

# RECORD OF DECISION

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Columbia Cement Company, Inc.  
Operable Unit Number 02: Off-Site  
State Superfund Project  
Freeport, Nassau County  
Site No. 130052  
March 2017



Prepared by  
Division of Environmental Remediation  
New York State Department of Environmental Conservation

# **DECLARATION STATEMENT - RECORD OF DECISION**

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Columbia Cement Company, Inc.  
Operable Unit Number: 02  
State Superfund Project  
Freeport, Nassau County  
Site No. 130052  
March 2017

## **Statement of Purpose and Basis**

This document presents the remedy for Operable Unit Number: 02: Off-Site of the Columbia Cement Company, Inc. site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit Number: 02 of the Columbia Cement Company, Inc. site and the public's input to the selected remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

## **Description of Selected Remedy**

The elements of the selected remedy are as follows:

Based on the results of the investigations conducted at the site, the remedial measures that have been performed at OU1, and the evaluation presented here, the Department has selected No Further Action with Groundwater Monitoring as the remedy for the OU2. This No Further Action with Groundwater Monitoring remedy is contingent upon implementation of ongoing OU1 remedy. Monitoring will include development and implementation of a Site Management Plan (SMP) for OU1 and OU2. The Department believes that this remedy is protective of human health and the environment and satisfies the remediation objectives described in Section 6.5.

The main components of the remedy are:

1. Green remediation principals and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows;
  - Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;

- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste.

## 2. Site Management Plan

The Site Management Plan for the site required for OU1 will include the following elements related to the OU2 area:

A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- semi-annual sampling of monitoring wells for a minimum of 5 years for VOCs; and
- a schedule of monitoring and frequency of submittals to the Department;
- any additional work to delineate the extent of off-site soil vapor contamination;
- implementation of monitoring and/or mitigation actions if necessary for off-site buildings; and
- the periodic monitoring of the groundwater will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued monitoring is not needed because the remedial goals were achieved or the concentration of contaminants are asymptotic.

## **New York State Department of Health Acceptance**

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

## **Declaration**

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

*March 16, 2017*

Date



Robert W. Schick, P.E., Director  
Division of Environmental Remediation

# RECORD OF DECISION

Columbia Cement Company, Inc.  
Freeport, Nassau County  
Site No. 130052  
March 2017

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## **SECTION 1: SUMMARY AND PURPOSE**

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

## **SECTION 2: CITIZEN PARTICIPATION**

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the selected remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

Freeport Memorial Library  
Attn: Reference Section  
144 West Merrick Road  
Freeport, NY 11520  
Phone: (516) 379- 3274

A public meeting was also held on January 25, 2017, which no members of public attended.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

### **Receive Site Citizen Participation Information By Email**

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at <http://www.dec.ny.gov/chemical/61092.html>

### **SECTION 3: SITE DESCRIPTION AND HISTORY**

**Site Location:** The former Columbia Cement Company, Inc. Site is located at 159 Hanse Avenue in Freeport, Nassau County. The site is bordered by Gershow Recycling, a scrap metal recycling facility to the north. Former Rohm & Haas Electronic Materials borders the property to the east. Apollo Fine Spirits is located to the south of the property. The property is bordered by Hanse Avenue to the west. Farber Plastics Inc. and Love & Quiches Inc. are located on the opposite (west) side of Hanse Avenue.

**Site Features:** The site is approximately 2 acres in size and is currently vacant. The site building covers approximately 65,000 square feet, and consists of former offices, material storage, production rooms, and warehousing. Freeport Creek is located 500 feet (ft) west of the site and Stadium Park Canal is 1,000 ft east of the site. Stadium Park Canal merges with Freeport Creek approximately 1,500 ft southeast of the site. From this point, surface water flows south through tidal marshes to the Atlantic Ocean, approximately 5 miles south of the site. The site is very flat, ranging from 5 to 10 ft above mean sea level (MSL). Surface water at the site drains to the west toward Freeport Creek. Storm drains located on site also drain to Freeport Creek. Ten 8,000 gallon underground storage tanks (USTs) were located near the southeast corner of the property.

**Current Zoning/Use(s):** The site is zoned industrial. The surrounding parcels are currently used for a combination of industrial and commercial purposes.

**Past Use of the Site:** Columbia Cement Company was the occupant of the site building since it was constructed 1969. Prior to 1969, the Village of Freeport operated a municipal landfill within this area of Freeport before its development for commercial/industrial use. Columbia Cement Company manufactured various grades of contact cement and other industrial/commercial adhesives at the site. The southeastern portion of the site was served as an unloading and storage area for process chemicals. Between 1969 and 1988, there were twenty-two 1,000 gallon underground storage tanks (USTs) located in the southeastern part (southern tank farm) of the site to store chemicals such as toluene, hexane, acetone and Laktane (light petroleum

distillate). On April 28, 1988, during delivery of approximately 3,500 gallons of 1,1,1-trichloroethane (1,1,1-TCA) to an above ground tank in the building, the truck became over pressurized causing the tanker end to buckle, resulting in the loss of the entire load. The Department responded to the spill. Approximately 1,740 gallons of the spilled material was recovered with the remaining 1,760 gallons of spilled material entering into a storm drain. An undetermined amount of spilled material also entered into the drainage system which leads to Freeport Creek. The 22 USTs and piping were removed in September 1988. Four additional 6,000 gallon USTs were located to the east of the 22 USTs. These tanks were reportedly used to store acetone, hexane, Laktane and toluene between 1969 and 1989. These tanks and associated lines were removed in January 1990. A 6,000 gallon UST was also located in the southern tank farm that collected floor drain runoff from the manufacturing areas of the building. This UST was removed in 1994. Ten 8,000-gallon USTs were installed in the southern tank farm area. Five of these USTs (the southern tank farm) were installed in the Spring of 1988 (prior to the 1,1,1-TCA spill) and the remaining five (the northern tank farm) were installed after the spill. These 10 USTs were closed and removed by the current site owner in September 2004.

**Operable Units:** The site was divided into two Operable Units. An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

Operable Unit 1 (OU1) consists of the 2 acre site property. A Record of Decision (ROD) was issued for OU1 in March 2008.

Operable Unit 2 (OU2) is defined as the off-site area immediately surrounding the site beyond the 2 acre property where contaminants have migrated from the site (OU1).

**Geology/Hydrogeology:** The site geology consists of five units beneath the site. In order of increasing depth, these units are: fill material; tidal marsh deposits; the Upper Glacial deposits, a clay unit; and the Magothy aquifer. The fill material is encountered across the entire site and consists of reworked native soil with debris related to the previous site use as a municipal landfill. The fill material has an average thickness of about 11 ft. Tidal marsh deposits are present in some areas of the site. The tidal marsh deposits are encountered at an average depth of 9.5 ft and has an average thickness of 4 ft. Groundwater at the site is encountered at 5.5 to 6.8 feet bgs and generally flows toward Freeport Creek, but is tidally influenced. Due to the proximity to Freeport Creek, the shallow water-bearing unit, which includes the fill material, tidal marsh deposits and Upper Glacial deposits, is impacted by saltwater and is not suitable for drinking water. Potable water in the area is supplied by the Village of Freeport.

An active extraction well and a diffusion well for a cooling system installed in 1994 are located approximately 800 feet southeast of the site (100 Doxsee Drive, Freeport). These wells are screened below the clay unit.

Operable Unit (OU) Number 02 is the subject of this document.

A Record of Decision was issued previously for OU 01.

A site location map is attached as Figure 1.

#### **SECTION 4: LAND USE AND PHYSICAL SETTING**

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to industrial use as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

#### **SECTION 5: ENFORCEMENT STATUS**

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

Illinois Tool Works (ITW)

Columbia Cement Company, Inc.

British Petroleum (BP)

TACC International Corporation (TACC)

The Columbia Cement Company Inc. produced adhesives for a variety of applications. Burmah Castrol Holdings, Inc. (Burmah Castrol) was the parent corporation of Columbia Cement Company, Inc.

In 1996, the property was sold to TACC International Corporation (TACC). TACC was subsequently acquired by Illinois Tools Works (ITW) in 1998. The Department and the Burmah Castrol Holdings, Inc. entered into a Consent Order on May 29, 1998. The Order obligates the responsible parties to implement a full remedial program. In 2001, British petroleum (BP) purchased all Burmah Castrol Holdings and assumed liability for the 1,1,1-TCA spill. ITW currently owns the property.

#### **SECTION 6: SITE CONTAMINATION**

##### **6.1: Summary of the Remedial Investigation**

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the



nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- air
- groundwater
- surface water
- sediment
- soil vapor
- indoor air
- sub-slab vapor

#### **6.1.1: Standards, Criteria, and Guidance (SCGs)**

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: <http://www.dec.ny.gov/regulations/61794.html>

#### **6.1.2: RI Results**

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action



are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified for this Operable Unit at this site is/are:

1,1,1-trichloroethane	chloroethane
1,1-dichloroethane	

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- drinking water

## **6.2: Interim Remedial Measures**

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

## **6.3: Summary of Environmental Assessment**

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 02.

Operable Unit 2 (OU2):

Nature and Extent of Impacted Groundwater and Impacted Vapor:

The groundwater contamination originates from the site (OU1) and extends into the off-site area horizontally approximately 500 feet towards Freeport Creek and extends to a depth of approximately 35 feet bgs. The mean tide groundwater flow direction is toward the west. The primary site-related contaminants of concern (COCs) for the off-site groundwater include chloroethane (CA) and 1,1-dichloroethane (DCA), the breakdown products of 1,1,1 - trichloroethane (TCA). The anaerobic groundwater conditions created by the presence of peat and former municipal landfill material beneath the site are enhancing the breakdown of the 1,1,1 -TCA.

Prior to OU1 Remediation:

In 2009, the highest CA concentrations were detected at 490 parts per billion (ppb) in well a located close to western site boundary on Hanse Avenue and 5.1 ppb in a second well located close to Freeport Creek. Lower concentrations of CA were detected along the northern edge of

the plume at 170 ppb and along the southern edge of the plume at the highest level of 9.8 ppb near Hanse Avenue.

#### Post OU1 Remediation:

Since completion of the four rounds of on-site (OU1) in situ chemical oxidation (ISCO) injections for contaminated soil and groundwater in the spill/source area and three rounds of ISCO injections in the loading dock area from 2009 to 2016, the CA concentrations in nearby OU2 monitoring well has decreased from 490 ppb to non-detect. Based on the results of annual groundwater samples collected from 2009 to 2014, the concentrations of CA and 1,1-DCA are decreasing in most of the OU2 monitoring wells except one northern monitoring well where CA levels are fluctuating. In 2014, CA and 1,1-DCA were not detected above laboratory detection limits in eleven out of twelve OU2 monitoring wells but CA and 1,1-DCA were detected at 280 ppb and 20 ppb, respectively in a deep monitoring well across Hanse Avenue from the site.

The OU1 remedy is being implemented to remediate remaining OU1 soil and groundwater contamination. Another round of injections has been completed in October 2016.

**Surface Water/Sediments in Freeport Creek:** Surface water and sediment samples were collected from six locations in Freeport Creek and were analyzed for CA and chlorobenzene, the only compounds detected in wells adjacent to Freeport Creek. These compounds were not detected in any of the surface water or sediment samples.

#### Nature and Extent of Impacted Soil Vapor:

Soil vapor intrusion (SVI) evaluation was completed at a two off-site properties in 2009 and one off-site property in 2016. In 2009, soil vapor samples were collected from a paved lot on the property located east of the site. Results showed 1,1,1-TCA ranging from non-detect to 100  $\mu\text{g}/\text{m}^3$ , 1,1-DCA ranging from 4.5  $\mu\text{g}/\text{m}^3$  to 8.1  $\mu\text{g}/\text{m}^3$ , trichloroethene (TCE) ranging from 5.9  $\mu\text{g}/\text{m}^3$  to 96  $\mu\text{g}/\text{m}^3$  and acetone ranging from 16  $\mu\text{g}/\text{m}^3$  to 120  $\mu\text{g}/\text{m}^3$ . Based on the results of soil vapor sampling, a SVI investigation was recommended at the property located east of the site and SVI evaluations will be conducted by BP when access is granted by the property owner.

Site related compound 1,1,1-TCA was detected in the sub-slab soil vapor samples ranging from non-detect to 6 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) but was non-detect in the indoor air samples. CA was detected in sub-slab soil vapor samples ranging from non-detect to 0.4  $\mu\text{g}/\text{m}^3$  but was not-detected in indoor air samples. 1,1-DCA was detected in sub-slab soil vapor samples ranging from non-detect to 3.9  $\mu\text{g}/\text{m}^3$  but was non-detect in indoor air samples. Other VOC compounds detected include PCE ranging from 0.6  $\mu\text{g}/\text{m}^3$  to 17  $\mu\text{g}/\text{m}^3$  in sub-slab soil vapor and non-detect to 2.8  $\mu\text{g}/\text{m}^3$  in indoor air samples. Acetone was detected ranging from 3.3  $\mu\text{g}/\text{m}^3$  to 190  $\mu\text{g}/\text{m}^3$  in sub-slab soil vapor samples and ranging from non-detect to 260  $\mu\text{g}/\text{m}^3$  in indoor air samples. These are not considered site related.

Based on an evaluation of the indoor air and sub-slab soil vapor concentrations, soil vapor intrusion is not affecting the indoor air quality of the three off-site structures and hence no further actions to address potential exposures are warranted at the three off-site properties investigated.

Resources impacted/threatened: The Long Island Sole Source Aquifer has been impacted with site-related contamination. However, Freeport Creek is not impacted.

#### **6.4: Summary of Human Exposure Pathways**

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

Direct contact with contaminants in the soil is unlikely because the majority of the site is covered with buildings and pavement. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. 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. The potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion in any future on-site building redevelopment and occupancy. In addition, the potential exists for contaminated soil vapor to impact the indoor air of one off-site building.

#### **6.5: Summary of the Remediation Objectives**

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

##### **Groundwater**

###### **RAOs for Public Health Protection**

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

###### **RAOs for Environmental Protection**

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.

- Remove the source of ground or surface water contamination.

### **Soil Vapor**

#### **RAOs for Public Health Protection**

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

## **SECTION 7: SUMMARY OF THE SELECTED REMEDY**

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the feasibility study (FS) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as the No Further Action with Groundwater Monitoring remedy.

The estimated present worth cost to implement the remedy is \$193,000. The cost to construct the remedy is estimated to be \$6,000 and the estimated average annual cost is \$12,000.

The elements of the selected remedy are as follows:

Based on the results of the investigations conducted at the site, the remedial measures that have been performed at OU1, and the evaluation presented here, the Department has selected No Further Action with Groundwater Monitoring as the remedy for the OU2. This No Further Action with Groundwater Monitoring remedy is contingent upon implementation of ongoing OU1 remedy. Monitoring will include development and implementation of a Site Management Plan (SMP) for OU1 and OU2. The Department believes that this remedy is protective of human health and the environment and satisfies the remediation objectives described in Section 6.5.

The main components of the remedy are:

1. Green remediation principals and techniques will be implemented to the extent feasible in

the site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste.

## 2. Site Management Plan

The Site Management Plan for the site required for OU1 will include the following elements related to the OU2 area:

A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- semi-annual sampling of monitoring wells for a minimum of 5 years for VOCs; and
- a schedule of monitoring and frequency of submittals to the Department;
- any additional work to delineate the extent of off-site soil vapor contamination;
- implementation of monitoring and/or mitigation actions if necessary for off-site buildings; and
- the periodic monitoring of the groundwater will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued monitoring is not needed because the remedial goals were achieved or the concentration of contaminants are asymptotic.

## **Exhibit A**

### **Nature and Extent of Contamination**

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide).

### **Waste/Source Areas**

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater and soil vapor.

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas identified at the site include a spill of approximately 3,500 gallons of 1,1,1- TCA in the southeastern portion of the site. The Department responded to the spill. Approximately 1,740 gallons of the spilled material was recovered, with the remaining 1,760 gallons of spilled material entering into a storm drain.

The waste/source areas identified at the site were addressed by the 2008 OU1 ROD Remedy.

### **Groundwater**

A complete round of groundwater sampling data was collected annually from September 2009 through May 2014. Figure 2 provides the locations of wells located off-site. As shown on the table 1, primarily chloroethane (CA) and 1,1-dichloroethane (1,1, -DCA), the breakdown products of 1,1,1- trichloroethane (1,1,1- TCA) have been detected in on-site and off-site groundwater.

Figure 3 provides a summary of the concentrations of contaminants of concern. During the annual sampling round conducted in 2009, the highest CA concentrations were detected along the centerline of off-site plume in monitoring well MW-05-15D at 490 parts per billion(ppb) located closer to western site boundary of the site on the Hanse Avenue. Lower concentrations of CA were detected along the northern edge of the plume 170 ppb in MW-09-19D and 24 ppb in MW-09-25D and along the southern edge of the plume (9.8 ppb in MW-09-21D and non-detect in MW-09-23D).

Based on the results of annual groundwater samples collected from 2009 to 2014, the concentrations of CA and 1,1 -DCA are decreasing in most of the OU2 monitoring wells except one northern monitoring well MW-09-19D where CA levels are fluctuating. During the annual sampling in 2014, CA and 1,1-DCA were not detected above laboratory detection limits in the 13 out of 14 OU2 monitoring wells. However, CA and 1,1 -DCA were detected at 280 ppb and 20 ppb respectively in monitoring well MW-09-19D.

**Table 1 - Groundwater**

Detected Constituents	Concentration Range Detected (ppb) <sup>a</sup>	SCG <sup>b</sup>	Frequency Exceeding SCG
<b>VOCs</b>			
1,1,1-Trichloroethane	ND	5	0 of 74
1,1-Dichloroethane	ND-140	5	4 of 74
Chloroethane	ND-490	5	29 of 66

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.

b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: chloroethane (CA) and 1,1, dichloroethane (1,11-DCA).

#### **Surface Water**

No site-related surface water contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for surface water.

#### **Sediments**

No site-related sediment contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for sediment.

#### **Soil Vapor**

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. At this site due to the presence of buildings in the impacted area a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

Off-site soil vapor intrusion (SVI) evaluations were conducted at a property located west of the site and a property located south of the site in 2009 and at another property located west of the site in 2016. However, results of soil vapor samples collected from a paved lot located east of the property showed 1,1,1-TCA ranging from non-detect to 100 µg/m<sup>3</sup>, 1,1 DCA ranging from 4.5 µg/m<sup>3</sup> to 8.1 µg/m<sup>3</sup>, trichloroethene (TCE) ranging from 5.9 µg/m<sup>3</sup> to 96 µg/m<sup>3</sup> and acetone ranging from 16 µg/m<sup>3</sup> to 120 µg/m<sup>3</sup>. Based on the results of soil vapor sampling, a SVI investigation was recommended at the property located east of the site and BP will conduct the SVI evaluations when access is granted by the property owner.



Spill related compound 1,1,1- TCA was detected in the sub-slab soil vapor samples ranging from non-detect to 6 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) but was non-detect in the indoor air samples. CA was detected in sub-slab soil vapor samples ranging from non-detect to  $0.4 \mu\text{g}/\text{m}^3$  but was not-detected in indoor air samples. 1,1 DCA was detected in sub-slab soil vapor samples ranging from non-detect to  $3.9 \mu\text{g}/\text{m}^3$  but was non-detect in indoor air samples.

Other VOC compounds detected include PCE ranging from  $0.6 \mu\text{g}/\text{m}^3$  to  $16 \mu\text{g}/\text{m}^3$  in sub-slab soil vapor and non-detect to  $2.8 \mu\text{g}/\text{m}^3$  in indoor air samples. Acetone was detected ranging from  $3.3 \mu\text{g}/\text{m}^3$  to  $190 \mu\text{g}/\text{m}^3$  in sub-slab soil vapor samples and ranging from non-detect to  $260 \mu\text{g}/\text{m}^3$  in indoor air samples and were not considered site related.

Based on an evaluation of the indoor air and sub-slab soil vapor concentrations, soil vapor intrusion is not affecting the indoor air quality of the three off-site structures.

No further actions to address potential exposures are warranted at the three off-site properties.

**Exhibit B**

**Description of Remedial Alternatives**

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

**Alternative 1: No Action**

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

*Present Worth:* ..... \$00  
*Capital Cost:* ..... \$00  
*Annual Costs:* ..... \$00

**Alternative 2: In-Situ Chemical Oxidation**

In-situ chemical oxidation (ISCO) of residual contaminated groundwater to restore the groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable. ISCO is a technology used to treat volatile organic compounds in the soil and groundwater. The process injects a chemical oxidant into the subsurface. As the chemical oxidant comes into contact with the contaminant, an oxidation reaction occurs that breaks down the contaminant into relatively benign compounds such as carbon dioxide and water. Residual groundwater contamination in OU-2, downgradient from the source would be treated through ISCO, as it has been treated at OU-1. ISCO, using sodium persulfate activated with hydrogen peroxide has been effective at reducing both soil and groundwater contamination levels at OU1. The chemical oxidant will be applied off-site through multiple injection points with multiple injections as needed to achieve the goal. Performance groundwater sampling will be performed after the subsurface injections are completed to evaluate the effectiveness of the injections in achieving the remedial action objectives for this site and to determine the need for further injections.

*Present Worth:* ..... \$384,645  
*Capital Cost:* ..... \$194,770  
*Annual Costs:* ..... \$12,352

**Alternative 3: No Further Action with Groundwater Monitoring**

This alternative would include, long-term monitoring of groundwater in conjunction with continued treatment of the OU1 source area and groundwater.

*Present Worth:* ..... \$192,987  
*Capital Cost:* ..... \$6,219  
*Annual Costs:* ..... \$12,150

**Exhibit C**

**Remedial Alternative Costs**

<b>Remedial Alternative</b>	<b>Capital Cost (\$)</b>	<b>Annual Costs (\$)</b>	<b>Total Present Worth (\$)</b>
Alternative 1- No Action	0	0	0
Alternative 2- In-Situ Chemical Oxidation (ISCO)	194,770	12,352	384,645
Alternative 3- No Further Action With Groundwater Monitoring	6,219	12,150	192,987

## **Exhibit D**

### **SUMMARY OF THE SELECTED REMEDY**

The Department is selecting Alternative 3, no further action with groundwater monitoring as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by continued implementation of the OU1 Remedy which uses natural degradation processes and long term monitoring of off-site groundwater. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 2.

### **Basis for Selection**

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Public Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The selected remedy, Alternative 3 would satisfy this criterion by long term groundwater monitoring in conjunction with continued treatment of the OU1 source area and groundwater. The onsite ISCO program has been successful at reducing VOC concentrations significantly at the down gradient boundary of OU1. The decrease in CA concentration in most of the OU2 wells during last few years is an indication that the effects of the ISCO injections are being manifested in OU2.

Alternative 1 (No Action) would leave OU2 in its present condition and would not provide any additional protection to public health and the environment and will not be evaluated further.

Alternative 2 would provide active remediation which will restore groundwater to ambient groundwater quality standards, to the extent practicable. Alternative 2 will be protective of human health and environment.

Alternative 3 uses Site Management to provide monitoring and thus providing protection to public health and environment

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.\

Alternatives 2 and 3 would meet SCGs for groundwater to varying degrees. Under Alternative 2, VOCs will be destroyed through oxidation and any remaining VOCs could then degrade through natural processes. Under Alternatives 3, monitoring will verify compliance with SCGs based on additional reduction in source area contamination and natural processes.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation.

Alternative 2 would be protective over the long-term by reducing COC levels in off-site groundwater. However, the area available to conduct ISCO injection in OU2 is limited, so only a small portion of the plume will be addressed. Alternative 3 would be protective over the long-term by periodic monitoring of the groundwater quality. However, both alternatives would provide similar protection for public health.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 2 would reduce the toxicity, mobility and volume of contaminants more quickly by use of chemical treatment. Alternative 3 would also reduce the toxicity, mobility and volume of contaminants by over time by natural processes.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

There would be short-term impacts to the community for Alternative 2 resulting from construction related noise, dust, traffic and road closure are likely. There would be minimal impacts from installation of an additional monitoring well during implementation of Alternative 3.

Alternatives 2 and 3 have short-term impacts which could easily be controlled, however, Alternative 2 would have the greatest short term impact.

The time needed to achieve the remediation goals is the shortest for Alternative 2 and longer for Alternatives 3.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternative 3 is readily implementable. Alternative 2 is also implementable, however, the space available for injection in offsite areas is limited and the generation of soil vapor present a potential risk to the public and building occupants in OU2.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The estimated total present worth for the two alternatives under consideration ranged from \$193,000 to \$385,000. From the least expensive to the most expensive they are alternative 3 and alternative 2.

8. Land Use.

Neither alternative 2 or 3 does not require any change in land use.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It was evaluated after public comments on the Proposed Remedial Action Plan were received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP were evaluated. A responsiveness summary was prepared that describes public comments received and the manner in which the Department will address the concerns raised. No members of the public attended the public meeting and only comments were received from two individuals. The selected remedy is not changed from the selected remedy.

Alternative 3 is being selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



# **APPENDIX A**

## **Responsiveness Summary**

# RESPONSIVENESS SUMMARY

**Columbia Cement Company, Inc. Site  
Operable Unit No. 2: State Superfund Project  
Freeport, Town of Hempstead, Nassau County, New York  
Site No. 130052**

The Proposed Remedial Action Plan (PRAP) for the Columbia Cement Company, Inc. site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on January 9, 2017. The PRAP outlined the remedial measure proposed for the contaminated groundwater and soil vapor at the Columbia Cement Company, Inc. site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on January 25, 2017, which no members of the public attended. The public comment period for the PRAP ended on February 9, 2017.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

Fred Bruzzone submitted an email dated January 9, 2017 which included the following comment regarding the property directly east of the site:

**COMMENT 1:** Needless to say we are very concerned for the health of our staff. This is all new to us, are there any recommendations on actions we should take to ensure whatever contamination does not affect us.

**RESPONSE 1:** A vapor intrusion (VI) sampling work plan for the adjacent property located east of the site was approved on November 6, 2015. However, this sampling was never conducted because the slab is no longer intact. The building is currently vacant, and occupancy is not expected until after the planned renovation/construction has been completed by the property owner. Providing the property owner notifies the Department, the remedial party will conduct VI sampling after the renovation is complete, but prior to building occupancy and actions will be taken to address any identified potential exposures to site contamination via the soil vapor intrusion pathway. It is our understanding that the construction/renovation is anticipated to be complete in the next 6 to 12 month.

Rob Weltner, President of Operation SPLASH submitted an email dated January 10, 2017 which included the following comment:

**COMMENT 2:** From a drinking water/groundwater contamination perspective, additional remediation would give some peace of mind and it is possible that the contamination may not result, thru any long term exposure that could be perceived as a threat to human health.

**RESPONSE 2:** The Columbia Cement Company site was divided into two Operable Units. An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release, or exposure pathway resulting from the site contamination. Operable Unit 1 (OU1) consists of the 2-acre site property. Operable Unit 2 (OU2) is defined as the off-site area immediately surrounding the site beyond the 2-acre site property where contaminants have migrated from the site. A Record of Decision (ROD) was issued for OU1 in March 2008 and included treatment by in-situ chemical oxidation of the on-site groundwater. This treatment is underway. Based on the OU1 remedy and evaluation of the data, the Department selected “No Further Action with Groundwater Monitoring” as the remedy for OU2. Should the monitoring indicate that additional action is needed, the groundwater remedy may be revisited.

**COMMENT 3:** I do not agree with the assessment that since the buildings are vacant at the present time, they do not pose a threat through soil vapor contact. I would suggest additional soil vapor testing as there is no guarantee that the buildings will always remain vacant and periodic monitoring of this site.

**RESPONSE 3:** The on-site building is currently vacant. Should it become reoccupied, installation of an active sub-slab depressurization system, similar to a radon mitigation system, is required as part of the site management plan. Should new buildings be constructed, they must be evaluated to determine if an active sub-slab depressurization system is required.

# **APPENDIX B**

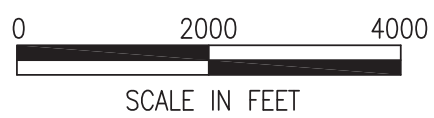
## **Administrative Record**

**Columbia Cement Company, Inc. Site  
Operable Unit No. 2  
State Superfund Project**

**Freeport, Town of Hempstead, Nassau County, New York  
Site No. 130052**

1. Proposed Remedial Action Plan for the Columbia Cement Company, Inc. site, Operable Unit No. 2, dated January 2017, prepared by the Department.
2. Order on Consent, Index No. W1-0813-098-05, between the Department and Burmah Castrol Holdings, Inc., executed on May 29, 1998.
3. Revised Remedial Investigation Work Plan OU2, October 2008, prepared by URS Corporation.
4. Revised Vapor Intrusion Sampling Plan OU2, March 2009, prepared by URS Corporation.
5. Revised Remedial Investigation Report OU2, September 2012, prepared by URS Corporation.
6. Revised Vapor Intrusion sampling Work Plan OU2, November 2015, prepared by URS Corporation.
7. Supplemental Remedial Investigation Report OU2, March 2015, prepared by URS Corporation.
8. Vapor Intrusion Sampling Results OU2, February 2016, prepared by URS Corporation.
9. Revised Feasibility Study Report OU2, March 2016, prepared by URS Corporation.
10. An Email dated January 09, 2017 from Fred Bruzzone of BA272 LLC.
11. An Email dated January 10, 2017 from Rob Weltner of Operation SPLASH.





REFERENCE:  
 U.S.G.S. 7.5 MINUTE QUADRANGLE:  
 FREEPORT, NY (2010)

**SITE LOCATION MAP**  
**FORMER COLUMBIA CEMENT COMPANY, INC.**  
**SITE NO. 130052**  
**159 HANSE AVENUE**  
**FREEPORT, NEW YORK**

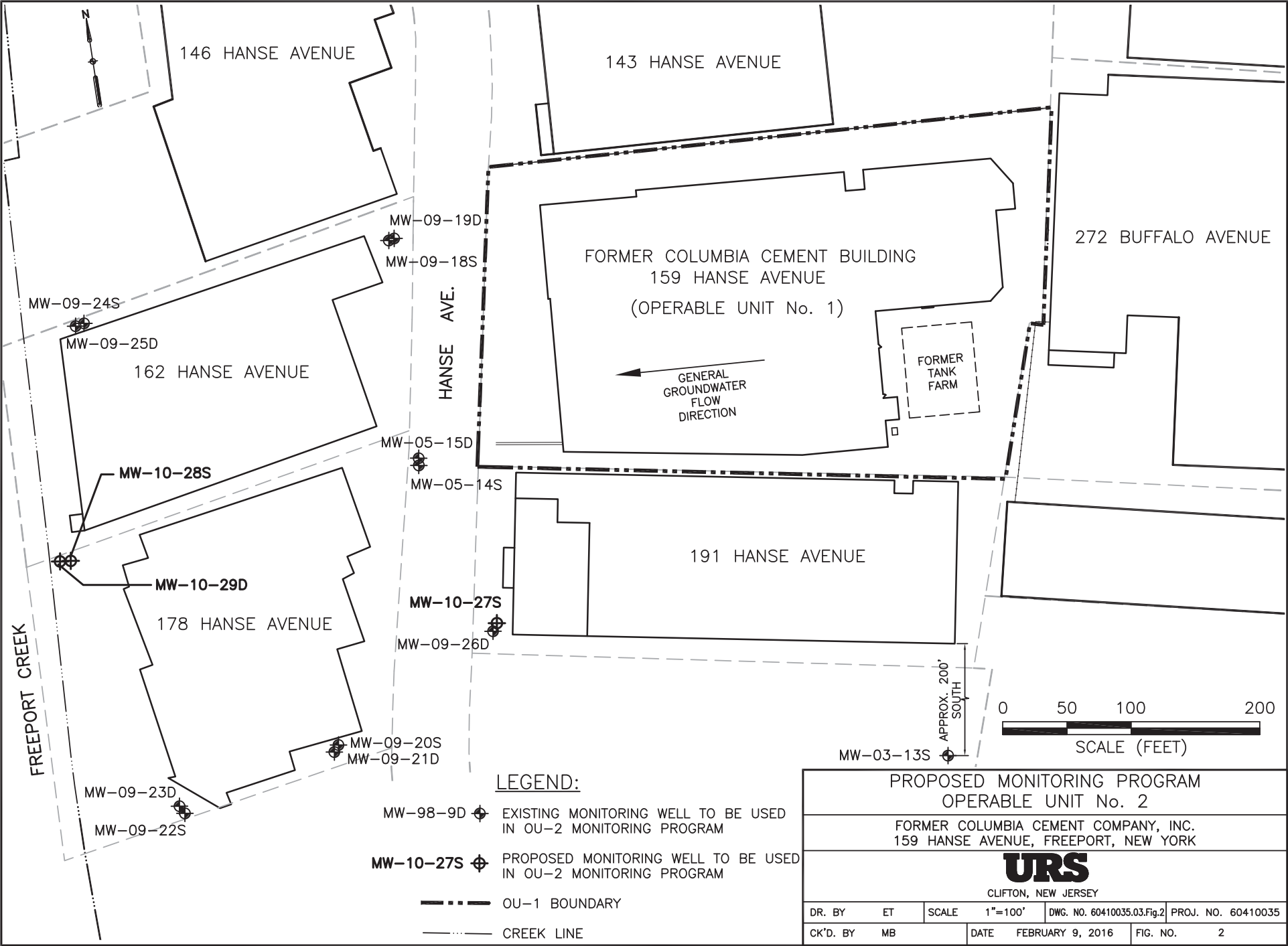


1255 Broad Street  
 Clifton, New Jersey 07013  
 PHONE: (973) 883-8500  
 FAX: (973) 883-8501

DATE: 01/23/15  
 JOB: 11130912

**FIGURE 1**

K:\Cadd\Columbia Cement-Unit No.2\1130912\Unit.No.2\60410035.04-FIG.2(8.5x11).dwg, 8.5X11, 4/12/2016 5:27:43 PM



**LEGEND:**

- MW-98-9D EXISTING MONITORING WELL TO BE USED IN OU-2 MONITORING PROGRAM
- MW-10-27S PROPOSED MONITORING WELL TO BE USED IN OU-2 MONITORING PROGRAM
- OU-1 BOUNDARY
- CREEK LINE

<b>PROPOSED MONITORING PROGRAM</b>					
<b>OPERABLE UNIT No. 2</b>					
FORMER COLUMBIA CEMENT COMPANY, INC. 159 HANSE AVENUE, FREEPORT, NEW YORK					
<b>URS</b>					
CLIFTON, NEW JERSEY					
DR. BY	ET	SCALE	1"=100'	DWG. NO. 60410035.03.Fig.2	PROJ. NO. 60410035
CK'D. BY	MB	DATE	FEBRUARY 9, 2016	FIG. NO.	2



MW-09-19D	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14
1,1-Dichloroethane	4.1	ND	130	ND	ND	20
Chlorobenzene	<b>7 J</b>	<b>5.2 J</b>	ND	ND	7.1	ND
Chloroethane	170	58	<b>340 R</b>	ND	30	280

MW-09-18S	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14
Chlorobenzene	ND	ND	1.6	ND	ND	ND
Chloroethane	<b>77</b>	<b>37</b>	<b>79R</b>	<b>130</b>	<b>94</b>	ND

MW-09-24S	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14
1,4-Dichlorobenzene	NA	1.8 J	1.7	1.8	1.4 J	1.6 J
Chlorobenzene	4.5 J	3.3 J	ND	ND	ND	ND
Chloroethane	<b>11</b>	ND	<b>13 R</b>	<b>14</b>	4.4 J	ND
MTBE	NA	0.79 J	0.79	ND	ND	ND

MW-09-25D	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14
1,4-Dichlorobenzene	NA	1.8 J	1.9	1.6	1.7 J	ND
Chlorobenzene	<b>6.3 J</b>	<b>5.5 J</b>	ND	ND	ND	ND
Chloroethane	24	6.5 J	16 R	19	23	ND

MW-07-16S	Sept-09	Oct-10	May-14
Chloroethane	52	13	ND
Chlorobenzene	<b>6.8 J</b>	<b>6.5 J</b>	ND

MW-07-17D	Sept-09	Oct-10	May-14
Chloroethane	<b>5.1 J</b>	<b>31 J</b>	ND
Chlorobenzene	<b>8.9 J</b>	<b>9.1 J</b>	ND
MTBE	NA	< 0.46	ND

**LEGEND:**

- MW-98-9D
- PROPERTY BOUNDARY LINE
- CREEK LINE
- J QUANTITATIVELY ESTIMATED VALUE
- NA NOT ANALYZED
- R RESULT REJECTED DURING QA/QC REVIEW
- ND NOT DETECTED

MW-09-23D	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14
1,4-Dichlorobenzene	NA	2.9 J	ND	2.4	ND	ND
Chlorobenzene	<b>13 J</b>	<b>14</b>	ND	ND	ND	ND
Chloroethane	ND	3.1 J	ND	ND	ND	ND

MW-09-22S	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14
1,4-Dichlorobenzene	NA	ND	2.6	ND	ND	ND
Chlorobenzene	<b>5.9 J</b>	2.9 J	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND

MW-09-21D	Sept-09	Oct-10	Oct-11	May-13	May-14
1,4-Dichlorobenzene	NA	ND	1.5	ND	ND
Chlorobenzene	5.0 J	ND	4.4	ND	ND
Chloroethane	<b>9.8 J</b>	ND	<b>29</b>	<b>41</b>	ND

MW-05-15D	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14
1,1-DCA	ND	ND	140	ND	ND	ND
Carbon Disulfide	ND	ND	ND	9.6 J	31 J	25 J
Chloroethane	<b>490 D</b>	<b>140</b>	<b>430 R</b>	<b>100</b>	<b>13</b>	ND
Chlorobenzene	<b>7 J</b>	ND	ND	ND	ND	ND
Methylene Chloride	<b>13</b>	ND	ND	ND	ND	ND
Xylene	NA	ND	ND	ND	ND	ND

MW-05-14S	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14
Chloroethane	ND	ND	4.7 R	ND	ND	ND
Chlorobenzene	<b>8.4 J</b>	<b>6.2 J</b>	ND	ND	ND	ND
Carbon Disulfide	NA	ND	ND	ND	ND	9.0
Benzene	NA	ND	ND	ND	ND	ND

MW-09-26D	Sept-09	Oct-10	Oct-11	May-13	May-14
1,4-Dichlorobenzene	NA	2.1 J	2.4	2.5 J	ND
Chlorobenzene	<b>13</b>	<b>14</b>	<b>13</b>	<b>13</b>	ND
Chloroethane	<b>36</b>	4.2 J	<b>35</b>	<b>6.7 J</b>	ND

MW-09-20S	Sept-09	Oct-10	Oct-11	May-13	May-14
1,4-Dichlorobenzene	NA	ND	1.0	ND	ND
Chlorobenzene	ND	ND	1.7	ND	ND
Chloroethane	ND	ND	ND	ND	ND
Carbon Disulfide	NA	ND	0.25 JB	ND	57

146 HANSE AVENUE

143 HANSE AVENUE

FORMER COLUMBIA CEMENT BUILDING  
159 HANSE AVENUE  
(OPERABLE UNIT No. 1)

272 BUFFALO AVE.

HANSE AVENUE

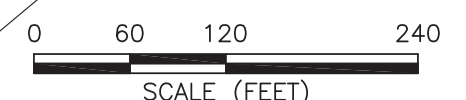
178 HANSE AVENUE

191 HANSE AVENUE

FREEPORT CREEK

HANSE AVE.

GENERAL GROUNDWATER FLOW DIRECTION



APPROX. 200' SOUTH

### GROUNDWATER VOC SAMPLING RESULTS OPERABLE UNIT No. 2

FORMER COLUMBIA CEMENT COMPANY, INC.  
159 HANSE AVENUE, FREEPORT, NEW YORK



CLIFTON, NEW JERSEY

DR. BY	ET	SCALE	1"=120'	DWG. NO.	60410035.01.Fig.3	PROJ. NO.	60410035
CK'D. BY	MB	DATE	FEBRUARY 23, 2016	FIG. NO.	3		

**NOTE:**  
ALL RESULTS IN µg/L. BOLD INDICATES RESULT EXCEEDS NYSDEC GROUNDWATER STANDARD.