< 3.0	< 3.0	< 3.0	3.5[3]	< 3.0	< 3.0	< 3.0
Magnesium	ug/L	NA	100	34,000	35,000	37,000	43,000	35,000	NA	33,000
Manganese	ug/L	1,079	20	140	160	170	140[3]	150	210	130 Ej
Mercury	ug/L	0.0005	0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nickel	ug/L	239	25	< 25	< 25[2]	<2 5	< 25	< 25	< 2 5	< 25
Potassium	ug/L	NA	500	3,300	3,800[2]	3,400	3,900	3,800	NA	4,000
Selenium	ug/L	5	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Silver	ug/L	0.5	0.20	0.31	< 0.72[2]	< 0.20	0.23 f	0.67 u[3]	< 0.20	< 0.20
Sodium	ug/L	NA	1,000	48,000	47,000	45,000	48,000	48,000	NA	46,000
Thallium	ug/L	4	2	< 2.0	4.3[2]	< 2.0	< 2.0	< 2.0	NA	< 2.0
Zinc	ug/L	493	20	< 20	< 20	24	44	<2 0	< 20	22

Notes:

[1] Generic Target Detection Limit and GSI Criteria are based on Tables 4-1 and 4-5, respectively of, the April 2001 OM&M Plan.

[2] Results were revised from those contained in the Year 2000 Annual Report.

[3] Results were previously reported incorrectly in the tables contained in the applicable annual report.

E = Estimated concentration owing to matrix interference.

j = estimated concentration owing to QC failure.

f =analyte present in field blank.

u = analyte present in laboratory blank.

NA = Not Applicable. Parameter sampled annually only, in accordance with Table 4-1 of the April 2001 OM&M Plan.

D = Deleted from parameter list in accordance with April 2001 OM&M Plan.

Prepared by: CA

Checked by: PD

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 3 0 '01

REPLY TO THE ATTENTION OF:

SR-6J

RMT, Inc.
Ms. Linda E. Hicken, P.E.
Senior Project Manager
744 Heartland Trail
P.O. Box 8923
Madison, WI 53717-1915

Subject: Folkertsma Refuse Site, Walker, Michigan

Dear Linda:

The U.S. EPA and the Michigan Department of Environmental Quality have received and reviewed the May 22, 2001, letter requesting our approval of a reduction in the frequency of the landfill gas monitoring at the Folkertsma Refuse Site.

The summary of the landfill gas measurements data sets over the past 61/4 years have proved that the monitoring for landfill gas can be reduced from quarterly to semiannually monitoring. The U. S. EPA and the Michigan Department of Environmental Quality are approving the landfill gas monitoring and the groundwater and surface water monitoring and site inspections to be conducted in March and September. If a change occurs in the amount of landfill gas generated, U.S. EPA and the Michigan Department of Environmental Quality reserve the right to increase the monitoring frequency.

If you have any questions or need further assistance, please feel free to contact me at (312) 886-7253.

Sincerely,

Gladys Beard

Gladys Beard
NPL State Deletion Process Manager

cc: Bruce Sypniewski, RRS-2
Lisa Summerfield, MDEQ
Mith Adelman, MDEQ

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAY 2 4 2001

REPLY TO THE ATTENTION OF:

SR-6J

RMT, Inc.
Ms. Linda E Hicken, P.E.
Senior Project Manager
744 Heartland Trail
P. O. Box 8923
Madison, WI 53717-1915

Subject: Folkertsma Refuse Site, Walker, Michigan

Dear Linda:

The U.S. EPA and the Michigan Department of Environmental Quality are confirming your letter dated May 7, 2001. We are approving the Operation, Monitoring, and Maintenance (OM&M) Plan for the Folkertsma Refuse Site. This letter confirms our telephone conversation of April 25, 2001 and approves the April 2001 OM&M Plan revision. All of the revisions that were discussed on April 25, 2001, were incorporated into the June 2000 and September 1999 OM&M Plan. This OM&M Plan is the third revision of the April 2001 OM&M Plan. All of the revisions that were discussed on April 25, 2001, were incorporated into the June 2000 and September 2000 OM&M Plan and this OM&M Plan is now called Revision 3: April 2001 OM&M Plan.

The April 2001 OM&M Plan provided and updated versions of all the changes that we agreed upon and they are listed below:

1. Groundwater and surface water samples need to be analyzed for mercury, nickel and selenium on a semiannual frequency and silver should remain on the list for semiannual monitoring.

2. Mercury analyses continue to be performed using the method in the approved QAPjP.

The landfill gas quarterly monitoring will continue accordance to the OM&M Plan. We will review and evaluate the post-construction landfill gas monitoring data next month.

If you have any questions or need further assistant, please feel free to contact Gladys Beard at (312) 886-7253.

Sincerely,

Gladys Beard

Gladys Beard

cc: Bruce Sypniewski
Lisa Summerfield, MDEQ
Mith Adelman, MDEQ
Dion Novak

RMT
Integrated
Environmental
Solutions

744 Heartland Trail 53717-1934
P.O. Box 8923 53708-8923
Madison, WI
Telephone: 608-831-4444
Fax: 608-831-3334

May 22, 2001

Ms. Gladys Beard
Associate Project Manager
USEPA Region 5 (SR-61)
77 W. Jackson Boulevard
Chicago, IL 60604-3590

Subject: Folkertsma Refuse Site, Walker, Michigan
Landfill Gas Monitoring

Dear Gladys:

On behalf of the Folkertsma Refuse Site Settling Defendants, I am writing to request a reduction in the frequency of the landfill gas monitoring at the Folkertsma Refuse Site. Landfill gas has been monitored at this site on a quarterly frequency since December 1994. To date, the Settling Defendants have completed 6¼ years of post-construction monitoring. In accordance with Subsection 4.7 of the OM&M Plan (RMT, April 2001), after 6 years of post-construction monitoring, the Settling Defendants may request a reduction in the frequency of future landfill gas monitoring or to eliminate it.

A summary of the landfill gas measurements at the three gas probes at this site is presented in Table 1. The monitoring locations are shown on Figure 1. The data show that methane has not been detected above 0.15 percent (3 percent of the Lower Explosive Limit) at GP1 over the period of record and not above 0.4 percent (8 percent of the LEL) at GP3 since April 1995. Methane levels at GP3 have been as high as 1.85 percent (37 percent of the LEL) over the period of record.

The concentration of methane at GP2 has been variable over time and is believed to be influenced by the decomposition of the organic matter (peat) in the surrounding natural soil. Since May 2000, we have also been measuring the pressure in the probes, as well as the concentrations of oxygen and carbon dioxide. No detectable pressure has been measured in any of the probes, since we started collecting this data. The lack of positive pressure in the probes indicates that the methane is dissipating at a rate close to that at which it is generated. This observation is consistent with our hypothesis that the methane present at GP2 may be due to natural degradation processes. Moreover, there is no apparent seasonal trend in the levels of methane present at GP2. This too, is consistent with a natural source of the methane.

In light of a data set that spans 6¼ years of quarterly post-construction landfill gas monitoring, and the USEPA's recent approval of a reduction in the frequency of groundwater and surface water monitoring at this site from quarterly to semiannually, the Settling Defendants request that the USEPA approve a reduction in the frequency of landfill gas monitoring from quarterly to semiannually as well. If approved by the agency, landfill gas monitoring would be conducted in March and September each year, along with the groundwater and surface water monitoring and site inspections.

Please call me, at (608) 662-5307, if you have any questions. We would appreciate your response to this request on or before June 20.

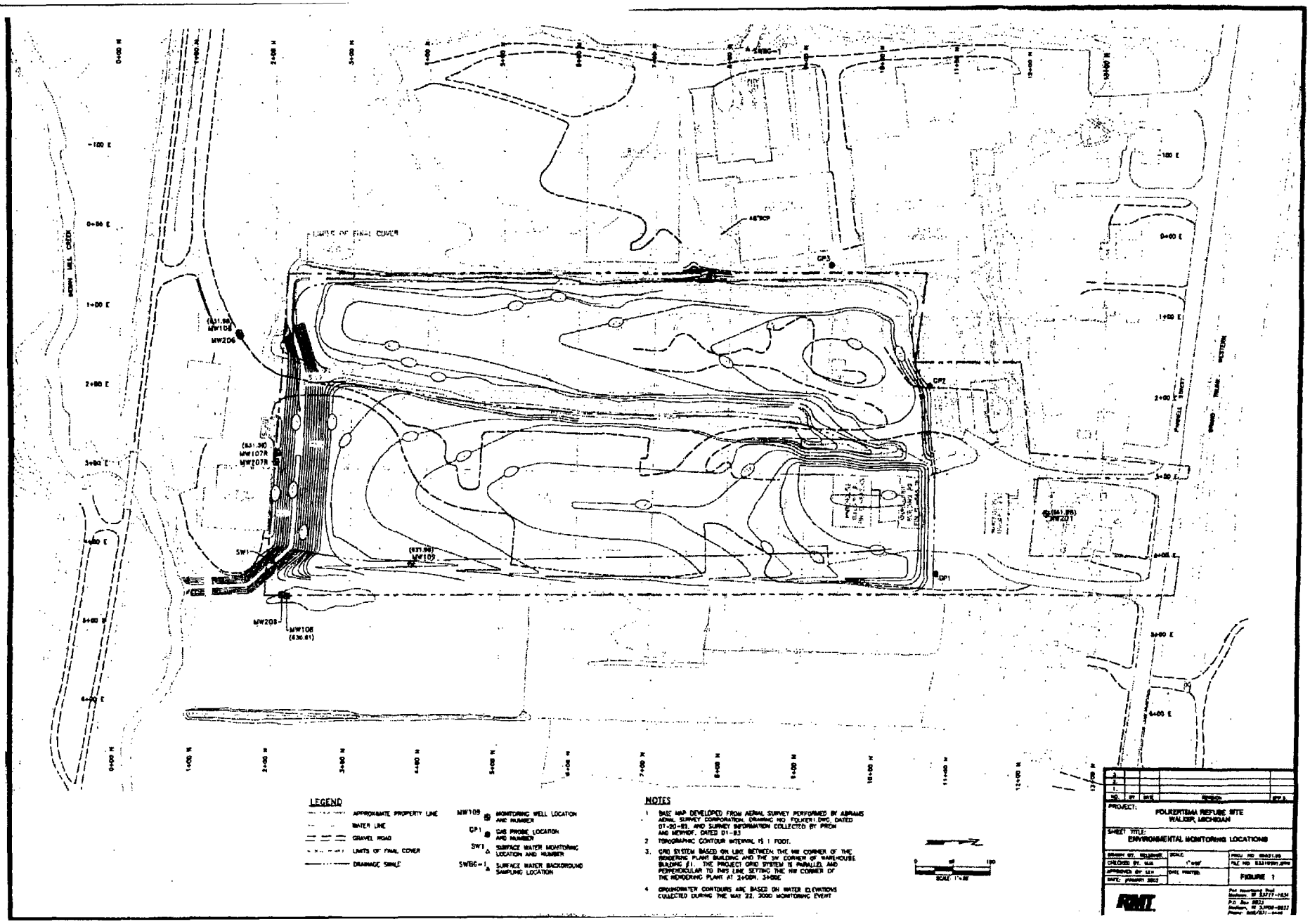
Sincerely,

RMT, Inc.

Linda Hicken

Linda E. Hicken, P.E.
Senior Project Manager

cc: Lisa Summerfield, MDEQ
Phill Mazor, Waste Management
Jim Forney, Waste Management
Katie Moertl, Quarles & Brady
Mike Amstadt, RMT


LIMITS OF FINAL COVER
GP3
GP2
GP1
MW108
MW2D6
MW107R
MW207R
MW109
MW207
MW208
MW110
(630.81)
SW1
48"RCP
LEGEND
APPROXIMATE PROPERTY LINE
WATER LINE
GRAVEL ROAD
LIMITS OF FINAL COVER
DRAINAGE SWALE
MW109 MONITORING WELL LOCATION AND NUMBER
GP1 GAS PROBE LOCATION AND NUMBER
SW1 SURFACE WATER MONITORING LOCATION AND NUMBER
SWBG-1 SURFACE WATER BACKGROUND SAMPLING LOCATION
NOTES
1 BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL SURVEY CORPORATION, DRAWING NO FOLKERT.DWG, DATED 07-20-93, AND SURVEY INFORMATION COLLECTED BY PRCH AND METHOF, DATED 01-93
2 TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
3 GRID SYSTEM BASED ON LINE BETWEEN THE NW CORNER OF THE RENDERING PLANT BUILDING AND THE SW CORNER OF WAREHOUSE BUILDING #1. THE PROJECT GRID SYSTEM IS PARALLEL AND PERPENDICULAR TO THIS LINE, SETTING THE NW CORNER OF THE RENDERING PLANT AT 2+00N, 3+00E
4 GROUNDWATER CONTOURS ARE BASED ON WATER ELEVATIONS COLLECTED DURING THE MAY 22, 2000 MONITORING EVENT
0 60 120
SCALE: 1"=60'
PROJECT: FOLKERTSMA REFUSE SITE WALKER, MICHIGAN
SHEET TITLE: ENVIRONMENTAL MONITORING LOCATIONS
DRAWN BY: KELLENBERGER
CHECKED BY: MAA
APPROVED BY: MAA
DATE: JANUARY 2002
SCALE: 1"=60'
DATE PRINTED:
PROJ. NO. 03431.09
FILE NO. 03431091.DWG
FIGURE 1
PRM

RMT Integrated Environmental Solutions

744 Heartland Trail 53717-1934
P.O. Box 8923 53708-8923
Madison, WI
Telephone: 608-831-4444
Fax: 608-831-3334

May 7, 2001

Ms. Gladys Beard
Project Manager
USEPA Region 5 (SR-6J)
77 W. Jackson Boulevard
Chicago, IL 60604-3590

Subject: Folkertsma Refuse Site, Walker, Michigan

Dear Gladys:

On behalf of the Folkertsma Settling Defendants, I am writing to confirm our recent conversations in connection with the Operation, Monitoring, and Maintenance (OM&M) Plan for the Folkertsma Refuse Site. As you explained to me during our telephone conversation on April 25, the intent of the USEPA's April 25, 2001, letter was to approve the June 2000 proposed revision of the OM&M Plan for the Folkertsma Landfill, with the following two exceptions:

1. Groundwater and surface water samples need to be analyzed for mercury, nickel, and selenium on a semiannual frequency.
2. Mercury testing needs to be conducted using the new low-level sampling and analytical methods.

The Settling Defendants subsequently agreed (as documented in my April 27 e-mail message to you) to increase the monitoring frequency for nickel and selenium from annual to semiannual (the June 2000 OM&M Plan already included semiannual monitoring for silver, which is the other parameter mentioned in your April 25 letter) and to add mercury to the list of parameters analyzed semiannually. However, the Settling Defendants requested that mercury analysis continue to be performed using the method in the approved QAPjP (Warzyn, Inc., 1993). On April 30, you advised me by telephone that the USEPA and the MDEQ have approved the Settling Defendants' request to use the analytical method in the QAPjP for mercury analysis. In light of the oral agreements reached on the OM&M Plan, the Settling Defendants withdrew their request to meet with the agencies. At your request, I am submitting this letter documenting these oral agreements.

In order to provide a single reference document for future monitoring events, I am enclosing an updated version of the OM&M Plan (dated April 2001). This version is the same as the June 2000 revision, with the above-described changes for mercury, selenium, and nickel. Note that Appendix A contains the agreed-upon revisions to the QAPjP.

Since groundwater and surface water monitoring will now be conducted semiannually, and since the most recent sampling was conducted in March, the next groundwater and surface water sampling

event will be performed in September or October (future semiannual groundwater and surface water sampling events will be conducted in March or April, and in September or October).

We will continue quarterly landfill gas monitoring in accordance with the OM&M Plan. As described in Subsection 4.7 of the OM&M Plan, after 6 years of post-construction monitoring, the Settling Defendants may submit a request to the agencies either to modify the frequency of future landfill gas monitoring or to eliminate it altogether. Since post-construction monitoring has been conducted quarterly since December 1994, sufficient data are available to review this component of the OM&M Plan. The Settling Defendants anticipate submitting a technical memorandum to the agencies summarizing and evaluating the post-construction landfill gas monitoring data, and recommending changes for future monitoring. This memorandum will be sent for your review under separate cover within the next month.

The Settling Defendants and RMT appreciate the agencies' willingness to update the OM&M Plan to more fully utilize the post-construction monitoring data. Please call me, at (608) 662-5307, if your understanding of our recent telephone conversations differs from what I have described above, or if you have any questions concerning this site. We request written approval of the enclosed April 2001 OM&M Plan by the USEPA in order to maintain a clear administrative record for this site.

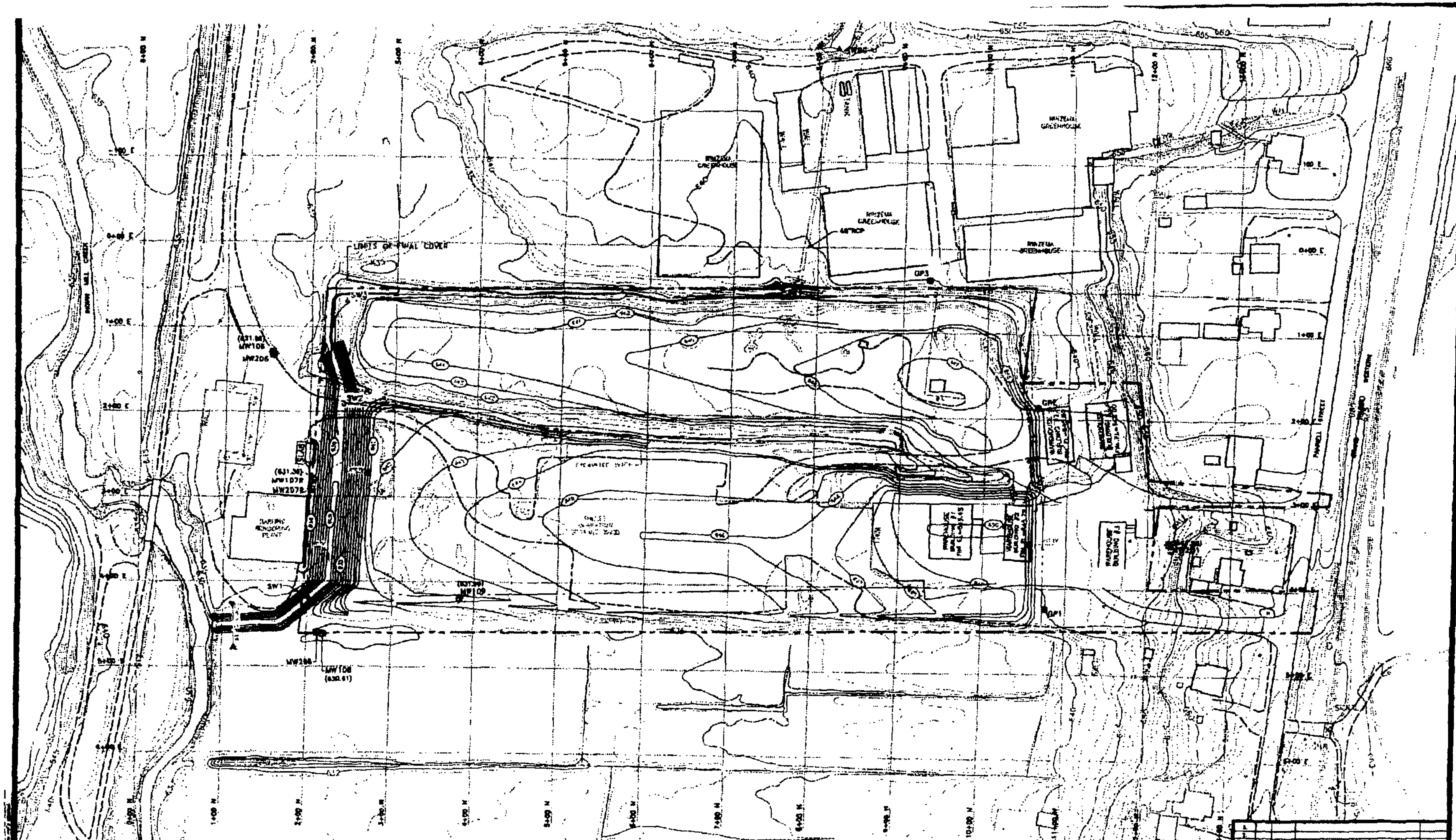
Sincerely,

RMT, Inc.

Linda Hicken

Linda E. Hicken, P.E.
Senior Project Manager

cc: Dion Novak, USEPA (cover letter only)
Lisa Summerfield, MDEQ
Mitch Adelman, MDEQ (cover letter only)
Phill Mazor, Waste Management
Jim Forney, Waste Management
Katie Moertl, Quarles & Brady (cover letter only)
Mike Amstadt, RMT
Bernd Rehm, RMT



LEGEND

- APPROXIMATE PROPERTY LINE
- WATER LINE
- GRAVEL ROAD
- LIMITS OF FINAL COVER
- DRAINAGE SWALE
- MW109 — MONITORING WELL LOCATION AND NUMBER
- GP1 — GAS PROBE LOCATION AND NUMBER
- SW1 — SURFACE WATER MONITORING LOCATION AND NUMBER
- SWBG-1 — SURFACE WATER BACKGROUND SAMPLING LOCATION

NOTES

1. BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL SURVEY CORPORATION, DRAWING NO. FOLKERT1.DWG, DATED 07-20-01, AND SURVEY INFORMATION COLLECTED BY PREIN AND NEWHOF, DATED 01-03.
2. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT
3. GRID SYSTEM BASED ON LINE BETWEEN THE NW CORNER OF THE RENDERING PLANT BUILDING AND THE SW CORNER OF WAREHOUSE BUILDING #1. THE PROJECT GRID SYSTEM IS PARALLEL AND PERPENDICULAR TO THIS LINE SETTING THE NW CORNER OF THE RENDERING PLANT AT 2+00N, 3+00E.
4. GROUNDWATER CONTOURS ARE BASED ON WATER ELEVATIONS COLLECTED DURING THE MAY 22, 2000 MONITORING EVENT

NO.	BY	DATE	REVISION	APP'D
1.				
2.				
3.				

PROJECT
FOLKERTSMA REFUSE SITE
WALKER, MICHIGAN

SHEET TITLE
ENVIRONMENTAL MONITORING LOCATIONS

SCALE: 1"=80'

DATE: JANUARY 2003

FIGURE 1

RMT

ATTACHMENT 5

GROUNDWATER AND SURFACE WATER DATA

2004-2007

Table 2
Groundwater and Surface Water Inorganic Parameter Results
Folkertsma Refuse Site
April 2004

PARAMETER	UNITS	GENERIC GSI CRITERIA[1]	BG MW-201 4/16/2004 845633-010	BG MW-201DUP 4/16/2004 845633-011	MW-106 4/15/2004 845633-005	MW-107R 4/15/2004 845633-001	MW-107R DUP 4/15/2004 845633-002	MW-108 4/16/2004 845633-012	MW-109 4/16/2004 845633-013	MW-206 4/15/2004 845633-004
Aluminum, total[2]	µg/L	NA	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Barium, total[2]	µg/L	1037	120	110	< 100	120	120	< 100	110	< 100
Chromium, total[2]	µg/L	216[3]	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Copper, total[2]	µg/L	27	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Iron, total[2]	µg/L	NA	110	100	3,400	570	800	800	120	780
Lead, total[2]	µg/L	107	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Magnesium, total[2]	µg/L	NA	27,000	28,000	45,000	29,000	29,000	29,000	29,000	31,000
Manganese, total[2]	µg/L	1079	30	30	140	38	38	< 20	< 20	30
Potassium, total[2]	µg/L	NA	1,300	1,300	3,000	1,200	1,200	1,300	1,300	1,300
Silver, total[2]	µg/L	0.2[3]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]
Sodium, total[2]	µg/L	NA	17,000	17,000	35,000	8,000	8,200	13,000	11,000	15,000
Thallium, total[2]	µg/L	4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Zinc, total[2]	µg/L	493	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Table 2 (continued)
Groundwater and Surface Water Inorganic Parameter Results
Folkertsma Refuse Site
April 2004

PARAMETER	UNITS	GENERIC GSI CRITERIA[1]	MW-207R 4/15/2004 845633-003	MW-208 4/15/2004 845633-006	SW-1 4/15/2004 845633-007	SWBG-1 4/15/2004 845633-008
Aluminum, total[2]	µg/L	NA	< 50	< 50	< 50	190
Barium, total[2]	µg/L	1037	210	< 100	< 100	120
Chromium, total[2]	µg/L	216[3]	< 5.0	< 5.0	< 5.0	< 5.0
Copper, total[2]	µg/L	27	< 5.0	< 5.0	< 5.0	11 uf
Iron, total[2]	µg/L	NA	570	580	220	400
Lead, total[2]	µg/L	107	< 3.0	< 3.0	< 3.0	4.2
Magnesium, total[2]	µg/L	NA	30,000	30,000	31,000	34,000
Manganese, total[2]	µg/L	1079	110	130	39	85
Potassium, total[2]	µg/L	NA	1,100	2,600	7,800	10,000
Silver, total[2]	µg/L	0.2[3]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]
Sodium, total[2]	µg/L	NA	9,300	15,000	44,000	48,000
Thallium, total[2]	µg/L	4	< 2.0	< 2.0	< 2.0	< 2.0
Zinc, total[2]	µg/L	493	< 20	< 20	24	36

Footnotes:

(1) Reference date for generic GSI criteria is June 7, 2000. For hardness-dependent GSI criteria, a hardness of 225 mg/L $CaCO_3$ for Indian Mill Creek in Kent County was used, as directed by Jack Wuycheck, MDEQ. The Rule 57 Water Quality Values are the applicable criteria for surface water. For the constituents of interest at this site, the generic GSI criteria are the lowest of the relevant Rule 57 criteria (February 1, 2001).

(2) Except as noted, the detection limits are the Contract Required Detection Limits from the USEPA-approved 1993 QAPjP.

(3) Generic GSI criteria are less than the analytical Method Detection Limit (MDL) of 0.2 µg/L, and therefore default to the MDL. The target detection limit for silver is 0.2 µg/L, as stated in the April 2001 OM&M Plan.

(4) Contract-required detection limit is 10 µg/L. A lower detection limit was reported by the laboratory.

Notes:

u = analyte is present at less than 5 times the blank concentration of an inorganic parameter, and is therefore qualified as nondetctable (u) according to USEPA data validation procedures (USEPA, 2002).

f = analyte was present in field blank.

NA = not available.

Created by: G. Schultz, 5/14/2004

Checked by: M. Roth, 5/17/2004

Table 2
Groundwater and Surface Water Inorganic Parameter Results
Folkertsma Refuse Site
April 2005

PARAMETER	UNITS	GENERIC GSI CRITERIA[1]	BG MW-201 4/19/2005 858457-002	MW-106 4/20/2005 858457-012	MW-107R 4/20/2005 858457-010	MW-108 4/19/2005 858457-007	MW-109 4/19/2005 858457-001	MW-109DUP 4/19/2005 858457-004	MW-206 4/20/2005 858457-013
Aluminum, total[2]	µg/L	NA	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Barium, total[2]	µg/L	1037	130	< 100	120	< 100	110	110	< 100
Chromium, total[2]	µg/L	216[3]	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Copper, total[2]	µg/L	27	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Iron, total[2]	µg/L	NA	< 100	2,100	1,200	1,200	120	< 100	1100
Lead, total[2]	µg/L	107	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Magnesium, total[2]	µg/L	NA	28,000	36,000	30,000	28,000	29,000	28,000	30,000
Manganese, total[2]	µg/L	1079	110	100	40	< 20	25	22	33
Potassium, total[2]	µg/L	NA	1,400	2,600	1,200	1,400	1,300	1,300	1,300
Silver, total[2]	µg/L	0.2[3]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]
Sodium, total[2]	µg/L	NA	19,000	29,000	8,300	16,000	11,000	10,000	11,000
Thallium, total[2]	µg/L	4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Zinc, total[2]	µg/L	493	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Table 2 (continued)
Groundwater and Surface Water Inorganic Parameter Results
Folkertsma Refuse Site
April 2005

PARAMETER	UNITS	GENERIC GSI CRITERIA[1]	MW-207R 4/20/2005 858457-011	MW-208 4/19/2005 858457-005	SW-1 4/19/2005 858457-003	SW-1 DUP 4/19/2005 858457-006	SWBG-1 4/19/2005 858457-008
Aluminum, total[2]	µg/L	NA	< 50	< 50	< 50	110	< 50
Barium, total[2]	µg/L	1037	220	< 100	< 100	< 100	< 100
Chromium, total[2]	µg/L	216[3]	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Copper, total[2]	µg/L	27	< 5.0	< 5.0	< 5.0	6.0	< 5.0
Iron, total[2]	µg/L	NA	2300	590	220	410	230
Lead, total[2]	µg/L	107	< 3.0	< 3.0	< 3.0	< 3	< 3
Magnesium, total[2]	µg/L	NA	28,000	28,000	28,000	14,000	28,000
Manganese, total[2]	µg/L	1079	190	150	< 20	60	26
Potassium, total[2]	µg/L	NA	1,100	2,400	3,200	2,700	3,400
Silver, total[2]	µg/L	0.2[3]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]
Sodium, total[2]	µg/L	NA	8,900	14,000	44,000	19,000	47,000
Thallium, total[2]	µg/L	4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Zinc, total[2]	µg/L	493	< 20	< 20	< 20	53	< 20

Footnotes:

(1) Reference date for generic GSI criteria is June 7, 2000. For hardness-dependent GSI criteria, a hardness of 225 mg/L $CaCO_3$ for Indian Mill Creek in Kent County was used, as directed by Jack Wuycheck, MDEQ. The Rule 57 Water Quality Values are the applicable criteria for surface water. For the constituents of interest at this site, the generic GSI criteria are the lowest of the relevant Rule 57 criteria (February 1, 2001).

(2) Except as noted, the detection limits are the Contract Required Detection Limits from the USEPA-approved 1993 QAPjP.

(3) Generic GSI criteria are less than the analytical Method Detection Limit (MDL) of 0.2 µg/L, and therefore default to the MDL. The target detection limit for silver is 0.2 µg/L, as stated in the April 2001 OM&M Plan.

(4) Contract-required detection limit is 10 µg/L. A lower detection limit was reported by the laboratory.

Notes:

NA = not available.

Created by: J. Overvoorde, 5/9/2005

Checked by: N. Braun, 08/05/2005

Table 2
Groundwater and Surface Water Inorganic Parameter Results
Folkertsma Refuse Site
April 2006

PARAMETER	UNITS	CRITERIA [1]	BG MW-201 4/12/2006 870827-007	MW-105 4/13/2006 870827-011	MW-107R 4/13/2006 870827-013	MW-108 4/12/2006 870827-005	MW-109 4/12/2006 870827-003	MW-109DUP 4/12/2006 870827-009	MW-206 4/13/2006 870827-012
Aluminum, total[2]	µg/L	NA	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Barium, total[2]	µg/L	1037	100	< 100	120	< 100	100	110	< 100
Chromium, total[2]	µg/L	216	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Copper, total[2]	µg/L	27	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Iron, total[2]	µg/L	NA	160	1,900	910	1,100	160	190	720
Lead, total[2]	µg/L	107	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Magnesium, total[2]	µg/L	NA	25,000	36,000	32,000	28,000	29,000	28,000	28,000
Manganese, total[2]	µg/L	1079	35	85	36	< 20	37	37	26
Potassium, total[2]	µg/L	NA	1,200	2,300	1,100	1,300	1,500	1,200	1,200
Silver, total[2]	µg/L	0.2[3]	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sodium, total[2]	µg/L	NA	17,000	28,000	12,000	15,000	12,000	12,000	16,000
Thallium, total[2]	µg/L	4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Zinc, total[2]	µg/L	493	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Table 2 (continued)
Groundwater and Surface Water Inorganic Parameter Results
Folkertsma Refuse Site
April 2006

PARAMETER	UNITS	GENERIC GSI CRITERIA[1]	MW-207S 4/13/2006 870427-011	MW-204 4/13/2006 870423-006	SW-1 4/13/2006 870427-007	SW-1 DUP 4/13/2006 870427-008	SWBG-1 4/13/2006 870427-002
Aluminum, total[2]	µg/L	NA	< 50	< 50	< 50	< 50	< 50
Barium, total[2]	µg/L	1037	210	< 100	< 100	< 100	< 100
Chromium, total[2]	µg/L	216	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Copper, total[2]	µg/L	27	< 5.0	< 5.0	< 5.0	< 5.0	8.1
Iron, total[2]	µg/L	NA	630	500	220	300	320
Lead, total[2]	µg/L	107	< 3.0	< 3.0	< 3.0	< 3.00	< 3.00
Magnesium, total[2]	µg/L	NA	30,000	30,000	27,000	28,000	33,000
Manganese, total[2]	µg/L	1079	120	110	< 20	< 20	58
Potassium, total[2]	µg/L	NA	1,100	2,200	3,500	3,000	11,000
Silver, total[2]	µg/L	0.2[3]	< 0.40[4]	< 0.40	< 0.40	< 0.40	< 0.40
Sodium, total[2]	µg/L	NA	11,000	15,000	44,000	44,000	44,000
Thallium, total[2]	µg/L	4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Zinc, total[2]	µg/L	493	< 20	< 20	< 20	< 20	42

Footnotes:

(1) Reference date for generic GSI criteria is June 7, 2000. For hardness-dependent GSI criteria, a hardness of 225 mg/L $CaCO_3$ for Indian Mill Creek in Kent County was used, as directed by Jack Wuycheck, MDEQ. The Rule 57 Water Quality Values are the applicable criteria for surface water. For the constituents of interest at this site, the generic GSI criteria are the lowest of the relevant Rule 57 criteria (February 1, 2001).

(2) Except as noted, the detection limits are the Contract Required Detection Limits from the USEPA-approved 1993 QAPjP.

(3) Generic GSI criterion is less than the analytical Method Detection Limit (MDL) of 0.2 µg/L, and therefore defaults to the MDL. The target detection limit for silver is 0.2 µg/L, as stated in the April 2001 OM&M Plan.

(4) Contract-required detection limit is 10 µg/L. A lower detection limit was reported by the laboratory.

Notes:

NA = not available.

Created by: K. Bray 5/2006

Checked by: C. Shaw 5/2006

Table 2
Groundwater and Surface Water Inorganic Parameter Results
Folkertsma Refuse Site
April 2007

PARAMETER	UNITS	GENERIC GSI CRITERIA[1]	BG MW-201 4/30/2007 883295-009	MW-106 4/30/2007 883295-013	MW-107R 4/30/2007 883295-011	MW-108 4/30/2007 883292-004	MW-109 4/30/2007 883295-005	MW-109DUP 4/30/2007 883295-007	MW-206 4/30/2007 883295012
Aluminum, total[2]	µg/L	NA	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Barium, total[2]	µg/L	1037	110	110	150	< 100	110	110	< 100
Chromium, total[2]	µg/L	216[3]	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Copper, total[2]	µg/L	27	6.8	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Iron, total[2]	µg/L	NA	300	2,800	1,500	1,400	350	350	930
Lead, total[2]	µg/L	107	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Magnesium, total[2]	µg/L	NA	28,000	46,000	39,000	27,000	32,000	31,000	29,000
Manganese, total[2]	µg/L	1079	30	120	34	< 20	37	37	23
Potassium, total[2]	µg/L	NA	1,300	2,800	1,500	1,400	1,500	1,500	1,300
Silver, total[2]	µg/L	0.2[3]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]
Sodium, total[2]	µg/L	NA	16,000	25,000	23,000	15,000	14,000	13,000	13,000
Thallium, total[2]	µg/L	4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Zinc, total[2]	µg/L	493	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Table 2 (continued)
Groundwater and Surface Water Inorganic Parameter Results
Folkertsma Refuse Site
April 2007

PARAMETER	UNITS	GENERIC GSI CRITERIA [1]	MW-207R 4/30/2007 883295-010	MW-208 4/30/2007 883295-003	SW-1 4/30/2007 883295-002	SW-1-DUP 4/30/2007 883295-006	SWBG-1 4/30/2007 883295-001
Aluminum, total[2]	µg/L	NA	< 50	< 50	< 50	< 50	< 50
Barium, total[2]	µg/L	1037	220	< 100	< 100	< 100	< 100
Chromium, total[2]	µg/L	216[3]	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Copper, total[2]	µg/L	27	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Iron, total[2]	µg/L	NA	750	840	420	440	460
Lead, total[2]	µg/L	107	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Magnesium, total[2]	µg/L	NA	30,000	32,000	28,000	28,000	33,000
Manganese, total[2]	µg/L	1079	120	110	< 20	< 20	< 20
Potassium, total[2]	µg/L	NA	1,200	2,400	3,000	3,000	3,000
Silver, total[2]	µg/L	0.2[3]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]
Sodium, total[2]	µg/L	NA	13,000	19,000	45,000	45,000	52,000
Thallium, total[2]	µg/L	4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Zinc, total[2]	µg/L	493	< 20	< 20	< 20	< 20	< 20

Footnotes:

(1) Reference date for generic GSI criteria is June 7, 2000. For hardness-dependent GSI criteria, a hardness of 225 mg/L $CaCO_3$ for Indian Mill Creek in Kent County was used, as directed by Jack Wuycheck, MDEQ. The Rule 57 Water Quality Values are the applicable criteria for surface water. For the constituents of interest at this site, the generic GSI criteria are the lowest of the relevant Rule 57 criteria (February 1, 2001).

(2) Except as noted, the detection limits are the Contract Required Detection Limits from the USEPA-approved 1993 QAPjP.

(3) Generic GSI criteria are less than the analytical Method Detection Limit (MDL) of 0.2 µg/L, and therefore default to the MDL. The target detection limit for silver is 0.2 µg/L, as stated in the April 2001 OM&M Plan.

(4) Contract-required detection limit is 10 µg/L. A lower detection limit was reported by the laboratory.

Notes:

NA = not available.

Created by: A. Rogowski, 6/6/2007

Checked by: J. Overvoorde, 6/7/2007

Table 2
Groundwater and Surface Water Inorganic Parameter Results
Folkertsma Refuse Site
April 2008

PARAMETER	UNITS	GENERIC GSI CRITERIA[1]	BG MW-201 4/18/2008 402841011	MW-106 4/18/2008 402841001	MW-107R 4/18/2008 402841004	MW-108 4/18/2008 402841009	MW-109 4/18/2008 402841007	MW-206 4/18/2008 402841002	MW-206DUP 4/18/2008 402841005
Aluminum, total[2]	µg/L	NA	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Barium, total[2]	µg/L	1037	106	112	102	< 100	108	< 100	< 100
Chromium, total[2]	µg/L	216[3]	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Copper, total[2]	µg/L	27	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Iron, total[2]	µg/L	NA	122	2,610	859	863	145	707	816
Lead, total[2]	µg/L	107	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Magnesium, total[2]	µg/L	NA	29,900	45,100	25,400	28,800	31,600	29,200	29,800
Manganese, total[2]	µg/L	1079	32.6	102	27.3	< 20	40.2	23	25.1
Potassium, total[2]	µg/L	NA	1,080	2,630	1,290	1,240	1,360	1,480	1,390
Silver, total[2]	µg/L	0.2[3]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]
Sodium, total[2]	µg/L	NA	16,600	36,100	36,300	18,000	13,300	20,600	20,100
Thallium, total[2]	µg/L	4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Zinc, total[2]	µg/L	493	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Table 2 (continued)
Groundwater and Surface Water Inorganic Parameter Results
Folkertsma Refuse Site
April 2008

PARAMETER	UNITS	GENERIC GSI CRITERIA[1]	MW-207R 4/18/2008 402841003	MW-208 4/18/2008 402841010	SW-1 4/18/2008 402841008	SWBG-1 4/18/2008 402841014	SWBG-1DUP 4/18/2008 402841013
Aluminum, total[2]	µg/L	NA	< 50	< 50	< 50	< 50	69.8
Barium, total[2]	µg/L	1037	210	< 100	< 100	< 100	< 100
Chromium, total[2]	µg/L	216[3]	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Copper, total[2]	µg/L	27	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Iron, total[2]	µg/L	NA	1310	513	230	293	391
Lead, total[2]	µg/L	107	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Magnesium, total[2]	µg/L	NA	32,700	32,300	31,200	30,300	31,000
Manganese, total[2]	µg/L	1079	91.7	136	< 20	27.1	36.3
Potassium, total[2]	µg/L	NA	1,360	2,330	3,090	2,990	3,060
Silver, total[2]	µg/L	0.2[3]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]	< 0.20[4]
Sodium, total[2]	µg/L	NA	18,000	18,600	50,700	49,200	52,000
Thallium, total[2]	µg/L	4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Zinc, total[2]	µg/L	493	< 20	< 20	< 20	22.5	24.4

Footnotes:

(1) Reference date for generic GSI criteria is June 7, 2000. For hardness-dependent GSI criteria, a hardness of 225 mg/L $CaCO_3$ for Indian Mill Creek in Kent County was used, as directed by Jack Wuycheck, MDEQ. The Rule 57 Water Quality Values are the applicable criteria for surface water. For the constituents of interest at this site, the generic GSI criteria are the lowest of the relevant Rule 57 criteria (February 1, 2001).

(2) Except as noted, the detection limits are the Contract Required Detection Limits from the USEPA-approved 1993 QAPjP.

(3) Generic GSI criteria are less than the analytical Method Detection Limit (MDL) of 0.2 µg/L, and therefore default to the MDL. The target detection limit for silver is 0.2 µg/L, as stated in the April 2001 OM&M Plan.

(4) Contract-required detection limit is 10 µg/L. A lower detection limit was reported by the laboratory.

Notes:

NA = not available.

Created by: K. Wolosiewicz, 5/29/08

Checked by: J. Overvoorde, 6/6/08

ATTACHMENT 6

SITE PHOTOS

RMT

Photographic Log

Client Name:	Site Location:	Project No.:
Waste Management, Inc.	Folkertsma Refuse Site	5331.28

Photo No.	Date
1	9/11/08

Description

Locked back gate.

Photo No.	Date
2	9/11/08

Description

Close-up of the locked back gate.

RMT

Photographic Log

Client Name:	Site Location:	Project No.:
Waste Management, Inc.	Folkertsma Refuse Site	5331.28

Photo No.	Date
3	9/11/08

Description

Monitoring well MW-108 before the repairs.

Photo No.	Date
4	9/11/08

Description

Monitoring well MW-108 after removal of the excess well riser.

RMT

Photographic Log

Client Name:	Site Location:	Project No.:
Waste Management, Inc.	Folkertsma Refuse Site	5331.28

Photo No.	Date
5	9/11/08

Description

Monitoring well MW-106.

Photo No.	Date
6	9/11/08

Description

Monitoring well MW-208.

RMT

Photographic Log

Client Name:	Site Location:	Project No.:
Waste Management, Inc.	Folkertsma Refuse Site	5331.28

Photo No.	Date
7	9/11/08

Description

Locked monitoring well MW-109.

ATTACHMENT 7

LIST OF DOCUMENTS REVIEWED

Documents Reviewed for 2008 Five-Year Review

- 2004 Five-Year Review Report
- 1999 Five-Year Review Report
- 2004-2007 Annual Reports
- 2008 Groundwater, Surface Water and Gas Monitoring Results
- 1995-2003 Quarterly and Annual Reports
- 2001 O&M Report
- 1990 RI
- 1991 ROD
- 2007 Draft IC Study
- 1995 Restrictive Covenant
- 2007 SWRFU Determination
- Current Grand Rapids Water Supply Map
- Current MDEQ Generic Groundwater Surface Water Interface Criteria
- Current MDEQ Generic Residential Drinking Water Criteria
- Current EPA Regional Screening Criteria

ATTACHMENT 8

EPA 2008 FIVE-YEAR REVIEW NOTICE

EPA Reviews
Folkertsma Refuse Site
Walker Refuse Site

U.S. Environmental Protection Agency is reviewing the effectiveness of the cleanup at the Folkertsma Refuse Superfund site. Superfund law requires five-year reviews of sites where the cleanup is either done or in progress but hazardous waste remains on site. These five-year reviews ensure that the cleanup remains effective and protects human health and the environment. This is the third five-year review for this site.

At the Folkertsma Refuse site, EPA continues with routine maintenance. EPA's original cleanup involved covering the landfill with a layer of clay and topsoil; removing contaminated sediment; installing gas vents, secure fencing and new drainage ditches; long term groundwater and drainage-water monitoring; and filing deed restrictions to prevent construction activities from damaging the landfill cover and prevent drinking water wells from being installed in the landfill.

As part of this five-year review EPA is looking at:
- Site information.
- How the cleanup was done.
- How well the cleanup is working.
- Any future actions needed.

The results will be available for viewing at
Kent County Public Library
4293 Remembrance N.W.
Walker, Mich.

Questions or concerns regarding the cleanup or the review should be directed to
Karen Cibulskis
Remedial Project Manager
EPA Region 6 (SR-6J)
77 W. Jackson Blvd
Chicago, IL 60604
312-886-1843
800-621-8431, Ext. 61843, 9:30 a.m. – 5:30 p.m., weekdays
Cibulskis.karen@epa.gov

Government fleet costs $3.4 billion to maintain

Watchdogs say vehicle mismanagement costs millions of dollars a year

BY JENNIFER C. KERR
THE ASSOCIATED PRESS

WASHINGTON — Americans love their cars, and so apparently does Uncle Sam. He has 642,233 of them.

Operating those vehicles — maintenance, leases and fuel — cost $3.4 billion last year, according to General Services Administration data.

While Cabinet and other officials say they need the vehicles to do their jobs, watchdogs say mismanagement of the government fleet is costing millions of dollars a year in wasteful spending.

Add to that the cost of drivers, a perk given to high-level government officials.

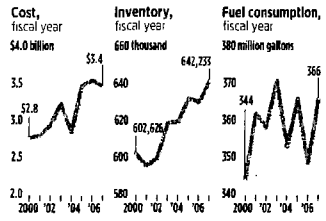
Transportation Secretary Mary Peters has two drivers. Their salaries totaled more than $128,000 last year.

The driver for Health and Human Services Secretary Michael Leavitt is paid about $90,000 a year.

The government owns or leases sedans, SUVs, trucks, limousines and ambulances for more than three dozen agencies, the U.S. military and the Postal Service.

Cost of U.S. government fleet vehicles is up 21 percent

From 2000 to 2007, operating costs for government fleet vehicles increased from $2.8 billion to $3.4 billion, while inventory and fuel consumption rose more than 6 percent.



SOURCE: Gov't Accountability Office AP

Problems at HUD

The Department of Housing and Urban Development concedes problems with its fleet of about 450 vehicles.

According to an AP analysis, fleet costs at HUD have soared nearly 70 percent since 2004, to more than $2.1 million last year. But during the same period, the agency trimmed its fleet and overall fuel consumption. While gas prices have increased since 2004, the period analyzed came well before today's record-high prices.

"Where that spike in overall costs came from, I have no idea," said Bradley Jewitt, director of HUD's facilities management division.

Jewitt, who came to HUD late last year, promised more accountability and oversight. The agency has begun a thorough review of its vehicles, how they are being used and whether each is justified.

HUD has cars for employees who conduct fair housing and mortgage fraud investigations and housing inspections across the country. At the Interior Department, cars and trucks are used by workers who help manage some 500 million acres of public lands. The Agriculture Department has tens of thousands of vehicles for conservationists, scientists, farm loan specialists and the Forest Service.

Federal agencies also have dedicated cars and drivers for senior officials.

In addition to the salaries for the two drivers for Transportation Secretary Peters, her car, fuel and maintenance cost $11,500 last year. Most agency chiefs have one driver.

The department says Peters needs two because the "cost of paying one driver overtime to cover both weekday shifts and weekends would be prohibitive."

The Veterans Affairs Department has five sedans assigned to Secretary James Peake, the deputy secretary and the three top officials for the health office, benefits office and national cemetery administration. Total cost for the five cars and drivers: $353,470 a year.

Salaries for government drivers ranged from $46,000 for the driver for Equal Employment Opportunity Commission Chairwoman Naomi Earp to about $90,000 for Leavitt's driver at HHS.

Across-the-board waste

The latest report available from the Government Accountability Office, from 2004, looked at the fleets of five departments including Veterans Affairs, Homeland Security and the Navy. It found a number of instances where agencies were keeping vehicles they didn't need. Ditching those cars, the report said, could save the government millions of dollars.

The Interior Department was another agency singled out for wasteful spending. In a 2004 report, the agency's inspector general found a significant portion of department vehicles weren't driven much. Eliminating them could save $34 million a year.

Interior cut more than 600 vehicles before the report was released, but its overall fleet has increased by more than 1,500 vehicles since then.

Interior ranks fourth among civilian agencies in the size of its fleet, but it spends the most money — more than $241 million last year on vehicles, maintenance and fuel. Agriculture has the largest fleet but spends far less, about $150 million.

Debra Sonderman, director of the office of acquisition and property management at Interior, said the department has 25,000 trucks that are costly to maintain and fuel.

Only a handful of agencies said they have conducted annual audits to ensure their fleets are the right size. The Department of Homeland Security said it has not conducted a departmentwide audit in its five years.

At Veterans Affairs, an audit last year by the inspector general's office found potential savings of about $83,000 for underused vehicles, but it looked at only three VA medical centers. The VA has more than 150 centers.

In the case of a Cleveland VA medical center, a government-leased vehicle was driven only 16 times in nearly a year. One sedan at the center was missing and apparently hadn't been seen in months.

ATTACHMENT 9

2008 SITE INSPECTION REPORT

Site Inspection Checklist

I. SITE INFORMATION

Site name: Folkertsma Refuse	**Date of inspection:** 8/11/08
Location and Region: Walker, MI R5	**EPA ID:**
Agency, office, or company leading the five-year review: EPA	**Weather/temperature:** 75° sunny

Remedy Includes: (Check all that apply)

- [X] Landfill cover/containment
- [X] Access controls
- [X] Institutional controls
- [ ] Groundwater pump and treatment
- [ ] Surface water collection and treatment
- [ ] Other Long-term monitoring
- [ ] Monitored natural attenuation
- [ ] Groundwater containment
- [ ] Vertical barrier walls

Attachments: [ ] Inspection team roster attached [ ] Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Phil Mazor (Name) Project Mgr (Title) 8/11/08 (Date)
   Interviewed [X] at site [ ] at office [ ] by phone Phone no. 616-688-5777 x17
   Problems, suggestions; [ ] Report attached Pleased with remedy. Would like EPA to consider suspending monitoring

2. **O&M staff** N/A (Name) _____ (Title) _____ (Date)
   Interviewed [ ] at site [ ] at office [ ] by phone Phone no. _____
   Problems, suggestions; [ ] Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency MDEQ
Contact Daria Devantier — Manager — ____ — ____
Name — Title — Date — Phone no.
Problems; suggestions; G Report attached Can't attend inspection. Will Review SAR & comment & help as needed

Agency Grand Rapids Water Dept.
Contact ____ — ____ — ____ — ____
Name — Title — Date — Phone no.
Problems; suggestions; G Report attached Provided copy of current water supply map

Agency ____
Contact ____ — ____ — ____ — ____
Name — Title — Date — Phone no.
Problems; suggestions; G Report attached ____

Agency ____
Contact ____ — ____ — ____ — ____
Name — Title — Date — Phone no.
Problems; suggestions; G Report attached ____

4. **Other interviews** (optional) G Report attached.

Resident - 1506 PANNELL - not aware of site
Resident - 1500 Pannell - not aware of site
Resident - 1338 Pannell - concerned about well
Darling Worker - concerned about impacts to Indian Mill Creek
1404, 1340, 1444 & 1420 PANNELL not home

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - G O&M manual — G Readily available — G Up to date — G N/A
   - G As-built drawings — G Readily available — G Up to date — G N/A
   - G Maintenance logs — G Readily available — G Up to date — G N/A

   Remarks Off-site

2. **Site-Specific Health and Safety Plan** — G Readily available — G Up to date — G N/A
   - G Contingency plan/emergency response plan — G Readily available — G Up to date — G N/A

   Remarks Off-site

3. **O&M and OSHA Training Records** — G Readily available — G Up to date — G N/A

   Remarks Off-site

4. **Permits and Service Agreements** N/A
   - G Air discharge permit — G Readily available — G Up to date — G N/A
   - G Effluent discharge — G Readily available — G Up to date — G N/A
   - G Waste disposal, POTW — G Readily available — G Up to date — G N/A
   - G Other permits _____ — G Readily available — G Up to date — G N/A

   Remarks

5. **Gas Generation Records** — G Readily available — G Up to date — G N/A

   Remarks Off-site

6. **Settlement Monument Records** — G Readily available — G Up to date — G N/A

   Remarks N/A

7. **Groundwater Monitoring Records** — G Readily available — G Up to date — G N/A

   Remarks Off-site

8. **Leachate Extraction Records** — G Readily available — G Up to date — G N/A

   Remarks N/A

9. **Discharge Compliance Records**
   - G Air — G Readily available — G Up to date — G N/A
   - G Water (effluent) — G Readily available — G Up to date — G N/A

   Remarks N/A

10. **Daily Access/Security Logs** — G Readily available — G Up to date — G N/A

    Remarks N/A

IV. O&M COSTS

1. **O&M Organization**

G State in-house G Contractor for State
G PRP in-house ☒ Contractor for PRP
G Federal Facility in-house G Contractor for Federal Facility
G Other Phyl Mazor WM + RMT

2. **O&M Cost Records**

G Readily available G Up to date See 5-Yr Review Report
G Funding mechanism/agreement in place
Original O&M cost estimate_____ G Breakdown attached

Total annual cost by year for review period if available

From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: NO

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable G N/A

A. Fencing

1. **Fencing damaged** G Location shown on site map G Gates secured G N/A

Remarks South gate missing lock

B. Other Access Restrictions

1. **Signs and other security measures** G Location shown on site map ☒ N/A

Remarks SOW Requires signs but RPM + ORC agree not required if Site capped & secure. Dont want to discourage development/redevelopment & land use in area.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented — G Yes ☒ No G N/A

Site conditions imply ICs not being fully enforced — G Yes ☒ No G N/A

Type of monitoring (*e.g.*, self-reporting, drive by) Site Inspections

Frequency Semiannual

Responsible party/agency PRP / RMT

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up-to-date — ☒ Yes G No G N/A

Reports are verified by the lead agency — ☒ Yes G No G N/A

Specific requirements in deed or decision documents have been met — ☒ Yes G No G N/A

Violations have been reported — G Yes ☒ No G N/A

Other problems or suggestions: G Report attached

Update 1995 deed restriction to increase long-term effectiveness

2. **Adequacy** G ICs are adequate G ICs are inadequate G N/A

Remarks See above

D. General

1. **Vandalism/trespassing** G Location shown on site map G No vandalism evident

Remarks 2 well locks (MW-208 & MW-109) & South gate lock missing. Hinge on MW-208 broken

2. **Land use changes on site** G N/A

Remarks NO

3. **Land use changes off site** G N/A

Remarks No

VI. GENERAL SITE CONDITIONS

A. Roads G Applicable ☒ N/A

1. **Roads damaged** G Location shown on site map G Roads adequate G N/A

Remarks

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☒ Settlement not evident
   Areal extent _____ Depth _____
   Remarks _____

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident
   Lengths _____ Widths _____ Depths _____
   Remarks _____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
   Areal extent _____ Depth _____
   Remarks _____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
   Areal extent _____ Depth _____
   Remarks _____

5. **Vegetative Cover** ☐ Grass ☒ Cover properly established ☐ No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks One small 5' x 5' area of yellowish grass on east side of middle drainage swale center of site

6. **Alternative Cover (armored rock, concrete, etc.)** ☒ N/A
   Remarks _____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
   Areal extent _____ Height _____
   Remarks _____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident

G Wet areas G Location shown on site map Areal extent_____

G Ponding G Location shown on site map Areal extent_____

G Seeps G Location shown on site map Areal extent_____

G Soft subgrade G Location shown on site map Areal extent_____

Remarks_____

9. **Slope Instability** G Slides G Location shown on site map ☒ No evidence of slope instability

Areal extent_____

Remarks_____

B. Benches G Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** G Location shown on site map G N/A or okay

Remarks_____

2. **Bench Breached** G Location shown on site map G N/A or okay

Remarks_____

3. **Bench Overtopped** G Location shown on site map G N/A or okay

Remarks_____

C. Letdown Channels G Applicable ☒ N/A

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** G Location shown on site map G No evidence of settlement

Areal extent_____ Depth_____

Remarks_____

2. **Material Degradation** G Location shown on site map G No evidence of degradation

Material type_____ Areal extent_____

Remarks_____

3. **Erosion** G Location shown on site map G No evidence of erosion

Areal extent_____ Depth_____

Remarks_____

4. **Undercutting** G Location shown on site map G No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ G No obstructions
G Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
G No evidence of excessive growth
G Vegetation in channels does not obstruct flow
G Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations X Applicable G N/A

1. **Gas Vents** G Active G Passive
G Properly secured/locked G Functioning G Routinely sampled G Good condition
G Evidence of leakage at penetration G Needs Maintenance
X G N/A
Remarks_____

2. **Gas Monitoring Probes**
X Properly secured/locked G Functioning X G Routinely sampled X G Good condition
G Evidence of leakage at penetration G Needs Maintenance G N/A
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
G Properly secured/locked G Functioning X G Routinely sampled G Good condition
G Evidence of leakage at penetration X G Needs Maintenance G N/A
Remarks No lock on MW-208 & MW-109. PRP replaced MW-109 lock. Hinge on MW-208 broken

4. **Leachate Extraction Wells**
G Properly secured/locked G Functioning G Routinely sampled G Good condition
G Evidence of leakage at penetration G Needs Maintenance X G N/A
Remarks_____

5. **Settlement Monuments** G Located G Routinely surveyed X G N/A
Remarks_____

E. Gas Collection and Treatment G Applicable G N/A

1. **Gas Treatment Facilities**
   G Flaring G Thermal destruction G Collection for reuse
   G Good condition G Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   G Good condition G Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   G Good condition G Needs Maintenance G N/A
   Remarks_____

F. Cover Drainage Layer G Applicable G N/A

1. **Outlet Pipes Inspected** G Functioning G N/A
   Remarks_____

2. **Outlet Rock Inspected** G Functioning G N/A
   Remarks_____

G. Detention/Sedimentation Ponds G Applicable G N/A

1. **Siltation** Areal extent_____ Depth_____ G N/A
   G Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   G Erosion not evident
   Remarks_____

3. **Outlet Works** G Functioning G N/A
   Remarks_____

4. **Dam** G Functioning G N/A
   Remarks_____

H. Retaining Walls G Applicable ☒ N/A

1. **Deformations** G Location shown on site map G Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** G Location shown on site map G Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge ☒ Applicable G N/A

1. **Siltation** G Location shown on site map ☒ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** G Location shown on site map G N/A
   ☒ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** G Location shown on site map ☒ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** ☒ Functioning G N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS G Applicable ☒ N/A

1. **Settlement** G Location shown on site map G Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   G Performance not monitored
   Frequency_____ G Evidence of breaching
   Head differential_____
   Remarks_____

C. Treatment System G Applicable G N/A

1. **Treatment Train** (Check components that apply)
   G Metals removal G Oil/water separation G Bioremediation
   G Air stripping G Carbon adsorbers
   G Filters_____
   G Additive (*e.g.*, chelation agent, flocculent)_____
   G Others_____
   G Good condition G Needs Maintenance
   G Sampling ports properly marked and functional
   G Sampling/maintenance log displayed and up to date
   G Equipment properly identified
   G Quantity of groundwater treated annually_____
   G Quantity of surface water treated annually_____
   Remarks_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   G N/A G Good condition G Needs Maintenance
   Remarks_____

3. **Tanks, Vaults, Storage Vessels**
   G N/A G Good condition G Proper secondary containment G Needs Maintenance
   Remarks_____

4. **Discharge Structure and Appurtenances**
   G N/A G Good condition G Needs Maintenance
   Remarks_____

5. **Treatment Building(s)**
   G N/A G Good condition (esp. roof and doorways) G Needs repair
   G Chemicals and equipment properly stored
   Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
   G Properly secured/locked G Functioning G Routinely sampled G Good condition
   G All required wells located G Needs Maintenance G N/A
   Remarks_____

D. Monitoring Data

1. Monitoring Data
   G Is routinely submitted on time G Is of acceptable quality

2. Monitoring data suggests:
   G Groundwater plume is effectively contained G Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

G Properly secured/locked G Functioning G Routinely sampled G Good condition

G All required wells located G Needs Maintenance G N/A

Remarks

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Perimiter fence in good condition, landfill vegetation doing very well. No signs of erosion or leachate.

Drainage swales & underground drains working.

Discharge to Indian Mill creek looks okay

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

Continue semiannual inspections to check fence, wells, locks & land use

Continue to mow to prevent trees/brush from growing & fertilize as needed.

C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. None
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. Reduce semiannual gas monitoring & annual surface water / groundwater monitoring to every 5 years for 5-year reviews.

APPENDIX

COMMENTS RECEIVED FROM SUPPORT AGENCIES AND/OR THE COMMUNITY

MDEQ reviewed the Folkertsma Refuse 2008 Five Year Review but did not have any comments on the report. As of November 17, 2008, EPA has not received any comments from any support agencies or the community concerning the Folkertsma Refuse 2008 Five Year Review.