

**U.S. Environmental Protection Agency  
OPA90 Removal Project Plan**

**I. HEADING**

Date: June 23, 2005

From: Gary Lipson, On-Scene Coordinator  
U.S. EPA, Region I

To: Lt. William D. Adkins, U.S. Coast Guard  
National Pollution Funds Center

Subject: Oil Removal Project Plan  
**Hull Dye and Print Works Facility** (a.k.a. Roosevelt Drive or  
Everready McCallum), Derby, CT

**II. BACKGROUND**

FPN:	014504
ERNS/CERCLIS No.:	L41695
Response Authority:	OPA
State Notification:	CT DEP notified EPA
State OSLTF Opened:	August 25, 1994
Mobilization Date:	August 25, 1994
Current Project Ceiling:	\$6,727,800
Demobilization Date:	TBD
Completion Date:	TBD
Incident Category:	Activities at this site are pursuant to Section 311(c) Federal Water Pollution Control Act (FWPCA), as amended by the Oil Pollution Act of 1990 (OPA), Public Law 101-380, in accordance with the National Contingency Plan (NCP).

**III. SITE INFORMATION and CONDITIONS**

**A. Site Description and Physical Location**

On August 25, 1994, U.S. EPA received a call from the Connecticut Department of Environmental Protection (DEP), requesting access to the Oil Spill Liability Trust Fund (OSLTF), in order to conduct removal actions to prevent the continuing discharge of No.6 fuel oil to the Housatonic River from the former Hull Dye and Print Works facility (the Site) located at 140 Roosevelt Avenue in

Derby, Connecticut. The No.6 fuel oil was observed bubbling up from sediments and rising to the surface in discreet masses, and subsequently spreading out on the surface of the river.

The Site is located on the east bank of the Housatonic River. Response operations on-site have been complicated due to the regional topography and because the river is tidally influenced in that area. Consequently, removal activities have been limited to low tide hours.

Land use in the vicinity of the Site is primarily industrial. The facility which is currently being utilized for warehouse space, also houses two electric producing turbines which are powered by outfall from a canal located just across Route 34 (north of the building). Due to an increase of oil being released into the river when the turbines have operated in the past, these turbines are currently off-line at the request of the EPA. The No.6 oil continuing impact to the subsurface and the Housatonic River is the result of a historic leaking underground oil pipe which connected a 20,000-gallon underground storage tank (UST), located on the northern portion of the Hull property, with an on-site pumphouse. The 20,000-gallon underground tank was used in conjunction with a 500,000-gallon above ground storage tank (AST), located north of the Hull building. Neither of these tanks were in use at the time of discovery.

The Hull property also contains two abandoned 10,000-gallon USTs (see below). Two other 20,000-gallon USTs are owned by Apollo Pizza, and are located northeast of the property on the corner of North Avenue and Route 34; one of the tanks was observed to contain 2 to 3 inches of No.2 fuel oil. A third 20,000-gallon UST (clean; labeled No.6 oil) is located west of the Hull property at Derby Cellular, formerly B.F. Goodrich Sponge Rubber.

#### B. Description of Threat

The discharge of No.6 fuel oil product from the Site was first discovered to be impacting the Housatonic River in July 1994. According to a *Subsurface Investigation, Soil Removal, and Containment System Report* by Land Tech Remedial, Inc. dated November 1996, the oil was first observed bubbling up from sediments and rising to the surface in discreet masses, and then spreading out on the surface of the river. An oil/water sample collected from the river surface was sent to a Complete Environmental Testing, Inc. (CET) laboratory in Shelton, Connecticut for analysis of volatile organic compounds (VOC's) via EPA Methods 8010 and 8020. Analytical results revealed no detectable concentrations of VOC's in the oil.

The No.6 oil impact to the subsurface and the Housatonic River is the result of a leaking underground oil pipe which connected a 20,000-gallon UST, located on the northern portion of the Hull property, with an on-site pumphouse. Investigations have revealed a large subsurface plume of No. 6 oil which has been

identified as the source of the continuing contamination. The continuing subsurface discharge of oil into the river constitutes an imminent and substantial threat to a navigable waterway of the United States.

According to a fact sheet on No.6 fuel oil spills [[http://response.restoration.noaa.gov/oilands/no\\_6.pdf](http://response.restoration.noaa.gov/oilands/no_6.pdf)], the National Oceanic and Atmospheric Administration's (NOAA's) Office of Response and Restoration identifies No.6 fuel oil as a dense, viscous oil produced by blending heavy residual oils with a lighter oil (often No.2 fuel oil) to meet specifications for viscosity and pour point. When spilled on water, No.6 fuel usually spreads out into thick, dark colored slicks, which can contain large amounts of oil. It is a persistent oil; only 5-10% is expected to evaporate within the first few hours of a spill. Consequently, the oil can be carried hundreds of miles in the form of scattered tarballs by winds and currents. The tarballs will vary in diameter from several meters to a few centimeters and may be very difficult to detect visually or with remote sensing techniques. Natural degradation rates for heavy oils like No.6 fuel oil are very long; the oil may persist on beaches for months to years before it has been fully degraded.

Adverse effects of floating No.6 fuel oil are related primarily to coating of wildlife dwelling on the water surface, smothering of intertidal organisms, and long-term sediment contamination. Though No.6 fuel oil is not expected to be as acutely toxic to water column organisms as lighter oils (such as No.2 fuel oil), direct mortality rates can be high for seabirds, waterfowl, and fur-bearing marine mammals, especially where populations are concentrated in small areas, such as during bird migrations or marine mammal haulouts. Direct mortality rates are generally less for shorebirds because they rarely enter the water. However, shorebirds that feed in intertidal habitats where oil strands and persists, are at a higher risk of sublethal effects from either contaminated or reduced prey populations.

### C. Previous Site Actions

On August 25, 1994, U.S. EPA responded to a call from the Connecticut Department of Environmental Protection (CTDEP) regarding the discharge of No.6 fuel oil to the Housatonic River from the former Hull Dye facility. The On-Scene Coordinator (OSC) and the National Pollution Funds Center (NPFC) Case Officer prepared a Pollution Removal Funding Authorization (PRFA), which was issued to the DEP for costs associated with recovery of the oil (See § V., Estimated Project Cost Information).

CTDEP hired American Environmental Technologies (AET) of Bethel, CT to initiate cleanup operations to contain and remove oil which was discharging to the river from beneath the river bed, and subsequently floating to the surface. Tidal influences on the river limited response activities to low tide hours. Activities included the application of a boom and absorbent materials to the spill area,

effectively containing the spilled oil on the river. The sorbent boom was inspected daily and replaced as needed to maintain control of the fuel oil spill; these activities were performed from early July until installation of the containment system in November, 1994 (see below) provided hydraulic control of any remaining No.6 oil east of the Hull building. The boom has been kept in place and monitored weekly since November, 1994.

From August 27 to September 8, 1994, AET investigated two 10,000-gallon USTs, one 20,000-gallon UST, and one 500,000-gallon AST located on-site. The 500,000-gallon AST, located north of the Hull building, was inspected and found to be clean; no residual hydrocarbons were observed in the tank. The 10,000-gallon UST located inside the southern edge of the Hull building was inspected and found to be abandoned in place; no oil or other hydrocarbons were observed in the tank. The second 10,000-gallon UST located approximately 10 feet south of the Hull building was found to contain an oil/water mixture. Sampling results indicated the mixture to contain #2 fuel oil. The contents of the tank were removed with a vac-truck, following which the tank was cut open and cleaned. Analytical results from a soil sample beneath the tank indicated a TPH concentration of 860 ppm. The tank was subsequently filled with clean sand and abandoned in place. Groundwater analyses from two monitoring wells installed between the tank and the Housatonic River have not detected the presence of liquid-phase hydrocarbons in these wells.

The on-site 20,000-gallon UST located just north of the Hull building was found to contain approximately 10,000 gallons of a sand/No.6 fuel oil/water mixture. On September 3, 1994, the tank was cut open for removal of the mixture, and from September 6 to September 8, 1994, the tank was cleaned. The tank was noted to be in poor condition; numerous holes in the tank walls and floor were observed. Test borings conducted at 15 and 30 feet east of the UST revealed No.6 fuel oil contamination in sediments at approximately 20 to 25 feet below grade. This depth approximately coincides with the depth of the bottom of the tank. Thus, the 20,000-gallon UST appears to be the source of the No.6 oil impact to soil along the bank of the Housatonic River east of the Hull building.

Sampling of the river bottom in the area of the discharge indicated that river sediments were saturated with oil in an area approximately 30 ft. by 100 ft. Oil saturated sediments were discovered to be present at thicknesses of up to 8 ft. Soil samples analyzed at the CET laboratory for total petroleum hydrocarbons (TPH) via EPA Method 418.1 contained detectable TPH concentrations ranging from 65 ppm to 58,000 ppm. Augured samples on the riverbank indicated the presence of a large volume of oil floating on the groundwater.

To remediate sediment contamination, a coffer dam (concrete blocks and earth to a height of approximately 6 feet above grade) was constructed around the area of sediment contamination. Oil soaked sediments were excavated and shipped off-site for disposal from September 6 to September 24, 1994. Excavation of the

sediments released a large quantity of oil which was collected using a vacuum truck. An estimated 15,000 gallons of free product and 15,000 gallons of oil tied up in sediments were removed.

To prevent the continued release of oil to the river, an interceptor trench and recovery well system were installed in November, 1994, to contain and collect additional oil discharges. The system has been operating continuously since its installation, and approximately 5,000 additional gallons of No.6 fuel oil have been recovered.

On August 20, 1999, CTDEP responded to a report of an oil sheen on the river at the Site. The sheen appeared to be emanating from the tailrace of the facility. Because the oil recovery system was functioning properly, the presence of the oil sheen indicated the possibility of a discharge point to the river upgradient of the recovery trench. CTDEP and U.S. EPA initiated an investigation to attempt to better delineate the oil plume, and to develop a plan to prevent the discharge. Several monitoring wells were installed; well data indicated that the oil is migrating under the facility (and under the tailrace) and also potentially around the building foundation, to the river. It appears that operation of the electricity-generating turbines has scoured out the bottom of the tailrace and the vibration of the turbines when operating further mobilized the subsurface oil, both facilitating the observed discharge. For that reason, the turbines have been off-line since 1999.

Based upon the information generated during the well investigation, plans to construct an oil recovery system in the suspected source area were developed, and removal operations began on December 6, 1999. Operations included the dismantling and removal of the 500,000-gallon AST, as well as the excavation and removal of the 20,000-gallon UST.

Prior to excavating, a series of 10-inch diameter wells were installed surrounding the planned trench excavation. These wells were then pumped to depress the water table in the excavation area. Rapid groundwater recharge rates necessitated the installation of a larger groundwater treatment system than had been originally planned. Pumped water was sent through a treatment system consisting of an oil water separator and frac tanks, and subsequently discharged to the river.

The collection trench, excavated in a "Y" configuration, was approximately 350 feet in length and 25 to 30 feet deep. Due to soil stability concerns, the excavation was performed with specialized shoring equipment. A series of five oil recovery wells were installed in the trench, which was later backfilled with pea stone. Excavated oil-contaminated soil was shipped off-site for disposal. The system began operating in late 1999 and to date has yielded approximately 160,000 gallons of product.

During the day tank removal, the apparent source of the release was discovered to be an underground pipe connecting the day tank and the pumphouse. Heating and pressurization of oil in the pipeline during facility operation likely facilitated the underground leak, which went undetected for an extended period of time.

Detection of an inventory loss would also have been unlikely due to known inefficiencies of No.6 fuel oil boiler systems. Excavation operations also revealed a large underground structure (believed to be a steam box) running along the path of the trench. Constructed of steel reinforced concrete, removal of the structure proved difficult and time-consuming to perform.

#### **IV. RESPONSE INFORMATION**

##### **A. Current Situation**

In August, 1994, U.S. EPA received an OSLTF request from CTDEP in order to conduct removal actions to prevent the continuing discharge of No.6 fuel oil to the Housatonic River from the former Hull Dye and Print Works facility. CTDEP had serious concern about sediment and surface water contamination from continuing on-site fuel oil releases. The U.S. EPA OSC opened Federal Project Number (FPN #) 014504, and with the NPFC Case Officer, prepared a PRFA which was issued to the DEP for costs associated with recovery of the oil.

Subsequent investigations have revealed the source of the No.6 fuel oil impact to the Housatonic River and sediments to be a leaking underground oil pipe which connected a 20,000-gallon underground storage tank, located on the northern portion of the Hull property, with an on-site pumphouse. The 20,000-gallon underground tank was used in conjunction with a 500,000-gallon above-ground storage tank. Neither of these tanks were in use at the time of discovery.

An on-going U.S. EPA removal action is being conducted at the Site. Activities have included spill containment and removal for remediation of surface water contamination, river water and sediment sampling to characterize the nature and extent of oil contamination, and excavation and off-site disposal of free product and oil saturated sediments. Analytical results from sediment and water sampling have revealed no detectable concentrations of VOC's in the No.6 fuel oil.

Two interceptor trenches and oil recovery systems have been installed to prevent the continued release of fuel oil to the river. One was installed in 1994 in response to the release, the other in 1999 following the excavation and removal of the 500,000-gallon above-ground and 20,000-gallon underground storage tanks. The 1994 system in recent months has had variable oil production. It had recovered a very small amount over the fall and winter of 2004/2005, but picked up again this past spring. The 1999 system was installed following a report of an oil sheen emanating from the tailrace of the facility. Operation of the electricity-generating turbines appears to have scoured out the bottom of the tailrace and/or

mobilized additional product due to vibration and facilitated the observed discharge.

B. Proposed Actions

The U.S. EPA OSC, CTDEP, and the agencies contractors will coordinate removal activities to the extent that the exigencies of the situation require. Actions are anticipated to include:

- The U.S. EPA will transition from a PRFA with the CTDEP to an EPA lead action. This will involve additional coordination between the EPA OSC and EPA's Superfund Technical Assistance and Response Team (START) contractor, Weston Solutions, Inc., and EPA's Rapid and Response Services (ERRS) contractor, Shaw Environment and Infrastructure.
- As the 1994 system has recently shown variable results, the system will be closely monitored to determine if any product is still being recovered. This monitoring may include shutting down the system for a period of time to determine if there is a slow recharge of product into the recovery well. If the monitoring indicates that the system is still viable, it will continue to be operated to remove oil which poses a threat to the river.
- Operation of the second oil recovery system, utilizing the "Y" trench and recovery wells. The system relies on depression of the groundwater table to induce flow of No.6 fuel oil toward the recovery wells. Belt skimmers are being used for oil recovery.
- Continued operation and maintenance of the on-site groundwater treatment system consisting of pumping wells, the oil water separator and frac tanks.
- Additional activities as needed to prevent or contain the discharge of No.6 fuel oil at the tailrace. Actions may include dewatering the tailrace and resealing its base, installing an impervious sleeve within the race and providing for an oil collection system between the floor, walls, and sleeve, and/or installation of an underflow weir in conjunction with damming the race to artificially increase the head pressure, thereby containing the oil. This is considered a viable measure considering no oil has been seen impacting the river during high tide when the depth of water in the tail race is greater. During the early spring of 2005, EPA was contacted by the owners of the two power generating units located in the Hull Dye building. At the request of EPA, the turbines had been taken off line a number of years previous as their operation appeared to be exacerbating the release of oil to the river. The company is interested in bringing the turbines back on line and is currently performing a preliminary cost analysis to see if that is feasible. The EPA has stated to the owners that any engineering plans being developed must include an oil collection system that EPA will be able to tie into the existing treatment system.

- Installation of additional monitoring wells to further characterize the source and extent of subsurface fuel oil contamination, possibly followed up by another recovery system, or repositioning of the 1994 recovery system.

### C. Enforcement

An investigation of the source and scope of the threat to the Housatonic River due to the subsurface discharge of No.6 fuel oil at the Site revealed the source to be a 20,000-gallon underground day tank which was used in conjunction with a 500,000-gallon above-ground storage tank. Neither of these tanks were in use at the time of discovery.

During the initial response, the OSC issued a Notification of Federal Interest to the owner of the property from which the oil was discharging to the river. The OSC subsequently offered the potentially responsible party the opportunity to take over the clean-up operation. The offer was not accepted.

## V. **ESTIMATED PROJECT COST INFORMATION**

### A. Estimated Project Costs Incurred to Date

Since the FPN was issued in 1994 and EPA entered into a PRFA with the CT DEP, the ceilings have subsequently been raised due to the continuing threat to the Housatonic River.

Note that in Total to Date column, the figure of \$3,500,000 for the CT DEP PRFA represents the approximate amount of expenditures submitted by the CT DEP and their contractor(s) and approved by EPA (there is an invoice currently being reviewed by EPA that will bring the total to that figure). The CT DEP is currently reviewing additional invoices submitted by their contractor(s) prior to submitting them to EPA for their approval.

	<u>Ceiling</u>	<u>Total to Date</u>	<u>Remaining</u>
<u>Extramural</u>			
CT DEP PRFA	\$5,000,000	\$3,500,000	\$1,500,000
REAC	85,000	45,000	40,000
START	10,000	9,000	1,000
Contingency	1,332,800	0	1,332,800
<u>Intramural</u>			
EPA	300,000	60,000	240,000
<b>FPN #014504 TOTAL</b>	<b>\$6,727,800</b>	<b>\$3,614,000</b>	<b>\$3,113,000</b>