NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
Site Classification Report

DATE: 9/17/2012

Site Code: 344004 **Site Name:** Ramapo Town Landfill
City: Ramapo **Town:** Ramapo
Region: 3 **County:** Rockland
Current Classification: 02 **Proposed Classification:** 04
Estimated Size (acres): 80.00 **Disposal Area:** Landfill
Significant Threat: Previously **Site Type:**
Priority ranking Score: **Project Manager:** Carl Hoffman

Summary of Approvals

Originator/Supervisor: Susan Edwards **07/24/2012**

RHWRE: : **07/27/2012**

BEEI of NYSDOH: **08/23/2012**

CO Bureau Director: Michael Cruden, Director, Remedial Bureau E: **08/27/2012**

08/27/2012

Assistant Division Director: Robert W. Schick, P.E.:

Basis for Classification Change

Hazardous waste disposal at this site was addressed by implementation of the remedy identified for the site by one or more Records of Decision. All construction of the components of the site-wide remedy was completed no later than 1997. The Final Engineering Report(s) (FER) (or its equivalent) confirms that the remedy has been constructed consistent with the requirements in the ROD(s). Management of contamination remaining at the site, including any required monitoring, is and has been controlled pursuant to a Site Management Plan (SMP) (or its equivalent). A copy of the SMP (or its equivalent) is in edocs. An Environmental Easement has been filed placing restrictions on groundwater and land-use. A significant threat to public health and the environment no longer exists at the site. The site is properly remediated and requires site management, therefore, it qualifies for Class 4 status on the Registry of Inactive Hazardous Waste disposal sites.

Site Description - Last Review: 07/24/2012

Location:
The Ramapo Landfill site is located in the Town of Ramapo, Rockland County, New York, about 35 miles northwest of New York City and 1 mile northeast of the Village of Hillburn, New York. The site is situated at the western base of the Ramapo Mountains, off Torne Valley Road, east of the New York State Thruway, Route 17, and Route 59.

Site Features: The landfill is situated on a 96-acre tract. Approximately 60 acres of the site (the landfill

portion) are covered with fill material. The landfill portion of the site is mounded into two major lobes (northern and southern), and slopes steeply toward the west with grades ranging from less than one percent to greater than 30 percent. Both landfill lobes consist of mixed refuse. Substances reportedly disposed of in the landfill include industrial sludge and other wastes reportedly from a pharmaceutical company, sewage sludge, municipal refuse, asbestos, construction and demolition debris, yard debris, paint sludge (presumably from an automotive plant), and liquid wastes reportedly from a paper company.

Current Zoning/Use(s): The site is currently zoned utilities. The area surrounding the site is zoned low density residential (1 to 2 dwelling units per acre) except for a small parcel located to the south of the site that is zoned park/open space. Presently, a good portion of the site is being used by the Ramapo Police Department as a shooting range. The closest private well is located approximately 450 feet west of the site on the west bank of the Ramapo River at the Torne Brook Estate, a residential apartment complex of 25 units. A 2-unit apartment building maintains a well about 1,200 feet from the landfill. Land use is restricted to commercial/industrial use via an environmental easement.

Historic Use(s): Prior to landfill operations in the 1950's and 1960's, portions of the site were excavated as a source of gravel. In 1971, the Rockland County Department of Health granted a permit to the Town of Ramapo for the operation of the sanitary landfill. At that time, the site was owned by the Ramapo Land Company and the contract-operator was the Torne Mountain Sand and Gravel Co., Inc. In September 1983, the Ramapo Landfill site was placed on the Superfund National Priorities List. From June 1980 through October 1986, NYSDEC and the Town of Ramapo entered into three Orders on Consent related to phasing out the operation of the landfill, determining the extent of leachate movement and the feasibility of leachate collection and constructing a surface water and groundwater diversion system, leachate-collection system, and a system capable of transporting or treating the collected leachate. Municipal waste was accepted in the landfill until 1984. The Town of Ramapo continued to accept construction and demolition debris at the landfill until 1989.

A leachate collection system was constructed along the downgradient edge of the landfill from 1984 to 1985. The collected leachate was conveyed to a wastewater treatment pond in the site's southwest corner. After aeration and settling in the pond, the water was discharged to the Ramapo River. Beginning in November 1990, the collected leachate was discharged to the Village of Suffern Wastewater Treatment Plant via a 7,900-foot sewer line.

On February 1, 1988, the Town entered into its fourth Order on Consent (Index No. W3-0083-8707) with the NYSDEC. This Order required that a remedial investigation and feasibility study (RI/FS) be performed for the site and that the design and construction of the remedy that was to be selected be undertaken.

EPA issued a Record of Decision in March 1992 calling for a landfill cap and installation of groundwater extraction wells.

Site Geology and Hydrogeology: The site is underlain by a sequence of glacially derived unconsolidated sediments that overly bedrock, which is comprised of granitic and biotite gneiss. The bedrock geology is structurally complex with numerous fault systems in the area. A fracture trace analysis identified a number of lineaments in the vicinity of the site, the most obvious one being the Ramapo fault (approximately 1.25 miles

southeast of the site), which strikes northeast and dips steeply southeast. Two other lineaments observed within the immediate area of the landfill include one that lies adjacent to the west side of the landfill and trends northeast. This lineament may represent faulting or other subsurface structures controlling deflections in Torne Brook. The second lineament trends east-west and appears to cross the central portion of the landfill.

The shallow aquifer is comprised of permeable sediments consisting of a grey to brown, very loose to loose sand or sandy gravel with some silt with a hydraulic conductivity on the order of 1 x 10-4 cm/sec and a medium dense to very dense silty sand or gravelly sand with abundant boulders and cobbles with hydraulic conductivity values ranging from 5.1 x 10-5 to 1.4 x 10-4 cm/sec. Below these sand units is a thin weathered rock zone ranging in thickness from a few inches to nearly five feet with hydraulic conductivity values ranging from 4 x 10-5 to 1.5 x 10-3 cm/sec. Underlying the weathered rock zone is a granitic and biotite gneiss bedrock aquifer. In some locations, highly fractured zones were found within the bedrock suggesting faulting. Hydraulic conductivity values for the bedrock aquifer ranged from 8.9 x 10-5 to 1 x 10-2 cm/sec.

Past investigations found that shallow groundwater generally flows toward Torne Brook and the Ramapo River with Torne Brook acting as the discharge area for the water table aquifer and that groundwater in the bedrock aquifer likely flows beneath Torne Brook. Vertical flow measurements indicated that groundwater generally flows downward.

7/12/12-DEC signed the Environmental Easement for the landfill portion of the site.

Contaminants of Concern (Including Materials Disposed)	**Quantity Disposed**
OU 01	
VOLATILE ORGANICS	0.00
METALS	0.00
METHANE	0.00

Analytical Data Available for : Groundwater, Surface Water, Soil, Sediment

Applicable Standards Exceeded for: Groundwater, Soil

Site Environmental Assessment- Last Review: 07/24/2012

Nature and Extent of Contamination: The groundwater underlying the landfill has been contaminated with volatile organic compounds (benzene, toluene, and xylene) and heavy metals (mercury, lead, chromium, and cadmium). Before the site was remediated, surface water was contaminated with heavy metals, semi-volatile compounds, and phenols. In addition, direct contact with or ingestion of contaminated soil, groundwater, or surface water posed a health threat.
Prior to remediation: RI field work was carried out in two phases: Phase I from April 1989 through May 1990, Phase II from August to September 1990. Media sampled during the RI included surface and subsurface soil, waste samples, groundwater, surface water, sediments, and air.
Groundwater: Groundwater monitoring wells were installed in the overburden, intermediate layer, and bedrock aquifers. NYSDEC Water Quality Standards and Guidance Values (T.O.G.S: 1.1.1) (WQSGV) and/or EPA Maximum Contaminant Levels (MCLs) were exceeded for arsenic, chromium, iron, lead, magnesium, manganese, mercury, sodium, benzene, chlorobenzene, di-n-octyl phthalate, and total organic carbon. No federal or state drinking water standards were exceeded in samples taken from the nearby public or private water supply wells.

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Waste Samples and Soils: Volatile compounds were detected in three waste sample locations at concentrations ranging from 2 micrograms per kilogram (ug/kg) to 110 milligrams per kilogram (mg/kg) (total xylenes at SPS-5). No volatile compounds were detected in any of the surface soil samples. Semi-volatile compounds, including polycyclic aromatic hydrocarbons (PAHs), were detected in waste samples and surface soil samples at concentrations ranging from 42 ug/kg to 16 mg/kg (naphthalene at SPS-5). Antimony, barium, beryllium, cadmium, calcium, chromium, copper, lead, selenium, and zinc were detected in surface soil and waste samples at concentrations exceeding background by an order of magnitude. Six semi-volatile compounds, acetone, and toluene, were detected in one monitoring well boring (MW-3-SB). All five waste samples were analyzed for RCRA hazardous waste characteristics and EP Toxicity parameters. No measurements exceeded the EP Toxicity Criteria.

Surface Water: Phase I and Phase II surface water samples were collected from Torne Brook, the Ramapo River near the confluence of Torne Brook, a drainage swale on an adjacent property, and two leachate seeps emanating from the landfill. At all surface water locations that were sampled, New York State surface water standards were exceeded for one or more of the following contaminants: vinyl chloride, antimony, arsenic, iron, manganese, mercury, nickel, zinc, ammonia, sulfide, copper, and lead. The highest frequency of the detections above the standards occurred near the confluence of Torne Brook and the Ramapo River, where water from the on-site leachate holding pond was being discharged to the Ramapo River.

Sediment: No volatile or pesticide compounds were detected in any of the sediment samples collected in Torne Brook or the Ramapo River. Three semi-volatile compounds were detected in a sediment sample collected in Torne Brook at concentrations below NYSDEC sediment cleanup criteria. Inorganic compounds detected in sediments which exceeded background concentrations by at least an order of magnitude included antimony, calcium, manganese, and thallium.

Post-Remediation: The remedial actions that have taken place at the site have eliminated potential exposure of receptors to contaminated surface water, sediment, and surface soil. Since June 2005, only inorganics (chromium, manganese, sodium and iron), have been detected in groundwater above MCLs. A groundwater use restriction is in effect at the site.

In November 2011, EPA determined, and NYS agreed, that there were no vapor forming chemicals at the site and that no further action was warranted related to the potential for vapor intrusion.

Site Health Assessment - Last Update: 07/20/2012

The landfill was properly capped when it was closed and public access is restricted by site fencing; therefore, people are not likely to contact landfill contents. People are not drinking contaminated water because sampling indicates site-related contaminants are not impacting off-site private drinking water wells. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. Furthermore, environmental sampling indicates soil vapor intrusion is not a concern in off-site buildings.

Start End

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OU 00				
Periodic Review	10/1/13	PLN	11/15/13	PLN
Reclass Pkg.	7/24/12	ACT	9/17/12	ACT
Site Management	12/1/97	ACT	5/1/27	PLN
OU 01				
OGC Docket - Environmental Easement	5/1/11	ACT	7/12/12	ACT
Reclass Pkg.	1/1/99	ACT		XXX
Remedial Action	10/1/94	ACT	6/1/97	ACT
Remedial Design	4/1/92	ACT	6/1/94	ACT
Remedial Investigation	3/1/89	ACT	3/1/92	ACT
VI Evaluation	4/2/07	ACT	11/11/11	ANF

Remedy Description and Cost

Remedy Description for Operable Unit 01

Elements of the USEPA-issued remedy included;

- Installation of a cap on the top of the landfill using a multimedia system, including layers of fill material, a gas-venting system, and an impermeable membrane. The landfill side slopes would be capped using a multimedia system without an impermeable membrane if confirmatory studies demonstrated that this approach met the remedial action objectives;
- Installation of groundwater extraction wells to supplement the existing leachate collection system;
- Installation of a perimeter drain around the sections of the cap containing the impermeable membrane to collect and divert surface water runoff;
- Collection and diversion of leachate seeps to the existing leachate collection system;
- Conveyance of the collected leachate and contaminated groundwater via the sewer system to a local wastewater treatment facility;
- Imposition of property deed restrictions which would include measures to prevent the installation of drinking water wells at the site, and restrict activities which could affect the integrity of the cap; and,
- Performance of a maintenance and sampling program upon completion of closure activities to evaluate the effectiveness of the remedial effort.

Total Cost $21,410,000

OU 00 **Site Management Plan Approval: 12/01/1997** **Status: ACT**

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Form
9/17/2012

SITE DESCRIPTION

SITE NO. 344004

SITE NAME Ramapo Town Landfill

SITE ADDRESS: Torne Valley Road ZIP CODE: 10901

CITY/TOWN: Ramapo

COUNTY: Rockland

ALLOWABLE USE: Commercial and Industrial

SITE MANAGEMENT DESCRIPTION

SITE MANAGEMENT PLAN INCLUDES:	YES	NO
IC/EC Certification Plan	☐	▣
Monitoring Plan	▣	☐
Operation and Maintenance (O&M) Plan	▣	☐

Periodic Review Frequency: every five years

Periodic Review Report Submittal Date: 10/01/2013

DATE: 9/17/2012

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Description of Institutional Control

Town of Ramapo

TORNE VALL EY RD
Environmental Easement
Block: 0011
Lot: AA
Sublot:
Section: 007
Subsection: 000
S_B_L Image: 007.0.11.AA
Ground Water Use Restriction
Landuse Restriction
Monitoring Plan
O&M Plan

Description of Engineering Control

Town of Ramapo

TORNE VALL EY RD
Environmental Easement - Institutional Control Instrument
Block: 0011
Lot: AA
Sublot:
Section: 007
Subsection: 000
S_B_L Image: 007.0.11.AA
Cover System
Groundwater Containment
Leachate Collection
Fencing/Access Control

NEW YORK
state department of
HEALTH

Nirav R. Shah, M.D., M.P.H.
Commissioner

Sue Kelly
Executive Deputy Commissioner

August 23, 2012

Michael Cruden, Director
Remedial Bureau E
Division of Environmental Remediation
NYS Dept. of Environmental Conservation
625 Broadway, 11th Floor
Albany, New York 12233

Re: **Reclassification Package**
Ramapo Town Landfill
Site #344004
Ramapo, Rockland County

Dear Mr. Cruden:

Per your request, we have reviewed the New York State Department of Environmental Conservation's (NYSDEC's) proposal to reclassify the above-referenced site from a Class 2 to a Class 4 on the NYSDEC's Registry of Inactive Hazardous Waste Disposal Sites. I understand that remedial actions conducted have reduced contamination in groundwater. An institutional control in the form of an environmental easement restricts the use of groundwater and limits site use to commercial and industrial uses. In addition, engineering controls in the form of a fence, site cap and a leachate recovery system are in place to minimize the potential for contact with contaminants. Sampling also indicates that soil vapor intrusion is not a concern for off-site buildings.

Based on this information, I believe the proposal is protective of public health and concur with the Class 4 reclassification. If you have any questions, please contact Ms. Charlotte Bethoney or me at (518) 402-7880.

Sincerely,

Krista M. Anders

Krista M. Anders, Acting Director
Bureau of Environmental Exposure Investigation

ec: A. Salame-Alfie, Ph.D.
C. Bethoney / J. Nealon / A. Perretta / File
B. Devine – NYSDOH MDO
C. Quinn – RCDH
S. Edwards / C. Hoffman – NYSDEC Central Office
E. Moore – NYSDEC Region 3

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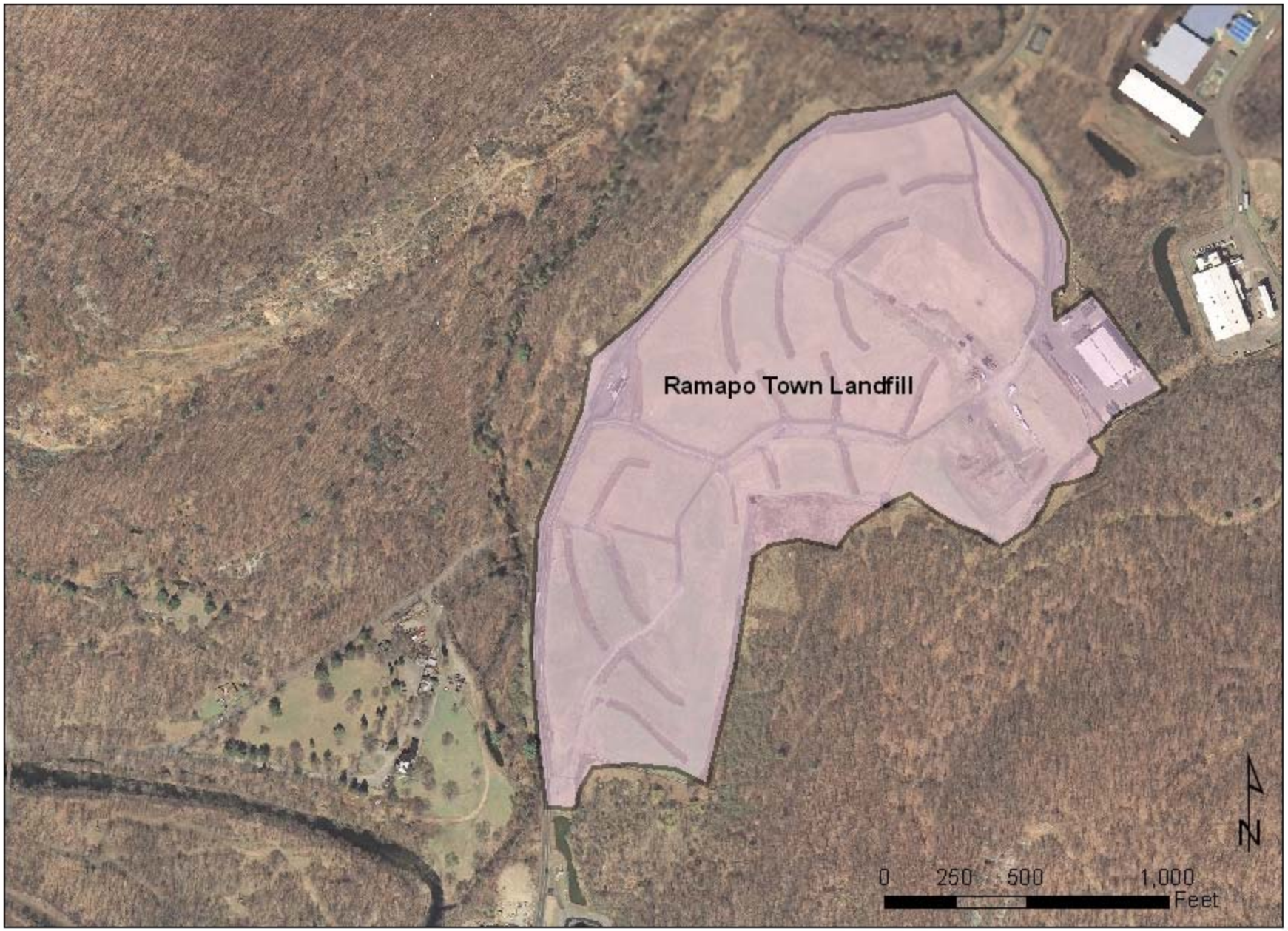
Site Name: Ramapo Town Landfill



Site Contact List

Instructions:

1. Enter Site name and ID No. in cells A10 and C10 and the date of the list in E10.
2. Each contact list must include the site property owner(s), adjacent property owner(s)/resident(s), the municipal CEO, public water supplier for the area, and any other intererested parties for sites in counties where there is not a functional list serve.
3. Items in red with an asterisk are required. Items in blue with no asterisk are optional. "Titles" are typically for elected officials (e.g., "Senator," "Mayor," "Supervisor").
4. Row 13 shows the expected format of the cells and should be deleted once actual information is entered.
5. To enter data, it is convenient to select the Excel option where keying "Enter" moves the cell one to the right (Office Button, Excel Options, Advanced, Direction, select "right").
6. If a notice comes back indicating that an individual at a residence has moved, the "last name" should be replaced with "Resident" and the first name deleted.

Site Name	Site ID No.	List Last Updated
Ramapo Town Landfill	344004	8/1/2011

Last Name*	First Name*	Title	Address 1*	Address 2	Address 3	Address 4	City*	State*	Zip*	Email	Phone	Fax
Town of Ramapo		Owner	237 Route 59				Suffern	NY	10901			
Rockland County Solid Waste Management Authority		Adjacent	P O Box 354				Hillburn	NY	10931			
Orange & Rockland Util. Inc.		Adjacent	1 Blue Hill Plaza				Pearl River	NY	10965			
Stone Industries		Adjacent	P O Box 8310				Haledon	NJ	07538			
St. Lawrence	Christopher P.	Town Supervisor	237 Route 59				Suffern	NY	10901			
Sampson	Chris	Town Clerk	237 Route 59				Suffern	NY	10901			
Ullman	Yitzchok	Town Board	237 Route 59				Suffern	NY	10901			
Friedman	Daniel	Town Board	237 Route 59				Suffern	NY	10901			
Logan	Brendel	Town Board	237 Route 59				Suffern	NY	10901			
Withers	Patrick	Town Board	237 Route 59				Suffern	NY	10901			
United Water New York		Water Services	360 West Nyack Rd				West Nyack	NY	10994			
Piperato	Paul	County Clerk	1 South Main St, Suite 100				New City	NY	10956			
Rockland County Times		Newspaper	119 Main St				Nanuet	NY	10954			
Mallia	Anthony	Director of Building, I	237 Route 59				Suffern	NY	10901	MalliaA@ramapo-ny.gov	45-357-5100 x280	