

May 1, 2014

Mr. Mike Cunningham
State of North Carolina
Department of Environment and Natural Resources
Division of Waste Management, Superfund Section
1646 Mail Service Center
Raleigh, NC 27699-1646

RE: Risk Management Plan
Knightdale Cleaners
1003 North Smithfield Road
Knightdale, Wake County, North Carolina
ATC Project No. 45.34341.9209
DSCA Site Identification No. 92-0009

Dear Mr. Cunningham:

ATC Associates of North Carolina, P.C. (ATC) is pleased to submit the enclosed Risk Management Plan (RMP) for the above referenced site. The results of a previous Risk Assessment indicated that contaminant concentrations at the site do not pose an unacceptable risk. The primary purpose of this RMP is to ensure that the assumptions made during the risk assessment remain valid in the future. Based on the documentation outlined in this report, ATC recommends issuance of a No Further Action letter for the site.

If you have questions or require additional information, please do not hesitate to contact Genna Olson at (919) 871-0999.

Sincerely,
ATC Associates of North Carolina, P.C.



Genna K. Olson, P.G.
Program Manager

**RISK MANAGEMENT PLAN
KNIGHTDALE CLEANERS
1003 NORTH SMITHFIELD ROAD
KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA
ATC PROJECT NO. 45.34341.9209
DSCA SITE IDENTIFICATION NO. 92-0009
MAY 1, 2014**

Risk Management Plan

Knightdale Cleaners

1003 North Smithfield Road
Knightdale, Wake County, North Carolina
ATC Project No. 45.34341.9209
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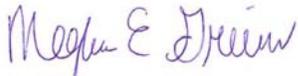
Prepared By:

Submitted To:

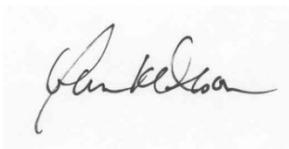
**North Carolina Department of Environment
and Natural Resources
Division of Waste Management
Superfund Section – DSCA Program**
1646 Mail Service Center
Raleigh, NC 27699-1646



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May 1, 2014

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1.0 INTRODUCTION

ATC Associates of North Carolina, P.C. (ATC) has prepared this Risk Management Plan (RMP) for the Knightdale Cleaners site on behalf of the North Carolina Dry-Cleaning Solvent Cleanup Act (DSCA) Program. Knightdale Cleaners is located at 1003 North Smithfield Road in Knightdale, Wake County, North Carolina. Site assessment activities confirmed that contamination associated with the site is confined to the source property. This RMP is intended to comply with the requirements of the DSCA (N.C.G.S. 143-215.104A *et seqs*) and promulgated rules and follows the outline provided in the DSCA Program's risk-based corrective action (RBCA) guidance.

2.0 OBJECTIVES OF RMP

Prior assessment activities at the site indicated concentrations of tetrachloroethylene (PCE) in groundwater above Title 15A NCAC 2L .0202 Groundwater Standards (2L Standards) on the source property. PCE was also detected in soil on the source property, but concentrations do not exceed unrestricted use levels. ATC completed a Risk Assessment for the site on December 2, 2013. The results of the Risk Assessment indicated that there are on-site risks that do exceed target risk levels. However, the risks will be managed based on site-specific land-use conditions that have been selected as part of the evaluation and which require a RMP. Thus, the objective of the RMP is to ensure that those site-specific land-use conditions remain valid in the future.

3.0 SUMMARY OF APPROVED RISK ASSESSMENT REPORT

Based on groundwater impacts above the DSCA Program's risk based screening levels, a risk assessment was conducted to evaluate if an unacceptable risk is present at the site from the contamination detected in soil and groundwater. This section summarizes the final risk assessment findings, which resulted in the recommendation for no further action status with land-use controls in place on the affected property.

The first step in the risk assessment process included a development of an exposure model. ATC evaluated exposure pathways for one exposure unit. The On-Site Exposure Unit encompasses a portion of the source property where the former Knightdale Cleaners facility is located.

Complete exposure pathways identified for the On-Site Exposure Unit include indoor inhalation of vapor emissions, outdoor inhalation of vapor emissions and surficial soil exposure by a current or future non-residential worker, future resident, or construction worker. The indoor inhalation pathway was evaluated via two mechanisms to address current and future risks. To evaluate current risk, indoor air data collected from the existing building were used. To evaluate future risk, sub-slab soil gas data were used. Sub-slab soil gas data are not expected to vary significantly for alternate building construction, so this approach takes into account the fact that vapor intrusion characteristics could be variable for a future newly constructed building. The remaining pathways were evaluated using soil and groundwater data and the Groundwater Services Inc. (GSI) risk software. The results of the risk evaluation indicated acceptable risk levels for a resident and a construction worker. Because risk levels were found acceptable for the most conservative residential scenario, ATC did not run a model for a commercial scenario.

ATC also evaluated the protection of groundwater use pathway assuming a point-of-exposure (POE) at the nearest downgradient property line. It should be noted that modeling under this scenario assumes that controls limiting the installation of water supply wells will be implemented for the source property. Representative concentrations were calculated using soil and groundwater samples collected in the area of maximum contaminant concentrations in the source area. The results of the protection of groundwater use modeling indicated no exceedences of Site Specific Target Levels (SSTLs) for source groundwater or source soil. Furthermore, plume stability monitoring has confirmed that the plume is stable and does not appear likely to impact the POE. Therefore, ATC concludes that the protection of groundwater use pathway is not a significant concern, assuming that land-use controls limiting groundwater use can be enacted for the source property.

The POE for the protection of surface water pathway was placed at the surface water body located approximately 140 feet downgradient of the source area. The protection of surface water evaluation indicated no exceedences of SSTLs. Furthermore, samples were collected from the

downgradient surface water body in February 2009 which contained no detectable constituents of concern.

The Risk Assessment concluded that the risks associated with the contamination could be managed through implementation of land-use controls for the site property. Therefore, the Risk Assessment recommended risk-based closure for the site. Land-use controls proposed for the site are discussed in Section 6.0.

4.0 RAP COMPONENTS

4.1 Summary of Prior Assessment and Interim Actions

The source property is located at 1003 North Smithfield Road in Knightdale, North Carolina in an area that is primarily characterized by commercial and residential development. The property consists of an approximate 6.28-acre lot with an asphalt pavement area and commercial buildings located in the Knightdale Crossings shopping center at the intersection of North Smithfield Road and Knightdale Boulevard. The area topography slopes downward towards the southwest.

Knightdale Cleaners operated as an active drycleaning facility with one on-site drycleaning machine that used PCE from 1987 to 2005. The former drycleaning tenant space is currently vacant.

In December 1997, Atlanta Testing and Engineering performed an Initial Environmental Site Assessment at Knightdale Cleaners. Three soil borings were advanced around the facility. Soil and groundwater samples were collected from each boring. PCE was detected in groundwater at a concentration of 0.0024 milligrams per liter (mg/L) in the sample located downgradient from the facility (P-2). Laboratory analytical results of the soil samples indicated target constituents were below laboratory detection limits.

Withers and Ravenel (W&R) advanced six soil borings and installed three Type II monitoring wells (MW-1, MW-2, and MW-3) in February 2009. PCE was detected in two soil samples at concentrations below the Tier 1 Risk Based Screening Level (RBSL). PCE was detected in

monitoring well MW-2 at a concentration above the 2L Standard. Other targeted constituents were below laboratory detection limits. These activities were documented in an Assessment Report dated June 8, 2009.

In March 2010, W&R installed an additional Type II monitoring well (MW-4) and completed a groundwater sampling event. PCE was detected at a concentration above the 2L Standard in MW-3. W&R also collected two indoor air samples, one background air sample, and two sub-slab soil gas samples from the former Knightdale Cleaners facility. PCE was detected in the indoor air, background air, and sub-slab soil gas samples, but concentrations did not indicate exceedences of applicable risk levels. These activities were documented in an Assessment Report dated May 6, 2010.

Five additional groundwater monitoring events were completed between November 2012 and July 2013. The monitoring events were documented two reports prepared by W&R, a Groundwater Monitoring Report dated November 29, 2012 and a Plume Stability Evaluation report dated August 27, 2013. Based on the results of the sampling events, W&R concluded that the magnitude and extent of the PCE plume in groundwater appeared stable and limited to the source property.

ATC completed a Risk Assessment for the site in December 2013. The results of the Risk Assessment indicated that the risk associated with the site contamination is below the risk levels considered acceptable by the DSCA Program. If land-use controls can be implemented to ensure the risk assessment assumptions remain valid in the future, no further action status is recommended for the site.

4.2 Remedial Action

According to the DSCA Program's RBCA guidance, no remedial action is necessary if four site conditions are met. Each of these conditions and their applicability to the subject site are addressed below.

Condition 1: The dissolved plume is stable or decreasing.

Periodic groundwater monitoring has been conducted at the site since 1997. The only constituent of concern (COC) detected at the site historically above the 2L Standard is PCE. As such, ATC focused on PCE for the plume stability evaluation.

ATC prepared concentration versus distance and concentration versus time graphs for sampling events conducted at the site for PCE. Over the past six sampling events since 2010, PCE concentrations have been detected in excess of the NC 2L Standard only in monitoring well MW-3. PCE concentrations in well MW-3 are generally low, ranging from 0.0019 to 0.0038 mg/L. These concentrations exceed the 2L Standard of 0.0007 mg/L, but are below the EPA Maximum Contaminant Level (MCL) for drinking water of 0.005 mg/L. The concentration versus time graph for well MW-3 shows that PCE concentrations are exhibiting a stable trend. Monitoring well MW-2 is located generally downgradient of source area well MW-3. Well MW-2 contained PCE at a concentration above the 2L Standard during the first sampling event in 2009, but contained no detectable PCE during the six subsequent sampling events. Therefore, ATC concludes that the initial detection was an outlier and should be disregarded. The absence of detectable PCE in well MW-2 confirms that the plume is not migrating significantly downgradient. Documentation of the plume stability evaluation, including a figure showing monitoring well locations, a table showing historical groundwater analytical data, a concentration versus distance graph, and a concentration versus time graph are included in ***Appendix A***.

It should be noted that no monitoring wells current exist to the north, west, or southwest of impacted well MW-3. However, based on the overall low concentrations of PCE in well MW-3, which are consistently below the EPA MCL for drinking water of 0.005 mg/L, ATC does not consider further plume delineation to be warranted.

Condition 2: The maximum concentration within the exposure domain for every complete exposure pathway of any COC is less than ten times the representative concentration of that COC.

ATC evaluated the representative concentrations calculated during the Risk Assessment and found that this condition has been met for all COCs and exposure pathways.

Condition 3: Adequate assurance is provided that the land-use assumptions used in the DSCA Program's RBCA process are not violated for current or future conditions.

Land-use controls will be implemented for the source property to ensure the assumptions made in the Risk Assessment remain valid in the future. Refer to Section 6.0 for additional details regarding the proposed land-use controls for the site.

Condition 4: There are no ecological concerns at the site.

ATC completed a Level 1 Ecological Risk Assessment for the site in accordance with the DSCA Program's RBCA guidance. The results of the evaluation indicate that the release does not pose an unacceptable ecological risk. The completed Level 1 Ecological Risk Assessment Checklists A and B and associated attachments are included in **Appendix B**.

The site's compliance with the four above referenced conditions confirms that the contaminant concentrations are not likely to pose an unacceptable risk either at present or in the future. The plume is expected to naturally attenuate over time and the appropriate remedial action is to implement appropriate land-use controls on the site property where soil and/or groundwater contamination is present.

5.0 DATA COLLECTED DURING RMP IMPLEMENTATION

No further sampling or other data collection activities are proposed for the site, as long as the assumptions detailed in the Notice of Dry-Cleaning Solvent Remediation (NDCSR) remain valid. As such, this section is not applicable.

6.0 LAND-USE CONTROLS

As discussed in detail in Section 3.0, the recommendation for closure in the Risk Assessment for the site was based on the following land-use conditions:

- Groundwater will not be utilized on the source property.

Institutional controls will be implemented to ensure that land-use conditions are maintained and monitored until the land-use controls are no longer required for the site. A NDCSR was prepared for the source property to comply with the land-use control requirement. The NDCSR is included in *Appendix C*. Refer to the NDCSR for the specific language to be incorporated to address the risk assessment assumptions detailed above. A plat showing the locations and types of dry-cleaning solvent contamination is included as an exhibit to the NDCSR. The locations of dry-cleaning solvent contamination are where contaminants have been detected above unrestricted use standards.

7.0 LONG-TERM STEWARDSHIP PLAN

The NDCSR contains a clause which requires that the owner of the property submit notarized “Annual Certification of Land-use Restrictions” to NCDENR on an annual basis certifying that the NDCSR remains recorded with the Register of Deeds and that the land-use restrictions are being complied with. An example of such a certification is included in *Appendix D*.

8.0 RMP IMPLEMENTATION SCHEDULE

Since the contamination is stable and confined to the source property and possible exposure to the contamination is managed through the NDCSR, no additional site remediation activities are required to implement the RMP. A 30-day public comment period will be held to allow the community an opportunity to comment on the proposed strategy. *Appendix E* includes example documents used to announce the public comment period in the local newspaper and to inform local officials, nearby property owners, and interested parties. As such, upon completion of the

public comment period and final approval of the RMP, the NDCSR will be filed with the Wake County Register of Deeds and will complete the RMP schedule.

9.0 CRITERIA FOR DEMONSTRATING RMP SUCCESS

The RMP will be successfully implemented once the required NDCSR has been executed and recorded with the Wake County Register of Deeds. The NDCSR for the property may, at the request of the owner of the property, be canceled by DENR after the risk to public health and the environment associated with the dry-cleaning solvent contamination and any other contaminants included in the dry-cleaning solvent assessment and remediation agreement has been eliminated as a result of remediation of the property. If DENR is notified of a change in site conditions, per the notification requirements detailed in the NDCSR, the RMP will be reviewed to determine if the site conditions have impacted the requirements set forth in each NDCSR and if changes are required. Enforcement of the RMP will be maintained through receipt of the “Annual DSCA Land-use Restrictions Certification” from the property owner as part of the NDCSR requirements.

10.0 CONTINGENCY PLAN IF RMP FAILS

As discussed above, unless the DSCA Program is notified of a change in land-use conditions at the site, per the notification requirements detailed in this plan, the RMP will remain in effect until the RMP has met its objectives and is considered a success. Pursuant to N.C.G.S. 143-215.104K, if any of the land-use restrictions (LURs) set out in the NDCSRs are violated, the owner of the property at the time the LURs are violated, the owner’s successors and assigns, and the owner’s agents who direct or contract for alteration of the site in violation of the LURs, shall be held liable for the remediation of all contaminants to unrestricted use standards.

11.0 CONCLUSIONS AND RECOMMENDATIONS

ATC has prepared this RMP for Knightdale Cleaners site on behalf of the NC DSCA Program. The results of a Risk Assessment indicated that contaminant concentrations at the site do not pose an unacceptable risk. The contaminant plume associated with the site appears stable or decreasing. This RMP specifies that the NDCSR requirements provide notification that land-use

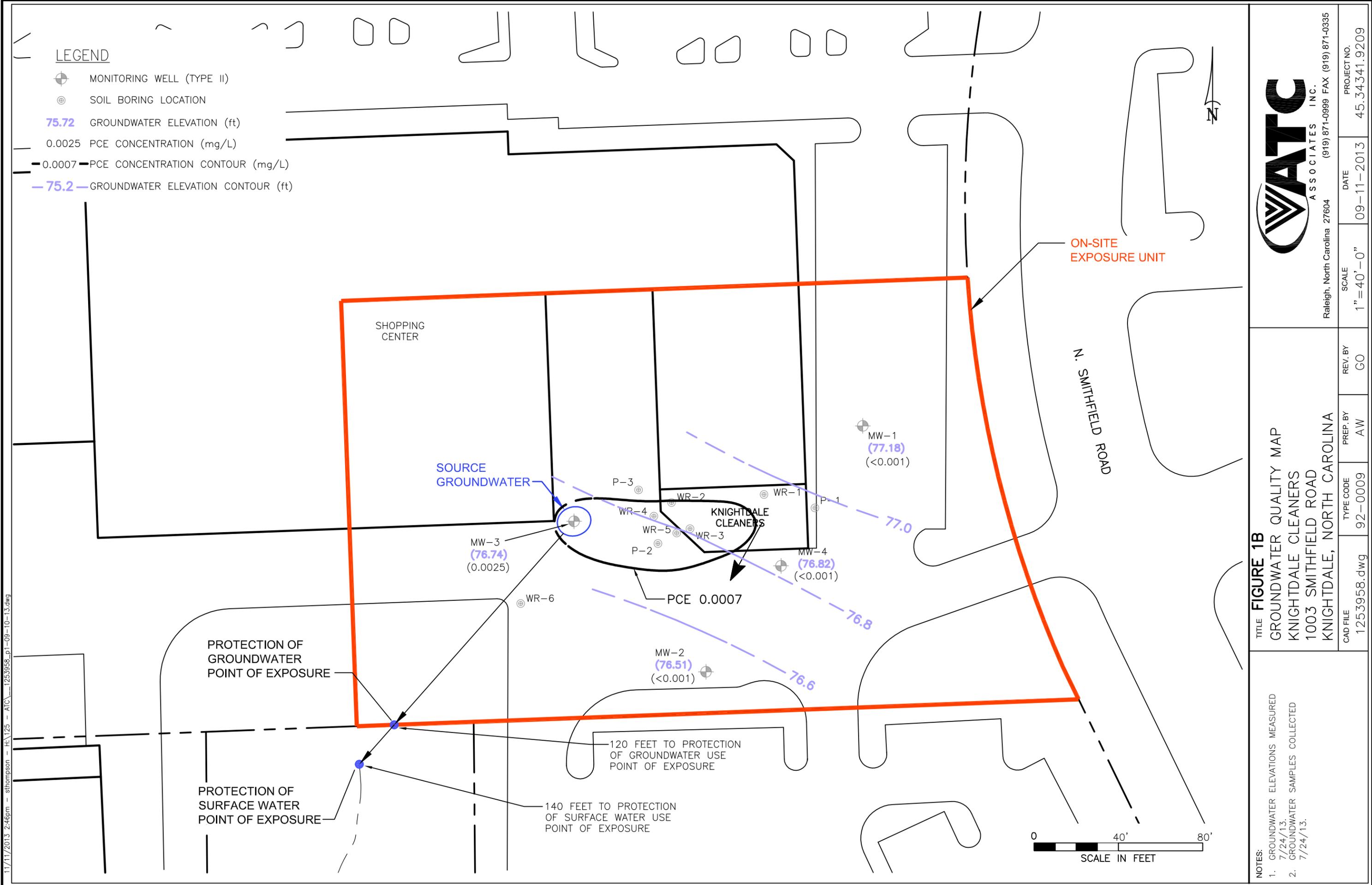
conditions observed during the risk assessment evaluation remain valid in the future. Based on the documentation contained in this report, ATC recommends issuance of a “No Further Action” letter.

APPENDIX A

DOCUMENTATION OF PLUME STABILITY EVALUATION

LEGEND

-  MONITORING WELL (TYPE II)
-  SOIL BORING LOCATION
- 75.72** GROUNDWATER ELEVATION (ft)
- 0.0025 PCE CONCENTRATION (mg/L)
- 0.0007** PCE CONCENTRATION CONTOUR (mg/L)
- 75.2** GROUNDWATER ELEVATION CONTOUR (ft)



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Raleigh, North Carolina 27604 (919) 871-0999 FAX (919) 871-0335

TITLE **FIGURE 1B**
GROUNDWATER QUALITY MAP
KNIGHTDALE CLEANERS
1003 SMITHFIELD ROAD
KNIGHTDALE, NORTH CAROLINA

NOTES:
 1. GROUNDWATER ELEVATIONS MEASURED 7/24/13.
 2. GROUNDWATER SAMPLES COLLECTED 7/24/13.

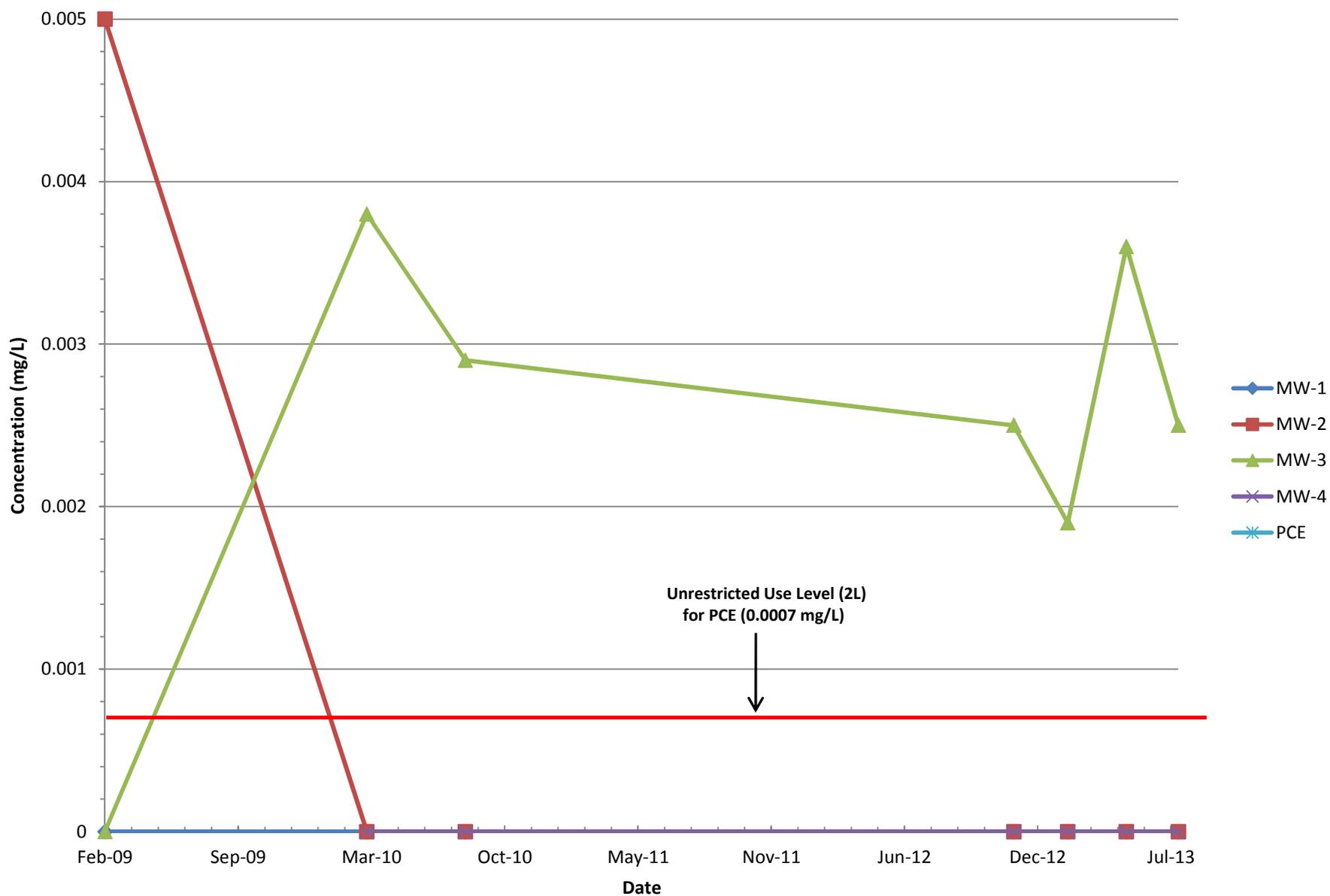
CAD FILE	TYPE CODE	PREP. BY	REV. BY	SCALE	DATE	PROJECT NO.
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Table 1: Analytical Data for Groundwater

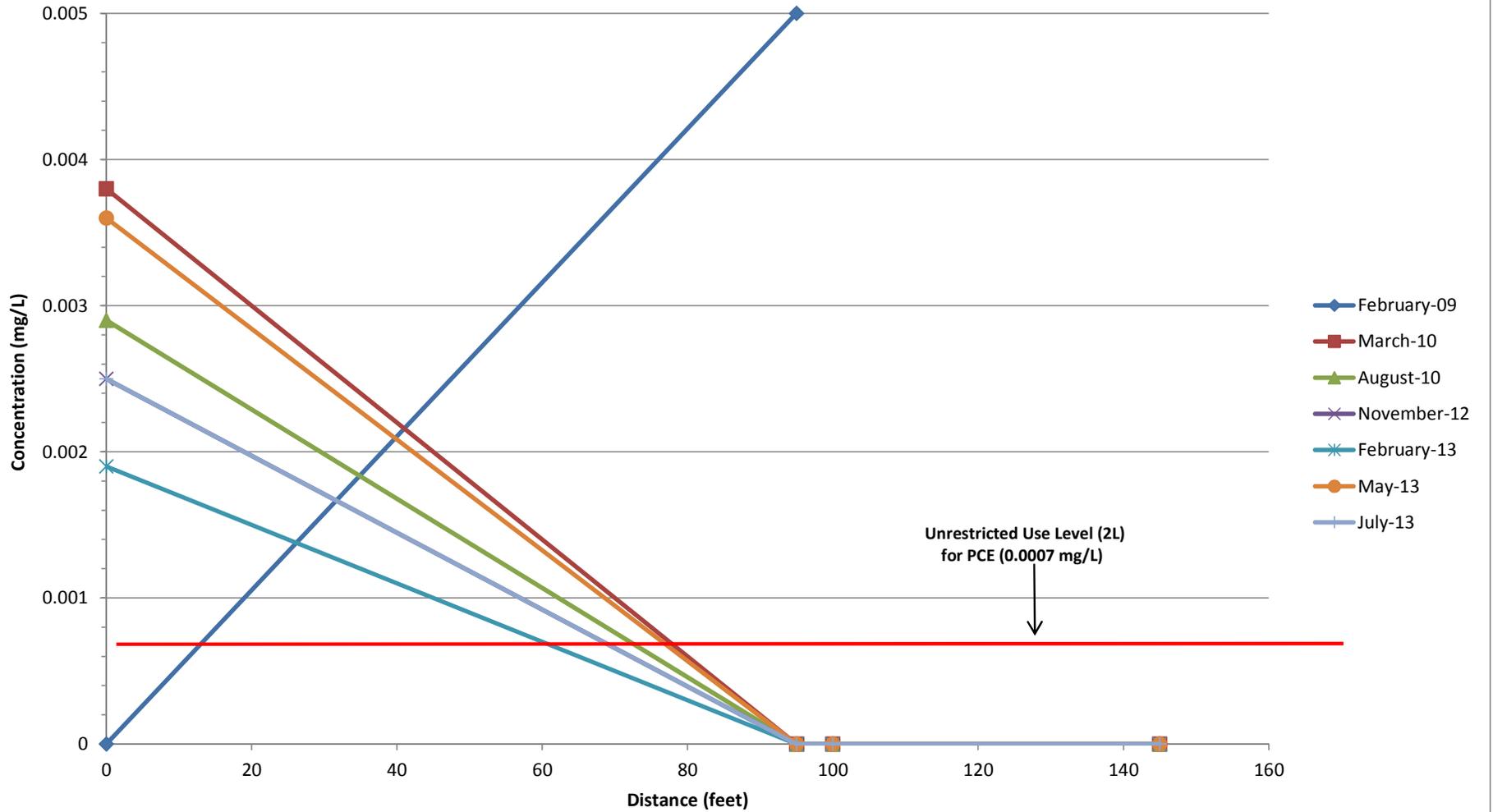
ADT 8

DSCA ID No.: 92-0009												
Groundwater Sampling Point	Sampling Date (mm/dd/yy)	Benzene	cis-1,2-Dichloroethylene	Ethylbenzene	Methyl tert-butyl ether (MTBE)	Naphthalene	Tetrachloroethylene	Toluene	trans-1,2-Dichloroethylene	Trichloroethylene	Vinyl chloride	Xylenes (total)
		[mg/L]										
P-1	12/12/97	NA	NA	NA	NA	NA	<0.001	NA	<0.001	<0.001	<0.001	NA
P-2	12/12/97	NA	NA	NA	NA	NA	0.0024	NA	<0.001	<0.001	<0.001	NA
P-3	12/12/97	NA	NA	NA	NA	NA	<0.001	NA	<0.001	<0.001	<0.001	NA
MW-1	2/24/09	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	3/24/10	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	8/19/10	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	11/19/12	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	2/8/13	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	5/7/13	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	7/24/13	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
MW-2	2/24/09	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	0.005	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	3/24/10	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	8/19/10	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	11/19/12	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	2/8/13	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	5/7/13	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	7/24/13	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
MW-3	2/24/09	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	3/24/10	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	0.0038	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	8/19/10	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	0.0029	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	11/19/12	<0.0010	<0.0010	<0.0010	0.0014	<0.0050	0.0025	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	2/8/13	<0.0010	<0.0010	<0.0010	0.0017	<0.0050	0.0019	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	5/7/13	<0.0010	<0.0010	<0.0010	0.0016	<0.0050	0.0036	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	7/24/13	<0.0010	<0.0010	<0.0010	0.0016	<0.0050	0.0025	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
MW-4	3/24/10	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	8/19/10	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	11/19/12	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	2/8/13	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	5/7/13	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030
	7/24/13	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030

PCE Concentration vs. Time



PCE Concentration vs. Distance



APPENDIX B

LEVEL 1 ECOLOGICAL RISK ASSESSMENT CHECKLISTS

Appendix B
Ecological Risk Assessment – Level 1
Pope’s Dry Cleaners
1013 North Smithfield Road
Knightdale, Wake County, NC
ATC Project No: 45.34341.9209
DSCA Site ID: 92-0009

Checklist A

1. Are there navigable water bodies or tributaries to a navigable water body on or within the one-half mile of the site?

Based on the Knightdale Quadrangle Topographic map and the United States Fish and Wildlife Service, a small intermittent creek is located approximately 140 feet southwest of the site source area. The intermittent creek discharges into Mango Creek. See the topographic map in **Attachment 1** and the USFWS Wetlands Map in **Attachment 2**.

2. Are there any water bodies anywhere on or within the one-half mile of the site?

Based on the Knightdale Quadrangle Topographic map and the USFWS, a small intermittent creek is located approximately 140 feet southwest of the site source area. The intermittent creek discharges into Mango Creek. Several freshwater ponds are also located within one-half mile of the site.

3. Are there any wetland areas such as marshes or swamps on or within one-half mile of the site?

Based on the USFWS Wetland Map, several freshwater ponds are located within one-half mile of the site.

4. Are there any sensitive environmental areas on or within one-half mile of the site?

Based on a review of the USFWS online database, no critical habitats or significant natural areas are located within one-half mile of the site. However, several freshwater ponds are located within one-half mile of the site which are classified as wetlands. Wetlands are considered a sensitive environment.

5. Are there any areas on or within one-half mile of the site owned or used by local tribes?

Based on site observations and the North Carolina Department of Cultural Resources, no tribal artifacts or lands have been identified on or within one-half mile of the site.

6. Are there any habitat, foraging area or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species on or within one-half of the site?

Based on the USFWS online databases, there are no wilderness areas or wildlife refuges within one-half mile of the site.

7. Are there any breeding, roosting or feeding areas by migratory bird species on or within one-half of the site?

The Migratory Bird Treaty Act was developed to help reduce potential migratory bird strikes with aircraft, wind turbines and towers. Many species of birds are protected that are common to the United States, Canada, and Mexico. Therefore, many species of birds in Wake County (e.g., Bald Eagle, Canadian Goose, Mourning Dove) are likely to be within one-half mile of the site.

8. Are there any ecologically, recreationally, or commercially important species on or within one-half mile of the site?

The site is located in an urban setting with mostly commercial, retail and residential properties surrounding the property. It is unlikely that recreational or commercially important species are located in the area overlying the plume. However, several freshwater ponds are located within one-half mile of the site and ecologically important species may exist within this sensitive environment.

9. Are there any threatened and/or endangered species (plant or animal) on or within one-half mile of the site?

ATC reviewed the USFWS online species list. Several endangered and threatened species were identified within Wake County. Endangered and threatened species identified within Wake County include the Red-cockaded woodpecker, Dwarf wedgemussel clam and the Michaux's sumac flowering plant. Because the site is located in an urban setting with mostly commercial, retail and residential properties surrounding the property, it is unlikely that any threatened or endangered species are located in the area overlying the plume. However, several freshwater ponds are located within one-half mile of the site and it is possible that threatened or endangered species exist within this sensitive environment.

ATC also reviewed the North Carolina Heritage Program online Knightdale Quadrangle species list. Several species were identified within the Knightdale Quadrangle. Species listed in the North Carolina Heritage Program within the Knightdale Quadrangle include the Red-cockaded Woodpecker, Four-toed Salamander, the Least Brook Lamprey fish and Regal Darner dragonfly.

Checklist B

1A. Can chemicals associated with the site leach, dissolve, or otherwise migrate to groundwater?

Yes. The primary constituent of concern is tetrachloroethylene (PCE). Based on published references (EPA, 2006), PCE is leachable to groundwater and is slightly soluble in groundwater. Furthermore, impacted groundwater has been confirmed at the site.

1B. Are chemicals associated with the site mobile in groundwater?

Yes. Chemical mobility is primarily influenced by the chemical solubility and soil-water partition coefficient. Based on these values, PCE is classified as moderately mobile (Fetter, 1988).

1C. Does groundwater from the site discharge to an ecological receptor habitat?

The primary ecological receptor habitat identified in the site vicinity is a small intermittent creek located approximately 140 feet southwest of the site source area. The intermittent creek discharges into Mango Creek. Based on groundwater and surface water sampling data, the plume has been defined and does not discharge to this ecological receptor habitat.

1. Could chemicals associated with the site reach ecological receptors through groundwater?

No. As discussed above, the plume is confined to the site property and does not appear likely to reach the nearest ecological receptor habitat.

2A. Are chemicals present in surface soils on the site?

Chemicals are present in surface soils on the site.

2B. Can chemicals be leached from or be transported by erosion of surface soil on the site?

It is unlikely that chemicals can be leached or eroded from the surface soils on the site. The site is a retail shopping center and is paved with asphalt.

2. Could chemicals associated with the site reach ecological receptors through runoff or erosion?

It is unlikely that chemicals associated with the site could reach ecological receptors through runoff or erosion. The site is a retail shopping center and is paved with asphalt.

3A. Are chemicals present in the surface soil or on the surface of the ground?

Chemicals are present in surface soils on the site. The site is located in a large shopping center and impacted soil is covered with asphalt.

3B. Are potential ecological receptors on the site?

Ecological receptors are unlikely to be present on the site property. The primary ecological receptor identified in the site vicinity is a small intermittent creek located approximately 140 feet southwest of the site source area. Several bird species were identified to be associated with wetland areas, but the site is an active shopping center so these species appear unlikely to be present on the site property.

3. Could chemicals associated with the site reach ecological receptors through direct contact?

It is unlikely that chemicals associated with the site would reach ecological receptors through direct contact. Surficial impacted soil is overlain by asphalt and ecological receptors are unlikely to be present in the area.

4A. Are chemicals on the site volatile?

Yes. Chlorinated solvents are considered volatile organic compounds.

4B. Could chemicals on the site be transported in air as dust or particulate matter?

It is unlikely that chemicals on the site be transported in air or as particulate matter. Impacted soil at the site is overlain by asphalt.

4. Could chemicals associated with the site reach ecological receptors through inhalation of volatilized chemicals or adhered chemicals to dust in ambient air or in subsurface burrows?

As discussed above, impacted soils on the site are overlain by asphalt.

5A. Is Non-Aqueous Phase Liquid (NAPL) present at the site?

No. NAPL has not been encountered at the site.

5B. Is NAPL migrating?

No. NAPL has not been encountered at the site.

5C. Could NAPL discharge occur where ecological receptors are found?

No. NAPL has not been encountered at the site.

5. Could chemicals associated with the site reach ecological receptors through migration of NAPL?

No. NAPL has not been encountered at the site.

6A. Are chemicals present in surface and shallow subsurface soils or on the surface of the ground?

Impacted surficial soils are present at the site and are overlain by asphalt.

6B. Are chemicals found in the soil on the site taken up by plants growing on the site?

It is unlikely that chemicals found in the soil could be taken up by plants growing on the site. The site is located in a commercial shopping center consisting mainly of asphalt parking lots and commercial buildings with little to no vegetation.

6C. Do potential ecological receptors on or near the site feed on plants (e.g., grasses, shrubs, forbs, trees, etc.) found on the site?

The site is located in a large shopping center with little to no vegetation and significant ecological receptors are unlikely to be present for a significant time period.

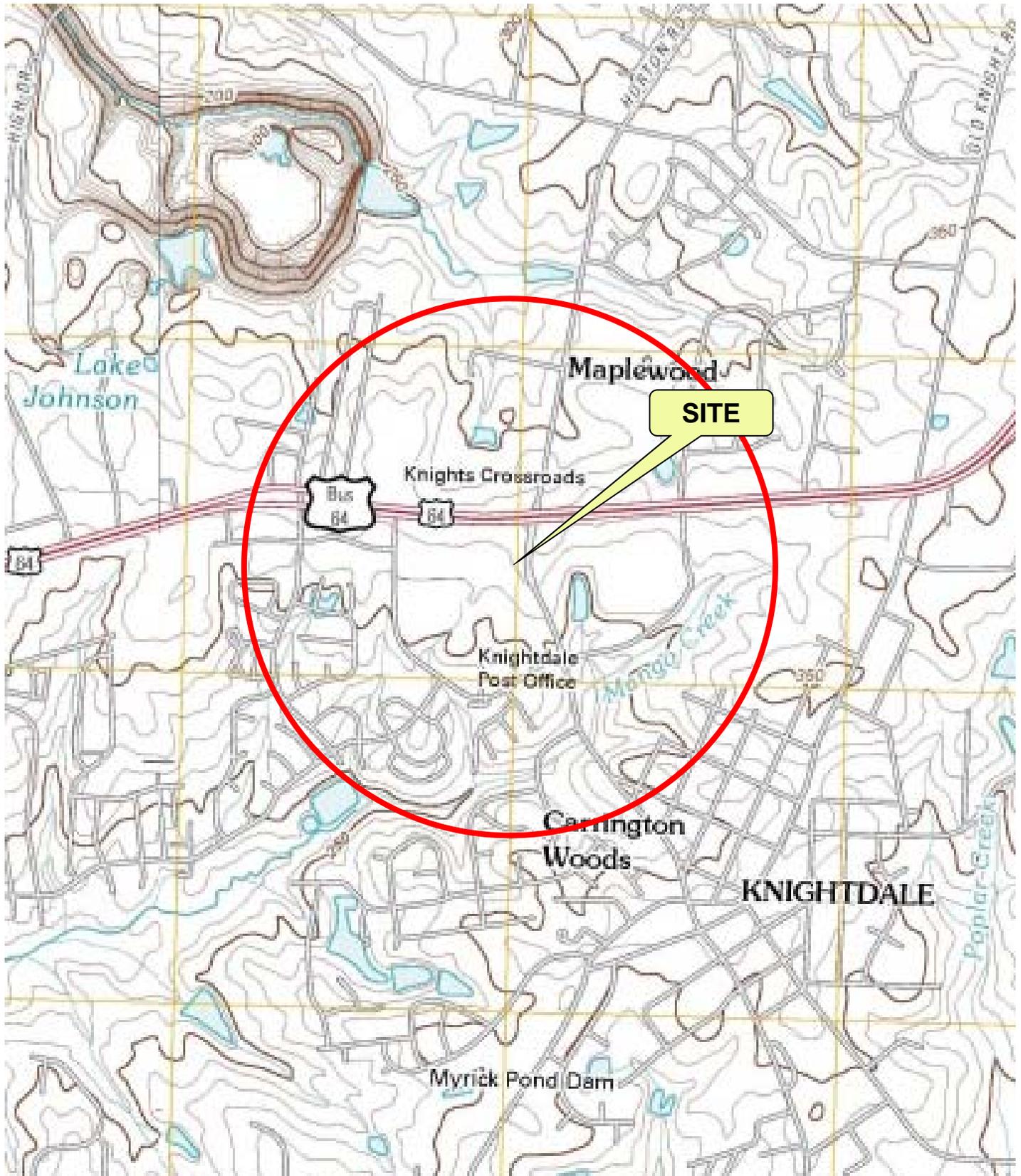
6D. Do chemicals found on the site bioaccumulate?

Based on published references (U.S. Agency for Toxic Substances and Disease Registry, 1997), PCE does not significantly bioaccumulate.

6. Could chemicals associated with the site reach ecological receptors through direct ingestion of soil, plants, animals, or contaminants?

Because impacted surficial soils at the site are overlain by asphalt, the lack of vegetation at the site, the commercial site environment, and the absence of bioaccumulation for the chemicals of concern, it is not anticipated that chemicals associated with the site would reach ecological receptors through direct ingestion of soil, plants, animals, or contaminants.

Attachment 1: Topographic Map, Knightdale Quadrangle
Knightdale Cleaners, DSCA Site ID #92-0009



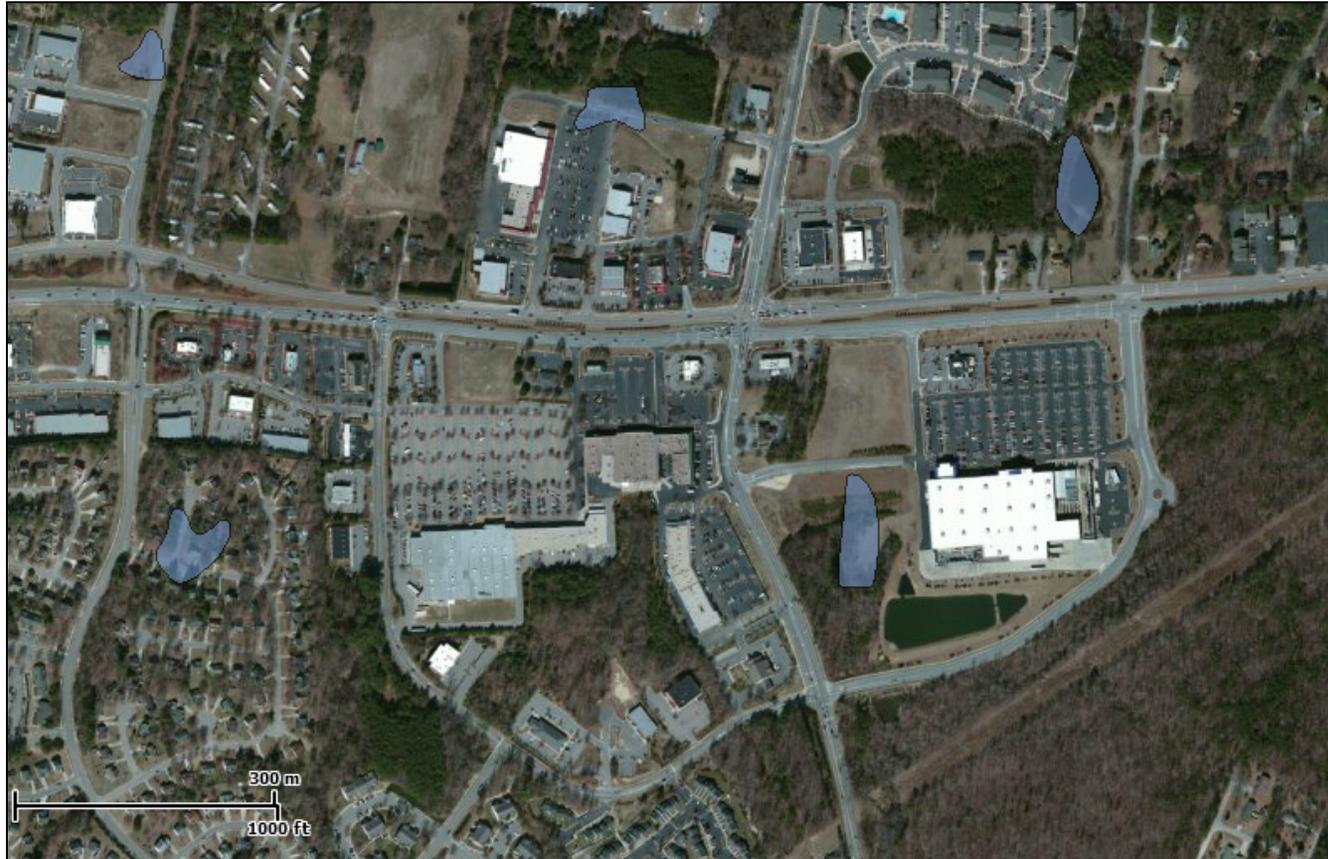
— 1/2 mile radius



U.S. Fish and Wildlife Service National Wetlands Inventory

**Knightsdale
Cleaners**

Sep 13, 2013



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

Riparian Status

- Digital Data

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

APPENDIX C

NOTICE OF DRY-CLEANING SOLVENT REMEDIATION FOR SOURCE PROPERTY

NOTICE OF DRY-CLEANING SOLVENT REMEDIATION

Property Owner: Knightdale Crossing, LLC

Recorded in Book _____, Page _____

Associated plat recorded in Plat Book _____, Page _____

This documentary component of a Notice of Dry-Cleaning Solvent Remediation (hereinafter “Notice”) is hereby recorded on this ____ day of _____, 20____ by Knightdale Crossing, LLC (hereinafter “Property Owner”). The survey plat component of the Notice is being recorded concurrently with this documentary component. The real property (hereinafter “Property”) which is the subject of this Notice is located at 1003 North Smithfield Road, Knightdale, Wake County, North Carolina, Parcel Identification Number (PIN) 1754156437.

The Property is contaminated with dry-cleaning solvent, as defined at North Carolina General Statutes (hereinafter “N.C.G.S.”), Section (hereinafter “§”) 143-215.104B(b)(9) and other contaminants. This Notice has been approved by the North Carolina Department of Environment and Natural Resources, or its successor in function (hereinafter “DENR”) under the authority of the Dry-Cleaning Solvent Cleanup Act of 1997, as amended, N.C.G.S. § 143-215.104A *et seq.* (hereinafter “DSCA”), and is required to be filed in the Register of Deeds' Office in the county or counties in which the land is located, pursuant to NCGS § 143-215.104M.

Soil and groundwater at the Property are contaminated with dry-cleaning solvents associated with dry-cleaning operations at Knightdale Cleaners (DSCA Site 92-0009) located at 1013 North Smithfield Road, Knightdale, in the Knightdale Crossing shopping center. Dry-cleaning operations were conducted on the Property from approximately 1987 to 2005. The building is currently vacant.

Pursuant to N.C.G.S. § 143-215.104M, this Notice is being filed in order to reduce or eliminate the danger to public health or the environment posed by the Property. Attached hereto as **Exhibit A** is a reduction, to 8 1/2" x 11", of the survey plat component of the Notice required

by N.C.G.S. § 143-215.104M. The survey plat has been prepared and certified by a professional land surveyor and meets the requirements of G.S. 47-30, and contains the following information required by N.C.G.S. § 143-215.104M:

- (1) A description of the location and dimensions of the areas of potential environmental concern with respect to permanently surveyed benchmarks; and
- (2) The type, location and quantity of regulated dry-cleaning solvent contamination and other contaminants known to exist on the Property.

Attached hereto as **Exhibit B**, is a legal description of the Property that would be sufficient as a description in an instrument of conveyance.

Pursuant to NCGS § 143-215.104M, a certified copy of this Notice must be filed within 15 days of receipt of DENR's approval of the Notice or the effective date of the dry-cleaning solvent remediation agreement, whichever is later. Pursuant to NCGS § 143-215.104M, the copy of the Notice certified by DENR must be recorded in the grantor index under the names of the owners of the land.

LAND-USE RESTRICTIONS

NCGS § 143-215.104M requires that the Notice identify any restrictions on the current and future use of the Property that are necessary or useful to maintain the level of protection appropriate for the designated current or future use of the Property and that are designated in the dry-cleaning remediation agreement. The restrictions shall remain in force in perpetuity unless canceled by the Secretary of DENR, or his/her designee, after the hazards have been eliminated, pursuant to NCGS §143-215.104M. Those restrictions are hereby imposed on the Property, and are as follows:

- 1. Without prior written approval from DENR, the Property shall not be used for mining or extraction of coal, oil, gas or any mineral or non-mineral substances.**
- 2. No activities that encounter, expose, remove or use groundwater (for example, installation of water supply wells, fountains, ponds, lakes or swimming pools that use groundwater, or construction or excavation activities that encounter or expose groundwater) may occur on the Property without prior approval of DENR.**
- 3. In January of each year, on or before January 31st, the owner of any portion of the Property shall submit a notarized Annual DSCA Land-Use Restrictions Certification to DENR certifying that this Notice remains recorded at the Register of Deeds' office, and that the Land-Use Restrictions are being complied with.**
- 4. No person conducting environmental assessment or remediation at the Property or involved in determining compliance with applicable land-use restrictions, at the**

direction of, or pursuant to a permit or order issued by DENR may be denied access to the Property for the purpose of conducting such activities.

- 5. The owner of any portion of the Property shall cause the instrument of any sale, lease, grant, or other transfer of any interest in the property to include a provision expressly requiring the lessee, grantee, or transferee to comply with this Notice. The failure to include such a provision shall not affect the validity or applicability of any land-use restriction in this Notice.**

EASEMENT (RIGHT OF ENTRY)

The property owner grants and conveys to DENR, its agents, contractors, and employees, and any person performing pollution remediation activities under the direction of DENR, access at reasonable times and under reasonable security requirements to the Property to determine and monitor compliance with the land-use restrictions set forth in this Notice. Such investigations and actions are necessary by DENR to ensure that use, occupancy, and activities of and at the Property are consistent with the land-use restrictions and to ensure that the structural integrity and continued effectiveness of any engineering controls (if appropriate) described in the Notice are maintained. Whenever possible, at least 48 hours advance notice will be given to the Property Owner prior to entry. Advance notice may not always be possible due to conditions such as response time to complaints and emergency situations.

REPRESENTATIONS AND WARRANTIES

The Property Owner hereby represents and warrants to the other signatories hereto:

- i) that the Property Owner is the sole owner of the Property; **or** that the Property Owner has provided to DENR the names of all other persons that own an interest in or hold an encumbrance on the Property and have notified such persons of the Property Owner's intention to enter into this Notice;
- ii) that the Property Owner has the power and authority to enter into this Notice, to grant the rights and interests herein provided and to carry out all obligations hereunder; and
- iii) that this Notice will not materially violate or contravene or constitute a material default under any other agreement, document or instrument to which the Property Owner is a party or by which the Property Owner may be bound or affected.

ENFORCEMENT

The above land-use restrictions shall be enforceable without regard to lack of privity of estate or contract, lack of benefit to particular land, or lack of any property interest in particular

land. The land-use restrictions shall be enforced by any owner of the Property. The land-use restrictions may also be enforced by DENR through the remedies provided in NCGS § 143-215.104P or by means of a civil action; by any unit of local government having jurisdiction over any part of the Property; and by any person eligible for liability protection under the DSCA who will lose liability protection if the restrictions are violated. Any attempt to cancel any or all of this Declaration without the approval of the Secretary of DENR (or its successor in function), or his/her delegate, shall be subject to enforcement by DENR to the full extent of the law. Failure by any party required-or authorized to enforce any of the above restrictions shall in no event be deemed a waiver of the right to do so thereafter as to the same violation or as to one occurring prior or subsequent thereto.

If a land-use restriction set out in this Notice required under NCGS § 143-215.104.M is violated, the owner of the Property at the time the land-use restriction is violated, the owner's successors and assigns, and the owner's agents who direct or contract for alteration of the contamination site in violation of a land-use restriction shall be liable for remediation of all contaminants to unrestricted use standards.

FUTURE SALES, LEASES, CONVEYANCES AND TRANSFERS

When any portion of the Property subject to this Notice is sold, leased, conveyed or transferred, the deed or other instrument of transfer shall contain in the description section, in no smaller type than that used in the body of the deed or instrument, (1) a statement that the property has been contaminated with dry-cleaning solvent and, if appropriate, cleaned up under the Act and (2) a reference by book and page to the recordation of this Notice.

The Property Owner shall notify DENR within fourteen (14) calendar days of the effective date of any conveyance, grant, gift, or other transfer, whole or in part, of the Property Owner's interest in the Property. This notification shall include the name, business address and phone number of the transferee and the expected date of transfer.

The Property Owner shall notify DENR within thirty (30) days following the petitioning or filing of any document by any person initiating a rezoning of the Property that would change the base zone of the Property.

PROPERTY OWNER SIGNATURE

IN WITNESS WHEREOF, Property Owner has caused this instrument to be duly executed this ___ day of _____, 20__.

Knightdale Crossing, LLC

By:

Name of contact

STATE OF _____
COUNTY OF _____

I, _____, a Notary Public of the county and state aforesaid, certify that _____ personally came before me this day and acknowledged that he/she is a Member of Knightdale Crossing, LLC, a North Carolina limited liability corporation, and its Manager, and that by authority duly given and as the act of the company, the foregoing Notice of Dry-Cleaning Solvent Remediation was signed in its name by him.

WITNESS my hand and official stamp or seal, this ___ day of _____, 20__.

Name typed or printed
Notary Public

My Commission expires: _____
[Stamp/Seal]

APPROVAL AND CERTIFICATION

The foregoing Notice of Dry-Cleaning Solvent Remediation is hereby approved and certified.

North Carolina Department of Environment and Natural Resources

By: _____ Date _____
Jim Bateson, LG
Chief, Superfund Section
Division of Waste Management

LIMITED POWER OF ATTORNEY

I _____ “Property Owner”, do hereby grant a limited power of attorney to DENR and to DENR’s independent contractors, as follows:

DENR and DENR’s independent contractors shall have the limited power of attorney to record this Notice, including its documentary and survey plat components, in accordance with N.C.G.S. § 143-215.104M on my “Property Owner” behalf. This limited power of attorney shall terminate upon completion of the recordation of the Notice.

Signature of Property Owner _____

Dated this ____ day of _____ 20__.

STATE OF _____
COUNTY OF _____

I, _____, a Notary Public, do hereby certify that _____ personally appeared before me this day and signed this “Limited Power of Attorney”.

WITNESS my hand and official stamp or seal, this ____ day of _____, 20__.

Name typed or printed
Notary Public

My Commission expires: _____
[Stamp/Seal]

EXHIBIT A
REDUCTION OF SURVEY PLAT

EXHIBIT B
PROPERTY LEGAL DESCRIPTION

BEING all of Tract 3, as shown on map and survey as recorded in
Book of Maps 1986, Page 849, Wake County Registry.

APPENDIX D

EXAMPLE ANNUAL CERTIFICATION OF DSCA LAND-USE RESTRICTIONS

Annual Certification of Land-Use Restrictions

Site Name: Knightdale Cleaners
Site Address: 1003 North Smithfield Road, Knightdale, Wake County
DSCA ID No: 92-0009

ANNUAL CERTIFICATION of LAND-USE RESTRICTIONS

Pursuant to Condition 3 in the Notice of Dry-Cleaning Solvent Remediation (Notice) signed by Knightdale Crossing, LLC and recorded in Deed Book ____ Page ____ on <date> at the Wake County Register of Deeds Office, Knightdale Crossing, LLC hereby certifies, as an owner of at least part of the property that is the subject of the Notice, that the Notice remains recorded at the Wake County Register of Deeds office and the land-use restrictions therein are being complied with.

Duly executed this ____ day of _____, 20__.

Knightdale Crossing, LLC

By: _____

Name typed or printed:

STATE OF _____
COUNTY OF _____

I, _____, a Notary Public of the county and state aforesaid, certify that _____ personally came before me this day and the foregoing certification was signed by him/her.

WITNESS my hand and official stamp or seal, this ____ day of _____, 20__.

Name typed or printed:
Notary Public

My Commission expires: _____
[Stamp/Seal]

APPENDIX E

EXAMPLE DOCUMENTS ANNOUNCING THE PUBLIC COMMENT PERIOD



North Carolina Department of Environment and Natural Resources
Division of Waste Management

Pat McCrory
Governor

Dexter R. Matthews
Director

John E. Skvarla, III
Secretary

<Date>

<property owner>
<mailing address>
<city, state, zip>

Subj: Dry-Cleaning Solvent Contamination at 1003 North Smithfield Road, Knightdale, NC

Dear <property owner>:

You are receiving this letter because your property at <adjacent property address> is adjacent to an area contaminated with dry-cleaning solvents. The Dry-Cleaning Solvent Clean-up Act (DSCA) Program has completed an assessment of the dry-cleaning solvent contamination associated with Knightdale Cleaners at 1003 North Smithfield Road in Knightdale. A remedial strategy to address the site contamination has been prepared, and in accordance with our program's statutes, the community has an opportunity to review and comment on the proposed strategy.

The attached Summary of the Notice of Intent to Remediate a Dry-Cleaning Solvent Facility or Abandoned Site (NOI) provides a brief description of the proposed remedy, a web link to the complete NOI, and the dates and procedures for commenting on the proposed remedy. If you do not have access to the internet, we ask that you contact us to request a hard copy of the complete NOI.

If you have questions, please contact me at (919) 707-8361 or Delonda Alexander at (919) 707-8365.

Sincerely,

Mike Cunningham, Project Manager
DSCA Remediation Unit
Mike.Cunningham@ncdenr.gov

Attachments: Summary of the NOI

Cc: DSCA Site # 92-0009 File



North Carolina Department of Environment and Natural Resources
Division of Waste Management

Pat McCrory
Governor

Dexter R. Matthews
Director

John E. Skvarla, III
Secretary

<Date>

<name>, <City Manager/County Health Director>
<address>
<city>, NC <zip>

Subj: Remediation of Dry-Cleaning Solvent Contamination
DSCA Site # 92-0009
Knightdale Cleaners, 1003 North Smithfield Road, Knightdale

Dear <name>:

The Dry-Cleaning Solvent Cleanup Act of 1997 (DSCA), North Carolina General Statutes (N.C.G.S.) Sections 143-215.104A through 143-215.104U, provides for the assessment and remediation of properties that may have been or were contaminated by chlorinated solvents. To satisfy the requirements of N.C.G.S. 143-215.104L, this letter serves as the **Notice of Intent to Remediate a Dry-Cleaning Solvent Facility or Abandoned Site** (NOI) approved by the North Carolina Department of Environment and Natural Resources (DENR).

The NOI must provide, to the extent known, a legal description of the location of the DSCA Site, a map showing the location of the DSCA Site, a description of the contaminants involved and their concentrations in the media of the DSCA Site, a description of the intended future use of the DSCA Site, any proposed investigation and remediation, and a proposed Notice of Dry-Cleaning Solvent Remediation (NDCSR) prepared in accordance with N.C.G.S. Section 143-215.104M. The required components of the NOI are included in the attached Risk Management Plan, and are available on our website at www.ncdscsca.org, under "Public Notices" during the public comment period.

The DSCA Program is providing a copy of the NOI to all local governments having jurisdiction over the DSCA Site. A 30-day public comment period is being held from <date>, until <date>. Written comments may be submitted to DENR no later than <date>. Written requests for a public meeting may be submitted to DENR no later than <date>. All such comments and requests should be sent to:

Mike Cunningham, DSCA Remediation Unit
Division of Waste Management, NC DENR
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Remediation of Dry-Cleaning Solvent Contamination
DSCA Site # 92-0009
Knightdale Cleaners, 1003 North Smithfield Road, Knightdale
Page 2

<date>

A Summary of the NOI is being published in The News and Observer, copies are being sent to owners of property within and contiguous with the area of contamination, and a copy of the Summary will be conspicuously posted at the Site during the public comment period.

If you have any questions, please feel free to contact me at (919) 707-8361.

Sincerely,

Mike Cunningham, Project Manager
DSCA Remediation Unit
Mike.Cunningham@ncdenr.gov

Attachments: Risk Management Plan

Cc: DSCA Site # 92-0009 File

Public Notice

SUMMARY OF NOTICE OF INTENT TO REMEDIATE A DRY-CLEANING SOLVENT FACILITY OR ABANDONED SITE

Knightdale Cleaners
DSCA Site # 92-0009

Pursuant to N.C.G.S. §143-215.104L, on behalf of Knightdale Crossing, LLC, the North Carolina Department of Environment and Natural Resources' (DENR's) private contractor has prepared a Notice of Intent to Remediate a Dry-Cleaning Solvent Facility or Abandoned Site (NOI). The purpose of this Summary of the NOI is to notify the community of the proposed remedy for the contamination site and invite comment on the proposed remedy.

Knightdale Cleaners formerly conducted dry-cleaning operations in the Knightdale Crossing shopping center, at 1003 North Smithfield Road in Knightdale, North Carolina. The property is currently used for storage by a flooring retailer. Dry-cleaning solvent contamination in soil and groundwater has been identified at the following parcel:

1003 North Smithfield Road in Knightdale; Parcel No. 1754156437

An investigation of the extent of contamination has been completed. A risk assessment of the contaminated properties concluded that the contamination poses no unacceptable risks. A Risk Management Plan has been prepared which proposes using land-use controls to prevent current and future risks at the affected properties.

The elements of the complete NOI are included in the Risk Management Plan (RMP) which is available online at <http://portal.ncdenr.org/web/wm/DSCA/PublicNotices>.

The public comment period begins _____, 20__, and ends _____, 20__.

Comments must be in writing and submitted to DENR no later than _____, 20__. Written requests for a public meeting may be submitted to DENR no later than _____, 20__. Requests for additional information should be directed to Mike Cunningham at (919)707-8361.

All comments and requests should be sent to:

Mike Cunningham, DSCA Remediation Unit
Division of Waste Management, NC DENR
1646 Mail Service Center
Raleigh, North Carolina 27699-1646