Dzus Fastener Co., Inc. Operable Unit Number 04: Willetts Creek and Lake Capri State Superfund Project West Islip, Suffolk County Site No. 152033 October 2018



NEW YORK STATE OF OPPORTUNITY. Conservation

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

# **PROPOSED REMEDIAL ACTION PLAN**

Dzus Fastener Co., Inc. Operable Unit 4 West Islip, Suffolk County Site No. 152033 October 2018

### SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing 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 proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred 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 Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

# SECTION 2: <u>CITIZEN PARTICIPATION</u>

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

West Islip Public Library Attn: Donna MacGilvray 3 Higbie Lane West Islip, NY 11795 Phone: (631) 661-7080

### A public comment period has been set from:

### 10/1/2018 to 10/31/2018

### A public meeting is scheduled for the following date:

### 10/16/2018 at 7:00 PM

### Public meeting location:

### West Islip Senior High School, 1 Lions Path, West Islip, NY

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a questionand-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through 10/31/2018 to:

Payson Long NYS Department of Environmental Conservation Division of Environmental Remediation 625 Broadway Albany, NY 12233 payson.long@dec.ny.gov

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

#### **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 <a href="http://www.dec.ny.gov/chemical/61092.html">http://www.dec.ny.gov/chemical/61092.html</a>

# SECTION 3: SITE DESCRIPTION AND HISTORY

### Location:

The Dzus Fastener Co. site is a one-acre site located at 425 Union Boulevard in a suburban area of West Islip. The site is bounded by Union Avenue to the south, the former Dzus facility and Beach Street to the west, and Long Island Rail Road tracks to the north.

### Site Features:

The site is triangular in shape and relatively flat, and is defined as the portion of the former fouracre Dzus facility where leaching pools were located. There are no buildings located on the site. Immediately to the east of the site is Willetts Creek which drains south into Lake Capri, an eightacre man-made lake. Lake Capri drains into the tidal portion of Willetts Creek through a culvert located under Montauk Highway. There are no areas of exposed surface soils on the site.

### Current Zoning and Land Use:

The site is located in a mixed residential, commercial, and industrial area. The facility is currently vacant. Current zoning for the property (including the site) is industrial-manufacturing and processing. The nearest residence is approximately 150 feet north of the site.

### Past Use of the Site:

The Dzus Fastener Co. Inc., produced fasteners and springs from 1932 to 2015, and moved operations to 425 Union Boulevard in 1937. Operations included the design and manufacture of quarter-turn fasteners, quick acting latches and panel strips using steel, stainless steel, aluminum and plastic. The products were used by the military and commercial aerospace industries. The fasteners were also used in the transportation, electronics, air handling, refrigeration, motor control and computer industries to secure access panels, covers or detachable components. Wastes from metal plating, tumbling, electroplating, chromic acid, anodizing, and special finishing operations consisted of oils, heavy metals and salts. Leaching pools on-site were used for the disposal of wastes.

#### Operable Units:

The site was divided into six operable units. An operable unit (OU) represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

Operable Unit 1 (OU1) originally encompassed the entire four-acre on-site source area at the eastern end of the former Dzus facility property and the Dzus facility itself. The OU1 Record of Decision (ROD) was issued March 1995. In 2016, a boundary modification reduced the site to only the one-acre stabilized area.

Operable Unit 2 (OU2) included contaminated sediments in a portion of Willetts Creek adjacent to the Beach Street Middle School footbridge, Lake Capri, and groundwater downgradient of the facility. The OU2 ROD was issued October 1997. A remedial action for OU2 was implemented in 1999.

Operable Unit 3 (OU3) encompasses the area of off-site impacted wetlands located behind a strip mall on Union Boulevard and includes a portion of the Willetts Creek channel from the Captree 2 Plaza to 500 feet south of the high school footbridge (CR36), West Islip School properties, and low-lying residential property that was re-contaminated after the OU2 remedy was implemented.

Operable Unit 4 (OU4) encompasses contaminated soils on properties abutting Willetts Creek located south of the high school footbridge and bordering Lake Capri. OU4 also includes the sediments within Willetts Creek, and portions of Lake Capri that were re-contaminated after the OU2 remedy was implemented or were not remediated as part of OU2.

Operable Unit 5 (OU5) encompasses contaminated soils on properties abutting the tidal portion of Willetts Creek located south of the Montauk highway. OU5 also includes the contaminated sediments within the tidal portion of Willetts Creek.

Operable Unit 6 (OU6) is the RCRA closure for the DFCI facility, and included the decontamination and washing of the building floors and walls, excavation and removal of contaminated soils, installation and operation of a soil vapor extraction system, and remediation and closure of contaminated leaching pools. The RCRA Closure was completed June 2018.

Site Geology and Hydrogeology:

The Site is located on the Long Island glacial sand deposits, which have been designated as a sole source aquifer. Depth to groundwater (to the Upper Glacial Aquifer) is approximately 10 feet and flow is generally southward. The Upper Glacial Aquifer is underlain by the Magothy aquifer, which is the primary source of drinking water.

Willetts Creek is a north-south flowing, slow moving creek, approximately 16-23 feet wide and less than 7 inches in depth. Willetts Creek is located immediately to the east of the Dzus facility, and flows in a southerly direction approximately 4,500 feet to Lake Capri, a privately owned, 8-acre man-made lake. From Lake Capri, water flows to the tidal portion of the creek, where it flows another 3,000 feet south to Babylon Cove. The creek is fed by both upstream surface water runoff and groundwater discharge. The creek is divided into an upper and a lower reach. The upper portion is the freshwater reach located upstream of Lake Capri; the lower portion is the tidal channelized reach downstream of Lake Capri. The sediments in Willetts Creek are composed of organic-rich depositional material overlying native sands and gravel.

Operable Unit (OU) Number 04 is the subject of this document.

A Record of Decision was issued previously for OU 01, 02, and 03. A Record of Decision will be issued for OU 05 in the future.

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 residential use (which allows for restricted-residential use, commercial use and industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation 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:

Dzus Fastener Co., Inc.

Dzus International Limited

DFCI Solutions

The Department has settled claims for OU2 with two of the three identified PRPs. As OU3 and OU4 are a redo of OU2, the State is precluded by prior settlements from seeking recovery of additional response costs. In addition, the Office of the Attorney General determined that there were insufficient grounds to pursue the third PRP for OU2 response costs.

# SECTION 6: SITE CONTAMINATION

# 6.1: <u>Summary of the Remedial Investigation</u>

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:

- surface water
- soil
- sediment

# 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: <u>http://www.dec.ny.gov/regulations/61794.html</u>

# 6.1.2: <u>RI Results</u>

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:

cadmium

#### chromium

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

soilsediment

# 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 OU4 Remedial Investigation.

# 6.3: <u>Summary of Environmental Assessment</u>

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.

The Fish and Wildlife Resources Impact Analysis (FWRIA) for OU 04, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

Remediation for OU1 and OU2 is complete. Prior to remediation, the primary contaminants of concern were cadmium and trivalent chromium in soil, sediment and groundwater. Remedial actions are preventing contaminants from migrating from the stabilized soil monolith into the environment. Residual contamination in the soil, groundwater, and sediment is being managed under a Site Management Plan.

For OU3: Soil and Sediment Contamination North of the West Islip High School footbridge.

Soil, surface water and sediments were analyzed for metals. Based on investigations conducted to date, the primary contaminants of concern for OU 3 are cadmium and trivalent chromium.

Soil - Soils located on low lying residential areas and along the banks of Willetts Creek on the Beach Street Middle School property were impacted by the primary contaminants of concern, with concentrations ranging from 1.4-84 parts-per-million (ppm) of cadmium and 5.5-130 ppm of trivalent chromium. Cadmium and trivalent chromium levels exceeded soil cleanup objectives for residential use of 2.5 ppm and 36 ppm, respectively. Impacted soils on the Beach Street Middle School property were removed during an interim remedial measure (IRM). The remaining contamination is being addressed by the selected remedy for OU3.

Sediment - Sediments in Willetts Creek have been impacted by the primary contaminants of concern, with concentrations ranging from 0.61-8,200 ppm of cadmium and 0.43-60 ppm of trivalent chromium. Cadmium and chromium levels exceeded the lowest end of the Class B Sediment Guidance Value of 1 ppm and 43 ppm, respectively. Sediments that do not exceed lowest end of the Class B are considered to present little or no potential risk to aquatic life. A majority of the contaminated sediment is located in the northern reaches of the Willetts Creek, south of Union Boulevard. The contaminated sediment is being addressed by the selected remedy for OU3. Impacted sediments from the Beach Street Middle School and High school footbridges were removed during an interim remedial measure (IRM). The remaining contamination is being addressed by the selected remedy for OU3.

Surface water contamination was detected in Willetts Creek during the September 21 2017 groundwater sampling event. Cadmium was detected at 5.6 ug/L exceeding the lowest end of the NYSDEC Class B surface water criteria 5.0 ug/L.

For OU4: Soil and Sediment Contamination south of the High School footbridge.

Soil, surface water and sediments were analyzed for metals. Based on investigations conducted to date, the primary contaminants of concern for OU 4 are cadmium and trivalent chromium.

Soil - Soils located on low lying residential areas were impacted by the primary contaminants of concern, with concentrations ranging from 2.1-47 ppm of cadmium and 7.6-50 ppm of trivalent chromium. Cadmium and trivalent chromium levels exceeded soil cleanup objectives for unrestricted use of 2.5 ppm and 30 ppm, respectively. This document addresses the OU 4 soil contamination.

Sediment - Sediments in Willetts Creek and Lake Capri have been impacted by the primary contaminants of concern. In freshwater sediment, concentrations ranged from 1.4-150 ppm of cadmium and 7-82 ppm of trivalent chromium. Cadmium and chromium levels exceeded the lowest end of the Class B Sediment Guidance Value of 1 ppm and 43 ppm, respectively. Sediments that do not exceed lowest end of the Class B are considered to present little or no potential risk to aquatic life and Class C sediments are considered to have a high potential to be toxic to aquatic life. This document addresses the OU4 sediment contamination.

No surface water contamination was detected during the OU4 investigation.

# 6.4: <u>Summary of Human Exposure Pathways</u>

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*.

Since the site is covered by an asphalt cover, people will not come into contact with site related soil and groundwater contamination on-site unless they dig below this cover. People could contact contaminants in soil adjacent to the site by walking on the soil, digging or otherwise disturbing the soil, and in groundwater off-site if they dig below the ground surface. Contaminated groundwater is not used for drinking on- or off-site as the area is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into 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 on-site does not represent a current concern, however, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any redevelopment and occupancy. Environmental sampling indicates soil vapor intrusion is a concern for redevelopment or re-occupancy of the adjacent off-site property. People may come into contact with contaminants present in sediments and floodplain soils of Willetts Creek, Lake Capri, and the Tidal Area South of Lake Capri when entering, exiting, and using the waterbodies and adjacent wetland and floodplain areas. A fishing consumption advisory exists for Lake Capri connecting water bodies. and https://www.health.ny.gov/environmental/outdoors/fish/health advisories/

# 6.5: <u>Summary of the Remediation Objectives</u>

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:

# <u>Soil</u>

# **RAOs for Public Health Protection**

Prevent ingestion/direct contact with contaminated soil.

# **RAOs for Environmental Protection**

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

# <u>Sediment</u>

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

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination which may result in fish advisories.

### **RAOs for Environmental Protection**

- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
- Restore sediments to pre-release/background conditions to the extent feasible.

# SECTION 7: SUMMARY OF THE PROPOSED 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 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 proposed remedy is set forth at Exhibit D.

The proposed remedy is referred to as the Excavation of Soil to Residential Use SCOs, Removal of Sediment in Willetts Creek to Native Material and Removal of Sediment in Lake Capri to Lowest End of the Class B SGVs.

The estimated present worth cost to implement the remedy is \$18,200,000. The cost to construct the remedy is estimated to be \$18,100,000 and the estimated average annual cost is \$3,200.

The elements of the proposed remedy are as follows:

- 1. A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;
  - a. Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
  - b. Reducing direct and indirect greenhouse gases and other emissions;
  - c. Increasing energy efficiency and minimizing use of non-renewable energy;
  - d. Conserving and efficiently managing resources and materials;
  - e. Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
  - f. Maximizing habitat value and creating habitat when possible;
  - g. Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
  - h. Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.
- 2. All impacted soils which exceed residential use SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported from the zone of impact for disposal. The zone of impact is defined by the portion of Willetts Creek and Lake Capri (and associated floodplains) where cadmium or chromium were observed above residential SCOs or above the lowest end of the Class B Sediment Guidance Values. Approximately 1,800 cubic yards of contaminated soil will be removed from the zone of impact. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the zone of impact. The excavated areas will be replaced with topsoil, plantings, and grass seed and restored to a condition similar to existing conditions to the extent feasible.
- 3. Removal of approximately 19,000 cubic yards of sediment from:
  - Willetts Creek, including removal of sediment to native material in the zone of impact. The zone of impact is the portion of Willetts Creek (and associated floodplain) where cadmium or chromium were observed above residential SCOs for soil and for sediment above the lowest end of the Class B SGVs.
  - Lake Capri, including removal of sediments that exceed the lowest end of the Class B SGVs and confirmatory sampling. Existing structures will be protected where feasible or removed and replaced.
- 4. A restoration plan will be included in the remedial design to specify the details of the restoration using appropriate material would not exceed the lowest end of the Class B Sediment Guidance Values. Wetland habitat will be restored to the maximum extent possible while allowing sufficient

flood capacity and appropriate steam flow. Details regarding substrates, plantings, and seeding for restoration will be included in the restoration plan. The design will include a monitoring plan for areas disturbed by the remedy and all activities will be consistent with the requirements of 6 NYCRR Part 608.

#### 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 metals and the environmental media are soil, surface water, and sediment. For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

#### Soil

Soil samples were collected from 175 locations on residential properties abutting Lake Capri and Willetts Creek. The samples were collected from surface soils, sub-surface soils, and gardens, if present, to assess direct human exposure. Contaminated surface soil (0 to 2 inches deep) was found in limited areas on the banks of Willetts Creek and the eastern properties abutting Lake Capri. Sub-surface soil (6 inches to 1 foot deep) contamination was discovered along the banks of Lake Capri on moderately low lying residential properties, and where fill was brought in to raise the property level to reduce flooding. Sampling results exceeded unrestricted and residential SCGs for metals. The results are presented in Figure 2 and Table 1.

#### Table 1 – OU4 Soil

Detected Constituents	Concentration Range Detected (ppm) <sup>a</sup>	Unrestricted SCG <sup>b</sup> (ppm)	Frequency Exceeding Unrestricted SCG	Residential Use SCG <sup>c</sup> (ppm)	Frequency Exceeding Residential SCG
Cadmium	2.1-47	2.5	21 of 175	2.5	21 of 175
Chromium, Trivalent	7.6-50	30	17 of 175	36	12 of 175

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil.

b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Residential Use, unless otherwise noted.

The primary contaminants of concern are cadmium and trivalent chromium. The contaminants were discharged into on-site leaching pools then discharged to Willetts Creek via pipe and were then transported by Willetts Creek to the shoreline soils of Willetts Creek and Lake Capri. The pipe discharging to Willetts Creek was removed during the Remedial Action of Operable Unit 1. Cadmium and trivalent chromium were found in surface soils at concentrations exceeding unrestricted and residential SCOs.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, cadmium and trivalent chromium.

#### Surface Water

Surface water was collected in conjunction with collocated sediment samples within Lake Capri. A total of 20 surface water samples were collected. No contaminants were detected in any of the surface water samples collected. Figure 3 and Table 2 present the surface water sampling results.

#### Table 2 – OU4 Surface Water

Constituents	Concentration Range Detected (ppb) <sup>a</sup>	Class C Water SGV <sup>b</sup> (ppb)	Frequency Exceeding Class C Water SGV
Cadmium	Not detected	1.4	0 of 20
Chromium, Trivalent	Not detected	49	0 of 20

a - ppb: parts per billion, which is equivalent to micrograms per liter,  $\mu$ g/L, in water.

b - SGV: New York State Ambient Water Quality Standards and Guidance Values for fish propagation in Class C Water (1998)

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

Sediment samples were collected in Lake Capri and Willets Creek upstream of Lake Capri. Samples were collected from the sediment surface to a depth where the sediment-native sand interface was encountered and deeper to ensure the native sand was not impacted. Contaminated sediment was found in Willetts Creek and Lake Capri. The most contaminated sediment was found in the upper 1-foot interval, with a maximum depth of 6 feet in limited areas. Of the 146 samples that were collected, 96 samples exceeded the lowest end of the Class B Sediment Guidance Values (SGV) for cadmium while five samples exceeded the lowest end of the Class BSGV for trivalent chromium. The results are presented in Figure 4 and Table 3.

### Table 3 – OU4 Sediment (Freshwater)

Detected Constituents	Concentration Range Detected (ppm) <sup>a</sup>	SGV <sup>b</sup> Class A (ppm)	Frequency Exceeding Class A	SGV <sup>c</sup> Class B (ppm)	Frequency in Class B Range	SGV <sup>d</sup> Class C (ppm)	Frequency Exceeding Class C
Inorganics							
Cadmium	1.4-150	<1	96/146	1-5	22/146	>5	74/146
Chromium, Trivalent	7-82	<43	5/146	43-110	5/146	>110	0/146

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in sediment.

b - SGV: Class A-The Department's Screening and Assessment of Contaminated Sediment (June 2014).

c - SGV: Class B-The Department's Screening and Assessment of Contaminated Sediment (June 2014).

d - SGV: Class C-The Department's Screening and Assessment of Contaminated Sediment (June 2014).

#### **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 for public health and the environment.

#### Alternative 2: Excavation of Soil to Residential Use SCOs, Removal of Sediment in Willetts Creek to Native Material and Removal of Sediment in Lake Capri to Lowest End of the Class B SGVs

This alternative will include:

- 1. Pre-design investigation to refine excavation boundaries.
- 2. All zone of impact soils which exceed residential use SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported from the zone of impact for disposal. The zone of impact is defined by the portion of Willetts Creek and Lake Capri (and associated floodplains) where cadmium or chromium were observed above residential SCOs or above the lowest end of the Class B Sediment Guidance Values. Approximately 1,800 cubic yards of contaminated soil will be removed from the zone of impact. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the zone of impact. The excavated areas will be replaced with topsoil, plantings, and grass seed and restored to a condition similar to existing conditions to the extent feasible or replaced.
- 3. Clearing, chipping, and grubbing of woody material and subgrade preparation of the zone of impact will be conducted.
- 4. Removal of approximately 19,000 cubic yards total of sediment from:
  - Willetts Creek including removal of sediment to native material in the zone of impact. The zone of impact is the portion of Willetts Creek (and associated floodplain) where cadmium and chromium were consistently observed above residential SCOs for soil and for sediment above the lowest end of the Class B SGVs.
  - Lake Capri, including removal of sediment that exceed the lowest end of the Class B SGVs, including confirmatory sampling. Existing structures will be protected where feasible or replaced.
- 5. A restoration plan will be included in the remedial design to specify the details of the restoration. Wetland habitat will be restored to the maximum extent possible while allowing sufficient flood capacity and appropriate steam flow. Details regarding substrates, plantings, and seeding for restoration will be included in the restoration plan. The design will include a monitoring plan for areas disturbed by the remedy and all activities will be consistent with the requirements of 6 NYCRR Part 608.

The remedy requires approximately one year to design and one year to implement. Upon completion, the remedial goals will be met.

Present Worth:	
Capital Cost:	
Annual Costs:	\$3,200

#### Alternative 3: Excavation of Soil to Unrestricted Use SCOs and Removal of Sediment to Class A SGV

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil cleanup objectives listed in Part 375-6.8 (a). This alternative will include:

- 1. Pre-design investigation to refine excavation boundaries.
- 2. All zone of impact soils which exceed unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported from the zone of impact for disposal. Approximately 1,800 cubic yards of contaminated soil will be removed from the zone of impact. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the zone of impact. The excavated areas will be replaced with topsoil, plantings, and grass seed and restored to a condition similar to existing conditions to the extent feasible.
- 3. Clearing, chipping, and grubbing of woody material and subgrade preparation of the zone of impact will be conducted.
- 4. Removal of all sediment (approximately 24,000 cubic yards total) above Class A Sediment Standards in Willetts Creek and Lake Capri. Existing structures will be protected where feasible or replaced.
- 5. Willetts Creek and Lake Capri bathymetry and topography will be restored with appropriate material meeting Class A sediment guidance values. A restoration plan will be included in the remedial design to specify the details of the restoration. Wetland habitat will be restored to the maximum extent possible while allowing sufficient flood capacity and appropriate steam flow. Details regarding substrates, plantings, and seeding for restoration will be included in the restoration plan. The design will include a monitoring plan for areas disturbed by the remedy and all activities will be consistent with the requirements of 6 NYCRR Part 608.

The remedy requires approximately one year to design and one year to implement. Upon completion, the remedial goals will be met.

Present Worth:	
Capital Cost:	\$20,600,000
Annual Costs:	

#### Alternative 4: Excavation with Capping of Sediment

This alternative will include:

- 1. Pre-design investigation to refine excavation boundaries.
- 2. All off-site soils which exceed residential SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. Approximately 1,800 cubic yards of contaminated soil will be removed from the zone of impact. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the zone of impact. The excavated areas will be replaced with topsoil, plantings, and grass seed and restored to a condition similar to existing conditions, to the extent feasible.
- 3. Clearing, chipping, and grubbing of woody material and subgrade preparation of the zone of impact will be conducted.
- 4. Off-site sediments in freshwater which exceed Class A SCGs will be excavated (approximately 11,000 cubic yards total) to maintain existing bathymetry and topography, and capped. The engineered cap system will be placed over the contaminated sediments in Willetts Creek and Lake Capri will be designed, constructed and maintained in conformance with the substantive and procedural requirements of the National Environmental Policy Act (NEPA), the Federal Water Pollution Control Act of 1972, Public Law 92-500, as amended by the Clean Water Act of 1977 (CWA), and the Marine Protection, Research, and Sanctuaries Act (MPRSA).
- 5. Stream bed bathymetry and topography will be restored with appropriate stream bed material. If present, submerged aquatic vegetation in the remediation area will also be restored. The design will include a monitoring plan for areas disturbed by the remedy and all activities will be consistent with the requirements of 6 NYCRR Part 608.
- 6. The existing Site Management Plan for the site will be edited to provide for cap inspection and additional monitoring.

The remedy requires approximately one year to design and one year to implement. Monitoring of the cap will be required indefinitely to ensure protectiveness.

Present Worth:	
Capital Cost:	
Annual Costs:	

# **Remedial Alternative Costs**

<b>Remedial Alternative</b>	Capital Cost (\$)	Annual Costs (\$)	<b>Total Present Worth (\$)</b>
1: No Action	0	0	0
2: Excavation of Soil to Residential Use SCOs, Removal of Sediment in Willetts Creek to Native Material and Removal of Sediment in Lake Capri to lowest end of the Class B SGVs	\$18,100,000	\$3,200	\$18,200,000
3: Excavation of Soil to Unrestricted Use SCOs and Removal of Sediment in Zone of Impact to Class A SGV	\$20,600,000	\$3,200	\$20,700,000
4: Excavation with Capping of Sediment	\$7,220,000	\$3,200	\$7,800,000

### SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 2 Excavation of Soil to residential Use SCOs, Removal of Sediment in Willetts Creek to Native Material and Removal of Sediment in Lake Capri to lowest end of the Class B SGVs as the remedy for this site. Alternative 2 would achieve the remediation goals for the site by removal of approximately 19,000 cubic yards of sediment from Willetts Creek and Lake Capri and approximately 1,800 cubic yards of soil from residential yards. Upon completion of the remedy the above listed areas will be restored. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figures 5.

#### **Basis for Selection**

The proposed 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. <u>Protection of Human Health and the Environment.</u> This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Alternative 1 (No Action) does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2 and 3 best fulfill this criterion by removing the contaminated soil/sediment exceeding applicable SCGs. Alternative 4 fulfills this criterion by closing off the soil/sediment exposure pathway; and thereby, preventing human and biota contact with remaining contamination with proper site management.

2. <u>Compliance with New York State Standards, Criteria, and Guidance (SCGs).</u> 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 best meet this criterion by removing cadmium and chromium in soil exceeding residential and unrestricted use SCOs, respectively. Alternative 2 will remove freshwater sediment above the lowest end of the Class B SGVs to native material in Willetts Creek while Alternative 3 will remove sediments to Class A SGV in Willetts Creek. Alternative 2 will remove freshwater sediment above the lowest end of the Class B SGVs from Lake Capri. Alternative 3 will remove sediment in Lake Capri to Class A SGV. Alternative 4 meets SCGs to a lesser extent by eliminating exposure pathways from the capped material.

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

3. <u>Long-term Effectiveness and Permanence</u>. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Alternatives 2 and 3 fulfill this criterion by permanently removing contaminants at concentrations exceeding residential and unrestricted SCOs, respectively, from the site. Alternative 4 will fulfill this criterion but will require long-term maintenance and monitoring of the cap, as the impacted soil/sediment will remain on site.

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

Alternatives 2 and 3 reduce the toxicity, mobility and volume of waste at the site by removal of contaminated soil and sediment to an approved off-site location. Dewatering the excavated sediment would decrease the volume of waste. Alternative 4 decreases the volume of waste to a lesser degree by removing less soil and sediment than Alternatives 2 and 3. Although Alternative 4 does not reduce the toxicity of the remaining material, it decreases the mobility of the contamination through capping.

5. <u>Short-term Impacts and Effectiveness</u>. 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.

Alternatives 2, 3, and 4 each pose limited short-term risks to the public during excavation/dredging, grading, treatment, and other site activities due to noise, increased truck traffic, and ground disturbance. These effects can be reduced by using designated truck routes and limiting hours of operations to during school hours, when students will be inside the school building and away from these activities. Also, working with School district officials to ensure students are indoors during work periods. Workers can potentially be exposed to contaminated media during excavation and/or treatment activities involved. Risks can be minimized by implementing health and safety controls, including the use of appropriate personal protective equipment and community air monitoring and engineering controls. These alternatives will pose increased short-term risks to the environment in the form of site disturbances. These disturbances will be from tree removal, stream channel changes and temporary draining of Lake Capri. This risk will be reduced though a comprehensive site restoration plan detailing creek and site restoration to a stable riparian corridor. Alternative 4 has fewer short-term impacts than Alternatives 2 and 3, because Alternative 4 disturbs less soil and sediment. Alternatives 2 and 3 will meet remedial objectives upon construction completion, but Alternative 4 will require indefinite monitoring and maintenance to meet remedial objectives.

6. <u>Implementability</u>. 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.

Alternatives 2-4 are implementable, but will present challenges due to the proximity of the schools, residences, and limited access which will impact the timing and efficiency of the implementation.

7. <u>Cost-Effectiveness</u>. 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.

Alternative 4 has the lowest cost. However, Alternative 3 provides the most protection to public health and the environment. Alternative 2 is less costly than Alternative 3, while Alternative 3 provides only slightly more protection to human health and the environment than Alternative 2.

8. <u>Land Use</u>. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Under Alternative 3, the land will be returned to pre-disposal conditions and would allow for any use. Alternatives 2 and 4 would clean up the soil to residential use, which is the current land use. Under Alternative 4, some of impacted media would remain on site, so residual contamination would be controllable with implementation of a Site Management Plan.

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

9. <u>Community Acceptance.</u> Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes

Alternative 2 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.





**Chromium-Soil** 

- Meets Residential SCO
- Meets Restricted Residential SCO

Edmore Ln S

- Meets Commercial SCO
- Meets Industrial SCO

# Cadmium-Soil

- Meets Residential SCO
- Meets Restricted Residential SCO
- Meets Commercial SCO
- Meets Industrial SCO
  - **Exceeds Industrial SCO**

Figure 2 Soil Sampling Results **Operable Unit 4 Dzus Fasteners** Site Number: 152033 West Islip, NY Map Created: July 12, 2018

Montauk Hwy

Capri Ci

250 500 Feet

- 1

0





Figure 3 Lake Capri Surface Water Sampling Locations Dzus Fastener Company, Inc. Site Number : 152033 Legend West Islip, NY

Surface Water Locations

06/20/2018



Map Created: July 12, 2018

250 500 Feet - 1

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