145792

FOURTH FIVE-YEAR REVIEW REPORT FOR CONKLIN DUMPS SUPERFUND SITE TOWN OF CONKLIN, BROOME COUNTY, NEW YORK

Prepared by:
United States Environmental Protection Agency
Region 2
New York, New York

January 2013

Walter E. Mugdan, Director
Emergency and Remedial Response Division

JAN. 30, 2013
Date

TABLE OF CONTENTS

Acronyms Used in this Document		iii
Executive Summary		iv
Five-Year Review Summary Form		v
I.	Introduction	1
II.	Site Chronology	1
III.	Background	1
	Physical Characteristics	1
	Site Geology/Hydrogeology	2
	Land and Resource Use	2
	History of Contamination	2
	Initial Response	2
	Basis for Taking Action	3
IV.	Remedial Actions	3
	Remedy Selection	3
	Remedy Implementation	5
	Institutional Controls Implementation	6
	Operation and Maintenance	6
V.	Progress Since the Last Review	7
VI.	Five-Year Review Process	8
	Administrative Components	8
	Community Involvement	8
	Document Review	8
	Data Review	8
	Site Inspection	9
	Interviews	10
	Institutional Controls Verification	10
	Other Comments on Operation, Maintenance, Monitoring and Institutional Controls	10
VII.	Technical Assessment	10
	Question A: Is the remedy functioning as intended by the decision documents?	10
	Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of the remedy still valid?	11
	Question C: Has other information come to light which could affect protectiveness of remedy?	12
	Technical Assessment Summary	12
VIII.	Recommendations and Follow-Up Actions	13
IX.	Protectiveness Statement	13
X.	Next Review	13

FIGURE

Figure 1: Site Plan

TABLES

Table 1: Chronology of Site Events
Table 2: Annual Operation, Maintenance and Monitoring Costs
Table 3: Status of 2008 Five-Year Review Other Comments on Operation, Maintenance, Monitoring and Institutional Controls
Table 4: Documents, Data and Information Reviewed in Completing the 4th Five-Year Review
Table 5: Other Comments on Operation, Maintenance, Monitoring and Institutional Controls
Table 6: Recommendation and Follow-Up Action

ACRONYMS USED IN THIS DOCUMENT

ARAR	Applicable or Relevant and Appropriate Requirements
CIC	Community Involvement Coordinator
COCs	Contaminants of Concern
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FML	Flexible Membrane Layer
GWQS	New York State Class GA Ground Water Quality Standards
MCL	Maximum Contaminant Level
µg/L	microgram per liter
mg/L	milligram per liter
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation & Maintenance
PRP	Potentially Responsible Party
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/ Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This is the fourth five-year review for the Conklin Dumps Superfund site. The site is located in the Town of Conklin, Broome County, New York. There have been no physical changes to the site that would adversely affect the protectiveness of the remedy. Currently, there are no exposure pathways that could result in unacceptable risks and none are expected, as long as the site use does not change and the engineered and access controls that are currently in place continue to be operated, monitored and maintained properly. The implemented landfill remedy is currently functioning as intended by the decision documents and is protecting human health and the environment in the short term. In order for the site to be protective in the long term, on-property institutional controls are needed to restrict activities that could affect the integrity of the cap, prohibit the residential use of the property and prohibit the installation of groundwater wells for drinking or irrigation until groundwater standards are achieved.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Conklin Dumps Superfund Site		
EPA ID: NYD981486947		
Region: 2	**State:** NY	**City/County:** Conklin/Broome County

SITE STATUS	
NPL Status: Deleted	
Multiple OUs? No	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: State **If "Other Federal Agency" was selected above, enter Agency name:** Click here to enter text.
Author name (Federal or State Project Manager): George Jacob
Author affiliation: EPA
Review period: 01/30/2008 – 01/30/2013
Date of site inspection: 08/30/2012
Type of review: Statutory
Review number: 4
Triggering action date: 01/30/2008
Due date *(five years after triggering action date)*: 01/30/2013

Five-Year Review Summary Form (continued)

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
NA
Issues and Recommendations Identified in the Five-Year Review:

OU(s): 01	**Issue Category: Institutional Controls**			
	Issue: On-property institutional controls are needed to restrict activities that could affect the integrity of the cap, prohibit the residential use of the property and prohibit the installation of groundwater wells for drinking or irrigation until groundwater standards are achieved.			
	Recommendation: Implement institutional controls			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	02/28/13

Protectiveness Statement(s)		
Include each individual OU protectiveness determination and statement. If you need to add more protectiveness determinations and statements for additional OUs, copy and paste the table below as many times as necessary to complete for each OU evaluated in the FYR report.		
Operable Unit: 01	*Protectiveness Determination:* Short-term Protective	*Addendum Due Date (if applicable):*
Protectiveness Statement: The implemented landfill remedy is functioning as intended by the decision documents and is protecting human health and the environment in the short term. In order for the site to be protective in the long term, on-property institutional controls are needed to restrict activities that could affect the integrity of the cap, prohibit the residential use of the property and prohibit the installation of groundwater wells for drinking or irrigation until groundwater standards are achieved.		

Sitewide Protectiveness Statement (if applicable)	
For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.	
Protectiveness Determination: Short-term Protective	*Addendum Due Date (if applicable):* Click here to enter date.
Protectiveness Statement: The implemented remedy is functioning as intended by the decision documents and is protecting human health and the environment in the short term. In order for the site to be protective in the long term, on-property institutional controls are needed to restrict activities that could affect the integrity of the cap and prohibit the residential use of the property, prohibit the installation of groundwater wells for drinking or irrigation until groundwater standards are achieved.	

I. Introduction

This five-year review was conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation and Liability Act, as amended, 42 U.S.C. §9601 *et seq.* and 40 CFR 300.430(F)(4)(ii) and in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of a five-year review is to ensure that a remedial action remains protective of public health and the environment and is functioning as designed. This document will become part of the site file.

This is the fourth five-year review for the Conklin Dumps site. Since, after the completion of the remedial action, contaminants remain on-site, a statutory five-year review is required. In accordance with the Section 1.3.3 of the five-year review guidance, a subsequent statutory five-year review is triggered by the signature date of the previous five-year review report. The trigger for this five-year review is the date of the previous five-year review report, which is January 30, 2008.

This five-year review covers the entire site. Based upon this five-year review, it has been determined that there have been no changes in the physical condition of the landfill cap which may be affecting the remedy.

II. Site Chronology

Table 1 (attached) summarizes the site-related events from discovery to the present.

III. Background

The Conklin Dumps site in located in the Town of Conklin, Broome County, New York, approximately 10 miles southeast of Binghamton about 1 mile north of the Kirkwood exit of Route 81. See Figure 1.

Physical Characteristics

The 37-acre site originally consisted of two landfilled areas referred to as the Upper and Lower Landfills. The 5.5-acre Upper Landfill is located on the western border of the site; the now excavated Lower Landfill (2.5 acres) was situated on the eastern border of the site. County Route 322, also known as Broome Parkway, runs down the middle of the site in a north-south direction. Carlin Creek is located adjacent to the northeastern portion of the Upper Landfill. Wetlands and a Delaware and Hudson railroad track border the eastern perimeter of the site. The Susquehanna River is located approximately 0.5 miles to the east of the site.

The entire site is fenced and the entry area is gated.

Site Geology/Hydrogeology

Shale/siltstone bedrock underlies the entire site, with depth to bedrock varying from 80 feet to 130 feet from west to east. Glacial till underlies the Upper Landfill. The area immediately to the east of the landfill is underlain by a lens of low permeability silt and fine sand. The silt layer varies in depth from 10 to 30 feet. Sand and gravel glacial outwash underlies the area where the former Lower Landfill was located. The sand and gravel layer is approximately 20 feet thick and is underlain by glacial till.

Groundwater is encountered at approximately 24 feet below the ground surface in the vicinity of the Upper Landfill and one foot below the ground surface to the east. The horizontal groundwater flow direction is from west to east toward the Susquehanna River.

Land and Resource Use

The site is situated in a sparsely populated area within the eastern perimeter of the Broome County Corporate Park. The Broome County Corporate Park is adjacent to the site on the eastern side. The predominant land use in the surrounding area is agricultural. The population within one mile of the site is about 700. The closest residents live along Route 7, about a quarter mile from the site. A Town of Conklin public water supply well is located 2,000 feet northeast of the site.

History of Contamination

The Lower Landfill, which was operated between 1964 and 1969, contained approximately 48,000 cubic yards of municipal wastes before it was excavated and consolidated with the Upper Landfill. The Upper Landfill, which originally contained approximately 55,000 cubic yards of municipal and industrial waste, was operated from 1969 until 1975, when a closure order was issued by the New York State Department of Environmental Conservation (NYSDEC). The property is currently owned by the Town of Conklin.

Initial Response

Beginning in 1983, field investigations, including the sampling of leachate seeps, groundwater and drinking water supplies, were conducted. A two-phase hydrogeological investigation was conducted by O'Brien and Gere Engineers for the Broome County Industrial Development Agency from 1983 to 1985. This investigation included the sampling of 17 private drinking water wells located near the site. Based upon the sample results, the New York State Department of Health (NYSDOH) recommended that public water be extended to the residences located downgradient from the site to eliminate exposure to contaminants in the groundwater. Public water was extended to this area in 1985 as part of anticipated industrial and commercial development in the area.

Basis for Taking Action

In June 1986, the site was nominated for inclusion on the National Priorities List. In June 1987, a Consent Order was signed between the Town of Conklin and NYSDEC, which covered the performance of a remedial investigation and feasibility study (RI/FS) and the remedial design (RD)/remedial action (RA). The RI, which was completed in December 1988, indicated limited groundwater contamination in the immediate vicinity of the Upper Landfill. The risk assessment concluded that the risk to human health due to site-related exposure to groundwater, landfill leachate or surface water (sediments) was at the upper bound (10^{-4}) of the acceptable exposure levels. Although current health risks were in the acceptable range, state and federal groundwater standards were exceeded. Chloroethane, 1,2-dichloropropane and xylene were the contaminants of concern in groundwater and leachate. Confirmatory sampling, performed in June 1990, confirmed the RI findings and provided additional validated data.

In 1990, NYSDOH learned that some residences near the site had not connected to the public water supply. These wells were sampled; no site-related contamination was detected in these wells.

An FS report was completed in January 1991.

IV. Remedial Actions

Remedy Selection

Based upon the results of the RI/FS, the following remedial action objectives (RAOs) were established for the site:

- Prevent ingestion of groundwater containing site-related contaminants of concern (COCs) at concentrations significantly exceeding Class GA standards;
- Prevent the migration of COCs from the landfill material that could result in groundwater concentrations above Class GA standards; and
- Restore the aquifer to concentrations that meet Class GA standards for site-related COCs.

A Record of Decision (ROD), which was signed by the Environmental Protection Agency (EPA) Regional Administrator on March 29, 1991, called for:

- Cutting the existing sides of the landfills to slopes of no greater than approximately 33 percent. The top surfaces of the landfills will be regarded to slopes of no less than 4 percent to provide for proper drainage.
- Installation of leachate collection wells and a leachate collection trench or toe drain at the upper landfill and leachate collection trench at the lower landfill to a depth sufficient to eliminate leachate seeps.
- Installation of multimedia caps over the landfill material. Water infiltrating through the vegetative and protective layers of the cap will be intercepted by the impermeable

flexible membrane layer and conveyed away from the landfill material. The multi-media caps will be consistent with applicable regulations that require that when a flexible membrane liner (FML) is used in place of clay, the FML may have permeability no greater than 1×10^{-12} cm/sec. The design requirements contained in the 6 NYCRR Part 360 standards will be incorporated into the cap design.

- Installation of a gravel gas-venting layer, with a filter fabric layer placed over the gravel. The FML will be placed over the filter fabric and another layer of filter fabric will be placed on top of the FML.
- Seeding and mulching of the topsoil layer to prevent erosion and provide for rapid growth of vegetation.
- Collection of the leachate followed by either its discharge to the Binghamton-Johnson City Sewage Treatment Plant for treatment or its treatment on-site via an air stripping treatment plant and discharge to Carlin Creek. (If discharge to the sewage treatment plant is not possible, then the leachate treatment system will be constructed concurrently with the cap. The system will be located adjacent to the lower landfill. Leachate collected at the upper landfill will be transported to the lower landfill through a gravity flow pipe.)
- Installation of fencing to protect the integrity of the caps by restricting access to the site, periodic inspection of the caps and maintenance as necessary, will provide for long-term effectiveness and permanence of the alternative.
- Imposition of property deed restriction, if necessary. The deed restrictions will include measures to prevent the installation of drinking water wells at the site and restrict activities which could affect the integrity of the cap.
- Initiation of a monitoring program upon completion of the closure activities. The monitoring program will provide data to evaluate the effectiveness of the remedial effort and will act as an early warning system to protect private wells in the area.

During preliminary design activities associated with the selected remedy, it was determined that the construction of a leachate collection trench and cap at the Lower Landfill would present significant engineering difficulties due to the proximity of an adjacent wetland and railroad tracks. In order to eliminate the leachate seeps at the Lower Landfill, it would be necessary to install a leachate collection system below the water table. A leachate collection system installed below the water table, however, would collect large amounts of uncontaminated groundwater and could adversely impact the adjacent wetland by dewatering a portion of it, unless hydraulic barriers were installed (which in itself could adversely impact the wetland). In addition, installing a cap on the Lower Landfill could negatively impact the adjacent wetland in that it would encroach on the wetland. Due to these technical feasibility and environmental concerns, the selected remedy was modified by an Explanation of Significant Differences (ESD) in September 1992. The modified remedy consists of the excavation of the Lower Landfill, consolidation of the excavated Lower Landfill contents onto the Upper Landfill, capping of the Upper Landfill, construction of a leachate collection system and either on- or off-site treatment of the leachate.

Remedy Implementation

Lower Landfill

The RD associated with the excavation of the Lower Landfill and consolidation of the excavated wastes onto the Upper Landfill commenced in April 1991 and was completed in September 1992.

A contract was awarded to Masciarelli Construction Company to provide construction services related to the excavation of the Lower Landfill in January 1993. The composition of the wastes that were encountered during the excavation was primarily soil and decomposed organic matter intermixed with scrap metal, bottles and fabric from a local tent manufacturer. Although four 55-gallon drums were encountered, they were found to be empty or contained nonhazardous debris and were crushed and disposed of in the Upper Landfill.

An air monitoring program was implemented during the excavation activities. This program entailed sampling for volatile organic compounds (VOCs) and particulates both in the work area and on the site perimeter. Real-time monitoring was performed using an HNu photoionization detector for detection of VOCs and a mini-Ram for detection of particulates. Perimeter monitoring was performed using EPA Method TO-14, with sampling stations being placed on the northern and southern portions of the landfill and two being placed along the railroad right-of-way to the east. This alignment allowed for monitoring of any airborne contaminants that could be migrating off-site to populated areas. Samples were analyzed by Performance Analytical, Inc. of Canoga Park, California. All results showed nondetectable levels of VOCs and particulates were below the levels set by the Occupational Safety and Health Administration.

Samples were collected from the waste at a frequency of one sample per 5,000 cubic yards of waste. Each sample was analyzed in accordance with the Toxicity Characteristic Leaching Procedure (TCLP) to determine whether it constituted a Resource Conservation and Recovery Act hazardous waste. Analytical results showed all samples to be nonhazardous. Samples were also collected from the bottom of the excavation and analyzed using TCLP; these results were also nonhazardous.

The waste that was excavated from the Lower Landfill (47,615 cubic yards) was deposited on the Upper Landfill in approximately one-foot lifts. This effort, which was performed by the Town of Conklin, was completed in July 1993. Backfilling of the Lower Landfill, which also was performed by the Town, was completed in September 1993.

Upper Landfill

The RD associated with the capping of the consolidated wastes on the Upper Landfill and the construction of a leachate collection, storage and pre-treatment system commenced in April 1991 and was completed in July 1993.

From October 1993 to November 1994, the following activities were completed by Lafarge Brothers Construction Company, Inc.: the installation of a leachate recovery system consisting of three leachate recovery wells located within the landfill waste mass near the northeastern corner of the landfill; installation of a 940 linear foot collection trench along the northern and eastern sides of the landfill and PVC piping to a precast concrete pump station; installation of a 30,000-gallon leachate storage tank; compaction and regrading of the excavated waste mass; construction of a final cover system for the Upper Landfill; and installation of an eight- foot high chain-linked fence around the Upper Landfill to restrict access.

Leachate Storage and Pre-Treatment System

In June 1995, the Binghamton-Johnson City Joint Sewer Board approved the Town of Conklin's application for discharge of the leachate from the Upper Landfill into the sanitary sewer system for treatment at the Binghamton-Johnson City Joint Sewage Treatment Plant in Vestal, New York. This approval required that the Town obtain an industrial wastewater discharge permit and temporarily store the leachate in an on-site storage tank while it is sampled and analyzed to determine if it meets the discharge requirements of the permit. The construction of a leachate storage, pre-treatment system and pipeline to the sewer interceptor, which began in November 1995, included the installation of a 30,000-gallon horizontal steel storage tank with a secondary containment dike, installation of a leachate pre-treatment system, consisting of a series of bag filters to remove solids and installation of a pipe to discharge the leachate from the storage and pre-treatment system to the sanitary sewer system. The work, which was performed by JEM Smith Construction Company, Inc., was completed in January 1996. A final inspection was conducted after the snow melt in June 1996.

Institutional Controls Implementation

The ROD called for the imposition of a property deed restriction, if necessary, to prevent the installation of drinking water wells at the site and restrict activities which could affect the integrity of the cap. In consultation with NYSDEC, EPA drafted environmental easement language. In addition, the Town surveyed the site and submitted an Abstract of Title. At a January 22, 2013 Town Board meeting, the Board authorized the Town Supervisor to execute the environmental easement. Following the execution of the easement by the Town Supervisor, it needs to be signed by NYSDEC and recorded by the County Clerk. It is anticipated that the environmental easement will be recorded in February 2013.

Operation and Maintenance

The groundwater remedy provides for the collection and off-site treatment of leachate. A groundwater monitoring program provides data to evaluate the effectiveness of the remedy and to act as an early warning system to protect private wells in the area. Leachate is monitored before off-site disposal and treatment.

The landfill is inspected annually by the Town's contractor, Shumaker Consulting and Land Surveying, P.C., to observe the condition of the perimeter fence, access roads, leachate system, landfill cover (areas of instability, subsidence, erosion, discoloration), surface water drainage features (washouts, excessive sediment or debris in ditches), gas venting system (damaged or disturbed vents) and monitoring and leachate recovery wells.

The Town maintenance crew maintains the integrity of the short-rooted vegetative cover by mowing the landfill twice a year.

V. Progress Since Last Five-Year Review

The third five-year review made recommendations regarding the implementation of institutional controls, an investigation of the cap and an assessment of the leachate collection system.

With regard to institutional controls, since the last five-year review, in consultation with NYSDEC, EPA drafted environmental easement language. In addition, the Town surveyed the site and submitted an Abstract of Title. At a January 22, 2013 Town Board meeting, the Board authorized the Town Supervisor to execute the environmental easement. Following the execution of the easement by the Town Supervisor, it needs to be signed by NYSDEC and recorded by the County Clerk. It is anticipated that the environmental easement will be recorded in February 2013.

As it appeared that considerable differential compaction of the landfill had occurred, the third five-year review called for an investigation of the cap. If that investigation indicated that the integrity of the cap had been compromised, corrective measures needed to be implemented. In July 2008, the Town's contractor conducted a full survey, cap assessment and physical condition assessment. Through this assessment, it was determined that the areas with deepest refuse deposits had likely settled the most and the outlying areas had generally settled less. There was no indication of excessive settlement, collection of surface water, or other physical evidence that would suggest the failure of the cap system. No further actions were deemed necessary.

Based upon groundwater sampling results which showed increasing concentrations of inorganics in downgradient shallow and deep monitoring wells, the third five-year review concluded that the possibility existed that some leachate could be escaping the leachate collection system or that the leachate collection system was not operating as designed. The five-year review called for a maintenance assessment and an investigation of the leachate collection system and, if necessary, corrective actions should be performed. The leachate collection system was troubleshot and repaired from May to July 2008. The automatic level controls on three out of the four leachate collection pumps had failed, preventing the pumps from turning on for an indeterminate amount of time. The appropriate repairs and component replacements were made and the leachate collection system was returned to its normal operating conditions.

During the May 2011 site inspection, an observation was made that the secondary containment for the leachate tank had accumulated storm water due to a failed containment skirt. Also noted was the accumulation of water in the sump pit inside the facility, making it apparent that the sump pump was not functioning properly. The secondary containment skirt was repaired and the containment dike drained. An inspection and test of the leachate handling system was completed in August 2012. Based on the observations of the control panel, pumps, level monitors and controls, the system appeared to be functioning properly.

The third five-year review also made several observations related to maintenance, monitoring and reporting and offered suggestions to resolve the issues. Table 3 summarizes the status of these items.

VI. Five-Year Review Process

Administrative Components

The five-year review team consisted of George Jacob (Remedial Project Manager RPM]), Roberta McIntyre (hydrogeologist) and Urszula Filipowitz (human health risk assessor).

Community Involvement

The EPA Community Involvement Coordinator (CIC) for the Conklin Dumps site, Cecilia Echols, will issue a press release indicating the findings of the five-year review once the five-year review is completed. The results of the five-year review will be made available in the local site repository. In addition, the press release will include the addresses and telephone numbers for the RPM and CIC for questions related to the five-year review process or the Conklin Dumps Superfund site.

Document Review

The documents, data and information which were reviewed in completing the five-year review are summarized in Table 4.

Data Review

To date, approximately 170,000 gallons of leachate have been collected and sent for treatment at the Binghamton-Johnson City sewage treatment plant. Analyses of the leachate has shown that there were no detectable levels of chloroethane, 1,2-dichloropropane or xylene, the principal COCs at the site. In addition, all conventional analytical parameters (wet chemical analysis) were within specifications required for transfer to the sewage treatment plant.

Six groundwater monitoring wells and surface water from Carlin Creek are sampled once each year for VOCs and on a quarterly basis for inorganic compounds.

The COCs at the time of the ROD were chloroethane, 1,2-dichloropropane and xylene.

During the review period, concentrations of these contaminants were consistently below their respective New York State Class GA Ground Water Quality Standards (6 NYCRR Part 703) (GWQS). A number of inorganic chemicals were, however, detected exceeding the GWQS in on-site monitoring wells. Since some of these inorganics (iron, manganese and sodium) were also detected in the upgradient monitoring well, MW-1, these contaminants may be reflective of background concentrations at the site. Other metal excursions are more difficult to interpret. Lead, for example, was detected in deep downgradient monitoring well MW-38D at concentrations ranging from 57 micrograms per liter (µg/L) in June 2009 to 2,690 µg/L in September 2010. The results from the most current rounds of sampling (June and September 2012) indicate lead concentrations below the detection limit of 10 µg/L in the same well. Another noteworthy inorganic compound detected in site monitoring wells is thallium. Thallium detections exceeding the federal Maximum Contaminant Level (MCL) of 2 µg/L have been reported in several monitoring wells, with a maximum concentration of < 2,500 µg/L[1] in MW-38D during the June 2010 sampling event. Concentrations of thallium in other monitoring wells sampled from 2008 to 2010 indicate excursions one to two orders of magnitude greater than the MCL. Data collected in 2011 to 2012 do not indicate excursions of thallium. However, the minimum detection limit for the analytical method used for thallium (25 µg/L) during the review period is above the MCL of 2 µg/L. Additionally, phenols were detected in several monitoring wells in the early portion of the review period above the MCL of 1 µg/L, but were not detected in the more recent samples. The GWQS for phenol is, however, below the minimum detection limit for the analytical method for phenols.

To better understand site conditions, it is recommended samples be analyzed for both total and filtered metals. In addition, the laboratory detection limits for all constituents should be less than or equal to their respective groundwater standard.

During the review period, surface water data collected from the nearby Carlin Creek did not indicate excursions of COCs (chloroethane, 1,2-dichloropropane and xylene) above the ROD-established cleanup levels. It should be noted, however, that iron, lead and sodium were detected above their guidance values of 300 µg/L, 25 µg/L and 20 milligrams per liter (mg/L), respectively. Lead excursions in surface water were observed only once in the last five years at a concentration of 328 µg/L during the October 2009 sampling event. Since that excursion, detected lead levels were reported below 10 µg/L. Two excursions of iron were reported in August 2009 and June 2011 (3,190 and 715 µg/L, respectively); there were no excursions of iron in 2012. There was an overall downward trend for sodium concentrations during the review period. Sodium levels ranged from a maximum of 43.8 mg/L in March 2010 to 20.7 in June 2010 (concentrations in August and November 2011 were below the action level). Surface water sampling should continue.

Site Inspection

On August 30, 2012, a five-year review-related site inspection was conducted by George Jacob, Roberta McIntyre and Urszula Filipowitz of EPA, Payson Long from NYSDEC.

[1] The detection limit for thallium using the analytical method that was employed was 2,500 µg/l.

Tom Delamarter and Nick Piatt from the Town of Conklin and Donald J. Lockwood from Shumaker Consulting Engineering were present at the Site during the Site inspection.

During the inspection, it was observed that the access roads were well maintained and traversable, the fencing, entry gates and the wells were in good repair, the surface drainage features were in good condition and there were no visible signs of trespassing or vandalism. It was also observed that trees are impinging on the fence in several locations, including two small trees that died, fell over and are lying on top of the fence. In addition, monitoring well MW-12 is enveloped by trees and shrubs, making it difficult to access it along the north side of the landfill security fence due to thick vegetative growth.

Interviews

Interviews for this review were conducted on August 30, 2012 with Tom Delamarter and Nick Piatt from the Town of Conklin and Donald J. Lockwood from Shumaker Consulting Engineering. During the interview the landfill cap assessment and leachate collection system troubleshooting and repairs done by the PRPs were discussed in detail.

Institutional Controls Verification

The ROD called for the imposition of a property deed restriction, if necessary, to prevent the installation of drinking water wells at the site and restrict activities which could affect the integrity of the cap. As was noted above, the Town has surveyed the site and has submitted an Abstract of Title and the Town Board has authorized the Town Supervisor to execute the environmental easement. Following the execution of the easement by the Town Supervisor, it needs to be signed by NYSDEC and recorded by the County Clerk. It is anticipated that the environmental easement will be recorded in February 2013.

Other Comments on Operation, Maintenance, Monitoring and Institutional Controls

Table 5 (attached) presents comments and observations and offers suggestions to resolve them.

VII. Technical Assessment

***Question A**: Is the remedy functioning as intended by the decision documents?*

The ROD, as modified by the ESD, called for the excavation of the Lower Landfill, consolidation of the excavated Lower Landfill contents onto the Upper Landfill, capping of the Upper Landfill, construction of a leachate collection system, off-site treatment of the leachate and institutional controls.

The Upper Landfill has been capped and leachate is being collected and treated off-site, removing direct contact (*i.e.*, ingestion or dermal contact with contaminated soil and leachate) exposures to the public as well as ecological receptors. A fence is in place to prevent trespassing. Exposure protection to the Lower Landfill is provided by consolidation of the excavated contents onto the Upper Landfill.

The COCs for the site at the time of the ROD were chloroethane, 1,2-dichloropropane and xylenes. Currently the COCs are not being detected in groundwater, leachate or surface water above the GWQS. A number of inorganic chemicals were, however, detected exceeding the GWQS in on-site monitoring wells. Since some of these inorganics (iron, manganese and sodium) were also detected in the upgradient monitoring well, these contaminants may be reflective of background concentrations at the site. In addition, sporadic detections of lead and thallium were detected. As was noted in the "Data Review" section, elevated concentrations of lead and thallium were detected early in the review period, but were not detected above their detection limits in the most recent sampling. Sampling for inorganics will continue.

Potential exposure to contaminated groundwater has also been eliminated, since most of the surrounding businesses and homes receive water from a public supply. For those residences with private drinking water wells, sampling during the RI did not indicate that these wells had been impacted by site-related contaminants.

As noted above, it is expected that institutional controls will be in place by February 2013. In the interim, the landfill is surrounded by a fence to prevent trespassing and no groundwater wells are installed on site.

In summary, the remedy is functioning as intended by the decision documents.

Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of the remedy still valid?

There have been no physical changes to the site that would adversely affect the protectiveness of the remedy. Land use assumptions, exposure assumptions and pathways and cleanup levels considered in the decision document followed the Risk Assessment Guidance for Superfund used by the Agency and remain valid. Although specific parameters may have changed since the time the risk assessment was completed, the process that was used remains valid.

Exposure pathways considered in the risk assessment included ingestion of groundwater and dermal contact with leachate. The risk assessment concluded risk to human health due to site-related exposure to groundwater, landfill leachate or surface water (sediments) was at the upper bound (i.e. 10-4) for acceptable exposure levels. Because certain compounds in groundwater and leachate exceeded New York State Class GA Groundwater Quality Standards (NYS GWQS) which were determined to be ARARs for the site, a response action was warranted. The exposure assumptions remain valid.

At the time of the ROD, the GWQSs for xylene and 1,2-dichloropropane were 5 µg/L and a standard for chloroethane (ethyl chloride) was not established. The current GWQS for xylene has remained unchanged; the standard for 1,2-dichloropropane has since been reduced to 1 µg/L . The current risk-based tap water screening value for chloroethane is 21,000 ug/L and the current GWQS for chloroethane is 5 µg/L. The selected remedy

chose federal and state standards as ARARs. These ARARs are still valid. Although the current GWQS for 1,2-dichloropropane is more stringent than the one used at the time of the ROD, sampling results at the site indicate that the 1,2-dichloropropane levels remain below the standard.

The RAOs that where established at the time of the ROD (see the "Remedy Selection" section, above) remain valid for the site.

Vapor intrusion was not considered a completed pathway at the time of the risk assessment; however, the potential for vapor intrusion was evaluated in the prior five-year review. Since the site does not contain any buildings other than the leachate collection system building and since there are no buildings directly downgradient of the landfill, the vapor intrusion pathway remains incomplete. Furthermore, data collected from the past five years indicate volatile organic compounds are not currently present in the groundwater. Therefore vapor intrusion is not considered an issue at this site.

Although the ecological risk assessment screening values used to support the ROD may not necessarily reflect the current values, the remedy is protective of ecological resources as the exposure to ecological receptors has been controlled by the final cap and the leachate collection system. Although surface water monitoring did not indicate elevated site-related contaminants, monitoring should continue.

***Question C**: Has other information come to light which could affect protectiveness of remedy?*

No other information has come to light which calls into question the protectiveness of the remedy.

Technical Assessment Summary

Based upon the results of the five-year review, it has been concluded that:

- The site does not pose a risk to human health, since current drinking water wells in the vicinity of the site are not threatened and contaminated material is not available for contact.

- The leachate filtration (there is pretreatment of the leachate), storage and transfer systems are operating properly.

- The access roads were well maintained and traversable, the fencing, entry gates and the wells were in good repair, surface drainage features appear in good condition.

- There is no evidence of trespassing or vandalism.

- The soil and vegetative covers are intact and in good condition.

- While the fence around the site and entry gate are intact and in good repair, trees are impinging on the fence in several locations, including two small trees that died, fell over and are lying on top of the fence.

- There has been no detection of volatile organic compounds in the leachate, monitoring wells or surface waters.

- Since ingestion of drinking water is not occurring, nor is it expected to occur in the next five years, this pathway is currently incomplete.

- Although surface water monitoring did not indicate elevated site-related contaminants, monitoring should continue.

- Monitoring well MW-2, which is used for groundwater elevations only, has a blockage below the ground surface. The absence of the use of MW-2 does not seem to be affecting adversely the overall quality of the data collected at the site.

- Monitoring well MW-12 is enveloped by trees and shrubs, making it difficult to access it along the north side of the landfill security fence due to thick vegetative growth.

VIII. Recommendations and Follow-Up Actions

Table 6 (attached) summarizes a recommendations and follow-up action stemming from this five-year review.

IX. Protectiveness Statement

The implemented remedy is functioning as intended by the decision documents and is protecting human health and the environment in the short term. In order for the site to be protective in the long term, on-property institutional controls are needed to restrict activities that could affect the integrity of the cap, prohibit the residential use of the property and prohibit the installation of groundwater wells for drinking or irrigation until groundwater standards are achieved.

X. Next Review

The next five-year review for the Conklin Dumps Superfund site should be completed within five years of the date of this review.

Overview

Map Layers

0 500 1000

feet

Figure 1

Site Location

9/8/2008 5:11PM

Table 1: Chronology of Site Events

Event	Date(s)
Hydrogeological Investigations/Detect Contamination	1983-1985
Public Water Extended	1985
Site placed on National Priorities List	1986
NYSDEC signs consent order with Town of Conklin for RI/FS	1987
Record of Decision (ROD) signed	1991
Explanation of Significant Differences	1992
Remedial Design	1991-1992
Remedial Action (Lower Landfill excavation)	1992-1993
Remedial Action (Upper Landfill Level- Cap & Leachate Collection System)	1993-1996
Superfund Site Close-Out Report	1996
Site Deleted from NPL	1997
First Five-Year Review Report	1998
Second Five-Year Review Report	2003
Third Five-Year Review Report	2008

Table 2: Annual Operation, Maintenance and Monitoring Costs

Sampling and Analysis (including reporting)	$5,000
Site Operation/Inspection/Maintenance	$15,000
Leachate Collection, Treatment	$15,000
Total Estimated Annual OM&M Costs	$35,000

Table 3: Status of 2008 Five-Year Review Other Comments on Operation, Maintenance, Monitoring and Institutional Controls	
Comment/Suggestion	**Status**
The monitoring wells need to be surveyed to establish casing elevations.	A full survey of all landfill wells, sumps, leachate collection and fences was completed in July 2008.
The monitoring reports contain raw data from the laboratory which are difficult to interpret without considerable data reduction. The Town needs to perform data reduction and analysis.	Data reduction and analysis began with the August 2008 annual report.
For each future sampling event, the water levels should be measured and potentiometric maps should be created. Contouring the water table to establish actual flow directions will require taking water level measurements from old wells that have not been included in the past. Since landfill compaction has the potential to damage the inner casing, the older wells will require an evaluation.	Groundwater potentiometric maps have been developed since the 2009 annual O&M report. The monitoring wells were inspected in July 2008 and were rehabilitated, as necessary, in February 2009.
The detection limits used by the laboratory should be at least as low as the relevant groundwater standard. Alternative analytical methods for several contaminants need to be employed for all subsequent sample analyses.	This suggestion was never implemented.
Monitoring well MW-3, where contaminant levels have been increasing, has only been sampled sporadically in recent years. The monitoring well should be sampled on a quarterly basis.	Monitoring well MW3 was supposed to be sampled quarterly, but it was typically buried by sediment, snow, or submerged under water. The well was reconstructed in February 2009 and is again being sampled quarterly.
The Application for Monitoring Variance lists six items under "Reporting" (comparison of groundwater and surface water results with applicable standards, historical groundwater elevations, historical parameter concentrations, groundwater contours, statistical evaluation of the data and comparison of upgradient and down gradient sample results). The recommended items should be implemented. This information should be utilized to assess system performance.	This suggestion was never implemented.
Manganese may not be a perfect surrogate for the trends in the other contaminants. Perform time series analysis on the other analytes detected in the downgradient wells.	This suggestion was never implemented.

Table 3: Status of 2008 Five-Year Review Other Comments on Operation, Maintenance, Monitoring and Institutional Controls Continued	
Comment/Suggestion	**Status**
The increasing manganese levels in the shallow downgradient wells suggest that an engineering evaluation should be performed. Broken wells have the potential to transmit water downward and the casing of at least one of the wells during the site visit was found to be bent over. A physical examination of the cap and the wells installed through it should be performed. Repairs should be made if necessary. This includes obvious breaches in the cap, broken or malfunctioning wells and the leachate collection system. After minor repairs are made, the landfill should be monitored quarterly for five years to see if increasing contamination trends are reversed, or at least stabilized. If not, then a more thorough investigation and remedy may have to be developed.	Repairs were made to the damaged wells in February 2009. In July 2008, the Town's contractor conducted a full survey, cap assessment and physical condition assessment. There was no indication of excessive settlement, collection of surface water, or other physical evidence that would suggest the failure of the cap system. No further actions were deemed necessary.
The Town should ascertain if there are any reuse opportunities for this site. If such opportunities exist, then a reuse plan should be developed. This plan would need to be a collaborative effort between the interested parties. A reuse plan should be developed to address future property ownership, institutional controls and the final status of the existing structures and foundations on the site.	Discussions are underway between the Town and its consultant regarding the reuse of the property (e.g., solar farming).
On an annual basis, the site will need to be inspected to verify that no groundwater extraction wells have been installed at the site. The annual operation and maintenance (O&M) report should indicate the results of this inspection and should include a certification that remedy-related O&M is being performed. Once the institutional controls are put into place, the annual O&M report should include a certification that the institutional controls are in place, as well.	The annual reports do not include an assessment of groundwater extraction wells in the area.

Table 4: Documents, Data and Information Reviewed in Completing the 4th Five-Year Review

Document Title (Author)	Submittal Date
Remedial Investigation/Feasibility Study, O'Brien & Gere	1991
Record of Decision, EPA	1991
Explanation of Significant Differences	1992
Remedial Action Report (Lower Landfill), Dunn Engineering	1993
Remedial Action Report (Upper & Lower Landfill), Rust Environment and Infrastructure	1996
Superfund Site Close-Out Report, EPA	1996
Annual Monitoring Reports	2007-2012
EPA guidance for conducting five-year reviews and other guidance and regulations to determine if any new Applicable or Relevant and Appropriate Requirements relating to the protectiveness of the remedy have been developed since EPA issued the ROD	

Table 5: Other Comments on Operation, Maintenance, Monitoring and Institutional Controls	
Comment	**Suggestion**
If the site is developed in the future, it is possible that drinking water wells could draw residual contamination from the site.	In the event of future development, water use should be evaluated to ensure that drinking water wells do not draw residual contamination from the site.
New York State requires annual certifications that institutional controls that are required by RODs are in place and that remedy-related operation and maintenance (O&M) is being performed.	On an annual basis, the site will need to be inspected to determine whether any groundwater wells have been installed at the site. The fourth quarter O&M report should include a certification that remedy-related O&M is being performed. Once the institutional controls are put into place, the fourth quarter O&M report should include a certification that the institutional controls are in place, as well.
Trees are impinging on the fence in several locations, including two small trees that died, fell over and are lying on top of the fence.	To ensure that the integrity of the fence is not compromised, the trees should be removed.
Monitoring well MW-12 is enveloped by trees and shrubs, making it difficult to access it along the north side of the landfill security fence due to thick vegetative growth.	To ensure unobstructed access to the monitoring well, the trees and shrubs should be removed.
Monitoring wells MW-2 and MW-14 are not labeled.	All monitoring wells should be properly labeled.
Although the surface water monitoring of Carlin Creek did not indicate any elevated site contaminants, it is possible that the elevated inorganic contaminants in the groundwater could migrate to the surface water.	Surface water monitoring and sediment sampling should continue.
Monitoring well MW-2 has been reported as having a blockage at 19 feet.	The blockage should be removed.
The detection limits used by the laboratory should be at least as low as the relevant groundwater standard.	Alternative analytical methods for several contaminants need to be employed for all subsequent sample analyses.
Total metals analysis results should always be greater than or equal to dissolved metals analysis results, because dissolved metals is a subset of total metals. Dissolved metals are generally considered more mobile and biologically available.	Groundwater and surface water samples should be analyzed for both total and filtered metals.
Manganese may not be a perfect surrogate for the trends in the other contaminants.	Perform time series analysis on the other analytes detected in the downgradient wells.

Table 6: Recommendation and Follow-Up Action

Issue	Recommendations/Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
On-property institutional controls need to be put into place.	Complete the implementation of on-property institutional controls that restrict activities that could affect the integrity of the cap, prohibit the residential use of the property and prohibit the installation of groundwater wells for drinking or irrigation until groundwater standards are achieved.	PRP	NYSDEC	02/13	N	Y