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December 21, 2006

Ms. Karen Lumino
United States Environmental Protection Agency
Mail Code: HBT
1 Congress Street
Boston, MA 02114-2023

Mr. Michael Smith
Vermont Department of Environmental Conservation
Waste Management Division
103 South Main Street
Waterbury, VT 05676

RE: Remedial Action Construction Completion Report
Pine Street Canal Superfund Site, Burlington, Vermont

Dear Ms. Lumino and Mr. Smith:

On behalf of the Performing Defendants and at the request of Ms. Karen Lumino, attached is the revised Remedial Action Construction Completion Report for the Pine Street Canal Superfund Site, Burlington, Vermont. This document incorporates the Performing Defendants' responses to EPA comments on the Remedial Action Construction Completion Report of September 3, 2004. That report, and the Performing Defendants' responses to EPA comments on that report, were conditionally approved by EPA on December 30, 2004.

Please do not hesitate to call me at (781)642-8775 should you have any questions.

Sincerely,
de maximis, inc.

Thor Helgason
Project Coordinator

cc: Norm Terreri - Green Mountain Power Corp.
David Ledbetter - Hunton & Williams
Brian Stearns - National Grid
Rob Kirsch - WilmerHale LLP
Jay Mullowney - Vermont Gas Systems, Inc.
Peter Van Oot - Dpwn Rachlin & Martin, PC
Chris Crandell - The Johnson Company

REMEDIAL ACTION CONSTRUCTION COMPLETION REPORT

VOLUME I
REPORT & APPENDICES

Pine Street Canal Superfund Site
Burlington, Vermont

Prepared for
Performing Defendants

Submitted to
U.S. Environmental Protection Agency
Region I
The State of Vermont

Conditionally Approved December 30, 2004

PREPARED BY:

The Johnson Company, Inc.
100 State Street, Suite 600
Montpelier, Vermont 05602

Revision 1
Reprinted November 2006

Disclaimer

This document is a DRAFT document prepared by the Performing Defendants under a government Consent Decree. This document has not undergone formal review by the EPA and VT DEC. The opinions, findings, and conclusions, expressed are those of the author and not those of the U.S. Environmental Protection Agency and VT DEC.

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1.0 INTRODUCTION

This Remedial Action Construction Completion Report (RACCR) for the Pine Street Canal Superfund Site (the Site) has been prepared in accordance with the Consent Decree and Statement of Work (SOW) entered into February 11, 2000 between the EPA and the Performing Defendants. This RACCR describes the activities performed to implement the construction of the Remedial Action, and describes the results of that implementation.

The Site is located on the eastern shore of Lake Champlain (the Lake) in Burlington, Vermont. It lies in a topographically low area and includes an abandoned barge canal (the Canal) and a turning basin (the Turning Basin), adjacent filled-in boat slips, and vegetated wetlands south, east, and west of the canal. The primary environmental concern at the Site resulted from the past operation of a manufactured gas plant near the southern end of the canal. Coal tar residues from this plant, which were historically discharged to the Site, have been detected in groundwater, canal sediments, and wetland sediments on the Site. In November 1981, the Site was placed on the National Priority List (NPL).

Remedial investigations and risk assessments were performed at the Site during the 1980s and 1990s which concluded that there was no migration of contamination off-site and there were no unacceptable human health risks associated with the on-site contamination given current land uses. The ecological risk assessments did identify unacceptable risk to on-site ecological receptors thereby requiring a remedial action to address those risks.

During the course of completing the remedial investigations and risk assessments, the Site was broken down into “study areas” with east-west transects every 100 feet for convenience. The transects, which run east-west, were originally established for the Additional Remedial Investigation on a 100-foot spacing, and are numbered from north to south starting with T1 and ending with T30. Locations between transects are connoted by the nearest transect to the north plus the distance from that transect. Positions along a transect are called transect nodes and are connoted by E (east) or W (west) followed by the number of feet from the west end of the transect. For example, T7+20E53 is a location 20 feet south of T7 and 53 feet east of the west

end of the transect. The ends of the transects vary depending on where on the Site they are located and are defined as follows:

- from transect T1+50 and northwards, the transect node is measured as the distance east of the eastern side of the railroad bridge over the canal outlet;
- from transect T1+51 to transect T14+50 the transect node is measured as the distance east of the west side of the canal;
- from transect T14+51 to transect T17+50 the transect node is measured as the distance east or west of the base of the railroad bank; and
- from transect T17+51 southwards the transect node is measured as the distance east of the General Dynamics property line.

References to these study areas, numbered 1 through 8, continued during Remedial Action design and implementation and are therefore referenced similarly in this RACCR. The locations of these eight reference areas and transect designations are shown on Figure 1.

In November of 1992, EPA proposed an initial clean-up plan for the site. The plan called for the construction of a containment/disposal facility (CDF) on a portion of the Site and dredging contaminated sediments from the Canal and Turning Basin and placing the sediment in the CDF. Public comment on the proposed plan was overwhelmingly negative and after the six-month comment period, EPA withdrew the proposed clean-up plan on June 4, 1993. Following additional studies the EPA released the revised proposed clean-up plan in May 1998 which became the final selected remedy.

The selected remedy included construction of surficial and sub-aqueous caps to isolate contaminated sediments from ecological receptors, restoration and maintenance of the wetlands impacted by the cap installation (including construction of a weir at the outlet to the Lake to maintain water levels at the Site), and construction of stormwater management features to facilitate the removal of stormwater contaminants upstream of the remedy to protect the chemical integrity of the cap. Other components of the remedy include operation and maintenance, long-term compliance monitoring, institutional controls, and 5-year reviews. The chronology of the construction of the Remedial Action elements is presented in Table 1.

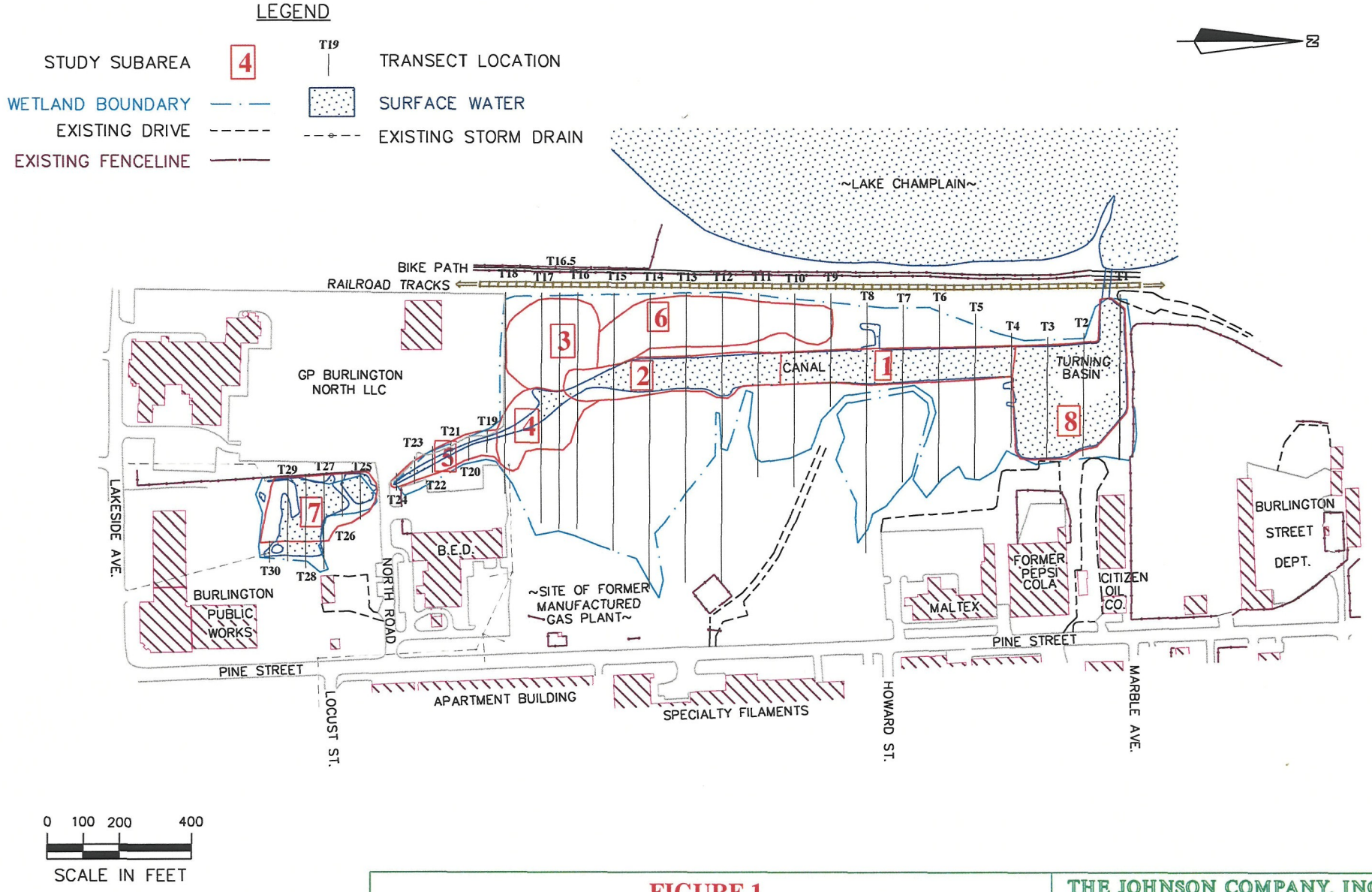

FIGURE 1
STUDY AREAS & TRANSECT LOCATIONS
PINE STREET CANAL SITE, BURLINGTON, VT

PROPOSAL.dwg

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602

DATE: 8/18/04 PROJECT: 1-0870-1
DRAWN BY: TJK SCALE: 1"=400'

TABLE 1 REMEDIAL ACTION CHRONOLOGY	
Milestone	**Date**
Record of Decision	September 29, 1998
Performing Defendants receive notice from EPA that the Consent Decree is lodged	November 29, 1999
Remedial Action design/build team of The Johnson Company & Fleet Environmental approved by the EPA.	December 23, 1999
Performing Defendants receive notice from the Court that the Consent Decree is entered	February 11, 2000
Remedial Design Workplan, Revision 0	February 24, 2000
Remedial Design Workplan, Revision 1	August 24, 2000
EPA approval of Remedial Design Workplan	September 28, 2000
Pre-Design investigations and pilot tests	Autumn 2000
Pre-Design Field Investigation Report, Revision 0	March 1, 2001
Conceptual Design Report, Remedial Action Project Operations Plan and Remedial Action Workplan, Revision 0	March 1, 2001
Decision to break Remedial Action into phases due to seasonal constraints, Lake Champlain Level and construction sequence	April 2001
Phase 1A (Outlet Weir) 95%/100% Design Submittal, Revision 0	July 27, 2001
Phase 1A (Outlet Weir) 95%/100% Design Submittal, Revision 1	September 4, 2001
EPA approval Phase 1A (Outlet Weir) 95%/100% Design Submittal, Revision 1 with revisions dated September 21, 2001.	October 2, 2001
Outlet weir construction	October 2001
Outlet weir construction final inspection , EPA and VTDEC	November 1, 2001
Responses to EPA/VTDEC comments on the Phase 1B Conceptual (30%) Design Report	January 16, 2002
Phase 1A Remedial Action Construction Completion Report, Revision 0	January 29, 2002
EPA approval Compliance Monitoring Workplan, Final Revision 3, April 3 2002 and Remedial Design Workplan, Revision 1, August 24, 2000	April 10, 2002
EPA conditional approval of the Phase 1B Conceptual Design	March 8, 2002
Submittal of supplemental design information on the Phase 1B Conceptual Design	March 20, 2002
Phase 1B (Areas 3 and 7 cap, stormwater features) 95%/100% Design Submittal, Revision 0	May 9, 2002
Additional Phase 1B submittal, responses to EPA/VTDEC comments	June 17, 2002
EPA conditional approval of the Phase 1B Final Design, May 9, 2002 with revisions June 17, 2002	July 8, 2002
Initiate Phase 1B construction	End of July 2002
EPA approval of the Phase 2 (sub-aqueous capping of canal and turning basin) Conceptual Design,	September 19, 2002
Submittal of Design Change #10 (dewatering of canal and capping sediments in the “dry”),150 foot test section, followed by the remainder of the Canal	November 1, 2002; Revised November 15, 2002
EPA approval of Design Change #10	December 3, 2002
Submittal of Design Change #11 (capping of the Turning Basin sediments in the “dry” and capping of the 100 foot by 100 foot area)	January 22, 2003
EPA conditional approval of Design Change #11	January 24, 2003
Completion of capping Canal and Turning Basin sediments	March 18, 2003
Re-flooding of Canal and Turning Basin	March 21, 2003
Submittal of West Bank Cap Remedial Action Workplan	December 3, 2003
Submittal of Supplemental West Bank Cap Remedial Action Workplan	December 18, 2003
EPA approval of Supplemental West Bank Capping Remedial Action Workplan	January, 29, 2004
Initiate West Bank Capping Construction	June 17, 2004
Completion of West Bank Capping and NAPL Removal	July 15, 2004
EPA and VT DEC Construction Completion Inspection	August 6, 2004

The Remedial Action construction was initially designed to be implemented in three phases due to seasonal limitations on construction. Phase 1A, construction of the weir, was performed first to allow control of the Canal water elevation during subsequent construction phases. Phase 1B, cap construction in Areas 3 and 7 (including stormwater management features), targeted a completion date of mid- to late summer, and a start date in late spring to facilitate re-vegetation immediately following construction. Phase 2, construction of the originally conceived sub-aqueous cap in the Canal and Turning Basin (Areas 1, 2, and 8) (ultimately installed in the "dry" as a design change to Phase 1B), could not be completed until the upstream Areas 3 and 7 were capped due to the potential for re-contamination during construction. The capping of the 100-foot by 100-foot area was done following the winter installation of the cap in the Canal and Turning Basin once access conditions were suitable for construction vehicles. During completion of Phase 1B it was agreed by all parties that construction of the cap in the Canal and Turning Basin would be best accomplished during the winter season as an extension (design change) to Phase 1B (described further below).

These three phases of the Remedial Action construction were completed. Phase 1A, installation of a concrete weir at the Canal outlet, was completed in autumn 2001. Phase 1B, the capping of Areas 3 and 7, construction of the Burlington Electric Department (BED) stormwater outfall and other stormwater management features, and capping and construction of the Area 2 waterway in the southern end of the Canal, were implemented in the summer and fall of 2002. Experience and information gathered during capping in Area 2 (and construction of the waterway there) indicated that it would be feasible and advantageous to apply the sand cap directly over the sediments in a dewatered Canal and Turning Basin instead of subaqueously as originally planned. Further, it was determined that construction during the winter season could take advantage of increased sediment strength due to freezing as well as accelerate the overall Remedial Action Schedule. Therefore, Phase 2, which includes capping the 100-foot by 100-foot area, was implemented as an extension of the Phase 1B construction during the winter and spring of 2003 in accordance with design changes to Phase 1B.

After the Canal and Turning Basin cap construction was completed and following the high seasonal Lake/Canal water level in the spring of 2003, non-aqueous phase liquid (NAPL), both lighter and denser than water (LNAPL and DNAPL, respectively), was observed on a portion of the west bank of the Canal (outside of the cap limits) and on top of a small portion of the Canal cap adjacent to this west bank area. A NAPL response strategy was developed during fall 2003 which included the recommendation of additional capping over the affected portion of the west bank of the Canal and removal of DNAPL from the surface of adjacent existing capped areas in the Canal. Following the winter of 2003/2004, and the lowering of the elevation of the water level in the Canal, this west bank cap and DNAPL removal was implemented in the summer of 2004.

2.0 PHASE 1A REMEDIAL ACTION CONSTRUCTION

As previously described in Section 1 the Phase 1A Remedial Action construction was completed in the autumn of 2001 and the Phase 1A Remedial Action Completion Report was submitted on January 29, 2002. That report is herein incorporated by reference. A brief summary of the constructed Phase 1A Remedial Action construction is provided below.

The Phase IA Remedial Action consisted of the construction of a cast-in-place, broad-crested concrete weir at the Canal outlet to the Lake. The weir is approximately 50 feet long and is located beneath the Burlington bike path bridge over the Canal outlet. The weir has five-foot long abutments on either end at an elevation of 98 feet above mean sea level based on the 1988 national geodetic vertical datum (feet NGVD). The main crest of the weir is at elevation 96.5 feet NGVD. There is a six foot wide sluice in the center of the weir with an elevation of 94.5 feet NGVD. This sluice has a steel guide cast-in-place to allow the placement of synthetic stop logs. The stop logs maintain the Canal water level at approximately 96 feet NGVD to optimize the wetlands functions on the Site.

The final Phase 1A construction inspection was performed by EPA on November 1, 2001. No deficiencies were noted by EPA.

3.0 SUMMARY OF PHASE 1B/2 AND WEST BANK CAP REMEDIAL ACTION CONSTRUCTION ACTIVITIES

3.1 INTRODUCTION

The Remedial Action construction activities were completed in accordance with the approved Remedial Design documents and Remedial Action Workplans (RAWPs) listed in Table 1, the Consent Decree and associated Statement of Work, and in compliance with the Applicable or Relevant and Appropriate Requirements (ARARs). A copy of the previously submitted Regulatory Compliance Statement, which summarizes the ARARs and regulatory compliance status, is in Appendix 1. The RAWPs for the different phases of work, which were submitted to EPA and the Vermont Department of Environmental Conservation (VTDEC) for approval prior to initiating the construction of the Remedial Action components, describe the activities necessary to implement the remedial action, and identify the management and organization for that implementation. Revisions and/or changes to the approved Remedial Design were submitted and approved by the EPA and the VTDEC through a design change process prior to implementation. Those design changes, including approval dates, are listed in Table 2. Copies of Design Changes 5 through 11 and 13 and the Design Change for the West Bank Cap (the more substantive design changes) are provided in Volume II of this report. The sections that follow, presented generally in chronological order, provide a summary of the major elements of work performed to implement the Remedial Action.

3.2 STAGING AND CONSTRUCTION SUPPORT

Equipment access and materials staging areas were created at various locations proximal to the various aspects of the work. A field office trailer, storage trailer, and portable toilet were staged south of North Road, opposite the BED facility, for all phases of the work. Temporary material stockpile areas were located on the southern side of Area 3 on the Gilbane properties parking lot, east of the Canal circa Transect T9, and on the Havey property, north of the Turning Basin. Re-fueling of equipment was performed in equipment staging areas. Access through Vermont Railway property on the west side of the Turning Basin was utilized for the installation and maintenance of the surface water bypass pumps used to lower the water level in the Canal.

TABLE 2 DESIGN CHANGE LIST		
Design Change #	**APPROVAL DATE**	**DESCRIPTION**
AREAS 1, 2, 3 ,7, 8 AND 100 FT. X 100 FT. AREA		
1	VTDEC - 9/16/02 EPA - 9/13/02	Bolt drain flange to drop inlet riser vs. welded
2	VTDEC - 9/16/02 EPA – 9/13/02	Minor variation in Area 7 forebay geometry
3	VTDEC - 9/26/02 EPA – 10/04/02	Standard backfill vs. select fill on top Gilbane culvert
4	VTDEC - 9/16/02 EPA - 9/13/02	Revise piping for Aux. 8" storm drain – Gilbane Culvert
5	VTDEC - 9/24/02 EPA - 9/18/02	Revise grading at BED Plunge Pool
6	VTDEC - 10/15/02 EPA - 10/11/02	Revise Area 2 waterway alignment/elevation
6A	VTDEC - 10/21/02 EPA - 10/21/02	Add 250' of 60 mil LDPE liner under waterway in Area 2
6B	VTDEC – 2/20/03 EPA - 2/19/03	Further Area 2 waterway re-location to allow construction of a berm over the eastern cribbing
7	VTDEC - 10/15/02 EPA - 10/04/02	Cut window into drop inlet
8	VTDEC - 10/15/02 EPA - 10/10/02	Revise periphery grading at Area 7
9	VTDEC - 12/03/02 EPA - 12/02/02	Expand stone in pool at North Rd. Abandon temporary bypass pipes in place
10	VTDEC - 12/04/02 EPA - 12/03/02	Dry cap installation in Canal starting with 150' test section
11	VTDEC – 1/27/03 EPA - 01/24/03	Turning Basin cap in dry and 100' x 100' area cap
12	----------	Reserved
13	VTDEC - 01/24/03 EPA - 01/21/03	Cribbing treatment
West Bank Cap		
1	VTDEC - 6/28/04 EPA - 6/28/04	Extension of the sand cap 1' to 2' east of the eastern edge of the cap

The construction access routes utilized during the construction of the Phase 1B and Phase 2 components of Remedial Action already existed and no significant site access preparation was necessary. Fencing was removed from along the western boundary of Area 7, the southern boundary of Area 3, and the southern boundary of the Havey Property in order to provide access in these areas. Access preparation also included cutting trees and brush along existing but overgrown uplands access routes to the Canal from Pine Street, from the Maltex parking lot to the stockpile area east of the Canal at Transect T9, and along an existing route from the Maltex parking lot to the 100 x 100' area south of the Turning Basin.

3.3 SITE PREPARATION

Site preparation included the deployment and operation of surface water bypass pumping equipment, installation of environmental and site controls (e.g., silt fences and curtains, construction fences, and sorbent booms), application of herbicide (Rodeo^{TM}) to existing phragmites in Area 7 and Area 3, and the general clearing and grubbing of vegetation in areas to be capped.

Silt curtains and sorbent booms were placed across the Canal and across the outlet from the Turning Basin to the Lake and maintained throughout all active construction (except when the Canal and Turning Basin were dewatered) to prevent construction-related impacts to the Lake. Silt fence was installed (to prevent construction impacts to adjacent wetlands areas) along the western and northern edge of the cap for Area 3, the east side of Area 2, the west side of the Canal inlet channel between North Road and Area 3, and around the BED stormwater outlet basin/apron.

In preparation for the Phase 1B Remedial Action, the surface water in the Canal was lowered to 94 feet via a surface water bypass pump that pumped water from the Turning Basin and discharged it to the Lake onto a rip-rap apron near the outlet weir. Due to the high lake level prior to Phase 1B construction, flashboards were installed on the top of the weir increasing the weir crest height to 98.0 to prevent the Lake water from inundating the Canal. The lowering of

the Canal water level began July 26, 2002, two weeks prior to construction activities. The bypass pump discharge was monitored daily for turbidity during active pumping (see Section 4.4 for a summary of monitoring results).

3.4 STORMWATER MANAGEMENT FEATURES

Stormwater management features constructed during the Phase 1B Remedial Action which included the new North Road Culvert and Drop Inlet and modifications at the outlets of the Burlington Department of Public Works (DPW), Burlington Electric Department (BED) and Gilbane storm sewers. These constructed features are shown on the as-built drawings for Area 7 on Sheet 1 of 10 (North Road Culvert and Drop Inlet and the DPW and Gilbane storm sewer outlet modifications) and for Area 3/2 on Sheet 5 of 10 (BED storm sewer outlet modifications) in Volume II.

3.4.1 North Road Culvert and Drop Inlet

The first stormwater features constructed were the drop inlet and the new culvert under North Road with a stone lined outlet plunge pool. The construction of these features included the following activities: 1) removal of the pavement on North Road over and on either side of the preexisting culvert under North Road; 2) temporary placement and operation of pumps upstream and inside the excavation area to pump out ground and surface water to temporary sediment basins located in the upper portion of Area 7 and the eastern portion of Area 3; 3) excavation and removal of the old culvert; 4) preparation of the subgrade; and 5) installation of the new culvert pipe and drop inlet. Backfill was placed around the culvert and drop inlet and compacted and the road base for North Road was installed and compacted. Concrete was placed in the bottom of the drop inlet. Once installed, the drain in the drop inlet was left open to allow surface water to flow out of Area 7 during the remainder of cap construction. Construction was completed August 15, 2002, and the restoration paving was completed on August 25, 2003.

The North Road culvert and drop inlet were constructed in accordance with the approved Phase 1B Remedial Design, including Design Changes 001 and 007, and the Remedial Action Workplan.

3.4.2 *Burlington Department of Public Works Storm Sewer*

The sedimentation forebay and its inlet channel at the DPW 48" storm sewer outlet into Area 7 were constructed as described below. Two pumps were installed; the first was placed in an existing manhole upstream of the storm sewer outlet to bypass incoming stormwater, and the second was utilized to de-water excavations during construction. Excavation to the design subgrade for the inlet channel and forebay was accomplished with an excavator. Upon verification of the correct subgrade, geotextile and stone rip-rap were placed to armor the channel and forebay. Construction was completed September 3, 2002.

The sedimentation forebay and its inlet channel at the DPW storm sewer outlet were constructed in accordance with the approved Phase 1B Remedial Design including Design Change 002, and the Remedial Action Workplan.

3.4.3 Burlington Electric Department Storm Sewer Outlet Modifications

The renovation of the BED storm sewer outlet basin and installation of a rock lined discharge apron was constructed concurrent with the DPW stormwater outlet modifications. One bypass pump was installed in a sump created at the end of the BED culvert outlet with sand bags, and a second was placed inside the excavation for de-watering purposes. Both pumps discharged into a temporary sediment basin adjacent to the Canal inlet. Excavated material was sorted between root mass and native soil and stockpiled. Excavated root mass was placed south of the BED apron and covered with topsoil. Approximately 40 yd^3 of native soil was moved to Area 3 for placement beneath the Area 3 cap. Excavation to the design subgrade was achieved with an excavator, followed by placement of geotextile and rip-rap in the outlet basin and rock-lined discharge apron. Adjacent disturbed areas were seeded with a wetland grass seed mix. Construction was completed on August 22, 2002.

The BED storm sewer outlet modifications were constructed in accordance with the approved Phase 1B Remedial Design including Design Change 005 and the Remedial Action Workplan.

3.4.4 Gilbane Storm Sewer Outlet Modifications

Following the completion of the channel and forebay downstream of the DPW storm sewer outlet, the Gilbane storm sewer interception manhole and culvert extension were constructed. One pump was installed in a manhole upstream of the Gilbane storm sewer outlet to bypass storm flow and a second pump was used to de-water excavations. Excavation for the manhole and culvert was accomplished with an excavator and suitable excavated materials were stockpiled for use as backfill, while unsuitable materials were moved to Area 3 for placement beneath the Area 3 cap. Upon achievement and verification of the design subgrade, the manhole was installed at the end of the existing storm sewer. A 220 foot galvanized steel, corrugated culvert extension was installed along with a galvanized steel discharge apron at the outlet. Backfill was placed according to specifications up to one foot of the final grade in anticipation of the ultimate placement of the cap in Area 7. The Gilbane storm water interception manhole and culvert extension were completed on September 6, 2002.

The Gilbane Storm sewer outlet modifications were constructed in accordance with the approved Phase 1A Remedial Design including Design Changes 003 and 004 and the Remedial Action Workplan.

3.5 AREA 7 CAP CONSTRUCTION

The Area 7 cap construction followed the completion of the work associated with the stormwater management features described in Section 2.4, with a majority of the construction taking place between September 17, 2002 and November 12, 2002. The constructed Area 7 cap is shown on the as-built drawing of Area 7 presented on Sheet 1 of 10 in Volume II.

3.5.1 Subgrade Preparation and Management of Excess Soils

The subgrade was shaped to mirror and be uniformly one foot lower than the final design grade (to accommodate the placement of the cap). Excavating to subgrade was performed utilizing an excavator working from swamp mats. The excavated materials were sorted (e.g., organic muck, peat and root masses) to the extent possible and the excess organic muck

encountered during excavation was moved to Area 3 for placement beneath the Area 3 cap. The excess excavated root mass materials were placed in the southern portion of Area 7 and capped.

Two 18" diameter HDPE pipes were installed from the previously constructed Area 7 forebay to the vicinity of the North Road drop inlet to allow for gravity bypass of stormwater during construction of the wetland waterway in Area 7 (see Section 3.5.2 below). These temporary pipes were abandoned in-place after the Area 7 cap construction was completed by filling with low strength cement and sand grout on April 13, 2003, after the Area 7 construction was complete.

3.5.2 Cap Installation and Erosion Control Armor

After verification of design subgrade, a nonwoven geotextile was placed over the entire subgrade to provide separation of the subgrade and the overlying cap materials (sand and topsoil). A cellular confinement system, GeoWeb®, was placed on 6 inches of sand and filled with crushed stone, to provide erosion protection armoring in the wetland waterway through the center of the Area 7 capped area. Due to soft subgrades, a Putzmeister Telebelt conveyor, stationed on the periphery of the Area 7, was used to place approximately 0.5 feet of sand for the cap, and the crushed stone for the waterway. Approximately 0.5 feet of topsoil was placed with low ground pressure tracked skid steer loaders after the sand cap material had frozen, thereby providing additional strength.

3.5.3 Area 7 Summary

Area 7 construction was completed on April 10, 2003 and wetland vegetation planting was completed on August 20, 2003. The Area 7 cap was constructed in accordance with the approved Remedial Design including Design Changes 008 and 009 and the Remedial Action Workplan.

3.6 AREA 3 CAP CONSTRUCTION

The majority of the cap construction in Area 3 was performed from October 18, 2002 through December 5, 2002. The Area 3 cap construction cap is shown on the as-built drawing of Area 3/2 presented on Sheet 5 of 10 in Volume II.

3.6.1 Subgrade Preparation

Subgrade preparation in Area 3 was performed concurrent with Area 7 subgrade preparation. Approximately 2,100 yd^3 of excess soil (predominately from the Area 7 subgrade preparation but with a minor amount from the BED storm sewer outlet modification), designated for placement under the Area 3 cap, was initially stockpiled along the southern edge of Area 3. A construction access road to facilitate Area 3 cap placement was built incorporating plastic swamp mats starting from the southern end of Area 3 towards the north, parallel to the Area 2 waterway. Following the completion of the Area 7 subgrade, the excess soil stockpiles along the southern edge of Area 3 (excess soils from the regrading of Area 7) were spread out into Area 3 and graded to the design subgrade elevations. Suitable excess excavated soil from the Area 2 waterway, which was constructed concurrent with Area 3 construction (see Section 3.7), was also placed in Area 3 prior to capping. The subgrade was shaped to mirror and be uniformly 1.5 feet lower than the final design grade (to accommodate the placement of the cap) utilizing an excavator working from swamp mats.

3.6.2 Cap Installation

After verification of the design subgrade, a nonwoven geotextile was placed over the entire subgrade to provide a clear separation and prevent mixing of the contaminated soils and the overlying cap materials (sand and topsoil). Approximately 1.0 feet of cap sand followed by approximately 0.5 feet of topsoil was placed with low ground pressure tracked skid steer loaders. The topsoil was placed after the sand cap material had frozen, thereby providing additional strength to support equipment.

3.6.3 Area 3 Summary

Area 3 construction was completed on April 13, 2003 and wetland vegetation planting was completed on August 20, 2003. The Area 3 cap was constructed in accordance with the approved Remedial Design and the Remedial Action Workplan.

3.7 AREA 2 WATERWAY

The majority of the work in Area 2 was performed from November 18, 2002 through December 16, 2002. The constructed Area 2 waterway is shown on the as-built drawing for Areas 3/2 presented on Sheet 5 of 10 in Volume II.

3.7.1 Subgrade Preparation and Management of NAPL-containing Soils

During excavation to establish subgrade elevations for the Area 2 waterway, previously unknown Canal sidewall cribbing (located farther south than previously known) and NAPL-containing soils were encountered resulting in Design Changes 006, 006A, and 006B to the waterway including modification of the vertical and horizontal alignment of the waterway, and special liner treatment in the vicinity of the NAPL-containing soils. Upon verification of the revised subgrade, geotextile was placed followed by approximately 0.5 foot of sand except under a portion of the waterway where the geotextile was placed directly on a 40 mil low density polyethylene liner (LDPE) to maintain the design grades. Excavated NAPL-containing soils were placed in a designated area west of the waterway, covered with polyethylene sheeting, and subsequently capped as described in Section 3.7.2. The canal cribbing in this area was covered with approximately 2.5 feet of sand cap and 0.5 feet of topsoil to an elevation of approximately 99 ft NGVD.

3.7.2 Cap and Erosion Control Armor

Steel cages (0.5 feet thick) filled with stone were installed on top of the liner and geotextile to armor the waterway. Two layers of coir (coconut fiber) logs were installed on both sides of the waterway to protect the banks of the waterway from erosion until planted and natural vegetation becomes established. Cap sand and topsoil were placed on the east side and the west side of the waterway (outside the coir logs) to meet Area 2 and Area 3 cap final grades, respectively.

3.7.3 Area 2 Waterway Summary

The Area 2 waterway construction was completed on March 25, 2003 and the wetlands vegetation planting was completed on August 20, 2003. The Area 2 waterway was constructed in accordance with the approved Remedial Design including Design Changes 006, 006A, and 006B, and the Remedial Action Workplan.

3.8 AREA 1, 2 AND 8 SUBAQUEOUS CAP

The experience and information gained during the construction of the Area 2 waterway (which was constructed in a dewatered condition while pumps in the Turning Basin maintained the water level at elevation 94.0) indicated that it was feasible and advantageous to apply the sand cap over the canal sediment under winter or dry conditions. Capping of the Canal and Turning Basin sediments had previously been proposed to be constructed under water (subaqueously) during Phase 2 of the Remedial Action. Design Change 010, approved December 04, 2002, and Design Change 011, approved January 24, 2003, allowed for the installation of the cap directly over sediments after dewatering the Canal and Turning Basin. The majority of the work in Areas 1 and 2 (the Canal) and Area 8 (the Turning Basin) was performed from December 10, 2002 through March 4, 2003 after dewatering the majority of the Canal and Turning Basin. The constructed cap in Areas 1, 2 and 8 is shown on the as-built drawing for these areas on Sheet 8 of 10 in Volume II.

The following is a summary of construction activities associated with the installation of the sand cap in Areas 1, 2, and 8.

3.8.1 Dewatering

Bypass pumping of the Canal water to the Lake continued at its location in the Turning Basin during the extension of Phase 1B construction. As per Design Change 010 and 011, the Canal water level, which had already been drawn down and maintained at elevation 94 ft. NGVD for the construction of the Area 3 and Area 2 caps, was further drawn down to 85 ft. NGVD for the capping of the Canal and the Turning Basin. Environmental Controls upstream of, and around the pump suction, were maintained throughout the construction of the Area 1, 2 and 8

caps. Stormwater flowing into the Area 2 waterway from the upstream stormwater sewers was bypassed around the Canal through a series of pumps located at the south end of the Area 2 waterway to the Turning Basin, where it was pumped to the Lake.

3.8.2 Cap Installation

Following dewatering, woody debris was removed from the sediment surface. All woody debris sticking above the sediment surface was cut off and removed. Portions of the wood which had not contacted the contaminated sediments were cut into short lengths and burned or placed along the banks of the Canal and Turning Basin at elevations above 96 ft NGVD. Debris which was contaminated with tar or oil was collected, temporarily stored in roll-offs, and ultimately transported off-site for disposal at a licensed facility. After debris removal was complete, geotextile was manually placed directly onto the existing sediment in the Canal lengthwise down the Canal from approximately Transect T13 to approximately T4+50, leaving 2 to 3 foot pleats on each side of the Canal to account for settlement after cap placement. Geotextile was also placed on the sediments in the Turning Basin to facilitate the construction of the cap there, as dictated by field conditions. In the 150' area from the end of the Area 2 waterway northward (an initial test area to demonstrate the feasibility of capping the sediments in a dewatered state), field connections of the geotextile joints were either sewn or fastened mechanically with a minimum one foot of overlap. For the remainder of the Canal, connections were field sewn. Geotextile seams in the Turning Basin were not sewn or attached, but were overlapped a minimum of two feet and for much of the Turning Basin area, a second layer of geotextile panels were placed over and perpendicular to the first layer. Geogrid was placed over the geotextile in the Canal generally parallel to the cribbing, and in some portions of the 150' test area and the Turning Basin. Adjacent geogrid edges were secured with Zipties® with a minimum of one foot of Geogrid overlap. The actual locations of the placed geotextile and geogrid panels are presented in Figures included in Appendix 2.

Following the installation of geotextile and geogrid, a sand cap was placed with a minimum thickness of 1.5 and up to 3 feet thick or more in the Canal, and 2 to 4 feet thick in the

Turning Basin. Methods used to place the cap sand over a majority of the Canal and Turning Basin sediments involved the use of low-ground-pressure tracked skid-steer loaders. In certain areas requiring more precise cap placement near the cribbing and around the historic barges in the Turning Basin, the cap sand was placed manually. In the western portion of the Turning Basin that could not be fully dewatered (i.e., the deepest pool where the dewatering pump suction was located) the cap sand was placed subaqueously using a Putzmeister Telebelt conveyor truck. The sequence and methods for cap placement were performed in accordance with Design Changes 010 and 011.

As a result of NAPL-containing sediment emerging at the surface in the vicinity of T11 between the vertical timber piles that make up the Canal's western cribbing wall with the potential re-contamination of the placed cap in the Canal, the capping procedure along the cribbing wall between T14+20 northward to T7+50 was briefly halted, and subsequently modified (Design Changes 006B and 013). The modified treatment of the cribbing between approximately T10 and T13 included removal of the cribbing header (so that the voids between the vertical piles could be accessed), and placement of granulated bentonite followed by cap sand between the vertical timber piles, and to a minimum of 1.5 feet over the top of the sediment between the timber piles. From T10 north to approximately T7+50 (where the cribbing header was at a higher elevation than the cap design elevation), the cribbing treatment involved the installation of a 60 mil LDPE liner vertically against the piles prior to placement of the Canal cap (in accordance with Design Change 013). Prior to placing the liner, a minimum of two inches of dry granulated bentonite was placed on the sediments between the cribbing posts. The liner was then pushed down vertically into the sediments next to the cribbing wall and nailed into place using 1.5 inch galvanized nails with 1-inch diameter plastic washers on approximately 2-foot centers. Vertical seams were minimized, overlapped at least three cribbing piles, and were sealed with mastic as well as nails. Sand was hand shoveled into the void spaces behind the liner and between the piles during the capping. A third cribbing treatment was used for the portion of the canal between approximately Transects T13 and T14+20. In this area, the header was left in place and a sand and topsoil cap was placed over and beyond the cribbing to a minimum elevation of 99 ft. NGVD.

3.8.3 Canal Reinundation

On March 3, 2003, the cap in the Canal and Turning Basin was completed and the surface water bypass pumping system was shut down and removed. This allowed groundwater inflow and in-coming stormwater to accumulate in the Turning Basin and Canal. The water reached the ultimate weir overflow elevation of 96 ft. NGVD on March 22, 2003 and began to flow into the Lake.

3.8.4 Areas 1, 2 and 8 Summary

The caps placed in Areas 1 and 2 (the Canal) and Area 8 (the Turning Basin) were completed on March 22, 2003 and were constructed in accordance with the approved Remedial Design including Design Changes 006B, 010, 011, and 013, and the Remedial Action Workplan.

3.9 100 FT. X 100 FT. AREA CAP

The majority of the work in the 100 ft. by 100 ft. area south of the Turning Basin on the east side of the Canal was performed on March 26 and 27, 2003 and completed March 28, 2003. The constructed cap in the 100 ft. by 100 ft. area is shown on the as-built drawing presented on Sheet 8 of 10 in Volume II.

Prior to placement of the cap, the vegetation in the 100 x 100 foot area was cleared and chipped. The chips were blown into a thin layer in the adjacent wooded areas and left to decompose. A cap was then installed with the placement of 1 foot of sand covered by 6 inches of topsoil. Low ground pressure equipment was utilized to spread the cap materials.

The 100 ft. x 100 ft. area cap was constructed in accordance with the approved Remedial Design, including Design Change 011, and the Remedial Action Workplan.

3.10 HISTORIC RESOURCES

Pursuant to Section IV.C.1. of the SOW, the Performing Defendants submitted a Historic Resources Study to EPA, VTDEC and the Vermont Division of Historic Preservation. The study was also submitted to various other entities including the "consulting parties" under the National Historic Preservation Act, following discussions with EPA, VTDEC and the Vermont Division for Historic Preservation. The Historic Resources Study, prepared by John Milner Associates, Inc. of Croton-on-Hudson, New York, evaluates the effects of implementation of the remedial action on potentially significant historic resources at the Site, and discusses possible mitigation measures where appropriate. In May 2002, the Performing Defendants, EPA and the State of Vermont entered into a Memorandum of Agreement (MOA) for Mitigation of Adverse Effects. The provisions of the MOA applicable to the construction of the Phase 1B/2 components of the remedy were incorporated by reference into the Remedial Action Work Plan. The construction of Phase 1B/2 was performed in accordance with those provisions.

Sand used in the construction of the Remedial Action was obtained from sources acceptable to the State of Vermont Division of Historic Preservation.

3.11 WEST BANK CAP

Following completion of the Canal Cap in March 2003, during a site visit on April 28, 2003, a seep of light non-aqueous phase liquid, or LNAPL (i.e., sheens and small black globules floating on the water surface) was observed in the Canal associated with gas bubbles and located just west of the western cribbing (beyond the edge of the cap) at approximately Transect T10+50. The frequency of visual monitoring was increased, and additional similar LNAPL and bubble release locations were observed along the western cribbing between transects T11+20 and T9+75, and near the center of the Canal between approximately Transects T10+50 and T11+30, during the summer of 2003. Sorbents, booms, and sweeps were installed to contain the NAPL, and weekly removal of accumulated sheens and LNAPL was performed during the summer and autumn 2003.

In August, 2003, another NAPL release area was observed during a site walkover. This release area was located west and adjacent to the western edge of the Canal from Transects T13+98 to T14+10, and five to ten feet west of the west cribbing. This area consisted of four ponded, locally low areas (one to two feet below the surrounding ground surface) west of the berm placed over the cribbing in that area. The four ponded areas, which were all isolated from surface water in the Canal and in Area 6 to the west, ranged from less than one square foot to about 15 square feet in size and contained DNAPL, water and LNAPL. On August 20 approximately 105 gallons of NAPL was bailed from the deepest pool (at T14+05, 5' west of the cribbing) and placed into two drums. Observations of the liquid levels in the four pools during bailing indicated that they were interconnected via macropores. While bailing out the NAPL from the largest pool, the NAPL levels dropped in all of the other pools. It appears that the macropores were related to an old tree stump in the immediate vicinity which had rotted in place.

On August 21, an additional 100 gallons of liquid (NAPL and water) was bailed from the pool. This liquid had recharged from the initial removal the day before. Approximately 75 gallons of liquid was bailed from the largest pool on August 23 and again on August 25, 2003. On both occasions the mixed water and NAPL was bailed until there was approximately 0.1 feet of liquid left in the pool (the practical limit for bailing).

Monitoring and removal of NAPL from the pools continued on an intermittent basis until October 23, 2004. A total of approximately 727 gallons of mixed DNAPL and water was removed during 14 bailing events during autumn 2003. A rapid increase in the Canal water level at the end of September (due to a corresponding increase in the Lake Champlain stage above the outlet weir crest elevation) correlated with decreases in observed DNAPL in the pools to thickness of less than 0.1 feet.

In response to a request by the Environmental Protection Agency (EPA) during an October 29, 2003 meeting, on November 6 and 7 The Johnson Company performed additional characterization of the cap covering the sediments in the Pine Street Canal. The work consisted

of the collection of cores in 2-inch diameter clear butyrate liners from the cap installed during the winter of 2002-2003. Cores were collected at 28 locations. Generally, three cores were collected at intervals of fifty feet north and south along the Canal from Transect T9+50 to T14+00. At each interval a core was collected from the center of the Canal, and one each from the sides of the Canal as close as possible to the respective cribbing walls. In addition to coring, probing for DNAPL on the cap surface was performed.

DNAPL was observed in the top inch or two of five of the 28 cap sand cores. These five cores were collected along the west bank generally between Transects T10+00 and T11+00, and in the two cores near the center of the Canal circa T11+00. No NAPL was present in the lower portions of the cores. The cores indicated that DNAPL was present on the cap surface in local areas in portions of the center of the Canal and along the western bank at thicknesses up to 0.1 foot. The DNAPL probing indicated that the DNAPL pools on the cap surface near the center of the Canal were local in extent, being generally less than four feet in diameter, and were located in local low depressions in the cap surface. Probing near the west bank at Transects T10+00 and T11+00 indicated that the DNAPL was present on the cap surface from between eight and 16 feet from the Canal cribbing.

In November 2003, the cap surface in the Canal was again probed for the presence of DNAPL, and underwater videos were recorded showing methane gas vents, DNAPL, and the cap surface in general. Methane gas vents were observed at several locations. In many instances the gas vents were not associated with observations of DNAPL on the cap surface. In other cases, small globules of DNAPL were observed lying on the cap surface in close proximity to the vents. In some low areas of the cap surface, contiguous pools of DNAPL up to one foot thick were observed on the cap surface. Additional probing and monitoring of the extent and thickness of DNAPL on the cap surface was performed in January and April of 2004. No increase in thickness or areal extent of the DNAPL was observed when compared to the November 2003 results.

During construction of the West Bank Cap on June 21, 2004, DNAPL globules were observed on the subaqueous cap adjacent to the construction. These small globules appeared to have been expelled from the Canal cribbing near Transect T10+70. There was 2-3 inches of sand over the cribbing at the time, with active cap placement occurring in the vicinity using tracked skid-steer loaders. The DNAPL globules would appear on the cap surface, and then detach and roll downhill to lower areas of the cap in the Canal. There was no visible residue left by the DNAPL in or on the sand cap. The rate of formation of these globules decreased and finally stopped a few hours after the disturbance from construction ceased.

All areas where NAPL was observed in the shallow (less than 2 fbgs) soils, at the ground surface, or in measurable thickness on the Canal cap surface are shown on Figure 2.

A Proposed NAPL Response Strategy was prepared by the Performing Defendants and submitted to the EPA and VTDEC on September 12, 2003. A meeting of the Performing Defendants, the Design/Build Team, and EPA and VTDEC was held on October 29, 2003 to discuss the strategy. As a result of this meeting, additional investigations of the nature and extent of NAPL contamination on the Canal cap and in the near sub-surface were performed. As a result of those investigations, the Performing Defendants prepared the West Bank Cap Remedial Action Workplan which was submitted to EPA VTDEC on November 14, 2003, revised on December 3, 2003, and a supplement submitted on December 18, 2003.

Following is a summary of the activities associated with the construction of the West Bank Cap pursuant to the West Bank Cap Remedial Action Workplan. The constructed West Bank Cap is shown on Sheet 8 of 10 of the as-built drawings in Volume II of this report.

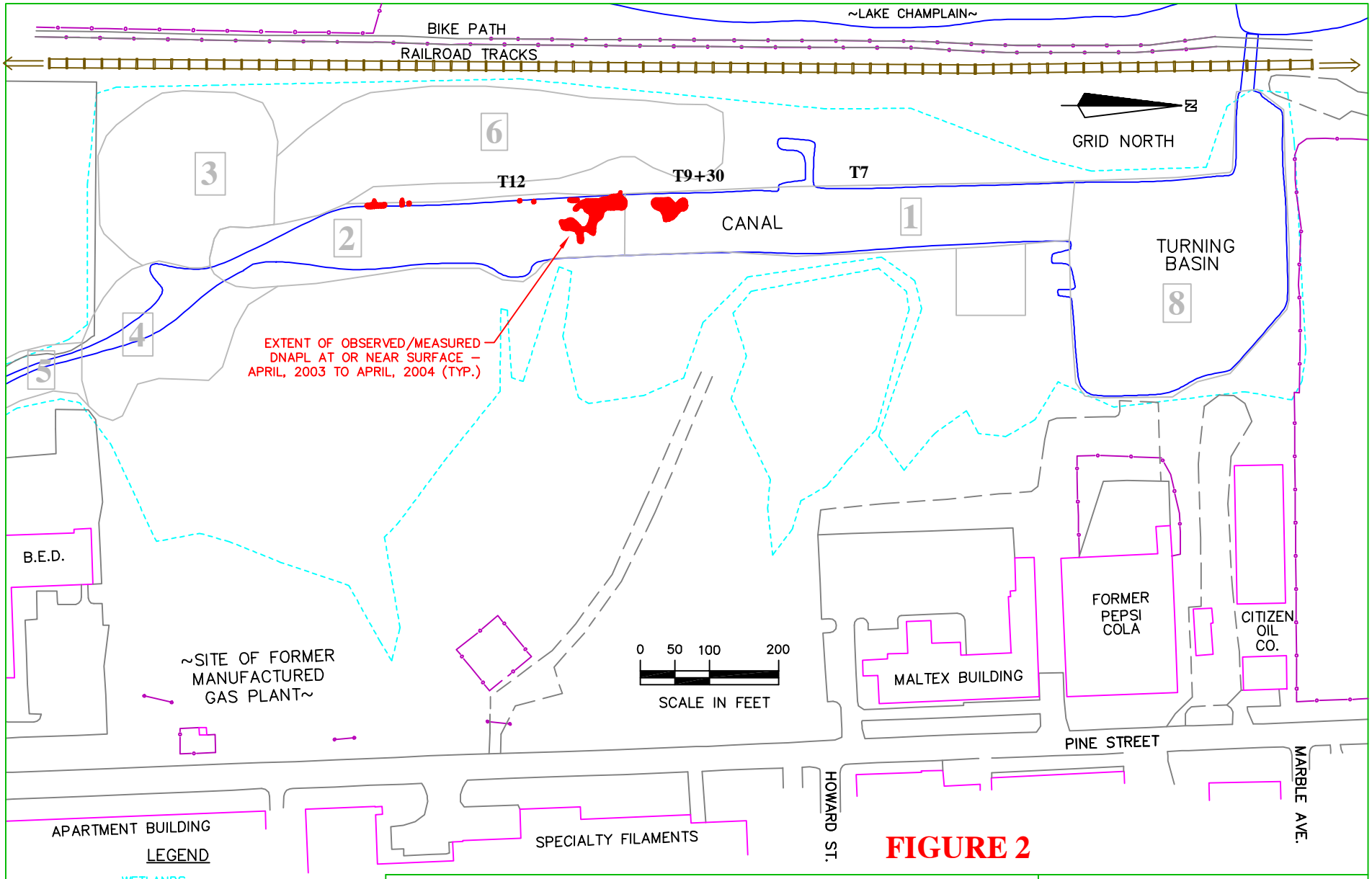

FIGURE 2

AREAS OF OBSERVED NAPL RELEASES AFTER CAP INSTALLATION IN CANAL & TURNING BASIN PINE STREET CANAL SITE, BURLINGTON, VERMONT

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602

DATE: 12/10/04 PROJECT: 1-0870-1
DRAWN BY: TJK SCALE: 1"=200'

3.11.1 Site Preparation

Site preparation for the West Bank Cap construction included deployment and operation of surface water bypass pumping equipment, installation of environmental controls (i.e., hard booms, silt curtains and sorbent booms), installation of a temporary access road across Areas 2 and 3, and clearing of vegetation from the West Bank area.

In order to construct the West Bank Cap, water levels in the Canal were maintained between 95.5 and 96.5 ft. NGVD during construction. To keep Lake water from entering the Turning Basin, the Canal and the Turning Basin were hydraulically isolated from the Lake using the weir built in 2001 and flashboards installed on May 31, 2004. Surface water bypass pumps were installed on the south side of the Turning Basin and began pumping on May 31, 2004.

Silt curtains and sorbent booms across the outlet of the Turning Basin to the Lake east of the railroad, and a sorbent boom across the Canal at Transect T7, were maintained as barriers to prevent sediment and contaminant transport to the Lake. Two floating hard booms were installed across the Canal circa Transect T9+30 and T12 to contain and facilitate collection of any light non-aqueous phase liquids (LNAPL) released to the Canal within the work area during and following construction. An additional silt curtain was installed at T9+30 which included an absorbent sweep fixed to the weighted bottom of the silt curtain to prevent any dense non-aqueous phase liquids (DNAPL) from migrating outside the work area. Sorbent booms were deployed in a ten-foot radius around the pump intakes to prevent the inadvertent pumping of sheens or LNAPL to the Lake.

Equipment access to the construction area necessitated a 15-foot wide temporary road through Area 3 in order to facilitate the construction of the cap. This road was constructed by placing a 15-foot wide geotextile panel on the ground at the pre-marked road location. Four-inch thick, 14 by 8-foot plastic swamp mats were then placed on the geotextile to create the temporary road. Wooden stakes and yellow caution tape were maintained on both sides of the entire length of the road to prevent equipment from straying off the approved travel corridor. To get across a particularly low wet area, approximately one foot of topsoil was placed on the ground surface between Transects T15+30 and T14+20 prior to placing the geotextile and plastic mats.

3.11.2 NAPL Removal and Treatment

Removal of accumulated NAPL from pools at the ground surface west of the west cribbing and on the Canal cap surface along and east of the cribbing was performed prior to and during active construction. Removal methods included a drum pump, a 1,000 gallon vac-truck and absorbents. Recoverable NAPL on the Canal cap surface was vacuumed using the vacuum truck stationed at the T-9 access and equipped with a two-inch vacuum line suspended across the Canal on floats. Commercial divers operated a 1-inch diameter wand equipped with a ball valve attached to the end of the vacuum hose to extract NAPL globules, pools, and puddles from the cap surface. A total of 14,980 gallons of oil/water was recovered from the West Bank area, and West Bank observation wells, and the Canal cap surface.

An on-site treatment system was constructed to store and treat the collected materials. The treatment system consisted of two 21,000 gallon frac tanks (one for collection and gravity separation of NAPL, water, and grit; and the second for collection of the treated water), two sand filters in parallel, two bag filters in parallel, and two pairs of 55 gallon Carbtrol carbon units in parallel. All collected materials were pumped from the vac-truck into the front frac tank for phase separation. A single batch treatment of the separated water was conducted between July 19 and July 20, 2004. The pump suction from the front frac tank was maintained and monitored to pump only water into the treatment trains. Approximately 12,000 gallons of water was pumped through the series of treatment vessels described above, and collected in the second frac tank for analytical testing prior to discharge back to the Canal. A grab sample was collected from the second frac tank on July 20, 2004 and analyzed for Volatile Organic and Semi-Volatile Organic Compounds (see Appendix 3 for analytical results). The treated water was "batch-discharged" on August 5, 2004 following EPA and VTDEC approval granted July 26, 2004. The remaining liquid and collected grit in the front frac tank were pumped into a vac-truck for off-site disposal. All vessels were then cleaned and demobilized.

Following removal of the majority of the DNAPL from the Canal cap surface using the divers and vacuum system, the Canal cap was swept, swabbed, and mopped to remove residual DNAPL droplets. The Canal cap area between Transect T9+30 and T12+00 was initially probed

on July 19 with a ten-foot pole to identify locations where sheens and/or DNAPL were released upon being disturbed. This probing was conducted in a grid at intervals of 5-10 feet between points. Locations where sheens and/or DNAPL were observed were then swabbed and mopped from the sample barge and the skiff using Snare™ attached to poles. Swabbing and mopping of the Canal cap was repeated several times at each location over a period of four weeks (on July 29, August 4 and 5, August 10 and 11, and August 23 and 24) to ensure that removal of DNAPL was achieved to the extent feasible.

Probing for DNAPL on the Canal cap between Transects T9+30 and T12+00 (following the same methods for probing this area during pre-construction monitoring) was conducted on August 24, 2004 following completion of the swabbing and mopping of residual accumulations. The probing was conducted using a ten-foot long PVC pipe with a cloth survey tape attached. A 12-inch strip of sorbent pad was attached to the pipe with Zipties™. The pipe was gently inserted into the water to the cap surface, and then removed for visual inspection. The highest point on the sorbent at which NAPL was observed was recorded as the DNAPL thickness. This method allows detection of DNAPL thickness down to approximately 0.01 feet. Any observations of sheens or NAPL released to the water surface during the probing were noted. The location of each probe test was determined using a Trimble sub-meter global positioning system.

Figure 3 presents the final probing locations and results. The probing did not encounter measurable accumulations of DNAPL remaining on the Canal cap surface. Of the 66 probing locations, 44 locations showed no evidence of DNAPL on the cap surface and 22 locations showed spots of DNAPL on the sorbent fabric attached to the probe. DNAPL that could be feasibly removed from the cap surface was removed.

3.11.3 Installation of the NAPL Observation Wells

Four NAPL observation wells were installed within the area of the West Bank Cap between June 17 and June 23, 2004. These wells were installed at T9+77, T10+23, T10+90, and T14+04 and were constructed of 18-inch corrugated aluminum pipe. Details of the well construction are provided in Table 3.

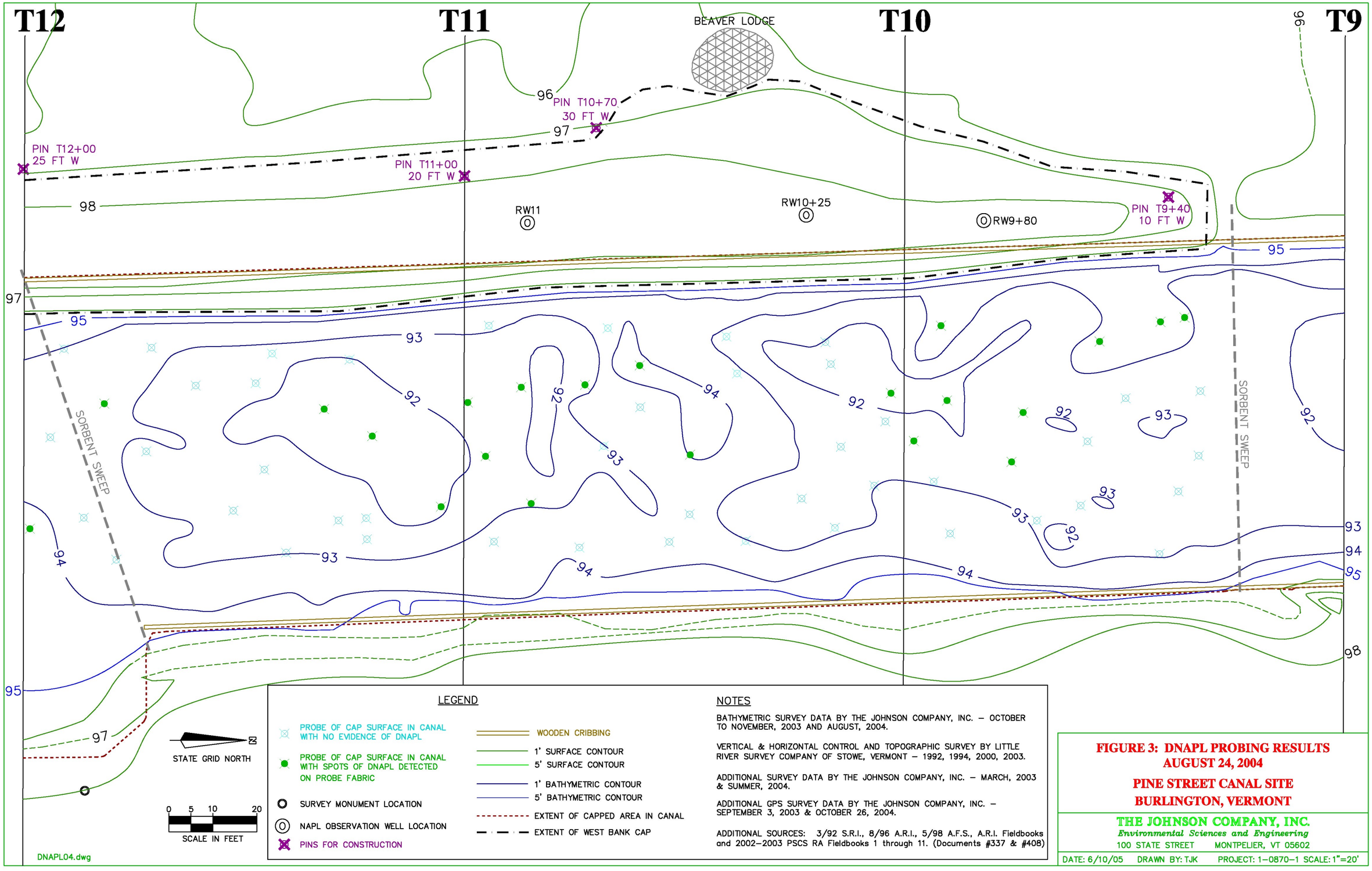

FIGURE 3: DNAPL PROBING RESULTS
AUGUST 24, 2004

PINE STREET CANAL SITE
BURLINGTON, VERMONT

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602

DATE: 6/10/05 DRAWN BY: TJK PROJECT: 1–0870–1 SCALE: 1"=20'

TABLE 3 WEST BANK OBSERVATION WELL DATA				
	Observation Well ID			
	RW 9+80	**RW 10+25**	**RW 11**	**RW14**
Transect Location:	T9+77	T10+23	T10+90	T14+04
Offset from west cribbing (# of ft W):	6.0	9.5	10.5	4.5
Top of Well Elevation (ft. NGVD):	101.86	102.36	102.00	101.95
Bottom of Well Elevation (ft. NGVD):	93.86	94.36	94.00	93.95
Total length of Well Column (ft.):	8	8	8	8
Top Elevation of Stone in the Well (ft. NGVD):	95.2	95.2	94.5	94.4
Ground Elevation of Cap at well (ft. NGVD):	98.4	98.5	98.5	98.6

All observation wells were monitored for water levels and any measurable DNAPL accumulations daily during active construction. Wells containing greater than a 0.10 ft of DNAPL were generally pumped daily during active cap construction and discharged into the treatment system front frac tank. Following completion of the cap, all liquid collected was treated along with the other collected liquids as described in Section 3.11.2.

The DNAPL thickness in the NAPL observation wells was measured daily and DNAPL was removed on eleven occasions during the construction of the West Bank Cap. A total of approximately 775 gallons of liquid was removed with a vacuum truck from Well RW14 (as well as from the T14+05 pool) between June 18 and July 7, 2004. The DNAPL thickness measured in RW 14 ranged from 0.5 to 1.5 feet. No NAPL was observed in wells RW11 or RW9+80. DNAPL thicknesses between 0.05 and 0.4 feet were observed in RW 10+25 during active construction of the West Bank Cap, and approximately 25 gallons of liquids were removed.

3.11.4 Cap Installation

The West Bank Cap was installed using tracked skid steer loaders. Construction of the 470 foot by 20 foot cap began from the south and proceeded northwards from T14+20 to T9+50. The cap extended from one to two feet east of the west cribbing (into the Canal) westward for approximately 10 to 15 feet at its 1.5 foot minimum design thickness (to a maximum elevation of 98.5 ft. NGVD) and then tapering to the west to meet the existing grade. The cap was extended further to the west in low areas in order to minimize the potential for future NAPL migration to the ground surface at those locations. The cap was installed in two lifts. The first lift was used

to fill in low areas and provide the minimum thickness of the sand portion of the cap. The second lift consisted of the placement of 0.5 ft of topsoil over the cap sand in areas where the final cap elevation is above the normal water elevation of 96 ft. NGVD.

3.11.5 Site Restoration and Demobilization

Once the West Bank Cap was constructed, it was seeded with annual rye and wetland grass seed mix and covered with a biodegradable erosion protection mesh (see Section 3.12 below). The surface water bypass pumping system and flash boards over the weir were removed July 12 and 13, 2004. Temporary staging areas, the temporary road and other areas disturbed during construction were restored to pre-construction conditions and the construction office and temporary utilities were removed. Construction controls were removed, and the area cleaned-up and equipment demobilized.

3.11.6 West Bank Cap Summary

The West Bank Cap construction was completed by July 15, 2004 and was constructed in accordance with the West Bank Cap Remedial Action Workplan, the Supplemental West Bank Cap Remedial Action Workplan, and associated Design Change 001 approved June 28, 2004.

3.12 SITE WETLANDS RESTORATION

Following is a summary of activities associated with the restoration of the capped emergent and shrub-scrub wetland areas and wetland areas disturbed by construction as described in Appendix J "Wetland Restoration Plan" of the Phase 1B Remedial Action Design Report. Table 4 provides a summary of the design wetland areas (projected after completion of the construction) and the actual wetland areas based on the as-built survey. The wetland types are defined based on the final elevation of the cap surfaces, the design minimum water elevations, and the resulting hydrology in the different capped areas. The constructed caps meet the intent of the design to maintain the pre-existing balance of wetland area.

The areas of the cap projected to maintain shrub-scrub and emergent wetland functions were based upon the ground surface elevation of the constructed cap. The forested wetland in Area 3 was determined from the pre-construction forested wetland area less the portion that was removed and capped. The wetland areas as-built compared to baseline wetland areas and designed wetland areas are presented in Table 4. The projected wetland type areas shown in

Table 4 were determined from the cap surface areas below certain elevations based on the grading plans of the Areas 7 and 3 cap designs. The constructed wetland type areas shown in Table 4 were determined from the constructed cap surface areas below certain elevations based on the as-built surveys of the Areas 7 and 3 caps. The combined constructed wetland area is 5,270 ft^2 greater than the design area, and 5,280 ft^2 greater than the baseline area. In Area 7 the balance of wetland types based on the as-built cap elevations resulted in 5,400ft^2 more emergent wetland area and 3,270 ft^2 less scrub/shrub wetland area than had been predicted from the design. Stormwater treatment is among the values of the emergent wetlands, particularly in Area 7, so the increase in as-built emergent wetland area over the design area is a positive outcome since one of the purposes of the design is stormwater treatment.

TABLE 4
COMPARISON OF BASELINE AND AS-BUILT WETLAND AREAS BASED ON GROUND SURFACE ELEVATION IN AREAS 3/2 AND 7

Area 3/Area 2

Habitat Type	Baseline Area (ft^2)	Design Area (ft^2)*	As-built Area (ft^2)*	As-built Design Difference (ft^2)	As-built-Baseline Difference (ft^2)
Emergent Wetland	49,000	18,000	18,400	400	-30,600
Scrub/Shrub Wetland	7,000	55,000	54,200	-800	47,200
Forested	17,160	6,000	9,540	3,540	-7,620
Total Wetlands:	**73,160**	**73,000**	**82,140**	**3,140**	**8,980**

* Area 3/Area 2 design and as-built wetland areas are those at and below elevation 100 ft. NGVD: scrub/shrub wetland 97 to 100 ft. NGVD; emergent wetland 97 ft. NGVD and below. Forested is the un-capped forested area remaining after cap construction.

Area 7

Habitat Type	Baseline Area (ft^2)	Design Area (ft^2)**	As-built Area (ft^2)**	As-built Design Difference (ft^2)	As-built Baseline Difference (ft^2)
Emergent Wetland	34,100	26,300	31,700	5,400	-2,400
Scrub/Shrub Wetland	0	15,670	12,400	-3,270	12,400
Forested	13,700	0	0	0	-13,700
Total Wetlands:	**47,800**	**41,970**	**44,100**	**2,130**	**-3,700**

** Area 7 design and as-built wetland areas are those at and below elevation 101 ft. NGVD: scrub/shrub wetland 100 to 101 ft. NGVD; and emergent wetland at 100 ft. NGVD and below.

Wetland Balance Summary for Area 7 and 3/2

Habitat Type	Baseline Area (ft^2)	Design Area (ft^2)	As-built Area (ft^2)	As-built Design Difference (ft^2)	As-built Baseline-Difference (ft^2)
Emergent Wetland	83,100	44,300	50,100	5,800	-33,000
Scrub/Shrub Wetland	7,000	70,670	66,600	-4,070	59,600
Forested	30,860	6,000	9,540	3,540	-21,320
Total Wetlands:	**120,960**	**120,970**	**126,240**	**5,270**	**5,280**

3.12.1 Seeding

Wetland restoration following construction began with seeding (and mulching in upland areas) in order to provide rapid stabilization of the soils. Additional plantings following seeding are described in Section 3.12.2 below. The three following seed mixes, specified in the Wetlands Restoration Plan, were used for Site restoration:

- Vermont Conservation Mix in upland areas
- Wetland Grass Seed Mix in areas that would be inundated only for short periods in the spring
- Wetland Diversity Mix in emergent wetland and scrub/shrub areas where longer inundation would typically occur

In March of 2003, the stockpile area and access road to the 100 ft. x 100 ft. area were seeded with Vermont Conservation Mix, and the boat access area from the east side of the Canal and the 100 ft. x 100 ft. capped area south of the Turning Basin were seeded with the Wetland Grass Seed Mix.

In Area 7, Vermont Conservation Mix was spread on all upland areas in March 2003. Erosion mat was also placed over the steep seeded area along the eastern side of the stormwater inlet channel from the DPW storm sewer outfall to the Area 7 forebay. Portions of Areas 3 and 7 that were inundated at that time or were expected to be inundated by the spring floods were not seeded in March 2003 due to the potential for loss of seed before germination. These areas were seeded with the Wetland Diversity Mix or the Wetland Grass Seed Mix, depending on the specific area, on August 19 and 20, 2003.

The West Bank Cap was seeded with Wetland Grass Seed Mix supplemented with additional annual rye on July 6, 2004. The Wetland Grass Seed Mix contains 4.5% annual rye. The additional seeding with annual rye, approved by the EPA, was done to assure rapid vegetative cover development on the capped area. Erosion control straw matting was placed over the seeded areas. The capped area was monitored weekly for erosion until vegetation was well established.

3.12.2 Plantings

The plantings specified in the Wetland Restoration Plan were planted on August 19 and 20, 2003. Two changes were made to the species specified in the original planting plan. The nursery was unable to supply sufficient numbers of royal fern, *Osmunda regalis*, so cinnamon fern, *Osmunda cinnamomea*, was substituted. Cinnamon fern is equally suited to the hydrology of Area 3 where the royal fern had been specified originally. Cottonwood trees, *Populus deltoides*, also were not available, so additional red maples, *Acer rubrum*, were planted. Some field changes were made to planting locations in order to place plants in areas that appeared to be more suitable for their survival.

Inspections of wetland vegetation in Area 3 and 7 were performed on May 11 and 19, 2004 to determine which plants had survived the first winter. At that time, wetland plantings were monitored for the production of bud and leaf growth following winter dormancy. The Wetland Restoration Plan calls for replacement of plantings that did not have successful survival rates after the first growing season. On July 6, 2004, Sonja Schuyler, Senior Scientist at The Johnson Company and Deborah Roberts, Metcalf and Eddy Wetland Consultant to EPA, met on site to observe wetland planting success and review plans for the replacement plantings. The following field decisions were made concerning re-planting in Areas 3, 7, and the Area 2/3 waterway and the seeding of the West Bank Cap.

Area 3

- The red osier dogwood and silky dogwood shrubs that had been moved to make way for the construction road for the West Bank Cap were doing well where they had been re-planted. These shrubs do not need to be moved again now that the road has been taken out.

- The alders that had been planted in two cells on the northern edge of Area 3 had been removed by beaver. One remnant stump with beaver marks was observed. However, native alder were noted colonizing the southwest corner of the capped area in the vicinity of water-level observation well J_OW-3. Therefore, the northern cells do not need to be replanted because the natural recruits will provide this shrub.

- The sensitive fern that had been originally planted had very poor survival. During the May "survival survey" no cinnamon fern plants were observed. However, during the subsequent inspection on July 6, 2004, one of the cinnamon fern cells had full survival, and the cell to the north of that cell had partial survival with eight plants noted. The plants were small but looked healthy. The May high water may have delayed the sprouting of these plants so that they were not visible during the survival survey. The cinnamon ferns that did not survive were replaced since the species appears to be suited to the site. The sensitive ferns do not need to be replaced since the very poor survival probably indicates that the species is not well suited to this location.

- The willow and green ash trees and the silky dogwood shrubs that did not survive were replaced November 19, 2004.

- Native cattail and burreed are aggressively re-colonizing the area, so replacement of lost plants in these planting cells will not be needed.

Area 2 Waterway

- Plantings in and behind the coir logs did not survive well. A few willows were observed on the east side behind the coir logs and one small group of five irises was observed in the coir logs on the west side. The logs are now inundated and have collected some silt. Replanting of herbaceous plants in this area was performed on July 13, 2004. Woody plants were replaced November 19, 2004.

Area 7

- The rice cutgrass plantings did not survive. Areas where they were planted are now dominated by cattail and *Phragmites*. The *Phragmites* is being treated with the herbicide Rodeo® as part of the nuisance species control program. Rodeo® is not specific to *Phragmites* so would likely also kill rice cut-grass. Other locations with suitable hydrology were not found. Therefore, these lost plants will not be replaced.

- Certain alders did not survive. These shrubs were replaced November 19, 2004.

- The burreed cells around the Area 7 forebay have been overtaken by native cattail, so these cells will not be replaced. On the south side of the waterway, the areas where the water levels appeared suitable for burreed are underlain with the stone-filled geocells, so replanting would not be possible. The cells that had poor survival around the northeast margin of the drop inlet pool were replaced July 13, 2004. The arrowhead and iris in this area were also replaced at that time.

- The five cottonwoods that were not planted in 2003 were replaced November 19, 2004, since a source was located. The high bush cranberry and dogwood shrubs with poor survival were replaced November 19, 2004, with locations adjusted to as-built water levels as necessary.

The herbaceous plants needing replacement in all areas described above were planted on July 13, 2004. A total of 263 replacement herbaceous plants were planted in Areas 3 and 7 and along the Area 2/3 waterway. The woody plants described above were replaced November 19, 2004 as dormant bareroot stock. These dormant plantings will have a better chance of survival than plantings made during the summer months would have. Sheets 4 and 7 of 10 of the as-built drawings in Volume II show the as-built wetland plantings (located using a sub-meter Trimble Global Positioning Satellite (GPS) system) and locations for the woody plants that were replaced in November 2004 for Areas 7 and 3, respectively.

The wetland restoration has been performed according to Appendix J, Wetland Restoration Plan, in the Phase 1B Remedial Action Design Report and the supplemental restoration plan for the West Bank Cap, with modifications to the plans made in the field on July 6, 2004, as described above.

4.0 PHASE 1B/2 SITE AND ENVIRONMENTAL CONTROLS, MONITORING AND TESTING AND WASTE MANAGEMENT

This section presents a summary of engineering controls and health and safety and environmental monitoring implemented during construction in order to protect the environment, the community and site workers as stated in the "Remedial Action Project Operations Plan", as well as a description of hazardous materials management during the Remedial Action.

4.1 SITE CONTROLS

Temporary fencing was placed around areas of active construction as necessary to prevent public access during construction. This included fencing along the entire east side of the Canal and Turning Basin, as well as other areas of the Site. All personnel that entered the Site were required to sign in and present evidence of current OSHA training to gain access to areas of intrusive construction activities. All visitors who did not meet the OSHA health and safety training requirements specified in 29 CFR 1910.120 were excluded from the work zone unless they were accompanied by the Site Health and Safety Officer (SSO) or designee.

4.2 ENVIRONMENTAL CONTROLS

Silt curtains and sorbent booms were placed across the Canal, and across the Canal outlet to the Lake, and maintained throughout all active construction to prevent environmental impacts to the Lake. Silt fence was installed along the eastern edge of Area 2, the western and northern edges of the cap area in Area 3, the west side of the Canal inlet channel between North Road and Area 3, and the south, west, and northern edges of the BED storm sewer outlet basin/apron, to prevent sediment transport into wetland areas adjacent to construction. Silt fence was also placed around material stockpile areas that were not paved in advance of material stockpiling activities. Floating sorbent booms and a silt curtain were placed around the bypass pump intake in the Turning Basin to control and prevent inadvertent pumping of suspended sediment or LNAPL sheens to the Lake. For the West Bank Cap construction, hard booms were placed across the Canal at Transects T9+30 and T12, and an additional silt curtain was placed across the Canal at Transect T9+30. All environmental controls were regularly inspected and maintained throughout the construction period. Also, regular visual inspections were performed in the

vicinity of the West Bank Cap for the presence of NAPL, including LNAPL on the water, DNAPL on the previously placed Canal cap surface, and NAPL in the wetlands to the west, on an ongoing basis during active West Bank Cap construction. A vacuum pump system was also brought to the Site and made available for possible NAPL removal during active West Bank Cap construction.

4.3 AIR QUALITY

During all active construction activities, air quality in the breathing zone in the immediate area of construction activity was monitored on a regular basis with a photoionization detector (PID), in accordance with the requirements of the Remedial Action Health and Safety Plan. Over 400 PID monitoring results indicated no sustained total VOC concentrations were measured at or above 1 ppm within the breathing zone (the action level for upgrading personal protective equipment), ensuring respiratory safety of all personnel (see Appendix 4 for all PID results throughout active construction).

4.4 SURFACE WATER QUALITY

Monitoring of physical and chemical parameters of surface water quality at the outlet to the Lake was conducted during active construction in accordance with the approved Compliance Monitoring Workplan. This included the installation of two Hydrolabs™ to measure physical parameter measurements, on-site measurements of turbidity, and collection of surface water samples for laboratory analysis.

Prior to and during Phase 1B construction, two Hydrolab™ water quality multi-probes were placed in the water column on either side of a silt curtain near Transect T4 that separated the bypass pump suction zone from the remainder of the Canal surface water, and were used to monitor water quality parameters including pH, dissolved oxygen, specific conductance, and turbidity. Monitoring in advance of active construction provided a baseline turbidity used to evaluate the impact of the active construction. During active construction, the effectiveness of the silt curtains was monitored by comparing turbidity readings upstream and downstream of the silt curtain, and against baseline measurements. The upstream Hydrolab™ was removed on

November 11, 2002 and the downstream Hydrolab™ was removed November 19, 2002 when ice formed over the Canal.

In addition, a Turbidimeter was utilized daily during bypass pumping, to measure the turbidity of the bypass pump discharge into the Lake (see Appendix 5 for all manual turbidity measurements). Over 330 turbidity readings were collected from the bypass pump discharge during active construction, with an average reading of 32.0 NTU. When turbidity levels measured at the outlet of the bypass pump exceeded 50 NTU, bypass pumping ceased and corrective measures were implemented. This occurred only at the end of the capping of the Turning Basin. Successful corrective measures employed at that time included repositioning of the pump suction and replacement of the larger 6-inch discharge diesel pump with 2-inch and 3-inch discharge electric pumps.

Surface water samples were collected monthly from the Turning Basin and from the bypass pump discharge to Lake Champlain for chemical analysis of polycyclic aromatic hydrocarbons (PAHs), metals, and total suspended solids during active construction (see Appendix 5 for all surface water analytical results). A total of 11 monthly sampling events occurred during construction.

4.5 WASTE MANAGEMENT

Some activities performed during the Remedial Action generated hazardous wastes (Remedial Action Derived Wastes: RADW). All applicable federal, state and local laws and regulations were adhered to in the management of RADW. All RADW assumed to be hazardous were stored in 55-gallon drums, covered waterproof roll-offs, or a 21,000 gallon holding (frac) tank and secured in an on-site storage area. All hazardous materials were transported and disposed of off-site in accordance with appropriate regulations. Notice was provided to EPA prior to hazardous materials shipments.

A summary of all hazardous materials generated during the Remedial Action and transported off-site for disposal is provided in Table 5.

Table 5 Hazardous Materials Summary					
Shipping Date:	**Description:**	**Container:**	**#:**	**Volume/Weight:**	**Disposal Facility:**
Solids					
11/11/00	Non-RCRA Non-DOT Regulated Solid (Debris, Soil, Sorbent, Wood, Plastic PPE)	55 gallon drum	4	220 gallons	Adirondack Resource Recovery, Fort Edward, NY
6/7/01	Environmentally hazardous substances, solid, n.o.s. 9, UN3077, III	55 gallon drum	3	440 lbs	Cycle Chem, Inc., Elizabeth, NJ
12/9/02	Coal Tar Contaminated Debris	55 gallon drum	1	55 gallons	General Chemical Corp., Framingham, MA
7/31/03	Coal Tar Contaminated Debris	Roll off	1	12.73 tons	Waste Management of New Hampshire, Rochester, NH
8/6/03	Coal Tar Contaminated Debris	Roll off	1	11.31 tons	Waste Management of New Hampshire, Rochester, NH
8/11/03	Coal Tar Contaminated Debris	Roll off	1	16.07 tons	Waste Management of New Hampshire, Rochester, NH
8/28/03	Coal Tar Contaminated Debris	Roll off	1	4.06 tons	Waste Management of New Hampshire, Rochester, NH
8/28/03	Coal Tar Contaminated Debris	55 gallon drum	6	330 gallons	Cycle Chem, Inc., Elizabeth, NJ
9/3/03	Coal Tar Contaminated Debris	Roll off	1	13.05 tons	Waste Management of New Hampshire, Rochester, NH
12/2/03	Coal Tar Contaminated Debris	55 gallon drum	16	880 gallons	Cycle Chem, Inc., Elizabeth, NJ
Pending	Coal Tar Contaminated Debris	Roll off	1	(not available)	Waste Management of New Hampshire, Rochester, NH
Liquids					
11/11/00	Decontamination Wash Water	55 gallon drum	7	385 gallons	Cycle Chem, Inc., Elizabeth, NJ
6/7/01	Decontamination Wash Water	55 gallon drum	1	55 gallons	Cycle Chem, Inc., Elizabeth, NJ
11/27/02	Coal Tar Oil/Decontamination Wash Water	55 gallon drum	1	55 gallons	Cycle Chem, Inc., Elizabeth, NJ
8/28/03	Coal Tar Oil	55 gallon drum	8	440 gallons	Cycle Chem, Inc., Elizabeth, NJ
12/2/03	Coal Tar Oil	55 gallon drum	7	385 gallons	Cycle Chem, Inc., Elizabeth, NJ
8/6/04	Coal Tar Oil/Decontamination Wash Water	Transport Truck	1	4442 gallons	Norlite Corp., Cohoes, NY

5.0 PHASE 1B/2 AS-BUILT DOCUMENTATION

As-Built documentation, as described below, includes the results of field measurements and inspections, photographs, surveys, and "as-built" drawings of the remediation features, signed and stamped by a professional engineer. A complete set of as-built drawings of the Remedial Action Construction are provided in Volume II of this report.

5.1 FIELD MEASUREMENTS/INSPECTIONS

5.1.1 Overview

The horizontal limit of the caps in Areas 3, 7, 2, the 100' by 100' Area, and the West Bank cap were laid out with stakes and/or flagging, by a licensed surveyor or engineer, prior to construction activities. Grade stakes were also installed across the cap areas to provide the design subgrade elevations in the field. The stakes were maintained throughout construction.

The horizontal limit of the caps in the Canal (except along the West Bank Cap area) was defined by the cribbing walls along the east and west side of the Canal, and on the west and south side of the Turning Basin. The edge of the cap along the east and north sides of the Turning Basin was determined by the break in existing topography.

A summary of the areas of all the caps installed as part of the Remedial Action construction is provided in Table 6.

TABLE 6
SUMMARY OF CAPPED AREAS

	Capped Area	
Location:	**Square feet**	**Acres**
Area 3/2	82,500	1.89
Area 7	59,500	1.37
Turning Basin	99,700	2.29
Canal	74,000	1.70
100 ft by 100 ft Area	10,000	0.23
West Bank Cap	14,900	0.34
Total Capped Area:	**340,600 ft^2**	**7.82 acres**

Field measurements and inspections concurrent with and following construction were conducted to ensure that the remediation construction was completed consistent with design plans and specifications, and to provide the basis for the preparation of as-built drawings. A series of cap thickness measurements were collected throughout active construction to verify cap

and topsoil thickness. Bathymetric and topographic surveys of the capped areas (including horizontal extent of the cap) were conducted following the completion of construction to provide as-built documentation and to serve as a baseline for future measurements. A description of these field measurements is presented in the following subsections:

5.1.2 Cap Thickness and Horizontal Limits

Cap thickness measurements were made during and after construction between November 5, 2003 and March 28, 2003 (and between July 1, 2004 and July 12, 2004 for the West Bank Cap) to verify sand cap and topsoil thicknesses. The measurements were made at a minimum frequency of 12 locations/acre for Areas 7, 3, and 2, twelve locations per 300 linear feet (north-south) for the Canal, twenty-four locations in a grid pattern with a minimum of 50 ft spacing in the Turning Basin, and 2-3 locations per 50 linear feet (north-south) for the West Bank cap. Cap thickness measurements for the 100 ft. x 100 ft. area were made in a grid pattern on 10 to 20 foot spacings. As-built drawings Sheet 1 and Sheet 5 of 10 in Volume II present discrete cap thickness measurements in Areas 7 and 3/2, respectively. Due to the large number (approximately 800) of thickness measurements made in the Canal, Turning Basin, and the West Bank Cap throughout cap construction, the thickness data for these areas have been presented in the form of cap thickness isopachs, shown on Sheet 10 of 10 of the as-built drawings in Volume II. The actual discrete thickness measurements of the cap in the Canal and Turning Basin and the 100 ft. x 100 ft. area, and the West Bank Cap are provided in a spreadsheet included in Appendix 6. The as-built horizontal extent of the cap in Areas 2, 3 and 7 was determined by a survey completed by Little River Survey, and for the 100 ft. x 100 ft. area and the West Bank Cap by a survey completed by The Johnson Company. The horizontal extent of the cap in the Canal and Turning Basin was determined while cap thickness measurements were being made as construction proceeded, and locations determined in the field with measurements relative to the cribbing.

5.1.3 Topographic Survey

The topography of the final installed caps in Area 7 (Sheet 1 of 10 in Volume II) and Areas 3/2 (Sheet 5 of 10 in Volume II) was surveyed by Little River Survey (Stowe, VT) in August, 2003 using electronic total station equipment to the 1988 NGVD Datum with a vertical accuracy of +-0.1 ft. The topographic survey included elevation measurements in open water areas, emergent wetlands, and scrub/shrub areas for the as-built drawings. The topography of the constructed caps in the 100 ft by 100 ft and the West Bank Cap (Sheet 8 of 10 in Volume II) was surveyed by a professional engineer from the Johnson Company on July 8 and 9, 2003.

5.1.4 Bathymetry

A survey of the bathymetry of the final, installed and inundated cap in the open water areas in Areas 1, 2 and 8 was conducted between September 22 and November 25, 2003. Except in a section of the Canal along the west cribbing between T9+20 and T11+80 described below, bathymetric elevations were measured on a 20-foot (or less) grid using a 12 inch diameter, ¼ inch thick, 2.7 pound aluminum plate hung from a survey tape. This apparatus allowed for measurements of depth below water surface to the cap since the cap sand has a shear strength greatly exceeding the approximately 0.4 psf weight of the plate. The water elevation was measured to the nearest 0.01 foot referenced to the outlet weir crest elevation of 96.5 ft. NGVD in the morning and evening of each day of bathymetric measurements. The average of the morning and evening water elevation measurements were used to calculate the cap elevation by subtracting the water depth from the average water elevation. The method provided depth accuracy of 0.1 foot or less. Each measurement location was determined using a sub-meter Trimble global positioning satellite system.

Bathymetric data from the Canal between T9+20 and T11+80 were collected using a different method on an approximately 10 foot grid. Near the west cribbing in this area, where NAPL seeps had been observed on the cap surface, a pole was used to measure the water depth. The pole was constructed of two 5-foot lengths of 1-inch diameter PVC pipe with a 2-inch diameter plastic cap secured to the bottom of the pipe. A section of cloth survey tape was

attached to the pipe. This approach produced fewer disturbances of the NAPL on the cap surface there than would have been produced by the aluminum plate.

5.2 PHOTO DOCUMENTATION

Digital photographs were taken throughout all stages of construction to provide documentation of cap installation and placement, and associated stormwater features. Construction photographs are available upon request. A compact disc containing construction photographs is in Appendix 7.

5.3 AS-BUILT DRAWINGS

Using the topographic and bathymetric survey and cap thickness data collected during and after completion of construction, as-built drawings were prepared to reflect the final, completed Remedial Action construction. The record as-built drawings are provided in Volume II of this Remedial Action Construction Completion Report.

6.0 PHASE 1B/2 QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance (QA) for the Remedial Action was maintained through a series of specified measurements and tests during the construction phase in accordance with the Construction Quality Assurance Project Plan. A summary of all QA tests and inspections performed is provided in Table 7. A description of the results and documentation of these measures are summarized in the following sections.

TABLE 7 QA/QC TESTS AND INSPECTIONS PERFORMED DURING REMEDIAL ACTION CONSTRUCTION				
Construction Task	**Test or Inspection Method**	**Description**	**Timing and Frequency**	**Results/Comments**
Access control and construction support	Visual	Inspected fences, temporary power lines, equipment and similar features to ensure they are intact.	Immediately after installation, and daily during active construction.	Acceptable
Public health and worker safety	Visual	Inspected heavy equipment crossing area at North Road and other public roads to ensure that public safety is not threatened. Conducted air monitoring in the immediate work area and at the perimeter.	Daily or when conditions changed during active construction.	Acceptable (see Appendix 4 for air monitoring result).
Silt curtains, silt fences and hay bales	Visual	Inspected for proper initial placement functioning during construction.	Immediately after installation, daily during active construction, and after any precipitation event in excess of one inch rainfall equivalent (during active construction).	Repairs and extensions placed as necessary.
Sorbent/ hard booms	Visual	Inspected to ensure proper initial placement, replaced when saturated.	Immediately after installation, daily during active construction, and after any precipitation event in excess of one inch rainfall equivalent (during active construction).	Replaced sorbents as necessary. Refastened east side of T9+30 hard boom in winter 2003. Refastened west side of T12+00 hard boom in July 2004.
By-pass and dewatering pumping	Visual and turbidity monitoring.	Inspected supply lines, discharge lines, intakes and outfalls for wear, clogging and position. Monitored turbidity at bypass pump location and upstream of silt curtain.	Immediately after installation and daily (upon start-up and shutdown) during active construction. Checked turbidity meter calibration monthly.	Pump lines repaired as necessary. Turbidity levels in bypass pump discharge exceeded 50 NTU at end of Turning Basin capping. Pump suction relocated and pump down-sized. See Appendix 5 for turbidity monitoring results.

TABLE 7 QA/QC TESTS AND INSPECTIONS PERFORMED DURING REMEDIAL ACTION CONSTRUCTION				
Construction Task	**Test or Inspection Method**	**Description**	**Timing and Frequency**	**Results/Comments**
Excavation	Visual, survey, PID measurements	Checked grade stakes for accurate location and elevation prior to commencing excavation. Visually inspected and measured excavated soils with a PID for presence of non-aqueous phase liquids. Checked final subgrade dimensions and elevation.	Prior to and during excavation. PID screening frequency based on visual observations, soil type and previous screening results.	Acceptable
Sub-base for North Road.	Visual ASTM D422 ASTM D1556 ASTM D1557	Visual inspection for detritus, organic material, fines, and other deviations from the specifications.	Visual inspection - all delivered gravel; ASTM D422 test - one per 100 cubic yards delivered; ASTM D1556 - 2 per lift; ASTM D1557 - one per 500 cubic yards.	Acceptable (see Appendix 8 for test results).
Structural Bedding Material	ASTM D422 Survey	Visual inspection for detritus, organic material, fines, and other deviations from the specifications.	Visual inspection: all delivered bedding; ASTM D422: one per 100 cubic yards delivered;	Acceptable (see Appendix 8 for test results).
Pipe Bedding Material	Visual ASTM D422 ASTM D1556 ASTM D1557 (in areas subject to traffic)	Visually inspected to ensure bedding is thoroughly compacted under pipe, placed to a minimum of 50% of pipe diameter and shaped to conform to bottom of pipe. Checked grade elevations, thickness and dimensions	Visual inspection – all delivered gravel and during placement; ASTM D422: one per every 100 cubic yards delivered; ASTM D1556 - 2 per lift; ASTM D1557 -one per 500 cubic yard	Acceptable (see Appendix 8 for test results)
Backfill	Visual Survey ASTM D422 ASTM D1556 ASTM D1557	For areas subject to traffic, performed compaction tests. Checked final grade elevation, slope and alignment; inspected connections	Visual inspection – all delivered backfill; ASTM D422 - one per every 100 cubic yards delivered; ASTM D1556 - 2 per lift; ASTM D1557 - one per 500 cubic yard	Acceptable (see Appendix 8 for test results)
Installation of precast concrete manhole	Visual Survey	Check dimensions and inspect manhole sections for structural damage; check base section for plumb and level; verify elevation; inspect for correct alignment between sections.	During placement of precast sections.	Acceptable

TABLE 7 QA/QC TESTS AND INSPECTIONS PERFORMED DURING REMEDIAL ACTION CONSTRUCTION				
Construction Task	**Test or Inspection Method**	**Description**	**Timing and Frequency**	**Results/Comments**
Placement of geotextile and geogrid.	Visual	Inspected geotextile for damage, three-foot pleats on each edge of Canal, connections between sheets and at Canal edges.	During placement	Acceptable
Installation and filling of reno mattresses	Visual	Verified gradation of fill stone. Inspected expanded units, placement and alignment; connections between units; stone placement; and connections of closure lids.	During assembly and placement.	Acceptable
Placement of coir fiber logs	Visual	Inspected alignment and connections between adjacent units, and final staking.	During placement.	Acceptable
Installation and filling of geocells	Visual	Verified gradation of in-fill materials. Inspected geocell units, placement and alignment; anchorage and connections between units; depth of in-fill material placement.	During assembly and placement.	Acceptable
Native-backfill	Visual Survey	Inspected for detritus, organic material, fines, and other deviations from the specifications. Checked final grade elevation, thickness and dimensions.	Inspections during excavation. Survey during construction	Acceptable
Rip-rap placement	Visual Survey	Inspected for detritus, organic material, fines, and dimensions and other deviations from specifications. Checked final grade elevation, thickness and dimensions	Inspection upon delivery. Survey during construction.	Acceptable
Placement of surficial caps in Areas 7 and 3/2, and for West Bank Cap.	Visual; ASTM D422 Survey	Visual inspection for detritus, organic material, fines, and other deviations from the specifications. Checked final grades and horizontal extent of cap placement; verified compacted sand thickness, verified topsoil thickness.	ASTM D422 - one per 500 cubic yards delivered. Visual inspections of delivered material and during placement. Verified thickness at a minimum of 12 locations per acre for Areas 2, 3 and 7, and every fifty feet in a north-south direction for the West Bank Cap.	Acceptable (see Appendix 8 for test results and Appendix 7 and as-built drawings Sheets 1, 5 and 10 of 10 for cap thickness measurements).

TABLE 7 QA/QC TESTS AND INSPECTIONS PERFORMED DURING REMEDIAL ACTION CONSTRUCTION				
Construction Task	**Test or Inspection Method**	**Description**	**Timing and Frequency**	**Results/Comments**
Placement of caps in the Canal and Turning Basin	Visual Survey	Performed inspection of delivered sand for detritus, organic material, fines, and other deviations from the specifications. Checked final grades, maximum slope, and horizontal extent of cap placement; verified sand thickness.	During placement (Minimum of 12 locations per acre).	Acceptable (see Appendix 7 and as-built drawing sheet 10 of 10 for sand thickness results).
Topsoil	Lloyd-Kahn Method	Tested for organic content	1 TOC analysis per source	Acceptable (see Appendix 8A for submittals)
Vegetation Planting	Visual Inspections	Verified seed mix or plant species. Inspected installed plants and seeding for number/location and seed placement density	Verification during delivery of plants/seeds. Inspection during installation	Acceptable
Restoration	Visual	Inspected all areas disturbed and restored.	During and after restoration	Acceptable
Clean-up	Visual	Inspected for the removal of trash and construction debris	During construction and upon work completion.	Acceptable
NAPL Monitoring during West Bank Cap Construction	Visual	Inspect the West Bank Cap Area, wetlands to the west, and the existing Canal Cap surface for new NAPL releases.	Daily during active construction and weekly for two weeks following construction.	Acceptable
	Visual	Collect and inspect cores for NAPL from the newly placed West Bank Cap at 50-foot intervals (north-south).	As cap is being placed.	Acceptable
	Visual	Probe in wetlands west of West Bank Cap at 28 locations and inspect probe for NAPL.	Weekly during active construction.	Acceptable
	Visual	Measure DNAPL, LNAPL, and water thicknesses in four NAPL observation wells and remove recoverable NAPL.	Daily during active construction.	Approximately 800 gallons NAPL removed from wells.

TABLE 7 QA/QC TESTS AND INSPECTIONS PERFORMED DURING REMEDIAL ACTION CONSTRUCTION				
Construction Task	**Test or Inspection Method**	**Description**	**Timing and Frequency**	**Results/Comments**
Surface water chemical monitoring	Unfiltered SVOCs by EPA Method 8270 Filtered SVOCs by EPA Method 8270 Unfiltered Metals by EPA Method 6010b. Filtered Metals by EPA Method 6010b) Total Suspended Solids by EPA Method 160.2	Grab samples - 2 per sampling event	Monthly during active construction	Acceptable (see Appendix 5 for summary of results)

TABLE 7 QA/QC TESTS AND INSPECTIONS PERFORMED DURING REMEDIAL ACTION CONSTRUCTION				
Construction Task	**Test or Inspection Method**	**Description**	**Timing and Frequency**	**Results/Comments**
Surface water chemical monitoring	Unfiltered SVOCs by EPA Method 8270 Filtered SVOCs by EPA Method 8270 Unfiltered Metals by EPA Method 6010b. Filtered Metals by EPA Method 6010b) Total Suspended Solids by EPA Method 160.2	Grab samples - 2 per sampling event	Monthly during active construction	Acceptable (see Appendix 5 for summary of results)

6.1 FIELD NOTES AND DAILY INSPECTIONS

Field notes recorded during the Remedial Action construction were written into dedicated bound field notebooks titled "Pine Street Canal Superfund Site: Remedial Action Field Book" and labeled Field Book #2 through Field Book #11 (Field Book #1 was used in the Phase 1A Outlet Weir construction). Field notes recorded in these books include construction survey data, measurements of Canal and Lake levels, turbidity measurements, air quality and soil screening data, weather conditions, construction activities, notes of communication, estimates of material quantities, sketches and inspection notes, and other data as appropriate. Copies of these field notes are provided on a compact disc in Appendix 8.

In addition to field notes, a daily inspection checklist form was completed each day of active construction. The completed checklists includes information relating to weather, access control features, environmental controls, water level management, pumping systems, equipment, and summaries of work performed. Separate forms (construction monitoring inspection checklists and NAPL monitoring inspection checklists) were completed when applicable. Copies of all completed inspection forms are provided on a compact disc in Appendix 9.

6.2 MATERIALS

Table 8 summarizes all project submittals for construction materials reviewed and approved prior to use on the Site. These submittals were required by the Specifications for the Remedial Action. Copies of all submittals are provided in Appendix 10A.

TABLE 8
PROJECT SUBMITTALS

Product/Material	Submittal	Specification Number
Nonwoven Geotextiles	Mirafi S1200	Section 13550
Rip Rap (706.04 Type I Stone)	FWW Product #27 - Type I Stone Fill	Section 02262
Broadcast Seeding	Southern Tier Consulting Restoration Mix	Section 02831
Topsoil	Intervale Compost Products	Section 02992
Cap sand	Fontaine Sand Pit	Section 02992
Galvanized Corrugated Metal Pipe	Burtco	Section 02571
Culvert End Section	Burtco	N/A - Per Approved Design Plans

TABLE 8 PROJECT SUBMITTALS		
Product/Material	**Submittal**	**Specification Number**
Drop Inlet	Burtco	N/A - Per Approved Design Plans
Geoweb Cellular Confinement System Co.	GW20V, Presto Products	Section 13552
Bituminous Concrete Pavement	Pike Industries Inc.	Section 02601
Pumpable Flowable Fill	S.T.Griswold and Company, Inc.	N/A - Per Design Change 009
Trash Rack	Plastic-Solution	N/A - Per Approved Design Plans
Drop Inlet Valve	Pond Dam Piping	N/A - Per Approved Design Plans
Reno Mattresses	Tera Aqua Gabions	Section 13553
Coir Fiber Logs	International Waste Transport	N/A - Per Approved Design Plans
Geogrid	Structural Geogrid BX1500, Tensar Earth Technologies, Inc	Section 13554
Structural/Pipe Bedding Material	FWW Product #48 – Washed Stone Screenings: Frank W. Whitcomb Construction Corp.	Section 02221
Dense Graded Crushed Stone (3" Minus)	FWW Product #40: 704.06A, Frank W. Whitcomb Construction Corp.	Section 02223
Select Backfill	FWW Product #41: 704.08A, Frank W. Whitcomb Construction Corp.	Section 02221

Completion of Phase 1B/2 (Cap installation in Areas 1, 2, 3, 7, 8 and the 100 ft. x 100 ft. area and stormwater management features) and the West Bank Cap constitute the completion of the Remedial Action construction at the Site. Table 9 presents a summary of all construction materials used during these phases of the work.

TABLE 9 SUMMARY OF MATERIALS USED IN REMEDIAL ACTION CONSTRUCTION		
Material	**Quantity**	**Units**
Phase 1B/2		
Sand	32,309	yd^3
Stone	1,550	tons
Topsoil	2,608	yd^3
Geotextile	39,000	yd^2
Geogrid	17,783	yd^2
LDPE Membrane (liner under Area 2 waterway)	6,000	ft^2
LDPE Membrane (Vertical lines along west cribbing)	4,000	ft^2
36-inch diameter corrugated metal pipe (Gilbane culvert extension)	220	ft
6-ft diameter corrugated metal pipe and related drop inlet materials	1	drop inlet
48-inch diameter corrugated metal pipe (North Road culvert)	60	ft
4-ft diameter Concrete Manhole	1	Manhole

TABLE 9 (continued) SUMMARY OF MATERIALS USED IN REMEDIAL ACTION CONSTRUCTION		
Material	**Quantity**	**Units**
West Bank Cap		
Sand	1,052	yd^3
Topsoil	444	yd^3
Stone	13	tons
18-inch diameter corrugated pipe (NAPL observation wells)	4	8-foot wells

6.3 MATERIALS TESTING

On-site and laboratory testing of soils was performed by Knight Consulting Engineers, Inc. The test results from laboratory compaction, grain size, and field compaction testing are presented in Appendix 10 (10B, 10C and 10D, respectively). No significant deficiencies in the test results as compared to the design requirements were observed.

6.4 FIELD/SURVEY DATA

Field data collected throughout and after active construction, including air and turbidity monitoring results, were recorded onto appropriate field logbooks and/or forms dedicated to the project. These data were entered into a database by the Johnson Company. The data entry procedure followed internal Johnson Company Quality Assurance/Quality Control (QA/QC) protocols and any deviations from the protocols, or data discrepancies, limitations or other QA/QC issues, were identified and recorded onto a Procedure Deviation Alert form which was then filed along with the archives for the project. The as-built survey data, including the topographic and bathymetric maps, were examined for accuracy and adjusted as necessary to accurately depict field conditions.

6.5 DATA VALIDATION

A portion of analytical results from the surface water samples collected monthly throughout active construction were validated by an Independent Data Validator in accordance with the "Quality Assurance Project Plan" and the procedures published in:

Region 1, EPA – NE Data Validation Functional Guidelines for Evaluating Environmental Analyses; Part I, "Data Validation Manual: The Quality System", and Part IV: "Inorganic Analyses Data Validation".12/96. U.S. Environmental Protection Agency, Region I, Boston, MA.

Data qualifiers were applied in the final validation reports as necessary and appropriate, in accordance with these guidelines. All final validation reports were included in previously submitted compliance monitoring reports as attachments.

7.0 FINAL PHASE 1B/2 CONSTRUCTION INSPECTION

The final construction inspection was conducted on Friday, August 6, 2004. The weather conditions included rain showers, light and variable winds, and a temperature of 66° F. Attending the inspection were representatives of the EPA, VT DEC, Performing Defendants and the Design/Build Team. The inspection sequence proceeded in the field in the following order: the cap and stormwater management features in Area 7; the Burlington Electric Department storm sewer outlet modifications; the cap in Area 3 and waterway in Area 2; the cap along the West Bank; the subaqueous cap in the Canal; the cap in the 100' by 100' Area, and the subaqueous cap in the Turning Basin.

Immediately following the final construction inspection, the EPA offered initial verbal comments, identifying one construction punch list item described below:

> *What remains of the NAPL on the cap surface near the west bank cap must be completely removed before EPA will approve the construction completion report.*

The Punch List item identified by EPA relates to the residual NAPL on the cap surface that remained after completion of the NAPL vacuuming by the divers. At the time of the final Construction Inspection, the final manual clean-up after the divers demobilized had not been completed. The final NAPL clean-up work has since been completed as described in Section 3.11.2 of this report.

EPA also noted a few areas that will need to be monitored during operation and maintenance for their ability to meet long-term performance standards. These include:

- Area 7 where surface water runoff from the Gilbane property might cause erosion or loss of wetland vegetation
- Monitoring and treatment of the invasive species *Phragmites,* especially in Area 7 where this species was observed [note: the site-wide O & M Plan describes treatment of *Phragmites* as a requirement for two full growing seasons following receipt of EPA's Certification of Construction Completion]
- The southwest corner of Area 3 for wetland plants since establishment there may be difficult

- Settlement in the West Bank Cap along the top of the cribbing to assure that small fissures noted on the site visit do not deepen and compromise the cap
- The canal edge of the 100-foot by 100-foot cap where some loss of topsoil has occurred to assure that the bank does not continue to recede to the point where it might expose contaminated soils.

8.0 REMEDIAL CONSTRUCTION COST SUMMARY

A cost summary for each of the remedy components is provided in Table 10 below.

TABLE 10
REMEDIAL ACTION CONSTRUCTION COST SUMMARY

Remedy Component		Cost ($)
Design/Construction (The Johnson Co. and Fleet Environmental Services)	Overall Planning& Pre-Design Activities	288,680
	Design	530,980
	Outlet Weir	170,000
	Area 3/Area 7	1,356,390
	Canal/Turning Basin & 100 x 100' Area	1,777,500
	West Bank Cap	447,600
	SUBTOTAL, DESIGN/CONSTRUCTION:	**4,571,150**
Monitoring (The Johnson Co.)	Monitoring	831,620
	SUBTOTAL, MONITORING	**831,620**
Historic Resources	Historic resources Study (John Milner Associates)	38,552
	Supplemental Study/Mitigation (University of Vermont Consulting Archeology Program)	1,900
	Mitigation pursuant to Memorandum of Agreement	150,000
	SUBTOTAL, HISTORIC RESOURCES:	**190,452**
Project Coordination/IQAT Services	de maximis, inc. (November 1999 through July 2004)	558,600
	SUBTOTAL, PROJECT COORDINATION/ IQAT:	**558,600**
Construction Access	Access Agreement with Property Owner	42,400
	SUBTOTAL, CONSTRUCTION ACCESS AGMT.	**42,400**
Engineering Peer Review:	BBL, Inc	32,584
	SUBTOTAL, ENGINEERING PEER REVIEW:	**32,584**
Institutional Controls	Institutional Controls (through July 2004) -- Includes attorneys fees and related costs of title work	142,823
	SUBTOTAL, INSTITUIONAL CONTROLS	**142,823**
Natural Resource Mitigation (Howe Farm)	Gravel Construction	213,518
	Wetlands Enhancement Easement (Tomasi property)	25,371
	Sheehey Furlong (October 1999 through June 2001)	18,745
	The Johnson Co. (July 1998 through June 2004)	183,287
	SUBTOTAL, NATURAL RESOURCE MITIGATION	**440,921**
	GRAND TOTAL:	**6,810,550**

9.0 REMAINING ACTIVITIES

9.1 OPERATION AND MAINTENANCE

Pursuant to Section 1V.D.6 of the Statement of Work (SOW), an Operation and Maintenance Plan (O & M Plan) was prepared to ensure the continued effectiveness of the remedial action. A summary of the primary operation and maintenance activities for the Pine Street Canal Site for at least the first five years as presented in the O & M Plan is as follows:

Outlet Weir

- Annual visual inspections
- Annual elevation survey
- Clear obstructions, replace stop logs, replace/reposition rip-rap and repair concrete as-needed

Surficial Caps and Wetland Restorations

- Annual visual inspections
- Annual Monitoring for nuisance species
- Nuisance species control/treatment as needed
- Repair cracks/erosion in cap, repair/add armoring, re-vegetate, and control access as needed.

West Bank NAPL Collection Wells

- Visual inspections three times per year
- Repair/replace well risers or caps, repair undue settlement/consolidation around wells, remove accumulated sediment, and control vegetation to maintain access, as needed.

Subaqueous Cap

- Review and assess long term compliance monitoring results for the subaqueous cap
- Perform supplemental cap thickness measurements if warranted after review/assessment of compliance monitoring data
- Repair areas of deficient cap thickness with additional sand placement, place armoring, and/or modify hydraulic conditions in Canal (by changing the stop logs in the outlet weir) as may be warranted by monitoring data.

9.2 COMPLIANCE MONITORING

Post-construction and long term compliance monitoring obligations are summarized in the Compliance Monitoring Workplan (CMWP). The primary objectives of the CMWP are to establish methods and procedures by which to evaluate performance of the remedy in the context of the Performance Standards presented in the Consent Decree. Compliance monitoring has already been performed during preconstruction (design phases) and remedial construction

phases, and the results submitted to EPA and VTDEC in periodic Compliance Monitoring reports. Compliance monitoring will continue in the post-construction and long term monitoring phases as described in the CMWP and its associated compliance monitoring schedule. Future monitoring requirements include:

- Groundwater (bedrock and overburden)
- Surface water
- Cap chemistry
- Cap biology (macroinvertebrates)
- Stormwater inflow (sediment traps)
- Sediment transport to the Lake
- NAPL on the cap or water surface

9.3 DEMONSTRATION OF COMPLIANCE REPORT

One year following EPA approval of the Construction Completion Report, the PDs will submit the Demonstration of Compliance Report. This report will contain:

- The information needed to demonstrate compliance with performance standards established in the SOW
- Data needed to evaluate the conclusions presented in the report
- If performance standards have not been met, a Corrective Action Plan which describes actions the PDs propose to correct the remedy, re-evaluate the protectiveness of the remedy, and/or re-evaluate the performance standards.

9.4 FIVE YEAR REVIEWS

Five years after receipt of EPA approval or modification of the Construction Completion Report, and every five years thereafter, the Performing Defendants will submit a "Five-Year Review Report" for EPA approval after opportunity for VTDEC review and comment.

10.0 CERTIFICATION

PERFORMING DEFENDANTS CERTIFICATION

To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

By: Thor Helgason Date: 11/30/06

Thor Helgason
Performing Defendants'
Project Coordinator

We, the undersigned, hereby certify that the Remedial Action construction for the Pine Street Canal Superfund Site has been completed in full satisfaction of the requirements of the Consent Decree and associated Statement of Work lodged November 29, 1999, and all subsequent approved design submittals (including design plans and specifications) and Project Operation Plans.

Furthermore, based on the results of testing and inspections during and after remedial construction, and compliance monitoring data/results collected to date, we conclude that the performance standards associated with capping and wetland restoration have been met.

By: CM Crandell

Christopher M. Crandell, P.E.
Project Manager

Date: 12/5/06

By: Thor Helgason

Thor Helgason
Performing Defendants
Project Coordinator

Date: 11/30/06

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APPENDIX 1

REGULATORY COMPLIANCE STATEMENT

APPENDIX 1

REGULATORY COMPLIANCE STATEMENT

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
	CHEMICAL-SPECIFIC				
1	Draft Sediment Quality Criteria USEPA, 1993a, 1993b, 1993c, and 1992a	Criteria developed by the USEPA for certain hydrophobic organic compounds to protect benthic organisms.	TBC	Phase IA	Not Applicable.
				Phase IB, Phase 2 & West Bank Cap	No action necessary; sediments currently meet these criteria.
2	Ontario Ministry of the Environment and Energy (OMEE) Sediment Quality Guidelines	Guidelines derived specifically for freshwater sediments that define three levels of chronic effects on benthic organisms: no-effect level; lowest-effect level (LEL) which indicates level of sediment contamination that can be tolerated by most benthic organisms; severe-effects level (SEL) at which pronounced disturbances of sediment-dwelling organisms will occur for a majority of the benthic species.	TBC	Phase 1A	Not applicable.
				Phase 1B	Capping Areas 3 and 7 with clean sand and topsoil meets the guidance criteria.
				Phase 2	Capping the Canal and Turning Basin with sand, and the 100' by 100' area with clean sand and topsoil meets the guidance criteria.
				West Bank Cap	Capping the West Bank Cap with clean sand and topsoil meets the guidance criteria.
3	NOAA Sediment Screening Guidelines	Used to identify concentration levels associated with deleterious effects on estuarine and marine species and environments. Based on a database compiled from 89 publications lowest (ER-L) and median (ER-M) effects ranges (corresponding to the 10^{th} and 50^{th} percentiles, respectively) of observed biological effects were developed.	TBC	Phase 1A	Not applicable.
				Phase 1B	Capping Areas 3 and 7 with clean soil meets the guidance criteria.
				Phase 2	Capping the Canal and Turning Basin with clean sand and the 100' by 100' area with clean sand and topsoil meets the guidance criteria.
				West Bank Cap	Capping the West Bank Cap with clean sand and topsoil meets the guidance criteria.

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
4	Clean Water Act (CWA) Ambient Water Quality Criteria Guidelines 40 CFR Part 131	Establishes policy of user-based surface water quality criteria for protection of aquatic organisms and human health.	TBC	Phase 1A	Water quality impacts during construction were minimized by complete containment of the construction area by hydro-dams. Adjacent surface water was additionally protected with sorbent booms and silt curtains. Turbidity measurements of by-pass pump discharge and sediment control measures of sump pump discharge indicated no significant impact to surface water quality. No long-term impacts to water quality are expected. The project therefore meets these criteria.
				Phase 1B, Phase 2 & West Bank Cap	Water quality impacts during dewatering, excavating and cap placement were prevented through the use of engineering controls including silt fencing, sorbent booms, dewatering water sediment removal and NAPL management, and stormwater bypass. No long-term or short term impacts to water quality occurred. The project therefore meets these criteria. Dissolved oxygen, pH, turbidity, conductivity and temperature were measured and samples were collected for analysis of filtered and unfiltered SVOCs (16 PAHs) by EPA 8270, filtered and unfiltered metals (RCRA 8, Cu, Zn by EPA 6010b) and total suspended solids (by EPA 160.2). The measurements and analysis results confirmed no long-term or short term impacts to water quality occurred.
LOCATION- SPECIFIC					
5	Resource Conservation and Recovery Act (RCRA)Hazardous Waste Facility Located on 100-year Floodplain 40 CFR 264.18(b)	Facility must be designed and operated to avoid washout.	Applicable	Phase 1A	The weir will maintain water levels in the Canal at a minimum of 96.0 feet NGVD, reducing the potential for cap erosion during storms.
				Phase 1B, Phase 2 & West Bank Cap	The caps were designed to withstand the erosive forces of a 100 year flood event; therefore the project is compliant with this ARAR.

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
6	Executive Order 11988 Floodplains Management 40 CFR 6, Subpart A	Actions by federal agencies taking place within floodplains must be done to avoid adverse impacts and preserve beneficial values in floodplains.	Applicable	Phase 1A	The weir will not significantly change flood conditions upstream from pre-existing conditions with the beaver dam based upon the results of hydrologic modeling. The project is therefore compliant with this ARAR
				Phase 1B	The placement of a cap in Areas 3 and 7, and excess fill in Area 3, will reduce the flood storage capacity at the site. However, Areas 3 and 7 lie within the Lake Champlain flood plain. The Base Flood ("100 year flood") elevation for Lake Champlain in the Burlington area is 102. The top of the weir is 96.5, above which water levels will be contiguous with the Lake, thereby providing practically unlimited storage. Therefore, no adverse impacts are expected and beneficial values are preserved, and Phase 1B is compliant with this ARAR.
				Phase 2	The placement of a cap in the Canal, Turning Basin and the 100 foot by 100 foot area will reduce the flood storage capacity at the site. However, these areas lie within the Lake Champlain flood plain. The Base Flood ("100 year flood") elevation for Lake Champlain in the Burlington area is 102. The top of the weir is 96.5, above which water levels will be contiguous with the Lake, thereby providing practically unlimited storage. Therefore, no adverse impacts are expected and beneficial values are preserved, and Phase 2 is compliant with this ARAR.
				West Bank Cap	The placement of a cap in the West Bank will not adversely affect flood storage capacity at the site.
7	Executive Order 11990 Protection of Wetlands 40 CFR Part 6, Subpart A	Actions by federal agencies taking place within wetlands must be planned to limit adverse impacts.	Applicable	Phase 1A	Material from the weir excavation was moved to wetlands in Area 3 where it was incorporated under the Area 3 cap and restored as wetlands. Minimization of the impacts to the wetlands was included in the design for Phase IB. Phase 1B is compliant with this ARAR (See Compliance Statement for Phase 1B below).

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
				Phase 1B	Phase 1B involved excavation, regrading and capping in Area 7 wetlands, and filling, grading and capping in Area 3 wetlands. Adverse impacts were limited by limiting the extent of construction and implementing engineering controls to prevent impacts to adjacent wetlands and restoring the disturbed wetlands by placing top soil and planting wetland vegetation to restore and enhance wetland functions and values. The project is therefore compliant with this ARAR.
				Phase 2 & West Bank Cap	Phase 2 involves capping in the Canal, Turning Basin and the 100 foot by 100 foot area. The West Bank Cap is an extension of the cap in Area 2. Adverse impacts were limited by limiting the extent of construction and implementing engineering controls to prevent impacts to adjacent wetlands and restoring the disturbed wetlands by placing top soil, where needed, and planting wetland vegetation to restore and enhance wetland functions and values. The project is therefore compliant with this ARAR.
8	Clean Water Act (CWA) Section 404 Dredge and Fill in Wetlands 40 CFR Part 320, 330 CFR Parts 230-330	Dredging or filling activities in wetlands are regulated. Appropriate and practicable steps must be taken to minimize and address impacts of any discharges occurring as a result of the remedial action. No activity that adversely affects a wetland shall be permitted if a practicable alternative with lesser effects is available.	Applicable	Phase 1A	See Compliance Statement for ARAR # 7, Phase 1A

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
				Phase 1B	See Compliance Statement for ARAR #7, Phase 1B. Also, placement of cap material in these wetlands is the prescribed Remedial Action in Areas 3 and 7. The grading plan for Area 7 was designed to minimize wetland loss but resulted in excess soil that was moved to Area 3, incorporated under the cap, and all disturbed wetlands restored. The amount of excess soil to be placed in Area 3 (in addition to the cap) was reduced to the minimum possible during the design process. Alternatives with lesser effects were evaluated and none were found to be practicable. The ARAR requires that no net loss of wetlands be achieved if practicable. The remedy as built resulted in reduction of 0.8 acres of emergent wetland area, an increase of 1.4 acres of scrub-shrub wetland area, and a decrease of 0.5 acres of forested wetland area. The net change was a 0.1 acre increase in overall wetland area. The project, as built, appears to be compliant with this ARAR. However, full compliance is dependent on achieving long-term performance standards for wetland restoration.
				Phase 2	See Compliance Statement for ARAR #7, Phase 2. The capping of the Canal, Turning Basin and the 100 foot by 100 foot area resulted in no net loss of wetlands. Therefore, the project is compliant with this ARAR.
				West Bank Cap	See Compliance Statement for ARAR #7, West Bank Cap. After capping with clean sand and topsoil, the area was restored resulting in no net loss of wetlands. Therefore, the project is compliant with this ARAR.

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
9	National Historic Preservation Act Regulations Preservation of Historic Properties Controlled by Federal Agency 36 CFR Part 800	Actions by federal agencies must be planned to preserve historic properties and minimize harm to National Historic Landmarks. Statues include requirements that actions must be taken to recover and preserve artifacts, preserve historic properties and minimize harm to National Historic Landmarks	Applicable	Phase 1A	The historic resources identified prior to construction were protected by fencing and similar measures, and not impacted by the construction of the weir. The buried wooden stone-filled cribbing discovered during excavation was examined and mitigation consisted of documentation by an archeologist. Disruption of the cribbing was limited to that necessary to install the weir. The project is therefore compliant with this ARAR.
				Phase 1B	No historical/archeological artifacts were expected because most of the work was in areas of urban fill and no artifacts were encountered.
				Phase 2 & West Bank Cap	Previously identified historical artifacts were encountered in the Canal, Turning Basin, the West Bank Cap, and the 100 foot by 100 foot area. They were addressed in accordance with 36 CFR 800 and the Memorandum of Agreement (MOA) between the EPA, the SHPO, and the PDs. Steps described in these documents were followed to ensure that the project was compliant with this ARAR.
10	Archaeologic and Historical Preservation Act Regulations 36 CFR Part 65	Actions by federal agencies must be done to preserve and recover any historical/ archeological artifacts found.	Applicable	Phase 1A	See Compliance Statement for ARAR #9, Phase 1A.
				Phase 1B	See Compliance Statement for ARAR #9, Phase 1B
				Phase 2 & West Bank Cap	See Compliance Statement for ARAR #9, Phase 2 and West Bank Cap.
11	Vermont Historic Preservation Law 22 VSA Chapter 14, sec. 743(4) and 767	Places controls on actions conducted by the State of Vermont that may impact historic, scientific, or archaeological data.	Applicable	Phase 1A	See Compliance Statement for ARAR #9, Phase 1A
				Phase 1B	See Compliance Statement for ARAR #9, Phase 1B
				Phase 2 & West Bank Cap	See Compliance Statement for ARAR #9, Phase 2 and West Bank Cap.

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
12	Fish and Wildlife Coordination Act Modification to Waterway that Affects Fish or Wildlife 50 CFR Part 297	Actions by federal agencies must be taken to protect fish or wildlife when diverting, channeling, or otherwise modifying a stream or river.	Applicable	Phase 1A	The weir was designed and constructed to maintain Canal and Turning Basin water levels near historical levels controlled by beaver dams. Annual spring lake levels will typically overtop the weir crest, and therefore it will not adversely impact spring spawning or fish migration, and the project is compliant with this ARAR.
				Phase 1B, Phase 2 & West Bank Cap	The capped areas will protect fish and wildlife from exposure to toxic sediments. Engineering controls were used to protect wetlands and water quality from the release of silt, turbidity and contaminated sediments during the remedial work in areas adjacent to the work area. Therefore the project is compliant with this ARAR.
13	Vermont Wetlands Rules 10 VSA Chapter 37, sec. 905	Identification and protection of significant wetlands and their values and functions.	Applicable	Phase 1A	See Compliance Statement for ARAR #7 and ARAR #8 , Phase 1A
				Phase 1B	See Compliance Statement for ARAR #7 and ARAR #8, Phase 1B
				Phase 2 & West Bank Cap	See Compliance Statement for ARAR #7 and ARAR #8, Phase 2 and West Bank Cap.
14	Vermont Groundwater Protection Law	Establishes classifications for groundwater to protect the existing and potential future use of each groundwater source.	Applicable	Phase 1A	Groundwater quality in the vicinity of the weir currently meets the requirements of this ARAR.

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
	10 VSA, Chapter 48, sec. 1340			Phase 1B, Phase 2 & West Bank Cap	Groundwater beneath portions of the site that does not meet the quality requirements for Class III groundwater has been reclassified to Class IV, non-potable water supply, suitable for some agricultural, industrial, and commercial use. Contaminated groundwater from the Class IV area is not currently migrating into Class III areas and causing violations of Class III groundwater quality standards as demonstrated by the pre-construction, construction, and post-construction groundwater monitoring results. Long-term monitoring will be used to demonstrate that this continues to be the case. Therefore, the project is compliant with this ARAR.
15	RCRA - Identification and Listing of Hazardous Wastes 40 CFR Part 261	Criteria for determining if a waste is a hazardous waste and is subject to regulation.	Potentially ARAR	Phase 1A	Contaminated soil moved to Area 3 during weir construction was evaluated to determine if it was a characteristic hazardous waste. It was found not to be hazardous waste. Therefore, the Phase 1A project was compliant with this ARAR.
				Phase 1B	Excess soil from Area 7 may be a characteristic hazardous waste. However, this soil was moved to Area 3 for placement under the Area 3 cap. Excess soil from Area 2 may also be a characteristic hazardous waste. However, this soil was moved to an adjacent location for placement under the Area 2 cap. Since these materials did not leave the Superfund Site, they may be consolidated within the area of contamination.
				Phase 2	Some waste materials were collected and placed in roll-offs at the site and samples analyzed to determine if they were considered hazardous. Materials identified as hazardous were disposed of at a RCRA disposal facility, meeting the requirements of this ARAR.

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
	RCRA - Identification and Listing of Hazardous Wastes 40 CFR Part 261			West Bank Cap	Non-aqueous phase liquid coal tar and oil were removed from pools and monitoring wells in the vicinity of the West Bank Cap west of the Canal, and from the subaqueous cap surface in the Canal. These liquids were separated on-site from associated water, and along with decontamination water from the cleaning of the on-site separation tanks, were disposed of at a licensed RCRA disposal facility as hazardous materials. The separated water was treated and discharged on-site as described in ARAR #16. Solid wastes, including sorbents, oil stained wood and debris, and disposable equipment, were placed in a roll off or drums and disposed of at a licensed RCRA disposal facilitv.
ACTION-SPECIFIC					
16	RCRA - Treatment, Storage and Disposal Facilities 40 CFR Part 268	Regulations concerning land disposal of listed or characteristically hazardous waste	Not ARAR	Phase 1A	No RCRA hazardous wastes were generated with this Remedial Action (See Compliance Statement for ARAR #15, Phase 1A).
				Phase 1B	*In Situ* capping activities involve consolidation of materials within an area of existing contamination, which does not implicate RCRA standards [55 Fed. Reg. 8666, 8760 (March 8, 1990)] (See Compliance Statement for ARAR #15, Phase 1B.)
				Phase 2	Hazardous wastes generated during Phase 2 Remedial Action and removed from the Site were disposed of at a RCRA Disposal Facility.

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
				West Bank Cap	Non-aqueous phase coal tar and oil liquids and associated water were collected from pools, wells and from the surface of the Canal cap and temporarily placed in tanks where water and NAPL were allowed to separate. The separated water was selectively pumped from the tanks, treated on-site via filtration and activated carbon absorption, and stored in a second tank prior to discharge pending laboratory analysis. The analytical results indicated that the treated water would not adversely impact surface water quality, and it was discharged to the Canal consistent with the workplan and after prior approval from EPA and VT DEC.
17	Resource Conservation and Recovery Act. Land Disposal Facility Notice in Deed 40 CFR 264.116, 264.119(b)(1)	Establishes provisions for a deed notation for closed hazardous waste disposal units, to prevent land disturbance by future owner.	Potentially Relevant and Appropriate	Phase 1A, Phase 1B, Phase 2 & West Bank Cap	The deed restrictions and other institutional controls established for this Remedial Action satisfy the requirements of this ARAR (see Institutional Control Plan for details).
18	Resource Conservation and Recovery Act General Facility Standards and Security 40 CFR 264 Subpart B (§ 264.14-16, 18 and 19)	General Standards and security provisions for facilities that treat, store, or dispose of hazardous waste.	Potentially Relevant and Appropriate	Phase 1A, Phase 1B, Phase 2 & West Bank Cap	The Remedial Action does not involve a treatment, storage or disposal facility, therefore this ARAR is not Relevant and Appropriate

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
19	RCRA Preparedness and Prevention 40 CFR 264 Subpart C (§ 264.31 and 37)	Requirements for the design, construction and operation of hazardous waste facilities to maintain equipment to prevent an unplanned release.	Potentially Relevant and Appropriate	Phase 1A, Phase 1B, Phase 2 & West Bank Cap	See Compliance Statement for ARAR #18.
20	Contingency Plan and Emergency Procedures 40 CFR 264 Subpart D (all Sections)	Regulations pertaining to hazardous waste facilities requiring a contingency plan and emergency procedures.	Potentially Relevant and Appropriate	Phase 1A, Phase 1B, Phase 2 & West Bank Cap	See Compliance Statement for ARAR #18.
21	Releases from Solid Waste Management Units 40 CFR 264 Subpart F (§ 264.90 and 101)	Regulations pertaining to hazardous waste facilities requiring monitoring and corrective action for units that manage solid waste	Potentially Relevant and Appropriate	Phase 1A, Phase 1B, Phase 2 & West Bank Cap	See Compliance Statement for ARAR #18.
22	Closure and Post-Closure 40 CFR 264 Subpart G (§ 264.11 and 117)	Regulations pertaining to closure and post-closure activities for regulated units.	Potentially Relevant and Appropriate	Phase 1A, Phase 1B, Phase 2 & West Bank Cap	See Compliance Statement for ARAR #18.
23	Vermont Hazardous Waste Management Regulations 10 VSA Ch. 159.	Requirements for the management, treatment and disposal of hazardous wastes.	Potentially ARAR	Phase 1A	See Compliance Statement for ARAR #15, Phase 1A
				Phase 1B	See Compliance Statement for ARAR #15, Phase 1B
				Phase 2	See Compliance Statement for ARAR #15, Phase 2
				West Bank Cap	See Compliance Statement for ARAR #15, West Bank Cap

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
24	State Water Quality Policy 10 VSA § 1250	Establishes policy to protect and enhance the quality, character and usefulness of surface water and to assure the public health; control the discharge of wastes to the waters of the state, prevent degradation of high quality waters and prevent, abate, or control all activities harmful to water quality.	Applicable	Phase 1A	See Compliance Statement for ARAR #4, Phase 1A
				Phase 1B	See Compliance Statement for ARAR #4, Phase 1B
				Phase 2	See Compliance Statement for ARAR #4, Phase 2
				West Bank Cap	See Compliance Statement for ARAR #4, West Bank Cap
25	Vermont Water Quality Standards 10 VSA Ch. 47, EPR Ch. 1	Establishes requirements for surface water quality.	Applicable	Phase 1A	See Compliance Statement for ARAR #4, Phase 1A
				Phase 1B	See Compliance Statement for ARAR #4, Phase 1B
				Phase 2	See Compliance Statement for ARAR #4, Phase 2
				West Bank Cap	See Compliance Statement for ARAR #4, West Bank Cap
26	Vermont NPDES Permit Program Regulations 10 VSA Ch. 47	Establishes effluent standards and/or limitations for discharges to surface water	Applicable	Phase 1A	Turbidity measurements of by-pass pump discharge and sediment control measures of sump pump discharge indicate no significant impact to surface water quality. Dissolved oxygen, pH, turbidity, conductivity and temperature were measured and samples collected for analysis of filtered and unfiltered SVOCs (16 PAHs) by EPA 8270, filtered and unfiltered metals (RCRA 8, Cu, Zn by EPA 6010b) and total suspended solids (by EPA 160.2). The resulting data demonstrated compliance with this ARAR.

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
				Phase 1B	Dewatering of excavations/construction areas took place during construction. Excess sediment was removed prior to discharging the water downstream to meet the requirements of this ARAR. Dissolved oxygen, pH, turbidity, conductivity and temperature was measured and samples collected for analysis of filtered and unfiltered SVOCs (16 PAHs) by EPA 8270, filtered and unfiltered metals (RCRA 8, Cu, Zn by EPA 6010b) and total suspended solids (by EPA 160.2). The resulting data demonstrated compliance with this ARAR.
				Phase 2 & West Bank Cap	Water quality impacts during de-watering and cap placement were prevented through the use of engineering controls including silt fencing, sorbent booms, dewatering water sediment removal and NAPL management, and stormwater bypass. No long-term or short term impacts to water quality occurred. Dissolved oxygen, pH, turbidity, conductivity and temperature were measured and samples collected for analysis of filtered and unfiltered SVOCs (16 PAHs) by EPA 8270, filtered and unfiltered metals (RCRA 8, Cu, Zn by EPA 6010b) and total suspended solids (by EPA 160.2). The resulting data demonstrated compliance with this ARAR.
27	Vermont Air Pollution Control Regulations 5-261 10 V.S.A. Chapter 23, Sec. 552, 554, 558	Lists hazardous contaminants and sets Hazard Limiting Values and action Limits for numerous compounds. Identifies source registration and pollution control requirements.	Applicable	Phase 1A	Air monitoring and lack of dust due to saturated conditions demonstrated no significant impact to air quality, and compliance with this ARAR.
				Phase 1B, Phase 2 & West Bank Cap	Air monitoring was performed during construction to protect workers and the public from hazardous air contaminants and no air emissions were detected during construction that created the need for engineering controls. Therefore the project is compliant with this ARAR.

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
28	Vermont Air Pollution Control Regulations 5-304, 5-305, 5-306 10 V.S.A. Chapter 23, Sec. 552, 554, 558	Establishes maximum 24-hour concentrations and annual geometric mean ambient air quality standards for particulate matter.	Relevant and Appropriate	Phase 1A	See Compliance Statement for ARAR #27, Phase 1A
				Phase 1B, Phase 2 & West Bank Cap	See Compliance Statement for ARAR #27, Phase 1B, Phase 2 and West Bank Cap.
29	Stormwater Discharge Permit 10 VSA Sec. 4152	Limits stormwater runoff from the site.	Relevant and Appropriate	Phase 1A	Construction of the weir does not alter stormwater runoff from pre-existing conditions; therefore the project is compliant with this ARAR.
				Phase 1B, Phase 2 & West Bank Cap	On-site stormwater runoff from construction areas were controlled prior to discharge downstream with silt curtains and sorbent booms. Environmental controls were inspected on a daily basis during construction. Therefore the project is compliant with this ARAR.
30	Vermont Wetland Regulations 10 VSA Ch. 37	Procedures to identify and protect significant wetlands and the values and functions which they serve in such a manner that the goal of no net loss of such wetlands and their functions is achieved	Applicable	Phase 1A	See Compliance Statement for ARAR #7, Phase 1A.
				Phase 1B, Phase 2 & West Bank Cap	See Compliance Statement for ARAR #7 and #8, Phase 1B, Phase 2 and West Bank Cap.
31	Vermont Dam Regulations 10 VSA 43	This law governs all dams that are constructed in the State impounding more than 500,000 cubic feet of water and sediment, except those dams relating to the generation of electrical power for public use.	Potentially Applicable	Phase 1A	The volume of impounded water resulting from the construction of this weir is greater than 500,000 cubic feet; therefore this ARAR is applicable as defined in §1082 of the statute. The design and construction of the weir meets the engineering requirements of the Vermont Department of Environmental Conservation Facilities Engineering Division (the jurisdictional state agency). The municipality (Burlington) was notified of the project and the project will not adversely impact fish and wildlife habitats at the site, the other requirements of the statute. Therefore, the project is compliant with this ARAR.

TABLE 1 REGULATORY COMPLIANCE STATEMENT					
ARAR #	**REQUIREMENTS/ CRITERIA FROM RECORD OF DECISION**	**DESCRIPTION**	**EVALUATION DECISION**	**REMEDIAL ACTION PHASE**	**REGULATORY COMPLIANCE STATEMENT**
				Phase 1B, Phase 2 & West Bank Cap	Not applicable.

\\server01\projects\1-0870-1\CCR_Final Version\Appendix 1 Table 1CLL.doc

GEOTEXTILE PLACEMENT

PINE STREET CANAL SITE

BURLINGTON, VERMONT

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602

DATE: 8/12/03 DRAWN BY: TJK PROJECT: 1-0870-1 SCALE: 1"=~100

~LAKE CHAMPLAIN~

OUTLET WEIR

T15 T14 T13 T12 T11 T10 T9 T8 T7 T6 T5 T4 T3 T2 T1

INTAKE LOCATION FOR DEWATERING PUMP

6

2

1

8

CANAL

ACCESS POINT

ACCESS POINT

TURNING BASIN

LEGEND

- APPROX. SURFACE WATER
- RAILROAD TRACKS
- FENCELINE
- BUILDING
- GRAVEL DRIVE
- 2 FOCUS AREA
- SUNKEN BARGE/RAILROAD

KEY

- BX1100 grid (3m x 50 m)
- Tensar BX420060 grid (4m x 50 m)
- UX150060 grid (4.5ft x 200ft)
- Tensar BS150060 grid (4m x 50 m)

N

PostConstruction.DWG

GEOGRID PLACEMENT

PINE STREET CANAL SITE

BURLINGTON, VERMONT

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602

DATE: 8/12/03 DRAWN BY: TJK PROJECT: 1-0870-1 SCALE: 1"=~100

APPENDIX 3

TREATMENT SYSTEM TREATED WATER ANALYTICAL RESULTS

SEVERN TRENT STL

STL Burlington
208 South Park Drive, Suite 1
Colchester, VT 05446

Tel: 802 655 1203 Fax: 802 655 1248
www.stl-inc.com

July 23, 2004

Mr. James Bowes
The Johnson Company, Inc.
100 State Street
Suite 600
Montpelier, VT 05602

Re: Laboratory Project No. 20022
Case No. 20022; ETR: 101371

Treatment Plant Discharge Sample #1

Dear Mr. Bowes:

Enclosed are the analytical results of samples received intact by STL Burlington on July 20, 2004. This report is sequentially numbered starting with page 0001 and ending with page 0018.

Laboratory ID numbers were designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 07/20/04 ETR No: 101371		
579511	SIN00177-01	07/20/04	Water

EPA SW846 Method 8260B – Volatile Organics:
The analysis of the method blank identified as VBLKE1 exhibited the presence of the target compound Naphthalene. However the concentrations detected in the method blank sample was below the method reporting limit. This compound was not detected in the field sample of this delivery group. All associated results have been identified with the qualifier "B".

EPA SW846 Method 8270C – Semivolatile Organics:
The analysis of the blank spike sample T4LCS exhibited a percent recovery of the target compound 2-Methylnaphthalene that exceeded the control limits (42-118%) at 133%. However, the percent recovery in the associated blank spike duplicate sample yielded percent recoveries for all target compounds that were within the control limits. This exceedence is presented on the analytical form 3s.

Client specified matrix spike/matrix spike duplicate samples were not analyzed or requested with the above samples. However, routine method quality control analyses were performed.

The analytical results presented in this data report were generated under a quality system that adheres to the requirements specified in the NELAC standard. This report shall not be reproduced, except in full, without the written approval of the laboratory. The release of the data in this report is authorized by the Laboratory Director or his designee, as verified by the following signature.

If there are any questions regarding this submittal, please contact Ron Pentkowski at (802) 655-1203.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

Enclosure

STL Burlington Data Qualifier Definitions

Organic

U: Compound analyzed but not detected at a concentration above the reporting limit.

J: Estimated value.

N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.

P: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified in project QA plan, the lower of the two values is reported on the Form I.

C: Pesticide result whose identification has been confirmed by GC/MS.

B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.

E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.

D: Concentrations identified from analysis of the sample at a secondary dilution.

A: Tentatively identified compound is a suspected aldol condensation product.

X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

E: Reported value is estimated due to the presence of interference.

N: Matrix spike sample recovery is not within control limits.

* Duplicate sample analysis is not within control limits.

B: The result reported is less than the reporting limit but greater than the instrument detection limit.

U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

P	ICP-AES
MS	ICP-MS
CV	Cold Vapor AA
AS	Semi-Automated Spectrophotometric

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

JOHCOM SAMPLE NO.

SIN00177-01

Lab Name: STL BURLINGTON Contract: 24037

Lab Code: STLVT Case No.: 24037 SAS No.: SDG No.: 101371

Matrix: (soil/water) WATER Lab Sample ID: 579511

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 579511

Level: (low/med) LOW Date Received: 07/20/04

% Moisture: not dec. _____ Date Analyzed: 07/21/04

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylene (m,p)	1.0	U
1330-20-7	Xylene (total)	1.0	U
95-47-6	Xylene (o)	1.0	U
91-20-3	Naphthalene	0.59	JB
108-67-8	1,3,5-Trimethylbenzene	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

VBLKE1

Lab Name: STL BURLINGTON Contract: 24037

Lab Code: STLVT Case No.: 24037 SAS No.: SDG No.: 101371

Matrix: (soil/water) WATER Lab Sample ID: VBLKE1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: LEGB01A

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 07/20/04

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylene (m,p)	1.0	U
1330-20-7	Xylene (total)	1.0	U
95-47-6	Xylene (o)	1.0	U
91-20-3	Naphthalene	0.35	J
108-67-8	1,3,5-Trimethylbenzene	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U

FORM 1 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

LEGA LCS

Lab Name: STL BURLINGTON Contract: 24037

Lab Code: STLVT Case No.: 24037 SAS No.: SDG No.: 101371

Matrix: (soil/water) WATER Lab Sample ID: LEGA LCS

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: LEG10AQ

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 07/20/04

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	9.8	
108-88-3	Toluene	9.8	
100-41-4	Ethylbenzene	9.7	
1330-20-7	Xylene (m,p)	19	
1330-20-7	Xylene (total)	30	
95-47-6	Xylene (o)	9.7	
91-20-3	Naphthalene	13	B
108-67-8	1,3,5-Trimethylbenzene	10	
95-63-6	1,2,4-Trimethylbenzene	10	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LEGA LCSD

Lab Name: STL BURLINGTON Contract: 24037

Lab Code: STLVT Case No.: 24037 SAS No.: SDG No.: 101371

Matrix: (soil/water) WATER Lab Sample ID: LEGA LCSD

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: LEG10AQ2

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 07/20/04

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	10	
108-88-3	Toluene	10	
100-41-4	Ethylbenzene	10	
1330-20-7	Xylene (m,p)	20	
1330-20-7	Xylene (total)	31	
95-47-6	Xylene (o)	10	
91-20-3	Naphthalene	13	B
108-67-8	1,3,5-Trimethylbenzene	10	
95-63-6	1,2,4-Trimethylbenzene	11	

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: STL BURLINGTON Contract: 24037

Lab Code: STLVT Case No.: 24037 SAS No.: SDG No.: 101371

	CLIENT SAMPLE NO.	SMC1 (TOL) #	SMC2 (DCE) #	SMC3 (BFB) #	OTHER (DCB) #	TOT OUT
01	LEGA LCS	102	116	104	106	0
02	LEGA LCSD	102	104	103	104	0
03	VBLKE1	104	104	112	102	0
04	SIN00177-01	103	123	121	106	0
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
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16						
17						
18						
19						
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25						
26						
27						
28						
29						
30						

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(88-110)
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(72-141)
SMC3 (BFB)	= Bromofluorobenzene	(72-122)
OTHER(DCB)	= 1,2-Dichlorobenzene-d4	(69-124)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 24037

Lab Code: STLVT Case No.: 24037 SAS No.: SDG No.: 101371

Matrix Spike - Sample No.: LEGA LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Benzene	10		9.8	98	78-116
Toluene	10		9.8	98	78-126
Ethylbenzene	10		9.7	97	74-124
Xylene (m,p)	20		19	95	78-116
Xylene (total)	30		30	100	60-140
Xylene (o)	10		9.7	97	81-125
Naphthalene	10		13	130	78-130
1,3,5-Trimethylbenzene	10		10	100	72-112
1,2,4-Trimethylbenzene	10		10	100	75-123

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	10	10	100	2	40	78-116
Toluene	10	10	100	2	40	78-126
Ethylbenzene	10	10	100	3	40	74-124
Xylene (m,p)	20	20	100	5	40	78-116
Xylene (total)	30	31	103	3	40	60-140
Xylene (o)	10	10	100	3	40	81-125
Naphthalene	10	13	130	0	40	78-130
1,3,5-Trimethylbenzene	10	10	100	0	40	72-112
1,2,4-Trimethylbenzene	10	11	110	10	40	75-123

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 9 outside limits
Spike Recovery: 0 out of 18 outside limits

COMMENTS: _____

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKE1

Lab Name: STL BURLINGTON Contract: 24037

Lab Code: STLVT Case No.: 24037 SAS No.: SDG No.: 101371

Lab File ID: LEGB01A Lab Sample ID: VBLKE1

Date Analyzed: 07/20/04 Time Analyzed: 2316

GC Column: CAP ID: 0.53 (mm) Heated Purge: (Y/N) N

Instrument ID: L

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LEGA LCS	LEGA LCS	LEG10AQ	2121
02	LEGA LCSD	LEGA LCSD	LEG10AQ2	2149
03	SIN00177-01	579511	579511	0042
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
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28				
29				
30				

COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

JOHCOM SAMPLE NO.

SIN00177-01

Lab Name: STL BURLINGTON Contract: 20022

Lab Code: STLVT Case No.: 20022 SAS No.: SDG No.: 101371

Matrix: (soil/water) WATER Lab Sample ID: 579511

Sample wt/vol: 975.0 (g/mL) ML Lab File ID: 579511

Level: (low/med) LOW Date Received: 07/20/04

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 07/21/04

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	10	U
91-57-6	2-Methylnaphthalene	10	U
208-96-8	Acenaphthylene	3.2	J
83-32-9	Acenaphthene	2.8	J
86-73-7	Fluorene	3.2	J
85-01-8	Phenanthrene	5.0	J
120-12-7	Anthracene	6.3	J
206-44-0	Fluoranthene	12	
129-00-0	Pyrene	19	
56-55-3	Benzo(a)anthracene	8.6	J
218-01-9	Chrysene	8.2	J
205-99-2	Benzo(b)fluoranthene	4.6	J
207-08-9	Benzo(k)fluoranthene	4.7	J
50-32-8	Benzo(a)pyrene	7.9	J
193-39-5	Indeno(1,2,3-cd)pyrene	2.4	J
53-70-3	Dibenz(a,h)anthracene	0.90	J
191-24-2	Benzo(g,h,i)perylene	3.3	J

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

STLVT SAMPLE NO.

SBLKT4

Lab Name: STL BURLINGTON Contract: 20022

Lab Code: STLVT Case No.: 20022 SAS No.: SDG No.: 101371

Matrix: (soil/water) WATER Lab Sample ID: SBLKT4

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0720T4

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 07/21/04

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	10	U
91-57-6	2-Methylnaphthalene	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	10	U
86-73-7	Fluorene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

STLVT SAMPLE NO.

T4LCS

Lab Name: STL BURLINGTON Contract: 20022

Lab Code: STLVT Case No.: 20022 SAS No.: SDG No.: 101371

Matrix: (soil/water) WATER Lab Sample ID: T4LCS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: Q0720T4

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 07/21/04

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	27	
91-57-6	2-Methylnaphthalene	40	
208-96-8	Acenaphthylene	26	
83-32-9	Acenaphthene	28	
86-73-7	Fluorene	26	
85-01-8	Phenanthrene	28	
120-12-7	Anthracene	28	
206-44-0	Fluoranthene	28	
129-00-0	Pyrene	25	
56-55-3	Benzo(a)anthracene	24	
218-01-9	Chrysene	23	
205-99-2	Benzo(b)fluoranthene	22	
207-08-9	Benzo(k)fluoranthene	25	
50-32-8	Benzo(a)pyrene	25	
193-39-5	Indeno(1,2,3-cd)pyrene	28	
53-70-3	Dibenz(a,h)anthracene	25	
191-24-2	Benzo(g,h,i)perylene	28	

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

STLVT SAMPLE NO.

T4LCSD

Lab Name: STL BURLINGTON Contract: 20022

Lab Code: STLVT Case No.: 20022 SAS No.: SDG No.: 101371

Matrix: (soil/water) WATER Lab Sample ID: T4LCSD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: Q0720T4D

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 07/21/04

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	24	
91-57-6	2-Methylnaphthalene	35	
208-96-8	Acenaphthylene	23	
83-32-9	Acenaphthene	24	
86-73-7	Fluorene	22	
85-01-8	Phenanthrene	26	
120-12-7	Anthracene	25	
206-44-0	Fluoranthene	27	
129-00-0	Pyrene	23	
56-55-3	Benzo(a)anthracene	22	
218-01-9	Chrysene	22	
205-99-2	Benzo(b)fluoranthene	23	
207-08-9	Benzo(k)fluoranthene	25	
50-32-8	Benzo(a)pyrene	24	
193-39-5	Indeno(1,2,3-cd)pyrene	25	
53-70-3	Dibenz(a,h)anthracene	25	
191-24-2	Benzo(g,h,i)perylene	27	

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: STL BURLINGTON Contract: 20022

Lab Code: STLVT Case No.: 20022 SAS No.: SDG No.: 101371

	JOHCOM SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	SIN00177-01	100	114	103						0
02	T4LCS	99	107	93						0
03	T4LCSD	91	103	88						0
04	SBLKT4	84	92	82						0
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS
S1 (NBZ) = Nitrobenzene-d5	(35-114)
S2 (FBP) = 2-Fluorobiphenyl	(43-116)
S3 (TPH) = Terphenyl-d14	(33-141)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 20022

Lab Code: STLVT Case No.: 20022 SAS No.: SDG No.: 101371

Matrix Spike - STLVT Sample No.: T4LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Naphthalene	30		27	90	31-105
2-Methylnaphthalene	30		40	133*	42-118
Acenaphthylene	30		26	87	43- 98
Acenaphthene	30		28	93	47- 99
Fluorene	30		26	87	49-109
Phenanthrene	30		28	93	51-103
Anthracene	30		28	93	52-104
Fluoranthene	30		28	93	52-116
Pyrene	30		25	83	41-119
Benzo(a)anthracene	30		24	80	52-107
Chrysene	30		23	77	47-112
Benzo(b)fluoranthene	30		22	73	25-121
Benzo(k)fluoranthene	30		25	83	35-141
Benzo(a)pyrene	30		25	83	43-106
Indeno(1,2,3-cd)pyrene	30		28	93	20-127
Dibenz(a,h)anthracene	30		25	83	22-126
Benzo(g,h,i)perylene	30		28	93	28-100

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 20022

Lab Code: STLVT Case No.: 20022 SAS No.: SDG No.: 101371

Matrix Spike - STLVT Sample No.: T4LCS

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Naphthalene	30	24	80	12	40	31-105
2-Methylnaphthalene	30	35	117	13	40	42-118
Acenaphthylene	30	23	77	12	40	43- 98
Acenaphthene	30	24	80	15	40	47- 99
Fluorene	30	22	73	18	40	49-109
Phenanthrene	30	26	87	7	40	51-103
Anthracene	30	25	83	11	40	52-104
Fluoranthene	30	27	90	3	40	52-116
Pyrene	30	23	77	8	40	41-119
Benzo(a)anthracene	30	22	73	9	40	52-107
Chrysene	30	22	73	5	40	47-112
Benzo(b)fluoranthene	30	23	77	5	40	25-121
Benzo(k)fluoranthene	30	25	83	0	40	35-141
Benzo(a)pyrene	30	24	80	4	40	43-106
Indeno(1,2,3-cd)pyrene	30	25	83	11	40	20-127
Dibenz(a,h)anthracene	30	25	83	0	40	22-126
Benzo(g,h,i)perylene	30	27	90	3	40	28-100

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 17 outside limits
Spike Recovery: 1 out of 34 outside limits

COMMENTS: _____

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

STLVT SAMPLE NO.

SBLKT4

Lab Name: STL BURLINGTON Contract: 20022

Lab Code: STLVT Case No.: 20022 SAS No.: SDG No.: 101371

Lab File ID: B0720T4 Lab Sample ID: SBLKT4

Instrument ID: U Date Extracted: 07/20/04

Matrix: (soil/water) WATER Date Analyzed: 07/21/04

Level: (low/med) LOW Time Analyzed: 1521

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	STLVT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SIN00177-01	579511	579511	07/21/04
02	T4LCS	T4LCS	Q0720T4	07/21/04
03	T4LCSD	T4LCSD	Q0720T4D	07/21/04
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

CHAIN OF CUSTODY RECORD

5744

Client / Project Name	Project Location
PINE STREET CANAL SITE	BURLINGTON, VT
Project No.	**Field Logbook No.**
1-0870-1	PSCS RA FB
Sampler: (Signature)	**Chain of Custody Tape No.**
[signature]	5744

ANALYZES

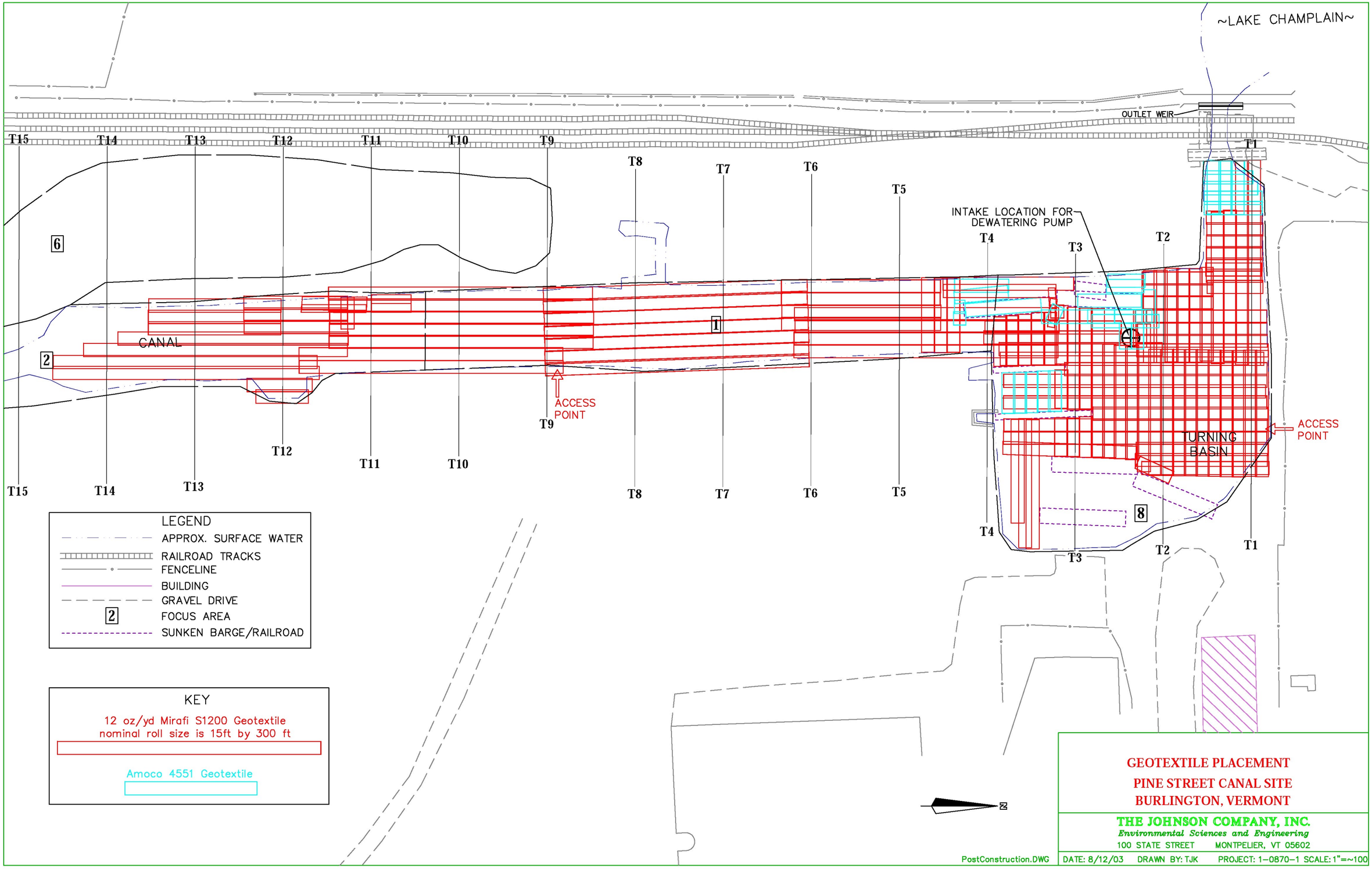
Sample No. / Identification	Date	Time	Lab Sample Number (USE THIS NAME)	Type of Sample	VOCs 8260	3 VOAs with HCl / SVOCs-PAHs 8270C (2 liter Ambers)					REMARKS
J_TREATED	7/20/04	12:00	SIN00177-01	Treated water	✓	✓					

0018

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	7/20/04	12:15	[signature]	07.20.04	1235
Relinquished by: (Signature)	**Date**	**Time**	**Received for Laboratory: (Signature)**	**Date**	**Time**
Sample Disposal Method:			**Disposed of by: (Signature)**	**Date**	**Time**

SAMPLE COLLECTOR	ANALYTICAL LABORATORY	Shipper ID #
100 State Street, Suite 600 Montpelier, VT 05602 (802) 229-4600 Fax (802) 229-5876 THE JOHNSON COMPANY, INC. Environmental Sciences and Engineering	STL RUSH - 48 HR TAT RESULTS TO JIM BOWES, JCO Cooler received at 3°C	

WHITE - To accompany sample to the lab and returned to the Johnson Co. YELLOW - Lab copy PINK - Transporter copy GOLD - Sampler copy



GEOTEXTILE PLACEMENT
PINE STREET CANAL SITE
BURLINGTON, VERMONT

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602

DATE: 8/12/03 DRAWN BY: TJK PROJECT: 1-0870-1 SCALE: 1"=~100

~LAKE CHAMPLAIN~

OUTLET WEIR

T15 T14 T13 T12 T11 T10 T9 T8 T7 T6 T5 T4 T3 T2 T1

INTAKE LOCATION FOR DEWATERING PUMP

6

CANAL

2

1

8

ACCESS POINT

ACCESS POINT

TURNING BASIN

N

LEGEND

- APPROX. SURFACE WATER
- RAILROAD TRACKS
- FENCELINE
- BUILDING
- GRAVEL DRIVE
- 2 FOCUS AREA
- SUNKEN BARGE/RAILROAD

KEY

- BX1100 grid (3m x 50 m)
- Tensar BX420060 grid (4m x 50 m)
- UX150060 grid (4.5ft x 200ft)
- Tensar BS150060 grid (4m x 50 m)

GEOGRID PLACEMENT

PINE STREET CANAL SITE

BURLINGTON, VERMONT

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602

PostConstruction.DWG

DATE: 8/12/03 DRAWN BY: TJK PROJECT: 1-0870-1 SCALE: 1"=~100

APPENDIX 4

SUMMARY OF HEALTH AND SAFETY AIR MONITORING RESULTS

Pine Street Canal Site, 1-0870-1 Summary of Air Quality Monitoring Throughout Active Construction				
Date:	Time:	Location:	Reading (ppm):	Notes:
8/7/02	9:45	Excavation of North Road, Upwind	0.0	
8/7/02	9:45	Excavation of North Road, Downwind	0.4	
8/7/02	9:45	Excavation of North Road, Breathing Zone	0.0-0.1	
8/7/02	10:00	Excavation of North Road, Soil Pile	0.0	
8/7/02	11:15	Excavation of North Road, Breathing Zone	0.0-0.1	
8/7/02	11:30	Excavation of North Road, Breathing Zone	0.0-0.1	
8/7/02	15:00	Excavation of North Road, Breathing Zone	0.0	
8/8/02	10:30	Excavation of North Road, Upwind	0.0	
8/8/02	10:30	Excavation of North Road, Breathing Zone	0.1-0.3	
8/8/02	11:15	Excavation of North Road, Breathing Zone	0.0-0.1	
8/8/02	14:00	Excavation of North Road, Breathing Zone	0.0-0.3	
8/8/02	14:00	Excavation of North Road, Soil Pile	2.2	
8/8/02	17:00	Excavation of North Road, Breathing Zone	0.0	
8/9/02	9:20	Excavation of North Road, Upwind	0.0-0.2	
8/9/02	9:40	Excavation of North Road, Breathing Zone	0.0-0.2	
8/9/02	10:15	Excavation of North Road, Breathing Zone	0.0	
8/9/02	10:45	Excavation of North Road, Breathing Zone	0.0-0.2	
8/9/02	10:45	Excavation of North Road, Soil Pile	2.2	
8/13/02	9:40	Excavation of Drop Inlet Area, Upwind	0.0-0.2	Area 7
8/13/02	9:40	Excavation of Drop Inlet Area, Breathing Zone	0.0	Area 7
8/13/02	9:53	Excavation of Drop Inlet Area, Breathing Zone	0.0	Area 7
8/20/02	9:53	Excavation of the Stone Lined Channel, Upwind	0.0-0.1	Area 7
8/20/02	11:44	Excavation of the Stone Lined Channel, Breathing Zone	0.1-0.3	Area 7
8/20/02	11:44	Excavation of the Stone Lined Channel, Soil Pile	1.7-3.0	Area 7
8/20/02	12:10	Excavation of the Stone Lined Channel, Breathing Zone	0.3-0.5	Area 7
8/20/02	12:30	Excavation of the Stone Lined Channel, Breathing Zone	0.1-0.5	Area 7
8/20/02	12:40	Excavation of the Stone Lined Channel, Breathing Zone	0.1-0.3	Area 7
8/20/02	14:15	Excavation of the Stone Lined Channel, Breathing Zone	0.0-0.5	Area 7
8/20/02	10:00	Excavation of BED outfall, Upwind	0.0-0.1	BED
8/20/02	10:35	Excavation of BED outfall, Soil Pile	0.3	BED
8/20/02	10:50	Excavation of BED outfall, Breathing Zone	0.3-0.4	BED
8/20/02	11:25	Excavation of BED outfall, Soil Pile	0.4-0.5	BED
8/20/02	11:50	Excavation of BED outfall, Breathing Zone	0.3	BED
8/20/02	14:00	Excavation of BED outfall, Breathing Zone	0.3-0.5	BED
8/20/02	15:15	Excavation of BED outfall, Soil Pile	0.0	BED
8/21/02	8:45	Excavation of BED outfall, Breathing Zone	0.2	BED
8/21/02	9:15	Excavation of BED outfall, Breathing Zone	0.3	BED
8/21/02	9:30	Excavation of BED outfall, Breathing Zone	0.3	BED
8/21/02	9:55	Excavation of BED outfall, Breathing Zone	0.4	BED
8/21/02	10:45	Excavation of BED outfall, Breathing Zone	0.5	BED
8/21/02	11:15	Excavation of BED outfall, Breathing Zone	0.4	BED
8/21/02	11:40	Excavation of BED outfall, Breathing Zone	0.2	BED
8/21/02	13:35	Excavation of BED outfall, Breathing Zone	0.0	BED
8/21/02	15:10	Excavation of BED outfall, Breathing Zone	0.0	BED
8/21/02	15:10	Excavation of BED outfall, Soil Pile	0.0	BED
8/21/02	15:09	Monitoring of soil stockpiled in area 3, upwind	0.2-0.4	stockpile
8/21/02	15:09	Monitoring of soil stockpiled in area 3, breathing zone	0.2-0.8	stockpile
8/21/02	15:09	Monitoring of soil stockpiled in area 3, soil (1rst load)	1.2	stockpile
8/21/02	16:14	Monitoring of soil stockpiled in area 3, soil (2nd load)	0.4-1.0	stockpile

Pine Street Canal Site, 1-0870-1 Summary of Air Quality Monitoring Throughout Active Construction				
Date:	Time:	Location:	Reading (ppm):	Notes:
8/22/02	7:25	Excavation of BED channel, Upwind	0.0-0.2	BED
8/22/02	7:25	Excavation of BED channel, Breathing Zone	0.0	BED
8/22/02	7:43	Monitoring of soil stockpiled in area 3, soil (1rst load)	0.0	stockpile
8/22/02	7:50	Monitoring of soil stockpiled in area 3, Breathing Zone (2nd load)	0.0-0.4	stockpile
8/22/02	7:50	Monitoring of soil stockpiled in area 3, soil (2nd load)	0.2-0.6	stockpile
8/22/02	9:29	Excavation of BED channel, Breathing Zone	0.0-0.2	BED
8/22/02	9:54	Excavation of BED channel, Breathing Zone	0.0-0.2	BED
8/22/02	8:40	Excavation of Forebay, Breathing Zone	0.0	Area 7
8/22/02	9:30	Excavation of Forebay, Breathing Zone	0.1	Area 7
8/22/02	12:30	Excavation of Forebay, Breathing Zone	0.0	Area 7
8/22/02	12:50	Excavation of Forebay, Breathing Zone	0.1	Area 7
8/22/02	15:00	Excavation of Forebay, Breathing Zone	0.0	Area 7
8/23/02	11:00	Excavation of Forebay, Upwind	0.0	Area 7
8/23/02	11:00	Excavation of Forebay, Breathing Zone	0.0	Area 7
8/23/02	14:00	Excavation of Forebay, Breathing Zone	0.0-0.2	Area 7
8/23/02	15:00	Excavation of Forebay, Breathing Zone	0.0-0.2	Area 7
8/24/02	8:15	Excavation of Forebay, Breathing Zone	0.0-0.4	Area 7
8/24/02	9:45	Excavation of Forebay, Breathing Zone	0.0	Area 7
8/24/02	10:15	Excavation of Forebay, Breathing Zone	0.4	Area 7
8/24/02	11:30	Discovered Drum during Forebay Excavation, Interior	0.0	Area 7
8/24/02	12:45	Excavation of Forebay, Breathing Zone	0.0	Area 7
8/24/02	14:05	Excavation of Forebay, Breathing Zone	0.0	Area 7
8/26/02	7:37	Excavation of Forebay, Upwind	0.0	Area 7
8/26/02	7:37	Excavation of Forebay, Breathing Zone	0.0-0.1	Area 7
8/26/02	8:41	Excavation of Forebay, Breathing Zone	0.0-0.1	Area 7
8/26/02	10:05	Excavation of Forebay, Breathing Zone	0.1-0.3	Area 7
8/26/02	11:30	Excavation of Forebay, Breathing Zone	0.0-0.2	Area 7
8/26/02	13:00	Excavation of Forebay, Breathing Zone	0.1-0.3	Area 7
8/26/02	14:20	Excavation of Forebay, Breathing Zone	0.0-0.3	Area 7
8/26/02	15:15	Excavation of Forebay, Breathing Zone	0.0-0.1	Area 7
8/29/02	7:38	Excavation of Drop Inlet Area, Upwind	0.0	Area 7
8/29/02	7:38	Excavation of Drop Inlet Area, Breathing Zone	0.0-0.2	Area 7
8/29/02	8:00	Excavation of Drop Inlet Area, Breathing Zone	0.0	Area 7
9/3/02	7:33	Excavation of Forebay, Upwind	0.0-0.1	Area 7
9/3/02	7:33	Excavation of Forebay, Breathing Zone	0.0-0.1	Area 7
9/3/02	14:35	Excavation for Gilbane Manhole, Breathing Zone	0.0-0.1	Area 7
9/4/02	9:00	Excavation for Gilbane Manhole, Upwind	0.0-0.1	Area 7
9/4/02	9:00	Excavation for Gilbane Manhole, Breathing Zone	0.0-8.9	Area 7
9/4/02	9:00	Excavation for Gilbane Manhole, Soil	3.3-14	Area 7
9/4/02	11:36	Excavation for Gilbane Manhole, Breathing Zone	0.0	Area 7
9/4/02	12:27	Excavation for Gilbane Manhole, Breathing Zone	0.0	Area 7
9/4/02	14:38	Excavation for Gilbane Manhole, Breathing Zone	0.0	Area 7
9/5/02	8:30	Excavation for Gilbane Culvert, Upwind	0.0	Area 7
9/5/02	8:30	Excavation for Gilbane Culvert, Breathing Zone	0.0	Area 7
9/5/02	10:13	Excavation for Gilbane Culvert, Breathing Zone	0.0	Area 7
9/5/02	11:08	Excavation for Gilbane Culvert, Breathing Zone	0.0	Area 7
9/5/02	13:13	Excavation for Gilbane Culvert, Breathing Zone	0.0-0.3	Area 7
9/5/02	14:12	Excavation for Gilbane Culvert, Breathing Zone	0.0	Area 7
9/5/02	15:15	Excavation for Gilbane Culvert, Breathing Zone	0.0	Area 7

Pine Street Canal Site, 1-0870-1 Summary of Air Quality Monitoring Throughout Active Construction				
Date:	Time:	Location:	Reading (ppm):	Notes:
9/6/02	10:40	Excavation for Gilbane Culvert, Upwind	0.0	Area 7
9/6/02	10:40	Excavation for Gilbane Culvert, Breathing Zone	0.0	Area 7
9/6/02	13:48	Excavation for Gilbane Culvert, Breathing Zone	0.0	Area 7
9/9/02	9:00	Preparation of subgrade in area 7, Breathing zone	0.0	Area 7
9/9/02	11:00	Preparation of subgrade in area 7, Breathing zone	0.0-0.1	Area 7
9/9/02	13:21	Preparation of subgrade in area 7, Breathing zone	0.0	Area 7
9/9/02	16:21	Preparation of subgrade in area 7, Breathing zone	0.0-0.1	Area 7
9/10/02	9:00	Preparation of subgrade in area 7, Breathing zone	0.0	Area 7
9/10/02	12:05	Preparation of subgrade in area 7, Breathing zone	0.0	Area 7
9/10/02	14:45	Preparation of subgrade in area 7, Breathing zone	0.0-0.1	Area 7
9/10/02	16:30	Link Belt Stuck in Sediments, Breathing Zone	0.0-0.5	Area 2
9/10/02	16:40	Link Belt Stuck in Sediments, Breathing Zone	0.1-0.7	Area 2
9/10/02	16:40	Link Belt Stuck in Sediments, Soils	18.1-27.2	Area 2
9/10/02	17:30	Link Belt Stuck in Sediments, Breathing Zone	0.1-1.2	Area 2
9/11/02	10:15	Link Belt Stuck in Sediments, Breathing Zone	0.0-0.3	Area 2
9/16/02	9:20	Excavation to generate channel to direct water, Upwind	0.0	Area 2
9/16/02	9:20	Excavation to generate channel to direct water, Breathing Zone	0.0-0.1	Area 2
9/16/02	9:20	Excavation to generate channel to direct water, Soils	0.1-2.2	Area 2
9/16/02	9:40	Excavation to generate channel to direct water, Upwind	0.0	Area 2
9/16/02	9:40	Excavation to generate channel to direct water, Breathing Zone	0.1-0.8	Area 2
9/25/02	7:53	Preparation of subgrade in area 7, Breathing zone	0.0	Area 7
9/25/02	9:55	Preparation of subgrade in area 7, Breathing zone	0.0	Area 7
9/25/02	11:46	Preparation of subgrade in area 7, Breathing zone	0.0	Area 7
9/25/02	13:45	Preparation of subgrade in area 7, Breathing zone	0.0	Area 7
9/25/02	15:32	Preparation of subgrade in area 7, Breathing zone	0.1-0.5	Area 7
9/26/02	8:00	Spread material from area 7 into area 3, Breathing Zone	0.0	Area 3
9/26/02	9:47	Spread material from area 7 into area 3, Breathing Zone	0.0-0.4	Area 3
9/26/02	9:47	Spread material from area 7 into area 3, Soils	0.1-0.7	Area 3
9/26/02	11:30	Spread material from area 7 into area 3, Breathing Zone	0.0	Area 3
9/26/02	13:10	Preparation of subgrade in area 7, Breathing zone	0.0-0.2	Area 7
9/26/02	15:05	Spread material from area 7 into area 3, Breathing Zone	0.0-0.4	Area 3
9/26/02	17:00	Preparation of subgrade in area 7, Breathing zone	0.0-0.2	Area 7
9/27/02	8:11	Preparation of subgrade in area 7, Breathing zone	0.1-0.2	Area 7
9/27/02	10:05	Spread material from area 7 into area 3, Breathing Zone	0.0-0.2	Area 3
9/28/02	7:00	Backround	0.3	
9/28/02	8:30	Area 3, breathing zone	0.4	Area 3
9/28/02	9:15	Area 7, breathing zone	0.4	Area 7
9/30/02	8:10	Preparation of subgrade in area 7, Backround	0.0	Area 7
9/30/02	8:10	Preparation of subgrade in area 7, Breathing zone	0.0	Area 7
9/30/02	10:05	Spread material from area 7 into area 3, Breathing Zone	0.0-0.2	Area 3
9/30/02	10:05	Spread material from area 7 into area 3, Soils	0.5-1.4	Area 3
9/30/02	12:01	Preparation of subgrade in area 7, Breathing zone	0.1-0.3	Area 7
9/30/02	12:01	Preparation of subgrade in area 7, Soils	0.3-0.9	Area 7
9/30/02	13:59	Spread material from area 7 into area 3, Breathing Zone	0.0-0.1	Area 3
9/30/02	13:59	Spread material from area 7 into area 3, Soils	0.0-0.1	Area 3
9/30/02	15:47	Preparation of subgrade in area 7, Breathing zone	0.0-0.2	Area 7
10/1/02	9:11	Preparation of subgrade in area 7, Backround	0.1-0.3	Area 7
10/1/02	9:11	Preparation of subgrade in area 7, Breathing Zone	0.1-0.3	Area 7
10/1/02	9:11	Preparation of subgrade in area 7, Soils	2.4	Area 7

Pine Street Canal Site, 1-0870-1 Summary of Air Quality Monitoring Throughout Active Construction				
Date:	Time:	Location:	Reading (ppm):	Notes:
10/1/02	11:05	Spread material from area 7 into area 3, Breathing Zone	0.1-0.4	Area 3
10/1/02	11:05	Spread material from area 7 into area 3, Soils	4.3	Area 3
10/1/02	13:00	Spread material from area 7 into area 3, Breathing Zone	0.1-0.5	Area 3
10/1/02	13:00	Spread material from area 7 into area 3, Soils	0.1-0.6	Area 3
10/1/02	15:00	Spread material from area 7 into area 3, Breathing Zone	0.1-0.3	Area 3
10/1/02	15:00	Spread material from area 7 into area 3, Soils	0.1-1.3	Area 3
10/2/02	8:15	Preparation of subgrade in area 7, Backround	0.0-0.1	Area 7
10/2/02	8:15	Preparation of subgrade in area 7, Breathing Zone	0.0-0.3	Area 7
10/2/02	10:07	Spread material from area 7 into area 3, Breathing Zone	0.0-0.1	Area 3
10/2/02	12:03	Preparation of subgrade in area 7, Breathing Zone	0.0-0.2	Area 7
10/2/02	13:59	Spread material from area 7 into area 3, Breathing Zone	0.0-0.4	Area 3
10/2/02	15:43	Preparation of subgrade in area 7, Breathing Zone	0.0-0.1	Area 7
10/2/02	17:01	Spread material from area 7 into area 3, Breathing Zone	0.0-0.1	Area 3
10/3/02	9:30	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/3/02	9:45	Spread material from area 7 into area 3, Breathing Zone	0.0	Area 3
10/3/02	9:55	Area 2 Waterway, breathing zone	0.0	Area 2
10/3/02	12:00	Area 2 Waterway, breathing zone	0.0	Area 2
10/3/02	12:25	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/3/02	14:00	Area 2 Waterway, breathing zone	0.0	Area 2
10/4/02	9:50	North Road, backround	0.6-0.7	Area 7
10/4/02	10:00	Spread material from area 7 into area 3, Soils	0.5	Area 3
10/4/02	10:03	Area 2 Waterway, breathing zone	0.3	Area 2
10/7/02	9:27	Preparation of subgrade in area 7, Backround	0.0	Area 7
10/7/02	9:27	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/7/02	11:19	Spread material from area 7 into area 3, Breathing Zone	0.-0.1	Area 3
10/7/02	13:06	Preparation of subgrade in area 7, Breathing Zone	0.0-0.3	Area 7
10/7/02	15:02	Spread material from area 7 into area 3, Breathing Zone	0.0	Area 3
10/8/02	9:07	Preparation of subgrade in area 7, Backround	0.0	Area 7
10/8/02	9:07	Preparation of subgrade in area 7, Breathing Zone	0.0-0.1	Area 7
10/8/02	11:03	Spread material from area 7 into area 3, Breathing Zone	0.0-0.1	Area 3
10/8/02	13:01	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/8/02	14:47	Spread material from area 7 into area 3, Breathing Zone	0.0-0.1	Area 3
10/8/02	16:38	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/9/02	7:50	Preparation of subgrade in area 7, Backround	0.0	Area 7
10/9/02	7:50	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/9/02	9:42	Spread material from area 7 into area 3, Breathing Zone	0.0	Area 3
10/9/02	11:37	Preparation of subgrade in area 7, Breathing Zone	0.0-0.1	Area 7
10/9/02	13:31	Spread material from area 7 into area 3, Breathing Zone	0.0	Area 3
10/9/02	15:24	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/10/02	7:58	Preparation of subgrade in area 7, Backround	0.0	Area 7
10/10/02	7:58	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/10/02	9:51	Spread material from area 7 into area 3, Breathing Zone	0.0-0.1	Area 3
10/10/02	11:46	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/10/02	13:14	Area 2 Waterway, breathing zone	0.0-0.2	Area 2
10/10/02	13:14	Area 2 Waterway, water surface containing napl sheens	8.8	Area 2
10/14/02	8:32	Preparation of subgrade in area 7, Backround	0.0	Area 7
10/14/02	8:32	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/14/02	10:23	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/14/02	10:23	Spread material from area 7 into area 3, Breathing Zone	0.0-0.1	Area 3

Pine Street Canal Site, 1-0870-1 Summary of Air Quality Monitoring Throughout Active Construction				
Date:	Time:	Location:	Reading (ppm):	Notes:
10/14/02	12:17	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/14/02	12:17	Spread material from area 7 into area 3, Breathing Zone	0.0-0.1	Area 3
10/14/02	14:05	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/14/02	14:05	Spread material from area 7 into area 3, Breathing Zone	0.0-0.1	Area 3
10/14/02	14:30	Head space reading of drum containing sorbents saturated with napl	20.1-32.5	Area 2
10/14/02	16:01	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/14/02	16:01	Spread material from area 7 into area 3, Breathing Zone	0.0-0.1	Area 3
10/15/02	8:42	Preparation of subgrade in area 7, Backround	0.0	Area 7
10/15/02	8:42	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/15/02	10:37	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/15/02	12:20	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
10/15/02	14:13	Preparation of subgrade in area 7, Breathing Zone	0.0	Area 7
11/20/02	7:00	Backround	0.2	-----
11/20/02	9:00	Downwind of the relocation of soils containing napl, Area 2 WW	0.7-0.9	Area 2
11/20/02	10:10	Station 2+00, Area 2 WW	0.3-0.9	Area 2
11/20/02	11:00	Station 2+50, Area 2 WW	1.2-1.5	Area 2
11/20/02	13:00	Station 2+25, Area 2 WW	0.3	Area 2
11/20/02	13:20	Station 2+50, Area 2 WW	0.6-0.7	Area 2
11/20/02	14:25	Station 2+50, Area 2 WW	0.6-0.9	Area 2
11/20/02	14:30	Downwing of the bagging of sorbents, Area 2 WW	1.3-1.6	Area 2
11/20/02	15:15	Station 2+50, Area 2 WW	0.5-0.6	Area 2
11/20/02	15:45	Station 1+00, Area 2 WW	0.2	Area 2
11/21/02	7:35	Backround	0.2	-----
11/21/02	8:15	Station 2+50, Area 2 WW	0.0	Area 2
11/21/02	10:40	Station 0+75, Area 2 WW	0.0-0.2	Area 2
11/21/02	11:20	Station 0+50, Area 2 WW	0.0	Area 2
11/21/02	12:55	Station 0+50, Area 2 WW	0.0-0.2	Area 2
11/21/02	14:45	Station 0+25, Area 2 WW	0.02	Area 2
11/21/02	8:00	Station 0+25, Area 2 WW	0.0-0.2	Area 2
11/21/02	9:30	Station 1+00, Area 2 WW	0.0-0.1	Area 2
11/21/02	10:50	Station 1+50, Area 2 WW	0.0-0.1	Area 2
11/21/02	11:50	Station 2+00, Area 2 WW	0.1-0.3	Area 2
11/24/02	7:45	Backround	0.0	-----
11/24/02	12:30	Station 2+50, Area 2 WW	0.0	Area 2
12/5/02	14:00	NE corner of Area 7, along property line, backround	0.0-0.1	-----
12/5/02	14:00	NE corner of Area 7, along property line, excavated soils	0.0	Area 7
12/9/02	15:30	Breathing zone	0.2	Area 2
12/10/02	12:15	Breathing zone @ T14+00	0.0	Canal
12/10/02	12:45	Breathing zone @ T12+00 E	0.0	Canal
12/11/02	10:15	Breathing zone at south slip	0.0	Canal
12/12/02	9:15	Breathing zone from T13+00 to T12+00	0.0	Canal
12/12/02	16:00	Breathing zone	0.0	Area 3
12/13/02	8:30	Breathing zone @ T12+00	0.0	Canal
12/13/02	12:45	Breathing zone @ T12+00	0.0	Canal
12/14/02	12:00	Breathing zone @ T13+50	0.0	Canal
12/14/02	12:30	Breathing zone @ T13+00	0.0	Canal
12/15/02	8:00	Breathing zone @ T12+00	0.0	Canal
12/15/02	14:00	Station 0+50, Area 2 WW	0.0	Area 2
12/16/02	8:55	Breathing Zone	0.0	Area 3

Pine Street Canal Site, 1-0870-1 Summary of Air Quality Monitoring Throughout Active Construction				
Date:	Time:	Location:	Reading (ppm):	Notes:
12/16/02	17:00	Breathing Zone	0.0	Area 2
12/17/02	8:15	Breathing zone @ T12+00	0.0	Canal
12/17/02	10:30	Breathing zone @ T12+00	0.0	Canal
12/18/02	8:25	Breathing zone @ T12+50	0.0	Canal
12/18/02	11:00	Breathing zone @ T11+00	0.0	Canal
12/19/02	8:00	Breathing zone @ T11+25	0.0	Canal
12/19/02	13:30	Breathing zone @ T10+00	0.0	Canal
1/3/03	8:00	Breathing zone @ T11+00	0.0	Canal
1/3/03	9:00	Breathing zone @ T10+50	0.0	Canal
1/6/03	7:30	Breathing zone @ T12+20	0.0	Canal
1/6/03	11:45	Breathing zone @ T11+50	0.0	Canal
1/7/03	08:00	Breathing zone @ T11+50	0.0	Canal
1/7/03	9:30	Breathing zone @ T11+50	0.0	Canal
1/8/03	10:15	Breathing zone @ T11+15	0.0	Canal
1/10/03	8:00	Breathing zone @ T8+00	0.0	Canal
1/10/03	14:35	Breathing zone @ T8+00	0.0	Canal
1/10/03	15:30	Breathing zone @ T6+50	0.0	Canal
1/11/03	9:40	Breathing zone @ T7+00-T8+00	0.0	Canal
1/13/03	7:45	Breathing zone @ T11+00	0.0	Canal
1/13/03	16:00	Breathing zone @ T11+00	0.0	Canal
1/14/03	8:30	Breathing zone @ T1-T2	0.0	Canal
1/14/03	10:45	Breathing zone @ T11+00	0.0	Canal
1/15/03	8:10	Breathing zone @ T15+00	0.0	Canal
1/15/03	10:15	Breathing zone @ T1+00	0.0	Canal
1/16/03	8:00	Breathing zone @ T11+50	0.0	Canal
1/16/03	13:15	Breathing zone @ T11+65 (over NAPL release)	0.0	Canal
1/17/03	7:45	Breathing zone @ T11+50	0.0	Canal
1/17/03	10:00	Breathing zone @ T11+00	0.0	Canal
1/19/03	9:50	Breathing zone @ T11+60	0.0	Canal
1/19/03	12:10	Breathing zone @ T11+60	0.0	Canal
1/20/03	8:15	Breathing zone @ T9+00	0.0	Canal
1/20/03	9:30	Breathing zone @ T9+00	0.0	Canal
1/21/03	8:00	Breathing zone @ T11+50	0.0	Canal
1/21/03	12:15	Breathing zone @ T11+50	0.0	Canal
1/22/03	13:15	Breathing zone @ T8+00	0.0	Canal
1/22/03	15:45	Breathing zone @ T9+00	0.0	Canal
1/24/03	11:30	Breathing zone and soils @ T1+00 175'E	0.0	Canal
1/24/03	11:45	Breathing zone and soils @ T1+00 100'E	0.0	Canal
1/27/03	8:30	Breathing zone @ T11+50	0.0	Canal
1/27/03	11:00	Breathing zone @ T11+15	0.0	Canal
1/28/03	8:00	Breathing zone @ T11+20 - west (over NAPL release)	0.0	Canal
1/28/03	10:00	Breathing zone @ T11+10 - west	0.0	Canal
1/29/03	7:00	Breathing zone from T11+05 to T11+65	0.0	Canal
1/29/03	12:30	Breathing zone @ discharge at weir	0.0	Canal
1/30/03	8:00	Breathing zone @ T11+50	0.0	Canal
1/30/03	10:35	Breathing zone @ T11+65	0.0	Canal
1/30/03	10:35	3" above NAPL release @ T11+65	5	Canal
1/30/03	11:15	Breathing zone @ T11+50	0.0	Canal
1/30/03	11:15	2" above NAPL release @ T11+50	0.7	Canal

Pine Street Canal Site: 1-0870-1 Summary of Air Quality Monitoring Throughout Active Construction				
Date:	Time:	Location:	Reading (ppm):	Notes:
1/30/03	13:20	Breathing zone @ T11+60, around drained hole	0.0	Canal
1/30/03	13:20	In air gap below the ice @ T11+60	0.0	Canal
1/30/03	15:00	Breathing zone @ T10+90	0.0-0.3	Canal
1/30/03	15:00	1' above NAPL in trench @ T10+90	2.3	Canal
1/31/03	7:30	Breathing zone @ T11+50	0.0	Canal
1/31/03	10:00	Breathing zone @ T11+50, along west cribbing	0.7	Canal
1/31/03	10:00	2' above NAPL release @ T11+50, along west cribbing	6.0-7.0	Canal
1/31/03	12:20	Breathing zone @ T11+05	0.0	Canal
2/1/03	12:00	Breathing zone @ the eastern boat railroad	0.0	Canal
2/3/03	9:50	Breathing zone @ T12+30, removed top beam from cribbing	0.0	Canal
2/3/03	10:20	Breathing zone @ T11+90, prior to application of bentonite	0.0	Canal
2/3/03	10:45	Breathing zone @ T11+90, upwind	0.0	Canal
2/3/03	10:45	Breathing zone @ T11+90, downwind	0.0-0.2	Canal
2/3/03	13:30	Breathing zone @ T12+00	0.0	Canal
2/3/03	14:30	Breathing zone @ T12+00	0.0	Canal
2/4/03	9:30	Breathing zone @ T12+50	0.0-0.2	Canal
2/4/03	10:40	Breathing zone @ T12+50 to T12+80, upwind	0.0	Canal
2/4/03	10:50	Breathing zone @ T13+25	0.4-0.9	Canal
2/4/03	11:20	Breathing zone @ T13+25	0.2-0.4	Canal
2/5/03	9:00	Breathing zone @ T12+36, downwind	0.4-0.6	Canal
2/5/03	9:40	Breathing zone @ T12+25, downwind	0.2-0.3	Canal
2/5/03	10:50	Breathing zone @ T12+30, downwind	0.2-0.3	Canal
2/6/03	9:30	Breathing zone @ T10+70, E. cribbing	0.0	Canal
2/6/03	10:00	6' above ground surface @ T10+70	0.0	Canal
2/6/03	10:00	3' above ground surface @ T10+70	0.6-0.9	Canal
2/6/03	10:00	1' above ground surface @ T10+70	2-5	Canal
2/6/03	11:45	Above NAPL @ T11+00 to T11+10	2-3	Canal
2/7/03	8:30	Breathing zone on north end of Area 2	0.0	Area 2
2/7/03	14:45	Breathing zone @ T5+00	0.0	Canal
2/8/03	7:30	Breathing zone @ T5+50	0.0	Canal
2/8/03	11:00	Breathing zone @ T5+00 to T6+00	0.0	Canal
2/9/03	8:10	Breathing zone @ T1+00	0.0	Canal
2/9/03	12:15	Breathing zone @ T1+00	0.0	Canal
2/10/03	7:15	Breathing zone @ T12+00	0.0	Canal
2/10/03	15:30	Breathing zone @ T13+00	0.0	Canal
2/12/03	9:00	Breathing zone @ the turning basin pump intake	0.0	Canal
2/12/03	12:50	Breathing zone @ the turning basin pump intake	0.0	Canal
2/13/03	7:00	Breathing zone on south end of Area 2	0.0	Area 2
2/13/03	15:30	Breathing zone in the Area 2 WW	0.0	Area 2
2/14/03	9:30	Breathing zone @ Barge #4	0.0	Canal
2/14/03	14:45	Breathing zone @ T1+00	0.0	Canal
2/15/03	9:30	Breathing zone @ T1+50	0.0	Canal
2/15/03	15:00	Breathing zone @ T1+50	0.0	Canal
2/18/03	7:00	Breathing zone @ T1+00	0.0	Canal
2/18/03	9:15	Breathing zone @ NE corner of Barge #4	0.0	Canal
2/20/03	7:00	Breathing zone @ NE corner of Barge #4	0.0	Canal
2/20/03	8:30	Breathing zone @ NE corner of Barge #4	0.0	Canal
2/21/03	8:30	Breathing zone @ N end of Barge #5	0.0	Canal
2/21/03	15:30	Breathing zone from T4+00 to T5+00	0.0	Canal

Pine Street Canal Site, 1-0870-1 Summary of Air Quality Monitoring Throughout Active Construction				
Date:	Time:	Location:	Reading (ppm):	Notes:
2/22/03	7:30	Breathing zone along west side of turning basin	0.0	Canal
2/22/03	12:00	Breathing zone along west side of turning basin	0.0	Canal
2/25/03	7:40	Breathing zone @ N end of Barge #5	0.0	Canal
2/25/03	9:15	Breathing zone @ N end of Barge #5	0.0	Canal
2/26/03	7:50	Breathing zone @ Barge #5	0.0	Canal
2/27/03	8:10	Breathing zone @ on the deck of Barge #5	0.0	Canal
2/27/03	17:05	Breathing zone @ the sump of the turning basin	0.0	Canal
2/28/03	7:20	Breathing zone @ the inside corner of the turning basin	0.0	Canal
3/1/03	8:05	Breathing zone @ T10+00	0.0	Canal
3/3/03	8:45	Breathing zone @ the sump of the turning basin	0.0	Canal
		West Bank Capping		
6/17/04	7:40	Breathing zone @ T14+05 during well installation	0.4-0.6	Canal
6/17/04	8:40	Breathing zone @ T14+05 during well installation	0.6-1.2 [1]	Canal
6/18/04	8:53	Breathing zone @ J_RW14 Well (while open)	0.6-0.9	Canal
6/18/04	10:50	Breathing zone @ J_RW14 Well	0.0	Canal
6/19/04	7:40	Breathing zone @ T11 during well installation	0.9-1.3 [1]	Canal
6/19/04	11:00	Breathing zone @ T14+00	0.3	Canal
6/20/04	9:20	Breathing zone @ J_RW14 Well (while open)	0.0-0.2	Canal
6/20/04	10:40	Breathing zone @ J_RW11	0.0	Canal
6/21/04	7:05	Breathing zone @T10+50 during well installation	0.0	Canal
6/21/04	13:06	Breathing zone @ J_RW14 Well	0.0	Canal
6/22/04	8:05	Breathing Zone @ T10+50-T10+85	0.3-0.7	Canal
6/22/04	8:30	Breathing Zone @ T10+40	0.7-1.0 [1]	Canal
6/23/04	7:45	Breathing Zone @ J_RW11 during NAPL removal	0.2-0.4	Canal
6/23/04	11:15	Breathing Zone @ T9+80	0.0	Canal
6/24/04	7:55	Breathing Zone @ T9+80	0.0-0.4	Canal
6/24/04	9:23	Breathing Zone @ J_RW14 downwind of open well	0.4	Canal
6/28/04	7:25	Breathing Zone @ J_RW14 during NAPL removal	0.0	Canal
6/28/04	7:55	Breathing Zone @ J_RW10+25 during NAPL removal	0.0-0.7	Canal
6/29/04	7:45	Breathing Zone @ T10+00	0.4-0.7	Canal
6/29/04	8:15	Breathing Zone @ T9+50	0.7-0.9	Canal
6/30/04	7:45	Breathing Zone @ T9+80	0.1	Canal
6/30/04	9:15	Breathing Zone from T10+25 - T10+80 along west cribbing	0.1	Canal
6/30/04	14:05	Breathing Zone @ J_RW11 over open well	0.4-0.9	Canal
7/1/04	7:20	Breathing Zone @ J_RW14 over open well	0.0-0.1	Canal
7/1/04	11:00	Breathing Zone @ T9+40 during NAPL removal over the canal	0.0	Canal
7/2/04	7:30	Breathing Zone @ J_RW14 during NAPL removal	0.0	Canal
7/6/04	7:30	Breathing Zone @ J_RW14 during NAPL removal	0.1-0.5	Canal
7/6/04	8:45	Breathing Zone @ J_RW10+25 during NAPL removal	0.0	Canal
7/6/04	14:30	Breathing Zone above White Frac Tank	0.3-0.8	Access
7/7/04	7:25	Breathing Zone @ J_RW14 during NAPL removal	0.0-0.3	Canal
7/7/04	7:43	Breathing Zone @ J_RW10+25 during NAPL removal	0.7-1.1 [1]	Canal
7/7/04	8:35	Breathing Zone @ T9+30 along east cribbing	0.0-0.3	Canal
7/7/04	9:32	Breathing Zone @ T9+75, ~25'E of west cribbing during NAPL removal	0.0	Canal
7/7/04	10:30	Breathing Zone @ T9+80, ~30'E of west cribbing during NAPL removal	0.0	Canal
7/7/04	12:41	Breathing Zone on stairway of white frac tank while pumping	0.0	Canal
7/7/04	12:53	Breathing Zone on ground while pumping	0.0	Canal

Pine Street Canal Site, 1-0870-1 Summary of Air Quality Monitoring Throughout Active Construction				
Date:	Time:	Location:	Reading (ppm):	Notes:
7/7/04	14:05	Breathing Zone @ T9+90, ~35'E	0.0	Canal
7/7/04	14:43	Breathing Zone @ T9+90, ~35'E	0.0	Canal
7/7/04	15:30	Breathing Zone on ground and stairway of white frac tank while pumping	0.0	Canal
7/8/04	8:05	Breathing Zone @ T9+90, ~35'E	0.0	Canal
7/8/04	8:15	Breathing Zone @ T10+00, ~35'E	0.0-0.1	Canal
7/8/04	9:29	Breathing Zone on ground and stairway of white frac tank while pumping	0.0	Canal
7/8/04	10:20	Breathing Zone @ T10+00, ~35'E, above sheen release	0.0-0.1	Canal
7/8/04	12:01	Breathing Zone on ground while pumping	0.0	Canal
7/8/04	13:50	Breathing Zone @ T10+90, ~35'E	0.0	Canal
7/8/04	14:52	Breathing Zone on ground while pumping into white frac tank	0.0-0.1	Canal
7/8/04	16:00	Breathing Zone @ T11+05, ~30'E	0.0-0.1	Canal
7/9/04	9:34	Breathing Zone @ T11+25, ~35'E	0	Canal
7/9/04	11:35	Breathing Zone @ T11+30, ~35'E, above sheen release	0.0-0.4	Canal
7/9/04	12:45	Breathing Zone on ground while pumping into white frac tank	0	Canal
7/9/04	14:50	Breathing Zone @ T9+75, ~22'E	0	Canal
7/13/04	8:40	Breathing Zone @ T9+30, over east cribbing	0.0-0.2	Canal
7/13/04	14:30	Breathing Zone @ T11+25, ~35'E	0	Canal
7/14/04	8:45	Breathing Zone @ T11+00, ~50'E	0.0-0.5	Canal
7/14/04	10:15	Breathing Zone @ T11+20, ~40'E	0.0-0.1	Canal
7/14/04	13:15	Breathing Zone @ T10+25	0.0-0.2	Canal
7/14/04	15:13	Breathing Zone @ T9+90, ~35'E	0	Canal
7/15/04	8:14	Breathing Zone @ T9+95, ~35'E	0.2-0.5	Canal
7/15/04	10:45	Breathing Zone @ T9+85, ~40'E	0.2-0.5	Canal
7/15/04	15:40	Breathing Zone @ T11+05, ~55'E	0.2	Canal
7/15/04	16:39	Breathing Zone on ground while pumping into white frac tank	0.2-0.5	Canal
7/16/04	8:05	Breathing Zone @ T11+00, ~35'E	0.2-0.8	Canal
7/16/04	8:30	Breathing Zone on ground while pumping into white frac tank	0.0-0.8	Canal
7/19/04	9:05	Breathing Zone @ T9 Access	0.0-0.1	Canal
7/19/04	9:08	Breathing Zone on ground suurounding white frac tank	0.0-0.1	Canal
7/19/04	14:35	Breathing Zone on ground surrounding white frac tank	0.0-0.4	Canal

K:/1-0870-1/Consturction Completion Report\turb and air data.xls JMV 7/26/04

APPENDIX 5

SUMMARY OF SURFACE WATER SAMPLING RESULTS: ANALYTICAL RESULTS AND TURBIDITY MONITORING

Pine Street Canal Site, Burlington, VT
Summary of Surface Water Analytical Data: Metals
(All results in Micrograms per Liter - ppb, unless otherwise noted)

SLID	SIN	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Selenium	Silver	Zinc	TSS (mg/L)
Vermont Surface Water Quality Standards (1):						Cr VI							
Protection of human health:													
Consumption of Water and Organisms:			0.02						0.14				
Consumption of Organisms Only:			1.5						0.15				
Protection of Aquatic Biota:													
Maximum Allowable Concentration - Acute Criteria:			360		1.85	16	9.47	34.99	2.4	20	1.29	66.58	
Average Allowable Concentration - Chronic Criteria:			190		0.67	11	6.70	1.36	0.012	5		66.58	
J_SW-0													
	00126-05	12/12/02	B 4.3	B 108.0	U 0.4	U 3.7	B 11.8	12.1	U 0.1	B 3.4	U 1.6	77.2	78.4
	00126-06	2/5/03	U 2.3	B 104.0	U 0.4	U 3.7	U 1.7	U 1.7	U 0.1	U 2.8	U 1.6	31.0	
	00126-07	2/19/03	U 2.3	B 154.0	U 0.4	U 3.7	B 4.1	3.9	U 0.1	U 2.8	U 1.6	122.0	49.0
	00126-09	11/23/03	U 4.1	B 21.6	U 0.5	U 1.1	B 2.5	U 1.4	U 0.1	U 3.6	U 1.6	25.7	5.9
	00126-10	6/1/04	B 3.1	B 37.7	U 0.3	U 0.8	B 4.5	U 1.7	U 0.1	B 4.1	U 1.0	B 10.3	6.4
	00126-11	7/2/04	B 4.3	B 68.8	U 0.6	B 1.5	B 2.7	B 2.4	U 0.1	U 3.2	U 2.1	B 11.2	9.3
J_SW-0F													
	00126-05F	12/12/02	B 3.8	B 90.6	U 0.4	U 3.7	B 3.9	U 1.7	U 0.1	U 2.8	U 1.6	42.2	
	00126-06F	2/5/03	U 2.3	B 90.7	U 0.4	U 3.7	U 1.7	U 1.7	U 0.1	U 2.8	U 1.6	23.4	
	00126-07F	2/19/03	U 2.3	B 154.0	U 0.4	U 3.7	U 1.7	U 1.7	U 0.1	U 2.8	U 1.6	112.0	
	00126-09F	11/23/03	U 4.1	B 19.6	U 0.5	U 1.1	U 2.2	U 1.4	U 0.1	U 3.6	U 1.6	B 16.9	
	00126-10F	6/1/04	U 2.6	B 35.0	U 0.3	U 0.8	B 1.1	U 1.7	U 0.1	U 3.6	U 1.0	B 8.4	
	00126-11F	7/2/04	U 3.0	B 55.6	U 0.6	U 1.1	U 2.6	U 1.5	U 0.1	U 3.2	U 2.1	B 8.4	
J_SW-DP													

SLID	SIN	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Selenium	Silver	Zinc	TSS (mg/L)
Vermont Surface Water Quality Standards (1):						Cr VI							
Protection of human health:													
Consumption of Water and Organisms:			0.02						0.14				
Consumption of Organisms Only:			1.5						0.15				
Protection of Aquatic Biota:													
Maximum Allowable Concentration - Acute Criteria:			360		1.85	16	9.47	34.99	2.4	20	1.29	66.58	
Average Allowable Concentration - Chronic Criteria:			190		0.67	11	6.70	1.36	0.012	5		66.58	
	00122-01	8/12/02	U 1.5	122.0	U 0.3	U 1.4	J 3.3	U 2.9	U 0.1	U 2.6	U 0.0	U 11.6	5.8
	00122-02	9/12/02	U 5.4	130.0	U 0.8	U 5.8	5.1	U 1.5	U 0.1	U 2.9	U 3.0	6.4	16.7
	00122-03	10/10/02	U 4.7	B 156.0	U 0.7	B 2.6	U 2.2	B 2.2	U 0.1	U 4.8	B 2.3	B 17.2	13.8
	00122-04	11/12/02	U 3.2	B 155.0	U 0.3	U 4.6	B 2.3	B 2.3	U 0.1	U 3.9	U 1.4	B 19.1	38.6
	00122-05	12/12/02	B 4.0	B 111.0	U 0.4	U 3.7	B 11.0	11.7	U 0.1	U 2.8	U 1.6	77.9	80.4
	00122-06	2/5/03	U 2.3	B 104.0	U 0.4	U 3.7	U 1.7	U 1.7	U 0.1	U 2.8	U 1.6	27.2	
	00122-07	2/19/03	B 2.7	B 157.0	U 0.4	U 3.7	B 5.8	B 2.6	U 0.1	U 2.8	U 1.6	126.0	51.5
	00122-08	3/12/03	U 2.3	B 114.0	B 1.1	U 3.7	B 8.7	U 1.7	U 0.1	U 2.8	U 1.6	406.0	10.0
	00122-09	11/23/03	U 4.1	B 22.2	U 0.5	U 1.1	B 2.7	U 1.4	U 0.1	U 3.6	U 1.6	25.3	
	00122-10	6/1/04	U 2.6	B 37.8	U 0.3	U 0.8	B 2.7	U 1.7	U 0.1	U 3.6	U 1.0	B 10.6	
	00122-11	7/2/04	B 3.0	B 69.2	U 0.6	B 1.7	B 2.8	U 1.5	U 0.1	U 3.2	U 2.1	B 11.6	
J_SW-DPF													
	00122-01F	8/12/02	J 2.0	94.0	U 0.3	U 0.8	J 3.3	U 0.9	U 0.1	U 2.6	U 1.5	U 11.6	
	00122-02F	9/12/02	U 5.4	116.0	U 0.8	U 5.6	5.5	U 1.5	U 0.1	U 2.9	U 3.0	J 3.0	
	00122-03F	10/10/02	U 4.7	B 142.0	U 0.7	U 1.9	U 2.2	U 1.9	U 0.1	U 4.8	U 1.9	B 8.6	
	00122-04F	11/12/02	U 3.2	B 145.0	U 0.3	U 4.6	U 1.8	U 1.1	U 0.1	U 3.9	U 1.4	B 7.8	
	00122-05F	12/12/02	B 3.7	B 94.3	U 0.4	U 3.7	B 9.9	U 1.7	U 0.1	B 3.2	U 1.6	41.6	
	00122-06F	2/5/03	U 2.3	B 97.2	U 0.4	U 3.7	U 1.7	U 1.7	U 0.1	U 2.8	U 1.6	27.3	
	00122-07F	2/19/03	U 2.3	B 179.0	U 0.4	U 3.7	U 1.7	U 1.7	U 0.1	U 2.8	U 1.6	110.0	

SLID	SIN	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Selenium	Silver	Zinc	TSS (mg/L)
Vermont Surface Water Quality Standards (1):						Cr VI							
Protection of human health:													
Consumption of Water and Organisms:			0.02						0.14				
Consumption of Organisms Only:			1.5						0.15				
Protection of Aquatic Biota:													
Maximum Allowable Concentration - Acute Criteria:			360		1.85	16	9.47	34.99	2.4	20	1.29	66.58	
Average Allowable Concentration - Chronic Criteria:			190		0.67	11	6.70	1.36	0.012	5		66.58	
	00122-08F	3/12/03	U 2.3	B 110.0	B 1.2	U 3.7	B 7.0	U 1.7	U 0.1	U 2.8	U 1.6	395.0	
	00122-09F	11/23/03	U 4.1	B 19.7	U 0.5	U 1.1	B 2.3	U 1.4	U 0.1	U 3.6	U 1.6	B 16.2	
	00122-10F	6/1/04	U 2.6	B 33.6	U 0.3	U 0.8	B 1.8	U 1.7	U 0.1	U 3.6	U 1.0	B 12.8	
	00122-11F	7/2/04	B 4.5	B 55.1	U 0.6	U 1.1	U 2.6	U 1.5	U 0.1	U 3.2	U 2.1	B 4.7	
J_SW-FB													
	00123-01FB	8/12/02	U 1.5	U 5.3	J 0.3	J 1.2	U 1.8	U 0.9	U 0.1	U 2.6	U 1.5	J 5.4	
	00123-02FB	9/12/02	U 5.4	U 5.4	U 0.8	U 2.1	U 1.9	U 1.5	U 0.1	U 2.9	U 3.0	U 2.4	
	00123-03FB	10/10/02	U 4.7	U 3.0	U 0.7	U 1.9	U 2.2	U 1.9	U 0.1	U 4.8	U 1.9	U 2.1	
	00123-04FB	11/12/02	U 3.2	U 9.2	U 0.3	U 4.6	U 1.8	B 1.2	U 0.1	U 3.9	U 1.4	U 6.9	
	00123-05FB	12/12/02	U 2.3	U 4.8	U 0.4	U 3.7	U 1.7	U 1.7	U 0.1	U 2.8	U 1.6	U 3.9	
	00123-06FB	2/5/03	U 2.3	U 4.8	U 0.4	U 3.7	U 1.7	U 1.7	U 0.1	U 2.8	U 1.6	U 3.9	
	00123-07FB	2/19/03	U 2.3	U 4.8	U 0.4	U 3.7	U 1.7	U 1.7	U 0.1	U 2.8	U 1.6	U 3.9	
	00123-08FB	3/12/03	U 2.3	U 4.8	U 0.4	U 3.7	U 1.7	U 1.7	U 0.1	U 2.8	U 1.6	U 3.9	
	00123-09FB	11/23/03	U 4.1	U 11.5	U 0.5	U 1.1	U 2.2	U 1.4	U 0.1	U 3.6	U 1.6	B 4.0	
	00123-10F	6/1/04	U 2.6	U 1.2	U 0.3	U 0.8	B 4.9	U 1.7	U 0.1	U 3.6	U 1.0	B 1.6	
	00123-11F	7/2/04	B 4.7	U 5.0	U 0.6	U 1.1	U 2.6	U 1.5	U 0.1	U 3.2	U 2.1	U 1.8	
J_SW-T2													
	00121-01	8/12/02	U 1.5	89.4	U 0.3	U 0.8	U 1.8	U 1.4	U 0.1	U 2.6	U 1.5	U 2.6	8.5
	00121-02	9/12/02	U 5.4	126.0	U 0.8	U 4.0	J 3.2	U 1.5	U 0.1	U 2.9	U 3.0	10.0	22.5

SLID	SIN	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Selenium	Silver	Zinc	TSS (mg/L)
Vermont Surface Water Quality Standards (1):						Cr VI							
Protection of human health:													
Consumption of Water and Organisms:			0.02						0.14				
Consumption of Organisms Only:			1.5						0.15				
Protection of Aquatic Biota:													
Maximum Allowable Concentration - Acute Criteria:			360		1.85	16	9.47	34.99	2.4	20	1.29	66.58	
Average Allowable Concentration - Chronic Criteria:			190		0.67	11	6.70	1.36	0.012	5		66.58	
	00121-03	10/10/02	U 4.7	B 121.0	U 0.7	B 2.8	U 2.2	U 1.1	U 0.1	U 4.8	U 1.9	B 7.0	14.2
	00121-04	11/12/02	U 3.2	B 104.0	U 0.3	U 4.6	U 1.8	U 1.1	U 0.1	U 3.9	U 1.4	B 11.1	13.8
	00121-08	3/12/03	U 2.3	B 122.0	B 1.1	U 3.7	B 9.9	U 1.7	U 0.1	U 2.8	U 1.6	431.0	10.3
J_SW-T2F													
	00121-01F	8/12/02	J 2.3	84.8	U 0.3	U 0.8	U 1.8	U 0.9	U 0.1	U 2.6	U 1.5	U 2.6	
	00121-02F	9/12/02	U 5.4	118.0	U 0.8	U 4.2	J 3.0	U 1.5	U 0.1	U 2.9	U 3.0	U 2.4	
	00121-03F	10/10/02	U 4.7	B 108.0	U 0.7	B 2.3	U 2.2	U 1.9	U 0.1	U 4.8	B 2.0	B 4.3	
	00121-04F	11/12/02	U 3.2	B 97.4	U 0.3	U 4.6	U 1.8	U 1.1	U 0.1	U 3.9	U 1.4	U 6.9	
	00121-08F	3/12/03	U 2.3	B 114.0	B 1.3	U 3.7	B 7.6	U 1.7	U 0.1	U 2.8	U 1.6	418.0	
J_SW-T5													
	00120-01	8/12/02	J 2.8	133.0	U 0.3	U 1.7	4.2	U 4.1	J 0.1	U 2.6	U 1.5	U 14.2	20.1
	00120-02	9/12/02	U 5.4	123.0	U 0.8	U 5.7	5.3	U 1.5	U 0.1	U 2.9	U 3.0	5.8	17.7
	00120-03	10/10/02	B 5.9	B 150.0	U 0.7	B 2.1	U 2.2	U 1.1	U 0.1	U 4.8	U 1.9	B 15.6	14.2
	00120-04	11/12/02	U 3.2	B 160.0	U 0.3	U 4.6	B 1.8	B 2.4	U 0.1	U 3.9	U 1.4	B 19.9	47.2
J_SW-T5F													
	00120-01F	8/12/02	U 1.5	93.3	U 0.3	U 0.9	J 2.2	U 0.9	U 0.1	U 2.6	U 1.5	U 6.5	
	00120-02F	9/12/02	U 5.4	116.0	U 0.8	U 4.0	J 3.1	U 1.5	U 0.1	U 2.9	U 3.0	U 2.4	
	00120-03F	10/10/02	U 4.7	B 142.0	U 0.7	B 2.4	U 2.2	B 2.2	U 0.1	U 4.8	U 1.9	B 8.8	
	00120-04F	11/12/02	U 3.2	B 147.0	U 0.3	U 4.6	U 1.8	U 1.1	U 0.1	U 3.9	U 1.4	B 8.0	

SLID	SIN	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Selenium	Silver	Zinc	TSS (mg/L)
Vermont Surface Water Quality Standards (1):						Cr VI							
Protection of human health:													
Consumption of Water and Organisms:			0.02						0.14				
Consumption of Organisms Only:			1.5						0.15				
Protection of Aquatic Biota:													
Maximum Allowable Concentration - Acute Criteria:			360		1.85	16	9.47	34.99	2.4	20	1.29	66.58	
Average Allowable Concentration - Chronic Criteria:			190		0.67	11	6.70	1.36	0.012	5		66.58	

(1) Vermont Quality Standards, July 2002, Appendix C: Water Quality Criteria for the Protection of Human Health and the Aquatic Biota (where applicable, median hardness of 51.4 mg/L as CaCO3 based on 64 samples from the Burlington Harbor Lake Station 21 was used to calculate standard)

GC/MS Qualifiers: B - The reported analyte was detected in the associated method blank as well as the sample. D - This flag indentifies all compounds identified in an analysis at a secondary dilution factor. This flag alerts data users that any descepancies between the concentrations reported for the dilutions may be due to dilution of the sample or extract. It additionally indicates that spike recoveries may have been diluted below quantifiable levels. E - Compound quantitation is above the instrument's calibration range for this analysis. J - Indicates an estimated value. This flag is used when the result is less than the reporting limit, but >1/2 reporting limit. U - Indicates compound was analyzed for but not detected above the reporting limit.

Metals Concentration Qualifiers: B - The reported value is less that the Contract Required Detection Limit (CRDL) or Practical Quantification Limit (PQL) but greater than the Instrument Detection Limit (IDL). U - Analyte was analyzed for but not detected, less than IDL, PQL, or CRDL.

Blank space indicates data not available for the sample on the listed date. Either the sample was not collected, or no lab analytical results were generated for the specific compound.

Pine Street Canal Site, Burlington, VT
Summary of Surface Water Analytical Data:
PAH (All results in Micrograms per Liter - ppb)

SLID	SIN	Sample Date	Benzo(g,h,i)perylene	Chrysene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(a) pyrene	Indeno(1,2,3-cd) pyrene	Dibenz(a,h) anthracene	Benzo(a) anthracene
Vermont Surface Water Quality Standards (1):										
Protection of human health:										
Consumption of Water and Organisms:				0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
Consumption of Organisms Only:				0.031	0.031	0.031	0.031	0.031	0.031	0.031
J_SW-0										
	00126-05	12/12/02	U 34.0	J 1.6	U 34.0	U 34.0	U 34.0	U 34.0	U 34.0	U 34.0
	00126-06	2/5/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-07	2/19/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-09	11/23/03	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0
	00126-10	6/1/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-11	7/2/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-0F										
	00126-05F	12/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-06F	2/5/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-07F	2/19/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-09F	11/23/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-10F	6/1/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-11F	7/2/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-DP										
	00122-01	8/12/02	U 10.0	J 0.5	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-02	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-03	10/10/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0

SLID	SIN	Sample Date	Benzo(g,h,i)perylene	Chrysene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(a) pyrene	Indeno(1,2,3-cd) pyrene	Dibenz(a,h) anthracene	Benzo(a) anthracene
Vermont Surface Water Quality Standards (1):										
Protection of human health:										
Consumption of Water and Organisms:				0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
Consumption of Organisms Only:				0.031	0.031	0.031	0.031	0.031	0.031	0.031
	00122-04	11/12/02	J 18.0	71.0	J 30.0	J 43.0	J 40.0	J 16.0	J 4.3	J 44.0
	00122-05	12/12/02	U 35.0	J 1.7	U 35.0	U 35.0	U 35.0	U 35.0	U 35.0	U 35.0
	00122-06	2/5/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-07	2/19/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-08	3/12/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-09	11/23/03	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0
	00122-10	6/1/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-11	7/2/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-DPF										
	00122-01F	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-02F	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-03F	10/10/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-04F	11/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-05F	12/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-06F	2/5/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-07F	2/19/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-08F	3/12/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-09F	11/23/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-10F	6/1/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-11F	7/2/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-FB										
	00123-01FB	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-02FB	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0

SLID	SIN	Sample Date	Benzo(g,h,i)perylene	Chrysene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(a) pyrene	Indeno(1,2,3-cd) pyrene	Dibenz(a,h) anthracene	Benzo(a) anthracene
Vermont Surface Water Quality Standards (1):										
Protection of human health:										
Consumption of Water and Organisms:				0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
Consumption of Organisms Only:				0.031	0.031	0.031	0.031	0.031	0.031	0.031
	00123-03FB	10/10/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-04FB	11/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-05FB	12/12/02	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0
	00123-06FB	2/5/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-07FB	2/19/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-08FB	3/12/03								
	00123-09FB	11/23/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-10F	6/1/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-11F	7/2/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-T2										
	00121-01	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-02	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-03	10/10/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-04	11/12/02	U 10.0	U 10.0		U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-08	3/12/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-T2F										
	00121-01F	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-02F	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-03F	10/10/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-04F	11/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-08F	3/12/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-T5										
	00120-01	8/12/02	U 10.0	J 0.9	J 0.5	J 0.5	U 10.0	U 10.0	U 10.0	U 10.0

SLID	SIN	Sample Date	Benzo(g,h,i)perylene	Chrysene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(a) pyrene	Indeno(1,2,3-cd) pyrene	Dibenz(a,h) anthracene	Benzo(a) anthracene
Vermont Surface Water Quality Standards (1):										
Protection of human health:										
Consumption of Water and Organisms:				0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028
Consumption of Organisms Only:				0.031	0.031	0.031	0.031	0.031	0.031	0.031
	00120-02	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00120-03	10/10/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00120-04	11/12/02	J 87.0	J 300.0	J 120.0	J 170.0	J 150.0	J 69.0	J 25.0	J 160.0
J_SW-T5F										
	00120-01F	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00120-02F	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00120-03F	10/10/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00120-04F	11/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0

(1) Vermont Quality Standards, July 2002, Appendix C: Water Quality Criteria for the Protection of Human Health and the Aquatic Biota (where applicable, median hardness of 51.4 mg/L as CaCO3 based on 64 samples from the Burlington Harbor Lake Station 21 was used to calculate standard)

GC/MS Qualifiers: B - The reported analyte was detected in the associated method blank as well as the sample. D - This flag indentifies all compounds identified in an analysis at a secondary dilution factor. This flag alerts data users that any descepancies between the concentrations reported for the dilutions may be due to dilution of the sample or extract. It additionally indicates that spike recoveries may have been diluted below quantifiable levels. E - Compound quantitation is above the instrument's calibration range for this analysis. J - Indicates an estimated value. This flag is used when the reuslt is less than the reporting limit, but >1/2 reporting limit. U - Indicates compound was analyzed for but not detected above the reporting limit.

Metals Concentration Qualifiers: B - The reported value is less that the Contract Required Detection Limit (CRDL) or Practical Quantification Limit (PQL) but greater than the Instrument Detection Limit (IDL). U - Analyte was analyzed for but not detected, less than IDL, PQL, or CRDL.

Blank space indicates data not available for the sample on the listed date. Either the sample was not collected, or no lab analytical results were generated for the specific compound.

Pine Street Canal Site, Burlington, VT
Summary of Surface Water Analytical Data: PAH's
(All results in Micrograms Per Liter - ppb)

SLID	SIN	Sample Date	Naphthalene	2-Methylnaph-thalene	Acenaphthalene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthrene	Pyrene
Vermont Surface Water Quality Standards (1):											
Protection of human health:											
Consumption of Water and Organisms:							1,300		9,600	300	960
Consumption of Organisms Only:							14,000		110,000	370	11,000
J_SW-0											
	00126-05	12/12/02	180.0	110.0	J 11.0	39.0	J 12.0	J 8.1	J 4.9	J 4.4	J 7.1
	00126-06	2/5/03	73.0	33.0	J 2.5	18.0	J 6.7	J 5.8	J 2.0	J 1.2	J 1.2
	00126-07	2/19/03	38.0	14.0	U 10.0	J 7.3	J 3.4	J 3.7	J 0.8	J 0.8	J 0.9
	00126-09	11/23/03	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0
	00126-10	6/1/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-11	7/2/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-0F											
	00126-05F	12/12/02	D 450.0	69.0	13.0	34.0	13.0	11.0	J 2.5	U 10.0	U 10.0
	00126-06F	2/5/03	75.0	28.0	J 2.6	16.0	J 4.8	J 3.3	J 1.0	U 10.0	U 10.0
	00126-07F	2/19/03	29.0	J 9.9	J 0.8	J 5.1	J 2.1	J 1.5	U 10.0	U 10.0	U 10.0
	00126-09F	11/23/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-10F	6/1/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00126-11F	7/2/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-DP											
	00122-01	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	J 0.7	J 0.7
	00122-02	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-03	10/10/02	U 10.0	U 10.0	U 10.0	J 0.8	U 10.0	U 10.0	U 10.0	J 1.2	J 2.4

SLID	SIN	Sample Date	Naphthalene	2-Methylnaph-thalene	Acenaphthalene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthrene	Pyrene
Vermont Surface Water Quality Standards (1):											
Protection of human health:											
Consumption of Water and Organisms:							1,300		9,600	300	960
Consumption of Organisms Only:							14,000		110,000	370	11,000
	00122-04	11/12/02	U 57.0	J 3.6	J 9.8	87.0	74.0	320.0	J 42.0	130.0	320.0
	00122-05	12/12/02	180.0	100.0	J 11.0	40.0	J 12.0	J 8.4	J 5.0	J 4.5	J 7.4
	00122-06	2/5/03	74.0	33.0	J 3.0	19.0	J 5.9	J 5.9	J 2.0	J 1.2	J 1.2
	00122-07	2/19/03	38.0	13.0	J 0.9	J 7.1	J 2.8	J 3.5	J 0.7	J 0.7	J 0.8
	00122-08	3/12/03	J 5.4	J 0.8	U 10.0	J 0.9	J 0.5	J 0.6	U 10.0	U 10.0	U 10.0
	00122-09	11/23/03	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0
	00122-10	6/1/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-11	7/2/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-DPF											
	00122-01F	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-02F	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-03F	10/10/02	J 1.0	J 6.0	J 2.0	J 8.8	J 3.8	J 3.7	J 0.9	U 10.0	J 0.6
	00122-04F	11/12/02	J 3.7	J 6.9	J 2.6	34.0	16.0	J 9.2	J 4.9	J 0.9	J 0.9
	00122-05F	12/12/02	D 470.0	73.0	14.0	35.0	13.0	J 8.9	J 1.6	U 10.0	U 10.0
	00122-06F	2/5/03	77.0	27.0	J 2.6	16.0	J 4.7	J 1.8	U 10.0	U 10.0	U 10.0
	00122-07F	2/19/03	26.0	J 7.5	J 0.5	J 3.9	J 1.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-08F	3/12/03	J 4.9	J 0.5	U 10.0	J 0.8	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-09F	11/23/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-10F	6/1/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00122-11F	7/2/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-FB											
	00123-01FB	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0

SLID	SIN	Sample Date	Naphthalene	2-Methylnaph-thalene	Acenaphthalene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthrene	Pyrene
Vermont Surface Water Quality Standards (1):											
Protection of human health:											
Consumption of Water and Organisms:							1,300		9,600	300	960
Consumption of Organisms Only:							14,000		110,000	370	11,000
	00123-02FB	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-03FB	10/10/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-04FB	11/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-05FB	12/12/02	J 0.6	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0	U 11.0
	00123-06FB	2/5/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-07FB	2/19/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-08FB	3/12/03									
	00123-09FB	11/23/03	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-10F	6/1/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00123-11F	7/2/04	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
J_SW-T2											
	00121-01	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-02	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-03	10/10/02	U 10.0	U 10.0	U 10.0	J 1.0	U 10.0	U 10.0	U 10.0	J 0.6	J 0.9
	00121-04	11/12/02	U 10.0	U 10.0	U 10.0	J 5.8	J 1.8	U 10.0	J 0.8	J 0.8	J 0.9
	00121-08	3/12/03	J 5.3	J 0.8	U 10.0	J 1.0	J 0.5	J 0.6	U 10.0	U 10.0	U 10.0
J_SW-T2F											
	00121-01F	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-02F	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-03F	10/10/02	U 10.0	U 10.0	U 10.0	J 1.1	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00121-04F	11/12/02	U 10.0	U 10.0	U 10.0	J 4.5	J 0.9	U 10.0	U 10.0	U 10.0	U 10.0
	00121-08F	3/12/03	J 5.4	J 0.6	U 10.0	J 0.8	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0

SLID	SIN	Sample Date	Naphthalene	2-Methylnaph-thalene	Acenaphthalene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthrene	Pyrene
Vermont Surface Water Quality Standards (1):											
Protection of human health:											
Consumption of Water and Organisms:							1,300		9,600	300	960
Consumption of Organisms Only:							14,000		110,000	370	11,000
J_SW-T5											
	00120-01	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	J 0.7	U 10.0	J 1.2	J 1.1
	00120-02	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00120-03	10/10/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	J 1.0	J 2.5
	00120-04	11/12/02	U 410.0	J 41.0	J 50.0	J 320.0	J 400.0	2000.0	J 110.0	590.0	1200.0
J_SW-T5F											
	00120-01F	8/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00120-02F	9/12/02	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0	U 10.0
	00120-03F	10/10/02	J 3.1	J 4.7	J 1.8	J 8.1	J 3.1	J 2.0	J 0.5	U 10.0	U 10.0
	00120-04F	11/12/02	J 4.7	14.0	J 3.9	39.0	19.0	15.0	J 5.8	J 0.8	J 0.7

(1) Vermont Quality Standards, July 2002, Appendix C: Water Quality Criteria for the Protection of Human Health and the Aquatic Biota (where applicable, median hardness of 51.4 mg/L as CaCO3 based on 64 samples from the Burlington Harbor Lake Station 21 was used to calculate standard)

GC/MS Qualifiers: B - The reported analyte was detected in the associated method blank as well as the sample. D - This flag indentifies all compounds identified in an analysis at a secondary dilution factor. This flag alerts data users that any descepancies between the concentrations reported for the dilutions may be due to dilution of the sample or extract. It additionally indicates that spike recoveries may have been diluted below quantifiable levels. E - Compound quantitation is above the instrument's calibration range for this analysis. J - Indicates an estimated value. This flag is used when the reuslt is less than the reporting limit, but >1/2 reporting limit. U - Indicates compound was analyzed for but not detected above the reporting limit.

Metals Concentration Qualifiers: B - The reported value is less that the Contract Required Detection Limit (CRDL) or Practical Quantification Limit (PQL) but greater than the Instrument Detection Limit (IDL). U - Analyte was analyzed for but not detected, less than IDL, PQL, or CRDL.

Blank space indicates data not available for the sample on the listed date. Either the sample was not collected, or no lab analytical results were generated for the specific compound.

Pine Street Canal Site, 1-0870-1 Summary of Turbidity Monitoring Throughout Active Construction					
Date:	Time:	Canal (NTU):	Lake (NTU):	Outlet (NTU):	Notes:
7/26/02	11:00		4.9	7.9	
7/27/02	9:40		12.6	13.2	
7/28/02	11:25	10.3	9.5	23.0	
7/29/02	10:30		1.0	22.9	
7/29/02	15:20		13.5	28.3	
7/30/02	8:45	5.7	16.0	14.9	
7/30/02	15:30	4.5	29.1	29.2	
7/31/02	10:54	6.9	4.3	27.9	Start Pump
7/31/02	16:46	4.1	13.6	36.2	
8/1/02	8:00	4.9	3.7	22.1	
8/1/02	16:30	6.4	21.8	36.9	
8/2/02	7:30	5.7	8.7	32.2	Pump off at 8:00
8/5/02	9:15	6.8	1.0	27.3	Pump off at 10:15
8/6/02	8:45	14.1	25.3	22.1	Pump on at 7:00
8/6/02	15:45	12.3	35.8	29.6	Pump off at 15:50
8/7/02	8:18	22.5	12.5	24.2	Pump on at 8:00, Pump off at 9:00
8/12/02	6:55	5.8	1.7	6.7	Pump off at 7:30
8/12/02	16:24	5.1	4.4		Pump off
8/14/03	11:46	5.5	6.7	12.1	Pump on at 9:15
8/15/02	7:50	5.8	2.3	8.9	Pump on at 7:50
8/16/02	8:18	8.2	9.2	9.4	
8/16/02	16:30	8.00	10.9	13.8	Pump off at 16:46
8/23/02	11:00	37.6	30.0	41.4	Pump on at 10:30
8/24/02	13:45	27.7	24.1	29.3	Pump on at 7:45
8/26/02	9:02	27.5	11.5	29.1	Pump on at 8:30
8/26/02	17:32	23.2	13.5	31.1	Pump off at 17:40
8/27/02	7:33	14.5	23.6	22.9	Pump on at 7:33
8/28/02	17:30	32.5	20.1	39.2	Pump on at 7:00, Pump off at 17:30
8/29/02	8:30	33.6	5.7		
8/30/02	8:36	44.1	1.6		
9/3/02	13:46	13.0	4.7		
9/6/02	9:00	13.3	6.7	17.5	Pump on at 7:30
9/6/02	16:20	14.5		19.2	
9/7/02	10:45	13.8			
9/9/02	16:30	7.7			
9/11/02	13:08	31.8			
9/12/02	16:30	58.0			
9/13/02	7:35		4.7	52.8	
9/13/02	15:00	43.6	6.7	45.2	Pump off at 15:00
9/14/02	15:00	26.2	3.2	34.9	
9/15/02	11:20	45.3	2.0	31.6	
9/16/02	7:16	27.9	4.5	25.3	
9/16/02	17:20	19.7	15.8	22.8	
9/17/02	7:32	14.5	7.7	17.3	
9/17/02	17:00	10.1	13.2	15.6	
9/18/02	7:00	8.9	0.8	12.5	

Pine Street Canal Site, 1-0870-1 Summary of Turbidity Monitoring Throughout Active Construction					
Date:	Time:	Canal (NTU):	Lake (NTU):	Outlet (NTU):	Notes:
9/18/02	18:30	7.8	1.2	14.7	
9/19/02	17:00	11.7	7.4	18.8	Pump on at 16:30
9/20/02	7:15	18.4	4.0	24.6	
9/20/02	18:30	23.5	14.5	35.2	
9/21/02	12:00	29.9	15.5	54.1	pump off at 12:00
9/23/02	8:25	40.3			
9/23/02	11:40	33.0	1.8	39.9	pump on at 10:30
9/23/02	16:43	29.2	1.8	34.4	
9/24/02	7:23	21.8	1.3	24.4	
9/24/02	16:14	18.3	1.6	21.9	
9/25/02	7:23	14.9	2.3	17.3	
9/25/02	16:30	11.9	1.4	18.9	
9/26/02	7:35	13.1	2.3	15.8	
9/26/02	17:46	14.2	3.6	22.0	
9/27/02	7:34	30.5	2.3	33.9	
9/27/02	15:50	30.3	3.3	45.4	pump off at 16:00
9/28/02	7:25	55.5	14.8		pump off
9/28/02	10:15	69.8			
9/29/02	8:40	47.9	1.3	53.2	pump on at 8:45
9/29/02	14:10	44.2	1.4	46.9	
9/30/02	7:12	40.2	34.3	38.6	
9/30/02	16:55	30.7	3.0	39.9	
10/1/02	7:00	29.7	8.8	33.8	
10/1/02	17:00	32.2	6.2	32.0	
10/2/02	7:00	18.6	2.8	24.9	
10/2/02	16:40	18.6	24.0	2.8	
10/3/02	7:45	15.9	18.6	18.0	
10/3/02	14:10	17.4	20.8	21.3	
10/4/02	11:00	24.8	24.8	32.2	pump on at 10:55
10/4/02	13:45	28.9	-----	36.0	
10/5/02	14:35	57.5	7.5	70.5	pump off at 14:52
10/6/02	10:15	39.3	-----	-----	pump off
10/6/02	18:02	32.1	5.6	52.6	pump off at 18:15
10/7/02	8:45	37.0	3.3	52.1	Pump on at 8:00, Pump off at 8:00
10/7/02	16:01	39.0	4.4	53.3	
10/8/02	8:50	32.0	-----	-----	
10/8/02	16:10	25.7	1.4	31.5	pump on at 16:05
10/9/02	7:22	23.8	1.7	29.2	
10/9/02	17:15	31.4	1.4	36.5	
10/10/02	7:38	56.7	3.4	56.2	
10/10/02	16:00	-----	4.2	51.0	
10/11/02	10:20	49.1	1.6	59.7	pump off at 10:55
10/14/02	9:26	50.4	6.6	-----	pump off
10/15/02	7:15	40.5	3.2	-----	
10/15/02	9:35	-----	-----	44.1	pump on at 9:30
10/15/02	16:12	25.6	1.0	26.4	

Pine Street Canal Site, 1-0870-1 Summary of Turbidity Monitoring Throughout Active Construction					
Date:	Time:	Canal (NTU):	Lake (NTU):	Outlet (NTU):	Notes:
10/16/02	7:24	35.1	1.1	28.1	
10/16/02	16:13	53.0	6.4	28.0	pump off at 16:25
10/17/02	7:12	24.5	7.6	-----	
10/17/02	8:22	-----	-----	22.8	pump on at 8:10
10/17/02	16:27	23.7	8.4	27.0	
10/18/02	7:36	19.5	5.4	18.6	
10/18/02	16:15	14.2	5.3	24.0	
10/19/02	10:00	13.8	4.7	14.2	
10/19/02	15:36	12.6	1.6	13.8	
10/20/02	10:00	11.6	1.4	12.9	
10/20/02	16:18	11.4	1.3	12.8	
10/21/02	7:20	8.4	1.3	14.0	
10/21/02	16:00	7.8	1.2	13.4	
10/22/02	17:11	23.7	1.1	34.4	
10/23/02	7:15	22.8	1.2	40.1	
10/23/02	16:45	24.8	1.2	42.2	
10/24/02	9:15	34.7	1.4	-----	
10/24/02	16:30	40.3	1.6	50.2	
10/25/02	7:40	51.4	1.2	62.0	pump off
10/28/02	7:25	29.9	3.4	47.2	
10/28/02	16:35	24.4	5.2	38.2	
10/29/02	7:10	28.3	2.9	45.1	
10/29/02	15:34	26.6	2.5	44.1	
10/30/02	7:14	27.4	2.5	37.8	
10/30/02	16:33	37.5	-----	48.5	pump off
10/31/02	16:30	60.2	2.1	-----	
11/1/02	14:00	71.8	2.8	87.5	pump on at 13:45, off at 14:05
11/4/02	16:23	67.3	-----	-----	
11/5/02	16:30	67.3	-----	-----	
11/7/02	7:50	38.5	-----	54.5	pump on at 7:50, off at 8:05
11/7/02	12:45	-----	-----	65.9	pump on at 12:42
11/7/02	12:50	-----	-----	49.2	
11/7/02	16:08	49.3	-----	47.0	
11/8/02	7:14	53.6	-----	31.5	
11/8/02	15:43	51.6	-----	25.3	
11/9/02	11:53	12.0	-----	30.6	pump off at 12:02
11/11/02	7:50	65.5	-----	53.5	pump on at 7:30, off at 7:55
11/11/02	14:16	-----	-----	48.5	pump on at 14:00
11/11/02	16:35	70.8	-----	55.6	turbidity meter unable to calibrate
11/12/02	16:10	54.4	-----	54.4	
11/13/02	7:10	56.3	-----	49.9	
11/13/02	16:17	51.5	-----	65.4	pump off at 16:20
11/15/02	8:09	67.2	-----	60.9	pump on at 7:45, off at 8:17
11/18/02	8:15	-----	-----	54.6	pump on at 8:00, off at 8:30
11/19/02	8:00	-----	-----	34.5	
11/19/02	13:45	-----	-----	29.0	

Pine Street Canal Site, 1-0870-1 Summary of Turbidity Monitoring Throughout Active Construction					
Date:	Time:	Canal (NTU):	Lake (NTU):	Outlet (NTU):	Notes:
11/20/02	7:25	-----	1.7	31.0	
11/20/02	16:10	-----	-----	25.7-26.3	
11/20/02	16:40	-----	-----	26.9	
11/21/02	7:00	-----	-----	28.0	
11/21/02	12:00	-----	-----	29.0	pump off at 16:30
11/22/03	7:45	-----	-----	37.0	pump on at 7:00, off at 10:20
11/23/03	10:00	-----	-----	64.0	pump on at 8:30, off at 10:00
11/24/03	9:50	48.5	-----	49.3	pump on at 8:00
11/25/02	7:43	61.5	-----	69.2	pump off at 8:00
11/25/02	16:00	-----	-----	69.3	pump on at 15:45, off at 16:10
11/26/02	7:45	61.8	-----	62.8	pump on at 7:15, off at 7:49
12/2/02	12:06	39.5	-----	41.7	pump on at 11:45
12/2/02	15:34	35.1	-----	40.9	
12/3/02	8:22	23.7	-----	42.6	
12/3/02	15:02	24.1	-----	41.2	
12/4/02	7:57	-----	-----	40.5	
12/5/02	7:37	-----	-----	35.0	
12/5/02	16:00	-----	-----	33.7	
12/6/02	9:50	-----	-----	32.6	pump on at 9:30
12/6/02	14:53	-----	-----	32.3	
12/7/02	10:30	-----	-----	38.7	
12/7/02	16:02	-----	-----	35.4	
12/8/02	11:20	-----	-----	29.2	
12/8/02	15:43	-----	-----	30.2	
12/9/02	15:30	-----	-----	48.7	pump on at 15:00
12/10/02	10:45	-----	-----	50.4	
12/10/02	16:35	-----	-----	46.8	
12/11/02	8:20	-----		23.7	
12/12/02	11:15	-----	-----	77.0, 86.0	Left pump on for sampling purposes, pump off overnight
12/13/02	7:45	-----	-----	62.0	Pump on at 6:45, off at 8:00
12/14/02	8:10	-----	-----	53.9	Pump on at 8:00
12/14/02	8:13	-----	-----	54.9	
12/14/02	8:20	-----	-----	56.9	Pump at 1/2 throttle
12/14/02	8:25	-----	-----	55.6	
12/14/02	8:27	-----	-----	53.9	
12/14/02	8:35	-----	-----	59.9	Shut down pump at 8:36
12/15/02	9:00	-----	-----	29.0	pump on at 8:00, acidified, turned down pump discharge
12/15/02	13:45	-----	-----	44.0	acidified, pump off at 15:00
12/16/02	8:30	-----	-----	29.0	pump on at 7:30, acidified
12/16/02	12:30	-----	-----	46.0	acidified
12/17/02	7:15	-----	-----	14.0	acidified
12/17/02	16:15	-----	-----	20.0	acidified
12/18/02	7:45	-----	-----	42.0	acidified, pump lost prime during the day

Pine Street Canal Site, 1-0870-1 Summary of Turbidity Monitoring Throughout Active Construction					
Date:	Time:	Canal (NTU):	Lake (NTU):	Outlet (NTU):	Notes:
12/19/02	9:00	-----	-----	23.0	pump on at 8:00, acidified
12/19/02	13:15	-----	-----	11.0	acidified
12/20/02	8:07	-----	-----	41.2	
12/20/02	15:18	44.1	-----	179.0	
12/21/02	9:23	19.4	-----	30.8	small, surging discharge
12/21/02	15:43	17.4	-----	32.0	
12/22/02	9:23	-----	-----	31.0	
12/22/02	16:02	-----	-----	30.1	
12/23/02	7:50	-----	-----	31.7	
12/23/02	16:04	-----	-----	34.1	pump off
12/28/02	15:34	-----	-----	36.0	
12/29/02	16:40	-----	-----	32.0	
12/31/02	16:00	44.0	-----	72.0	
1/1/03	14:40	-----	-----	40.0	acidified
1/2/03	17:30	-----	-----	39.0	acidified
1/3/02	7:30	-----	-----	45.0	
1/3/03	16:50	-----	-----	34.0	
1/4/03	9:30	-----	-----	33.0	
1/5/03	14:40	-----	-----	29.0	
1/7/03	17:00	6" tb discharge =		50.0	
1/7/03	17:00	3" tb discharge =		45.0	
1/8/03	07:35	6" tb discharge =		31.0	acidified
1/8/03	07:35	3" tb discharge =		-----	pump off between 5-8AM
1/8/03	17:00	6" tb discharge =		45.0	
1/8/03	17:00	3" tb discharge =		-----	pump off
1/10/03	10:20	6" tb discharge =		50.0	
1/10/03	10:20	3" tb discharge =		35.0	
1/10/03	17:00	6" tb discharge =		24.0	
1/10/03	17:00	3" tb discharge =		23.0	
1/11/03	9:00	6" tb discharge =		24.0	intermittent discharge
1/11/03	9:05	3" tb discharge =		23.0	
1/11/03	14:45	6" tb discharge =		22.0	intermittent discharge
1/11/03	14:45	3" tb discharge =		23.0	
1/12/03	10:30	6" tb discharge =		23.1	
1/12/03	10:30	3" tb discharge =		-----	frozen
1/13/03	7:25	6" tb discharge =		39.0	
1/13/03	7:25	3" tb discharge =		45.0	
1/13/03	16:15	6" tb discharge =		-----	pump off
1/13/03	16:15	3" tb discharge =		32.0	
1/14/03	7:45	6" tb discharge =		-----	pump off
1/14/03	7:45	3" tb discharge =		40.0	
1/14/03	15:15	6" tb discharge =		-----	pump off
1/14/03	15:15	3" tb discharge =		45.0	
1/15/03	10:00	6" tb discharge =		-----	pump off
1/15/03	10:00	3" tb discharge =		35.0	
1/16/03	8:00	6" tb discharge =		-----	pump off

Pine Street Canal Site, 1-0870-1 Summary of Turbidity Monitoring Throughout Active Construction					
Date:	Time:	Canal (NTU):	Lake (NTU):	Outlet (NTU):	Notes:
1/16/03	8:00	3" tb discharge =		46.0	
1/16/03	16:50	6" tb discharge =		45.0	
1/16/03	16:50	3" tb discharge =		41.0	
1/17/03	12:05	6" tb discharge =		46.0	
1/17/03	12:05	3" tb discharge =		46.0	acidified
1/18/03	7:45	6" tb discharge =		27.0	
1/18/03	7:45	3" tb discharge =		25.0	
1/18/03	16:13	3" tb discharge =		27.0	
1/19/03	8:50	3" tb discharge =		35.0	
1/19/03	14:21	3" tb discharge =		36.0	
1/22/03	7:15	6" tb discharge =		43.0	
1/23/03	10:20	6" tb discharge =		20.0	
1/23/03	17:30	6" tb discharge =		24.0	
1/24/03	9:15	6" tb discharge =		40.0	
1/24/03	13:45	6" tb discharge =		35.0	
1/25/03	9:50	6" tb discharge =		41.6	acidified
1/25/03	16:10	6" tb discharge =		42.0	acidified
1/28/03	7:45	6" tb discharge =		26.0	
1/28/03	12:00	6" tb discharge =		27.0	
1/29/03	6:30	6" tb discharge =		22.0	
1/29/03	12:05	6" tb discharge =		30.0	
1/30/03	8:00	6" tb discharge =		22.0	
1/30/03	15:00	6" tb discharge =		23.0	
1/31/03	13:38	6" tb discharge =		45.0	
1/31/03	16:10	6" tb discharge =		46.0	
2/1/03	7:45	6" tb discharge =		12.5	
2/1/03	15:45	6" tb discharge =		24.0	
2/2/03	8:30	6" tb discharge =		14.0	
2/2/03	12:45	6" tb discharge =		13.0	
2/3/03	6:45	6" tb discharge =		16.0	
2/3/03	18:00	6" tb discharge =		33.0	
2/4/03	7:25	6" tb discharge =		32.0	acidified
2/4/03	13:00	6" tb discharge =		20.0	
2/4/03	15:45	6" tb discharge =		34.0	
2/5/03	6:45	6" tb discharge =		15.0	
2/5/03	16:15	6" tb discharge =		24.0	
2/6/03	7:20	6" tb discharge =		24.0	
2/6/03	15:30	6" tb discharge =		22.0	
2/7/03	7:30	6" tb discharge =		16.0	
2/7/03	14:30	6" tb discharge =		13.0	
2/8/03	10:45	6" tb discharge =		25.0	
2/8/03	14:10	6" tb discharge =		27.0	
2/9/03	8:10	6" tb discharge =		17.0	
2/9/03	13:00	6" tb discharge =		20.0	
2/10/03	7:00	6" tb discharge =		23.0	
2/10/03	16:15	6" tb discharge =		25.0	

Pine Street Canal Site, 1-0870-1 Summary of Turbidity Monitoring Throughout Active Construction					
Date:	Time:	Canal (NTU):	Lake (NTU):	Outlet (NTU):	Notes:
2/11/03	6:15	6" tb discharge =		26.0	
2/11/03	15:00	6" tb discharge =		30.0	
2/12/03	7:00	6" tb discharge =		25.0	
2/12/03	14:30	6" tb discharge =		29.0	
2/13/03	12:30	6" tb discharge =		25.0	
2/13/03	13:45	6" tb discharge =		36.0	
2/13/03	16:00	6" tb discharge =		25.0	
2/14/03	7:00	6" tb discharge =		13.0	
2/14/03	13:00	6" tb discharge =		26.0	
2/15/03	7:45	6" tb discharge =		11.2	
2/15/03	15:05	6" tb discharge =		17.6	
2/16/03	8:15	6" tb discharge =		19.0	
2/16/03	12:30	6" tb discharge =		31.0	
2/17/03	6:45	6" tb discharge =		16.0	
2/17/03	12:00	6" tb discharge =		21.0	
2/17/03	16:15	6" tb discharge =		21.0	
2/18/03	6:45	6" tb discharge =		22.0	
2/18/03	12:00	6" tb discharge =		38.0	
2/18/03	17:00	6" tb discharge =		43.0	acidified
2/19/03	7:00	6" tb discharge =		26.0	
2/19/03	15:00	6" tb discharge =		38.0	
2/20/03	7:20	6" tb discharge =		26.0	
2/20/03	18:00	6" tb discharge =		43.0	corrected
2/21/03	7:55	6" tb discharge =		30.0	corrected
2/21/03	17:30	6" tb discharge =		46.0	corrected
2/22/03	7:45	6" tb discharge =		16.0	
2/22/03	15:00	6" tb discharge =		46.0	acidified, corrected
2/23/03	7:15	6" tb discharge =		19.0	
2/23/03	13:15	6" tb discharge =		26.0	
2/24/03	7:00	6" tb discharge =		77.0	corrected
2/24/03	10:30	6" tb discharge =		70.0	corrected
2/24/03	13:00	6" tb discharge =		69.0	corrected
2/24/03	14:55	6" tb discharge =		81.0	corrected
2/24/03	15:05	6" tb discharge =		63.0	corrected
2/24/03	15:35	6" tb discharge =		50.0	acidified, corrected
2/24/03	16:00	6" tb discharge =		47.0	acidified, corrected
2/24/03	16:20	6" tb discharge =		50.0	corrected
2/25/03	6:20	6" tb discharge =		16.0	
2/25/03	12:05	6" tb discharge =		35.0	pump off at 14:45
2/25/03	16:30	6" tb discharge =		51.0	acidified
2/26/03	7:20	6" tb discharge =		16.7	
2/26/03	14:45	6" tb discharge =		49.4	acidified
2/26/03	17:30	6" tb discharge =		42.1	
2/27/03	7:15	6" tb discharge =		21.7	
2/27/03	17:15	6" tb discharge =		54.2	intermittent discharge
2/28/03	7:15	6" tb discharge =		12.7	

Pine Street Canal Site, 1-0870-1 Summary of Turbidity Monitoring Throughout Active Construction				
Date:	Time:	Canal (NTU):	Lake (NTU):	Outlet (NTU):	Notes:
2/28/03	16:50	6" tb discharge =	39.3	
3/1/03	7:30	6" tb discharge =	15.0	
3/1/03	15:30	6" tb discharge =	19.6	
3/2/03	8:25	6" tb discharge =	17.5	
3/2/03	15:25	6" tb discharge =	11.3	
3/3/03	6:30	6" tb discharge =	4.5	shut down pump at 13:55
West Bank Capping				
6/4/04	8:50	4" tb discharge =	11.7	
6/4/04	8:50	6" tb discharge =	13.6	pump off @ 19:30
6/5/04	10:55	4" tb discharge =	9.3	
6/5/04	10:55	6" tb discharge =	10.8	pump on @ 7:30
6/6/04	10:30	4" tb discharge =	12.1	pump off @ 15:00
6/7/04	9:15	6" tb discharge =	13.5	pump on @ 6:00
6/7/04	9:15	4" tb discharge =	25.5	
6/9/04	8:45	6" tb discharge =	8.3	pump on @ 7:00; pump off @ 15:30
6/10/04	8:43	4" tb discharge =	11.5	pump on @ 6:30
6/10/04	8:43	6" tb discharge =	11.7	
6/11/04	8:55	4" tb discharge =	13.8	pump on @ 6:30
6/11/04	8:55	6" tb discharge =	14.2	
6/14/04	8:15	6" tb discharge =	16.0	pump on @ 6:30; pump off @ 16:45
6/15/04	8:50	6" tb discharge =	16.5	pump on @ 7:30
6/15/04	16:56	6" tb discharge =	17.5	pump off @ 17:00
6/18/04	7:25	6" tb discharge =	15.5	pump on @ 7:15
6/18/04	16:15	6" tb discharge =	15.3	pump off @ 16:20
6/19/04	6:45	6" tb discharge =	13.5	pump on @ 6:40
6/19/04	13:12	6" tb discharge =	15.4	pump off @ 13:15
6/20/04	7:55	6" tb discharge =	16.3	pump on @ 7:50
6/20/04	13:00	6" tb discharge =	15.8	pump off @ 13:00
6/21/04	9:00	6" tb discharge =	16.0	pump on @ 9:00; pump off @ 12:30
6/22/04	11:05	6" tb discharge =	15.0	pump on @ 7:00
6/22/04	15:50	6" tb discharge =	14.5	pump off @ 15:55
6/23/04	7:56	6" tb discharge =	16.6	pump on @ 7:00
6/23/04	15:30	6" tb discharge =	17.8	pump off @ 16:15
6/28/04	6:50	6" tb discharge =	17.0	pump on @ 6:45
6/28/04	11:35	6" tb discharge =	17.0	pump off @ 16:00
6/29/04	7:30	6" tb discharge =	14.7	pump on @ 6:45
6/29/04	11:20	6" tb discharge =	13.7	pump off @ 16:00
6/30/04	10:05	6" tb discharge =	14.7	pump on @ 9:45; pump off @ 15:00
7/1/04	7:40	6" tb discharge =	12.6	pump on @ 7:35
7/1/04	11:45	6" tb discharge =	13.1	pump off @ 11:50
7/2/04	7:00	4" tb discharge =	18.0	pump on @ 6:55; pump off @ 10:35
7/2/04	7:00	6" tb discharge =	19.1	pump on @ 6:56
7/2/04	12:40	6" tb discharge =	20.6	pump off @ 12:45
7/6/04	6:50	4" tb discharge =	10.0	
7/6/04	6:50	6" tb discharge =	9.8	pump on @ 6:30
7/6/04	11:00	4" tb discharge =	14.0	pump off @ 16:30

Pine Street Canal Site, 1-0870-1 Summary of Turbidity Monitoring Throughout Active Construction					
Date:	Time:	Canal (NTU):	Lake (NTU):	Outlet (NTU):	Notes:
7/6/04	11:00	6" tb discharge =		11.2	pump off @ 16:30

K:/1-0870-1/Consturction Completion Report\turb and air data.xls JMV 7/26/04

APPENDIX 6

CAP THICKNESS MEASUREMENT DATA

Pine Street Canal
Thickness measuments in feet
QA/QC by DMM 1/2/03 with adjustments for 1st lifts, etc.

Northing	Easting	Thickness	Date	Notes
717245	1453048	1	12/12/02	
717246	1452935	2.5	2/4/03	
717250	1452992	0.8	12/12/02	
717251	1453015	1	12/12/02	
717259	1453010	1	12/12/02	
717265	1453049	0.8	12/12/02	
717266	1452935	2.3	2/4/03	
717271	1453032	1	12/12/02	
717271	1452994	1.5	12/12/02	
717272	1453020	1.5	12/12/02	
717281	1453049	2	12/12/02	Added 1.3' on 1/7
717286	1452935	2.5	2/4/03	
717290	1452993	1.5	12/12/02	
717291	1453031	1.5	12/12/02	
717291	1453017	1.7	12/12/02	
717306	1452935	2.5	2/4/03	
717306	1452965	2.3	12/14/03	
717309	1452993	1.7	12/12/02	
717309	1453015	1.8	12/12/02	
717310	1453045	1.6	12/12/02	
717310	1453030	1.8	12/12/02	
717316	1452935	2.3	2/3/03	
717316	1452945	1.5	2/3/03	
717331	1453034	1.8	12/18/02	
717341	1452998	1.9	12/15/02	
717341	1452935	2.5	2/3/03	
717341	1452945	1.5	2/3/03	
717344	1452944	3.2	12/4/03	
717346	1452973	2	12/15/02	
717351	1453062	3	1/6/03	
717351	1452935	2	2/3/03	
717351	1452945	1.8	2/3/03	
717365	1453041	2.6	1/6/03	1.3' plus previous
717366	1452935	2.3	2/3/03	
717375	1453066	3.1	12/18/02	
717375	1453061	4.1	1/6/03	Total after 3/4 addition of 1'
717375	1453051	2	1/6/03	
717376	1452935	2	2/3/03	
717381	1452995	3.2	1/7/03	1.3' plus previous
717381	1452985	3	1/7/03	1.8' plus previous
717381	1452975	2.5	1/7/03	1' plus previous
717385	1453060	3	1/6/03	1.5' plus 1.5' on 3/4
717385	1453050	3	1/6/03	1.5' plus 1.5' on 3/4
717386	1452985	2	1/6/03	
717390	1453030	2.6	1/6/03	
717390	1453010	1.8	1/6/03	
717396	1452978	4.5	1/31/03	1.5' recap plus previous
717401	1452985	1.8	1/6/03	

Pine Street Canal

Thickness measuments in feet

QA/QC by DMM 1/2/03 with adjustments for 1st lifts, etc.

Northing	Easting	Thickness	Date	Notes
717405	1453034	2.8	1/6/03	
717411	1452999	2.2	1/6/03	
717411	1452979	3.2	1/31/03	1.5' plus previous
717415	1453044	4.3	1/6/03	2.8' on 1/31 plus previous
717415	1453029	1.5	1/7/03	
717415	1453009	3.6	1/7/03	
717421	1452989	3.2	1/31/03	1.5' added
717426	1452988	3.2	1/31/03	1.7' added
717426	1452978	4.3	1/31/03	2.8' added
717445	1453037	2	1/7/03	
717445	1453007	3.2	1/7/03	
717446	1452987	3.9	1/31/03	1.6' added
717446	1452975	6.7	1/31/03	3.2' added
717465	1453031	2.6	1/8/03	
717465	1453011	1.7	1/8/03	
717476	1452968	4.9	1/30/03	2.4' added
717480	1453016	1.5	1/8/03	
717481	1452996	3.5	1/8/03	
717485	1453036	2.5	1/7/03	
717486	1452975	4.5	1/30/03	1.5' added
717490	1453030	2.7	1/8/03	
717492	1453020	1.5	1/15/03	
717496	1452973	3.1	1/30/03	1.6' added
717501	1452995	2.3	1/15/03	1st lift + 1' on 3/1
717505	1453014	2.5	1/15/03	1st lift + 1' on 3/1
717505	1453009	2.4	1/15/03	1st lift + 1' on 3/1
717506	1452994	2.4	1/15/03	1st lift + 1' on 3/1
717506	1452972	2.7	1/30/03	1st lift + 1' on 3/1
717506	1452966	3.7	1/30/03	1st lift + 1' on 3/1
717508	1452999	2.5	1/15/03	1st lift + 1' on 3/1
717511	1452994	2.4	1/15/03	1st lift + 1' on 3/1
717514	1452999	2.5	1/15/03	1st lift + 1' on 3/1
717515	1453014	2.8	1/15/03	1st lift + 1' on 3/1
717516	1452974	3	1/21/03	1st lift + 1' on 3/1
717516	1452965	3.2	1/21/03	1st lift + 1' on 3/1
717522	1453029	2.7	1/17/03	1st lift + 1' on 3/1
717525	1453012	2.3	1/15/03	1st lift + 1' on 3/1
717526	1452994	4.3	3/1/03	1st lift + 1' on 3/1
717530	1453009	2.5	1/17/03	1st lift + 1' on 3/1
717531	1452965	3.5	1/21/03	1st lift + 1' on 3/1
717540	1453042	2.3	1/17/03	1st lift + 1' on 3/1
717540	1453024	3.8	1/17/03	1st lift + 1' on 3/1
717541	1453004	2.6	1/17/03	1st lift + 1' on 3/1
717541	1452969	2.8	1/21/03	1st lift + 1' on 3/1
717546	1452994	3.4	1/21/03	1st lift + 1' on 3/1
717546	1452984	3.8	1/21/03	1st lift + 1' on 3/1
717546	1452964	3	1/21/03	1st lift + 1' on 3/1
717550	1453041	2.5	1/17/03	1st lift + 1' on 3/1

Pine Street Canal

Thickness measuments in feet

QA/QC by DMM 1/2/03 with adjustments for 1st lifts, etc.

Northing	Easting	Thickness	Date	Notes
717550	1453033	2.5	1/17/03	1st lift + 1' on 3/1
717550	1453023	3	1/17/03	1st lift + 1' on 3/1
717550	1453008	3	1/17/03	1st lift + 1' on 3/1
717551	1452998	2.4	1/17/03	1st lift + 1' on 3/1
717551	1452988	2.7	1/17/03	1st lift + 1' on 3/1
717551	1452978	3	1/21/03	1st lift + 1' on 3/1
717551	1452971	2.9	1/21/03	1st lift + 1' on 3/1
717566	1452964	3	1/21/03	1st lift + 1' on 3/1
717576	1453003	3	1/21/03	1st lift + 1' on 3/1
717580	1453018	2.7	1/27/03	1st lift + 1' on 3/1
717591	1452982	3.6	1/27/03	1st lift + 1' on 3/1
717591	1452963	3.1	1/27/03	1st lift + 1' on 3/1
717591	1452967	3.3	1/27/03	1st lift + 1' on 3/1
717615	1453038	3.1	1/28/03	1st lift + 1' on 3/1
717615	1453023	3.1	1/28/03	1st lift + 1' on 3/1
717616	1453003	2.9	1/28/03	1st lift + 1' on 3/1
717616	1452993	3.4	1/27/03	1st lift + 1' on 3/1
717616	1452962	3	1/27/03	1st lift + 1' on 3/1
717616	1452968	3.2	1/27/03	1st lift + 1' on 3/1
717636	1452981	3.2	1/28/03	1st lift + 1' on 3/1
717636	1452986	3	1/27/03	1st lift + 1' on 3/1
717641	1453039	2.8	1/19/03	1st lift + 1' on 3/4
717641	1453021	3.2	1/19/03	1st lift + 1' on 3/4
717641	1452961	2.8	1/27/03	1st lift + 1' on 3/4
717641	1452966	2.8	1/27/03	1st lift + 1' on 3/4
717651	1453001	3	1/28/03	1st lift + 1' on 3/4
717651	1453016	3	1/28/03	1st lift + 1' on 3/4
717651	1452981	3	1/28/03	1st lift + 1' on 3/4
717656	1453036	3	1/18/03	1st lift + 1' on 3/4
717656	1452963	3.4	1/20/03	1st lift + 1' on 3/4
717656	1452981	3.1	1/19/03	1st lift + 1' on 3/4
717666	1453001	2.8	1/18/03	1st lift + 1' on 3/4
717666	1453036	2.7	1/18/03	1st lift +0.5' on 1/22+ 1' on 3/4
717666	1453016	2.8	1/18/03	1st lift + 1' on 3/4
717666	1452976	2.8	1/19/03	1st lift + 1' on 3/4
717676	1453029	2.7	1/19/03	1st lift +0.5' on 1/22+ 1' on 3/4
717676	1452994	2.9	1/18/03	1st lift + 1' on 3/4
717676	1453009	2.8	1/18/03	1st lift + 1' on 3/4
717676	1452960	2.8	1/20/03	1st lift + 1' on 3/4
717686	1453008	2.9	1/20/03	1st lift + 1' on 3/4
717691	1453029	3	1/22/03	1st lift + 1' on 3/4
717696	1452992	2.9	1/19/03	1st lift + 1' on 3/4
717701	1452958	2.4	1/20/03	1st lift + 1' on 3/4
717709	1452985	3.7	1/22/03	1st lift + 1' on 3/4
717711	1452976	3	1/19/03	1st lift + 1' on 3/4
717716	1453028	3.1	1/20/03	1st lift + 1' on 3/4
717716	1452960	2.8	1/22/03	1st lift + 1' on 3/4
717726	1452966	2.8	1/20/03	1st lift + 1' on 3/4

Pine Street Canal

Thickness measuments in feet

QA/QC by DMM 1/2/03 with adjustments for 1st lifts, etc.

Northing	Easting	Thickness	Date	Notes
717726	1452981	2.8	1/20/03	1st lift + 1' on 3/4
717731	1452972	2	1/23/03	
717736	1452992	3.2	1/20/03	
717736	1452961	2.6	1/22/03	
717741	1453031	2.1	1/20/03	
717741	1452988	2.3	1/20/03	
717741	1453003	2.2	1/20/03	
717741	1453018	2.7	1/20/03	
717766	1453015	2.7	1/22/03	
717766	1452975	2	1/22/03	
717781	1453029	3.2	1/28/03	
717781	1452991	2.8	1/23/03	
717781	1453011	2.7	1/23/03	
717781	1452957	2	1/23/03	
717781	1452971	2.4	1/23/03	
717806	1453026	1.7	1/29/03	
717806	1452956	2.5	1/22/03	
717806	1452968	2.2	1/23/03	
717826	1452989	2.4	1/29/03	
717836	1453026	1.7	1/29/03	
717836	1452989	2	1/29/03	
717836	1452999	2.1	1/29/03	
717836	1453019	2.7	1/29/03	
717841	1453009	2.5	1/28/03	
717846	1452954	2.6	1/29/03	
717846	1452969	2.6	1/29/03	
717856	1452979	2	1/29/03	
717861	1452989	2.6	1/29/03	
717861	1453004	2	1/29/03	
717866	1453026	1.7	1/29/03	
717866	1452954	2.5	1/29/03	
717871	1452979	2.3	1/29/03	
717881	1453026	2	1/29/03	
717881	1453004	2	1/29/03	
717881	1452951	2.2	1/29/03	
717881	1452979	2	12/12/02	
717919	1452952	2.2	2/5/03	
717919	1452986	2.6	2/5/03	
717919	1453030	1.6	2/5/03	
717926	1452953	1.8	2/8/03	
717930	1452955	2.7	2/8/03	
717936	1452952	1.8	2/8/03	
717937	1452954	2.3	2/8/03	
717945	1452953	1.5	2/8/03	
717946	1452975	3.1	3/4/03	1.5' added to 1st lift
717947	1452965	3.2	2/8/03	
717949	1452978	2.6	2/5/03	
717949	1453011	2.5	2/5/03	

Pine Street Canal

Thickness measuments in feet

QA/QC by DMM 1/2/03 with adjustments for 1st lifts, etc.

Northing	Easting	Thickness	Date	Notes
717949	1453029	1.5	2/5/03	
717951	1452956	2.3	2/8/03	
717955	1452980	2.5	2/8/03	1.5' added to 1st lift
717956	1452953	1.6	2/8/03	
717958	1452985	3.6	2/8/03	
717959	1453004	2.7	2/19/03	
717964	1452965	2.5	2/8/03	
717964	1452977	3	3/4/03	1.5' added to 1st lift
717966	1452954	2	2/7/03	
717966	1453028	2.3	2/19/03	
717966	1453024	3	2/19/03	
717976	1452971	3	2/5/03	
717978	1452953	1.5	2/5/03	
717979	1452970	3	2/8/03	
717985	1453007	2.5	2/5/03	
717985	1453027	2	2/5/03	
717988	1452980	2.5	2/5/03	
717991	1453027	1.5	2/5/03	
717993	1452957	2.7	2/8/03	
717993	1453023	2.3	2/7/03	
718002	1452974	3	2/5/03	
718012	1453002	3.5	2/7/03	
718013	1452970	3	2/8/03	
718014	1452973	3.2	2/8/03	
718015	1453025	3.5	2/7/03	
718017	1452980	2.8	2/8/03	
718020	1452974	3.2	2/8/03	1.5' added to 1st lift
718023	1452949	2.2	2/7/03	
718024	1452958	2.7	2/7/03	
718026	1452961	3.5	2/22/03	
718026	1453026	3.8	2/7/03	
718029	1452969	3.5	2/22/03	
718036	1452950	1.8	2/8/03	
718036	1452967	4.9	2/22/03	added sand
718036	1452999	3	2/7/03	
718041	1452967	2.9	2/8/03	
718045	1452961	4	2/22/03	
718049	1453003	3	2/7/03	
718052	1453024	4.2	2/7/03	added sand
718053	1452953	3.7	2/22/03	
718053	1452972	3.5	2/22/03	
718056	1452985	3	2/22/03	
718060	1452950	3.2	2/22/03	
718061	1452958	4.5	2/22/03	
718063	1452954	3	2/8/03	
718085	1452947	1.5	2/21/03	
718091	1452955	3.3	2/21/03	
718094	1452974	3	2/21/03	

Pine Street Canal

Thickness measuments in feet

QA/QC by DMM 1/2/03 with adjustments for 1st lifts, etc.

Northing	Easting	Thickness	Date	Notes
718099	1452952	3.3	2/21/03	
718101	1453005	2.5	2/21/03	
718105	1452964	3	2/22/03	
718107	1452954	3	2/21/03	
718108	1452966	3	2/21/03	
718114	1453009	1.9	2/15/03	
718119	1452955	3.5	2/21/03	
718121	1452991	2.7	2/21/03	
718121	1453008	2.3	2/15/03	
718123	1452951	3.5	2/22/03	
718129	1453010	1.9	2/15/03	
718133	1452946	2.5	2/21/03	
718135	1452958	3.1	2/21/03	
718140	1453006	2.5	2/15/03	
718145	1452949	3.5	2/22/03	
718152	1452997	3	2/22/03	
718159	1453002	2.5	2/15/03	
718163	1452967	3	2/22/03	
718169	1453010	2.7	2/15/03	

Turning Basin

Thickness measuments in feet

QA/QC by RTK 1/2/03 with adjustments for 1st lifts, etc.

Transect		Offset east from west cribbing	Northing	Easting	Thickness	Date	Notes
1	12	186	718454	1453121	1.8	1/29/03	
0	87	157	718479	1453092	1.9	1/29/03	
0	93	202	718473	1453137	2.5	1/29/03	
0	96	239	718470	1453174	2.5	1/29/03	
1	14	228	718452	1453163	1.8	1/29/03	
1	12	239	718454	1453174	2.1	1/29/03	
1	13	255	718453	1453190	2	1/30/03	
1	12	262	718454	1453197	1.5	1/30/03	
1	22	255	718444	1453190	2.2	1/30/03	
1	23	260	718443	1453195	2	1/30/03	
1	32	169	718434	1453104	2.1	1/29/03	
1	40	193	718426	1453128	2	1/30/03	
1	37	217	718429	1453152	2.1	1/29/03	
1	38	239	718428	1453174	2.5	1/30/03	
1	36	253	718430	1453188	2.3	1/30/03	
1	33	263	718433	1453198	1.5	1/30/03	
1	55	242	718411	1453177	2.5	1/30/03	
1	45	260	718421	1453195	2	1/30/03	
1	43	268	718423	1453203	1.5	1/30/03	
1	50	232	718416	1453167	2.6	1/30/03	
1	54	247	718412	1453182	2.6	1/30/03	
1	53	260	718413	1453195	2	1/30/03	
1	49	265	718417	1453200	2	1/30/03	
1	57	254	718409	1453189	2	1/30/03	
1	58	235	718408	1453170	2.5	1/30/03	
1	67	258	718399	1453193	2	1/30/03	
1	66	253	718400	1453188	2.3	1/30/03	
1	65	243	718401	1453178	2.5	1/30/03	
1	64	239	718402	1453174	2.5	1/30/03	
1	62	229	718404	1453164	2.5	1/30/03	
1	62	214	718404	1453149	2.1	1/30/03	
1	67	196	718399	1453131	2.1	1/29/03	
1	71	172	718395	1453107	2.5	1/30/03	
1	79	173	718387	1453108	2.5	1/30/03	
1	80	163	718386	1453098	2.6	1/30/03	
1	89	162	718377	1453097	2.6	1/30/03	
1	86	176	718380	1453111	2.5	1/30/03	
1	98	162	718368	1453097	2.7	1/30/03	
2	0	172	718366	1453107	2.6	1/30/03	
1	95	187	718371	1453122	2.6	1/30/03	
1	86	188	718380	1453123	2.5	1/30/03	
1	80	188	718386	1453123	3	1/30/03	
1	79	207	718387	1453142	2.5	1/30/03	
1	80	219	718386	1453154	2.5	1/30/03	
1	72	230	718394	1453165	2.7	1/30/03	
1	77	243	718389	1453178	2.3	1/30/03	
1	78	232	718388	1453167	2.6	1/30/03	
1	85	233	718381	1453168	2.5	1/30/03	

Turning Basin

Thickness measuments in feet

QA/QC by RTK 1/2/03 with adjustments for 1st lifts, etc.

Transect		Offset east from west cribbing	Northing	Easting	Thickness	Date	Notes
1	83	242	718383	1453177	2.3	1/30/03	
1	93	242	718373	1453177	3.5	1/30/03	Originally 2.3', total cap thickness 3.5' on 2/12/03
1	94	231	718372	1453166	2.5	1/30/03	
1	89	221	718377	1453156	2.5	1/30/03	
1	97	222	718369	1453157	2.5	1/30/03	
1	86	197	718380	1453132	2.5	1/30/03	
1	88	203	718378	1453138	2.6	1/30/03	
1	94	198	718372	1453133	2.7	1/30/03	
2	0	211	718366	1453146	2.6	1/30/03	
2	0	230	718366	1453165	3.5	1/30/03	Originally 2.3', total cap thickness 3.5' on 2/12/03
2	7	227	718359	1453162	2.3	1/30/03	
2	8	221	718358	1453156	2.5	1/30/03	
2	8	215	718358	1453150	2.5	1/30/03	
2	4	195	718362	1453130	2.6	1/30/03	
2	11	206	718355	1453141	2.5	1/30/03	
2	13	218	718353	1453153	2.5	1/30/03	
2	6	171	718360	1453106	2.6	1/30/03	
0	83	222	718483	1453157	1.5	1/30/03	
0	94	222	718472	1453157	2	1/30/03	
0	98	237	718468	1453172	1.5	1/30/03	
1	10	243	718456	1453178	2	1/30/03	
1	50	247	718416	1453182	2.5	1/30/03	
1	38	208	718428	1453143	2.5	1/30/03	
1	57	206	718409	1453141	2.5	1/30/03	
1	60	197	718406	1453132	2.7	1/30/03	
1	61	186	718405	1453121	2.5	1/30/03	
1	67	172	718399	1453107	2.7	1/30/03	
1	88	168	718378	1453103	2.5	1/30/03	
1	82	180	718384	1453115	2.5	1/30/03	
1	90	191	718376	1453126	2.5	1/30/03	
1	77	195	718389	1453130	3	1/30/03	
1	78	207	718388	1453142	2.7	1/30/03	
1	86	221	718380	1453156	2.5	1/30/03	
1	86	235	718380	1453170	2.5	1/30/03	
1	68	238	718398	1453173	2.5	1/30/03	
2	5	225	718361	1453160	2.5	1/30/03	
1	20	258	718446	1453193	1.5	1/30/03	
0	85	267	718481	1453202	2.1	1/30/03	
1	12	274	718454	1453209	1.5	1/30/03	
1	50	170	718416	1453105	2.5	1/30/03	
1	33	276	718433	1453211	2.3	1/30/03	
2	4	175	718362	1453110	2.5	1/30/03	
2	7	182	718359	1453117	2.5	1/30/03	
2	1	184	718365	1453119	2.7	1/30/03	
2	4	195	718362	1453130	2.5	1/30/03	
2	3	202	718363	1453137	3	1/30/03	

Turning Basin

Thickness measuments in feet

QA/QC by RTK 1/2/03 with adjustments for 1st lifts, etc.

Transect		Offset east from west cribbing	Northing	Easting	Thickness	Date	Notes
2	11	197	718355	1453132	2.9	1/30/03	
2	10	189	718356	1453124	2.5	1/30/03	
2	18	177	718348	1453112	2.5	1/30/03	
2	22	222	718344	1453157	3.5	1/30/03	Originally 2.5', total cap thickness 3.5' on 2/12/03
2	18	190	718348	1453125	2.9	1/30/03	
2	27	185	718339	1453120	2.5	1/30/03	
2	27	192	718339	1453127	2.5	1/30/03	
2	32	205	718334	1453140	2.9	1/30/03	
2	42	183	718324	1453118	2.6	1/30/03	
2	37	197	718329	1453132	2.6	1/30/03	
2	51	201	718315	1453136	2.5	1/30/03	
2	47	217	718319	1453152	3.5	1/30/03	Originally 3.0', total cap thickness 3.5' on 2/12/03
2	52	221	718314	1453156	3.5	1/30/03	Originally 2.7', total cap thickness 3.5' on 2/12/03
2	56	181	718310	1453116	2.7	1/31/03	
2	62	207	718304	1453142	2.7	1/31/03	
1	71	266	718395	1453201	2.5	2/1/03	
1	84	272	718382	1453207	1.5	2/1/03	
2	7	247	718359	1453182	3.5	2/1/03	Originally 2.5', total cap thickness 3.5' on 2/12/03
2	28	253	718338	1453188	2.5	2/1/03	
2	13	268	718353	1453203	2.3	2/1/03	
2	20	280	718346	1453215	2.5	2/1/03	
2	35	231	718331	1453166	2.5	2/1/03	
2	46	238	718320	1453173	3.5	2/1/03	Originally 2.3', total cap thickness 3.5' on 2/12/03
2	44	252	718322	1453187	2.5	2/1/03	
2	43	264	718323	1453199	2.7	2/1/03	
2	35	282	718331	1453217	2.6	2/1/03	
2	52	235	718314	1453170	3.5	2/1/03	Originally 2.5', total cap thickness 3.5' on 2/12/03
2	90	186	718276	1453121	3.2	2/1/03	
2	91	199	718275	1453134	2.7	2/1/03	
2	96	200	718270	1453135	2.5	2/1/03	
3	1	202	718265	1453137	2.5	2/1/03	
2	91	212	718275	1453147	3.5	2/1/03	Originally 2.5', total cap thickness 3.5' on 2/12/03
2	10	273	718356	1453208	3	2/2/03	
2	44	240	718322	1453175	2.5	2/2/03	Originally 2.5', total cap thickness 3.5' on 2/12/03
2	44	250	718322	1453185	3.1	2/2/03	
2	46	264	718320	1453199	2.9	2/2/03	
2	62	292	718304	1453227	2.6	2/2/03	
2	92	241	718274	1453176	2.5	2/2/03	
2	77	242	718289	1453177	2.5	2/2/03	
2	94	250	718272	1453185	2.5	2/2/03	

Turning Basin

Thickness measuments in feet

QA/QC by RTK 1/2/03 with adjustments for 1st lifts, etc.

Transect		Offset east from west cribbing	Northing	Easting	Thickness	Date	Notes
2	72	250	718294	1453185	2	2/2/03	
2	77	265	718289	1453200	3.5	2/2/03	Total cap thickness
2	90	290	718276	1453225	2.7	2/2/03	
3	15	238	718251	1453173	3.5	2/2/03	Originally 2.5', total cap thickness 3.5' on 2/12/03
3	5	242	718261	1453177	2.5	2/2/03	
3	17	247	718249	1453182	3	2/2/03	
3	8	263	718258	1453198	3.5	2/2/03	Total cap thickness
3	38	205	718228	1453140	2.5	2/2/03	
3	43	215	718223	1453150	3	2/2/03	
3	43	225	718223	1453160	3	2/2/03	
3	47	275	718219	1453210	2.7	2/2/03	Originally 1.4', 1.3' added 2/6/03
3	65	280	718201	1453215	2.3	2/2/03	Originally 1.0', 1.3' added 2/6/03
3	76	248	718190	1453183	2	2/2/03	
1	20	3	718446	1452938	2.5	2/4/03	
1	6	5	718460	1452940	2.5	2/4/03	
0	95	6	718471	1452941	2.5	2/4/03	
0	95	-23	718471	1452912	2.5	2/4/03	
0	98	-60	718468	1452875	1.5	2/4/03	
1	20	-25	718446	1452910	2	2/4/03	
1	20	-61	718446	1452874	1.8	2/4/03	
1	42	-2	718424	1452933	2.5	2/4/03	
1	43	-28	718423	1452907	2	2/4/03	
1	42	-54	718424	1452881	2	2/4/03	
1	34	-88	718432	1452847	2.5	2/4/03	Originally 1.5', 1' added 2/9/03
1	33	-112	718433	1452823	1.6	2/4/03	Originally 0.6', 1' added 2/9/03
1	62	115	718404	1453050	3.3	2/4/03	Originally 2.0', 1.3' added 2/15/03
1	90	109	718376	1453044	2.8	2/4/03	Originally 1.5', 1.3' added 2/15/03
1	86	115	718380	1453050	3.8	2/4/03	Originally 2.5', 1.3' added 2/15/03
1	85	125	718381	1453060	3.5	2/4/03	
2	0	136	718366	1453071	3	2/4/03	
2	31	103	718335	1453038	2.3	2/4/03	
2	8	111	718358	1453046	2.3	2/4/03	
2	33	115	718333	1453050	2.5	2/4/03	
2	30	133	718336	1453068	2.4	2/4/03	
2	56	113	718310	1453048	2.7	2/4/03	
2	57	135	718309	1453070	3.2	2/4/03	
2	47	135	718319	1453070	2.3	2/4/03	
2	77	112	718289	1453047	2.5	2/4/03	Originally 2.0', .5' added 2/11/03
2	70	132	718296	1453067	4.5	2/4/03	Originally 2.5', 2' added 2/11/03
2	84	134	718282	1453069	4.4	2/4/03	Originally 2.4', 2' added 2/11/03
3	2	111	718264	1453046	4.2	2/4/03	Originally 2.2', .5' added 2/11/03, 1.5' added 3/3/03
0	98	33	718468	1452968	2.5	2/3/03	
0	80	44	718486	1452979	2	2/3/03	
0	90	51	718476	1452986	2.5	2/3/03	
0	97	67	718469	1453002	2.5	2/3/03	
0	76	79	718490	1453014	1	2/3/03	

Turning Basin

Thickness measuments in feet

QA/QC by RTK 1/2/03 with adjustments for 1st lifts, etc.

Transect		Offset east from west cribbing	Northing	Easting	Thickness	Date	Notes
0	97	93	718469	1453028	2.5	2/3/03	
0	97	107	718469	1453042	2.5	2/3/03	
0	87	112	718479	1453047	2	2/3/03	
0	97	122	718469	1453057	2.5	2/3/03	
0	80	122	718486	1453057	1.5	2/3/03	
0	96	136	718470	1453071	2.5	2/3/03	
0	80	137	718486	1453072	1.5	2/3/03	
1	7	-64	718459	1452871	2	2/3/03	
1	5	106	718461	1453041	3	2/3/03	
1	4	115	718462	1453050	2.5	2/3/03	
1	25	125	718441	1453060	2.5	2/3/03	
1	11	128	718455	1453063	2.5	2/3/03	
1	20	139	718446	1453074	2.5	2/3/03	
1	5	142	718461	1453077	3	2/3/03	
1	14	109	718452	1453044	3.1	2/3/03	
1	33	136	718433	1453071	3	2/3/03	Originally 1.7', 1.3' added 2/15/03
2	18	137	718348	1453072	2	2/3/03	
2	0	170	718366	1453105	2.9	2/3/03	
2	12	205	718354	1453140	2.5	2/3/03	
2	70	133	718296	1453068	3.8	2/3/03	Originally 1.8', 2.0' added 2/11/03
2	47	145	718319	1453080	2.3	2/3/03	
2	58	181	718308	1453116	2.2	2/3/03	
2	62	232	718304	1453167	3.5	2/3/03	
2	72	304	718294	1453239	1.5	2/3/03	
2	46	303	718320	1453238	1.5	2/3/03	
2	83	161	718283	1453096	3.2	2/3/03	
2	78	177	718288	1453112	2.6	2/3/03	
2	80	193	718286	1453128	2.3	2/3/03	
2	81	230	718285	1453165	3.5	2/3/03	total cap thickness
2	94	304	718272	1453239	1.6	2/3/03	
3	64	300	718202	1453235	3.3	2/3/03	Originally 2.0', 1.3' added 2/6/03
3	47	303	718219	1453238	3.3	2/3/03	Originally 2.0', 1.3' added 2/6/03
3	19	304	718247	1453239	3.5	2/3/03	Originally 2.2', 1.3' added 2/6/03
1	32	-105	718434	1452830	1.5	2/9/03	
1	20	-69	718446	1452866	2	2/9/03	
1	20	-52	718446	1452883	2	2/9/03	
1	81	121	718385	1453056	2.3	2/9/03	Originally 1.0', 1.3' added 2/15/03
1	78	130	718388	1453065	2.8	2/9/03	Originally 1.5', 1.3' added 2/15/03
2	89	101	718277	1453036	3.8	2/9/03	Originally 2.3', .5' added 2/11/03, 1.0' added 3/3/03
2	76	105	718290	1453040	3.2	2/9/03	Originally 2.7', .5' added 2/11/03
2	93	112	718273	1453047	2	2/9/03	Originally 1.5', .5' added 2/11/03
2	77	114	718289	1453049	2.3	2/9/03	Originally 1.8', .5' added 2/11/03
3	50	99	718216	1453034	4.8	2/9/03	Originally 3.3', 1.5' added 3/4/03
3	20	100	718246	1453035	4	2/9/03	Originally 2.5', .5' added 2/11/03, 1' added 3/4/03
3	3	101	718263	1453036	3.8	2/9/03	Originally 2.3', .5' added 2/11/03, 1' added 3/4/03

Turning Basin

Thickness measuments in feet

QA/QC by RTK 1/2/03 with adjustments for 1st lifts, etc.

Transect		Offset east from west cribbing	Northing	Easting	Thickness	Date	Notes
3	50	111	718216	1453046	4.8	2/9/03	Originally 3.3', 1.5' added 3/4/03
3	49	150	718217	1453085	3.5	2/6/03	Originally 1.2', total cap thickness 3.5' on 2/11/03
3	31	146	718235	1453081	3.5	2/6/03	Originally 1.5', total cap thickness 3.5' on 2/11/03
3	41	210	718225	1453145	2.7	2/6/03	
3	57	226	718209	1453161	2.5	2/6/03	
3	44	231	718222	1453166	2.8	2/6/03	
3	53	242	718213	1453177	2.8	2/6/03	
3	42	250	718224	1453185	2.9	2/6/03	
3	45	263	718221	1453198	2.5	2/6/03	
3	12	93	718254	1453028	4	2/11/03	Originally 2.5', 1.5' added 3/3/03
3	0	123	718266	1453058	3.2	2/11/03	
3	0	135	718266	1453070	3.2	2/11/03	
3	33	91	718233	1453026	4	2/11/03	Originally 2.5', 1.5' added 2/15/03
3	57	90	718209	1453025	4	2/11/03	Originally 2.5', 1.5' added 2/15/03
3	48	138	718218	1453073	3	2/11/03	
3	27	153	718239	1453088	3.5	2/11/03	
3	52	153	718214	1453088	3.5	2/11/03	
3	76	90	718190	1453025	3.5	2/11/03	Originally 2.0', 1.5' added 2/15/03
3	65	98	718201	1453033	4.3	2/11/03	Originally 3.3', 1.0' added 3/3/03
3	70	112	718196	1453047	4.3	2/11/03	Originally 3.3', 1.0' added 3/3/03
3	70	119	718196	1453054	3	2/11/03	
1	24	7	718442	1452942	2.7	2/12/03	
1	10	10	718456	1452945	2.5	2/12/03	
1	45	10	718421	1452945	2.3	2/12/03	
1	33	15	718433	1452950	3.3	2/12/03	
1	37	71	718429	1453006	3	2/12/03	
1	15	78	718451	1453013	2.8	2/12/03	
1	42	80	718424	1453015	2.8	2/12/03	
1	24	13	718442	1452948	3.2	2/12/03	
3	18	118	718248	1453053	4	2/12/03	Originally 3.0', 1.0' added 3/4/03
3	28	122	718238	1453057	4	2/12/03	Originally 3.0', 1.0' added 3/4/03
3	26	128	718240	1453063	3	2/12/03	
2	47	285	718319	1453220	3.5	2/12/03	
2	74	274	718292	1453209	3.2	2/12/03	
3	2	273	718264	1453208	3.2	2/12/03	
3	32	271	718234	1453206	3.5	2/12/03	
3	38	119	718228	1453054	4.5	2/12/03	Originally 3.0', 1.5' added 3/4/03
3	62	128	718204	1453063	3.2	2/12/03	
3	37	127	718229	1453062	3	2/12/03	
3	77	258	718189	1453193	1.5	2/12/03	
1	0	32	718466	1452967	3	2/13/03	
1	10	42	718456	1452977	3.2	2/13/03	
1	3	51	718463	1452986	3	2/13/03	
1	16	52	718450	1452987	3	2/13/03	
1	32	88	718434	1453023	3	2/13/03	
2	94	187	718272	1453122	3	2/13/03	

Turning Basin

Thickness measuments in feet

QA/QC by RTK 1/2/03 with adjustments for 1st lifts, etc.

Transect		Offset east from west cribbing	Northing	Easting	Thickness	Date	Notes
3	17	190	718249	1453125	3	2/13/03	
3	23	195	718243	1453130	3	2/13/03	
3	18	205	718248	1453140	3.5	2/13/03	
3	54	124	718212	1453059	3	2/13/03	
3	55	160	718211	1453095	3.5	2/13/03	
3	60	170	718206	1453105	3	2/13/03	
3	42	189	718224	1453124	3.2	2/13/03	
3	59	195	718207	1453130	3	2/13/03	
3	37	205	718229	1453140	2.8	2/13/03	
3	52	208	718214	1453143	3	2/13/03	
3	75	110	718191	1453045	5.5	2/13/03	Originally 4.5', 1.0' added 3/3/03
3	73	122	718193	1453057	3.5	2/13/03	
3	80	137	718186	1453072	3.5	2/13/03	
3	72	160	718194	1453095	4.5	2/13/03	
3	73	180	718193	1453115	3.5	2/13/03	
3	68	204	718198	1453139	3	2/13/03	
1	41	3	718425	1452938	3	2/14/03	
1	20	15	718446	1452950	3	2/14/03	
0	93	20	718473	1452955	3	2/14/03	
1	12	22	718454	1452957	3.2	2/14/03	
1	32	25	718434	1452960	3	2/14/03	
2	7	102	718359	1453037	3	2/14/03	
2	22	113	718344	1453048	2.5	2/14/03	
1	94	113	718372	1453048	3.8	2/14/03	Originally 2.5', 1.3' added 2/15/03
2	5	120	718361	1453055	2	2/14/03	
3	62	125	718204	1453060	3.2	2/14/03	
3	51	167	718215	1453102	3.2	2/14/03	
3	42	168	718224	1453103	3	2/14/03	
3	42	160	718224	1453095	3.2	2/14/03	
3	82	72	718184	1453007	3.3	2/14/03	Originally 2.0', 1.3' added 2/15/03
3	69	73	718197	1453008	2.8	2/14/03	Originally 1.5', 1.3' added 2/15/03
3	59	77	718207	1453012	2.8	2/14/03	Originally 1.5', 1.3' added 2/15/03
3	38	78	718228	1453013	2.8	2/14/03	Originally 1.5', 1.3' added 2/15/03
1	47	100	718419	1453035	3.1	2/15/03	
1	54	107	718412	1453042	2.9	2/15/03	
1	37	110	718429	1453045	2.7	2/15/03	
1	45	113	718421	1453048	2.7	2/15/03	
1	85	12	718381	1452947	2.5	2/17/03	
1	68	14	718398	1452949	3	2/17/03	
1	53	20	718413	1452955	3	2/17/03	
1	46	23	718420	1452958	2.3	2/17/03	
1	37	38	718429	1452973	2.2	2/17/03	
1	56	47	718410	1452982	3	2/17/03	
1	49	44	718417	1452979	3	2/17/03	
1	71	62	718395	1452997	2	2/17/03	
1	64	65	718402	1453000	3	2/17/03	
1	67	81	718399	1453016	3	2/17/03	
1	65	90	718401	1453025	3	2/17/03	

Turning Basin

Thickness measuments in feet

QA/QC by RTK 1/2/03 with adjustments for 1st lifts, etc.

Transect		Offset east from west cribbing	Northing	Easting	Thickness	Date	Notes
1	75	93	718391	1453028	3	2/17/03	
1	90	101	718376	1453036	3	2/17/03	
2	3	100	718363	1453035	3	2/17/03	
3	47	68	718219	1453003	2.3	2/17/03	
3	25	214	718241	1453149	3.5	2/12/03	Originally 2.5', total cap thickness 3.5' on 2/12/03
3	5	86	718261	1453021	3	2/17/03	Originally 2.0', 1.0' added 3/3/03
3	50	73	718216	1453008	2.5	2/17/03	
4	19	68	718147	1453003	2.3	2/17/03	
2	92	74	718274	1453009	2	2/18/03	
2	93	93	718273	1453028	2.6	2/18/03	
3	5	77	718261	1453012	2.5	2/18/03	
3	26	59	718240	1452994	2.8	2/18/03	
3	27	65	718239	1453000	2.9	2/18/03	
3	48	72	718218	1453007	2.5	2/18/03	
3	98	62	718168	1452997	2.2	2/18/03	
4	18	67	718148	1453002	2.3	2/18/03	
4	33	67	718133	1453002	1.4	2/18/03	
1	85	20	718381	1452955	3.2	2/18/03	
1	47	30	718419	1452965	3	2/18/03	
1	42	29	718424	1452964	3.1	2/18/03	
2	3	105	718363	1453040	2.8	2/18/03	
2	15	105	718351	1453040	2.8	2/18/03	
2	29	104	718337	1453039	2.8	2/18/03	
3	24	62	718242	1452997	2.6	2/18/03	
3	25	71	718241	1453006	2.9	2/18/03	
3	8	74	718258	1453009	3	2/18/03	
2	91	76	718275	1453011	2	2/18/03	
3	2	82	718264	1453017	3.5	2/18/03	Originally 2.5', 1.0 added 3/3/03
2	93	93	718273	1453028	3.6	2/18/03	Originally 2.6', 1.0 added 3/3/03
2	60	33	718306	1452968	3	2/19/03	
3	58	15	718208	1452950	2.5	2/20/03	
3	61	27	718205	1452962	2.5	2/20/03	
3	58	35	718208	1452970	3.1	2/20/03	
3	42	20	718224	1452955	2.5	2/20/03	
3	35	36	718231	1452971	2.5	2/20/03	
3	24	26	718242	1452961	3.5	2/20/03	
3	12	40	718254	1452975	4	2/20/03	total cap thickness
2	92	40	718274	1452975	3	2/20/03	
2	68	43	718298	1452978	3	2/20/03	
3	63	61	718203	1452996	3.5	2/20/03	
3	54	60	718212	1452995	3.2	2/20/03	
3	45	60	718221	1452995	2.7	2/20/03	
3	36	59	718230	1452994	3.3	2/20/03	
3	34	51	718232	1452986	3	2/20/03	
3	22	44	718244	1452979	3	2/20/03	
3	17	47	718249	1452982	2.5	2/20/03	
3	13	61	718253	1452996	3.5	2/20/03	

Turning Basin

Thickness measuments in feet

QA/QC by RTK 1/2/03 with adjustments for 1st lifts, etc.

Transect		Offset east from west cribbing	Northing	Easting	Thickness	Date	Notes
3	8	48	718258	1452983	2.5	2/20/03	
2	71	62	718295	1452997	2.5	2/26/03	
2	59	55	718307	1452990	3.5	2/26/03	
2	9	90	718357	1453025	2.5	2/26/03	
2	10	47	718356	1452982	3	2/26/03	
2	17	43	718349	1452978	4.5	2/27/03	
1	87	70	718379	1453005	3	2/27/03	
1	86	75	718380	1453010	2.5	2/27/03	
2	79	17	718287	1452952	4	2/27/03	
2	44	48	718322	1452983	3.5	2/27/03	
2	52	55	718314	1452990	4.5	2/27/03	
2	78	64	718288	1452999	2.7	2/27/03	
2	57	78	718309	1453013	3	2/27/03	
2	60	104	718306	1453039	3.5	2/27/03	
2	97	15	718269	1452950	4	2/28/03	
2	83	16	718283	1452951	3.5	2/28/03	
2	84	82	718282	1453017	3.5	2/28/03	
2	58	88	718308	1453023	4	2/28/03	
2	50	94	718316	1453029	3.5	2/28/03	
2	5	32	718361	1452967	4	2/28/03	
2	14	50	718352	1452985	3.5	2/28/03	
2	15	62	718351	1452997	4	2/28/03	
2	2	63	718364	1452998	3	2/28/03	
1	59	62	718407	1452997	2.5	2/28/03	
1	52	43	718414	1452978	3	2/28/03	
1	52	30	718414	1452965	3.5	2/28/03	
1	42	36	718424	1452971	2.5	2/28/03	
1	42	47	718424	1452982	3	2/28/03	
2	20	34	718346	1452969	3.5	3/3/03	
2	12	37	718354	1452972	3	3/3/03	
2	3	27	718363	1452962	3.5	3/3/03	
1	91	16	718375	1452951	2.5	3/3/03	
1	90	28	718376	1452963	3	3/3/03	
1	89	40	718377	1452975	3	3/3/03	
1	86	55	718380	1452990	2.5	3/3/03	
1	72	55	718394	1452990	2.5	3/3/03	
1	70	40	718396	1452975	3	3/3/03	
1	75	23	718391	1452958	2.5	3/3/03	
1	63	23	718403	1452958	2.3	3/3/03	

100' by 100' Area
Thickness measurements in feet

Transect	Transect-2	Offset east from west crib	Northing	Easting	Thickness	Date	Notes
5	50	98.5	718016	1453034	1.00	3/27/03	
5	38	98	718028	1453033	1.00	3/27/03	
5	31	97	718035	1453032	1.17	3/27/03	
5	22	96	718044	1453031	1.08	3/27/03	
5	8	97	718058	1453032	1.00	3/27/03	
4	96	95	718070	1453030	1.00	3/27/03	
4	83	94	718083	1453029	1.08	3/27/03	
4	70	93	718096	1453028	1.00	3/27/03	
5	51	110	718015	1453045	1.08	3/27/03	
5	40	109	718026	1453044	1.08	3/27/03	
4	86	105	718080	1453040	1.00	3/27/03	
5	54	120	718012	1453055	1.08	3/27/03	
5	40	120	718026	1453055	1.17	3/27/03	
5	21	120	718045	1453055	1.00	3/27/03	
4	97	120	718069	1453055	1.00	3/27/03	
4	83	120	718083	1453055	1.00	3/27/03	
4	69	120	718097	1453055	1.17	3/27/03	
5	54	138	718012	1453073	1.08	3/27/03	
5	39	139	718027	1453074	1.08	3/27/03	
5	26	139	718040	1453074	1.08	3/27/03	
5	14	138	718052	1453073	1.17	3/27/03	
4	99	140	718067	1453075	1.00	3/27/03	
4	82	139	718084	1453074	1.17	3/27/03	
4	69	140	718097	1453075	1.08	3/27/03	
5	53	162	718013	1453097	1.00	3/27/03	
5	39	163	718027	1453098	1.08	3/27/03	
5	25	162	718041	1453097	1.00	3/27/03	
5	9	161	718057	1453096	1.17	3/27/03	
4	91	165	718075	1453100	1.17	3/27/03	
4	80	165	718086	1453100	1.17	3/27/03	
4	70	164	718096	1453099	1.17	3/27/03	
5	50	181	718016	1453116	1.00	3/27/03	
5	31	181	718035	1453116	1.08	3/27/03	
5	12	182	718054	1453117	1.00	3/27/03	
4	94	181	718072	1453116	1.17	3/27/03	
4	73	182	718093	1453117	1.00	3/27/03	

West Bank Cap
Thickness measuments in feet

Transect	Transect-2	Offset east from west crib	Northing	Easting	Topsoil Thickness	Sand Thickness	Total Thickness	Date	Notes
9	50	0	717616	1452935	0.5	> 3	> 3.5	7/1/04	
9	50	2	717616	1452937	-----	-----	> 3.5	7/12/04	
9	70	-6	717596	1452929	0.5	0.9	1.4	7/1/04	
9	70	1	717596	1452936	0.8	2.3	3.1	7/1/04	
9	80	-10	717586	1452925	0.5	0.8	1.3	7/1/04	
10	0	-4	717566	1452931	0.5	> 2.7	> 3.2	7/1/04	
10	0	2	717566	1452937	-----	-----	> 3.5	7/12/04	
10	13	1	717553	1452936	0.7	3.3	4	7/1/04	
10	13	3	717553	1452938	0.8	> 3.5	> 4.3	7/1/04	
10	20	4	717546	1452939	0.5	> 2.7	> 3.2	7/1/04	
10	20	0	717546	1452935	0.8	> 2.8	> 3.6	7/1/04	
10	20	-15	717546	1452920	0.7	0.8	1.5	7/1/04	
10	20	-25	717546	1452910	0.7	0.5	1.2	7/1/04	
10	50	0	717516	1452935	0.7	2.8	3.5	7/2/04	
10	50	-10	717516	1452925	0.5	1.2	1.7	7/2/04	
10	50	-20	717516	1452915	0.6	1.7	2.3	7/2/04	
10	50	-30	717516	1452905	0.5	1.8	2.3	7/2/04	
10	50	2	717516	1452937	-----	-----	> 3.5	7/12/04	
11	0	0	717466	1452935	0.7	> 2.8	> 3.5	7/2/04	
11	0	-10	717466	1452925	0.5	1.4	1.9	7/2/04	
11	0	-20	717466	1452915	0.4	1.3	1.7	7/2/04	
11	0	2	717466	1452937	-----	-----	> 3.5	7/12/04	
11	25	0	717441	1452935	0.7	> 2.8	> 3.5	7/7/04	
11	25	-5	717441	1452930	0.7	2.3	3	7/7/04	
11	50	2	717416	1452937	-----	-----	> 3.5	7/12/04	
11	70	-10	717396	1452925	-----	-----	1.9	7/7/04	
11	75	0	717391	1452935	0.7	> 2.8	> 3.5	7/7/04	
11	75	-5	717391	1452930	-----	-----	2.5	7/7/04	
11	75	-10	717391	1452925	-----	-----	1.7	7/7/04	
11	80	-10	717386	1452925	-----	-----	1.5	7/7/04	
11	85	-10	717381	1452925	-----	-----	2	7/7/04	
11	87	-7	717379	1452928	-----	-----	2.7	7/7/04	
11	90	-10	717376	1452925	-----	-----	2.7	7/7/04	
12	5	2	717361	1452937	-----	-----	> 3.5	7/12/04	
12	15	-10	717351	1452925	-----	-----	1.7	7/7/04	
12	20	-10	717346	1452925	-----	-----	1.5	7/7/04	
12	25	0	717341	1452935	0.6	2.3	2.9	7/7/04	
12	25	-5	717341	1452930	-----	-----	2	7/7/04	
12	25	-10	717341	1452925	-----	-----	1.6	7/7/04	
12	30	-10	717336	1452925	-----	-----	1.7	7/7/04	
12	30	-10	717336	1452925	-----	-----	1.6	7/7/04	
12	50	2	717316	1452937	-----	-----	> 3.5	7/12/04	
12	70	-10	717296	1452925	0.7	1.6	2.3	7/7/04	
12	75	0	717291	1452935	0.8	> 2.7	> 3.5	7/7/04	
12	75	-5	717291	1452930	0.7	1.8	2.5	7/7/04	
12	75	-10	717291	1452925	1.3	0.2	1.5	7/7/04	

West Bank Cap
Thickness measuments in feet

12	80	-10	717286	1452925		0.5		1.1		1.6	7/7/04	
13	0	0	717266	1452935		0.8	>	2.7	>	3.5	7/7/04	
13	0	-10	717266	1452925		0.5		1.2		1.7	7/7/04	
13	0	2	717266	1452937		-----		-----	>	3.5	7/12/04	
13	25	0	717241	1452935		0.8	>	2.7	>	3.5	7/7/04	
13	25	-10	717241	1452925		0.5		1.3		1.8	7/7/04	
13	50	0	717216	1452935		0.5		2.5		3	7/7/04	
13	50	-10	717216	1452925		0.4-0.5		1		1.5	7/7/04	
13	50	2	717216	1452937		-----		-----	>	3.5	7/12/04	
14	0	0	717166	1452935		0.6	>	2.9	>	3.5	7/7/04	
14	0	-10	717166	1452925		0.4-0.5		2.2		2.7	7/7/04	
14	0	2	717166	1452937		-----		-----	>	3.5	7/12/04	