FIVE-YEAR REVIEW

TANSITOR ELECTRONICS, INC. SUPERFUND SITE

BENNINGTON, VERMONT

Prepared by:

U.S. Environmental Protection Agency

Region 1

Boston, Massachusetts

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Date

ES EXECUTIVE SUMMARY

This is the first five-year review for the Tansitor Electronics Inc. Superfund Site (Site). This statutory five-year review is required since hazardous contamination remains at the Site above levels that allow for unlimited use and unrestricted exposure. The review was completed in accordance with EPA Guidance OSWER NO. 9355.7-03B-P.

Since the 1950's, various owners have used the Site as a manufacturing facility for electronic capacitors. Between 1956 and 1979, organic solvents and acids were disposed of at two areas of the property. During the period of 1975-1979, the process waste disposed included 1,1,1-trichloroethane (1,1,1-TCA) which is the predominant volatile organic compound (VOC) present in the groundwater. The site owner/operator, Vishay-Tansitor Electronics, Inc. (formerly Tansitor Electronics, Inc.) (hereafter, "Vishay-Tansitor") also reported that some waste detergents and dilute acid solutions may have been discharged into the two leach fields or directly into the intermittent stream north of its manufacturing building.

In May 1981, in compliance with Section 103(c) of the CERCLA, Vishay-Tansitor notified EPA of the waste disposal. Subsequent to the notification, the Vermont Agency of Natural Resources (VT ANR) performed site inspections and requested that Vishay-Tansitor initiate removal activities and implement a soil sampling and analysis program in the Disposal Area. The Record of Decision (ROD) was signed on September 29, 1995. The ROD set forth the selected remedy for the Site. The major components of the selected remedy included institutional controls to prevent use of groundwater, long-term monitoring of site groundwater, contingencies for additional investigation or further action, and five-year reviews.

In addition, as part of the selected remedy, for a ten-acre portion of the Site, EPA waived the attainment of federal drinking water standards which are applicable or relevant and appropriate requirements (ARARs). EPA waived attainment of these ARARs on the basis that it was technically impracticable from an engineering perspective to restore groundwater to drinking water standards for this portion of the Site within a reasonable timeframe. This followed the State of Vermont's reclassification of the groundwater beneath the Site to non-potable use only.

The ROD did not include any source control component because EPA's risk assessment concluded that the surface and subsurface soils did not present an unacceptable risk either under current conditions or under a potential future residential scenario.

Pursuant to a Consent Decree, Vishay-Tansitor and Siemens Communication Systems, Inc. (the "Settling PRPs") recorded the deed restrictions and are performing the sampling program established in the ROD. Three of the contingencies for additional monitoring outlined in the ROD have been triggered by the groundwater monitoring data. As a result, sampling frequency has been increased and a conceptual model evaluation plan and a phased bedrock monitoring plan have been submitted and approved.

In September 1999, EPA deleted the Site from the National Priorities List, and, on December 3, 1999, VT ANR formally accepted lead agency responsibilities.

Based on the data reviewed, observations from the site inspection, and interviews, the remedy is functioning as intended by the ROD. Groundwater monitoring continues, maintenance is performed as necessary, and the effective implementation of institutional controls have thus far ensured the integrity of the remedy and prevented exposure to site groundwater.

The primary ARARs for groundwater beyond the Technical Impracticability Zone are MCLs. The MCLs continue to be met in the wells outside the TI zone.

Land use at the Site has not changed and is not expected to change.

Three issues are raised by this five-year review. First, EPA has recently released a draft guidance document dealing with the vapor intrusion pathway. Based on the introduction to this guidance, this guidance is not expected to be used for settings that are primarily occupational. However, the guidance does recommend that EPA notify the facility of the potential for this exposure pathway and suggest that the facility consider any potential risk that may result. Second, the potential presence of 1,4-dioxane in groundwater at the Site needs to be evaluated. Third, with the accumulation of ten years of groundwater data, it is appropriate to assess the frequency of the sampling program.

Five-Year Review Protectiveness Statement

Because the remedy selected for the Site is protective, the Site is protective of human health and the environment. Institutional controls have been recorded. The institutional controls have prevented exposure to site groundwater, thereby ensuring the Site remains protective of human health. In addition, Vermont reclassified the groundwater beneath the site to non-potable use only. Annual reports certify compliance with the institutional controls and the Vermont Groundwater Reclassification Order. Groundwater monitoring within the TI zone has shown gradual reductions in concentrations of contaminants. Groundwater monitoring beneath and outside the TI zone demonstrates that there is no migration outside the TI zone or the Site. The monitoring program will continue to ensure that no migration outside the TI zone or the Site is occurring.

Five-Year Review Summary Form

SITE IDENTIFICATION
Site name *(from WasteLAN)*: Tansitor Electronics, Inc. Superfund Site
EPA ID *(from WasteLAN)*: VTD000509174
Region: 1 State: VT City/County: Bennington/Bennington
SITE STATUS
NPL status: Deleted from NPL (9/29/99)
Remediation status: Complete
Multiple OUs?* No Construction completion date: July 1999
Has site been put into reuse? Not applicable (Vishay-Tansitor continues to use the site as a manufacturing facility)
REVIEW STATUS
Lead agency: VT ANR
Author name: Terrence Connelly
Author title: Remedial Project Manager
Author affiliation: EPA Region I
Period for this review: 01/30/04 to 09/30/04 (Time period covered by this review, 1999 - 2004)
Date of site inspection: 08/18/04 Type of review: Post-SARA Review number: 1st Triggering action: Implementation of Institutional Controls July 29, 1999 Triggering action date *(from WasteLAN)*: 03/24/1999 Due date *(five years after triggering action date)*: 03/24/04 * "OU" refers to operable unit.

Five-Year Review Summary Form, cont'd.

ISSUES:

- The potential presence of 1,4-dioxane (reported to be commonly used as a stabilizer for 1,1,1-TCA) needs to be evaluated, particularly as it is more soluble than 1,1,1-TCA and therefore may have moved farther from the release area.

- EPA has released a draft guidance on vapor intrusion pathway. Although this guidance is not expected to be used for settings that are primarily occupational, it recommends that the facility be alerted to the potential of this exposure pathway and consider any potential risks that may result.

- Given the extensive groundwater data set accumulated since the ROD, and the hydrologic conditions present at the Site, it may be appropriate to reassess the sampling frequency.

RECOMMENDATIONS and FOLLOW-UP ACTIONS:

- Add 1,4-dioxane to the groundwater monitoring program to determine its presence, and if present, its distribution on the Site. If it is present and has a similar distribution of the other contaminants of concern, then add it to the long-term monitoring program.

- Discuss the vapor intrusion pathway with the facility.

- Reassess the frequency of sampling based on the conceptual site model.

PROTECTIVENESS STATEMENT:

Because the remedy selected for the Site is protective, the Site is protective of human health and the environment. Institutional controls have been recorded. The institutional controls prevent exposure to site groundwater ensuring the Site remains protective of human health. In addition, Vermont reclassified the groundwater beneath the site to non-potable use only. Annual reports certify compliance with the institutional controls and the Vermont Reclassification Order. Groundwater monitoring within the TI zone has shown gradual reductions in concentrations of concerns. Groundwater monitoring beneath and outside the TI zone demonstrate that there is no migration outside the TI zone or the Site . The monitoring program will continue to ensure that no migration outside the TI zone or the Site is occurring.

OTHER COMMENTS:

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FIVE-YEAR REVIEW

1.0 INTRODUCTION

The purpose of this five-year review is to determine if the remedy selected for the Tansitor Electronics, Inc. Superfund Site (Site) in Bennington, Vermont, is protective of human health and the environment. This report summarizes the five-year review process, investigations and remedial actions undertaken at the Site; evaluates the monitoring data collected; reviews the Applicable or Relevant and Appropriate Requirements (ARARs) specified in the Record of Decision (ROD) for changes; discusses any issues identified during the review; and presents recommendations to address these issues.

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

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

The EPA interpreted this requirement further in the National Contingency Plan; 40 CFR §300.430(f)(4)(ii) states:

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

This is the first five-year review for the Site. This statutory five-year review is required since hazardous contamination remains at the Site above levels that allow for unlimited use and unrestricted exposure. The triggering action for the initial statutory review was initiation of the remedial action. An environmental easement and declaration of restrictive covenants were recorded on the site property on July 30, 1999. A groundwater monitoring program, begun in 1994 during the RI/FS, has continued under a Consent Decree. Following a public comment period, EPA deleted the Site from the National Priorities List in September 1999 and VT ANR assumed the lead agency responsibility in November 1999.

Work on this review was performed between January and September 2004. The review was completed in accordance with EPA Guidance OSWER NO. 9355.7-03B-P.

2.0 SITE CHRONOLOGY

CHRONOLOGY OF SITE EVENTS
FIVE-YEAR REVIEW
TANSITOR ELECTRONICS, INC. SITE

EVENT	DATE
Property occupied by a farm, then a trucking company that had a two-bay garage building	pre-1956
Beginning in 1956, various owners have used the Site as a manufacturing facility for electronic capacitors.	1956
Vishay-Tansitor Electronics, Inc. (formerly Tansitor Electronics, Inc.) (hereafter "Vishay-Tansitor") notifies EPA that organic solvents and acids had been disposed of onsite between 1956 and 1979. During the period of 1975-1979, the process waste included 1,1,1-TCA, the predominant VOC present in the groundwater.	May 1981
Subsequent to the notification, VT ANR performed site inspections and requested that Vishay-Tansitor initiate removal activities and implement a soil sampling and analysis program in the Disposal Area.	1983 - 1987
VOCs were detected in overburden groundwater between the disposal area and the Fire Pond. VOCs also were detected in surface water samples from the on-site intermittent stream and the perennial stream south of Route 9.	1988
EPA placed the Site on the National Priorities List.	October 4, 1989
EPA notified seven parties, the current and former owners of the Site, of their potential liability with respect to the Site.	March 1989 to May 1990
Negotiations commenced with these potentially responsible parties (PRPs).	May 11, 1990
Two PRPs (Vishay-Tansitor and Siemens Communication Systems, Inc.) (hereafter, the "Settling PRPs") enter into Administrative Order by Consent (AOC) with EPA and under EPA oversight commenced an RI/FS for the Site.	September 12, 1990
EPA issued a community relations plan (the starting point of community involvement). The following month, EPA conducted interviews with city officials, nearby residents, and interested parties.	October 1990

VT ANR issued a Groundwater Reclassification Order in response to a Vishay-Tansitor petition. This Order changed the classification from Class III to Class IV for the groundwater beneath the Site.	November 23, 1993
Settling PRPs completed and EPA issued an RI Report.	June 10, 1994
Settling PRPs completed and EPA issued an FS Report.	February 13, 1995
EPA published notice of the completion of the FS and the proposed plan for remedial action in the Bennington Banner, the major local newspaper of general circulation.	February 27, 1995
EPA issued a ROD with State concurrence describing the remedial action to be implemented at the Site. The ROD included a technical impracticability waiver for MCLs for a ten acres area of the Site.	September 29, 1995
EPA begins Consent Decree negotiations after giving opportunity to VT ANR and Natural Resource Trustees to participate in the negotiations.	February 1997
ROD Contingencies #1 and #4 triggered for MW-104M and MW-112M.	October 1998
U.S. District Court enters Consent Decree, under which Settling PRPs agree to perform the remedy.	March 24, 1999
Restrictive Covenant recorded on Vishay-Tansitor deed at the Bennington County Registry of Deeds.	July 30, 1999
EPA published in the Federal Register a Notification of Intent to Delete (NOID) the Site from NPL.	August 1999
Deletion of the Site from NPL recorded in the Federal Register	September 29, 1999
VT ANR accepts lead agency responsibility from EPA.	December 3, 1999
ROD Contingency #5 triggered for MW-112M	January 2002

3.0 BACKGROUND

3.1 Physical Characteristics

The Site consists of approximately 44 acres of land on West Road (Route 9) in the Town of Bennington, Vermont, and is approximately 3.5 miles west of Bennington Center (see Figure 1). Most of the Site (37.6 acres) is located to the north of Route 9, with the remainder of the Site (6.6 acres) located to the south of Route 9. The portion of the Site located to the south of Route 9 consists of wetlands and there are also wetlands on the property north of Route 9.

The general topography surrounding the Site consists of rolling hills oriented north-south between the Green and Taconic Mountains. The Site lies at the southeastern portion of the base of Whipstock Hill. Elevations at the Site and close vicinity generally decrease to the south. Groundwater flow direction at the Site generally mimics surface contours.

Surficial runoff from the Site (storm water, snow melt and from groundwater seeps) drains into the Fire Pond, an intermittent stream located on-site, and the facility storm drain system, and ultimately into the wetland area south of Route 9. An unnamed east-west flowing perennial stream, located south of Route 9, enters the Site from the east and flows through these wetlands into Browns Brook, a Class B surface water body located about one-half mile off-site. Brown Brooks flows into the Hoosic River another three to four miles downstream.

Glacial activity has greatly influenced the geology and hydrogeology in the vicinity of the Site. To the north is the Whipstock Hill drumlin, which controls the surface water and groundwater flow directions across and beneath the Site. Underlying the Site is approximately 180 feet of glacial till, a mixture of dense deposits of silty clay, clayey silt, silt, and fine to coarse sand and gravel.

The till can be further divided into three units: ablation till, present from the ground surface to about 35 feet; a silty sand basal till about 15 feet thick; and a silty clay basal till approximately 130 feet thick. The till overlies bedrock which is comprised of variably fractured limestone under the southern portion of the Site and phyllite under the northern portion.

3.2 Land and Resource Use

The Site is located in an area zoned rural residential with a commercial corridor overlay along Route 9. As a manufacturing facility, Vishay-Tansitor's industrial use of the Site represents a grandfathered non-conforming use under the zoning laws. The Site is bounded to the north by privately owned woodland; to the east by Houran Road and a commercial property; to the south by wetlands; and to the west by agricultural/residential areas. Pleasant Valley School is located approximately 1,200 feet east and topographically upgradient of the Site.

Since issuance of the ROD and through the date of this five-year review, Vishay-Tansitor has continued to manufacture electronic capacitors at the Site. Major site features include Vishay-Tansitor's operating manufacturing/office building, an Etch House, a man-made pond (known as the Fire Pond), parking areas, a Solid Waste Disposal Area, a Disposal Area, a Concrete Pad Area, and a Borrow Area (see Figure 2).

Potable water supplies for the surrounding properties, as well as the water supply on the Site, are provided by private bedrock wells. Prior to 1993, the aquifer beneath and in the vicinity of the Site was classified by VT ANR as Class III, which is defined as suitable as a source of water for individual domestic drinking water supply, irrigation, agricultural use, and general industrial and commercial use. However, in response to a petition from Vishay-Tansitor that was based on the data obtained during the RI, on November 23, 1993, Vermont ANR issued a Groundwater Reclassification Order that reclassified groundwater beneath a 9.6 acre area of the Site, where groundwater contamination was detected, from Class III to Class IV. Class IV groundwater is defined as not suitable as a source of potable water but suitable for some agricultural, industrial and commercial use. This Reclassification Order was modified on March 10, 1994 to allow for a trained Vishay-Tansitor employee, approved by VT ANR, to conduct and report the monitoring. See Appendix B for the Reclassification Order.

Subsequent to the issuance of the ROD and through the date of this five-year review, sanitary waste water from the Vishay-Tansitor facility has been disposed of into the Town of Bennington public sewer system.

3.3 History of Contamination

The record indicates that prior to 1956 a trucking company occupied the property and had a two-bay garage building. Prior to the trucking company operation, the property was farmland.

Since 1956, various owners have used the Site as a manufacturing facility for electronic capacitors. In May 1981, in compliance with Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9603(c), Vishay-Tansitor notified EPA that organic solvents and acids had been disposed of on-site between 1956 and 1979. Over that period, an estimated equivalent of 117 drums of process waste were disposed in the Disposal Area, a 900-square foot area to the north of the Vishay-Tansitor manufacturing building. During the period of 1975-1979, the process waste disposed in the Disposal Area included 1,1,1-TCA which is the predominant VOC present in the groundwater. Vishay-Tansitor also reported that some waste detergents and dilute acid solutions may have been discharged into the two leach fields (now out of service with the extension and connection to the public sanitary sewer system in 2001) or directly into the intermittent stream north of its manufacturing building. Finally, Vishay-Tansitor reported that waste methanol had been burned periodically on the Concrete Pad.

3.4 Initial Response

Following the 1981 notification to EPA of hazardous waste disposal activities, VT ANR instructed Vishay-Tansitor to restrict access to the Fire Pond and disposal areas; define the areal and vertical extent of contaminated soil at the Disposal Area; remove the contaminated soil for proper disposal at a certified hazardous waste facility; design and implement an evaluation and monitoring program to determine the magnitude and extent of contamination resulting from the Site; and determine potential remedial actions.

In 1988, Vishay-Tansitor hired a contractor to perform the site investigation requested by VT

ANR. During this investigation, VOCs were detected in overburden groundwater samples from three monitoring wells located between the Disposal Area and the Fire Pond. No VOCs were detected in one monitoring well upgradient of the Disposal Area or in two monitoring wells south of the Fire Pond. However, surface water samples from the on-site intermittent stream and the perennial stream south of Route 9 did reveal VOC contamination.

3.5 Basis for Taking Action

Pursuant to an Administrative Order by Conent, on September 12, 1990, the Settling PRPs commenced a Remedial Investigation and Feasibility Study ("RI/FS") for the Site under EPA oversight. The Settling PRPs completed and EPA issued an RI Report on June 10, 1994, and the Settling PRPs completed and EPA issued an FS Report on February 13, 1995.

The RI found that there were two distinct source areas of VOCs detected at the Site, the Disposal Area and Concrete Pad Area. Areal extent of the Disposal Area is approximately 5,000 square feet; areal extent of the Concrete Pad Area is approximately 2,500 square feet.

Disposal Area soils contained low levels of VOCs, and elevated levels of silver and nickel. The highest concentrations of VOCs were found in soils at a depth of seven to eight feet below the ground surface. No dense non-aqueous phase liquids (DNAPLs) were found in the soils in this area, and the VOC concentrations found in the unsaturated soils did not suggest the presence of DNAPLs.

Concrete Pad Area soils also contained low levels of VOCs. The highest concentrations of VOCs were detected in soils at a depth of 10 to 15 feet below the ground surface. No evidence of DNAPLs was observed in these soils.

Semi-volatile organics were sporadically detected in samples from the Site. The occurrence of these compounds was attributed to the combustion by-products of fossil fuels and runoff from road surfaces. These compounds did not appear to be related to past or current production or wastewater disposal processes at the facility.

The RI identified two significant plumes or zones of VOC contamination in shallow groundwater. The first plume originates from the Disposal Area and extends to the Fire Pond, impacting an area approximately 170 feet by 260 feet. Based on soil gas analyses and groundwater analytical data, the plume does not exceed the width of the Fire Pond.

Contaminants detected throughout the Disposal Area plume above Federal drinking water standards, Maximum Contaminant Levels (MCLs), include 1,1,1-TCA and 1,1-dichloroethylene (1,1-DCE). The highest concentration of 1,1,1-TCA detected was 470,000 parts per billion (ppb) (MCL of 200 ppb); the highest concentration of 1,1-DCE detected was 3,800 ppb (MCL of 7 ppb). These concentrations were both detected in well ERM-2S.

The other significant plume originates from under the Concrete Pad Area, impacting an area approximately 60 feet by 240 feet. VOCs were detected above their MCLs at sampling location MW-108U. The highest concentrations detected were as follows: 1,1,1-TCA, 2000 ppb; 1,1-DCE, 180 ppb; trichloroethylene, 19 ppb (MCL of 5 ppb); and tetrachloroethylene, 20 ppb (MCL of 5

ppb).

On February 27, 1995, EPA published notice of the completion of the FS and the proposed plan for remedial action on February 27, 1995, in the Bennington Banner, the major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action.

On September 29, 1995, with concurrence from VT ANR, the ROD was signed. The ROD set forth a remedy for the Site that combined institutional controls, groundwater (and surface water if necessary) monitoring with contingencies for further investigation or further action, and five-year reviews. The primary contaminants of concern (COCs) affecting on-site soil, groundwater, surface water and/or sediment were determined to be VOCs (EPA, 1995).

4.0 REMEDIAL ACTIONS

This section describes the remedial actions selected for and implemented at the Site.

4.1 Remedy Selection

The September 29, 1995 ROD for the Site specified a multi-component remedy to address groundwater contamination. Based on the RI, remedial action objectives were identified for the Site:

- Eliminate or minimize the threat posed to human health and the environment by preventing exposure to groundwater contaminants by any individual who may use the groundwater within the area of the shallow plumes or within an area where groundwater could become contaminated as a result of pumping activities;
- Prevent the migration of groundwater contamination beyond its current extent, or to monitor the groundwater to ensure that contamination is not migrating beyond its current extent; and
- If technically practicable, to restore contaminated groundwater to drinking water standards, and to a level that is protective of human health and the environment.

The remedy selected in the ROD specified:

- Institutional controls to prevent the use of contaminated groundwater and to inform future purchasers of property of the groundwater restrictions associated with the property;
- Long-term monitoring of site groundwater on a regular basis to evaluate changes in site conditions over time;
- Contingencies for future additional investigation or further action should the long-term monitoring reveal that contaminants have migrated beyond their vertical or horizontal extent at the time of the ROD; and
- A review of the Site every five years to ensure that the remedy remains protective of human health and the environment.

In addition to these components of the remedy, EPA waived chemical-specific ARARs for a 9.6-acre portion of the Site. This area, designated as the Technical Impracticability Zone (TI zone), has the same surficial dimensions as the Class IV zone established in the November 1993 Vermont Groundwater Reclassification Order (and modified in February 1994). Unlike the Class IV area, the TI zone also has a vertical dimension and that extends to the bedrock surface. See Figure 2 for the TI zone/Class IV boundary.

Institutional controls were to be established to prevent the use of groundwater impacted by the Site and to inform future purchasers of the property of the groundwater restrictions associated with the property. These institutional controls were to consist of deed restrictions to provide permanent, enforceable restrictions on the use of groundwater at the Site. The Vermont Groundwater Reclassification Order would also serve to restrict use of the Site groundwater.

The deed restrictions were to provide the following:

(1) No water supply well was to be installed in either the overburden soils or bedrock within the area designated as a Class IV Groundwater Area by the State of Vermont (marked generally by MW-107U in the northeast, the Eastern Leach Field in the southeast, MW109U in the southwest, and the Water Reservoir in the northwest).

(2) No water supply well was to be installed in either the overburden soils or bedrock within the Class III Area on the Vishay-Tansitor property without prior EPA approval. At the time of the ROD (and continuing to this day), Vishay-Tansitor's operating facility was drawing its water from a bedrock well located west of the Class IV area. EPA acknowledged that either the current owner or potential future owners of the property may need or desire another source of water outside the Class IV Area at some time in the future because of possible failure of the existing well or development on other parts of the property. Because the addition of a new well, however, could cause contaminants to migrate or otherwise affect the contaminant plumes, EPA would require for any proposal for a new well a demonstration that such an action would not induce movement of the contaminants into uncontaminated areas. This demonstration would include, at a minimum, pump tests and laboratory analysis for VOCs. Should the demonstration indicate the proposed well would have an adverse affect on the plume, as determined by EPA, it would not be installed. It was (and is) not the intent of EPA to preclude the use of other areas of the Site with this requirement, rather it was (and is) to ensure that the institutional controls and monitoring remain protective and that further migration is prevented.

In the event that new water supply wells are installed with EPA approval in the future, additional monitoring positions located between the contaminant plume and the new water supply well may be required. These positions would be used to monitor for possible changes in on-site groundwater flow patterns (as it affects contaminant distribution). The water level monitoring program would be accomplished through the periodic use of continuous recorders on selected monitoring wells during seasonal low water periods.

(3) The existing water supply well located at the Tansitor Site would not be used to

extract more than 20,000 gallons of water per day, without prior EPA approval, as increased use of groundwater at and in the vicinity of the plumes could adversely affect the plume. Therefore, if use and pumping of the current well were to be proposed beyond the level of the RI pump test, which was approximately 20,000 gallons per day, a determination would be made by EPA as to the potential impact on the plumes.

(4) The TI zone would be used solely for industrial and commercial purposes, unless other uses of the TI zone were approved by EPA.

(5) No excavation or construction activities that would disturb the soil within the TI zone would be undertaken without EPA approval.

(6) All of the above-listed restrictions were to remain in effect as long as contaminated groundwater is present at the Site at levels in excess of federal drinking water standards, and at levels that are not protective of human health and the environment.

With respect to the State or local requirements, as noted above, the State of Vermont reclassified the groundwater in the area of the contaminated plumes from Class III to Class IV groundwater. Class IV groundwater under the state classification system is considered not suitable as a source of potable water but suitable for some agricultural, industrial, or commercial use. In addition, the Reclassification Order stated that a review of the monitoring data be performed by VT ANR after five years of monitoring, and possibly thereafter for successive five-year intervals. While VT ANR took this action independently of EPA, EPA believed that the reclassification, together with institutional controls described above, would effectively prevent future residential exposure to contaminated groundwater at the Tansitor Site.

The ROD-specified monitoring program was to be implemented to demonstrate that the conceptual model presented was correct, i.e., that the contaminants are not migrating horizontally beyond the Fire Pond or vertically toward the bedrock. The monitoring was also be used to evaluate the overall protectiveness of the remedy. The groundwater monitoring program was to include sampling and analytical methods that were appropriate for groundwater sampling and that accurately measure hazardous constituents in the samples. Monitoring was to be performed in wells located at and around the property boundary and within the interior of the Site to monitor the levels, distribution, and migration of VOCs, silver, and lead. Monitoring was also to include water level measurements.

Groundwater monitoring for VOCs were to be conducted semi-annually in the Spring and Fall for a period of at least five years. EPA concurred with VT ANR regarding the sampling locations, frequency, and analytes for the groundwater monitoring required by the November 1993 Vermont Groundwater Reclassification Order. Therefore, the monitoring data collected in accordance with the Reclassification Order was deemed suitable as part of the semi-annual monitoring required by the ROD.

Groundwater monitoring for silver and lead was to be conducted semi-annually in the Spring and Fall for a period of at least three years. As with the VOCs, monitoring data for silver and lead collected in accordance with the Reclassification Order prior to this Record of Decision was deemed suitable for this monitoring.

The monitoring program was to include selected groundwater monitoring wells. To evaluate the vertical extent of the contaminant plume, the following existing medium depth and bedrock wells were to be included in all semi-annual monitoring: MW-101M, MW-112M, MW-104M, MW-105M, MW-103M, ERM-5D, and MW-103R. To evaluate the horizontal extent of the contaminant plumes, the following existing shallow wells were to be included in all semi-annual monitoring: ERM-2S, MW-104U, ERM-4S, MW-108U, ERM-5S, MW-109U, MW-110U, MW-114U and MW-ELF.

After five years, as determined by EPA, the frequency and list of analytes monitored in the groundwater (and surface water if applicable) would be evaluated and possibly reduced, in accordance with relevant and appropriate RCRA groundwater monitoring standards. Subsequent to the initial reassessment, the duration and scope of monitoring activities would be reassessed periodically based on sampling results and observed trends. At a minimum, these reassessments would occur during each five-year site review.

Finally, all monitoring reports were to include documentation detailing the level of use of the existing water supply well at the Site, consistent with the requirement that this well would not be used to extract more than 20,000 gallons of water per day.

The ROD established contingencies in the event that wells outside the current contaminant plumes become impacted. These contingencies for future action would be triggered in the event that contamination above specified levels, was detected in the existing monitoring wells.

The contingencies were ordered in terms of depth, beginning with shallow wells and moving down to bedrock. This appeared to be the most likely sequence for detection of contaminants, should migration occur from the current plumes. With each contingency, an evaluation of the field sampling and analytical methods would be performed in the event of detection of a contaminant of concern. The monitoring well in question would be resampled if the review indicated the methods did not meet data quality objectives. If the evaluation indicated the detection was valid, the frequency of sampling for the appropriate well or wells would be increased to quarterly for overburden wells and monthly for bedrock wells to characterize seasonal fluctuations and migration trends.

For each contingency, the concentrations of contaminants were to be compared to their respective and applicable standard: MCLs, non-zero MCLGs, Vermont drinking water standards where more stringent (VT GWPRS are applicable at the Class III/IV boundary), or health based levels if the contaminant has no MCL.

The final component of the ROD remedy was five-year reviews. Because contaminants would remain onsite that would not allow the unrestricted use of the property. EPA would review the Site at least once every five years after the initiation of the remedial action at the Site to assure that the remedial action continues to be protective of human health and the environment.

4.2 Remedy Implementation

This section describes the implementation of the components of the remedy specified in the 1995 ROD.

4.2.1 Institutional Controls

Following the entry of the Consent Decree in March 1999, the Settling PRPs submitted a draft Environmental Protection Easement and Declaration of Restrictive Covenants ("Deed Restrictions") to EPA and VT ANR. This document was approved by EPA and then recorded July 30, 1999 on the property deed at the Town Clerk's Office for the Town of Bennington, Bennington County. The covenants included the restrictions listed above in Section 4.1.

4.2.2 Groundwater Monitoring

The ROD required the implementation of a semi-annual groundwater monitoring program for at least five years. If the action levels established by the ROD were exceeded, the ROD required further evaluation of the remedial action via contingencies described in the ROD. The ROD established a three-dimensional Technical Impracticability Zone where Safe Drinking Water Act Maximum Contaminant Levels (MCLs) were waived. Outside the TI zone, MCLs and VT GWPRS were set as the action levels, or standards, for all groundwater contaminants.

EPA determined that the groundwater monitoring collected in accordance with the Vermont Groundwater Reclassification Order was deemed suitable for the semi-annual monitoring required in the ROD. Pursuant to the November 1993 Reclassification Order, beginning in May 1994, twelve monitoring wells were sampled for VOCs, and silver and lead. Pursuant to the September 1995 ROD, beginning in October 1995 an additional four monitoring wells were included in the semi-annual sampling. The results for the wells within the TI zone were then compared to the contingencies established in the ROD and the wells outside the TI zone (both outside it laterally and also those beneath it) were compared to MCLs or VT GWPRS. The results of the selected sampling events are discussed in Section 6.4.3.

Following the completion of the fall 1998 sampling event, the groundwater monitoring program was adjusted so that the sampling frequency of MW-104M and MW-112M was increased to quarterly beginning in January 1999, as a result of periodic exceedances of Contingencies #1 and #4 (see below). In addition, sampling for silver and lead was discontinued, with the exception of lead in ERM-5S.

Subsequent to this, MW-112U was added to the groundwater monitoring program in January 2000.

Following a review of the data by the Vermont Groundwater Coordinating Committee in connection with the five-year review period established in the Groundwater Reclassification Order, VT ANR notified Tansitor on September 5, 2001 that lead was not present above groundwater quality enforcement standards and therefore, the sampling of ERM-5S for lead could be discontinued.

Contingency #5 was triggered for MW-112M after the fall 2001 sampling event. As a result, the frequency of monitoring of the MW-105M and the Vishay-Tansitor production well sampling was increased to quarterly.

4.2.3 Contingencies

The 1995 ROD established six contingencies in the event that wells, outside the contaminant plumes at the time of ROD, later became impacted. These were later expanded to eight contingencies in the Statement of Work, Appendix I to the Consent Decree, to include a new water supply well proposal and associated work plans.

Contingency #1 of the SOW, if concentrations of 1,1,1-TCA or 1,1-DCE or any other contaminants were detected at or above one half their respective standard in monitoring wells beyond the extent of the plumes at the time of the ROD (i.e., in wells 101M, 104M, 105M, 103M, ERM-5D, ERM-4S, ERM-5S, 109U, 110U, and 114U), was triggered in MW-104M for 1,1-DCE in the fall 1996 sampling round. Quarterly sampling of this well began in January 1999.

Contingency #4 of the SOW, if concentrations of 1,1,1-TCA or 1,1-DCE or any other contaminants were detected at or above their respective standard in any of the medium depth monitoring wells, 101M, 112M, 104M, 105M, 103M, or ERM-5D, the Settling Defendants were to submit to EPA and VT ANR and implement upon approval, a Conceptual Model Evaluation Plan, This contingency was triggered in MW-104M and MW-112M for 1,1-DCE in the fall 1998 sampling round. Quarterly sampling of both wells began in January 1999 and the Conceptual Model Evaluation Plan was submitted and approved in the spring of 1999.

Contingency #5 of the SOW, if concentrations of 1,1,1-TCA or 1,1-DCE or any other contaminants were detected at or above five times their respective standard for four consecutive quarters in any of the medium depth compliance monitoring wells, 101M, 112M, 104M, 105M, 103M, or ERM-5D, the Settling Defendants were to submit to EPA and VT DEC a Bedrock Monitoring Plan which would include a plan and schedule for selection, construction and monitoring for additional monitoring wells to determine the vertical extent of the plume. This contingency was triggered in MW-112M for 1,1-DCE in the fall 2001 sampling round. At a meeting on November 16, 2001 between VT ANR, EPA, and the Settling Defendants agreed to initiate a phased approach to the bedrock monitoring plan. Sampling of the Tansitor production well and MW-105M would be increased to quarterly and further assessment of the MW-112M data would be undertaken to determine whether additional medium depth wells would be needed.

4.3 Systems Operation/O&M

The ROD estimated net present worth O&M annual costs at $30,600 for thirty years of operation, primarily for the semi-annual sampling and reporting. As the selected remedy relied on institutional controls and monitoring, neither the ROD nor the 1995 Consent Decree established any specific operation and maintenance requirements. The Settling PRPs have maintained the monitoring wells as part of the regular facility grounds maintenance.

On September 15, 1999, EPA and VT ANR conducted a pre-certification site inspection pursuant to the Consent Decree, Section XIV, Certification of Completion. Subsequently, the Settling PRPs consultant, GZA GeoEnvironmental, submitted a Report of Completion of Remedial Action in October 1999. On November 10, 1999, EPA approved the report and certified that Completion of Remedial Action had been completed consistent with Consent Decree requirements.

5.0 PROGRESS SINCE LAST FIVE-YEAR REVIEW

This is the first five-year review for the Site.

6.0 FIVE-YEAR REVIEW PROCESS

6.1 Administrative Components

EPA, the lead agency for this five-year review, notified VT ANR in the winter of 2004 that the five-year review would be completed. Michael Smith of VT ANR was part of the review team.

The schedule established by EPA included completion of the review by September 2004.

6.2 Community Notification And Involvement

For this five-year review: EPA prepared a press release for the local paper announcing the five-year review and requesting public participation. There has been no response from the public to either the VT ANR or EPA regarding the five-year review.

During the period prior to the five-year review: In previous years, community concern and involvement has been low to moderate.

Beginning in 1990, informational meetings were held at the Bennington Free Library. A press release was sent out on July 29, 1991 announcing the beginning of field work at the Site. A Fact Sheet was mailed in December, 1991, to inform the public of the progress during the first portion of field work. Another Fact Sheet was mailed in September, 1993 to discuss the outcome of the Remedial Investigation (RI) and Risk Assessment and to announce a public meeting to discuss the RI and Risk Assessment.

VT ANR held a public meeting for the groundwater reclassification on September 15, 1993, and this meeting had the highest turnout of any meeting associated with the Superfund aspect of the Site.

EPA published a notice and brief analysis of the Proposed Plan in the Bennington Banner on February 23, 1995 and made the plan available to the public through a February 23, 1995 mailing as well at the Bennington Free Library on March 8, 1995. Also on March 8, 1995, EPA made the administrative record available for public review at EPA's offices in Boston and at the Bennington Free Library. A notice that EPA proposed to waive attainment of Maximum Contaminant Levels (MCLs) was also included in the Proposed Plan.

During a visit to the library on August 18, 2004 EPA reviewed the site file. According to the library's reference librarian, the files are accessed with some frequency.

6.3 Document Review

This five-year review included a review of relevant documents including decision documents, institutional controls and trust fund annual financial reports.

6.4 Data Review

A review was completed of the monitoring reports. A summary of relevant data regarding the components of the Site remedy is presented below.

6.4.3 Groundwater Monitoring

The ROD specified a monitoring program to address the potential for migration of 1,1,1-TCA, 1,1-DCE, and other contaminants in groundwater (see Section 4.1). Groundwater sampling began in the spring 1991 for the Phase 1A RI and has continued through the FS, the September 1995 ROD, the September 1999 deletion from the NPL, and continues currently based on a schedule set up in the ROD. Beginning with the spring 1994 groundwater sampling, the sampling has also fulfilled the requirements of the November 1993 Vermont Groundwater Reclassification Order. In December 1999, lead responsibility for oversight of the monitoring program was assumed by VT ANR.

Data from groundwater monitoring wells sampled since the spring 1994 are shown on Table 1. A summary of the wells, beginning from the upgradient location to Route 9, follows.

MW-101M/R were installed during the 1991 Phase 1A RI to the northeast of the Disposal Area. These wells are screened in the sandy basal till and bedrock respectively. They are outside the TI zone that was established in the September 1995 ROD. Vertical gradient is typically downward. No contaminants have ever been detected in either of these wells.

ERM-2S was installed prior to the RI in response to the request from VT ANR for an investigation of site conditions and is located just off the southwest corner of the Disposal Area. It is screened in the shallow ablation till. From the beginning this has been the most contaminated monitoring well, with 1,1,1-TCA concentrations as high as 420,000 µg/L (well above the solubility limit associated with DNAPL). Since 1998, of concentrations of all contaminants have been decreasing. 1,1,1-TCA concentrations dropped below 100,000 µg/L in 1998, below 50,000 µg/L in fall 2000, and to 26,000 µg/L or less in 2002. Should this rate of decrease continue, then the 1,1,1-TCA MCL (200 µg/L) would be approached in the next 20 - 30 years.

MW-112U/M were installed during the 1992 Phase 1B RI downgradient of MW-101 and the southeastern corner of the Disposal Area. These wells are screened in the shallow ablation till and at the top of the silty clay section of the basal till, respectively. Vertical gradient is typically downward. MW-112U was not originally part of the long-term monitoring, but was added to the program in January 2000. 1,1,1-TCA concentrations in MW-112U have also generally decreased at approximately the same rate as observed ion ERM-2S. Should this rate continue, then the MCL would be approached in the next 15 - 20 years in MW-112U.

Concentrations of 1,1,-TCA have increased in MW-112M from 6 µg/L in 1994, then averaging about 30 µg/L in 1995 - 1997, 125 µg/L in 1998 - 2000, 280 µg/L in 2001, and then 610 µg/L in 2002 - 2004. Concentrations of 1,1-DCE have followed a similar pattern, from a non-detect in 1994 to an average of 115 µg/L in 2002 - 2004.

MW-104U/M was installed during the 1991 Phase 1A RI downgradient of the Disposal Area and just upgradient of the Fire Pond. These wells are screened in the shallow ablation till and sandy basal till, respectively. They typically exhibit an upward gradient as the groundwater discharges to the Fire Pond and the ground surface at this location is often saturated with MW-104M showing flowing artesian conditions. Concentrations of 1,1,1-TCA in MW-104U have fluctuated for the past ten years, between 500 and 1200 µg/L, perhaps peaking in 2001 - 2003. Concentrations of 1,1-DCE have also fluctuated, but over much lower levels, 5 and 25 µg/L. Concentrations in MW-104M have shown a similar pattern, though showing a more pronounced seasonal variation between spring and fall. Concentrations of 1,1,1-TCA have ranged from 40 to 150 µg/L, perhaps peaking in 1999 - 2002.

ERM-4S was installed prior to the RI in response to the request from VT ANR for an investigation of site conditions and is located between the manufacturing building and the Fire Pond. It is screened in the shallow ablation till. No contaminants have ever been detected in this well.

MW-105M was installed during the Phase 1A RI adjacent to ERM-4S to determine whether the Disposal Area plume was moving past the Fire Pond to the west. It is screened at the bottom of the sandy basal till. Since 2001, 1,1,1-TCA has been detected at very low concentrations, 1J to 5 µg/L.

MW-103M/R were installed during the Phase 1A RI downgradient of the Fire Pond. These were screened in the sandy basal till and bedrock, respectively. These wells exhibit an upward gradient, with MW-103R typically under flowing artesian conditions. No contaminants have ever been detected in these wells.

ERM-5S/D were installed prior to the RI in response to the request from VT ANR for an investigation of site conditions and are located near the southeastern corner of the Fire Pond. These wells exhibit an upward gradient, with ERM-5D often under flowing artesian conditions. No contaminants have ever been detected in these wells.

MW-108U was installed during the Phase 1A RI to assess the potential plume emanating from the Concrete Pad Area. It is located adjacent to the northeast corner of the manufacturing building and is screened in the shallow ablation till. In addition to 1,1,1-TCA and 1,1-DCE, tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1-DCA, and 1,2-DCE are also present in the Concrete Pad Area plume. Although some of these compounds are breakdown products, with the exception of 1,1-DCA, they all appear to show a similar decreasing trend, peaking in the 1997 to 1999 time interval.

MW-109U and MW-110U were installed during the Phase 1A RI in 1991 and are located in the facility parking areas adjacent to Route 7 and are the most downgradient wells within the TI zone. Both are screened in the ablation till. No contaminants have ever detected in these wells.

MW-114U was installed in response to the October 1993 Groundwater Reclassification Order. It is located on the south side of Route 7 (the southern boundary pf the TI zone is the north side of Route 7)and it is screened in the shallow ablation till. No contaminants have ever been detected in this well.

6.5 Site Inspection

Site inspections have been performed periodically since the March 1999 Consent Decree. As noted above, EPA and VT ANR, on September 15, 1999, EPA and VT ANR conducted a pre-certification site inspection pursuant to the Consent Decree, Section XIV, Certification of Completion. No issues or discrepancies with the monitoring program or maintenance of the monitoring wells were noted.

A similar site inspection was made on November 16, 2001 following a meeting to discuss the sampling data. Again, no issues or discrepancies with the monitoring program or well maintenance were noted.

EPA conducted a five-year review inspection on August 18, 2004 with representatives from Vishay-Tansitor.

The inspection included a site walkover, inspection of the monitoring wells, and the interior of the manufacturing building immediately downgradient of MW-108U (and therefore above the Concrete Pad Area plume). Following the site inspection, the EPA representative drove around the neighborhoods contiguous to the Site to check for new homes and developments.

The Vishay-Tansitor property, as noted above, is an operating manufacturing facility and has been since 1956. The property is accessed through two entrances from Route 7. The property is not fenced along Route 7 nor along the property boundary. There remains a fence around the Disposal Area and another one around the Fire Pond. Beyond the buildings and parking areas, the grounds are maintained as mowed lawns. Further to the back, near the base of Whipstock Hill, the property is wooded. The property on the south side of Route 7 is a wetland. On the day of the site inspection for this five-year review, there was no indication of any disturbance of the grounds nor any excavation within the TI zone. Each of the monitoring wells currently in use as part of the monitoring program was located and inspected. All appeared to be in acceptable condition with no indication of frost displacement and all riser caps were secured.

It was reported in previous discussions with Vishay-Tansitor that passive diffusion bags could not be set in wells ERM-2S, ERM-5S, and MW-108U as each may have experienced a break in the well pipe so these wells had been sampled following low-flow procedures.

In response to the draft guidance on vapor intrusion pathway (OSWER's "Draft Guidance for Evaluating Vapor Intrusion to Indoor Air Pathway from Grounwater and Soils," hereafter "Subsurface Vapor Intrusion Guidance"), an EPA representative walked through the interior of manufacturing building above the Concrete Pad Area plume. That portion of the building is used for shop manufacturing and production stations. There is a women's restroom at the back of the building. The foundation is slab concrete. In response to VOC data collected from the parking lot manhole and septic system, Vishay-Tansitor disconnected/capped all floor drains from the building during the RI phase to prevent further releases. It was stated that Vishay-Tansitor had stopped using any chlorinated solvents several years ago and that no hazardous materials are used in the cleaning of equipment or any other facet of manufacturing.

The roads in the vicinity of the Site were driven to check for new development/new use. The

area remains predominantly rural residential interspersed with agricultural properties. There did not appear to be any significant changes on Pleasant Valley Road to the southeast; on this 1.2 mile road there are sixteen houses, three Christmas tree farms, one small corn field, and one motel with a few separate cottages. On Route 7 itself, a motorcycle shop and a farm produce store are east of the Site, and a motel with a few units and a farm are west of the Site. All of these have been present many years; the motel and farm dating back at least to the beginning of the RI negotiations in 1990.

Houran Road leads off from Route 7, east of the Site and winds past the Site to the north. It also is predominantly rural residential interspersed with agricultural properties. No new homes were noted.

The New York state line is approximately a half mile west of the Site. Two new developments were noted to the northwest, both more than a mile away from the Site: a quarry has opened on the northwest side of Whipstock Hill (the Site is located on the southeast slope of the hill) and a divided highway (Route 7 bypass) has opened. No other land use changes since the 2001 inspection were noted.

6.6 Interviews

EPA had general discussions with Vishay-Tansitor personnel, Town of Bennington officials, and Bennington Free Library staff during the site visit on August 18, 2004. An interview with VT ANR was conducted via telephone.

Michael Smith has been the VT ANR project manager since 1993, and the lead agency representative since December 1999. He coordinates the Groundwater Committee reviews for the Groundwater Reclassification Order and provides the agencies' comments on the Groundwater Monitoring and Conceptual Model Evaluation reports. He has approved the monitoring modifications currently in place and is satisfied with Vishay-Tansitor's monitoring program.

Adrian Paris and Brett Libby, Vishay-Tansitor staff, accompanied the EPA representative on the site inspection. Mr. Paris prepares the quarterly monitoring reports and Mr. Libby is responsible for the sampling and maintenance of the monitoring wells. They led the site walkover to each monitoring well, noting which wells were typically artesian. They also pointed out the paved trenching above the connection to the town sanitary sewer made in 2001 (both leach fields are now inactive).

The environmental easement and restrictive covenants attached to the Vishay-Tansitor deed were located in the Town Clerk's office (Book 354, Page 164). Town staff stated that the public sanitary sewer system, although it extends out to the facility along Route 7, has no other connections in the half mile east of the facility along Route 7. Town water service ends at the intersection of Route 7 and Pleasant Valley Road, about a quarter-mile east of the facility.

The site file at the Bennington Free Library was reviewed during the site visit. The Administrative Record, compiled March 8, 1995 and updated on January 17, 1996, was present. In addition, the Tansitor Deletion Docket, compiled Aug 16, 1999, was also present.

The final Federal Register Notice of the site's deletion from the NPL was not found, nor the inter-agency correspondence regarding the change in the agency's role. The reference librarian noted that the record is periodically accessed and asked that in addition to the missing documents, copies of future sampling reports be sent to the library.

7.0 TECHNICAL ASSESSMENT

7.1 Question A: Is The Remedy Functioning As Intended By The Decision Documents?

Remedial action performance. The RAOs were noted above (see Section 4.1). The threat posed to human health through exposure to groundwater is being prevented by institutional controls. An environmental easement and restrictive covenants are recorded to the property deed. In addition, the Settling PRPs certify annually that the facility production well is operating within the constraints placed on it and that no excavation or disturbance of the soils within the TI zone has occurred. The use of the Site has not changed since the ROD.

The threat posed to the environment through exposure to contaminated groundwater also has not occurred. Surface water samples collected from the Fire Pond during the RI showed only sporadic, detection limit VOC concentrations. Groundwater from the shallow downgradient wells have never shown any contamination thereby indicating that contaminated groundwater is not discharging to the wetlands south of Route 7.

Groundwater monitoring to ensure that contamination has not migrated beyond the extent at the time of the ROD has continued under both the 1999 Consent Decree and the 1993 Groundwater Reclassification Order. The monitoring has demonstrated that the contamination has not migrated horizontally beyond the Fire Pond. The monitoring has shown that 1,1,1-TCA and 1,1-DCE concentrations have increased in one medium depth well (MW-112M) since monitoring began in 1994. That the vertical gradient is downward at this location does require continued monitoring of the situation. However, as contaminants have decreased in MW-112U, contaminants have never been detected in the bedrock wells, and that there is over 100 feet of the silty basal till between MW-112M and the bedrock surface, continued monitoring of the situation may be sufficient rather than installation of deeper monitoring wells within the basal till.

The third RAO, to restore contaminated groundwater to drinking water standards if technically practicable, has not been achieved. It was determined prior to the ROD that it was technically impracticable to restore the groundwater to drinking water standards within a reasonable time frame.

Operations and Maintenance. Neither the ROD nor Consent Decree specified any O&M tasks. With the recording of the environmental easement and restrictive covenants in July 1999, the remedial action was determined to be complete per EPA's guidance. The monitoring wells are maintained as part of regular grounds maintenance for the facility.

Opportunities for Optimization. Based on the extensive data collected since 1994 and trends in water quality, it may be possible to reduce the number and frequency of monitoring locations. In addition, the switch to diffusion bag samplers with the approval of VT ANR in November 2001 has allowed for a more efficient collection of groundwater samples. VT ANR has also requested the Groundwater Monitoring and Conceptual Model Evaluation reports be submitted in electronic format.

Indicators of Remedy Problems. There are no indicators of remedy problems. As noted above, three of the monitoring wells cannot accept diffusion bag samplers. Subsequent data collected using low-flow technique has been consistent with the previous data, indicating that the wells are still functioning as intended. Should conditions change or the water quality results change, then replacement of these wells should be assessed.

Implementation of Institutional Controls. The environmental easement to the State of Vermont and the restrictive covenants were recorded on the property deed on July 30, 1999. Vishay-Tansitor has certified annually that the restrictions have been maintained and not violated, including the restraints on the facility's production well and no excavations within the TI zone without agency approval.

7.2 Question B: Are The Exposure Assumptions, Toxicity Data, Cleanup Levels And Remedial Action Objectives (RAOs) Used At The Time Of Remedy Selection Still Valid?

Changes in Standards and TBCs. As part of this five-year review, Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered (TBC) guidance for the Site presented in the ROD were reviewed, and a review of current ARARs was conducted. There have been no changes in the chemical-specific ARARs (MCLs or VT GWPRS) for the contaminants identified in the 1995 ROD, nor any location or action-specific ARARs. ARARs identified in the ROD and current ARARs and TBCs applicable to this five-year review are included in Appendix C of this report for reference.

Changes in Exposure Pathways. Nine potential exposure pathways were quantitatively assessed as part of the risk assessment during the RI/FS. Neither exposure to bedrock groundwater or exposure to vapors were part of the quantitative assessment; the former because there was no contamination in the bedrock groundwater, the latter was qualitatively addressed as part of the groundwater ingestion pathway. The ROD identified only ingestion of overburden groundwater in a future residential use exposure pathway as an unacceptable risk. The institutional controls in place have eliminated this pathway.

Land use around at the Site has not changed and is not expected to significantly change, and future development of the Site is restricted by the environmental easement, restrictive covenants and the Groundwater Reclassification Order.

Since the entry of the Consent Decree, a potential new exposure pathway has been identified: vapor emanating from either contaminated soil or groundwater intruding into buildings. However, as Vishay-Tansitor is an operating facility, the Subsurface Vapor Intrusion Guidance indicates that this be addressed through other avenues (OSHA purview) and EPA should notify

the facility of the potential pathway and associated risks.

Changes in Toxicity and Other Contaminant Characteristics. No changes in toxicity or other contaminant characteristics have been identified that would impact the protectiveness of the remedy.

Changes in Risk Assessment Methods. The human health risks discussed in the ROD have been eliminated by the implementation of institutional controls. Groundwater monitoring has demonstrated that the contaminant plume has not migrated beyond the TI zone. There are no changes that affect the protectiveness of the remedy. Since the target cleanup levels for groundwater outside the TI zone are the MCLs and VT GWPRS rather than site-specific risk-based concentrations, changes in risk assessment methods would not affect the protectiveness of the remedy.

Expected Progress Towards Meeting RAOs. The first two RAOs have been met. The third one was determined to not be technically practicable. Site-wide monitoring is still ongoing, and groundwater contaminant levels, with the exception of one well, MW-112M, have been decreasing within the TI zone. Should the rate of decrease remain the same, then attainment of MCLs and VT GWPRS for some of the wells within the TI zone could occur within twenty to thirty years, whereas for other wells such as MW-104U and MW-104M, the decrease in concentrations began only within the past couple years and thus there is insufficient data to project when these wells might attain MCLs or GWPRS (and it does not appear that the concentrations in MW-112M have peaked).

7.3 Question C: Has Any Other Information Come To Light That Could Call Into Question The Protectiveness Of The Remedy?

Since the 1999 Consent Decree, new information has come to light regarding the chemical compound 1,4-dioxane. This compound is used as both a solvent and a stabilizer for other solvents; it has been found associated with 1,1,1-TCA at many other Superfund sites. EPA has classified 1,4-dioxane as a Probable Human Carcinogen, recognizing the possibility that repeated exposure may increase the risk of developing cancer if contact rates are too high and occur for too long. A number of states have set drinking water guidelines ranging from 3 to 85 µg/L; no federal drinking water standard has been set. EPA Region 9's Preliminary Remediation Goal (PRG) for drinking water ingestion is 6.1 µg/L. This is a risk-based number for an exposure duration of 30 years. EPA's database has no information to evaluate risk via inhalation or dermal contact.

No other information has been discovered that would call into question the protectiveness of the remedy.

7.4 Technical Assessment Summary

Based on the data reviewed, observations from the site inspection, and interviews, the remedy is functioning as intended by the ROD. The institutional controls have been implemented and are certified annually to be in compliance. The groundwater monitoring has demonstrated that contaminants are not migrating to areas outside of the TI zone or offsite. Therefore, the remedy

is functioning as designed and remains protective of human health and the environment. Groundwater monitoring continues and maintenance of the monitoring wells is performed as necessary.

The primary ARARs for groundwater at the TI zone boundary are the MCLs and the VT GWPRS. These continue to be met not only at the TI zone boundary but also on the downgradient side of the Fire Pond, consistent with the Conceptual Model developed for the Site. Groundwater contamination levels within the TI zone upgradient of the Fire Pond are generally decreasing.

Land use at the Site has not changed and is not expected to change. The Site continues as a manufacturing facility. Restrictions on Vishay-Tanistor's water production well are maintained and all excavations or disturbances of the soil within the TI zone have been done with EPA approval. A potential additional route of exposure (vapor) has been identified, but per EPA guidance, it will be referred back to the facility.

8.0 ISSUES

This five-year review identified three issues.

The first is that since the time the ROD and Consent Decree were finalized there has been emerging research on the compound 1,4-dioxane, a stabilizer for 1,1,1-TCA. This compound has been classified by EPA as a probable human carcinogen. Additionally, this compound is much more water soluble than 1,1,1-TCA and therefore may be expected to migrate further and more quickly than 1,1,1-TCA.

The second issue relates to Subsurface Vapor Intrusion Guidance developed by EPA since the Consent Decree. In 2002, EPA released a draft guidance document dealing with the vapor intrusion pathway. Based on the introduction to this guidance, this guidance is not expected to be used for settings that are primarily occupational. However, the guidance does recommend that EPA notify the facility of the potential for this exposure pathway and suggest that the facility consider any potential risk that may result.

The third issue pertains to sampling frequency. Acknowledging that the contingencies established in the 1995 ROD have required increased sampling frequency when one of them has been triggered, however, given the large groundwater monitoring data set accumulated dating back to the RI/FS as well as the hydrological parameters present at the Site, it may be appropriate to reduce the number and frequency of the overall sampling program for the site.

9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

EPA recommends that 1,4-dioxane be added to the monitoring program for wells within the two plumes, the compliance wells, and the Vishay-Tansitor production well for one sampling event to determine its presence, and if present, its distribution on the Site. If it is present and has a

similar distribution of the other contaminants of concern, then EPA recommends it be added to the long-term monitoring program. Should it be present beyond the two contaminant plumes, then EPA recommends that the Conceptual Model Evaluation be revised and that a further assessment of options to address this new information be performed.

EPA shall notify both VT ANR and Vishay-Tansitor of the potential vapor intrusion exposure pathway and suggest that the facility consider any potential risk that may result.

EPA recommends that subsequent to the sampling for 1,4-dioxane, the groundwater monitoring program be reassessed relative to the number of sampling locations and frequency.

These recommendations should be accomplished as soon as practicable, with oversight from VT ANR and EPA.

10.0 PROTECTIVENESS STATEMENTS

Because the remedy selected for the Site is protective, the Site is protective of human health and the environment. Institutional controls have been recorded. The institutional controls have prevented exposure to site groundwater, thereby ensuring the Site remains protective of human health. In addition, Vermont reclassified the groundwater beneath the site to non-potable use only. Annual reports certify compliance with the institutional controls and the Vermont Groundwater Reclassification Order. Groundwater monitoring within the TI zone has shown gradual reductions in concentrations of contaminants. Groundwater monitoring beneath and outside the TI zone demonstrates that there is no migration outside the TI zone or the Site. The monitoring program will continue to ensure that no migration outside the TI zone or the Site is occurring.

11.0 NEXT REVIEW

The next five-year review for the Tansitor Electronics, Inc. Site will be conducted in 2009. This review is required since hazardous wastes remain at the Site above levels that allow for unlimited use and unrestricted exposure.

TANSITOR FIVE-YEAR REVIEW

TABLE

TABLE 1

SUMMARY OF
CHLORINATED VOLATILE ORGANIC ANALYSES FOR GROUNDWATER
Tansitor Electronics, Inc
Bennington, Vermont

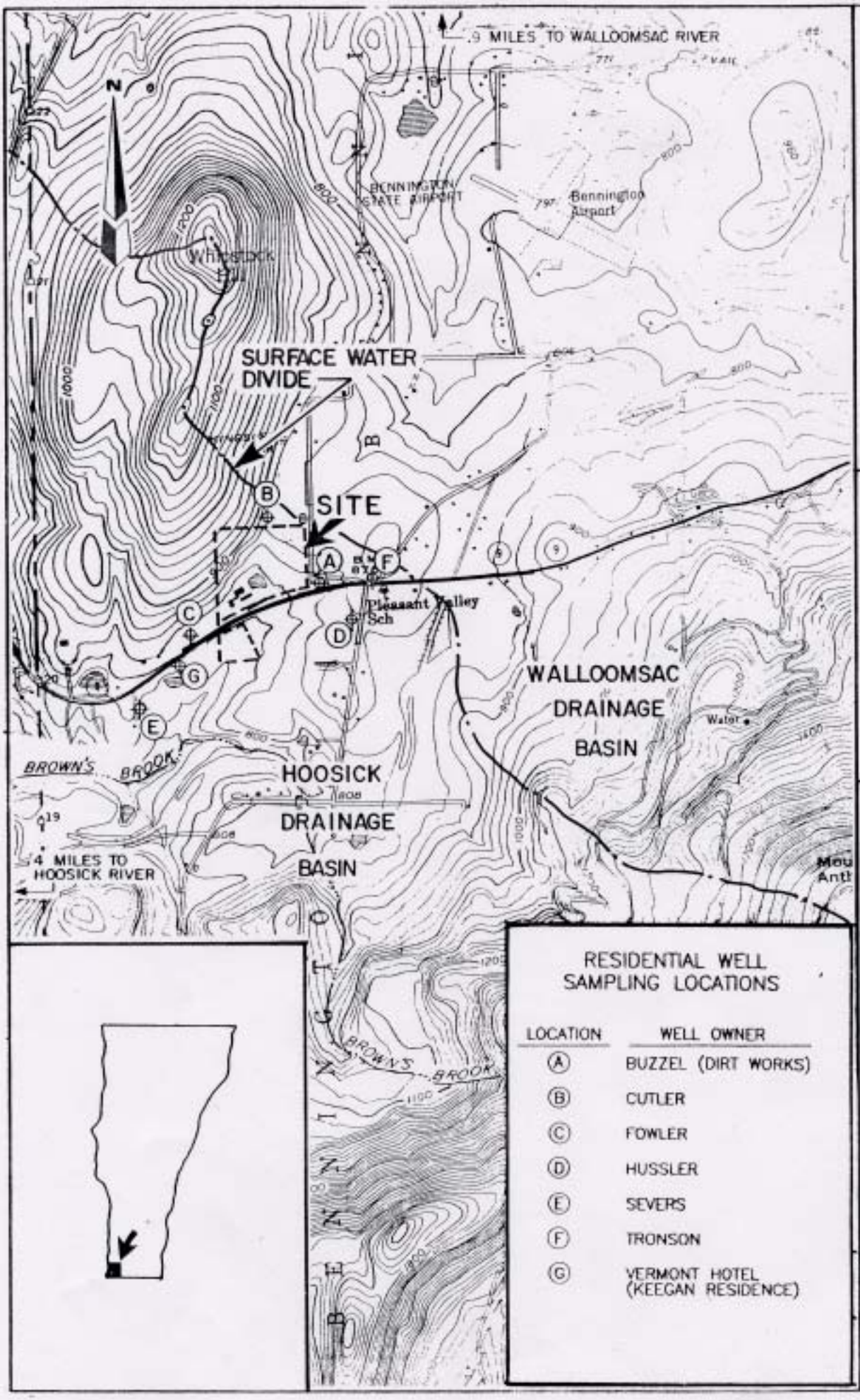
Collection Date	Well Location	INSIDE TI ZONE																												OUTSIDE TI ZONE			WATER SUPPLY WELL
	Well ID	ERM - 2S			MW-112U			MW-112M		MW-104U			MW-104M			MW-108U							ERM-4S	MW-105M	ERM-5S	ERM-5D	MW-103M	MW-103R	MW-ELF			MW-109U	MW-101M	MW-110U	MW-114U	
	Analyte	TCA	1,1 DCE	1,1 DCA	TCA	1,1 DCE	1,1 DCA	TCA	1,1 DCE	TCA	1,1 DCE	1,1 DCA	TCA	1,1 DCE	1,1-DCA	TCA	PCE	TCE	1,1 DCE	1,1 DCA	1,2 DCE	CA	1,1 DCA	TCA					TCA	1,1 DCA	CA				
10-May-94		130,000	2,500	240 J	NS					650	12J	77				2,000	20J	19J	470	280	50J								9J						NS
18-Oct-94		420,000	5,200J		NS			6J		8J						2,200	36J	27J	560	350															NS
18-Apr-95		86,000	1,300J		NS			20	1	700	15J	110				2,200	28J	27J	480	300									8						NS
30-Oct-95		NS	NS		NS			48	3J	1,200	31J	89J	4J	4J		3,200	47J	39J	850	480															NS
15-Apr-96		84,000	870J		NS			34	2J	440	9J	120	110			2,400E	47J	2J	480E	290E	40								3J						NS
8-Oct-96		110,000			NS			24	2J	1,200			49	6J		2,000	76J	42J	700																NS
19-May-97		140,000	2,600J		NS			22	2J	620		140	140			2,600	130J	94J	750	480	97J								1J						NS
13-Oct-97		130,000E	2,300	2,600	NS			38	3J	850		160	18			2,000	72J	45J	700	390															NS
8-May-98		36,000	1,400J		NS			83	10	370	12J	140	130	20		1,800	97J	47J	640	390	60J								2J						NS
13-Oct-98		56,000	1,200J		NS			89	13	1,100	24J	320	19			1,900E	80	44J	630	400	60J														NS
27-Jan-99		NS			NS			96	11	NS			48	7J		NS							NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
13-Apr-99		49,000	1,200J		NS			120	16	410	10J	190	140	21		1,600	96J	45J	560	370	56J														NS
27-Jul-99		NS			NS			120	18	NS			120	18		NS							NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
6-Oct-99		39,000			NS			150	18	860		370	130	16	6.4	1,600			690	380	77														NS
12-Jan-00		NS			10,000	510J	2,400	200	28	650	16J	300	170	25	1J	NS							NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
11-Apr-00		63,000	2,100J	410J	8,100	500	1,100	160	23	680	21J	220	180	29	1J	1,300	63J	34J	420	310	44J	8J							3J						NS
19-Jul-00		NS			8,000	360J	1,000	180	25	710	13J	220	170	29		NS							NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
10-Oct-00		46,000	1,600J	3,200J	5,900	420	700	170	28	1,100	29J	300	150	27	1J	400E	70	35	540E	330E	46	17													NS
16-Jan-01		NS			7,400	400J	1,800	280	44	1,600	30J	280	180	32	1J	NS							NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
10-Apr-01		46,000	890J		7,200	370J	1,800	270	44	560	14J	210	220	27	2J	1,100	60J	32J	410	340	44J	21J		1J					3J	3J					NS
12-Jul-01		NS			6,800	370J	960	240	39	1,400	26J	360	170	29	1J	NS							NS	1J	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
9-Oct-01		Dry			3,400	240	250	330	52	1,200	14J	410	34	6J		1,400	77J	41J	550	390	52J	26J													NS
22-Jan-02		NS			3,700	280J	370	510	86	1,300	26J	470	330	53	3J	NS							NS	1J	NS	NS	NS	NS	NS			NS	NS	NS	NS	
9-Apr-02		4,900	120J		22,000	1,200J	18,000	590	100	560	11J	360	150	21	1J	2,100	62J	48J	500	570		40J							2J	2J					
21-May-02		NS			6,200	400J	2,600	680	140	NS			NS			NS							NS		NS	NS	NS	NS	NS			NS	NS	NS	NS	
17-Jul-02		NS			3,000	200J	560	630	110	120	3J	42	13	3J		NS							NS		NS	NS	NS	NS	NS			NS	NS	NS	NS	
15-Oct-02		26,000	690J	570J	3,200	210J	250	810	130	110	2J	95	9J	2J		1,800	56J	42J	510	440	46J	47J		2J											
29-Jan-03		NS			3,800	290	300	700	140	510	13J	360	39	8J		NS							NS	2J	NS	NS	NS	NS	NS			NS	NS	NS	NS	
23-Apr-03		18,000	720J	290J	4,000	290	260	750	150	310	7J	210	67	12		1,900	30J	34J	580	530	37J	51J		3J											
15-Jul-03		NS			2,500	160J	200J	490	93	130	3J	57	85	16		NS							NS	4J	NS	NS	NS	NS	NS			NS	NS	NS	NS	
30-Oct-03		20,000	270J		4,300		270	470	85	360	12J	240	7J	2J		1,400	32J	31J	420	390	31J	37J	2J	4J											
21-Jan-04		NS			3,900	260	260	550	110	600	16	380	56	11		NS							NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	
20-Apr-04		23,000	990J	240	4,600	310	300	610	120	600	14J	380	64	14		1,500	39J	27J	470	460	35J	51J		5.2											

Notes:

1. Results are in ug/l (ppb)
2. TCA - 1,1,1 Trichloroethane
   1,1 DCE - 1,1 Dichloroethene
   1, 1 DCA - 1,1 Dichloroethene
   PCE - Tetrachloroethylene
   1,2 DCE - 1,2 Dichloroethene
   CA - Chloroethane
3. Blank space indicates not detected above method detection level
4. NS - Not Sampled
5. J - Estimated value below method detection level
   E - Estimated value from diluted sample, value exceeded calibration range
6. Vinyl Chloride has not been detected since sampling began.
7. Quarterly sampling of Tansitor Water Supply Well and MW-105M started on January 22, 2002
8. Starting in April 2004, samples from the Water Supply Well and MW-105M analyzed by Method 524.2
9. Well MW-105M not sampled in January 2004. Water in well was frozen

TANSITOR FIVE-YEAR REVIEW

FIGURES



DESIGNED BY: DJA
CHECKED BY: MMS
REVIEWED BY: WRN
DRAWN BY: R.R.M.
SCALE: 1: 25000
DATE: FEB. 1992

GZA GeoEnvironmental, Inc.

GRAPHIC SCALE
0' 1000' 2000' 4000'

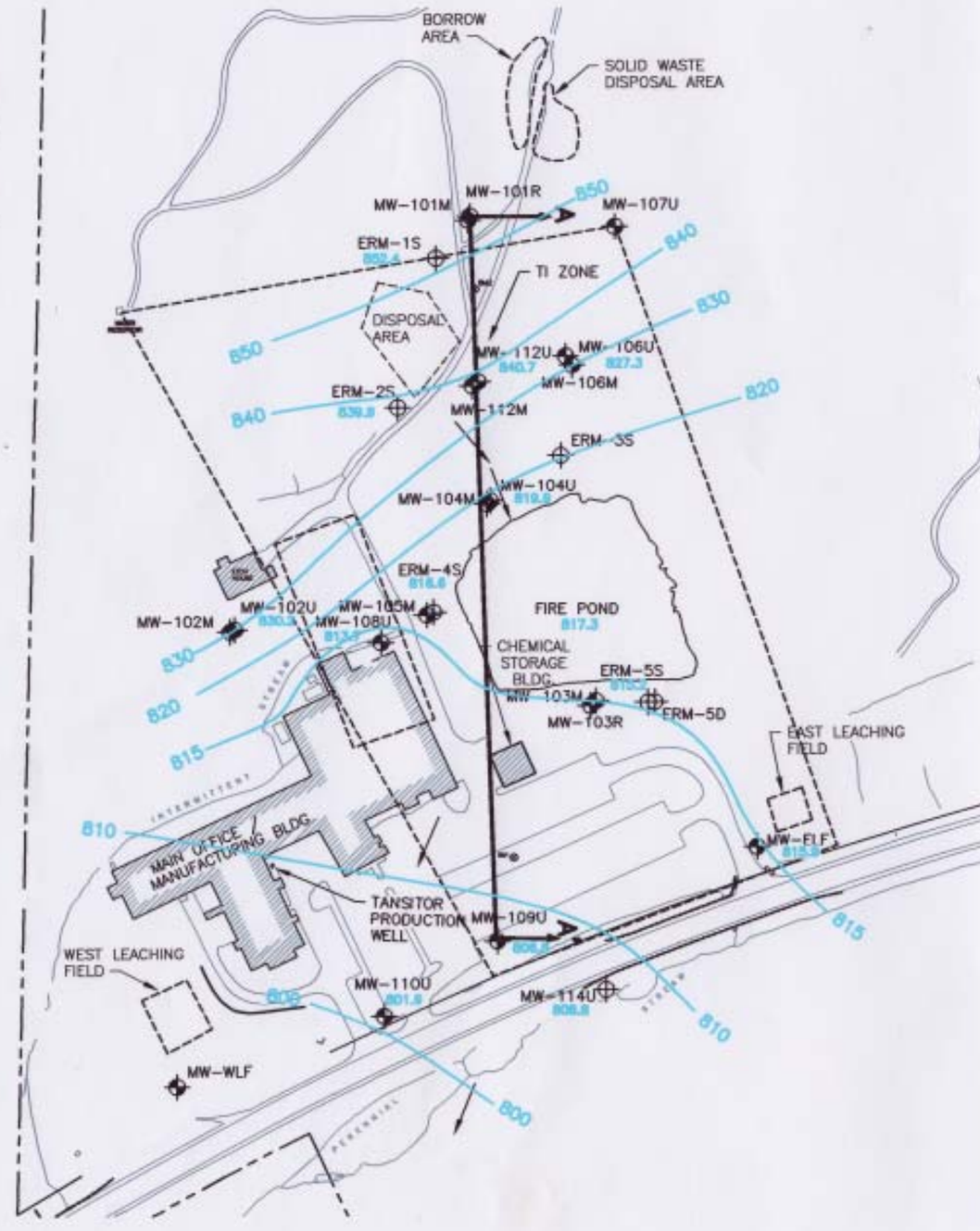
SOURCE: U.S.G.S. HOOSIC FALLS, N.Y.-VT., POWNAL, NORTH POWNAL & BENNINGTON VT. QUADRANGLE MAPS 1954 & 1980

TANSITOR ELECTRONICS, INC.
RI / FS STUDY
BENNINGTON, VT.

LOCUS PLAN

PROJECT NO
12596.50

FIGURE No.
1



NOTES:

1. BASE MAP DEVELOPED FROM PLANS PROVIDED BY ROBINSON AERIAL SURVEY AND GERALD E. MORRISSEY, INC. DATED (10/7/91,) ORIGINAL SCALE (1"=20'). FORMAT PROVIDED BY AUTOCAD. DWG FILE.
2. GROUNDWATER LEVEL MEASUREMENTS TAKEN ON APRIL 20, 2004 BY TANSITOR REPRESENTATIVES.
3. CONTOUR PLAN CONSTRUCTED USING GROUNDWATER ELEVATIONS FROM SHALLOW ("S"OR"U") WELLS.

LEGEND:

MW-106U
827.3 —— INDICATES GROUNDWATER ELEVATION

INDICATES GROUNDWATER CONTOUR

INDICATES GROUNDWATER FLOW DIRECTION

A A'

LOCATION OF CROSS-SECTION SHOWN ON FIGURE 2.

TECHNICAL IMPRACTICABILITY (TI) ZONE

Original includes color coding.

REV. NO.	DESCRIPTION	BY	DATE

PROJ MGR: WRN OPERATOR: WBH
DESIGNED BY: WRN
REVIEWED BY: WRN DATE: 7/16/04

GZA GeoEnvironmental, Inc.

SCALE 1"=165'
0 82.5' 165' 330'

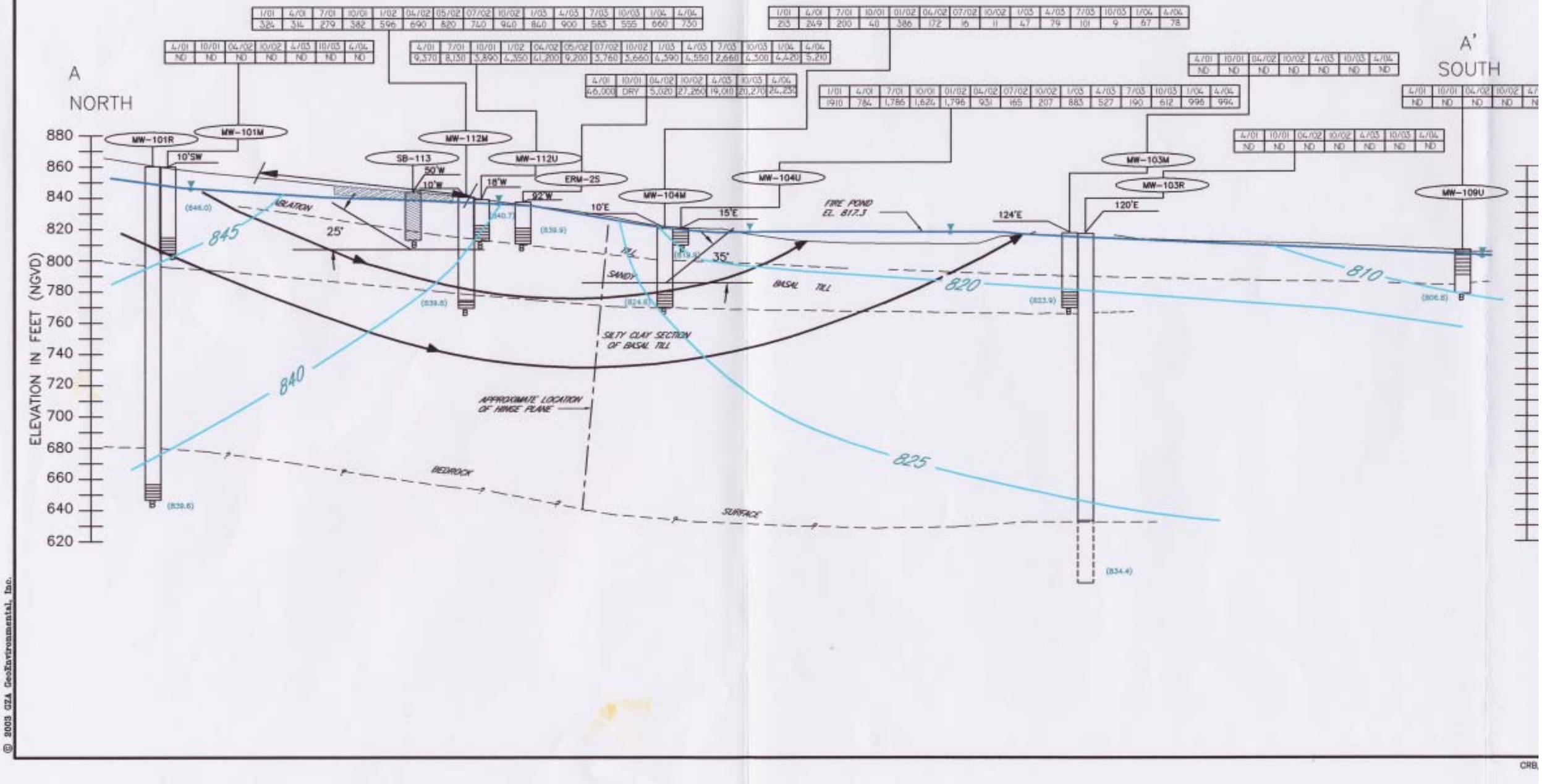
TANSITOR ELECTRONICS, INC.
BENNINGTON, VERMONT

GROUNDWATER CONTOUR PLAN, APRIL, 2004

JOB NO. 12596.68

FIGURE NO. 2

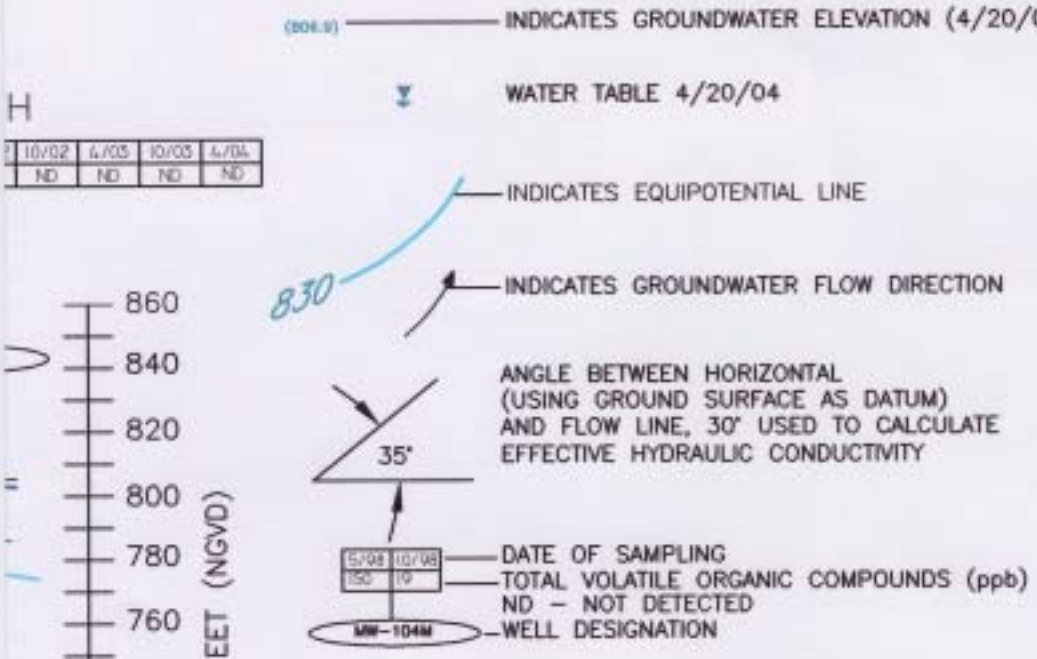
CRB, 07/16/2004, 08:58:14 | PCP: ZTA68F01.CTB | FILE: G:\12596.ZTA\12596-68.WRN\FIGURES\ZTA68F081.DWG



NOTES:

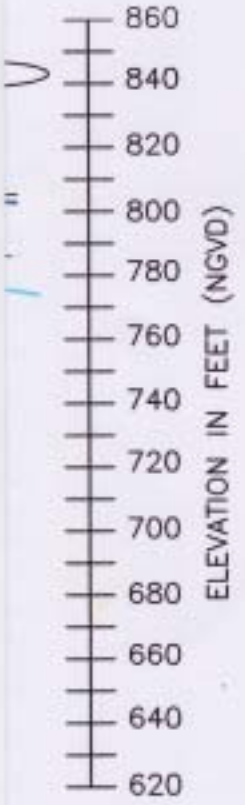
1. REFER TO FIGURE 1 FOR CROSS SECTION LOCATION
2. REFER TO APRIL 2002 REPORT FOR ANALYSES PRIOR TO 1/01.
3. THE FLOW NET IS A TRANSFORMED SECTION WHICH ACCOUNTS FOR AQUIFER ANISOTROPY. THEREFORE, THE GROUNDWATER FLOW DIRECTION ARROWS ARE PERPENDICULAR TO THE EQUIPOTENTIAL LINES. REFER TO PG. 64 OF THE SEPT. 2, 1994 RI REPORT FOR DETAILS.

LEGEND:



H

10/02	4/03	10/03	4/04
ND	ND	ND	ND



REV. NO.	DESCRIPTION	BY	DATE

PROJ MGR: WRN
DESIGNED BY: WRN
REVIEWED BY: WRN
OPERATOR: WBH
DATE: 7/16/04

GZA GeoEnvironmental, Inc.

VERTICAL SCALE: 1"=60'
0 30' 60' 120'
HORIZONTAL SCALE: 1"=60'
0 30' 60' 120'

TANSITOR ELECTRONICS, INC.
BENNINGTON, VERMONT

HYDROGEOLOGIC CROSS SECTION A-A' AND FLOW NET I:I SCALE
APRIL 20, 2004

JOB NO.
12596.68

FIGURE NO.
3

TANSITOR FIVE-YEAR REVIEW

APPENDICES

APPENDIX A

Document Review List

EPA, 1989. *Record of Decision, Tansitor Electronics, Inc. Superfund Site, Bennington, Vermont.* U.S. Environmental Protection Agency, Region 1, Boston, Massachusetts. September 29, 1995

EPA, 1999. *Certification of Completion of Remedial Action.* Terrence Connelly, U.S. Environmental Protection Agency, Region 1, Boston, Massachusetts. November 10, 1999.

EPA, 1999. *Modification of the Statement of Work, Appendix B of the March 24, 1999 Consent Decree.* Terrence Connelly, U.S. Environmental Protection Agency, Region 1, Boston, Massachusetts. November 19, 1999

EPA, 1999. *Notice of Deletion of the Tansitor Electronics, Inc. Site from the National Priorities List.* U.S. Environmental Protection Agency, Federal Register, September 29, 1999 (Volume 64, Number 188).

GZA 1999. *Report of Completion of Remedial Action Tansitor Electronics, Inc. Bennington, Vermont.* William Norman, GZA Geoenvironmental, Inc. Newton Upper Falls, Massachusetts. October 12, 1999

GZA 2001. Letter to Michael Smith, VTANR, *Contingency No. 5, Consent Decree, Tansitor Electronics Facility Bennington, Vermont.* William Norman, GZA Geoenvironmental, Inc. Norwood, Massachusetts. November 30, 2001.

GZA, 2002. *Groundwater Monitoring and Conceptual Model Evaluation Report, October 2001 Sampling Round Tansitor Electronics, Inc. Bennington, Vermont.* William Norman, GZA Geoenvironmental, Inc. Norwood, Massachusetts. January 16, 2002.

GZA, 2004. *Groundwater Monitoring and Conceptual Model Evaluation Report, October 2003 Sampling Round Vishay-Tansitor Electronics, Inc. Bennington, Vermont.* William Norman, GZA Geoenvironmental, Inc. Norwood, Massachusetts. January 20, 2004.

GZA, 2004. *Groundwater Monitoring and Conceptual Model Evaluation Report, April 2004 2001 Sampling Round Vishay-Tansitor Electronics, Inc. Bennington, Vermont.* William Norman, GZA Geoenvironmental, Inc. Norwood, Massachusetts. July 28, 2004

Goodwin, Proctor & Hoar, 2000. Letter to US EPA and VT ANR. Annual Report on Institutional Controls and Insurance. Colleen Lovely, Goodwin, Proctor & Hoar, Boston, Massachusetts. March 22, 2000.

Goodwin, Proctor & Hoar, 2002. Letter to US EPA and VT ANR. Annual Report on Institutional Controls and Insurance. Colleen Lovely, Goodwin, Proctor & Hoar, Boston, Massachusetts. November 14, 2002.

Goodwin, Proctor & Hoar, 2003. Letter to US EPA and VT ANR. Annual Report on

Institutional Controls and Insurance. Nathan Brodeur, Goodwin, Proctor & Hoar, Boston, Massachusetts. March 24, 2003.

United States of America and State of Vermont, 1999. *Consent Decree - United States of America, Plaintiff v. Tansitor Electronics, Inc. and Siemens Communication Systems, Inc. Defendants*. U.S. Environmental Protection Agency, Region 1, Boston, Massachusetts and Vermont Agency of Natural Resources, Waterbury, Vermont. March 24, 1999.

VT ANR, 1999. Letter to Ms. Patricia Meaney, Office of Site Remediation and Restoration Director, EPA Region 1. Canute Dalmasse, Vermont Agency of Natural Resources, Waterbury, Vermont. December 3, 1999.

VT ANR, 2000. Letter to Mr. Carroll Killen, Tansitor Electronics, Inc. Michael Smith, Vermont Agency of Natural Resources. August 24, 2000

VT ANR, 2001. Letter to Mr. Carroll Killen, Tansitor Electronics, Inc. Michael Smith, Vermont Agency of Natural Resources. January 4, 2001.

VT ANR, 2002. Letter to Mr. William Brown, Tansitor Electronics, Inc. Michael Smith, Vermont Agency of Natural Resources. August 7, 2002.

VT ANR, 2004. Letter to Mr. John Evans, Vishay-Tansitor Electronics, Inc. Michael Smith, Vermont Agency of Natural Resources. January 30, 2004.

VT ANR, 2004. Letter to Mr. John Evans, Vishay-Tansitor Electronics, Inc. Michael Smith, Vermont Agency of Natural Resources. September 7, 2004.

Vishay-Tansitor, 2004. *July 7, 2004 Groundwater Sampling Test Results.* Adrian Paris, Vishay-Tansitor Electronics, Inc. Bennington, Vermont. July 28, 2004.

APPENDIX B

Vermont Groundwater Reclassification Order November 1993 and amended March 1994

STATE OF VERMONT
AGENCY QF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CLASS 4 GROUNDWATER

Modification to Reclassification Order of November 23, l993

Re:

Application of
Tansitor Electronics, Inc.
For a Reclassification
of a Portion of The Groundwater Resources
at the Tansitor site in Bennington, Vermont

February 28, l994

I. Background

On November 23, 1993, the Secretary of the Agency of Natural Resources issued a Groundwater Reclassification order under the authority of l0 V.S.A., Chapter 48, for a portion of the groundwater at the site of Tansitor Electronics, Inc. ("Tansitor"), in Bennington, Vermont.

This order reclassified an approximately 9.6 acre area of ground, wholly on Tansitor's property, from Class 3 (suitable for use as a domestic water supply, and for some industrial and agricultural purposes) to Class 4 (not potab1e, but suitable for some industrial and agricultural purposes).

The reclassification order imposed four conditions on the applicant, Tansitor, to facilitate appropriate oversight over the next five years. The conditions required two major actions by the applicant:

1. Surveying, boundary marking, and filing of a map in the town records, so the public would have available information on location of the reclassified area was, and

2. Continued monitoring of the site to track the subsurface conditions near and within the reclassified area.

Tansitor has requested modifications to the order, based on economic considerations, contending that the purpose of the order could be upheld at a lower cost to Tansitor.

II. Findings

1. No change in the 1ocation or size of the reclassified area has been requested.

2. For certain monitoring wells, with high levels of contaminants of concern in them, adherence to extremely low levels of detection places an unnecessary economic burden on the applicant.

3. Silver is a secondary contaminant under drinking water regulations, with no known health effects. Two years of monitoring results with no detection of silver is an adequate oversight For this chemical, on a well-by-well basis.

4. Lead is a primary contaminant with significant health effects, and there is a substantial public interest in environmental lead. Semi-annual monitoring for this contaminant, for at least five years, is in the public interest.

5. Groundwater sampling twice per year, in the fall and spring, provides information correlated to seasonal fluctuations of subsurface groundwater conditions. Two samples per year provides increased statistical validity in analyzing for and detecting [rends in subsurface groundwater conditions.

6. Self-monitoring is a basic tenet of the state's environmental programs. With appropriate training and oversight, a specific employee of Tansitor may perform sampling and reporting on behalf of Tansitor.

7. By adding another existing monitoring well to the list of wells to be monitored, and alternating sampling from that welt with another well nearby, additional subsurface groundwater data will be available at no increased cost to Tansitor.

III. Modifications to the Reclassification Order

Based on the findings noted herein, on petition of Tansitor Electronics, Inc., and on recommendation of the Groundwater Coordinating Committee, I order the following changes to the reclassification order issued on November 23, 1993.

1. For the following observation wells, the detection limits shall be low enough to provide an accurate representation of the contaminant levels:

   ERM-2S
   MW-104U
   MW-108V

   For the remaining observation wells, the detection limit is unchanged from the order.

2. For each observation well, after two years of semi-annual sampling and no detection of silver, Tansitor may discontinue sampling tor silver at that well.

3. Upon written approval from the Secretary of the Agency of Natural Resources, Tansitor may conduct self-monitoring and self-reporting of sample results, by a specific, named, employee. In the event the Secretary does not approve self-monitoring and reporting, or withdraws such approval, Tansitor shall use an independent consultant to perform these tasks.

4. Tansitor shall alternate semi-annual monitoring between the two observation wells MW-112M and MW-104M. This monitoring requirement replaces the requirement for semi-annual monitoring of well MW-104M.

Barbara G. Ripley
Secretary

Date: 3/10/94

State of Vermont

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist
Natural Resources Conservation Council

Telephone Relay Service
for the Hearing Impaired
1-800-253-0191 TDD > Voice
1-800-253-0195 Voice > TDD

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
WATER SUPPLY DIVISION
The Old Pantry Building
103 South Main Street
Waterbury, VT 05671-0403

TELEPHONE (802) 241-3400
FACSIMILE (802) 244-5141

DEC 01 1993

November 24, 1993

Carroll Killen, Director
Tansitor Electronics, Inc.
P.O. Box 230
Bennington, VT 05201

Dear Mr. Killen:

Enclosed please find a reclassification document, reclassifying a portion of the lands owned by Tansitor in Bennington as Class 4, or non-potable. The document has been signed by the Secretary of Natural Resources, in accordance with the provisions of 10 V.S.A., Chapter 48, governing reclassification of groundwaters of the state.

In this department's and the Groundwater Coordinating Committee's reviews of your petition, the opinion of the reviewers was that it was in the public interest to reclassify this portion of the groundwater to a non-potable classification. In reaching this recommendation ta the Secretary, we examined the criteria specified in statute and reached the findings described n the reclassification document.

I ask you to give your attention to the following requirements and conditions of the reclassification:

1. The area reclassified is not identical to the area in your petition. This simpler shape was done to facilitate identification and tracking of the actual land area involved.

2. Your petition requested a classification that was both horizontally and vertically delineated. Even if we had agreed that such a designation was appropriate, the language in the Groundwater Protection Rule & Strategy does not provide for a vertical reclassification. Accordingly, all groundwater beneath the area designated as Class 4 is Class 4 groundwater at all depths.

3. The reclassification contains upgradient, plume, and downgradient: monitoring requirements on a semi-annual basis. Please contact us to establish who will do the sampling and who will analyze the results.

4. Tansitor must engage the services of a Vermont licensed surveyor to describe the reclassified area accurately, to prepare a plan of it, and to mark the corners of the reclassified area in the field with permanent markers. This will facilitate identification of the actual reclassified area.

5. Although not discussed in this document, you should know that we will, under the drinking water regulations, be requiring the company to monitor the company well adjacent to the Class 4 area for the contaminants of concern, among others. This monitoring will be required in accordance with the Vermont Water Supply Rule and is not a special or additional requirement of this reclassification.

Please review this document carefully, and if you would like to discuss it further or need clarification of the requirements, please feel free to contact me.

Finally, we appreciate and thank you for the civilities and courtesies you have shown to us as we have considered and reviewed your petition.

Sincerely,

Jay L. Rutherford, P.E., Director

cc: Governor Dean
Rep. Richard Pembroke
Merrill Hohman, US EPA w/encl
Jane Downing, US EPA w/encl
Secretary Chuck Clarke
Commissioner Jack Long
William Ahearn, DEC-HMMD w/encl
Groundwater Coordinating Committee Members w/encl

STATE OF VERMONT
AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CLASS 4 GROUNDWATER

Findings and Reclassification Order
Re:

Application of
Tansitor Electronics, Inc.
For a Reclassification
of a Portion of The Groundwater Resources
at the Tansitor site in Bennington, Vermont

November 18, l993

I. Background

On July l5, 1993 the Water Supply Division received an application from Tansitor Electronics, Inc. to reclassify a portion of the groundwater under its site on Vermont Route 9 west of Bennington, Vermont. The application contained a summary report on the conditions at the site which led up to the application with reference to four other reports with detailed information.

According to the reports, the groundwater at the site has been contaminated by industrial solvents including 1,1,1-trichloroethane, 1,1-dichloroethane and other volatile organic compounds which have reached the groundwater as a result of historic disposal practices. These practices stopped approximately fifteen years ago.

The application requesting reclassification from Class 3 groundwater to Class 4 groundwater, due to concentrations of chemicals exceeding drinking water standards, was signed by 72 affected or potentially affected persons. The package was reviewed by hydrogeologists assigned to the Hazardous Materials Management and Water Supply Divisions and determined to be complete with minor exceptions. By letter dated July 29, 1993 Tansitor's consultant, Environmental Project Control, Inc. responded to the noted exceptions and the application was judged complete on that date.

A notice of a public hearing was mailed to all known parties of interest and published in the Bennington Banner on August 11, l993.

An informal public hearing was held on September I5, 1993 in the Mt. Anthony Union High School with approximately forty persons in attendance. There were no adverse comments to the reclassification request. Approximately 5 commentors focused their remarks on the projected economic hardships if Tansitor were denied the reclassification, and as a result were forced to conduct additional expensive testing and remediation of the groundwater.

On September 30, l993 Merrill S. Hohman, Director of the Waste Management Division, US EPA Region I, requested via letter that the Secretary not issue a reclassification order until after EPA had developed its final RI/FS and clean up plan. The plan is expected during June of l994.

II. Findings

Regarding the application from Tansitor Electronics, Inc. for a reclassification of the groundwater beneath the proposed Class 4 area at the Tansitor site in Bennington, Vermont, the Secretary of the Agency of Natural Resources, under the provisions of 10 VSA, Section 1394 and the Ground Water Rule and Strategy, Chapter 12, Section 12-401, finds:

1. Regarding the use or potential future use of the ground water as a public water supply source-

   ...that the groundwater under the attached designated Class 4 area is not in use as a public water supply source and the contamination present in the ground precludes the potential future use of the groundwater for the immediate (5 years) future.

   ...that the present water supply well for the Tansitor facility does draw its water from the fractured bedrock aquifer nearby, but there is no available evidence that indicates that the water supplying the well comes from beneath the proposed Class 4 area and it is further noted that this finding and reclassification order does not preclude the continued use of that well for the Tansitor facility as long as the water continues to meet all applicable drinking water standards;

2. Regarding the extent of the activity which poses a risk to the groundwater-

   ...that the sources of contamination found in the groundwater were the result of former, now discontinued, disposal practices which were limited in areal extent to a very small area entirely within the Tansitor property;

3. Regarding the current water quality-

   ...that the groundwater is contaminated beyond drinking water standards for 1,1,1 trichloroethane and 1, 1 dichloroethane, at a 95% confidence level.

4. Regarding the availability of the groundwater in quantities needed for beneficial use-

   ...that the unconsolidated materials overlying the bedrock demonstrate a low permeability which limits the feasibility of beneficial use and that the potential for the bedrock to yield water for beneficial uses is unknown except as indicated by the Tansitor production well and other nearby wells;

5. Regarding the consequences of potential contamination and the availability of alternate sources of water-

   ...that the groundwater is already contaminated beyond drinking water standards so that the issue of potential contamination is moot, and that the availability of alternate sources of water is demonstrated by the Tansitor production well, which continues to produce potable water and the other nearby wells which remain uncontaminated;

6. Regarding the classification of adjacent surface water and other factors relevant to determine the maximum beneficial use of the aquifer-

...that the classification of the adjacent surface water in the perennial stream south of and down gradient from the Tansitor site is Class B, suitable for public water supply use with filtration and disinfection;

...and that the current use of the property as an industrial facility is compatible with a Class 4 classification.

III. The Class 4 Groundwater Area

A map showing the Class 4 groundwater area at the Tansitor site in Bennington, VT. as ordered by the Secretary, is attached.

The area is described as:

Beginning at a point on the northerly Right-of-Way boundary of Route 9, said point being located 216 ft., more or less, southwest along the Right-of-Way boundary from the southwestern corner of a parcel of land owned now or formerly by Buzzell;

Thence, turning to the northwest approximately right angles to the Route 9 Right-of-Way, and travelling 774 ft., more or less, to a point marked by the monitoring well MW-107U;

Thence, turning to the west and travelling 586 ft., more or less, to a point marked by a water reservoir;

Thence, turning to the southeast and travelling 890 ft., more or less, to a point in the northerly boundary of the Route 9 Right-of-Way, said point being located a distance of 424 ft., more or less, along the northerly boundary of Route 9, from the point oi beginning;

Thence, travelling along the northerly boundary of the Route 9 Right-of-Way a distance of 424 ft., more or less, to the point of beginning.

Said area contains 9.6 acres, more or less.

IV. Conditions of This Reclassification Order.

1. Monitoring of the groundwater is required to determine the need, if any, for future modifications or extensions of the reclassification order. Tansitor Electronics, Inc., as a condition of this reclassification order, shall conduct the following monitoring of the groundwater at its site.

There are four monitoring areas in the Tansitor Class 4 groundwater quality monitoring plan. These are:

1. Disposal Area/Fire Pond Plume Monitoring
2. Concrete Pad Plume Monitoring
3. Downgradient Compliance Monitoring
4. Upgradient Background Monitoring

Groundwater monitoring shall be conducted semi-annually in the Spring and fall for a period of at least five (5) years commencing January 1, 1994. The monitoring schedule shall be reconsidered by the Water Supply Division at the completion of the first five year monitoring period and petitioner may be required to continue monitoring.

Monitoring shall be conducted by an independent consultant and analyses shall be performed by a laboratory acceptable to the Secretary. All analyses shall be evaluated by methods with detection limits as good or better than the Preventive Action Limits in Subchapter 7 of Chapter l2 of the Environmental Protection Rules, Ground Water Protection Rule & Strategy.

The groundwater samples taken from the Disposal Area/Fire Pond, Concrete Pad and downgradient monitoring wells shall be analyzed for the volatile organic Contaminants of Concern and lead and silver. The upgradient monitoring wells shall be monitored for VOCs and lead and silver.

The wells to be monitored in each monitoring area are described below. The well identifiers are those depicted on a map entitled Exploration and Sampling Locations Remedial Investigation (Figure 2 of the Tansitor Electronics. Inc. Class 4 Groundwater Area. Bennington.VT report. dated /15/93.

Area 1: Disposal Area/Fire Pond Plume

ERM-SS: (shallow directly down gradient monitoring)
MW-103M; (medium depth directly down gradient monitoring)
MW-103R: (deep directly down gradient monitoring)

These wells (ERM-SS, MW-103M & 103R) will allow the Department to determine if the contaminants are migrating under the Fire Pond.

ERM-2S: (shallow in-plume monitoring)
MW-104U: (shallow in-plume monitoring)
MW-104M: (medium depth in-plume monitoring)

These wells will allow the Department to determine what is occurring within the plume.

Area 2: Concrete Pad Plume

MW-108U: (shallow in-plume monitoring)

This well will allow the Department to determine what is occurring within the plume.

MW-109U: (shallow directly downgradient monitoring)
MW-l l0U: (shallow directly downgradient monitoring)

These wells will allow the Department to determine it the plume is migrating.

Area 3: Downgradient Compliance Monitoring

MW-ELF: (shallow monitoring)

This well will allow the Department to determine whether or not there is a plume directly downgradient of the eastern leaching field.

New Well: If Tansitor Electronics, Inc., is able to secure sufficient access, a shallow monitoring well designed to intercept the top ten (10) feet of the water table shall be drilled and monitored on the south side of Rte. 9, approximately halfway between MW-109U and MW-ELF. This well will allow the Department to estimate if the plume is migrating beneath the highway and to refine the groundwater flow contour map.

In the event Tansitor Electronics, Inc. is unable to secure access to lands at the location specified above, it shall install a series of shallow monitoring wells across the Class 4 Groundwater area, on the North side of Route 9, at locations to be designated by the Secretary.

Area 4: Upgradient Background Monitoring

MW-101M:

Monitoring this well will provide background water quality data at the site.

For all sampling, groundwater levels shall be taken at the time of monitoring and supplied to the Department with the sampling results.

2. Reporting

Tansitor Electronics, Inc., shall report all results from its monitoring of the groundwater required above, semi-annually on or before June 30 and December 31, 1994, 1995, 1996, l997, and 1998. The reporting shall be to the Water Supply Division, in a formal acceptable to the Secretary.

The required reports shall include all data from the monitoring, a map showing the location of the sampling points and the concentrations of the monitored compounds, and a brief report summarizing the groundwater conditions on the Tansitor site with emphasis on the groundwater quality within the Class 4 groundwater area.

3. Surveying of Class 4 Area

Within 90 days of this reclassification order, Tansitor Electronics. Inc., shall employ a licensed surveyor to prepare a map of the reclassified area, mark the corners in the field with suitable permanent markers, and prepare a description of boundaries of the reclassified area.

4. Land Records

Upon completion oi the surveying of the Class 4 area, Tansitor Electronics Inc., shall cause the map and survey description of the reclassified area to be filed in the land records of the Town of Bennington.

V. Reclassification Order

Based on the findings listed above, and other considerations, I order the reclassification of the groundwater beneath the area shown on the attached map from Class 3 to Class 4.

Chuck C Clarke

Chuck C. Clarke, Secretary

Date: 11/23/93

APPENDIX C

ARARS and TBCs

TABLE 1-1

CHEMICAL-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) AND CRITERIA TO BE CONSIDERED (TBCs)

Medium	Requirement	Summary of Requirement	Status	Action to be Taken to Achieve Requirement	Applicable Alternatives
Groundwater	Vermont Groundwater Protection Act - 10 VSA Chapter 48.	Act protects groundwater through existing regulatory programs and provides restrictions, prohibitions, standards and criteria for groundwater protection for programs which regulate activities which may affect groundwater.	Applicable	Vermont has classified the groundwater plume as Class IV, which is not acceptable for drinking but allows commercial and industrial uses. All of the alternatives will attain standards for these permitted uses at the site. Adjacent to the plume, groundwater is classified as Class III. Pump and treat (MM-3) will ensure that contaminants do not migrate and cause a violation of these standards. Monitoring (MM-2) will detect any migration of contaminants away from the Class IV area.	MM-1 MM-2 MM-3
	Vermont Groundwater Protection Rule and Strategy - 10 VSA Chapter 48, EPR Chapter 12	The standards consist of groundwater classifications, which designate and assign uses for groundwater; In addition, the regulations establish water quality criteria necessary to sustain the designated uses.	Applicable	Same as above.	MM-1 MM-2 MM-3
	EPA Groundwater Protection Strategy	Provides classification and restoration of goals of groundwater based on its vulnerability, use and value.	To Be Considered	This strategy is considered in conjunction with the Federal SDWA and Vermont Groundwater Protection Rule and Strategy in determining cleanup goals.	MM-1 MM-2 MM-3
	Federal Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) - 40 CFR Part 141	Maximum Contaminant Levels (MCLs) are enforceable standards that are applicable to drinking water supplies. MCLs are relevant and appropriate for groundwater that may be a potential source of drinking water.	Relevant and Appropriate	MCLs must be attained unless waived. None of the alternatives will attain these ARARs in a reasonable timeframe.	MM-1 MM-2 MM-3

TABLE 2-1 (CONT'D)

Medium	Requirement	Summary of Requirement	Status	Action to be Taken to Achieve Requirement	Applicable Alternatives
	SDWA Maximum Contaminant Level Goals (MCLGs) - 40 CFR 141.50-141.62	MCLG are set with a margin of safety at levels that would result in no known or anticipated adverse health effects over a lifetime.	Non-zero MCLGs are relevant and appropriate	Non-zero MCLs must be attained. None of the alternatives will attain these ARARs in a reasonable time frame.	MM-1 MM-2 MM-3
	RCRA Groundwater Protection Standard - 40 CFR 264.94	The RCRA groundwater protection standard is established from groundwater monitoring of RCRA permitted treatment, storage or disposal facilities. The standard is set at either an existing or proposed RCRA-MCL, background concentration, or an alternate concentration protective of human health and the environment. RCRA-MCLs may be used or ACLs may be developed at the site to identify levels of contamination above which human health or the environment is at risk and provide an indicator when corrective action is necessary.	Relevant and Appropriate	Compliance with concentration limits and regular monitoring requirements will be considered in developing remedial alternatives for groundwater. None of the alternatives will achieve RCRA - MCLs in a reasonable time frame. MM- 2 and MM-3 will meet monitoring requirements.	MM-1 MM-2 MM-3
	US EPA Reference Doses (RfDs)	RfDs are dose levels developed by EPA for use in the characterization of risks due to non-carcinogens in various media.	To Be Considered	RfDs are typically employed to characterize risks of groundwater contaminant exposure (for ingestion pathways).	MM-1 MM-2 MM-3
	EPA Carcinogen Assessment Group Potency Factors	EPA Carcinogenic Potency Factors are used to compute the individual incremental cancer risk resulting from exposure to carcinogens.	To Be Considered	These factors are used to assess health risks from carcinogens present at the site.	
	EPA Health Advisories and Acceptable Intake Health , Assessment Documents	Intended for use in qualitative public health evaluation of remedial alternatives.	To Be Considered	Used, if adequate data exist, in assessing health risks from ingesting groundwater at the site.	

TABLE 1-2

LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) AND CRITERIA TO BE CONSIDERED (TBCs)

Medium	Requirement	Summary of Requirement	Status	Action to be Taken to Achieve Requirement	Applicable Alternatives
Wetlands	Vermont Wetlands Protection Law (10 VSA Chapter 37) and the Vermont Wetland Rules.	The rules require that the Vermont Water Resources Board adopt rules to identify and protect Vermont's significant wetlands. These standards include wetland classification. Any activities within fifty-foot buffer zones around vegetated wetlands, or within the wetlands, require the filing of a Request for Conditional Use Determination with the ANR.	Applicable	Protection of wetlands and compliance with the substantive requirements of these regulations will be incorporated into the design.	MM-2 MM-3
	Federal Clean Water Act (CWA) (33 USC 1344) 40 CFR 230, 404.	Applies to dredge and fill activities. Under this requirement, no activity that adversely affects a wetland shall be permitted if a practicable alternative that has less effect is available. Appropriate and practicable steps must be taken to minimize the potential adverse impacts of the discharge on the aquatic ecosystem.	Applicable	During the identification, screening, and evaluation of alternatives, the effects on wetlands are evaluated. All work will be performed in accordance with these regulations.	MM-2 MM-3
	Executive Order 11990, Protection of Wetlands - 40 CFR 6, Appendix A	Under this regulation, Federal agencies are required to minimize the destruction, loss or degradation of wetlands and preserve and enhance natural beneficial value of wetlands.	Applicable	Remedial alternatives that involve construction must include all practical means of minimizing harm to wetlands, Wetlands protection consideration must be incorporated into the design of the remedial action.	MM-2 MM-3
	Fish and Wildlife Coordination Act (16 USC 661)	This regulation requires that any Federal Agency that proposes to modify a body of water must consult with the U.S. Fish and Wildlife Services, Addressed under CWA regulations at 40 CFR 230 and 404.	Applicable	During the identification, screening, and evaluation of alternatives, the effects on wetlands are evaluated. If an alternative modifies a body of water, EPA must consult U.S. Fish and Wildlife Services.	MM-2 MM-3
	Endangered Species Act of l 973 (16 USC 531) 50 CFR 200 and 50 CFR part 402	This regulation is designed to protect endangered species. Consultation with the Department of the Interior is required if endangered species are identified at or near the site.	Applicable	Design of remedial action must include means to minimize disruption of the natural environment.	MM-2 MM-3

TABLE 2-2 (CONT'D)

Medium	Requirement	Summary of Requirement	Status	Action to be Taken to Achieve Requirement	Applicable Alternatives
Flooodplains	RCRA Location Standards - 40 CFR 264.18 and 761.75	This regulation outlines the requirements for construction of a RCRA facility on a l00-year flood lain.	Applicable	No activities are expected to take place in a 100 year floodplain.	None
	Executive Order 11988, Protection of Floodplains - 40 CFR 6. Appendix A	Federal Agencies are required to reduce the risk of flood loss, minimize impact of floods and restore and preserve the natural and beneficial value of floodplains.	Applicable	No activities are expected to take place in a 100 year floodplain.	None
Groundwater	Vermont Groundwater Protection Rule and Strategy - 10 VSA Chapter 48, EPR Chapter 12	Instructs the ANR to identify, map, and classify groundwater into classes so that various groundwater resources shall be enhanced, maintained and protected, The regulations prescribe the minimum water quality criteria required to sustain the designated uses. The Hazardous Material Management Division of the Department of Environmental Conservation reviews petitions for the reclassification of groundwaters to Class I, Il or IV status.	Applicable	The ANR approved a petition to reclassify the site area groundwater to Class IV status on November 1S, 1993. The requirements provided in A WR's determination must be followed.	MM-1 MM-2 MM-3

TABLE 1-3

ACTION-SPECIFIC APPLICABLE OR RELEVANT
AND APPROPRIATE REQUIREMENTS (ARARs) AND CRITERIA TO BE CONSIDERED (TBCs)

Requirement	Summary of Requirement	Status	Action to be Taken to Achieve Requirement	Applicable Alternatives
Federal National Emission Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR 61)	Specify maximum emission rates of hazardous air pollutants.	Applicable	Remedial alternatives involving air emissions from treatment units must comply with these regulations.	MM-3
RCRA 40 CFR 264 Subpart AA, Air Emission Standards for Process Vents	Regulates facilities that have operations involving air emissions above particular levels.	Relevant and Appropriate	Air Stripping System must conform to these requirements.	MM-3
RCRA 40 CFR 264 Subpart BB, Air Emission Standards for Equipment Leaks	Requirements governing response to equipment leaks at facilities that may cause air emissions.	Relevant and Appropriate	If, during implementation of remedial action, equipment leaks occur the response must be in conformance with this Subpart.	MM-3
OSWER Directive 9355.0-28, Air Stripper Control Guidance	Guidance regarding use of air emission controls at CERCLA sites.	To Be Considered	The remedial action should address this guidance.	MM-3
Department of Transportation (DOT) (49 CFR 107,171.1-171.5)	Regulations for off-site transport of hazardous waste. Regulations specify procedures for packaging, labeling, manifesting, as well as transportation.	Applicable	Off-site shipment of hazardous materials will have to be properly contained, labeled and manifested.	MM-2 MM-3
Fish and Wildlife Coordination Act (16 USC 661)	Requires the notification of the appropriate State agency exercising jurisdiction over Wildlife Resources and U.S. Fish and Wildlife Service, when undertaking any Federal action that modifies any body of water or affects fish and wildlife.	Applicable	Relevant federal agencies must be contacted to help analyze impacts of remedial action on wildlife in wetlands and rivers.	MM-3
Resource Conservation and Recovery Act (RCRA) Subtitle C, 40 CFR 260	RCRA regulates the generation, transport, storage, treatment and disposal of hazardous waste.	Relevant and Appropriate	Remedial alternatives involving transport, storage and disposal of materials must comply with these regulations.	MM-2 MM-3

TABLE 2-3 (CONT'D)

Requirement	Summary of Requirement	Status	Action to be Taken to Achieve Requirement	Applicable Alternatives
40 CFR 264 Subpart B - General Facility Standards for Owners and Operators of Permitted Hazardous Waste Facilities (40 CFR 264.10 - 264.18) Subpart C - Preparedness and Prevention 40 CFR 264.30-264.37	General facility requirements outline general waste analysis, security measures, inspections and training requirements.	Relevant and Appropriate	Any facility will be constructed, fenced, posted, and operated in accordance with this requirement.	MM-2 MM-3
	Requirements for safety equipment and spill control.	Relevant and Appropriate	Safety and communication equipment will be maintained at the site. Local authorities will be familiarized with site operations.	MM-2 MM-3
Subpart D - Contingency Plan and Emergency Procedures 40 CFR 264.50 - 264.56	Requirements for response to procedures such as explosions and fires.	Relevant and Appropriate	Plans will be developed and implemented during site work. Copies of plans will be kept on site.	MM-3
Subpart E - Manifesting, Record-keeping and Reporting (40 CFR 264.70 - 264.77)	Requirements for reporting and recordkeeping at RCRA facilities.	Relevant and Appropriate	Those parts of the regulation concerned with long term monitoring and maintenance of the site will comply with this requirement.	MM-2 MM-3
Subpart F - Groundwater Protection (40 CFR 264.90 - 264-101)	Requirements for groundwater monitoring program for the site.	Relevant and Appropriate	Those parts of the regulation concerned with long term monitoring and maintenance of the site will comply with this requirement.	MM-2 MM-3
Subpart G - Closure and Post-Closure (40 CFR 264.110 - 264.120)	Requirement for closure and post-closure of hazardous waste facilities.	Relevant and Appropriate	Considered for each alternative. Landfill must be closed in a manner which controls, minimizes or eliminates the potential for landfilled contaminants to threaten human health and the environment. Regular monitoring and maintenance will be performed for 30 years.	MM-2 MM-3
<u>State</u> Vermont Air Pollution Control Regulations 10 V.S.A. Section 551, et. seq. EPR Chapter 5.	Regulations specify requirements to prevent occurrence of conditions of air pollution where such do not exist and to facilitate abatement of conditions of air pollution where and when such occur.	Relevant and Appropriate	Air stripping system must meet air quality standards and allowable discharges.	MM-3
Vermont Hazardous Waste Management Act - 10 VSA Chapter 159, EPR Chapter 7	Regulates the storage, transport, treatment, disposal, recycling, and managing of hazardous waste. Incorporates requirements of RCRA, 40 CFR Part 264, Subpart F, groundwater protection standards.	Applicable	Alternatives will achieve groundwater protection standards through treatment and will comply with regulations which apply to installing groundwater monitoring wells and compliance monitoring.	MM-2 MM-3

TABLE 2-3 (CONT'D)

Requirement	Summary of Requirement	Status	Action to be Taken to Achieve Requirement	Applicable Alternatives
Land Use and Development Law (10 VSA Part 5, Chapter l51)	Regulates areas in which there is construction or improvement, or some proposed change to the land.	Relevant and Appropriate	Extraction and treatment system must produce no undue air or water pollution.	MM-3
Vermont Water Quality Standards listed under the Vermont Water Pollution Control Act (VWPCA) - 10 VSA Chapter 47 and 314 CMR 3.00 and 4.00	The standards consist of classification of surface waters which designate the most sensitive uses for which various waters shall be enhanced, maintained, and protected; and which prescribe the minimum water quality criteria required to sustain the designated uses. Standards regulate discharges of pollutants to surface waters.	Applicable	Effluent standards will be attained in the discharge of treated groundwater to the perennial stream or Browns Brook. No state numerical standards apply to parameters measured at the site. However, the regulations require the use of Federal Ambient Water Quality Criteria to establish water quality for toxic pollutants. AWQC are non-regulatory concentrations for the protection of aquatic life; and the protection of human health from water ingestion and fish consumption.	MM-3
American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) Time Weighted Average (TWA) and Short Term Exposure Limit (STELs)	TLVs are issued as criteria for controlling air quality for occupational settings. STELs are fifteen minute time-weighted concentrations.	To Be Considered	TLV-TWAs and STELs will be used in the evaluation of predicted air concentrations during remedial activities.	MM-3
CAA-State Implementation Plan Emission Standards - 40 CFR 52	Emission Standards designed to attain National Ambient Air Quality Standards	Relevant and Appropriate	State Implementation Plan requirements are enforceable ARARs and must be attained.	MM-3