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**Proposed**  
**Remedial Action Document**  
for  
**State Hwy 123 PCE Plume**

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**December 9, 2004**

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# PROPOSED REMEDIAL ACTION DOCUMENT



STATE HIGHWAY 123 PCE PLUME  
PROPOSED STATE SUPERFUND SITE  
SAN MARCOS, HAYS COUNTY, TEXAS

DECEMBER 9, 2004

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**STATE HIGHWAY 123 PCE PLUME PROPOSED STATE SUPERFUND SITE  
SAN MARCOS, HAYS COUNTY, TEXAS  
PROPOSED REMEDIAL ACTION DOCUMENT**

**I. INTRODUCTION**

The State Highway 123 PCE Plume Proposed State Superfund Site (Site) is located in San Marcos, Hays County, Texas. The Site consists of all property overlying an area of shallow groundwater contaminated with tetrachloroethylene (PCE) and PCE related chemicals. The volume of contaminated shallow groundwater is known as a "plume". PCE and PCE related chemicals are considered "chlorinated compounds" or "chlorinated chemicals" and are commonly associated with solvents used in dry cleaning and de-greasing activities. The location of the source of the contamination at the Site, and the historic activity which caused it has not been determined as of this time. Throughout this document the unknown historic source is referenced in the singular, though it is possible that more than one location or more than one release event may have caused the shallow groundwater contamination at the Site.

The Texas Commission on Environmental Quality (TCEQ) is an agency in the State of Texas given responsibility for implementing the laws of the state relating to the conservation of natural resources and the protection of public health and safety and the environment. The TCEQ addresses certain sites that may constitute an imminent and substantial endangerment to public health and safety or the environment through the state Superfund program.

**II. PURPOSE**

This *Proposed Remedial Action Document* (PRAD) presents the proposed *Remedial Action* (also known as the remedy) for the Site, which is designed to address the contamination and provide protection of public health and safety and the environment. Words appearing in italics in this document are defined in Section X, "Glossary" of this PRAD.

- A. The purpose of this document is:
1. to describe the actions taken by the TCEQ to investigate the contamination, including any mitigating actions;
  2. to describe the proposed *Remedial Action* and solicit public review and comment on that proposed *Remedial Action*; and
  3. to provide information on how the public can comment on the proposed *Remedial Action*.
- B. This PRAD summarizes information that can be found in greater detail in various studies and reports located in the Site files. Relevant documents are identified and summarized in Part V, "Summary of Reports" of this PRAD.

The TCEQ encourages the public to review these documents to gain a better understanding of the Site, the state Superfund process, the actions taken by the TCEQ, and the actions

proposed by the TCEQ to address the threats presented by the Site. Copies of the documents summarized in this PRAD, as well as other relevant information, can be viewed at the local repository:

San Marcos Public Library  
625 E. Hopkins Street  
San Marcos TX 78666  
512/393-8200

or in Austin at the TCEQ Records Management Center:

Building E, 1st Floor  
12100 Park 35 Circle  
Austin, Texas 78753  
(512) 239-2930

### III. LEGAL AUTHORITY

The investigation of the nature and extent of contamination at the Site and the selection of the proposed *Remedial Action* is in accordance with the *Solid Waste Disposal Act* (codified as Chapter 361 of the Texas Health and Safety Code); Subchapter K: Hazardous Substance Facilities Assessment and Remediation rules found in Chapter 335 of 30 Texas Administrative Code (Subchapter K); and the *Texas Risk Reduction Program* (TRRP) rules found in Chapter 350 of 30 Texas Administrative Code.

While the Subchapter K rules are specific to the Superfund process, the TRRP rules are a comprehensive program for addressing environmental contamination and apply to many different types of corrective action administered by the TCEQ. The TRRP rules establish procedures for determining the concentration of contaminants to which a person or other environmental receptor can be exposed without unacceptable risk of harm. These acceptable concentration levels are called *Protective Concentration Levels* (PCLs).

A three-tiered approach may be used under the TRRP rules to calculate the PCLs for a site. The tiers represent increasing levels of evaluation where site-specific information is factored into the process. For example, Tier 1 uses conservative, generic models that do not account for site-specific factors while Tier 3 allows for more detailed and complex evaluations so that PCLs are appropriate for specific site conditions. The PCLs for this Site were developed under Tier 1.

Under the TRRP rules land can be classified as either residential or commercial/industrial for the purposes of establishing applicable PCLs. Remediation to residential standards assumes that the site may be occupied by children and therefore is applicable not only to strictly residential land but also to playgrounds, schools, daycare centers and similar land uses. Remediation to commercial/industrial standards assumes that the site will not be regularly occupied by children and is protective of persons who may occupy the site as workers. Sites remediated to commercial/industrial standards cannot be used for residential-type activities unless further controls are implemented to make the site safe for that use.

The remedial action objectives and PCLs established for the Site (which are discussed later in this document) are protective of residential and commercial/industrial occupants.

The TRRP rules allow risks posed by the presence of contamination above a PCL to be managed by any combination of the following: 1) removal or decontamination of contaminated media; 2) physical controls such as landfills and caps which limit exposure to the contaminated media; or 3) *institutional controls* such as deed restrictions on the future use of the property which are also intended to limit exposure to the contaminated media. These remedies under the TRRP rules are divided into two main categories. Remedies which do not rely on physical controls and which meet the remedial objectives by removal or decontamination are considered to meet TRRP "Remedy Standard A." Remedies which utilize removal, decontamination, and/or physical or *institutional controls* are considered to meet TRRP "Remedy Standard B." These standards are described in detail in 30 Texas Administrative Code Section 350.32 and Section 350.33, respectively.

#### **IV. SITE HISTORY**

Chlorinated chemicals similar to PCE were first detected in groundwater in the vicinity of the Site during investigations related to the removal of an underground petroleum storage tank (UST) in 1986. As the UST investigation progressed through 1989 it was determined that chlorinated chemicals were detected in Willow Springs and in small fish netted from Willow Springs Creek (but at levels which do not pose a health risk). The investigation also concluded that the initial UST site was not the likely source of all of the chlorinated contaminants.

From 1989 through 1994 other UST removal and investigation projects in the vicinity continued to indicate a release of chlorinated chemicals but failed to indicate a source of the contamination. Data collected in association with a major water main installation project near the intersection of SH-123 and IH-35 in San Marcos also indicated a release of chlorinated chemicals but did not indicate the original source.

In 1996 a United States Environmental Protection Agency (EPA) Screening Site Inspection was conducted which again indicated the presence of chlorinated solvents in shallow groundwater but concluded with a recommendation of "No Further Remedial Action Planned" (by the EPA) due to the lack of drinking water receptors in the area. Additional data collected by the TCEQ in 2000 continued to indicate detections of chlorinated solvents and the site was proposed for listing on the State Superfund Registry in January 2001.

#### **V. SUMMARY OF REPORTS**

##### **A. HAZARD RANKING SYSTEM REPORT**

The *Hazard Ranking System* (HRS) is a numerically-based screening system that uses information from initial, limited investigations to assess whether a site qualifies for the state or federal Superfund program. Sites scoring 28.5 or greater may qualify for the federal Superfund program, while sites scoring 5 or greater may qualify for the state Superfund program. The HRS scoring for the Site was prepared by the TCEQ in August, 2000 and is presented in the report titled "Hazard Ranking System Documentation for the State Highway 123 PCE Plume Site." The Site earned a score of 12 which qualified the Site for proposal to the State Registry of Superfund Sites on January 26, 2001 and acceptance into the state Superfund program.

## B. REMEDIAL INVESTIGATION REPORT

The "Remedial Investigation Report for the State Highway 123 PCE Plume State Superfund Site" (RI) includes a detailed description of multiple phases of investigation conducted at the site from November of 2001 through August of 2004. These investigations were aimed at 1) determining the nature and extent of contamination exceeding residential PCLs in all media; 2) identifying the source of the contamination; and, 3) collecting data needed to determine feasible remedy alternatives.

The RI concluded that shallow groundwater at the site is impacted by PCE and PCE related chemicals at levels exceeding the applicable PCL. Investigations determined that the impacted shallow groundwater is Class II. According to the TCEQ groundwater classification system, Class II groundwater is suitable for drinking water if not contaminated. The shallow groundwater at the Site is not currently used as a source of drinking water. The area of the plume contaminated above PCLs extends from Willow Springs west of IH-35 southwest to near the intersection of State Highway 123 and Ebony Street. No other media was found to be contaminated above applicable PCLs.

## C. FEASIBILITY STUDY / PRESUMPTIVE REMEDY

30 Texas Administrative Code Section 335.348(k) requires that the selection of the remedial alternative be made in accordance with the *presumptive remedy* process unless the executive director of the TCEQ determines that a feasibility study must be conducted. For the Site, it was determined that the *presumptive remedy* approach is applicable. The Presumptive Remedies Document for the State Highway 123 PCE Plume State Superfund Site (PRD) presents a summary of the specific threats identified at the Site and identifies an appropriate remedy based upon the application of the presumptive remedies approach in lieu of the full feasibility study process. The following section of this PRAD describes the result of the *presumptive remedy* approach to remedy selection.

## VI. EVALUATION OF REMEDIAL ACTION ALTERNATIVES

In accordance with 30 Texas Administrative Code Section 335.348(l) and the requirements of Section 361.193 of the *Solid Waste Disposal Act*, the TCEQ selects the *Remedial Action* for a site by determining which remedial alternative is "the lowest cost alternative that is technologically feasible and reliable and that effectively mitigates and minimizes damage to and provides adequate protection of the public health and safety or the environment."

The RI concluded that an unacceptable risk is presented by PCE and PCE related chemicals of concern in the shallow groundwater at the Site. No other media was contaminated at levels that present an unacceptable risk. The following table presents the remedial objective for the Site based on the findings of the RI:

STATE HIGHWAY 123 PCE PLUME  
REMEDY SUMMARY  
AFFECTED MEDIA: GROUNDWATER

CHEMICAL OF CONCERN (COC)	ACTION LEVEL (Critical PCL, mg/L)	REMEDIAL ACTION OBJECTIVE (RAO)
Tetrachloroethylene (PCE)	0.005	For all COCs the RAO is to prevent exposure to the contaminated groundwater until such time as, through natural attenuation processes, the concentration of all COCs is below the Action Level (Critical PCL).
Trichloroethene (TCE)	0.005	
Vinyl Chloride	0.002	
1,1,2,2-Tetrachloroethane	0.0046	
1,2,3-Trichloropropane	0.00013	
1,2-Dibromo-3-chloropropane	0.0002	
1,2-Dichloroethane	0.005	
Cis-1,2-Dichloroethene	0.07	
Cis-1,3-Dichloropropene	0.0017	
Hexachlorobutadiene	0.0049	

The remedy proposed for the Site was identified through application of the TCEQ guidance document "Presumptive Remedies for Groundwater at Texas State Superfund Sites." In comparison to the full *feasibility study* process, the *presumptive remedy* process provides a streamlined approach to identifying the remedy best meeting the criteria described above for sites that fit within a set of standard conditions. For sites fitting those standard conditions, a variety of remedies are evaluated and the one best meeting the Superfund remedy selection criteria is presumed to be the best remedy for all other sites having the same standard conditions.

The Site was found to fit within the standard conditions assumed in the *presumptive remedy* guidance for sites having contamination by chlorinated chemicals. The presumptive remedy guidance considered a range of technologies with the potential to address this type of contamination including containment, a variety of ex-situ treatment technologies, a variety of in-situ technologies, and monitored natural attenuation (MNA). Natural attenuation is the reduction in mass or concentration of a chemical of concern over time due to naturally occurring physical, chemical and biological processes such as: biodegradation, dispersion, dilution, adsorption, and volatilization. Monitored natural attenuation is the use of natural attenuation within the context of a carefully controlled and monitored response action to achieve a remedial objective.

The guidance concluded that MNA was the remedy best meeting the selection criteria for those sites where physical conditions are suitable for natural attenuation. In comparison to MNA, the other alternatives evaluated in the *presumptive remedy* guidance which would likely achieve the remedial objectives (in-situ

and ex-situ treatment technologies) are estimated to be significantly more costly than MNA (and therefore would meet the criteria for remedy selection only if site conditions are not amenable to MNA). Samples collected during the RI indicate that the Site conditions are suitable for natural attenuation and that natural attenuation has likely been occurring at the site. MNA is proposed as one element of the remedy for the Site.

There is currently no exposure pathway to the contaminated groundwater as the entire area is served by the City of San Marcos public drinking water system (which is unaffected by the Site). In order to provide long-term assurance that no exposure is likely to occur during the time that COC concentrations remain above PCLs, a "plume management zone" (PMZ) is proposed in conjunction with MNA to meet the remedial objectives. The PMZ corresponds to the aerial extent of the contamination at the Site. Each property within the PMZ will have an *institutional control* in the form of a deed restriction or a deed notice filed in the real property records of Hays County. Those restrictions or notices serve to warn property owners of the presence of the contamination and of the risks of exposure. When the contamination attenuates to below concentrations of concern (PCLs) in the future, the deed restrictions or notices can be removed.

In summary, the proposed remedy is "monitored natural attenuation with a plume management zone." The remedy anticipates that over the long term (perhaps approaching 30 years) the COCs will attenuate to below levels of concern. During the time of the remedy, *institutional controls* will help ensure that no unacceptable exposure occurs. The proposed remedy meets TRRP Remedy Standard A and is in compliance with all criteria for selection of remedies at state superfund sites.

## **VII. THE PROPOSED REMEDIAL ACTION**

The TCEQ proposes monitored natural attenuation with a plume management zone as the *Remedial Action* for the Site. This proposed *Remedial Action* is described in detail in Part VI. of this PRAD.

## **VIII. COMMUNITY PARTICIPATION IN THE SUPERFUND PROCESS**

The public is invited to comment on the proposed *Remedial Action* for the Site. Those wanting to make oral comments may do so at the public meeting scheduled for January 20, 2005 from 7:00 PM to 9:00 PM at the San Marcos Activity Center, 501 E. Hopkins St., San Marcos, TX 78666. The public meeting is legislative in nature and is not a contested case hearing under Chapter 2001 of the Texas Government Code. The public comment period begins December 17, 2004, and ends on January 20, 2005, at the close of the public meeting. During this time period, the public may comment on the proposed *Remedial Action* or give additional information regarding the Site or the identification of *Potentially Responsible Parties*. Written comments concerning the proposed remedial action must be received by the close of the public meeting on January 20, 2005. Comments should be submitted to:

Luda Voskov, Project Manager  
Superfund Cleanup Section (MC 143)  
Remediation Division  
Texas Commission on Environmental Quality  
P.O. Box 13087  
Austin, Texas 78711-3087  
Facsimile: (512) 239-2450

The TCEQ will respond to all comments received during the public comment period in the *Responsiveness Summary*. The *Responsiveness Summary* will be made available to the public upon request and a copy will be placed in the Site files.

## **IX. REMAINING STEPS IN THE SUPERFUND PROCESS**

After the end of the public comment period described above, and after considering all comments received relating to the proposed *Remedial Action*, the TCEQ will select the *Remedial Action* to implement at the Site.

Following selection of the *Remedial Action*, since no *Potentially Responsible Parties* have yet been identified, the TCEQ will complete the detailed design of the selected remedy and cause that remedy to be implemented in its entirety.

At any time in this process, the TCEQ may determine that a *minor change*, *significant change*, or *fundamental change* should be made to the *Remedial Action*. If a *minor change* is implemented, the TCEQ will document the change in the Site files without the necessity for another public meeting. If a *significant change* is made, a notice describing the changes will be posted in the Texas Register and in a newspaper of general circulation in the county where the Site is located. If a *fundamental change* is considered, another public comment period and meeting will be held to discuss that fundamentally changed proposed remedy.

Upon completion of the *Remedial Action*, the TCEQ may propose to delete the Site from the State Registry of Superfund Sites. A public meeting will be held before the Site is deleted from the State Registry.

## **X. GLOSSARY**

*Feasibility Study* - A description, screening, and analysis of the potential *Remedial Action* alternatives for a site.

*Fundamental change* - A change to the *Remedial Action* which uses a different approach to achieve the remedial action goals, or one that uses the same approach but results in a remedial action that is less protective than the originally proposed remedial action.

*Hazard Ranking System (HRS)* - The scoring system used by the TCEQ to evaluate a site for the state or federal Superfund program. The scoring system was developed by the U.S. Environmental Protection Agency (EPA) as described in 40 Code of Federal Regulations Part 300, Appendix A.

*Institutional Control* - A legal instrument placed in the property records in the form of a deed notice, restrictive covenant, or other form established in the TRRP rules which indicates the limitations on or conditions governing the use of the property which ensures protection of human health and the environment.

*Minor change* - A change to the *Remedial Action* which does not significantly affect the scope, performance, or cost of the originally proposed *Remedial Action*.

*Potentially Responsible Parties (PRPs)* - Persons or entities that the TCEQ considers potentially responsible for the contamination of the site pursuant to Section 361.271 of the Texas Health and Safety Code.

*Presumptive Remedy* - A remedy identified through the presumptive remedy process which provides a streamlined approach to identifying a remedy meeting selection criteria for sites having conditions similar to sites which are evaluated in applicable presumptive remedy guidance documents.

*Proposed Remedial Action Document (PRAD)* - The document which describes the TCEQ's proposed *Remedial Action*.

*Protective Concentration Level (PCL)* - The concentration of a chemical of concern which can remain within the source medium and not result in levels which exceed the applicable human health risk-based exposure limit or ecological protective concentration level at the point of exposure for that exposure pathway.

*Remedial Action* - An action, including remedial design and post-closure care, consistent with a remedy taken instead of or in addition to a removal action in the event of a release or threatened release of hazardous substances into the environment to prevent or minimize the release of a hazardous substance so that the hazardous substance does not cause an imminent and substantial endangerment to present or future public health and safety or the environment.

*Remedial Investigation* - An investigative study which may include removals, and/or a feasibility study, in addition to the development of protective concentration levels, designed to adequately determine the nature and extent of release or threatened release of hazardous substances and, as appropriate, its impact on air, soils, groundwater and surface water, both within and beyond the boundaries of the facility.

*Responsiveness Summary* - A document in which the TCEQ summarizes its response to all comments received on the PRAD during the public comment period.

*Significant change* - A change to the *Remedial Action* which materially affects the scope, performance, or cost of the *Remedial Action* but which uses the same approach and results in a *Remedial Action* at least as protective as the originally proposed *Remedial Action*.

*Solid Waste Disposal Act* - Chapter 361 of the Texas Health and Safety Code. The purpose of the *Solid Waste Disposal Act* is to safeguard the health, welfare, and physical property of the people and to protect the environment by controlling the management of solid waste, including any hazardous waste that is generated. Subchapter F of Chapter 361 relates to the state Superfund process. The Texas Health and Safety Code is available online at: <http://www.capitol.state.tx.us/statutes/statutes.html>.

*Texas Risk Reduction Program (TRRP)* - A program of the TCEQ that provides a consistent corrective

action process directed toward protection of human health and the environment balanced with the economic welfare of the citizens of the state. The rules for this program are located in Chapter 350 of 30 Texas Administrative Code. The Texas Administrative Code is available online at: <http://www.sos.state.tx.us/tac/>.