

STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL- SITE INVESTIGATION AND RESTORATION BRANCH

PROPOSED PLAN OF REMEDIAL ACTION OPERABLE UNITS 130 & 132



**St. Georges Bridge
St. Georges, Delaware**

DNREC Project No. DE-1193

This proposed plan of remedial action (proposed plan) presents the Department of Natural Resources and Environmental Control's (DNREC) preferred cleanup alternative for the remediation at the St. Georges Bridge Site (Site) in St. Georges, DE. Due to the aerial extent and number of parcels involved, the proposed plan has been split into three separate proposed plans. In total, all three proposed plans cover 126 properties, and additional parcels as access for sampling was granted, as defined by their tax parcel number. This proposed plan covers Operating Units (OU) OU130 and OU132 or a total of two parcels¹(Table 1). Prior proposed plans were issued in June 2005 for 126 operable units. These two operable units recently granted access for sampling purposes, and were not part of the original proposed plans.

For site-related reports and more information, please see the public participation section of this document.

¹Properties will be identified by tax parcel number. Subject parcels comprise portions of New Castle County as included in tax map numbers 27.4, 35.2 and 35.4. Those parcels located in the area described by New Castle County tax map 27.4 have been given the prefix "A". Similarly, those parcels located in the area described by New Castle County tax maps 35.2 and 35.4 have been given the prefix of "B" and "C", respectively. For example, parcel A41 refers to parcel 41 on tax map 27.4.

INTRODUCTION

The St. Georges Bridge comprises that part of U.S. Highway Route 13 that spans the Chesapeake and Delaware (C&D) Canal in New Castle County, Delaware (part of the Intracoastal Waterway) (Figure 1). The bridge is 4,209 ft long from the south abutment to the north abutment and contains a tied arch that is 450 ft long and 133 ft above the canal water level. The bridge is approximately 28 ft wide. Rainwater runoff from the bridge is transported via downspouts located on the bridge supports to the ground surface directly beneath the bridge. In the vicinity of the bridge there are a number of residential properties, land owned by the federal government, and a former elementary school, located adjacent to the northern support structures.

The town of St. Georges is located on both banks of the C&D Canal, adjacent to Delaware State Route 13 and the St. Georges Bridge (Figure 2). The town is separated into northern and south St. Georges by the canal. The oldest structure in the town dates to the latter part of the 1700's and is currently a residential home on Main St. in northern St. Georges. Most of the buildings on Main St. and Delaware Ave. in northern St. Georges date to the late 1700's and early 1800's and have either brick or wood clapboard exteriors. Some buildings have been re-sided with aluminum, asphalt, and/or vinyl siding. Several of the homes have outbuildings that also appear to be of early construction. Homes in southern St. Georges are generally not as old as in northern St. Georges, but there are some homes that date to the early 1800's.

PURPOSE

The purpose of the proposed plan is to provide specific information about the soil contamination and the cleanup alternatives DNREC has considered. In addition, as described in Section 12 of the Delaware Regulations Governing Hazardous Substance Cleanup (Regulations), DNREC will provide notice to the public and an opportunity for the public to comment on the proposed plan. At the comment period's conclusion, DNREC will review and consider all of the comments received and then will issue a final plan of remedial action (final plan). The final plan shall designate the selected remedy, if required, for the site. All investigations of the site, the proposed plan, comments received from the public, DNREC's responses to the comments, and the final plan will constitute the Remedial Decision Record for this project.

This proposed plan summarizes the Report of Results for the Comprehensive Investigation and the administrative record file upon which this proposed plan is based. Copies of these documents can be obtained or viewed at locations listed at the end of this document.

DNREC's proposed remedy is preliminary and a final decision will not be made until all of the comments are considered. The final remedy selected could differ from the proposed remedy based on DNREC's responses to comments.

SITE DESCRIPTION AND HISTORY

The U.S. Army Corps of Engineers (USACE)-Philadelphia District constructed the St. Georges Bridge in the early 1940s and maintains the Bridge currently. A new highway bridge, designated State Highway Route 1 (SR-1) Bridge, was designed and constructed by the Delaware Department of Transportation (DelDOT) with reimbursement by the USACE and was opened in December 1995. The new bridge is located approximately 2000 ft west of the old bridge. Subsequent to the opening of the new SR-1 Bridge, the USACE curtailed painting maintenance on the St. Georges Bridge. Prior to the most recent repainting of the bridge (completed in 2002), the last re-painting of the St. Georges Bridge occurred in 1985.

In February 2000, it was observed that paint was flaking off St. Georges Bridge and falling onto properties in the vicinity of the bridge. Due to the deteriorating condition of the paint on the bridge and DNREC's findings that the paint chips falling off of the bridge were considered hazardous waste under state rules and regulations, DNREC directed the Army Corps to undertake immediate corrective actions in March 2000 which included the requirement to submit a work plan to investigate and remediate any lead contaminated soils that could be attributed to peeling paint from the St. Georges Bridge.

Additionally, visible paint chips on the ground were removed by the USACE beginning in March 2000. The Army Corps completed repainting of the St. Georges Bridge in June 2002.

INVESTIGATION RESULTS

The Army Corps contracted three separate investigations to evaluate soils on residential properties located in the vicinity of the St. Georges Bridge: the **June 2000 Investigation conducted by EA Engineering**, the **June 2001 Investigation performed by Black and Veatch**, and the **2002 Comprehensive Investigation also performed by EA Engineering** (Figure 3).

During the **June 2000 Investigation**, EA Engineering collected composite surface soil samples from the Commodore MacDonough Elementary School (School) as well as from 54 residential properties surrounding the bridge. The purpose of the investigation was to determine if lead contamination was present in surface soils above DNREC's unrestricted use uniform risk-based standard (URS) of 400 milligrams per kilogram (mg/kg) lead. One composite sample was collected from each parcel. If the property had a garden, play area, or an area of bare soil located on it, then EA Engineering took an additional composite sample specific from these areas. Composite samples consisted of collecting 5 separate surface soil samples from different locations in a yard from a depth of 0-2", blending them together, and then performing analysis.

A total of 71 composite samples were collected and analyzed for lead. Five samples from five different properties exhibited lead concentrations exceeding the Delaware HSCA unrestricted use URS for lead of 400 mg/kg (Figure 4).

The **June 2001 Investigation** conducted by Black and Veatch consisted of collecting 509 discrete samples from 63 parcels. This investigation was performed to delineate the horizontal and vertical extent of lead contamination on residential properties. The properties were selected based on their proximity to the St. Georges Bridge, whether previous sampling results from the composite sampling performed during the previous investigation exceeded 200 milligrams per kilogram (mg/kg) lead, and whether owners were willing to grant USACE access to sample the property. Samples were collected from surface soils at depths of 0-2 in., 4-6 in. and 10-12 in. below ground surface (bgs). Samples were screened with a X-ray fluorescence analyzer (XRF). Lead exceeded 400 mg/kg in 40 parcels and exceeded 1,000 mg/kg in 36 parcels.

The 2002 **Comprehensive Investigation** conducted by EA Engineering involved taking 365 discrete samples from 107 parcels. Five parcel owners refused entry to the USACE consultants. The majority of samples were taken from locations in yards using a grid pattern with a 10-ft spacing between samples, surrounding a previous sampling location with elevated results. Additional samples were also taken from gardens and play areas.

As a minimum at each location, samples were taken at two different depths of 0 to 2 in. and 4 to 6 in. bgs.

The **Comprehensive Investigation** evaluated 107 parcels. 42 of these parcels had lead contamination that exceeded DNREC's remedial action objectives as describe below. Including the results from each of the three investigations, a total of 126 parcels were evaluated for lead concentrations in soil (Table 1).

Of the 42 parcels requiring remediation, DNREC and USACE decided that parcels OU85 to OU98 presented a greater health risk than the remaining 28 parcels based on the fact that these properties had a greater extent of lead contamination. As an interim action DNREC and USACE remediated surface soils at parcels OU85 to OU98 using a cleanup standard of 400 mg/kg.

In addition to Lead, Zinc was detected in soil samples above the unrestricted URS. The maximum concentration of Zinc was entered into the DNREC risk calculator spreadsheet. The Hazard Index risk level for Zinc was less than 1 for unrestrictive use. As a result, no other metals except lead were considered as contaminants of concern.

Addendum 1 and Addendum 2 to the Comprehensive Investigation encompasses the specific sampling of the OU130 and OU132 parcels.

Groundwater Investigation

As part of the ongoing investigations, DNREC collected groundwater samples from 21 residential properties. The samples were analyzed for Total Analyte List (TAL) metals. None of the groundwater samples exceeded the maximum contaminant levels (MCL) standard for drinking water. Therefore, groundwater remediation was not considered in any of the three proposed plans.

REMEDIAL ACTION OBJECTIVES

The following qualitative objectives have been determined to be appropriate for the OU130 and OU132 parcels:

- Protect human health from exposure to unacceptable lead contaminated soils.
- Remediate lead contamination on properties to meet unrestricted use cleanup standards.

These objectives are consistent with the current and proposed future use of the parcels as residential property, state regulations and worker health and safety.

Prior to the **Comprehensive Investigation**, USACE and DNREC agreed to the remediation quantitative objectives listed below:

1. Remediate lead contamination in surface soils on properties to a clean up standard of 400 mg/kg per DNREC's Remediation Standards Guidance 1998.
2. Remediate any hot spot soil areas to 400 mg/kg on any area of the property where the lead concentration exceeded 1000 mg/kg.

The remediation goals are consistent with EPA Office of Solid Waste directive on risk assessments and clean-up of residential soil (EPA 1994) and the DNREC *Remedial Standards Guidance Under the Delaware Hazardous Substance Clean-Up Act* (DNREC 1999). The DNREC guidance requires that 75% of the samples collected are equal to or less than the URS (400 mg/kg), and no one sample exceeds ten times the URS of 400 mg/kg or **4,000 mg/kg**. However, in this case, USACE and DNREC agreed to a more conservative action level for hot spot remediation of 1,000 mg/kg.

PROPOSED PLAN OF REMEDIAL ACTION

Based upon results of investigations and interim removal actions that have been performed to date, three separate remedial action plans are proposed for the Site. This proposed plan covers OU130 and OU132 (Figure 5). These operating units have met the remedial objectives as stated above based on initial testing.

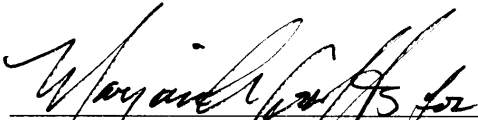
Based on DNREC's evaluation of the site information, which includes current and past environmental investigations, historical information and the above remedial action objectives, the following actions are required for OU130 and OU132:

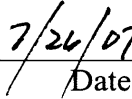
- Since OU130 and OU132 parcels meet the remediation quantitative objectives established for no further action, DNREC proposes no further action for these parcels.

PUBLIC PARTICIPATION

The Department is actively soliciting written public comments and suggestions on the proposed plan of remedial action. The comment period begins June 2007, and ends at the close of business (4:30 p.m.) July 2007.

If you have any questions or concerns regarding the St. Georges Bridge OU130 and OU132, or if you would like to view reports or other information regarding this site, please contact the project manager, Kristen Thornton, 391 Lukens Drive, New Castle, Delaware 19720 or at 302.395.2600. Copies of the Comprehensive Investigation Report will be made available to the public at DNREC's Lukens Drive Office, as well as the historic church located on North Main Street, in St. Georges.


James D. Werner
Director, Division of Air and Waste


Date of Review

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