



Second Five-Year Review Report

for

F. O'Connor Site

Augusta

Kennebec County, Maine

September 2007

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Region 1

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Date

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LIST OF ACRONYMS

AOC	Administrative Order by Consent
ARAR	Applicable or Relevant and Appropriate Requirement
AWQC	Ambient Water Quality Criteria
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMP	Central Maine Power Company
CMR	Code of Maine Rules
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
CSF	Cancer Slope Factor
CWA	Clean Water Act
DOT	Department of Transportation (U.S.)
ESD	Explanation of Significant Differences
FSP	Field Sampling Plan
gpd	gallons per day
gpm	gallons per minute
HA	health advisory
MCL	Maximum Contaminant Level
MEDEP	Maine Department of Environmental Protection
MEGs	Maximum Exposure Guidelines
MOM	Management of Migration
MRSA	Maine Revised Statutes Annotated
NCP	National Contingency Plan
ND	non detect
NUSEPA	National Environmental Policy Act
NPL	National Priorities List
NRPA	Natural Resources Protection Action
O&M	Operations and Maintenance
PCBs	Polychlorinated biphenyls
ppb	parts per billion
ppm	parts per million
PRP	Potentially Responsible Party
RfDs	USEPA Risk Reference Doses
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RSOW	Remedial Design/Remedial action Revised Statement of Work
SC	source control
SCRA	Source Control Remedial Action

SDWA Site	Safe Drinking Water Act O'Connor Company Superfund Site
TI	Technical Impracticability
TSCA	Toxic Substances Control Act
TWA	Transformer Work Area
$\mu\text{g/L}$	micrograms per liter
USEPA	United States Environmental Protection Agency
VER	vacuum enhanced recovery
VOC	volatile organic compound
W&C	Woodard & Curran Inc.

EXECUTIVE SUMMARY

This is the second five-year review performed for the F. O'Connor Superfund Site (Site) in Augusta, Maine, as required by CERCLA when hazardous substances are left onsite such that restrictions are placed on the use of the site. The purpose of the five-year review is to assess whether the remedy selected for the Site remains protective of human health and the environment. The trigger for this five-year review is the completion of the initial five-year review in September 2002.

The 1989 Record of Decision (ROD) selected a remedy to address the risks present in the site soils and groundwater from PCBs and volatile organic compounds (VOCs). These risks resulted from the operation of a salvage and electrical transformer recycling business. The 1989 remedy has subsequently been modified by an Explanation of Significant Differences (ESD) in 1994, a Contingency Remedy in 1995, and a ROD Amendment in 2002. The Site consists of three operable units (OUs).

The original Source Control remedial action included on-site solvent extraction treatment of soils to specified cleanup levels and offsite disposal of soils and sediments that exceeded the target cleanup levels. The 1994 ESD increased the cleanup levels in soil for a small area of the Site (Designated Area or DA). In 1995, a contingency in the 1994 ESD was triggered. The contingency waived the on-site treatment requirement, allowing for off-site disposal of all soil and sediment exceeding the target cleanup levels. The Source Control remedial action was completed on November 11, 1997.

The Management of Migration remedy (OU-2) specified in the 1989 ROD was changed in the 2002 ROD Amendment. The original Management of Migration remedial action included groundwater extraction and treatment and recharge into the subsurface to specified cleanup levels and included temporary institutional controls to be put in place until the groundwater met cleanup levels. The 2002 ROD Amendment included a Technical Impracticability (TI) determination that waived the cleanup standards for a limited area of the Site, replaced the groundwater extraction system with active and passive recovery of the PCB transformer oil, and made permanent the temporary institutional controls. Since the 2002 Five-Year Review, vacuum-enhanced recovery of the transformer oil from the Transformer Work Area (TWA) II occurred in 2002, 2003, 2004, and 2006 to remove transformer oil from groundwater monitoring wells. This active recovery was discontinued in 2007 as the amount recovered decreased to levels that could be recovered passively. The temporary institutional controls were made permanent on September 13, 2002 with the recording of a Declaration of Restrictive Covenant in the Kennebec County Registry of Deeds. Monitoring of groundwater continues and cleanup levels for VOCs have been met outside the TI Zone since spring 2002, and cleanup levels for PCBs have been met outside the TI Zone since spring 2006.

The 1989 ROD also addressed sediment in Riggs Brook (OU-3). The OU-3 remedy included ten years of annual monitoring of Riggs Brook sediment and periodic biota sampling. The annual sediment monitoring was completed in 2005. Sediment results have shown sporadic exceedances of the PCB threshold level that would trigger an evaluation of the need for further remedial action; seven of the ten mean annual PCB concentrations have been below the target cleanup level. The two biota results have been below the target level.

The five-year review process revealed that the remedies for all three operable units have been implemented in accordance with the requirements of the ROD, as modified by the subsequent decision documents.

Five-Year Review Protectiveness Statements:

- OU-1: The remedial action for OU-1 has been completed and is protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled. Finalizing the O&M plan will ensure that the OU-1 remedy will remain protective.
- OU-2: The remedy for OU-2 is protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled with institutional controls covering the entire Site. Ongoing monitoring of the groundwater beyond the TI Zone will continue to ensure that cleanup levels continue to be met.
- OU-3: The remedy at OU-3 is protective of human health and the environment. Ten years of annual monitoring has shown conditions to be stable with more than 95% of the samples beneath the trigger level for additional action and the mean annual PCB concentrations meeting the target cleanup level in seven of the ten years. The biota sampling results met the target cleanup level, indicating there was no unacceptable risk.

Because the remedial actions at all OUs are protective, the Site is protective of human health and the environment.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION
Site name (<i>from WasteLAN</i>): F. O'Connor Company Superfund Site
EPA ID (<i>from WasteLAN</i>): MED980731475
Region: 1 State: ME City/County: Augusta/Kennebec
SITE STATUS
NPL status: Added on September 8, 1983
Remediation status: Ongoing
Multiple OUs? Yes Construction completion date: November 11, 1997
Has site been put into reuse? No
REVIEW STATUS
Lead agency: USEPA
Author name: Terrence Connelly
Author title: Remedial Project Manager
Author affiliation: EPA Region I
Period for this review: 02/15/07 to 09/28/07 (Time period covered by this review, 2002 – 2007)
Date of site inspection: 04/25/07
Type of review: Post-SARA
Review number: 2 nd
Triggering action: Five years after first review
Triggering action date (<i>from WasteLAN</i>): <u>09/29/2002</u>
Due date (<i>five years after triggering action date</i>): <u>09/28/2007</u>
ISSUES:
<ul style="list-style-type: none"> - Samples from the Designated Area soil cover had been collected 4-8" below ground surface following the recommendation of MEDEP; MEDEP has since requested that the sampling depth be changed to 8-12" in order to demonstrate the integrity of the soil cover thickness. - MEDEP has noted that burrowing animals could dig beneath the 12" soil cover and thereby contact the soil within the Designated Area Change where PCBs concentrations up to 10 ppm had been consolidated. - Groundwater cleanup levels are now being met with regularity beyond the TI Zone. The decision documents did not specify criteria for determining when the Management of Migration groundwater component has been completed.

- There were limited exceedances in the annual sediment sampling, yet of the 36 locations, the majority of exceedances have been measured at one location, 3018.

RECOMMENDATIONS and FOLLOW-UP ACTIONS:

- Change the depth of the soil cover sampling to 8-12" to address the MEDEP's concerns.
- Revise the O&M Plan to add a management approach for burrowing animals.
- EPA should develop criteria for determining when the Management of Migration groundwater component has been completed.
- Determine an approach to address sampling location 3018, either a limited excavation or continuation of monitoring.

PROTECTIVENESS STATEMENT:

Because the remedy selected and implemented has addressed the unacceptable risks found at the Site, the remedy is protective of human health and the environment. The source control remedial action was completed in 1997. Since the 2002 Five-Year Review, a TI waiver has been issued for a limited area of the Site and a restrictive covenant has been recorded that restricts certain actions without written approval from MEDEP. Concentrations of VOCs and PCBs beyond the TI Zone have met cleanup standards since spring 2002 and since spring 2006, respectively. Annual sampling of Riggs Brook sediment has been completed. Although there have been sporadic exceedances (one or two samples out of 36 each year since 2001) of the 5 ppm trigger level for further action, the mean PCB concentration for the same time period has varied between 0.38 and 1.05 ppm (the target cleanup level is 1 ppm).

OTHER COMMENTS:

1.0 INTRODUCTION

This is the second five-year review for the F. O'Connor Company Superfund Site (Site) in Augusta, Maine. The purpose of this five-year review is to determine if the selected remedy is protective of human health and the environment. This report summarizes the five-year review process, investigations and remedial actions undertaken at the Site; evaluates the monitoring data collected; reviews the Applicable or Relevant and Appropriate Requirements (ARARs) specified in the decision documents for changes; discusses any issues identified during the review; and presents recommendations to address these issues. The decision documents include a 1989 Record of Decision (ROD), 1994 Explanation of Significant Differences (ESD), 1995 Contingency Remedy, and a 2002 ROD Amendment.

The United States Environmental Protection Agency, Region 1 (EPA) prepared this five-year review pursuant to the Section 121 of the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) and the National Contingency Plan. CERCLA § 121 states:

"If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."

Under the regulations promulgated to implement these requirements, 40 CFR § 300.430(f)(4)(ii) of the National Contingency Plan states:

"If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action."

This statutory five-year review is required since hazardous substances remain at the Site above levels that allow for unlimited use and unrestricted exposure. The triggering action for the initial statutory review was initiation of the remedial action following remedial design. EPA conducted this five-year review of the remedial actions implemented at the O'Connor Site. Work on this review was performed between April and September 2007. Assistance was provided by the Maine Department of Environmental Protection (MEDEP), Central Maine Power Co. (CMP) and Woodard & Curran, Inc. (W&C), consultants working for CMP. As referenced in the 1991 Consent Decree, CMP participated in the five-year review process. W&C on behalf of CMP provided draft portions of the Five-Year Review Report to EPA. The review was completed in accordance with EPA Guidance OSWER No. 9355.7-03B-P.

2.0 SITE CHRONOLOGY

Table 2-1: Chronology of Site Events

DATE	EVENT
Early 1950s	F. O'Connor Co. begins operating a salvage and electrical transformer recycling business on the site
Feb 1972	Oil spill on site found to have migrated toward Riggs Brook
1978 & 1982	MEDEP conducts additional sampling events at the site, identifies polychlorinated biphenyl (PCB) contamination
1982-1984	EPA conducts sampling events at the site, confirms PCB contamination
Sept 8, 1983	Site placed on National Priorities List (NPL)
Dec 21, 1984	EPA issues Unilateral Administrative Order to O'Connor Co. requiring it to fence five acres of the Site and sample and analyze all drums and tanks on the Site
April 1985	EPA notifies O'Connor and Central Maine Power (CMP) of their potential responsibility for contamination at the Site
May 13, 1986	O'Connor and CMP voluntarily enter into an Administrative Order by Consent (AOC) with EPA to conduct a Remedial Investigation and Feasibility Study (RI/FS) at the Site
May 19, 1986	MEDEP issues an Administrative Order to O'Connor designating the Site an Uncontrolled Hazardous Substance Site under Maine law
June 23, 1986	MEDEP issues an AOC to O'Connor and CMP
May 23, 1987	EPA and MEDEP issue an amended AOC to O'Connor and CMP. Order extends site limits to approximately 9 acres
June 15, 1989	CMP submits a draft RI/FS to EPA and MEDEP for review
Sept 27, 1989	ROD issued by EPA
Sept 3, 1991	Consent Decree (CD) between EPA and CMP signed
June 1994	MEDEP and CMP sign a Declaration of Restrictive Covenant
July 11, 1994	Explanation of Significant Difference (ESD) signed
Oct 20, 1994	Revised Statement of Work (RSOW) issued
Oct 10, 1995	Contingency triggered by EPA
July 1996	Source Control 100% Design completed
Aug-Oct 1996	Phase I of Source Control completed (OU-1)
Oct 1996	First sampling of OU-3, Riggs Brook sediment
Oct 1996	Phase I Vacuum Enhanced Recovery (VER) completed (OU-2)
Jan-May 1997	Phase II VER completed
May-Nov 1997	Phase II of Source Control completed (OU-1)
Nov 11, 1997	Source Control Remedial Action completed
Aug-Oct 2001	Phase III VER completed (OU-2)
April 2002	Draft Technical Impracticability (TI) Evaluation Report submitted to EPA and MEDEP for OU-2 Management of Migration
August 2002	Completion of First Five-Year Review
Sept. 13, 2002	Restrictive Covenant recorded in Kennebec County Registry of Deeds

DATE	EVENT
Sept. 27, 2002	ROD Amendment issued by EPA
Sept. 23, 2003	Amendment to Consent Decree signed and 2003 Statement of Work issued
Mar 29, 2004	Amendment to Consent Decree entered in US District Court for the District of Maine
Aug 2005	Tenth annual sampling event of Riggs Brook sediment
Aug-Oct 2006	Fourth annual active oil recovery effort in transformer work areas (TWA) II
April 25, 2007	Initiation of Second Five-Year Review

3.0 BACKGROUND

3.1 PHYSICAL CHARACTERISTICS

3.1.1 Setting

The F. O'Connor Site property consists of approximately 23 acres within a 28-acre property owned by Central Maine Power Company (CMP) and is located on U.S. Route 17 approximately three miles east of the Kennebec River in Augusta, Maine. The surrounding area is generally rural. The property is bordered on the east and southeast by Riggs Brook, a small northerly flowing tributary of the Kennebec River, on the north and west by woodlands, and on the south by Route 17. The property south of Route 17 is generally wooded. A residence abuts the CMP property along its western boundary. The land at the Site was used as farmland until the 1950s when the F. O'Connor Company established a salvage yard and transformer recycling operation at the Site. The MEDEP-designated Hazardous Substance Site consists of the same 23 acres within the 28-acre property. The location of the property is shown on Figure 3-1.

3.1.2 Topography

The Site is located on a ridge that transects the Site in a generally northeast-southwest direction. An access road splits the Site from southwest to northeast. North and west of the road, the Site is relatively level, with a low swampy area known as the Upland Marsh. East and south of the road the topography slopes sharply toward Riggs Brook, with a change in elevation of approximately 50 feet. Three water bodies are located on the Site, all of which were created by operations of the F. O'Connor Co. and later reconstructed as part of the source control work. The *approximately 2-acre Upland Marsh drains to a channel that flows to the Upper and Lower Lagoons and on to the Riggs Brook wetlands.* Figure 3-2 shows these features and Site topography.

3.1.3 Subsurface Conditions

The overburden soils at the Site generally consist, from surface to depth, of glacial marine silts and clays, glacial till, and bedrock. The clay tends to be absent only in areas of shallow bedrock. During source control, approximately 20,000 tons of soil and sediment with PCB concentrations greater than 10 parts per million (ppm) were excavated and disposed offsite. Another 3,000 tons, with PCB levels less than 10 ppm, were consolidated on site in one area, identified as the *Designated Area (See Figure 3-2).* *Approximately 24,000 cubic yards of clean soil (PCBs less than 1 ppm) were brought to the Site to restore the excavated area to approximate the original grade and to provide a 12-inch soil cover over the entire Designated Area.*

Bedrock drilling completed during site investigations indicated mostly competent rock with very few recognizable fractures. Bedrock outcrops are found in the areas of transformer work area (TWA) I and III (see Figure 3-2).

The principal groundwater migration pathway on the Site is a discrete zone within the till along the top of the bedrock surface. Groundwater flow from the Upland Marsh (a large recharge basin) is confined and channeled through the bedrock trough in the bedrock saddle centered immediately northeast of the *Upper Lagoon.* *The bedrock flow regime has very little water in storage. The vertical permeability of the bedrock is believed to be very low, creating a "quasi"*

perched condition of the overburden groundwater flow system. At the southeastern end of the Site, near Riggs Brook, the potentiometric surface of the bedrock groundwater is above the ground surface. MW-106B in this area is a free-flowing artesian well.

3.2 LAND AND RESOURCE USE

The Site remains a mix of forest and open field, bordering the Riggs Brook wetland, and unchanged since the 2002 five-year review. The open fields encompass the formerly contaminated areas and the three reconstructed wetlands on the Site (Upland Marsh, Upper Lagoon, and Lower Lagoon). The perimeter fence was removed in a public ceremony with EPA and MEDEP in November 1997. The Site is not actively used by CMP. Surrounding land uses include low-density residential, light agricultural, commercial, fields, and forest.

The 28-acre property that includes the 23-acre Site is zoned as RRES – rural residential district, where residential development that conserves the rural character of the area is permitted. North of the 28-acre property, the adjacent property is zoned as Planned Development District. This zoning allows for “commercial and industrial uses intended to be concentrated in single or mixed use centers to ensure the most efficient provision of services and minimize impacts on residential and environmental sensitive areas, and the roadway systems”. Examples of these mixed-use centers are present on Cony Road, the first road west and north of the Site. Immediately to the west of the property and extending to the intersection of Cony Road and Route 17, the zoning is Regional Business District. This zoning “provides trade and service opportunities and (is) highway oriented”. South and east of the property, the zoning is also RRES, with an overlay of zoning as Resource Protection District of Riggs Brook and its wetlands, where development would adversely affect water quality, productive habitat, biological ecosystems, or areas with scenic and natural values.

Natural resources on the O'Connor property include both terrestrial and aquatic habitats. While Riggs Brook is not navigable in the stream reach adjacent to the Site, large wetland areas in the Riggs Brook watershed have been mapped by the MEDEP. The Riggs Brook wetlands have been identified as shrub swamps, consisting of a mix of woodlands and emergent aquatic vegetation and peat. No rare or endangered species have been identified in wetland or woodland habitats associated with the Site. The Riggs Brook wetlands lie in Zone A according to the City of Augusta Flood Insurance Rate Map (230067 0011 C), revised June 15, 1994. Zone A is a special flood hazard area inundated by 100-year flood where no base flood elevations have been determined. There are no other specified flood hazard zones covering the balance of the Site.

There are no mapped sand or gravel aquifers in the vicinity of the Site. Bedrock wells were historically used for domestic water in the surrounding area, however public water is now available throughout the area.

3.3 HISTORY OF CONTAMINATION

The F. O'Connor Company operated a salvage yard for the dismantling and recycling of electrical transformers and capacitors on the Site from the early 1950s until the late 1970s. This resulted in drippage and spillage of oil to the ground, principally in the transformer work areas

(TWAs). Soil and groundwater contamination primarily consisted of PCBs with some volatile and semi-volatile organic compounds, and inorganics. Potential sources of contamination that were identified on the Site included the three TWAs, scrap piles, oil storage tanks, and two lagoons installed to help control oil migration from the Site.

3.4 INITIAL RESPONSE

The first report of contamination was due to an oil spill on the Site in February 1972, which was investigated by MEDEP. Later that year MEDEP requested the O'Connor Company contain all transformer fluids in above ground storage tanks to prevent spills.

In 1976, MEDEP conducted further investigations at the Site, and asked the O'Connor Company to construct two surface water lagoons on the Site to control migration of oils. The next year, MEDEP requested that the Company discontinue use of the lagoons and reclaim the area. Water from the lagoons was pumped into storage tanks and the sediments excavated and placed in a low area near the gravel access road. The sediments were underlain and covered by one-foot of clay soil. Placement of this soil created a barrier to surface water runoff, and resulted in the creation of the Upland Marsh.

The Site was proposed for inclusion on the National Priorities List (NPL) in December 1982, and placed on the final NPL on September 8, 1983. In April 1985, the F. O'Connor Company and CMP were notified of their potential liability for the Site.

CMP completed several additional response activities including placement of a chain link fence around the site in 1985, removing the above ground storage tanks in 1986, and extending the chain link fence and removing over 500 tons of material from the scrap area in 1987.

Following completion of an RI/FS in 1989, the ROD for the Site was issued on September 27, 1989. CMP, an identified Potentially Responsible Party (PRP) at the Site, signed a Consent Decree with the United States on September 3, 1991 to undertake an investigation and remediation of the Site. CMP also acquired ownership of the property from the F. O'Connor Company in 1992.

3.5 BASIS FOR TAKING ACTION

The hazardous substances that have been released to the Site are primarily related to PCB oils and scrap from the dismantling of transformers. Based on the compounds detected on the Site during the RI, contaminants of concern were identified. These contaminants of concern were listed in Table 1 of the 1989 ROD and are provided in the first column of Table 3-1 of this report.

As discussed in the ROD, an Endangerment Assessment was performed to estimate the potential adverse human health and environmental effects from exposure to the contaminants of concern. The major conclusions drawn from the Endangerment Assessment are as follows:

- Direct contact with, ingestion of, or inhalation of vapors from soils contaminated with PCBs and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) may pose an incremental increase in cancer risk over a lifetime of exposure. Children potentially playing on the Site currently, or future residents living on the Site would be at the greatest risk. Lead in soils may also pose a risk of adverse, non-carcinogenic health effects (through direct contact and ingestion) by potential future residents living at the Site.
- An increased cancer risk over a lifetime of exposure may also be associated with direct contact and ingestion by children with the PCB-contaminated sediments in the lagoons located on the Site.
- Ingestion of the contaminated groundwater from the deep/bedrock system under the Site may pose potential long-term risks to future inhabitants of the Site. Contaminants of concern are 1,4-dichlorobenzene, benzene and PCBs.
- Environmental risks to biota (i.e., fish, wildlife and plants) exposed to contaminated soils, sediments, or surface waters at the Site may potentially exist from the presence of PCBs, lead and aluminum.

Based on the results of the Endangerment Assessment, Applicable or Relevant and Appropriate Requirements (ARARs) and other guidance, target cleanup goals (see column 2 of Table 3-1) were established to protect human health and the environment from these identified risks. The 1989 ROD selected a remedy for the Site that would meet these target cleanup goals.

In September 2002, a ROD Amendment was signed that included a TI waiver for groundwater and made minor changes to the remedies for OU-1 and OU-3. Based on the ARARs review conducted as a part of the ROD Amendment, five other VOCs were identified that had ARARs established since the 1989 ROD for which the TI waiver applied. These ARARs include Maximum Contaminant Levels (MCLs) and Maine Maximum Exposure Guidelines (MEGs) for seven VOCs and PCBs. For five out of the eight compounds, the MEG is either the same as or lower than the respective MCL. Groundwater performance standards for these eight compounds based on the ROD Amendment are also listed in Table 3-1.

Table 3-1: Contaminants of Concern at Site

Contaminants of Concern ¹	Target Cleanup Goal ²	Selected Remedy ³	Performance Standards ⁷
Soil			
PCBs	1 ppm	1 ppm (10 ppm DA) ⁵	NA
cPAHs	1 ppm	1 ppm (10 ppm DA)	NA
Lead	248 ppm	248 ppm	NA
Cadmium	NA	NA	NA
Copper	NA	NA	NA
Nickel	NA	NA	NA
Zinc	NA	NA	NA
Surface Water			
PCBs	0.065 ppb	0.065 ppb	NA
Lead	1.94 ppb	1.94 ppb	NA
Aluminum	87 ppb	87 ppb	NA
Groundwater			
PCBs	0.5 ppb	0.5 ppb	0.05 ppb
Benzene	5 ppb	5 ppb	5 ppb
1,4-Dichlorobenzene	27 ppb	27 ppb	27 ppb
Bis 2-ethylhexylphthalate	NA	NA	NA
Chromium	NA	NA	NA
Manganese	NA	NA	NA
Chlorobenzene	NA	NA	47 ppb
1,2-Dichlorobenzene	NA	NA	85 ppb
1,3-Dichlorobenzene	NA	NA	85 ppb
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	70 ppb
1,3,5-Trichlorobenzene	NA	NA	40 ppb
On-Site Sediment			
PCBs	1 ppm	1 ppm (5 ppm ⁴)	NA
CPAHs	1 ppm	1 ppm	NA
Lead	248 ppm	248 ppm	NA
Copper	NA	NA	NA
Manganese	NA	NA	NA
Zinc	NA	NA	NA
Riggs Brook Sediment			
PCBs	1 ppm	1 ppm/5 ppm ⁵	NA
Riggs Brook Biota			
PCBs	NA	2 ppm ⁶	NA

Notes:

1. Based on Results of the RI.
2. Based on results of Endangerment Assessment, ARARs, and other guidance.
3. Target cleanup goal for ROD (September 1989) Selected Remedy, and revised by ESD (Explanation of Significant Differences (July 20, 1994)).
4. OU-1 Area 3 soils near Riggs Brook wetland.
5. 1 ppm is the target cleanup goal; 5 ppm is the trigger level for performing additional sampling and determining whether further remedial action is necessary. ROD pg. 47 and 52; Revised SOW (October 20, 1994), pg 15.
6. ROD pg. 47 and Revised SOW pg. 15.
7. Groundwater Performance Standards specified in the 2002 ROD Amendment and the 2003 SOW.

4.0 REMEDIAL ACTIONS

This section describes the remedial actions selected for and implemented at the Site. The decision documents in which the remedial actions were selected include the September 1989 ROD, July 2004 ESD, October 1995 Contingency Remedy, and September 2002 ROD Amendment.

4.1 REMEDY SELECTION

The September 27, 1989 ROD for the Site determined that exposure to the contaminated media at the Site may present an imminent and substantial endangerment to public health, welfare, or the environment if the threats were not addressed by a response action. A remedy was selected to meet the following Remedial Action Objectives (RAOs) identified for the Site:

- Reduce potential present and future public health and environmental risks from direct contact, ingestion, and/or dermal absorption with the PCB-, cPAH-, and lead-contaminated soils and sediments located on- and off-site;
- Reduce potential present and future public health risks from the inhalation of PCB vapors from the Site;
- Reduce potential present and future public health risks from the ingestion of PCB-contaminated fish from Riggs Brook;
- Reduce potential future public health risks from the ingestion of PCB-, benzene-, and 1,4 dichlorobenzene-contaminated groundwater found on the Site; and
- Reduce potential present and future environmental risks to aquatic and terrestrial wildlife from exposures to the PCB-, lead-, and aluminum-contaminated on-site surface water.

The remedy selected in the 1989 ROD included components for Source Control (OU-1) and Management of Migration (OU-2 and OU-3).

4.1.1 Source Control

The Source Control (OU-1) component of the remedy included:

- Excavation and on-site treatment by solvent extraction technology of all soil and sediment containing concentrations of PCBs and cPAHs greater than 1 ppm and lead greater than 248 ppm;
- Draining and off-site treatment of surface waters from the Upland Marsh, Upper Lagoon, and Lower Lagoon;
- Re-routing of existing drainage patterns from Upland Marsh and lagoons;
- Installation of erosion control measures and clearing of vegetation;
- Transportation and off-site disposal of soil and sediments should solvent extraction not achieve target cleanup levels;
- Establishment of compensatory wetlands;

- Site restoration following excavation activities; and
- Five-year reviews of site conditions.

On July 11, 1994, an ESD was approved and appended to the ROD. Based on an assessment of the ability to implement the ROD remedy, the ESD adjusted the soil target cleanup goals for all soils that would be located more than 12 inches below grade and within a three- to four-acre Designated Area to a maximum 10 ppm for PCBs and for cPAHs, and 248 ppm for lead. The target cleanup goals for soils outside the Designated Area remained at 1 ppm for PCBs and for cPAHs, and 248 ppm for lead (see Column 3 of Table 3-1). The ESD also included a contingency that allowed soils and sediments to be disposed off site without solvent extraction treatment, upon approval by EPA. On October 23, 1995, EPA approved the contingency based upon the determination that the solvent extraction treatment was not feasible to meet the target cleanup goals.

The 2002 ROD Amendment did not substantially alter the Source Control component of the remedy. It made minor changes to the Operations & Maintenance Plan, adding near-surface soil sampling of the Designated Area cover coincident with each five-year review to confirm the integrity and protectiveness of the soil cover. The ROD Amendment also reconfigured the Designated Area boundary, changing it from a 25-sided to a 10-sided area (see Figure 4-1) with permanent markers placed at the turning points.

4.1.2 Management of Migration

The MOM groundwater component (OU-2) of the 1989 ROD selected remedy required:

- Establishment of temporary institutional controls until groundwater remediation goals are achieved;
- Installation of groundwater extraction and monitoring wells;
- Installation of an on-site groundwater treatment and recharge system;
- Treatment and recharge system monitoring, operation, and maintenance; and
- Five-year reviews of site conditions.

The MOM also included response actions for Riggs Brook sediment (OU-3). These included:

- Establishment and implementation of an extensive sediment and biota sampling and analysis program within Riggs Brook;
- Implementation of public education programs; and
- Five-year reviews of site conditions.

A Revised Statement of Work (RSOW) was submitted on October 20, 1994 and appended to the Consent Decree. The RSOW defined the remaining work to be completed at the Site and finalized the target cleanup goals for the MOM (see Table 3-1).

In September 2002, a ROD Amendment was signed that changed the remedy originally selected in the 1989 ROD for groundwater (OU-2) and made minor changes to the remedies for OU-1 and OU-3. A comparison of the original 1989 remedy for groundwater and the modified remedy for

OU-2 is provided in Table 4-1. The 2003 SOW describes the extent of remedial activities required at the Site based on the 2002 ROD Amendment.

Table 4-1: Comparison between 1989 ROD and 2002 ROD Amendment

1989 ROD - Groundwater Components	2002 ROD Amendment for OU-2
# 1: temporary institutional controls. This would prevent exposure to site groundwater while remediation was underway.	#1 permanent institutional controls. With the 1994 ESD, CMP and MEDEP signed a restrictive covenant which prevented certain activities at the site without written approval of MEDEP.
#2: pump-and-treat system. The appropriate sizing of the system, including the number of extraction wells, pumping rate, treatment components such as granular activated carbon, sand filters, air stripper, and number of recharge wells was to be determined during the remedial design phase.	#2: annual application of the VER system. The VER has been operated three times post-ROD, recovering PCB-laden oil from the overburden and bedrock. The VER will be applied annually in TWA II area wells to recover as much oil as is practical.
#3: a network of monitoring wells. The wells used in the RI would be assessed and augmented with additional wells in both overburden soil and bedrock.	#3 monthly monitoring of oil levels in TWA II wells and removal using absorbent materials. Between the annual operations of the VER, the TWA II will be monitored for separate phase oil. Detected oil will be removed using absorbent material. It is expected that monitoring frequency will decrease as the amount of oil draining into the wells decreases.
	#4: long-term monitoring. It will be performed to track contaminant levels in the TI zone and outside it.
#4: Riggs Brook sediment and biota monitoring. Brook sediments were to be monitored yearly for ten years to assess PCB concentrations. Biota sampling was to occur five years after initiation of the monitoring.	#5: Riggs Brook sediment and biota monitoring. It will continue as OU-3, established in 1996.
#5: five-year reviews. The progress toward restoration of the groundwater and the target cleanup goal for the sediment were to be assessed during each review.	#6: five-year reviews. Reviews will be conducted to ensure that the site remedy for all three OU's remains protective.

The ROD Amendment for OU-2 required permanent institutional controls, active oil recovery, long-term monitoring of groundwater, and five-year reviews. The ROD Amendment also recognized the technical impracticability of achieving the cleanup levels required by the 1989 ROD in groundwater found on the Site (third RAO of 1989 ROD) within a reasonable timeframe. As a result, it established a technical impracticability (TI) zone for a portion of the Site (including TWA II Area) where state and federal drinking water standards are waived (see Figure 4-1).

Regarding OU-3, the ROD Amendment restated that the target cleanup goal for Riggs Brook sediment remains at 1 ppm PCBs and cPAHs. The ROD Amendment reiterated the same requirement as the 1989 ROD: "if an increase in the current PCB sediment levels occurs above the 5 ppm threshold and/or the fish tissue samples are found to be greater than 2 ppm, then a more rigorous sampling effort of such contamination will be conducted to determine the need for and/or extent of further remedial actions to be undertaken within Riggs Brook, if any."

4.2 REMEDY IMPLEMENTATION

Activities completed during the implementation of the remedies specified in the 1989 ROD as modified by the 1994 ESD, 1995 Contingency, and 2002 ROD Amendment are described in this section.

4.2.1 Source Control (OU-1)

Source Control was conducted in two phases. Phase I was conducted in the summer and fall of 1996 and included decontamination, demolition and disposal of the barn and other non-native debris, remediation of soils closest to Route 17; and construction of the support area for Phase II activities. Phase II began in May 1997 with work completed on November 11, 1997. Phase II activities included collection and disposal of on-site surface waters, sampling and remediation of soils and sediments in the former TWAs, reconstruction of the Upper Lagoon, Lower Lagoon, and the Upland Marsh and final restoration of the Site. The perimeter fence that had limited access to the Site was removed in November 1997.

Approximately 23,000 tons of soil and sediment were excavated and disposed offsite or consolidated into the Designated Area (see Figure 4-1) to meet the target cleanup goals. As listed in Table 3-1, the target cleanup goals for soil outside the Designated Area were 1 ppm PCBs, 1 ppm cPAHs and 248 ppm lead; and 1 ppm PCBs for on-Site sediments in the vicinity of the Riggs Brook Wetland area. Target cleanup goals within the Designated Area were 10 ppm PCBs, 10 ppm cPAHs and 248 ppm lead. Soil and sediment samples were collected using a sampling grid developed to provide a statistically valid approach for confirming that the excavation had met the target cleanup goals. Additional random samples were collected as determined necessary in the field to confirm attainment of target cleanup goals.

Approximately 24,000 cubic yards of clean backfill (containing less than or equal to 1 ppm PCBs, 1 ppm cPAHs and 248 ppm lead) were brought onsite for re-grading. As set forth in the 1994 ESD, the entire Designated Area was covered with 12 inches of clean fill. This was done to ensure that, even if those soils contaminated with between 1 and 10 ppm PCBs or cPAHs within the Designated Area were ever disturbed by potential future activities at the Site, the PCB and cPAH levels at the surface would likely be less than 1 ppm due to mixing with the clean soil.

Excavated areas of the Site outside of the Designated Area were backfilled and re-graded. No additional cover was added in the areas outside the Designated Area.

Site restoration included re-establishing drainage patterns to achieve discharges to Riggs Brook similar to those that existed prior to remediation of the Site. It also included restoration of on-site wetlands and the establishment of compensatory wetlands.

In the fall of 2002, CMP installed and surveyed 10 boundary markers simplifying the Designated Area by reconfiguring it into a 10-sided shape (see Figure 4-1). On April 24, 2007, 10 soil samples were collected of the cover soil on the Designated Area coincident with this five-year review. These soils samples were collected in accordance with the draft O&M plan.

4.2.2 Management of Migration (OU-2)

Management of Migration response actions selected in the 2002 ROD Amendment included active and passive oil recovery, a technical impracticability waiver for cleanup levels in groundwater in a small area of the Site, permanent institutional controls, and monitoring groundwater to assess the potential for migration of contaminants from the Site. Investigations completed following the 1989 ROD determined that the migration of contaminants in the shallow groundwater in the downgradient direction was limited; the bedrock aquifer had low groundwater storage and therefore a relatively small volume of water. It was also concluded that the 1992 pump test had mobilized the PCB transformer oil and other contaminants vertically downward into the bedrock flow regime. Based on these findings, CMP's consultant recommended continued groundwater monitoring and the use of vacuum extraction recovery (VER) rather than conventional groundwater pumping to eliminate the potential for drawing free-floating product farther into the bedrock aquifer.

Seepage of the transformer oil into the TWA II wells has been observed since it was first induced into the wells during the 1992 pump test. The total amount of oil recovered from the five TWA II wells since their installation using a combination of VER and passive oil recovery is about 125 gallons. Approximately 79 gallons of oil (about 71%) were recovered prior to the completion of the source control work, and approximately 35 gallons (about 28%) after the completion of source control through the summer of 2002. It was because of this amount that was recovered after the successful attainment of soil cleanup, the evaluation of the technical impracticability of restoring the groundwater was initiated. Since the resumption of the VER in 2002, 11.3 gallons of transformer oil have been recovered (or about 1% of the total).

During the second five-year review period, the VER system was operated in August and September of 2002, August to October 2003, August to September 2004, and in August 2006. Oil thickness monitoring at each well during the operation of the VER system showed that a decreasing quantity was recovered. Approximately 7.4 gallons of oil were recovered by the VER system in 2002, 2.5 gallons in 2003, and about 0.3 gallons in both 2004 and 2006. The system was not operated in 2005 because of equipment failure, yet there was not any increase in the amount recovered, neither passively or when the active recovery resumed in August 2006. Thus, there was no rebound after the VER suspension in 2005. The amount of oil removed from the wells using the VER system has decreased steadily over time to minimal amounts. In December 2006, the VER system was decommissioned because the rate of oil recovery using passive recovery was equal to or greater than with the VER system. Prior to 2005, the passive oil recovery program was conducted monthly. Since 2005, passive oil recovery has continued on a quarterly basis.

Table 4-2: Gallons of Transformer Oil Recovered From TWA II Area Wells

Phase	RW-101	OW-202B	OW-204B	OW-301B	OW-302B	Total
Pump Test and pre-VER I & II	-	29.5	0.0	15.0	7.9	52.4
VER I & II (1996 - 1997)	26.6	NS ¹	NS	NS	NS	26.6
Passive 1997- 2001	2.3	2.1	0.1	0.2	2.3	11.7
VER III 2001	3.2	1.9	0.0	4.6	10.1	19.8
Passive 2001 - 2002	0.2	0.2	0.0	0.0	3.5	3.9
VER 2002	0.1	0.6	0.0	0.9	5.8	7.4
Passive 2002 - 2003	0.0	0.2	0.0	0.0	0.0	0.2
VER 2003	0.2	0.5	NS	0.1	1.7	2.5
Passive 2003 - 2004	0.0	0.0	0.0	0.0	0.0	0.0
VER 2004	0.1	0.2	NS	0.0	0.0	0.3
Passive 2004 - 2006 ²	0.5	0.1	NS	0.0	0.0	0.6
VER 2006	0.1	0.2	NS	0.0	0.0	0.3
Total per Well	33.4	35.7	0.1	20.8	31.3	124.8

¹ NS: Not sampled

² The VER was not operated in 2005 because of equipment failure

Prior to 2002, the MOM monitoring program (wells outside TWA II) showed that contaminants in groundwater met the 1989 ROD target cleanup goals at the perimeter of the Site. Other groundwater monitoring wells showed decreasing trends for those compounds not yet at the cleanup standard. Within the TWA II area, concentrations of PCBs, benzene, and 1,4-dichlorobenzene exceeded the target cleanup goals. The source of this contamination in groundwater in the TWA II area is believed to be the residual oil trapped in the cracks in the clay and bedrock fractures. Because the remedy was not functioning as intended within the TWA II area, CMP submitted a TI Evaluation report in June 2002.

The TI Evaluation report presented a site conceptual model that explained the technical impracticability from an engineering perspective of restoring the groundwater in the TWA II area to drinking water standards within a reasonable timeframe using the selected remedy. It then evaluated alternative remedial strategies to achieve these standards. The report concluded that none of these alternatives would achieve this Remedial Action Objective, and hence, another approach would be necessary to ensure that the remedy was protective of human health and the environment. The report included a request for a TI waiver from specific ARARs within a small area of the Site established as the TI zone.

EPA, with concurrence from Maine DEP, approved the TI Evaluation report and prepared a Proposed Plan to amend the 1989 ROD. This Proposed Plan was mailed to the public and then discussed during a public information meeting in June 2002. Following a public hearing in July 2002, the 1989 ROD was formally amended in September 2002.

As stated above, the 2002 ROD Amendment established the TI zone which encompasses the TWA II area and the area associated with shallow groundwater flow to the south of the TWA II area. Monitoring wells along the boundary of the TI zone have been monitored to ensure that groundwater performance standards are met outside of the TI zone.

Institutional controls were established in the form of a Declaration of Restrictive Covenant

signed by MEDEP and CMP. This covenant includes the following:

- Any use of the groundwater beneath the Site is prohibited without the written approval of MEDEP;
- Any activity which might disrupt remedial or monitoring measures is prohibited without the written approval of MEDEP; and
- CMP or any subsequent owner shall maintain the Site in a condition adequate to ensure the continued compliance with all applicable standards and to ensure the ongoing adequacy of the remediation.

This Covenant was recorded in the Kennebec County Registry of Deeds on September 13, 2002. A copy of the covenant and a map showing the area covered by the covenant are included in Appendix A.

The formal MOM groundwater-monitoring program began in October 1995 using 15 of the Site wells (7 overburden and 8 bedrock). A number of wells were removed during soil excavation; new wells have also been added. The 16-well monitoring network now consists of 10 overburden and 6 bedrock wells. In addition to the MOM wells, five wells in the former TWA II area are routinely checked for the presence of residual transformer oil.

Since the last five-year review, groundwater performance standards for the seven VOCs specified in the 2002 ROD Amendment have been met in the monitoring wells outside of the TI zone. PCBs have met the performance standard in the monitoring wells outside of the TI zone since April 2006. Performance standards for the VOCs have been met for wells within the TI zone but outside of the TWA II area since April 2004. Within the TWA II Area, concentrations of PCBs and several VOCs exceed the performance standards.

4.2.3 Riggs Brook (OU-3)

Central Maine Power conducted annual sediment monitoring of Riggs Brook for 10 years (1996-2005) as required by the 1989 ROD. Biota sampling in Riggs Brook, which was also required by the ROD, was completed in 1997 and 2000. At EPA's request, the 2000 annual program was supplemented with a sampling grid with 51 locations adjacent to Riggs Brook in Areas 2 and 3 of the source control area of the Site.

Biota was sampled in 1997 following completion of the source control work. The next biota sampling event that had been scheduled for 2002, was instead completed in 2000 at the request of EPA.

The ROD/RSOW required that CMP implement a public education program to increase public awareness about the status of contamination within Riggs Brook. The status of Riggs Brook was discussed as a part of the Community Meetings leading up to and during the source control work. Due to minimal interest expressed by the public regarding Riggs Brook or the Site since the completion of the source control component of the work, further meetings have not been held.

4.3 SYSTEM OPERATIONS/O&M

The draft May 2007 O&M plan describes the long-term activities for the Site, including inspections, soil cover sampling, routine maintenance, and repairs as necessary. EPA, MEDEP

and CMP are finalizing the O&M plan. O&M activities for OU-1 include inspections, wetland construction compliance monitoring and soil sampling of the cover of the Designated Area as a part of five-year reviews. For OU-2, O&M activities include checking the integrity of the groundwater monitoring wells. Sediment and biota monitoring have been completed at OU-3, and therefore, there are no O&M activities associated with OU-3.

Site inspections for OU-1 have been performed by CMP. The inspections have reported that vegetation is well developed, thicker in some areas than others, and that drainage channels are in good shape and functioning as designed. Annual mowing has not been routinely performed as planned in order to allow the vegetation to establish itself. However, since 2002, the TWA II area has been mowed to facilitate access to the wells, and the Designated Area was mowed in 2006. Future mowing at the site will be conducted in accordance with the O&M Plan. Minor ruts in the access road were filled in 2003; and the 2007 site inspection noted low spots near the entrance, but otherwise, the access road is in good repair.

Compliance monitoring to evaluate wetland vegetation survival and general wetland system recovery was performed in 1998, 1999, 2000, 2002, (years 1, 2, 3, and 5) and the field investigation for the final monitoring in year 10 was performed this summer. The 2002 Five-Year Review assessment of the goals of the project concluded that the restoration had at that time:

- Provided vegetative cover and a diverse plant community,
- contributed to the availability of habitat in the surrounding community, and
- reestablished wetland functions and values.

The 2007 monitoring measured slightly less acreage and less vegetative cover than was recorded prior to remediation, yet the function and value acreage has increased. The restored wetlands have developed wet meadow communities comprised of a dominance of wetland species with a mixture of old-field upland species, which is consistent with the characteristics of natural communities. In addition to the wetland species, the 2007 monitoring identified hydric soil conditions and evidence of hydrology. The wetland communities provide potentially diverse habitat for aquatic and wetland dependent species.

O&M costs for OU-1 include site inspections, soil sampling and site repairs. O&M costs were originally estimated at approximately \$15,000 for year 1 and \$3,000 for years 2 through 10. Costs for O&M for years 5-10 have been lower than originally estimated in the O&M plan because the Site has not been mowed annually and the only repair work was minor access road repair conducted in 2003.

O&M costs for OU-2 have been limited to the costs of groundwater monitoring. No maintenance has been required to date for the wells. According to CMP's consultant, groundwater monitoring costs are approximately \$25,000 per year. Since there is no O&M associated with OU-3, there are no associated O&M costs.

5.0

PROGRESS SINCE LAST FIVE-YEAR REVIEW

This is the second five-year review for the Site. The first five-year review, completed by EPA in September 2002, assessed the three operable units and made the following conclusions:

- The remedial action for OU-1 has controlled exposure pathways and ongoing O&M would ensure that the OU-1 remedy remains protective of human health and the environment;
- The remedial action for OU-2 was not protective because of the presence of residual oil in the subsurface and PCB and VOC concentrations above target cleanup levels; and
- The remedial action for OU-3 was expected to be protective upon completion of the ten-year sampling program.

Additionally, the 2002 FYR made the following recommendations:

- Implement necessary regulatory changes to the OU-2 remedy;
- Analyze groundwater at lower detection limit to determine if remedy meets Maine MEG for PCBs;
- Resample two source control locations that exceeded the sediment 1 ppm PCB level;
- Update the O&M plan;
- Continue oversight of wetlands restoration effort for years 5 and 10 events; and
- Re-evaluate the institutional controls to reflect the current site conditions.

The following describes the progress made in addressing these recommendations following the 2002 FYR:

Implement necessary regulatory changes to the OU-2 remedy

As noted in earlier Section 4.0 Remedial Action, subsequent to the 2002 FYR, EPA issued a ROD Amendment on September 27, 2002. This ROD Amendment included a TI waiver for groundwater for a limited area of the Site while maintaining the groundwater standards established in the 1989 ROD for the remainder of OU-2. The ROD Amendment also added active and passive oil recovery in the TWA II area, recording of a restrictive covenant between MEDEP and CMP, and performance standards for five VOCs that did not have standards at the time of the 1989 ROD.

Active recovery of the transformer oil was performed during late summer-fall 2002, 2003, 2004, and 2006. Passive recovery, using absorbent materials placed within the TWA II monitoring wells, was performed monthly until 2005 and then quarterly since then. Approximately 7.4 gallons of oil were recovered by the VER system in 2002, 2.5 gallons in 2003, and about 0.3 gallons in 2004 and 2006.

Analyze groundwater at lower detection limit to determine if remedy meets Maine MEG for PCBs

Groundwater monitoring continued under a Long-Term Monitoring Plan approved by EPA after review and comment by MEDEP. All of the VOC standards have been met beyond the TI Zone since April 2002 (11 sampling events). With the new PCB standard an order of magnitude lower than the standard set in the 1989 ROD, the PCB detection limit was lowered to 0.047 ppb to allow comparison to the Maine MEG. This new standard has been met beyond the TI Zone since April 2006 (3 sampling events).

Resample two source control locations that exceeded the sediment 1 ppm PCB level

Sediment sampling continued through 2005, and included the two source locations that had inadvertently been included in the expanded 1998 sampling event. Thirty-six samples were collected annually from 2001 through 2005. One to two samples from the 36 locations were above the 5 ppm trigger level for further action. The annual mean PCB concentration for the same time past five years varied between 0.38 and 1.05 ppm (the target cleanup level is 1 ppm).

Update the O&M plan

The O&M Plan has been revised and is now being reviewed by the agencies.

Continue oversight of wetlands restoration effort for years 5 and 10 events

As noted above in Section 4.3, the final assessment of the restored wetlands was submitted to the agencies in September 2007. The assessment concluded that the function and value acreage of the wetlands have been increased when compared to the pre-remediation totals.

Re-evaluate the institutional controls to reflect the current site conditions

The Declaration of Restrictive Covenant had been signed by MEDEP and CMP in June 1994 but had not been recorded and was being held in escrow by MEDEP. As part of the ROD Amendment, MEDEP agreed to record the document and did so at the Kennebec Registry of Deeds on September 13, 2002.

6.0 FIVE-YEAR REVIEW PROCESS

6.1 ADMINISTRATIVE COMPONENTS

EPA, the lead agency for this five-year review, notified Maine DEP and CMP at the beginning of 2007 that the five-year review would take place during the spring and summer of 2007. A meeting was held at CMP's Augusta office on February 15, 2007 with the two agencies, CMP and their consultant, Woodard & Curran, to discuss the site status and components of this five-year review. Claudia Sait of MEDEP was part of the review team.

The schedule established by EPA included completion of the review by September 2007.

6.2 COMMUNITY INVOLVEMENT

EPA prepared a public notice announcing the five-year review and requesting public participation. The notice was published May 24, 2007 in the Kennebec Journal, a daily newspaper in Augusta, Maine. Since the publication of the notice, there has been no response from the public to either MEDEP or EPA regarding the five-year review. This level of response was similar to that of the previous five-year review and to the 2002 ROD Amendment public meeting and hearing.

The Administrative Record for the Site is available at the Lithgow Public Library in Augusta. Given space constraints and the lack of interest in the Site, the Administrative Record is stored in the library's basement. According to the library's research librarian, there has been little interest in the site documents.

6.3 DOCUMENT REVIEW

This five-year review consisted of a review of relevant documents including decision documents, work plans, various monitoring reports, and O&M inspection reports. These references are listed in Section 12.0 at the end of this report.

6.4 DATA REVIEW

6.4.1 Source Control OU-1

Since the last five-year review in 2002, semi-annual site inspections continue to be conducted by CMP to observe any physical changes at the Site that would compromise the remedy. Wetlands construction monitoring was conducted in years 5 (2002) and 10 (2007) after the completion of the source control work. In addition, soil sampling was conducted on the Designated Area in 2007 to confirm the integrity of the soil cover.

Inspection reports conclude that vegetation is well developed, drainage channels are in good condition and functioning as designed. The 2007 wetland monitoring report concluded the natural and restored wetlands are dominated by wetland species consistent with natural communities. Overall, the restored wetlands are providing to a number of targeted functional values.

Soil sampling of the Designated Area was completed on April 24, 2007. Ten composite soil samples were collected from randomly selected sample locations from a total of 183 grid points within the 10-sided Designated Area. Sample locations are shown on Figure 6-1. Soil samples were collected from four to eight inches below the ground surface, and analyzed for PCBs in accordance with the QAPP Amendment (W&C, 4/17/07). The purpose of the soil sampling was to demonstrate the integrity of the soil cover on the Designated Area, and compare the PCB concentrations of the soil samples to the remedial goal of 1 mg/kg. PCBs were detected at four sampling locations shown below; all were well below the soil remedial goal of 1 mg/kg.

Soil Sample location	Total PCBs (mg/kg)
1009.07	0.032
1036.07	0.18
1118.07	0.032
1121.07/Duplicate	0.023/0.028

A review of associated quality control results was conducted to determine the quality of the PCB data. All of the quality control results were compliant with validation criteria indicating that the data are of sufficient quality for its intended end use of characterizing soil conditions at the Site. Soil analytical data, evaluation and quality control/quality assurance summaries are provided in Appendix B.

6.4.2. Management of Migration OU-2

The results of the MOM monitoring, excluding the five wells located within the TWA II area, conducted between April 2002 and April 2007 were reviewed. Based on the ROD Amendment, groundwater performance standards were established for PCBs (0.05 ug/L) and seven VOCs (see Table 3-1). Limited data from wells within the TWA II Area are discussed separately.

PCBs. From April 2002 until September 2005, the groundwater performance standard for PCBs (0.05 µg/L) was exceeded four times outside the TI zone in wells MW-501 and MW-503. The highest total PCB concentration detected outside the TI zone was 0.91 µg/L detected in MW-503 in September 2004. PCBs were not detected in wells located outside of the TI zone in 2006 or in April 2007. There were two additional exceedances of the PCB performance standard at two wells (MW-104B and MW-510A) within the TI zone but outside of the TWA II Area. Monitoring wells MW-104B, MW-501 and MW-503 are located downgradient of the TWA II Area. These exceedances are summarized below.

Well	Date	Total PCBs (ug/L)
Outside TI zone		
MW-501	4/29/2002	0.06
MW-503	9/9/2003	0.068
MW-503	9/21/2004	0.91
MW-503	9/12/2005	0.5
Outside TWA-II Area		
MW-104B	4/20/2005	0.24
MW-510A	9/12/2005	0.14

VOCs. From April 2002 to April 2007, concentrations of VOCs detected in MOM monitoring wells have been decreasing and groundwater performance standards have been met at wells outside of the TI zone. The only exceedances of the performance standards have been in two bedrock wells (MW-104B and OW-201B) located outside and downgradient of the TWA II Area but within the TI zone. Between April 2002 and September 2003 concentrations of 1,2-dichlorobenzene (performance standard 85 ug/L) ranged from 87 to 110 ug/L, and concentrations of 1,4-dichlorobenzene (performance standard 27 ug/L) ranged from 28-44 ug/L. Concentrations of 1,2-dichlorobenzene and 1,4-dichlorobenzene have been below the performance standards at these two wells since April 2004. In addition, a Mann Kendall trend test was performed that indicated a statistically significant downward trend in the 1,4-dichlorobenzene concentrations in these wells.

Well MW-106B (outside the TI zone) flows under artesian conditions most of the year. As such, it provides an indication of the water quality of the bedrock groundwater migrating from the Site. Since April 2002, low levels of VOCs have been detected at MW-106B and are generally decreasing; total VOCs range from approximately 23 ug/L in April 2002 to approximately 1 ug/L in April 2007. There have been no exceedances of groundwater performance standards for VOCs at MW-106B.

Monitoring wells MW-507A and MW-508B (outside of the TWA II Area, but within the TI zone) are placed in the bedrock trough, which is the primary discharge pathway for groundwater from the upper portions of the Site. These wells monitor the till/bedrock migration pathway (MW-507A) and the secondary bedrock migration pathway (MW-508B). Since April 2002, several VOCs have been detected at MW-507A, but none has exceeded groundwater performance standards. These concentrations have been fluctuating and generally decreasing; total VOCs ranged from approximately 100 ug/L in 2003 to less than 1 ug/L in 2007. The bedrock concentrations of VOCs observed in MW-508B have been non-detect since September 2002.

TWA II Wells. The groundwater from the five wells in the TWA II area have typically not been sampled because the observable oil in these wells would not give representative results of the dissolved concentrations. However, observation well OW-204B has not shown any indication of

transformer oil since April 2000, and thus, has been sampled since 2002. The concentration of PCBs detected at OW-204B has been decreasing (maximum of 0.81 ppb was detected in April 2002), and has been non-detect since April 2006. Very low concentrations of VOCs have been detected since 2002, and have been non-detect since September 2006.

Observation well OW-301B has not had observable transformer oil since the 2003 VER, and was sampled for the first time in April 2007. Concentrations of PCBs in groundwater at OW-301B exceeded the groundwater performance standard at 74 ug/L. Concentrations of five out of eight VOCs exceeded performance standards. It should be noted that due to the damaged casing at OW-301B, a properly purged sample could not be obtained, and a bailer was used to collect the sample.

Groundwater samples have not been collected from the other TWA II wells because of the presence of residual transformer oil. Therefore, the samples collected from OW-204B and OW-301B are not considered to be representative of actual dissolved contaminants in the TWA II groundwater.

To date the MOM monitoring program has shown that groundwater performance standards for PCBs have been met for wells outside the TI zone since April 2006, and performance standards for VOCs have been met for wells outside the TI zone since April 2002. From April 2002 to September 2005, the only PCB exceedances in wells outside of the TI zone were in MW-501 and MW-503. At monitoring wells within the TI zone, but outside of the TWA II Area, there have been no exceedances of PCBs since April 2006, and no exceedances of VOCs since April 2004. Within the TWA II area, concentrations of PCBs, and several VOCs have exceeded the groundwater performance standards. The source of this contamination in groundwater in the TWA II area is believed to be the residual oil trapped in the cracks in the clay and bedrock fractures. As stated above, based on the TI waiver established in the 2002 ROD Amendment, groundwater performance standards for PCBs and VOCs are waived within the TI zone (including the TWA II Area).

6.4.3 Riggs Brook OU-3

This section reviews ten years of Riggs Brook sediment data (1996-2005) and two years of biota data (1997 and 2000). A total of 364 samples were collected over these ten years and analyzed for PCBs. The sampling program began with 24 locations as specified in the 1996 Sampling and Analysis Plan and expanded to 36 locations in 2001, after an additional 51 locations, in a more-closely spaced grid, were sampled in 2000. The sediment data is summarized in Appendix C. PCB concentrations have exceeded the 5 ppm trigger level at a few locations. PCB concentrations in biota have not exceeded the 2 ppm threshold level. Sampling results are discussed below.

- Over the past 10 years, 208 sediment samples have been analyzed from the 21 locations adjacent or downgradient of the site identified in the Sampling and Analysis Plan (SAP). Only seven of these samples from four locations exceeded 5 ppm PCBs (three at location 8006, two at location 8004, and one at location 8013 and location 9C100).
- As a result of the PCB results at location 8006, a more rigorous supplemental sampling plan was undertaken in 2000. Fifty-one locations on a grid around 8006 were sampled. Only four of these samples exceeded 5 ppm PCBs. Ten of the supplemental grid locations including the four that exceeded 5 ppm PCBs were added to the annual

sampling program. Over the next 5 years only one sample at an added location exceeded the 5 ppm threshold. Overall, of the 101 samples taken over 6 years in the supplemental grid area, only 5 samples exceeded 5 ppm PCBs, and no location has more than one exceedance.

- In 1998 two locations, 3018 and 8039, were mistaken for locations 8004 and 8013, respectively, and sampled. CMP continued to sample these locations in subsequent years. Location 3018 exceeded the 5 ppm threshold on a number of occasions, while location 8039 was consistently non-detect for PCBs.

Location 3018 is actually located within Area 3 of the Source Control operable unit (OU-1), and is outside the original Riggs Brook area of investigation. However, as noted in Figure 2 of the 2007 wetland monitoring report, this location appears to be within the delineated wetland, and thus, should be assessed using the criteria set forth in the 1989 ROD.

- PCB concentrations in 20 biota samples taken during both the 1997 and 2000 sampling events were below the target level of 2 ppm wet weight. (The 2000 sampling was changed from the originally scheduled date of 2002 at the request of EPA and USFWS.) A comparison of the two sampling events concluded that there was a decreasing trend in PCB concentrations during the 3-year period. The results of the biota sampling were presented in the 1997 and 2000 Riggs Brook Sediment and Biota Monitoring Reports.

The results of the 10-year sampling program show the sediments in Riggs Brook to be stable, with no indication that PCBs are migrating or increasing in concentration. Over 95% of the samples were below the PCB action trigger level of 5 ppm; the annual mean varied between 0.38 to 1.93 ppm (three years greater than 1 ppm, seven years 1 ppm or less). See Table 6-1 below for a statistical summary of the ten years of data and Appendix C for all the data. The sporadic exceedances of PCBs above the 5 ppm trigger level within Riggs Brook appear to be the result of the variability of sediment deposition near the brook. The biota samples were all below the threshold limit for the Site.

Table 6-1: Summary Statistics of Annual PCB Sediment Sampling Data

Year	Number above Action Trigger Level/Sampling Locations	Number of Non-Detects/Sampling Locations	Maximum Concentration ppm (mg/kg)	Maximum Concentration Location	Mean Concentration ¹ ppm (mg/kg)
1996	0/24	9/24	4.1	3018	0.41
1997	2/24	14/24	29	8004	1.72
1998	2/24	13/24	16.8	8006	1.15
1999	1/26	19/26	14	8006	0.75
2000	1/26	20/26	10.4	8006	0.74
2000 (supp)	4/51	9/51	12.6	9B000	1.59
2001	1/36	18/36	6.1	3018	0.40
2002	1/36	15/36	5.6	3018	0.58
2003	0/36	17/36	4.4J	3018	0.38
2004	2/36	12/36	18	3018	1.00
2005	2/36	11/36	8J	3018	1.05

¹ In calculating the mean, the detection limit value was used for non-detect locations and where duplicate samples were collected, the higher concentration value was used. Both of these methods therefore would produce a higher average concentration.

6.5 SITE INSPECTION

A site inspection was conducted on April 25, 2007 with representatives from EPA, Maine DEP, CMP and CMP's contractor. The inspection included a walkover focusing on the Designated Area boundary and observations of vegetated cover, monitoring wells and restored wetland areas. The Site is no longer secured with fencing and not all of the monitoring wells have secure locks. In 1997, EPA determined that the fence was no longer necessary once the soil cover was placed over the Designated Area, eliminating this exposure route. There has been no reported vandalism or trespassing on the Site. The vegetation appeared to be well established, given that the inspection was performed at the beginning of the growing season. The riprap spreader swales constructed to direct runoff from the lagoons toward Riggs Brook are in good repair other than a limited area below the Lower Lagoon where the underlying geotextile was visible. A small amount of soil was observed to have eroded from the base of the riprap between the upper and lower lagoons. A small low area was observed on the dirt access road near Route 17, along the edge of the Designated Area between boundary markers A and B. These areas will be repaired in accordance with the O&M Plan for the Site. The site inspection report, including site photos, is included in Appendix D.

CMP personnel check the Site during the quarterly passive recovery, the semi-annual monitoring

events, and following major storm events. CMP reported that they have been mowing the top grassy portion of the Site (including the Designated Area) annually for the last few years. Since the Site was farmland in the 1950's the perimeter trees and other vegetation have become well established in areas where there were no active operations.

No significant development of surrounding areas is underway; municipal water supply is available. As noted in Section 3.2, zoning districts encompassing the Site permit residential development. Institutional controls are covered in the Declaration of Restrictive Covenant signed by MEDEP and CMP and recorded in the Kennebec County Registry of Deeds on September 13, 2002. CMP and the RP contractor reported that there have been no known violations of the terms of the Covenant: no use of the groundwater; no activity that has disrupted remedial or monitoring measures; and the Site is maintained in a condition adequate to ensure the continued compliance with all applicable standards.

A follow-up inspection was performed on July 26, 2007 to assess the vegetative cover during the height of the growing season. Wildflowers were observed in the uplands (Black-eye Susan's, Queen Anne's lace, blue curls, goldenrod), while grasses and perennials, such as crown-vetch, have provided dense cover on the slope from the upland area down to the Riggs Brook wetlands. No areas of distressed vegetation were observed on the Site during the initial and follow-up site inspections.

6.6 INTERVIEWS

General discussions and observations were documented during the soil sampling on April 24, 2007 and the site inspection on April 25, 2007.

Roy Koster, CMP, noted that CMP personnel visit the Site on a quarterly basis to check the wells in the TWA II area for floating oil. When present, oil is collected using absorbent pads that are then taken to a CMP transfer facility in Augusta. In addition to these scheduled visits, CMP personnel also visit the Site after extreme weather events. CMP has no plans to develop the site; noting the Riggs Brook wetlands, the restored wetlands, and the steepness of the slope, CMP believes that there is limited acreage that would be available for redevelopment. Additionally, for the past several decades, most of the development in Augusta has been on the west side of the Kennebec River.

Mr. George Soucy, one of the Code Enforcement Officers for the City of Augusta, was contacted by telephone on August 2, 2007. He knew of the Site and its location and said he has received several inquiries about the availability of the property for development. As a 28-acre lot on a main highway with public water and sewer nearby, it has generated interest regarding its availability.

Mr. Soucy provided information on the current zoning in the area of the Site and provided the internet access to obtain the tax and zoning maps. He did not express any concerns about the activities that have been completed and was pleased to hear that groundwater had been meeting cleanup levels. The administrative record and site documents are available at the Lithgow Public Library in Augusta. Library staff indicated that few individuals have accessed the documents.

To date USEPA has received no response from the public following publication of the public notice in the Kennebec Journal on May 24, 2007.

7.0 TECHNICAL ASSESSMENT

The following sections evaluate the remedy based on its function in accordance with decision documents, its adherence to risk data and scenarios and any other information that could have affected the remedy's protectiveness. ARARs and To Be Considered (TBC) guidance for the Site identified during the development of the 1989 ROD and the 2002 ROD Amendment along with current ARARs and TBCs are provided in Appendix E of this Report for reference.

7.1 QUESTION A: IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?

ANSWER A: YES, the source control is complete with inspections and sampling indicating the soil cover is functioning as intended; the management of migration is meeting cleanup levels outside the TI zone; and, ten years of sampling of Riggs Brook sediment indicate the performance standards have been attained 95% of the time.

7.1.1 **OU-1: Source Control**

Remedial action performance and monitoring results. The 2002 FYR noted that the site was remediated in accordance with the requirements of the 1989 ROD, as modified by the 1994 ESD. The soil excavation and covering of the Designated Area with clean fill reduced public health and environmental risks from direct contact with contaminated soils and sediments, and exposure to surface water. Site inspections since the completion of this component of the work and soil sampling performed in April 2007 show that the integrity of the soil cover placed over the Designated Area has been maintained and the Source Control remedy is functioning as intended. EPA, MEDEP, and CMP are finalizing the draft O&M plan to ensure the long-term integrity of the soil cover over the Designated Area.

In accordance with the 2002 ROD Amendment and Statement of Work (SOW, Appendix II of the March 2004 Amendment to Consent Decree), the Designated Area boundary was simplified to a 10-sided shape and on-site markers were installed to clearly define marked boundaries (see Figure 4-1). In addition, shallow soil samples collected (see Figure 6-1) of the cover soil show that very low concentrations of PCBs were detected at several locations, but were well below the required cleanup level of 1 ppm. Therefore, the integrity of the soil cover on the Designated Area is intact and the soil cover is functioning as intended.

The 2007 wetland monitoring report concluded the natural and restored wetlands are dominated by wetland species consistent with natural communities. Overall, the restored wetlands are providing to a number of targeted functional values.

Operations and Maintenance Costs. Maintenance of the Site has only been necessary on the gravel access road and has been effective. As discussed earlier in this report, minor erosion was observed on the access road in 2003 and was repaired. During the April 2007 inspection, a small erosion area was observed on the access road and a small erosion area was observed in a drainage swale. These areas will be repaired in accordance with the O&M plan. Neither the minor erosion that was noted in 2003, nor the erosion areas that were observed in 2007 were deep, and they will not affect the protectiveness of the remedy.

O&M costs are less than originally estimated because site repairs have been minimal. The O&M costs presented do not include the site inspections that are performed by CMP or the wetland monitoring contractor.

Opportunities for Optimization. Now that the vegetation on the Site is well established, it is proposed that the mowing of the Designated Area be conducted in accordance with the O&M plan.

Indicators of Remedy Problems. Based on site inspections conducted, there do not appear to be any indicators of remedy problems.

Implementation of Institutional Controls. The Declaration of Restrictive Covenant prohibits any activity that might disrupt remedial or monitoring measures at the Site, or any use of the groundwater beneath the property without prior written approval of MEDEP. The Declaration of Restrictive covenant also requires that CMP maintain the property to ensure the ongoing adequacy of the remediation implemented under the Consent Decree. The implementation of institutional controls has thus far effectively ensured the integrity of the remedial measures conducted at the Site, and has prevented exposure to site soils. The Agreement, Release and Stipulation and the Declaration of Restrictive Covenant are provided in Appendix A. The CMP consultant has reported that no activities have been observed on the Site that would have violated the institutional controls. As noted earlier, the Site is checked by CMP or its consultant during the quarterly passive recovery of transformer oil events, the semi-annual groundwater sampling events, and after significant weather events.

7.1.2 OU-2: Management of Migration

Remedial Action Performance and Monitoring Results. Review of relevant MOM documents and results of the semi-annual groundwater monitoring indicates that the MOM remedy is functioning as intended outside the TI zone. As described earlier in this report, concentrations of PCBs outside of the TI zone have met the groundwater performance standard since April 2006, and VOCs have met performance standards since April 2002 with both PCBs and VOCs trending downward. Small amounts of residual transformer oil, containing PCBs and VOCs, remain in fractures in the clay and to a limited extent in bedrock. However, because of the inherent surface tension within the clay, little movement of the oil has been observed.

Groundwater remediation with the VER system and monthly passive transformer oil recovery has removed a total of approximately 121 gallons of the oil from the TWA II wells since 1992, including approximately 11 gallons since 2002. Groundwater monitoring results indicate decreasing trends in concentrations of VOCs over the entire Site.

Monitoring wells along the boundary of the TI zone continue to be monitored to ensure that groundwater performance standards are met outside of the TI zone.

Operations and Maintenance/Costs. There have been no O&M costs for MOM other than the water quality monitoring. No maintenance has been required for the wells. Groundwater monitoring costs are approximately \$25,000 per year.

Opportunities for Optimization. The groundwater-monitoring network should be re-evaluated and the locations and number of wells included in the network modified based on agreement by EPA, MEDEP and CMP. It may be possible to reduce the number of wells routinely sampled based on a review of historical groundwater results.

To determine if further amounts of oil can be extracted from these wells, as of 2007, the passive oil recovery program is continuing on a quarterly basis.

Indicators of Remedy Problems. With the remedy modified in 2002 to include a Technical Impracticability waiver for a limited area of the Site, the remedy is functioning as intended.

Implementation of Institutional Controls. The implementation of institutional controls, through the Declaration of Restrictive Covenant, has thus far prevented exposure to contaminated groundwater at the Site.

7.1.3 OU-3: Riggs Brook

Remedial Action Performance and Monitoring Results. Review of documents related to and sampling data obtained from Riggs Brook sediment and biota, indicates that after the PCB hot spot removal in 1997, the remedy is functioning as intended by the 1989 ROD, 1994 RSOW, 2002 ROD Amendment and the 2004 SOW. Ten years of monitoring at Riggs Brook have been completed; sediment monitoring was conducted annually 1996 to 2005, and biota monitoring was conducted in 1997 and 2000.

Over the last ten years, PCB concentrations in sediment have exceeded the 5 ppm trigger level in only a few sporadic locations (one or two out of 24 -36 locations per year), which appears to be the result of variability of sediment deposition near Riggs Brook. In addition, there is no indication that PCBs are migrating or increasing in concentration. Mann-Kendall statistical trend analysis does not show any statistically significant trends. The 1997 and 2000 biota sampling events have shown that PCB concentrations did not exceed the 2 ppm threshold limit, and in fact were less than 1 ppm wet weight. The small amount of PCBs detected in Riggs Brook do not appear to have adversely affected biota in the stream. Therefore the remedy is functioning as intended.

Operations and Maintenance/Costs. Since the remedial action for OU-3, monitoring, has been completed, there are no other operations or maintenance occurring at Riggs Brook. Based on information from the consultant for CMP, annual monitoring costs for Riggs Brook sediment monitoring were approximately \$10,000.

Opportunities for Optimization. Although the ten years of sampling required by the ROD have been completed, because of the frequent exceedance of the trigger level in sample location 3018, it may be more efficient to perform a limited removal of sediment (i.e., less than a cubic yard) rather than to continue to monitor it indefinitely.

Indicators of Remedy Problems. Based on annual sediment and biota monitoring, there do not appear to be any significant indications of remedy problems. Although PCBs have been detected each year in one or more sediment samples, of the 309 samples collected during the ten years of monitoring and the 51 added in 2000 as part of a supplemental grid, only 12 and 4 samples, respectively, exceeded the trigger level of 5 ppm at a few locations. Additionally, the mean annual PCB concentration has been below or just above the target cleanup level (1 ppm) in the last four years of monitoring. Overall concentrations of PCBs appear to be stable, with no indication that PCBs are migrating or increasing in concentration. In addition, concentrations of PCBs in sediment do not appear to be impacting biota (all samples less than the threshold level of 2 ppm).

Implementation of Institutional Controls. The institutional controls discussed in Section 4.2.2 apply to the entire Site, including OU-3, and there have been no infractions of these controls.

7.2 QUESTION B: ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEANUP LEVELS AND REMEDIAL ACTION OBJECTIVES (RAOs) USED AT THE TIME OF REMEDY SELECTION STILL VALID?

ANSWER B: YES, though there have been some limited changes in the toxicity data and cleanup levels since the 1989 ROD, the RAOs used at the time of the remedy selection, as modified, are still valid.

7.2.1 OU-1: Source Control Remedial Action

Changes in Standards and TBCs. As a part of this Five-Year Review, the ARARs presented in the 1989 ROD and 2002 ROD Amendment have been reviewed. In addition, a review of current ARARs, promulgated, amended or revised between 2002-2005 has been conducted. Since the SCRA has been completed, ARARs for soil contamination cited in the ROD and ROD Amendment have been met.

There are no current chemical-specific ARARs that apply to soil contaminants at the Site. The 1989 ROD target cleanup goals of 1 ppm for PCBs, 1 ppm for cPAHs and 248 ppm for lead used to remediate the areas of the Site outside the Designated Area are still the considered protective. Although the target cleanup goals inside the Designated Area were 10 ppm for PCBs, 10 ppm for cPAHs and 248 ppm for lead, the top 12-inches of soil on the Designated Area is comprised of clean fill. In addition, the April 2007 analysis of the soil cover on the Designated Area shows that the concentrations of PCBs in the soil cover are less than 1 ppm. Therefore, the source control component completed at OU-1 remains protective.

The only TBC guidance written since the last five-year review is EPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposures to Carcinogens, March 2005. This risk assessment guidance is discussed below.

Changes in Exposure Pathways. Seven exposure scenarios were identified in the Endangerment Assessment, including three potential current exposures and four potential future exposures. According to the 2002 ROD Amendment, following the completion of the source control component of the remedy, only two potential exposure pathways remained. They included future ingestion of groundwater from within the bedrock, and ingestion of fish caught in Riggs Brook. Since the 2002 five-year review, EPA released draft guidance on the vapor intrusion pathway.

Changes in Toxicity and Other Contaminant Characteristics. The contaminants with the greatest cancer risk potential at the Site were PCBs and cPAHs. Since the last five-year review was completed in 2002, the cancer slope factor (CSF) for PCBs has decreased from 7.7 (mg/kg/day)⁻¹ to 2 (mg/kg/day)⁻¹, as cited in EPA's Integrated Risk Information System (IRIS) database. A decrease in a cancer slope factor indicates that potential risk from exposure to contaminants is lower than previously calculated. The CSF for cPAHs, evaluated using benzo(a)pyrene, has remained the same at 7.3 (mg/kg/day)⁻¹, indicating no notable change in the risk of cancer at the Site.

Risk Reference Doses (RfDs) are values used to quantify the risk associated with specific

¹ (mg/kg/day)⁻¹ is the accepted shorthand practice in the risk assessment field where this would be read as 7.7 (in this example) per milligram of contaminant (PCBs) per kilogram of body weight per day, where the 7.7 is the risk per unit dose.

contaminants. Since the last five-year review, the RfD for PCBs has remained the same at 2×10^{-5} mg/kg/day², as cited in the EPA IRIS database (2007). The RfDs for cPAHs are not available in the IRIS database. In addition, the EPA blood lead level of concern (10 ug/dL) has not changed. Review of this information indicates that the remedy remains protective.

Changes in Risk Assessment Methods. The only change in risk assessment methods since the last five-year review is the manner in which cPAHs are evaluated based on EPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposures to Carcinogens, March 2005. This guidance document recommends application of an age-dependent adjustment factor (ADAF) to cancer slope factors of constituents with a known mutagenic mode of action when quantifying risks to children younger than 16 years. Benzo(a)pyrene has been identified as such a compound. While these changes may have an effect on calculated risks (and a decrease in the potential cleanup level for cPAHs), the protectiveness of the remedy would not be affected. Carcinogenic PAHs were remediated to 1 ppm throughout the Site. Even within the Designated Area, where PCBs remain with concentrations between 1 and 10 ppm, the extensive confirmatory sampling for the source control remedy found that cPAHs were always co-located with PCBs, and that the corresponding cPAH concentrations are only slightly above 1 ppm. Therefore, as long as the soil cover over the Designated Area is maintained, there is no potential for exposure, and the target cleanup goals set in the 1989 ROD, as modified in the 1994 ESD, remain protective of the exposures and receptors identified for the Site.

The methods used to assess risk of constituents in air have changed since the 1988 Endangerment Assessment was conducted, primarily with the evaluation of vapor intrusion from the subsurface into indoor air of a structure. However, because soils at the Site have been remediated, and institutional controls are in place where high levels of groundwater remain, this exposure pathway is not a concern.

Expected Progress Towards Meeting RAOs. The source control component of the remedy has been completed and met the remedial action goals for OU-1.

7.2.2 OU 2: Management of Migration

Changes in Standards and TBCs. There has been no change to the ARARs list for groundwater since the 2002 FYR. The 2002 ROD Amendment lists MCLs and 1992 Maine MEGs as chemical-specific ARARs, and the 2004 Statement of Work identifies the more conservative 1992 Maine MEGs as groundwater performance standards (see Table 3-1) where there are both federal and state standards.

The ROD amendment also established a waiver of these chemical-specific ARARs for a limited portion of the Site (the TI zone) on the basis on technical impracticability.

Changes in Exposure Pathways. Although institutional controls are in place at the Site, and there are no plans to develop the Site for residential or commercial use, future residential use is protective of other receptors, including potential commercial workers and temporary construction workers as long as water is not used for drinking water within the TI zone. As noted above, since the last review, EPA has issued draft guidance on exposure to volatiles in indoor air originating from shallow groundwater. A review of current groundwater data was

² This would be read as 2×10^{-5} milligrams of contaminant per kilogram of body weight per day where the measured concentration would be compared to this value for non-carcinogenic risks. If the measured concentration were greater than the calculated value using this equation, then this would indicate a potential risk.

conducted to determine whether this route of exposure is complete. In the areas of the Site that could be redeveloped (i.e., on more even terrain), shallow groundwater is primarily at a depth of 10 to 20 feet below ground surface. Concentrations of two VOCs, 1,2-dichlorobenzene (ND to 30 ug/L) and 1,4-dichlorobenzene (ND to 11 ug/L), were below the groundwater performance standards (85 and 27 ug/L, respectively), at one well (507A) in the shallow aquifer during the 2006-2007 sampling.

These concentrations are not expected to adversely affect indoor air in potential future buildings. The highest concentrations of these two compounds are well below the EPA target groundwater concentrations set in the draft guidance (protective of vapor intrusion) of 2,600 ug/L for 1,2-dichlorobenzene and 8,200 ug/L for 1,4-dichlorobenzene. Bedrock groundwater was not evaluated for this pathway, as shallow groundwater is the most likely potential source for volatilization into indoor air. Based on the limited concentrations in shallow groundwater, the exposure pathways that were evaluated remain valid.

Changes in Toxicity and Other Contaminant Characteristics. As discussed above, the 2002 ROD Amendment established groundwater performance standards for seven VOCs and PCBs. These are listed in Table 3-1. Since the last five-year review in 2002, the oral CSF for PCBs decreased to 2 (mg/kg/day)⁻¹, indicating a decrease in potential risk. The oral CSF for benzene increased from 2.9 E-2 (mg/kg/day)⁻¹ to a range of upper-bound CSF of 5.5 E-2 (mg/kg/day)⁻¹, indicating an increase in potential risk. CSFs were not available in EPA's IRIS database for 1,4-dichlorobenzene and other VOCs listed in the ROD Amendment (chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene and 1,3,5-trichlorobenzene). Although there may be an increase in potential risk due to an increase in the CSF for benzene, this constituent has not been detected in groundwater outside the TI zone since April 2003.

Since the last five-year review, the oral RfD (for non-cancer outcomes) has remained the same for PCBs at 2.0 E-5 mg/kg/day and as of 2007 was available for benzene at 4 E-3 mg/kg/day. RfDs for additional ROD Amendment VOCs that were available in EPA's IRIS database were 2 E-2 mg/kg/day for chlorobenzene, 9 E-2 mg/kg/day for 1,2-dichlorobenzene, and 1 E-2 mg/kg/day for 1,2,4-trichlorobenzene. The RfDs for 1,3-dichlorobenzene, 1,4-dichlorobenzene, and 1,2,3-trichlorobenzene were not available in the IRIS database. The inhalation reference concentration (RfC) for 1,4-dichlorobenzene remained the same at 8.0 E-1 mg/m³ and as of 2007 was available for benzene at 3.2 E-2 mg/m³. RfCs were not available in EPA's IRIS database for the other ROD Amendment VOCs or PCBs. Although the addition of RfDs and RfCs for benzene and other VOCs would increase the cumulative risk, benzene has not been detected outside the TI zone since April 2003, and concentrations of other VOCs detected outside the TI zone have been below the current MCLs and MEGs. Additionally, when assessing whether the OU-2 remedy has been completed, a final risk assessment will be performed that will include evaluation of the cumulative risk.

Changes in Risk Assessment Methods. Since the target cleanup levels for groundwater were based on MCLs and MEGs, changes in risk assessment methods would be accounted for because MCLs and MEGs use conservative default assumptions and are updated periodically.

Expected Progress Towards Meeting RAOs. A TI waiver has been granted for a small portion of the site groundwater. The TI Zone, about three acres in size, includes and surrounds the TWA II area, and includes the area where concentrations of VOCs (e.g., benzene, 1,4-dichlorobenzene)

and PCBs exceed groundwater performance standards. Based on groundwater data, groundwater outside the TI zone has met 2002 ROD Amendment performance standards for VOCs since 2002 and for PCBs since April 2006.

7.2.3 OU-3: Riggs Brook

Changes in Standards and TBCs. Sediment quality criteria discussed in the first five-year review have not changed. This guidance for sediment continues to be included as a TBC in Appendix E. These criteria continue to be more conservative than the 1989 ROD target cleanup goal of 1 ppm. However, it was agreed by all parties prior to the 1989 ROD, including the USFWS that negative short-term impacts to the wetlands ecology outweighed the removal of sediments to that level. A trigger level of 5 ppm PCBs for further action was therefore established in the ROD that, if exceeded, would require more rigorous sampling to determine the need, if any, for further remedial action.

Changes in Exposure Pathways. Land use in the Riggs Brook area has not changed and is not expected to change, and there are no additional routes of exposure beyond the ingestion of fish. As described earlier, the threshold limit set in the 1989 ROD was met in the two biota sampling events. With PCBs cleanup levels being attained in the groundwater outside the TI zone since spring 2006, there is no indication that this pathway would become an unacceptable risk in the future.

Changes in Toxicity and Other Contaminant Characteristics. The major contaminant that has been historically detected in Riggs Brook sediments is PCBs. Since the last five-year review in 2002, the oral CSF for PCBs has decreased to 2 (mg/kg/day)⁻¹. Therefore, the potential risk from exposure to PCBs would decrease. In addition, ten years of monitoring data show the overall concentrations of PCBs to be stable and not increasing.

Changes in Risk Assessment Methods. There have not been any changes in the risk assessment methods for sediment since 2002. Therefore the remedy remains protective.

Expected Progress Towards Meeting RAO. Ten years of sediment sampling in Riggs Brook have been completed. There have been periodic exceedances of the 5 ppm trigger level for PCBs in Riggs Brook sediment since sampling began in 1996. These exceedances appear to be the result of the variability of sediment deposition near the brook. The results of the 10-year sampling program show the sediments in Riggs Brook to be stable, with no indication that PCBs are migrating or increasing in concentration. Concentrations of PCBs in biota were below the threshold limit of 2 ppm in both the 1997 and 2000 sampling events.

7.3 QUESTION C: HAS ANY OTHER INFORMATION COME TO LIGHT THAT COULD CALL INTO QUESTION THE PROTECTIVENESS OF THE REMEDY?

ANSWER C: NO.

7.3.1 OU-1: Source Control Remedial Action

The source control work was completed with the covering of the Designated Area where soils with less than 10 ppm PCBs were consolidated, the subsequent reestablishment of vegetation, and institutional controls that require that the soil cover be maintained. Continued O&M will ensure that the site soils are not accessible so there is no potential for human exposure. MEDEP expressed concern during the 2007 site inspection that one foot of clean fill above the Designated

Area soils may be insufficient to prevent burrowing animals from coming into contact with the consolidated soils, and suggested that the periodic soil sampling be conducted at a depth greater than the 4 – 8 inches previously recommended by MEDEP. No other information has been discovered that would call into question the protectiveness of the remedy for OU-1.

7.3.2 OU-2: Management of Migration

The main issue for OU-2 at the time of the 2002 five-year review was the possibility of a need for a TI waiver for a portion of the groundwater.. This waiver was subsequently part of the 2002 ROD Amendment. Ongoing monitoring of groundwater has shown that beyond the TI Zone VOCs have met the performance standards since the spring 2002 sampling event and PCBs since the spring 2006 sampling event. A decrease in concentrations has also been noted in the monitoring wells within the TI Zone and the amount of oil collected from TWA II wells has decreased such that active recovery is no longer being performed. No other information has been discovered that would call into question the protectiveness of the remedy for OU-2.

7.3.3 OU-3: Riggs Brook

The remedy selected for Riggs Brook consisted of the monitoring of contaminants in sediments and biota. There have been sporadic exceedances of clean-up goals for OU-3 (less than 5% of the sampling data, or one to two locations per year, have been above the trigger level); however, the annual mean PCB concentration since 2001 was 0.40 to 1.05 ppm with the target cleanup level being 1 ppm. The biota sampling has shown the PCB concentrations to be below the 2 ppm threshold level (in fact, the detected concentrations have been below 1 ppm). While this area is mapped as a Zone A flood hazard area, it has not been negatively affected by any flooding or other weather-related events since the last review. The April 25, 2007 site inspection came after two significant storm events earlier in April, and there was not any indication of storm-induced erosion. Further, the 2007 wetland monitoring report stated that the Riggs Brook wetlands did not appear to serve as a floodplain, given its location in the watershed. No other information has been discovered that would call into question the protectiveness of the remedy for OU-3.

7.4 TECHNICAL ASSESSMENT SUMMARY

According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the 1989 ROD, as modified by the 1994 ESD and the 2002 ROD Amendment. There have been no significant changes to the physical conditions of the Site since the 2002 five-year review other than perhaps an increased level of vegetative growth. The response actions required for OU-1 has been completed and the samples taken for the soil cover in OU-1 were well below the cleanup level. ARARs for groundwater are being met outside the TI Zone, and institutional controls prevent exposure to contaminated groundwater in the TI Zone. The ten years of annual sediment sampling indicate the PCB concentrations are stable and the mean concentration for the final four years of sampling was below or just above the target cleanup level. There have been some changes in toxicity factors, a decrease in the CSF for PCBs, thereby lowering its risk, and an increase in the oral CSF for benzene. However, as benzene has not been detected in the groundwater outside the TI Zone since spring 2003, this change does not affect the original determination of risk in the ROD. Additionally, there have been no changes to the standardized risk assessment methodology that could affect the protectiveness of the remedy. Finally, there is no other information for any of the OUs that calls into question the protectiveness of the remedy.

7.4.1 OU-1: Source Control Remedial Action

The source control portion of the remedy was completed in accordance with the ROD through the excavation and offsite disposal of soil and sediment with greater than 10 ppm PCBs, and the consolidation and covering of soil with less than 10 ppm PCBs into the Designated Area. Additionally, O&M costs have remained lower than original estimates. ARARs that apply to soil on Site have been met pursuant to the ROD, and additional TBCs identified since the ROD have also been met. Land use at the Site has not changed over the years, nor it is expected to in the future, therefore all exposure pathways identified remain valid, and no new pathways relevant to source control have emerged. Although some toxicity values for contaminants onsite have changed, the changes would not affect the outcome of the original Endangerment Assessment since there would be no significant change in cancer risks at the Site. With the completion of this work, the remedial action objectives for OU-1 were met.

7.4.2 OU-2: Management of Migration

As described in previous sections, documents and sampling results for the MOM portion of the Site show that the remedy is functioning as intended for the groundwater outside the TI Zone. The Declaration of Restrictive Covenant prevents exposure to contaminated groundwater within the TI Zone. There have been no additional O&M costs beyond the original scope of work. There have not been any changes in groundwater standards since the 2002 ROD Amendment. Since none of the decision documents specify the duration that performance standards have to be maintained before the remedial action objectives are met, with the attainment of standards for VOCs since spring 2002 and for PCBs since spring 2006, it would now be appropriate for EPA to address this issue.

One new exposure pathway identified since the ROD is the indoor pathway that would potentially exist if buildings were constructed onsite. However, there are currently no plans for any on-site construction and all previously identified pathways remain valid. Additionally, the VOC concentrations in the shallow groundwater do not suggest a significant source of vapors.

There were some changes in toxicity data for site contaminants, however only the oral CSF for benzene indicates a slightly greater risk of cancer than previously determined. Since the benzene *has not been detected in groundwater outside the TI Zone since spring 2003*, this change does not affect the protectiveness, and the original assessment remains valid.

7.4.3 OU-3: Riggs Brook

Document and data reviews for Riggs Brook indicate that the remedy is functioning as intended by the ROD and RSOW. The institutional controls implemented for the rest of the Site also apply to OU-3. Sampling at 36 locations since the 2002 FYR has indicated one exceedance in 2002, none in 2003, and two each in 2004 and 2005. The extent of the exceedances was found therefore to be very limited within the wetland area and the conditions appear to be stable. Concentrations of PCBs in biota were below the threshold level of 2 ppm in both the 1997 and 2000 sampling events.

There are several TBC documents that were reviewed for this report that provide guidance in establishing sediment standards. Although there have been exceedances of the 5 ppm trigger level, the annual mean PCB concentration was either below or just above the target cleanup level for the last four years of sampling. Additionally, as with the other OUs, the change in the CSF for PCBs would slightly lower the risk values for sediments, thereby not affecting the protectiveness of the remedy.

8.0 ISSUES

8.1 SOURCE CONTROL

As discussed previously, the remedial action for OU-1 was completed in 1997. Long-term maintenance of the soil cover continues and repairs to minor erosion features on the access road have been made consistent with the draft O&M Plan. Permanent markers outlining the boundary of the Designated Area have been installed. Sampling of the Designated Area soil cover coincident with the five-year reviews has begun.

Maine DEP has voiced two concerns relative to the soil cover. One, in order to demonstrate the thickness of the 12-inch soil cover, the soil samples should be collected at 8 – 12 inches below the ground surface rather than the previously agreed upon 4 – 8 inches. Two, as burrowing animals, such as woodchucks, can make tunnels more than 12 inches below ground surface, the O&M plan should be expanded to include a burrowing animal management plan. Both of these concerns can be addressed as EPA finalizes the O&M Plan.

8.2 MANAGEMENT OF MIGRATION

The groundwater in the TWA II area of the Site was impacted by residual oil and EPA determined that it was technically impracticable from an engineering perspective to attain federal and state drinking water standards for a limited portion of the Site within a reasonable timeframe. Consequently, EPA amended the 1989 ROD in 2002 and included a waiver for attaining drinking water standards for that area (approximately 3 acres in the 23-acre Site). In order to maintain the protectiveness of the remedy, the 2002 ROD required active and passive recovery of the residual oil, long-term monitoring, and recording of the Declaration of Restrictive Covenants in the Kennebec County Registry of Deeds. All three components have been implemented.

The Statement of Work, Appendix II to the March 2004 Amendment to the Consent Decree, stated that the necessity and conditions for continuation of the oil recovery would be addressed in this five-year review, and each subsequent five-year review period. As noted in Table 4, the amount of oil actively recovered annually in 2004 and 2006 has decreased to an amount that is comparable to that recovered using passive collection. *Therefore, the operation of the active oil recovery will be suspended at this time, and will be reassessed in the next scheduled five-year review in 2012. Passive recovery will continue.*

One issue for OU-2 was identified during the five-year review. None of the decision documents, the 1989 ROD, 1994 ESD, 1995 contingency remedy invocation, the 2002 ROD Amendment, or the 1992 Consent Decree or 2004 Amendment to the Consent Decree, specifies the criteria to be used to determine attainment of the groundwater cleanup goals. With the groundwater beyond the TI Zone meeting the VOCs cleanup levels (including those established in the 1989 ROD and those set in the 2002 ROD Amendment) since spring 2002 and the PCBs cleanup levels since spring 2006, EPA, with opportunity for review and comment by Maine DEP, should develop criteria to make this determination. As part of this determination, a final risk assessment of the

residual contamination will be performed. This risk assessment will include an evaluation of the cumulative risk from the multiple contaminants.

8.3 RIGGS BROOK

The ten years of annual sampling required in the 1989 have been completed. Over 95% of the samples were below the PCB action trigger level of 5 ppm; the annual mean varied between 0.38 to 1.93 ppm (three years greater than 1 ppm, seven years 1 ppm or less). With the anticipated continued attainment of PCB groundwater standards that started in the spring 2006, it is expected sediment conditions will remain stable.

It has been noted that the majority of PCB concentrations in the Riggs Brook sediments have been measured at sampling location 3018. Without this outlier, the annual mean would be lower. While this location was originally not in the Riggs Brook wetlands sampling program, the recent wetland delineation does confirm that it is located within the wetlands. Given the limited area, it may be more efficient to remove the sediment in this area (i.e., less than a cubic yard) rather than to continue to monitor it indefinitely.

9.0

RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
OU-1 Source Control						
Soil Sampling Depth	Change sampling depth to 8-12" for the soil cover sampling events	EPA	EPA/State	Dec 2007	N	N
O&M Plan	Update O&M Plan, obtain agency approval	CMP	EPA/State	Dec 2007	N	N
OU-2 Management of Migration						
Criteria for GW Cleanup Levels	Develop criteria to determine when GW Cleanup is completed	EPA	EPA/State	In FY 2008	N	N
OU-3 Riggs Brook						
Location 3018	Determine approach to address exceedances	CMP	EPA/State	Dec 2007	N	N

10.0 PROTECTIVENESS STATEMENTS

OU-1: The remedial action for OU-1 has been completed and is protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled through a clean soil cap that covers remaining contamination and institutional controls that have been placed on the Site. Finalizing the O&M plan will ensure that the OU-1 remedy will remain protective.

OU-2 : The remedy at OU-2 is because institutional controls are in place to prevent the use of contaminated groundwater within the TI zone. Outside the TI Zone, groundwater has met the target cleanup levels for VOCs since spring 2002 and since spring 2006 for PCBs and monitoring is continuing to occur to confirm that safe levels have been met.

OU-3: The remedy at OU-3 is protective of human health and the environment. Annual sampling of sediments for ten years has resulted in over 95% of the samples being below the action trigger level, and the annual mean PCB concentration has varied between 0.38 and 1.72 ppm. Results from the two biota sampling events were below the threshold level of 2 ppm for all samples, with the overall average being below 1 ppm. Site inspections have documented functioning habitat in both the uplands and wetlands. With the anticipated continued decrease in PCB concentrations in the discharging groundwater, the remedy is expected to remain protective of human health and the environment.

Because the remedial actions at all OUs are protective, the Site is protective of human health and the environment.

11.0 NEXT REVIEW

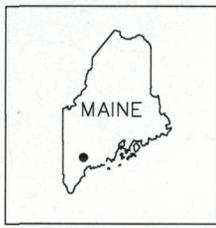
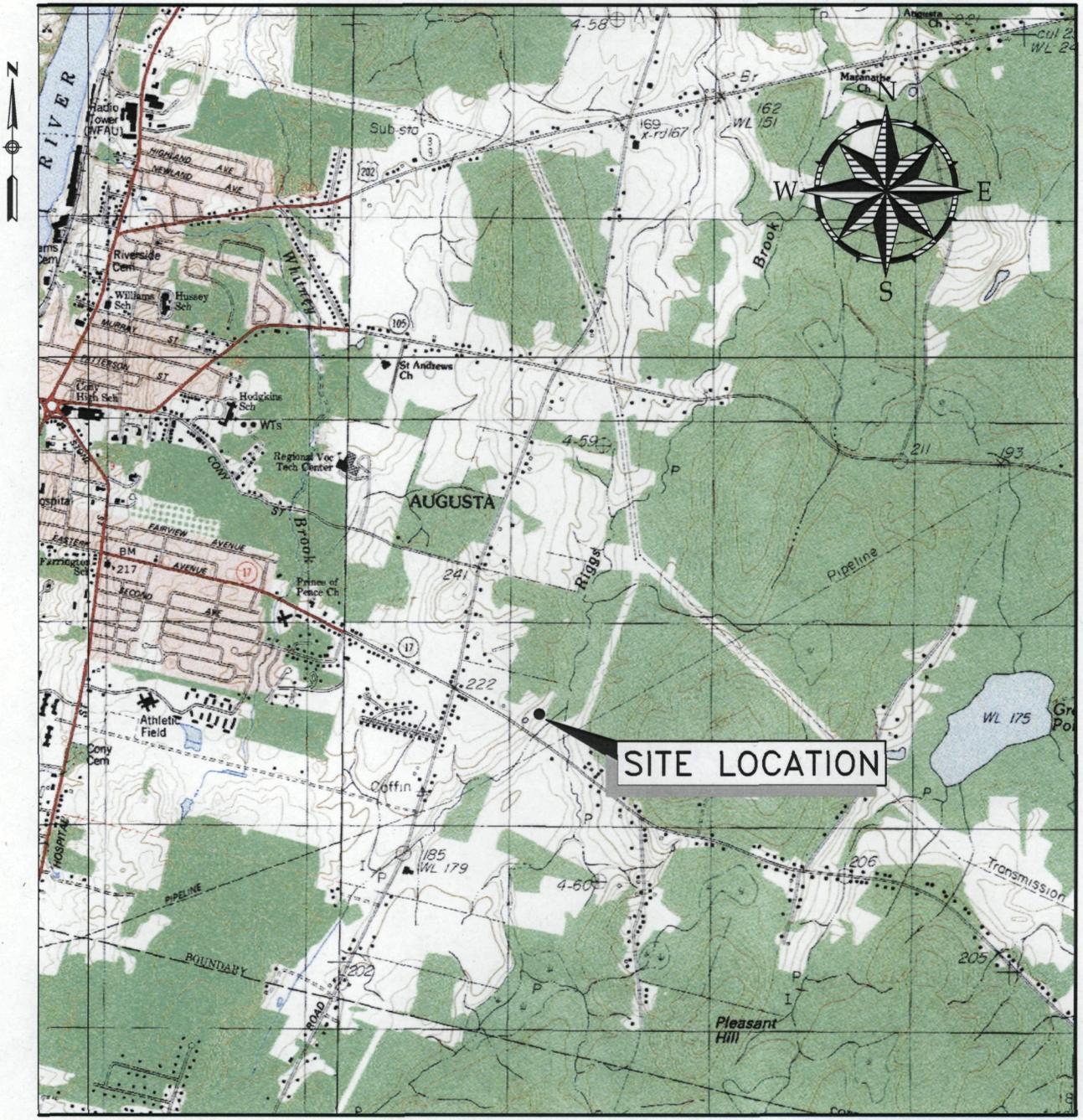
The third five-year review for the O'Connor Site will be conducted in 2012.

12.0 DOCUMENT REVIEW LIST & REFERENCES

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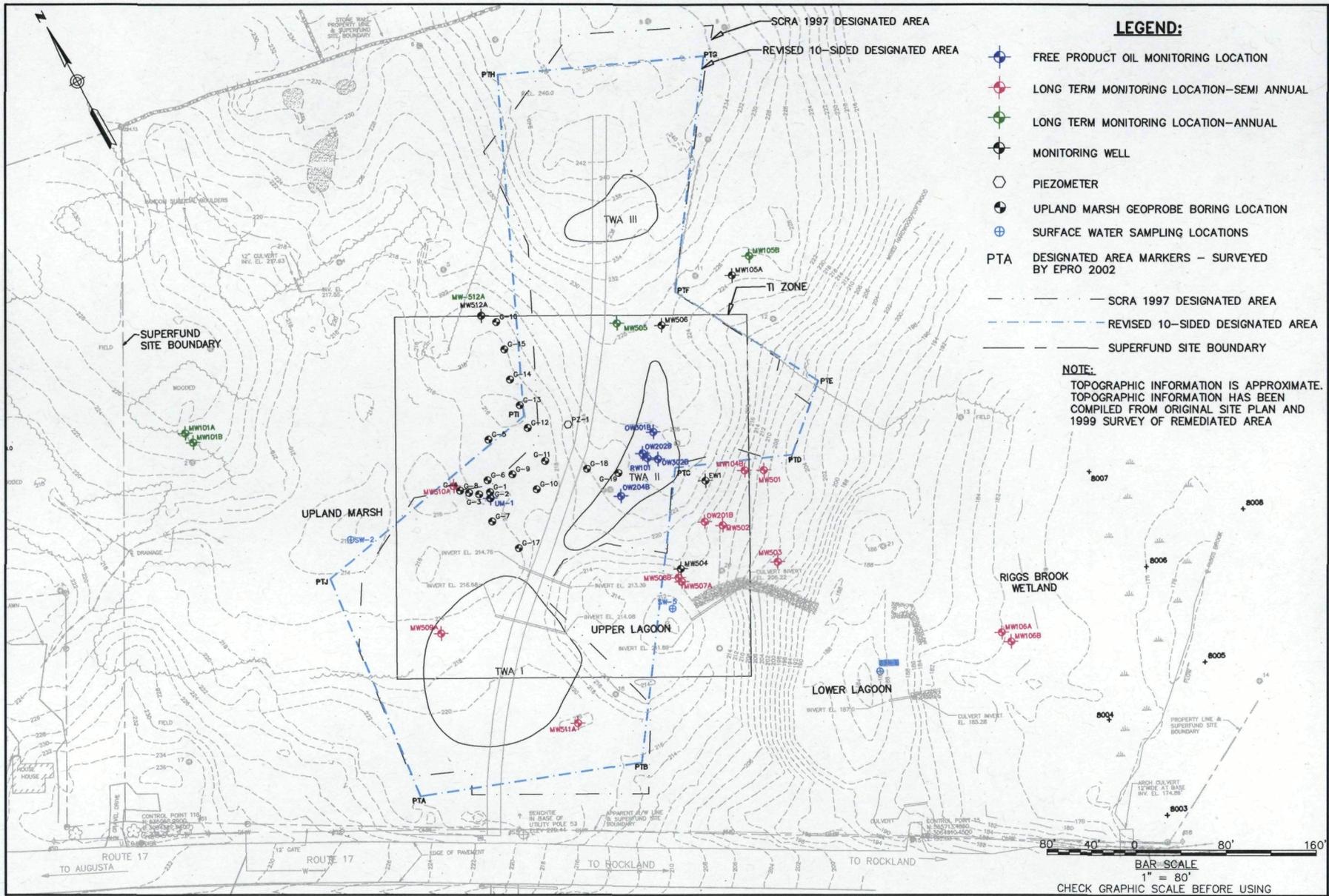
- Woodard & Curran, 10/97. *Final Riggs Brook Sediment and Biota Sampling and Analysis Plan*, O'Connor Superfund Site, Augusta, Maine; October.
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- Woodard & Curran, 2000. *1999 Riggs Brook Sediment Monitoring Report*, O'Connor Company Superfund Site, Augusta, Maine; February.
- Woodard & Curran, 2001. *2000 Riggs Brook Sediment and Biota Monitoring Report*, O'Connor Company Superfund Site, Augusta, Maine; July.
- Woodard & Curran, 2001. *2001 Riggs Brook Sediment Monitoring Report*, O'Connor Company Superfund Site, Augusta, Maine; December.
- Woodard & Curran, 2002. *MOM Sampling and Analysis Semi-annual Report*, April 2002, O'Connor Company Superfund Site, Augusta, Maine; June 10.
- Woodard & Curran, 2002. *Technical Impracticability Evaluation for OU-2 Management of Migration, O'Connor Company Superfund Site, Augusta, Maine*. Prepared for Central Maine Power Company, Augusta, ME; June.
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FIGURES
F. O'CONNOR SITE
SECOND FIVE-YEAR REVIEW



SOURCE: USGS TOPOGRAPHIC MAP
 AUGUSTA, MAINE / TOGUS POND, MAINE
 7.5 MIN. SERIES, 1988 LAND INFO INTERNATIONAL, LTD.

 <p>41 HUTCHINS DRIVE PORTLAND, MAINE 04102 800.426.4262 www.woodardcurran.com</p> <p>COMMITMENT & INTEGRITY DRIVE RESULTS</p>	<h3>SITE LOCATION MAP</h3>		CENTRAL MAINE POWER AUGUSTA, MAINE	JOB NO: 212004.01 DATE: JUNE 2007 SCALE: AS NOTED
	DESIGNED BY: DRAWN BY: PFF	CHECKED BY: LM 21200401-U3-1.dwg	O'CONNOR COMPANY SUPERFUND SITE	FIGURE 3-1



LEGEND:

- FREE PRODUCT OIL MONITORING LOCATION
- LONG TERM MONITORING LOCATION—SEMI ANNUAL
- LONG TERM MONITORING LOCATION—ANNUAL
- MONITORING WELL
- PIEZOMETER
- UPLAND MARSH GEOPROBE BORING LOCATION
- SURFACE WATER SAMPLING LOCATIONS
- PTA DESIGNATED AREA MARKERS – SURVEYED BY EPRO 2002
- SCRA 1997 DESIGNATED AREA
- REVISED 10-SIDED DESIGNATED AREA
- SUPERFUND SITE BOUNDARY

NOTE:
 TOPOGRAPHIC INFORMATION IS APPROXIMATE.
 TOPOGRAPHIC INFORMATION HAS BEEN
 COMPILED FROM ORIGINAL SITE PLAN AND
 1999 SURVEY OF REMEDIATED AREA

41 HUTCHINS DRIVE
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 800.426.4332 | www.woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

DESIGNED BY: LEM PFF

CHECKED BY: LEM PFF

DRAWN BY: LEM PFF

CENTRAL MAINE POWER
 AUGUSTA, MAINE

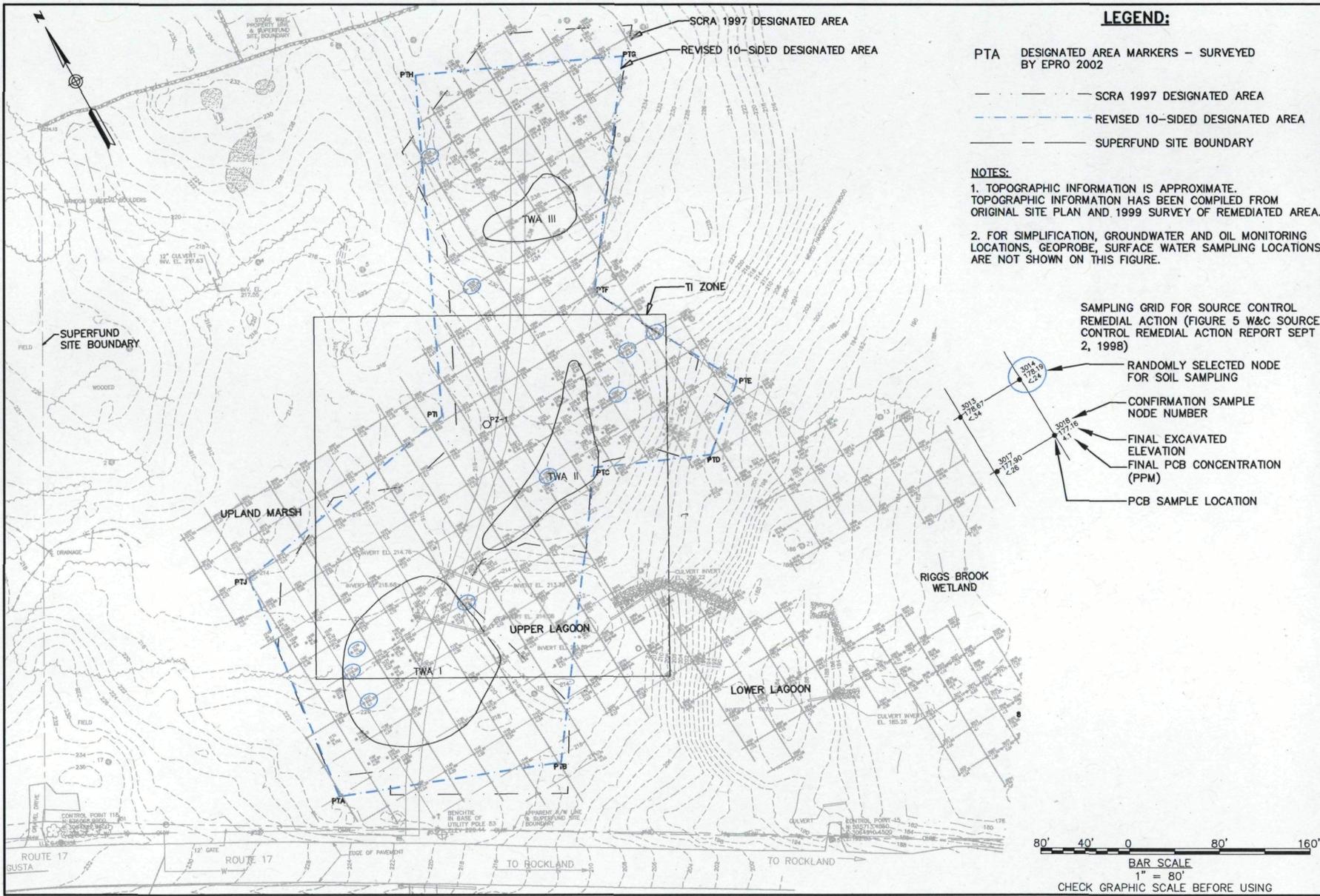
O'CONNOR COMPANY
 SUPERFUND SITE
 5-YEAR REVIEW

JOB NO: 212004.01

DATE: SEPT. 2007

SCALE: AS NOTED

FIGURE 4-1



41 HUTCHINS DRIVE
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COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

DESIGNATED AREA SOIL SAMPLING LOCATIONS

DESIGNED BY: LEM
DRAWN BY: PFF

CHECKED BY: LEM
2/20/04/01fig6-1.dwg

CENTRAL MAINE POWER
AUGUSTA, MAINE

O'CONNOR COMPANY
SUPERFUND SITE
5-YEAR REVIEW

JOB NO: Z12004.01
DATE: SEPT. 2007
SCALE: AS NOTED

FIGURE 6-1