

United States Environmental Protection Agency [EPA] – Region I  
and Connecticut Department of Energy & Environmental Protection [DEEP]  
RCRA Corrective Action Program

**STATEMENT OF BASIS  
FOR A  
CORRECTIVE ACTION COMPLETION DETERMINATION**

**And**

**Tentative Determination No Permit Is Necessary Due to Facility Closure and Completion of  
Investigation and Remediation Activities**

**FOR**

**SAFETY-KLEEN SYSTEMS, INC.  
11 Tipping Drive  
Branford, CT 06405**

**EPA ID No. CTD980667927**

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Based upon investigation activities conducted at the Safety-Kleen Systems, Inc. Branford facility, located at 11 Tipping Drive in Branford, CT, EPA and the Connecticut Department of Energy & Environmental Protection are announcing their Completion Determination remedy proposal that Corrective Action obligations under the Hazardous and Solid Waste Amendments of the Resource Conservation and Recovery Act are “complete without controls”, and that no activities exist that require a hazardous waste management permit under the Resource Conservation and Recovery Act (RCRA).

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**INTRODUCTION**

The Connecticut Department of Energy & Environmental Protection, previously known as the Connecticut Department of Environmental Protection (“DEEP”), is announcing its Completion Determination remedy proposal under the Hazardous and Solid Waste Amendments of the Resource Conservation and Recovery Act<sup>1</sup>. This proposal states that Corrective Action obligations at the Safety-Kleen Systems, Inc. Branford facility, located at 11 Tipping Drive in Branford, Connecticut [hereafter, “facility” or “site”] are complete. Investigation activities performed at the facility demonstrate that releases of hazardous wastes or hazardous constituents do not pose a threat to human health or the environment for the proposed risk exposure and current and future land use assumptions. DEEP’s proposed Completion Determination is based on the results of the investigation, closure, remediation, and reporting activities performed by the facility under the oversight of the DEEP.

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<sup>1</sup> “Completion Determination” is a regulatory phrase that refers to a final disposition of a facility subject to Corrective Action obligations under the Resource Conservation and Recovery Act. In this case, the Completion Determination proposed for the facility is one that is “complete without controls”. More information on this category of Completion Determination can be found in the Federal Register notice entitled, Final Guidance on Completion of Corrective Action Activities at RCRA Facilities, [68 FR 8757](#)

This document summarizes the regulatory status of the facility, the results of various investigations and remediation activities performed at the facility and reasons for proposing that a Completion without Controls determination is appropriate and protective of human health and the environment.

DEEP is publishing this document to provide the opportunity for public review and comment of this proposal. DEEP will consider public comments as part of its decision making progress.

This Statement of Basis is intended to:

- Explain the opportunities for public participation, including how the public may comment of this proposed Completion Determination and tentative permit application termination and where the public can find more detailed information;
- Provide a brief description and history of the facility;
- Present the principal findings of investigations and activities performed to date, and
- Present DEEP's rationale for proposing that Corrective Action obligations under the Hazardous and Solid Waste Amendments of the Resource Conservation and Recovery Act are Complete without Controls for the proposed current and future land use of the site; and
- Present DEEP's rationale for terminating the permit applications for the facility.

### **THE PUBLIC'S ROLE IN EVALUATING THIS CORRECTIVE ACTION PROPOSAL/RECOMMENDATION**

All interested parties are invited to express their views on this proposal. Public comment on all potential Corrective Action proposals or measures and supporting information is an important contribution to DEEP's decision making/remedy selection process.

#### **Public Comment Period**

Written comments on this proposal will be accepted throughout a public comment period that will last at least forty-five [45] days from the date that the notice of tentative determination is published to provide an opportunity for public comment and involvement during the evaluation of this proposal. Written comments will be accepted throughout this comment period through electronic mail directed to John Duff, Environmental Analyst, to [DEEP.RemStewardship@ct.gov](mailto:DEEP.RemStewardship@ct.gov) or through US Postal Service mail or courier services to John Duff, Environmental Analyst, Remediation Division, Bureau of Water Protection and Land Reuse, 2<sup>nd</sup> Floor, CT Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT 06106-5127. Additionally, a public information meeting will be offered during the comment period to collect verbal comments. Details will be included in the notice of tentative determination. During this Public Comment period the public is invited to review this Statement of Basis and supporting information and to offer comments to DEEP.

#### **Response to Public Comments/Decision Making Process**

A final decision regarding this proposed completion determination will not be made until the public comment period has closed and all comments received by DEEP have been evaluated and addressed. Based on any new information or comments from the public, DEEP may modify its proposal.

Following a review of public comments, the Commissioner of DEEP will decide whether to make the tentative determination a final determination. If the Commissioner makes a final determination that a hazardous waste management permit is not necessary for the facility because hazardous waste management activities have ceased and remediation is complete, then the facility is considered to have

completed its requirements related to RCRA Closure and RCRA Corrective Action. DEEP's final decision will be issued in a brief letter to the facility that will constitute the final administrative determination regarding the previous permit application that has been withdrawn. The facility's interim permit status will then be terminated. Any future waste management activities at the facility are subject to applicable local, state, and federal requirements.

### **Additional Public Information**

This Statement of Basis provides only a summary description of the investigation and activities performed at the facility. Therefore, the public is encouraged to consult the Administrative Record. As explained in more detail below, the Administrative Record is the collection of information [including data, reports, etc.,] that DEEP relied upon for its proposed remedy decision. In this case, the Administrative Record contains this Statement of Basis, site assessments describing the facility's release and operational history, the results of the site investigation activities conducted under State regulation, and other facility documents which provide additional information regarding the work conducted at the facility.

The Administrative Record and the Statement of Basis is available for review on the Department's web site at:

CT DEEP Document eSearch under the facility's address of 11 Tipping Drive in Branford, CT.  
(<https://filings.deep.ct.gov/DEEPDocumentSearchPortal/>)

### **Summary of Documents in Administrative Record**

The following information among other factors has been used as a basis for this Completion Determination remedy proposal and may be found in the Administrative Record at the location listed above:

1. Preliminary Assessment-Plus final Report, Safety-Kleen, 11 Tipping Drive, Branford, CT, TRC Companies, Inc. dated September 3, 1992
2. Soil Sampling Work Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, Loureiro Engineering Associates dated September 15, 1994
3. Establishment Transfer (Corporate Takeover) Form III and ECAF (signed October 1998), Safety-Kleen, 11 Tipping Drive, Branford, CT, Safety-Kleen Systems, Inc. dated May 18, 1998
4. Site Assessment Plus Report, Safety-Kleen, 11 Tipping Drive, Branford, CT, Vista Information Solutions dated September 11, 1998
5. Joint Motion for Judgment upon Stipulation, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated September 16, 1998
6. Notice of Deficiencies in Site Assessment Work Plan and RCRA Closure Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated March 29, 1999
7. Responses to 3/29/99 Notice of Deficiencies in Site Assessment Work Plan and RCRA Closure Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, Safety-Kleen Systems, Inc. dated April 28, 1999
8. Notice of Deficiencies in Revised Site Assessment Work Plan and RCRA Closure Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated September 15, 1999
9. Responses to 9/15/99 Notice of Deficiencies in Revised Site Assessment Work Plan and RCRA Closure Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, IT Corporation dated October 29, 1999

10. Comments on Proposed Revisions to Site Assessment Work Plan and Closure Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated November 10, 1999
11. Soil Gas Survey Schedule and Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, IT Corporation dated November 17, 1999
12. Approval of Soil Vapor Survey Proposed in Site Assessment Work Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated November 24, 1999
13. Site Assessment Work Plan (Final Revision), Safety-Kleen, 11 Tipping Drive, Branford, CT, IT Corporation dated December 22, 1999
14. Closure Plan and Financial Assurance (Final Revision), Safety-Kleen, 11 Tipping Drive, Branford, CT, IT Corporation dated December 22, 1999
15. Subsurface Investigation Schedule and Scope of Work, Safety-Kleen, 11 Tipping Drive, Branford, CT, IT Corporation dated January 12, 2000
16. Site Assessment Work Plan and Closure Plan Approvals, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated February 29, 2000
17. Soil Sampling Results and Proposed Monitoring Well Locations, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated September 15, 2000
18. Conditional Approval of Proposed Monitoring Well Locations, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated September 29, 2000
19. Ambient Air and Concrete Sampling Results , Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated February 22, 2001
20. Geoprobe Soil Sampling and Concrete Chip Sampling Results, and Proposals for Additional Investigation, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated March 29, 2001
21. Comments on 3/29/01 Geoprobe Soil Sampling and Concrete Chip Sampling Results, and Proposals for Additional Investigation , Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated April 24, 2001
22. Scope of Work, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated May 14, 2001
23. Concurrence on 5/14/01 Scope of Work, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated May 24, 2001
24. Approval of Indoor Air Monitoring Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated June 1, 2001
25. Summary of Soil Removal Activities Report, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated July 26, 2001
26. Ambient Air and Concrete Sampling Results, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated January 3, 2002
27. Concurrence to Proceed with Investigation, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated March 5, 2002
28. Environmental Site Assessment Report, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated March 6, 2002
29. Approval of Environmental Site Assessment Report, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated November 18, 2002
30. Soil Boring and Groundwater Results and Proposed Monitoring Well Installation, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated January 22, 2003
31. Supplemental Environmental Site Assessment and Quarterly Groundwater Monitoring Report, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated April 1, 2003
32. Environmental Indicator Evaluation Forms, Safety-Kleen, 11 Tipping Drive, Branford, CT, Safety-Kleen Systems, Inc. dated September 29, 2003
33. Approval of April 2003 Supplemental Environmental Site Assessment, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated October 28, 2003

34. Request for Submittal of a Remedial Action Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated January 28, 2004
35. Remedial Action Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated March 24, 2004
36. Comments on 3/24/04 RAP, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated April 30, 2004
37. RAP Addendum Letter (#1), Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated May 21, 2004
38. RAP Addendum Letter (#2), Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated December 7, 2004
39. Request for Additional RAP Information, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated December 21, 2004
40. RAP Addendum Letter (#3), Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated February 7, 2005
41. RAP Addendum Letter (#4), Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated June 5, 2005
42. Approval of RAP and Addendums, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated July 12, 2005
43. Summary of Sodium Permanganate Injection and Groundwater Activities, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated November 14, 2005
44. Summary of Concrete Sampling Results, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated April 5, 2006
45. Summary of Soil Excavation and Confirmatory Sampling Results, Proposed Actions and PMC and R-DEC Variance Request Report, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated May 2, 2006
46. Comments and Request for Additional Information on Variance Request and Proposed Actions from 5/2/06 Letter, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated May 16, 2006
47. Response to CTDEEP Letter dated 5/16/06 Requesting Additional Information on 5/2/06 Submittal, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated May 30, 2006
48. Response to CTDEEP Request for Additional Information on 5/2/06 Submittal, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated September 15, 2006
49. Approval of 95% UCL Compliance Approach for PMC, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated October 17, 2006
50. Additional Investigation and Remediation Memo, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated November 17, 2006
51. Summary of Soil Excavation and Confirmatory Sampling Results, Safety-Kleen, 11 Tipping Drive, Branford, CT, Safety-Kleen Systems, Inc. dated March 7, 2007
52. Summary of Concrete Sampling Results, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated June 21, 2007
53. Concurrence with Soil and Concrete Closure Activities, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated July 30, 2008
54. Summary of Sodium Permanganate Injection Activities, Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated December 17, 2008
55. Approval of Groundwater Monitoring Plan, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated May 5, 2010
56. Approval of Target Indoor Air Concentration for PCE, Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated May 24, 2022
57. Approval of Alternative Groundwater Protection Criteria for PCE (#1), Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated December 20, 2022

58. Approval of Alternative Groundwater Protection Criteria for PCE (#2), Safety-Kleen, 11 Tipping Drive, Branford, CT, CTDEEP dated December 20, 2023
59. Quarterly Groundwater Monitoring Reports (inclusive of ISCO Remediation Progress Reporting); Safety-Kleen, 11 Tipping Drive, Branford, CT, Woodard & Curran, Inc. dated 2002 to 2022
60. Stipulation of Judgment Progress Reports, Safety-Kleen, 11 Tipping Drive, Branford, CT, IT Corporation/Woodard & Curran, Inc. dated 1998 to 2023
61. Remediation Completion Report, 11 Tipping Drive, Branford, CT, CTDEEP RemID # 13524 Woodard & Curran, Inc., Dated August 17, 2023.
62. RCRA Part 2/Part 3 Closure Plan, 11 Tipping Drive, Branford, CT, EPA No. CTD980667927, CTDEEP RemID # 13524, Woodard & Curran, Inc., Dated August 17, 2023.

### **Facility History**

The facility, Safety-Kleen Systems, Inc. is located at 11 Tipping Drive in Branford, Connecticut (Figure 1, Site Locus). The owners of the property are Joyce Tipping N ET ALS (CO Trustees), C/O Joyce Tipping. The area surrounding the Site is zoned for mixed industrial and residential use, and presently contains commercial properties to the north and west, and undeveloped land to the south and east. The Site parcel is zoned industrial.

One building presently occupies the site parcel and consists of a concrete block structure located on the northern portion of the property (Figure 2, Site Plan). The remainder of the parcel is covered with either grass or asphalt driveway/parking. Groundwater at the site flows approximately southerly.

### **History of Ownership and Description of Operation**

The facility is classified by the U.S. Environmental Protection Agency (USEPA) as a Treatment, Storage and Disposal Facility (TSDF). In accordance with the Resource Conservation and Recovery Act (RCRA), Safety-Kleen Corporation filed Part A permit application (Interim Status Permit Application) on September 4, 1990. This document included a Part A Application, Facility Description, Waste Analysis Plan, Preparedness and Prevention Plan, Contingency Plan, Personnel Training Plan and Closure Plan.

The Site was owned by Alfred Granniss from September 12, 1931 to May 19, 1961. Alfred Granniss sold the Site to B & T Associates (Dominez Bontarbus and Leroy Tipping) on May 19, 1961. There are no records indicating that the land was developed during the time that it was owned by either Alfred Granniss or B&T Associates (Branford, 1965). On March 7, 1967, the Site was sold to Leroy Tipping. The main Site building was built in 1977. Safety-Kleen has had a lease on Lot 6 of the Tipping Drive parcel since February 1, 1982, when the land was transferred to Leroy and Vera Tipping. Safety-Kleens's operations began in 1981 and ceased in 1998. Safety-Kleen's customers primarily engaged in automotive repair and industrial maintenance.

The Safety-Kleen facility included the Container Storage Area (CSA), the covered aboveground storage tank (AST) farm, and the Return and Fill Station (RFS). The former CSA was in the eastern portion of the main building and is where products and waste solvents were stored. The covered AST farm area was located south of the CSA and contained two aboveground carbon steel storage tanks; one tank was used for clean parts washer solvent, and one was used for spent parts washer solvents. The RFS was in the main building of the facility adjacent and west of the CSA and northwest of the ASTs and is where drums were washed for reuse and filled with product for shipping. Wastes handled at the Branford facility include spent mineral spirits (petroleum naphtha) from parts washers; spent immersion cleaner; dry cleaning wastes (perchloroethylene); antifreeze wastes; industrial solvents; paint related wastes; and cleaning compounds and lacquer thinners.

## **Summary of Release History and Resulting Enforcement**

- On September 17, 1998, Safety-Kleen Systems, Inc. entered a stipulated judgment to settle a civil suit brought by the Attorney General on behalf of DEEP. The suit involved RCRA violations, underground storage tank (UST) regulations violations, and Property Transfer Act violations at four Safety-Kleen facilities in Connecticut. As part of the settlement, Safety-Kleen agreed to withdraw its hazardous waste storage facility permit applications for all its facilities. Terminating the facility's interim status will mean that Safety-Kleen has no authority to operate a storage facility at the site. Completion of the sitewide investigation and remediation means that Safety-Kleen will complete the obligations specified in the stipulated judgment.

The stipulated judgment required the following items to be addressed:

1. Withdrawal from RCRA regulated activities and complete RCRA closure of Hazardous Waste Management Units (HWMUs)
  2. Investigation of soil and groundwater contamination;
  3. Remediation of soil and groundwater contamination;
- Safety-Kleen Systems, Inc. complied with the stipulated judgment by taking the following actions:
    1. Contracted with IT Corporation/ Woodard & Curran to conduct an environmental investigation at the site. Woodard & Curran results indicated volatile organic compound (VOC) (primarily tetrachloroethylene (PCE)) impacts to soil and groundwater.
    2. Activities to clean close HWMU 1 (CSA), HWMU 2 (RFS), and HWMU 3 (AST) were conducted between October 2000 and September 2008 consistent with the Part I Closure Plan
    3. Remediation of contaminated soil associated with the former ASTs, RFS and CSA completed by removal and offsite disposal.
    4. Remediation of contaminated groundwater associated with former HWMUs was completed using in situ chemical oxidation with sodium permanganate followed by ozone injections.

## **Abutting Land Uses**

The area surrounding the Site is zoned for mixed industrial and residential use, and presently contains commercial properties to the north and west, and undeveloped land to the south and east. The Site parcel is zoned industrial.

## **Nature And Extent of Contamination**

Historic releases of various VOCs, primarily PCE to soil and groundwater at the site have led to the completion of various environmental assessments and remediation of soil and groundwater at the site. DEEP through the stipulated judgment has overseen the investigation and remediation of soil and groundwater.

## **Project Background/Site Investigation**

The conceptual site model (CSM) for the Site has been developed over multiple investigations. Shallow overburden materials at the Site consist primarily of medium to fine sands with varying amounts of coarse sands, silt, and gravel. A layer consisting primarily of silt encountered at depths between 12.5 and 14 feet below grade (fbg) appears to serve as an aquitard, limiting vertical migration. Sands are present beneath the silt layer and extend until a layer of silt and clay is encountered at depths ranging between 20.5 and 22 fbg. Both silt layers appear to slope gently to the north and south from a relative topographic high located in the vicinity of MW-4, see **Figure 2**.

The bedrock underlying this area is identified in the *Bedrock Geology Map of Connecticut* (Rogers, 1985) as the Middletown Formation, which consists of dark to light gray gneiss. This gneiss is a medium to coarse-grained mixture of metamorphic rock, quartz, feldspar, and various amounts of dark minerals. Bedrock was not observed during the Site investigations and the depth of bedrock has not been determined.

The horizontal groundwater gradient across the Site is relatively flat (approximately 0.0004 ft/ft to 0.001 ft/ft), with hydraulic conductivity ranging from approximately 0.45 ft/day to 2.9 ft/day and groundwater velocity ranging from 0.146 to 4.24 ft/year. Based on groundwater data from MW-5 and MW-5D, the vertical gradient was determined to be upward, with an average gradient of 0.005 ft/ft. Groundwater measured during the September monitoring event in monitoring well MW-4 between 2018 and 2022 ranged between 4.78 ft and 4.20 ft below the reference point.

Based on the timeframe of solvent use on the site (1984 to 1998), it is not likely that the VOCs in groundwater have reached the discharge point in the Branford River. This information also suggests that downgradient movement of the plume from the source area has been limited. This is supported by the groundwater monitoring data that shows VOC concentrations decreasing significantly immediately downgradient of the source area. VOC concentrations decrease with depth, and most of the contamination existed in the shallow aquifer (less than 20 fbg).

Waste and product solvents were historically handled on the eastern portion of the property. Wastes handled on this portion of the property included spent mineral spirits (petroleum naphtha) from parts washers, spent immersion cleaner, dry cleaning wastes (perchloroethylene), antifreeze wastes, industrial solvents, paint related wastes, some cleaning compounds and lacquer thinners. Historic releases of these materials have been documented in interior and exterior locations. There were indications that four of these spill locations had concrete, soil, or asphalt removed. A layer of concrete or bituminous pavement was present at all four release areas at the time of the releases. This information was used to develop the AOCs depicted on **Figure 2** as follows:

- AOC-1: Area of minor spills on paved areas south of the site building;
- AOC-2: Former above ground storage tanks (ASTs) used for storage of clean and spent mineral spirits located on the eastern portion of the site;
- AOC-3: The former Return and Fill (R & F) Station, used for distribution and collection of recycled mineral spirits and cleaning of empty solvent drums in the southeast portion of the building; and
- AOC-4: The former Container Storage Area (CSA) used for storage of waste paint materials including lacquer thinner in the northeast portion of the building.



The primary contaminant of concern (COC) in groundwater is PCE, which was present in seven of the monitoring wells prior to remediation. Trichloroethylene (TCE) and cis 1,2 dichloroethylene (cis-1,2-DCE) were also detected in three wells. Vinyl chloride was detected intermittently in one downgradient well. The historic concentrations of the primary solvents (PCE and TCE) compared to those of the degradation products (cis-1,2-DCE and vinyl chloride) indicate the natural degradation of PCE and TCE has occurred at the Site, particularly in MW-4 and MW-6.

Based on the historical review of the spill history and site activities, the primary release mechanism that has impacted subsurface soil and groundwater appears to be the July 1989 release of PCE that occurred at the east end of the building (AOC-4). This spill consisted of a release of an estimated 15 to 30 gallons of virgin PCE product that occurred slowly overnight. A reenactment of the release was performed in March 2000 using water. The pathway of the spill was to the south along the eastern portion of the parking area, immediately west of the former ASTs. This path is consistent with the primary areas where the chlorinated solvents were found in soil and groundwater. Soil and groundwater data are also indicative of a virgin PCE product release, as opposed to a waste solvent. Concentrations of other contaminants of concern (COCs) are limited.

Interim remedial activities were completed in accordance with a March 29, 2001 scope of work submittal from Woodard & Curran, Inc. (W & C), a comment letter from Mr. Maurice Hamel of CT DEEP dated April 24, 2001, and a revised scope of work from W & C dated May 14, 2001. A portion of the concrete slab was removed, and soil was excavated from beneath the building footprint, the former ASTs, and the concrete pad that was located immediately to the south of the building.

Additional excavation and soil disposal was conducted following CT DEEP letter dated July 12, 2005 approving the Remedial Action Plan dated March 2004, along with addendum letters dated May 21, 2004 and June 9, 2005. Soil was excavated in multiple phases beginning on September 22 and 23, 2005 with the excavation of contaminated soil from below the former Return and Fill Station and surrounding areas. Approximately 200 cubic yards of contaminated soil was removed to the low seasonal water table at depths of between 5.5 and 6 feet below grade. The initial excavation limits were expanded to the east and south based on the results of the confirmatory soil samples and additional soil excavations were completed on November 22, 2005, January 31, 2006, and October 5, 2006.

Remediation conducted at the Site also included in-situ chemical oxidation (ISCO) using sodium permanganate. Two separate injection events were completed with groundwater monitoring performed before and after each of the events.

ISCO using ozone delivered to the subsurface through air/ozone sparging was conducted at the site beginning in February 2018. Additional ozone sparge wells were added to the system in October 2019 and September 2020. Groundwater samples were collected from monitoring wells located within and downgradient of the system to evaluate the system performance.

### **Groundwater Monitoring**

Routine groundwater monitoring was performed during the operation of the modified injection system. Groundwater data indicated that elevated concentrations of COCs persisted in the vicinity of wells MW-4 and MW-5. CT DEEP approved a modified work plan on August 31, 2020 and six additional sparge wells were installed. The six additional sparge wells (3- paired wells) consisted of a shallow well (approximately 12 feet below grade) and a deep well (approximately 20 ft bgs). The modified system operated until September 2021 when the ozone injection system was shut down.

COC concentrations in groundwater have decreased significantly since the remedial activities discussed above. Quarterly groundwater monitoring results from 2021 and 2022 indicate that groundwater complies with the Remediation Standard Regulations (RSRs) including site-specific groundwater protection criteria for PCE approved in 2022.

## **RISK ASSESSMENT OF MIGRATION PATHWAYS AND ECOLOGICAL EXPOSURES**

### **Groundwater**

According to the *Water Quality Classification Map, Branford, CT* (October 2018), groundwater underlying the site is classified as GA. The GA designation indicates that the groundwater is presumed suitable for direct human consumption without the need for further treatment.

### **Surface Water**

The nearest downgradient surface water body is the Branford River, located approximately 700 feet to the south/southeast. The *Water Quality Classification Map, Branford, CT* (October 2018) identifies the Branford River as a Class A surface water body. This designation indicates that the waters are suitable for recreational use, fish and wildlife habitat, agricultural and industrial supply, and navigation.

With the complete attenuation of contaminants observed in the groundwater monitoring record, there is no risk of surface water impact from the Safety-Kleen Systems, Inc. site. Thus, there is also no risk of exposure from contaminated surface water.

### **Ecological Risk Assessment**

EPA defines ecological risk assessment (ERA) as “a process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors”. The goal of the assessment is to determine if there may be a potential for an adverse ecological impact posed by past or present conditions at or surrounding the Safety-Kleen Systems, Inc. site.

As part of the site investigation, an evaluation of the potential for site contaminants to present an ecological risk was conducted. The review consisted of the following steps:

- a site visit, conducted as part of the 2000-2001 Environmental Site Assessment;
- identification of on-site and off-site habitats and dominant local flora and fauna;
- identification of any rare, threatened, or endangered species potentially present in the area,
- identification of potential exposure pathways; and,
- review of site data relative to potential exposure pathways.

### **On-site Habitat Description**

The 0.82- acre site is flat and nearly entirely covered by asphalt and the footprint of the large, one-story building. The area to the south of the building, where contamination was detected, is covered by asphalt, which covers the entire south side of the property except for small areas near the street, the western property boundary, and two areas where contaminated soils were excavated in May 2001. These excavation areas have been backfilled with clean fill but have not yet been repaved. The Site is surrounded on the north and east side by a golf driving range, from which it is separated by an approximately 20-ft wide area of hedges and brush. Species observed in this brush zone include large, trimmed roses (*Rosa* spp.),

autumn olive (*Elaeagnus umbellata*), poison ivy (*Toxicodendron radicans*), willow trees (*Salix* spp.), Atlantic white cedar (*Chamaecyparis thyoides*), and various grasses. Fauna observed in this border consist of the eastern gray squirrel (*Sciurus carolinensis*), northern cardinal (*Cardinalis cardinalis*), and bluejay (*Cyanocitta cristata*).

No surface water or wetland habitats exist on the property.

### **Off-site Habitat Description**

The Site is located in a developed area of small industrial and commercial concerns, and little remains of natural habitat in this area. Properties west and south of the Site include vehicle repair, metal work, and other small shops, and the land surface consists of asphalt and buildings, with frequent truck and vehicle traffic. The golf driving range abuts the Site to the north and east, and consists of several acres of managed lawn.

The nearest surface water body in the hydrogeologically downgradient direction is the Branford River, located 700 feet south of the facility, behind industrial properties across Tipping Drive; at the time of inspection this stream was approximately 15 feet wide and 1-2 ft. deep. It was heavily silted, with a sand-silt bottom and visible small suds on the water surface. The *Water Quality Classification Map, Branford, CT* (October 2018) identifies the Branford River as a Class A surface water body. This designation indicates that the waters are suitable for recreational use, fish and wildlife habitat, agricultural and industrial supply, and navigation.

### **Sensitive Species Review**

Records on both state and federally listed rare, threatened, or endangered species are maintained in the CTDEEP in the Connecticut Natural Diversity Data Base. A review of this database conducted by CTDEEP personnel indicated that no known extant populations of federal or state endangered, threatened, or special concern species occur at the Site. Because of the lack of habitat in this area, future use by sensitive species is unlikely.

### **Potential Exposure Pathways**

The exposure pathway is the link between the contamination and the receptor. Potential exposure pathways typically consist of contaminated media (surface soil, surface water, sediment, air) to which ecological receptors might be exposed during feeding, burrowing, or nesting.

No exposure pathways to site contaminants currently exist at this Site. Nearly all site soils are covered by asphalt or site structures, and soils from areas that are uncovered do not contain site contaminants. Identified soil contaminants remaining at the Site above RSR criteria exist at depths of two feet or more, beyond the zone of exposure for ecological receptors.

No surface water exists on Site. Constituents detected in groundwater are not at concentrations expected to cause exposures through groundwater- to- surface water or sediment pathways, due to the concentrations of contaminants detected and the distance to the potential discharge point in the Branford River. Groundwater itself is typically not an exposure media for ecological receptors.

The surrounding area is highly developed and is unlikely to provide habitat for either a large number of species or individuals, so current land use would further serve to limit any potential ecological effect. Land use at the Site is expected to remain commercial/industrial.

### **Ecological Risk Evaluation Conclusion**

Little or no potential ecological risk is believed to exist at this facility, primarily because of the lack of completed exposure pathways to site contaminants. The Site is nearly completely covered by asphalt, concrete, or clean soil, rendering any soil contaminants inaccessible to terrestrial receptors. Groundwater, which discharges to surface water south of the Site, does not contain VOCs or other constituents at concentrations likely to affect surface water quality. Land in the area is currently, and is expected to remain, heavily utilized for commercial purposes, with little undeveloped land available as habitat.

### **DEEP'S PROPOSAL**

Based on the above information, DEEP is proposing a Completion without Controls Determination for the facility. In accordance with the EPA guidance on Completion Determinations, DEEP believes a Completion without Controls Determination is appropriate because:

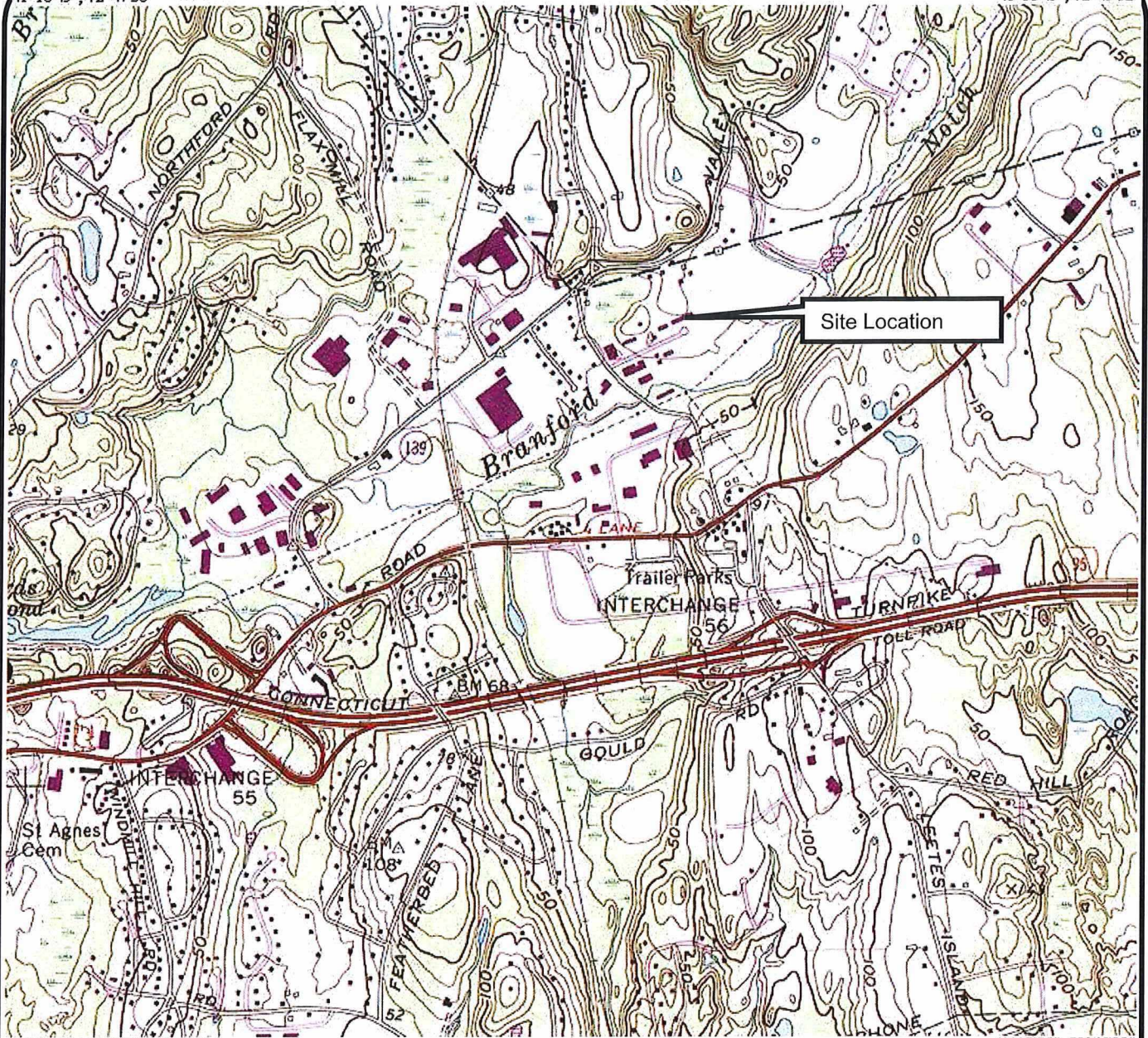
1. There are no ongoing treatment, storage, or disposal activities at the site that require a permit;
2. All closure and post-closure requirements applicable at the previously identified regulated units have been fulfilled; and
3. All corrective action obligations, including implementation of long-term monitoring procedures, have been met.

Notwithstanding this Completion Determination, EPA or an authorized State may conclude additional cleanup is needed if, subsequent to this Completion Determination, EPA or an authorized State discovers evidence of unreported or misrepresented releases, *See* Final Guidance on Completion of Corrective Action Activities at RCRA Facilities, 68FR8757.

In summary, DEEP, using all available information, is announcing its Corrective Action "Completion without Controls" Completion Determination proposal. A Complete without Controls Determination is reasonable and appropriate because investigations performed at the facility demonstrate that releases of hazardous wastes have naturally attenuated and do not pose a threat to human health or the environment and because the facility has attained all media protection and human health and environmental standards promulgated by the State of Connecticut for protection of human health, the public and the ecosystems.

41°18'45", 72°47'30"

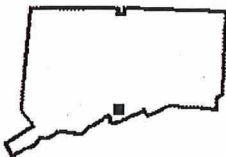
41°18'45", 72°45'02"



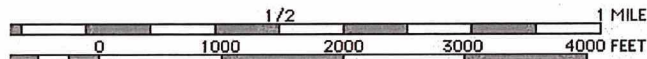
41°17'05", 72°47'30" NAD83

41°17'05", 72°45'02"

MI  
14%



**QUADRANGLE  
LOCATION**



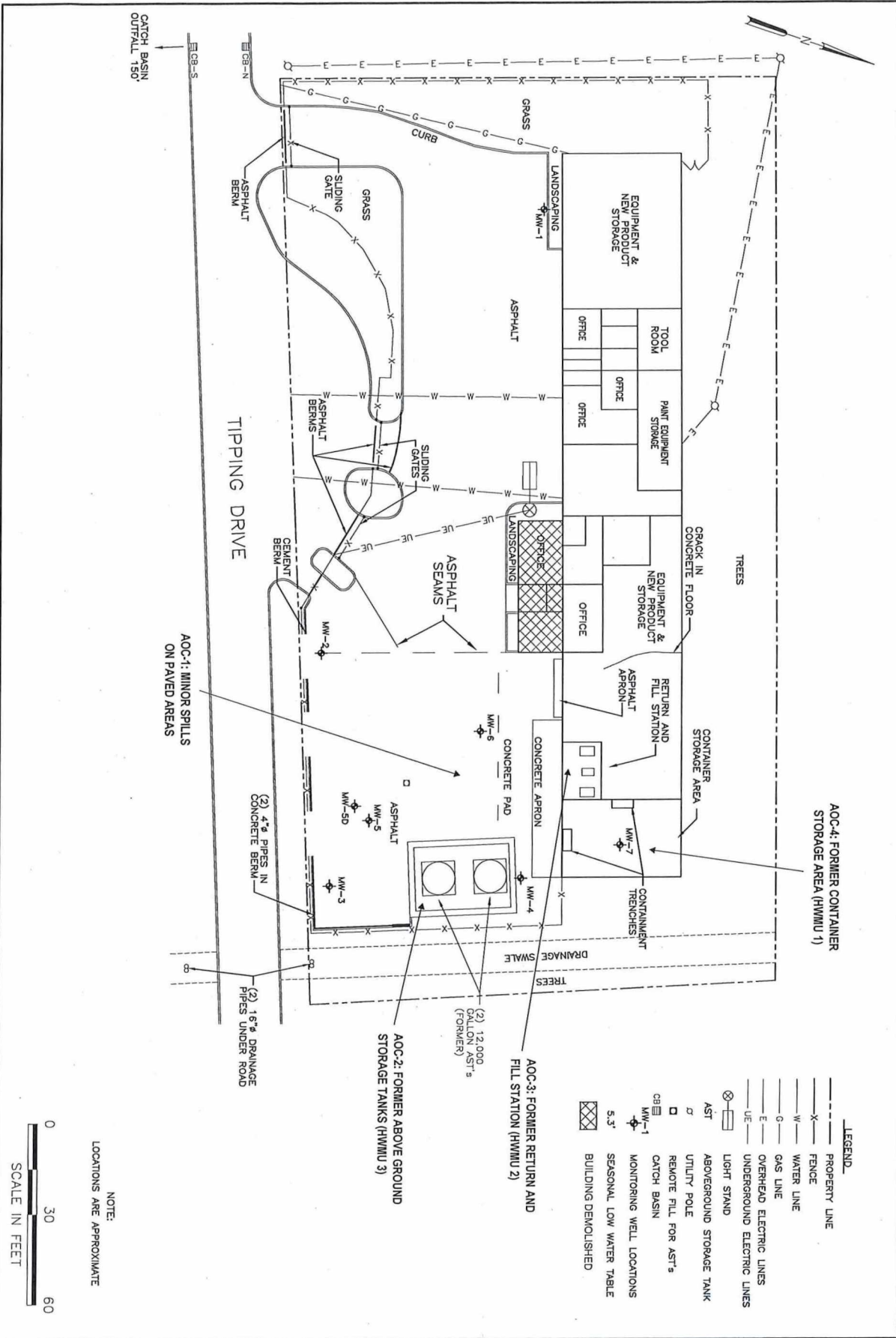
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Source: TOPO! Interactive Maps on CD, U.S.G.S., Branford, CT  
Topographic Quadrangle Map  
7.5 Minute Series, 1992



DATE: AUGUST 2023  
 DWN: ECS  
 APP: MGP  
 REV.: 0  
 PROJECT NO.  
206622

**Figure 1**  
**Site Locus Map**  
 11 Tipping Drive  
 Branford, Connecticut



AOC-4: FORMER CONTAINER STORAGE AREA (HWMU 1)

AOC-3: FORMER RETURN AND FILL STATION (HWMU 2)

AOC-1: MINOR SPILLS ON PAVED AREAS

AOC-2: FORMER ABOVE GROUND STORAGE TANKS (HWMU 3)

- LEGEND**
- PROPERTY LINE
  - X- FENCE
  - W- WATER LINE
  - G- GAS LINE
  - E- OVERHEAD ELECTRIC LINES
  - UE- UNDERGROUND ELECTRIC LINES
  - ⊗ LIGHT STAND
  - AST ABOVEGROUND STORAGE TANK
  - U UTILITY POLE
  - REMOTE FILL FOR AST'S
  - CB CATCH BASIN
  - MW-1 MONITORING WELL LOCATIONS
  - SEASONAL LOW WATER TABLE
  - 5.3' BUILDING DEMOLISHED

NOTE:  
LOCATIONS ARE APPROXIMATE



<p>SAFETY KLEEN SYSTEMS INC. 11 TIPPING DRIVE BRANFORD, CONNECTICUT</p>	<p><b>SITE PLAN</b></p>	<p>213 Court Street, 4th Floor Middletown, Connecticut 06457 860.265.8959   www.woodardcurran.com</p> <p><b>COMMITMENT &amp; INTEGRITY DRIVE RESULTS</b></p>
<p>REMIEDIATION COMPLETION REPORT</p>		<p>DESIGNED BY: MP      CHECKED BY: MP DRAWN BY: PFF        20662202-U2R-RSR.dwg</p>
<p>JOB NO. 20662202 DATE: AUGUST 2023 SCALE: AS NOTED FIGURE 2</p>		