

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

McLean County School District No 5, )  
 )  
 Petitioner, )  
 )  
 vs. )  
 )  
 ILLINOIS ENVIRONMENTAL )  
 PROTECTION AGENCY, and )  
 THE TOWN OF NORMAL, ILLINOIS, )  
 )  
 Respondents. )

PCB No. 04-69

RECEIVED  
CLERK'S OFFICE

OCT 17 2003

STATE OF ILLINOIS  
Pollution Control Board

**NOTICE OF FILING**

To: Division of Legal Counsel  
IEPA  
1021 N. Grand Ave. East  
PO Box 19276  
Springfield, IL 62794-9276

Mayor Chris Koos  
Town of Normal  
100 E. Phoenix Ave.  
P.O. Box 589  
Normal, IL 61761-0589

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board an original and nine of the Entry of Appearance and Petition for Exception to Setback of McLean County School District No. 5, Petitioner, a copy of which is herewith served upon you.

**Respectfully submitted,**

**McLean County School District No 5, Petitioner**

By: *Diana M. Jagiella*  
Diana M. Jagiella, Attorney for Petitioner

Date: October 16, 2003

Diana M. Jagiella  
Howard & Howard Attorneys, P.C.  
One Technology Plaza, Suite 600  
211 Fulton Street  
Peoria, IL 61602-1350  
(309) 672-1483 / (309) 672-1568 Fax

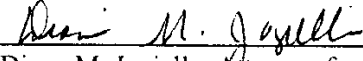
***THIS FILING IS SUBMITTED ON RECYCLED PAPER***

**CERTIFICATE OF SERVICE**

I, the undersigned, certify that I have served the attached *Notice of Filing* on this 16th day of October, 2003, via U.S. Mail, postage fully prepaid, upon the following persons:

Division of Legal Counsel  
Illinois Environmental Protection Agency  
1021 North Grand Avenue East, P. O. Box 19276  
Springfield, IL 62794-9276

Mayor Chris Koos  
Town of Normal  
100 E. Phoenix Ave.  
P.O. Box 589  
Normal, IL 61761-0589

  
\_\_\_\_\_  
Diana M. Jagiella, Attorney for Petitioner

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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

McLean County School District No 5, )  
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 Petitioner, )  
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 vs. )  
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 ILLINOIS ENVIRONMENTAL )  
 PROTECTION AGENCY, and )  
 THE TOWN OF NORMAL, ILLINOIS, )  
 )  
 Respondents. )

PCB No. 08-64

**RECEIVED**  
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OCT 17 2003  
STATE OF ILLINOIS  
Pollution Control Board

APPEARANCE

I hereby file my appearance in this proceeding, on behalf of McLEAN COUNTY SCHOOL DISTRICT NO. 5

Respectfully submitted,

McLean County School District No 5, Petitioner

By: Diana M. Jagiella  
Diana M. Jagiella, Attorney for Petitioner

Date: October 16, 2003

Diana M. Jagiella  
Howard & Howard Attorneys, P.C.  
One Technology Plaza, Suite 600  
211 Fulton Street  
Peoria, IL 61602-1350  
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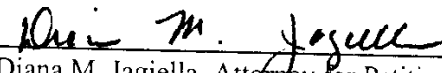
**THIS FILING IS SUBMITTED ON RECYCLED PAPER**

**CERTIFICATE OF SERVICE**

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Normal, IL 61761-0589

  
\_\_\_\_\_  
Diana M. Jagiella, Attorney for Petitioner

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

McLean County School District No 5, )  
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 Petitioner, )  
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 vs. )  
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 ILLINOIS ENVIRONMENTAL )  
 PROTECTION AGENCY, and )  
 THE TOWN OF NORMAL, ILLINOIS, )  
 )  
 Respondents )

PCB No. 08-67

RECEIVED  
OCT 17 2003  
STATE OF ILLINOIS  
Pollution Control Board

**PETITION FOR EXCEPTION TO SETBACK  
REQUIREMENTS OF 415 ILCS 5/14.2**

NOW COMES, McLEAN COUNTY SCHOOL DISTRICT NO. 5, by its attorneys, HOWARD & HOWARD ATTORNEYS, P.C., and for its Petition for Exception to Setback Requirements pursuant to 415 ILCS 5/14.2, and 35 Ill. Admin. Code Part 106, Subpart C. states as follows:

1. On June 24, 1997, a 2,000 gallon underground storage tank ("UST") was removed from property located at 900 Kern Street, Normal, Illinois ("Property") owned by McLean County School District No. 5 "(McLean)". Upon removal, a release of petroleum from the UST was discovered.

2. The Property is located within the setback zone of the Town of Normal, Illinois community water wells number nine (9) and ten (10) located approximately 625 feet southeast (upgradient) of the Property ("Wells"). The Wells draw water from a sand and gravel aquifer located more than 63 feet below the ground surface. (See Exhibit A depicting location of Wells and Well setback zones in relation to the Property.)

***THIS FILING IS SUBMITTED ON RECYCLED PAPER***

3. McLean commissioned MACTEC Engineering and Consulting, Inc. ("MACTEC") to investigate the nature and extent of soil and groundwater contamination caused by the release.

4. MACTEC conducted investigations in December 1997, and June 1998. The results of the investigations confirmed the presence of benzene in soil and shallow groundwater at levels exceeding those allowable under the Tiered Approach to Clean Up Objectives ("TACO"). The shallow groundwater aquifer in which the contamination was detected is located from seven (7) to fifteen (15) feet below the surface.

5. In June, 2000 MACTEC initiated biodegradation remedial activities in accordance with a corrective action plan approved by IEPA. Remedial activities consisted of the injection of oxygen release compound slurry into the saturated subsurface and installation of ORC "socks" into wells. Decreases in benzene concentrations occurred after the second application of ORC but did not decline enough to meet Tier 1 TACO.

6. Based on the contaminant reductions and modeling MACTEC requested approval of a Corrective Action Completion Report ("CACR"). The CACR included a Tier 3 evaluation demonstrating groundwater would not migrate beyond the property boundaries. IEPA denied the CACR finding that the Property must meet Tier 1 TACO because it is located within the set back zone for the Wells notwithstanding the fact they are upgradient of the Property. (See Exhibit B).

7. On January 13, 2003 MACTEC submitted a new High Priority Corrective Action Plan ("HPCAP") to the IEPA for review and approval. The HPCAP proposes to utilize in-situ chemical oxidation as a remedial approach to achieve the Tier 1 TACO required by IEPA. As part of the HPCAP, MACTEC will inject fifty (50) gallons of fifteen percent (15%) reagent into forty-one (41) wells to be installed at the Property to remediate the contamination. The wells

will be installed to allow injection of the reagent into the shallow groundwater. The 15% reagent is comprised of three percent (3%) sodium persulfate and ninety-seven percent (97%) calcium peroxide. (See Exhibit C).

8. By letter dated February 19, 2003 the IEPA approved with modification the HPCAP. (See Exhibit D). As a condition of the approval, IEPA requires that the HPCAP be completed in compliance with the requirements applicable under the Underground Injection Control Program for Class V Wells ("UIC"). The wells approved for injection of the reagent are classified as Class V injection wells. Additionally, IEPA requires Board approval for placement of the injection wells within the setback zone of the Wells.

9. Pursuant to 415 ILCS 5/14.2, no new potential route or potential primary source or potential secondary source may be placed within 200 feet of the setback zone of all wells, unless the Board grants an exception. An injection well falls within this prohibition.

10. Compliance with the well set back zones would pose an arbitrary and unreasonable hardship as it would make remediation of the Property difficult and perhaps even unfeasible.

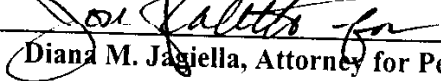
11. The HPCAP proposed by MACTEC and approved by IEPA does not present an environmental threat to the Wells and represents the best available control technology to minimize the likelihood of contamination of the Wells. The reagent will be injected into the shallow groundwater (where the contamination is located) only. The shallow groundwater is separated from the much deeper potable groundwater source serving the Well by a dense silty clay or glacial till. Finally, the reagent is an oxygen based treatment and not a contaminant. (See MSDS and installation drawings at Exhibit E). Not only is the reagent not harmful, it will actually eliminate any threat to the Well from the UST related petroleum contaminants.

12. The maximum feasible alternate setback has been utilized in selection of the well injection points.

WHEREFORE, Petitioner respectfully requests the Board grant Petitioner an exception to the prohibition of 415 ILCS 5/14.2 such that the reagent injection well points may be installed and operated consistent with the IEPA approved HPCAP. Petitioner further requests the Board to find that Petitioner's legal fees to obtain this Exception are eligible for reimbursement from the Illinois Underground Leaking Storage Tank Fund.

**Respectfully submitted,**

**McLean County School District No 5, Petitioner**

By:   
Diana M. Jagiella, Attorney for Petitioner

Date: October 16, 2003

Diana M. Jagiella  
Howard & Howard Attorneys, P.C.  
One Technology Plaza, Suite 600  
211 Fulton Street  
Peoria, IL 61602-1350  
(309) 672-1483 / (309) 672-1568 Fax

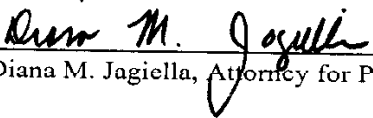


**CERTIFICATE OF SERVICE**

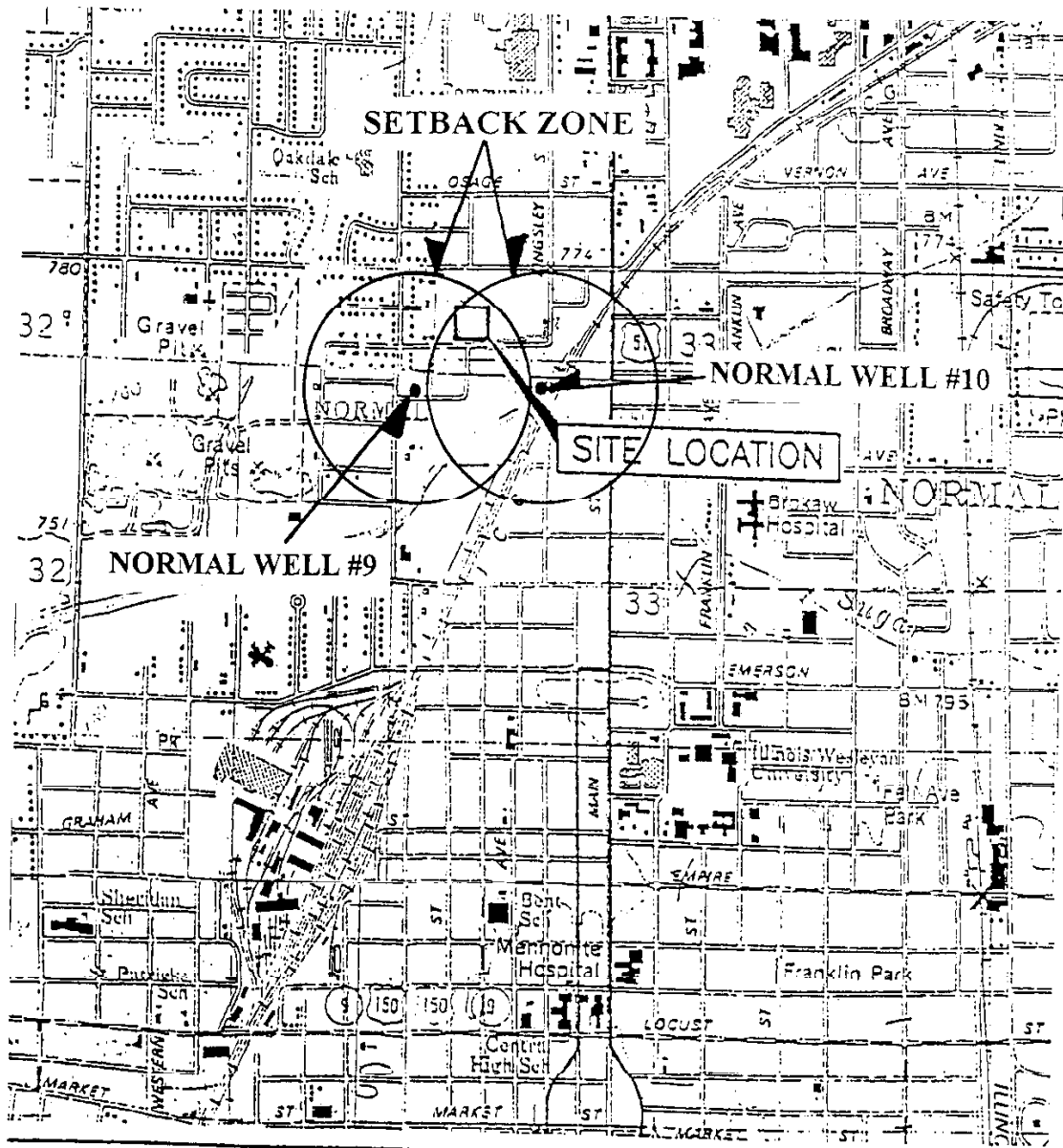
I, the undersigned, certify that I have served the attached *Petition for Exception to Setback Requirements of 415 ILCS 5/14.2* on this 16th day of October, 2003, via U.S. Mail, postage fully prepaid, upon the following persons:

Division of Legal Counsel  
Illinois Environmental Protection Agency  
1021 North Grand Avenue East, P. O. Box 19276  
Springfield, IL 62794-9276

Mayor Chris Koos  
Town of Normal  
100 E. Phoenix Ave.  
P.O. Box 589  
Normal, IL 61761 0589

  
\_\_\_\_\_  
Diana M. Jagiella, Attorney for Petitioner

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SCALE 1:24000



SETBACK ZONE MAP  
 MCLEAN C.U.S.D. NO. 5  
 NORMAL, ILLINOIS

EXHIBIT

A

**MACTEC**  
 ENGINEERING & CONSULTING, INC.  
 ILL. PROFESSIONAL DESIGN FIRM #18-001845  
 8861 NORTH INDUSTRIAL RD.  
 PEORIA, ILLINOIS 61615  
 PH (309) 862-4422 FX (309) 852-8384



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276

JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601

GEORGE H. RYAN, GOVERNOR

RENEE CIPRIANO, DIRECTOR

217/782-6762

CERTIFIED MAIL  
7099-3400-0014-9524-7893

NOV 01 2002

McLean County School District No. 5  
Attn: Stan Pieper  
1809 West Hovey Avenue  
Normal, Illinois 61761-4339

Re: LPC 1130905057 -- McLean County  
Normal/McLean County School Dist. No. 5  
900 Kern Street  
LUST Incident No. 971126  
LUST Technical File

Dear Mr. Pieper:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the High Priority Corrective Action Completion Report (report) for the referenced LUST incident. This report was dated September 12, 2002 and was received by the Illinois EPA on September 13, 2002. Citations in this letter are from the Environmental Protection Act (Act) and 35 Illinois Administrative Code (35 Ill. Adm. Code).

Pursuant to 57.7(c)(4)(D) of the Act and 35 Ill. Adm. Code 732.409(c) and 732.503(b), the report is being rejected for the reasons listed in Attachment A.

Pursuant to 35 Ill. Adm. Code 732.401 the Illinois EPA is requiring an amended Corrective Action Plan be submitted within 60 days to:

Illinois Environmental Protection Agency  
Bureau of Land - #24  
Leaking Underground Storage Tank Section  
1021 North Grand Avenue East, Post Office Box 19276  
Springfield, IL 62794-9276



Please submit all correspondence in duplicate and include the Re: block at the beginning of this letter.

The Illinois EPA does not require the submission or approval of a budget if the owner or operator will not seek payment of corrective action costs from the Underground Storage Tank Fund.

- ROCKFORD - 4302 North Main Street, Rockford, IL 61103 - (815) 987-7404
- ELGIN - 595 South State, Elgin 60123 - (847) 608-3131
- CHAMPAIGN - 2125 South First Street, Champaign, IL 61820 - (217) 333-6907
- COLLINSVILLE - 2009 Mall Street, Collinsville, IL 62234 - (618) 346-5120
- DES PLAINES - 9511 W. Harrison St., Des Plaines, IL 60016 - (847) 294-4073
- PEORIA - 5414 N. University St., Peoria, IL 61614 - (309) 693-5462
- SPRINGFIELD - 4500 S. Sixth Street Rd., Springfield, IL 62706 - (217) 786-6892
- MARION - 2309 W. Main St., Suite 116, Marion, IL 62959 - (618) 993-7200

Attachment A

Re: LPC 1130905057 -- McLean County  
Normal/McLean County School Dist. No. 5  
900 Kern Street  
LUST Incident No. 971126  
LUST Technical File

NOTE: Citations in this attachment are from the Environmental Protection Act (Act) and 35 Illinois Administrative Code (35 Ill. Adm. Code).

1. Pursuant to Section 742.805(a)(6), the Tier 1 Groundwater Remediation Objectives must be met since the site is within a setback zone of a municipal well. Therefore, groundwater must be remediated to Tier 1 AND any soil contamination that could potentially be a source of groundwater contamination in excess of the Tier 1 objective must be remediated. The Corrective Action Completion Report included an evaluation utilizing Tier 2 modeling. Pursuant to the above Section, this is prohibited since the existing groundwater contamination lies within the setback zone.

January 13, 2003

Illinois Environmental Protection Agency  
Bureau of Land #24  
Leaking Underground Storage Tank Section  
1021 N. Grand Avenue East  
P.O. Box 19276  
Springfield, IL 62794-9276  
Attention: Ms. Valerie Davis

**RE: LPC No. 1130905057 -- McLean County**  
**Normal/McLean County School District No. 5**  
**900 Kern Street**  
**LUST Incident No. 971126**  
**LUST Technical File**  
**MACTEC Project No. 539038.5202**

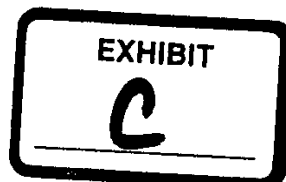
Dear Ms. Davis:

Enclosed please find a High Priority Corrective Action Plan (HPCAP) and Budget for the above referenced site.

MACTEC Engineering and Consulting, Inc. (MACTEC) f/k/a Harding ESE, Inc. submitted to IEPA a CACR using a Tier 3 evaluation that concluded that the existing groundwater contamination would not migrate beyond the property boundaries of the site. However, due to the site being located within a setback zone of a potable water supply well for the municipality of Normal, the IEPA denied the CACR and stipulated that the groundwater must meet Tier 1 Remediation Objectives.

The results of previous investigations conclude that the contaminant plume has been delineated and site characterization has been completed. Laboratory results from previous investigations indicate that soil contamination exceed IEPA Tier 1 Soil Remediation Objectives for: 1) benzene for the *Inhalation Exposure Route* and *Soil Component of the Groundwater Ingestion Exposure Route* and, 2) ethylbenzene for the *Soil Component of the Groundwater Ingestion Exposure Route*. Analytical results for groundwater sampling indicate benzene concentrations in groundwater exceed the Tier 1 Groundwater Remediation Objective. In June 2000 and May 2001, MACTEC initiated enhanced biodegradation remedial activities, in

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accordance with a Corrective Action Plan approved by the IEPA-LUST Section on April 3, 2000. Remedial activities consisted of the injection of oxygen-release compound (ORC®) slurry into the saturated subsurface and the installation of ORC® "socks" into wells. Although significant decreases in BTEX concentrations have occurred, further remediation is required to achieve Tier 1 remedial objectives.

Pursuant to the attached Corrective Action Plan and Budget, MACTEC proposes to utilize in-situ chemical oxidation as a remedial approach to remediate residual soil and groundwater contamination above Tier 1 Remediation Objectives.


Please feel free to contact me with any questions or comments at (309)-693-5697.

Sincerely,

MACTEC



Terence W. Dixon, PG  
Project Manager



Larry B. Williams, P.G., P.E.  
Associate Engineer

pc: Stan Pieper, McLean CUSD

**High Priority Corrective Action  
Plan and Budget**

**McLean CUSD No. 5  
LUST Incident No. 971126  
900 Kern Street  
Normal, Illinois**

*Prepared For:*

Mr. Stan Pieper  
McLean CUSD No. 5  
1809 W. Hovey  
Normal, IL 61761-4339

*Submitted To:*

Illinois Environmental Protection Agency  
Bureau of Land #24  
Leaking Underground Storage Tank Section  
1021 N. Grand Avenue East  
P.O. Box 19276  
Springfield, IL 62794-9276  
Attention: Ms. Valerie Davis

*Submitted By:*

MACTEC  
8901 N. Industrial Road  
Peoria, IL 61615  
(309) 693-5697  
Contact: Mr. Terence W. Dixon, PG  
Project Manager

## 1.0 INTRODUCTION

The subject site is used for vehicle storage and maintenance in a mixed commercial/residential area of Normal, Illinois. The property is covered with asphalt and concrete. A site map is attached in Appendix 2, Figure 1.

## 2.0 SITE HISTORY

One (1) 2,000-gallon gasoline underground storage tank (UST) was removed on June 24, 1997. Upon removal, the UST appeared to have had a release from the bottom of the UST near the weld.

Approximately 120 cubic yards of backfill and 465 cubic yards of soil were excavated and transported off-site to County Environmental Landfill. After UST removal, eight (8) soil samples were collected from the base and walls of the excavation. Analytical data from soil samples collected from the UST bed after soil excavation and disposal indicated the presence of soil contamination above IEPA Tier 1 Soil Remediation Objectives for benzene for the *Industrial/Commercial and Construction Worker Inhalation Exposure Route* and the *Soil Component of the Groundwater (Class 2) Ingestion Exposure Route*. Laboratory results for the soil samples collected from the UST excavation are listed in Table 1. A map indicating the soil excavation extents and soil sampling locations is attached in Appendix 2, Figure 1.

In December 1997, five (5) soil samples were collected from the site in order to identify the presence of contamination and potential migration pathways. No free product was encountered. Analytical data indicated the presence of soil contamination above IEPA Tier 1 Soil Remediation Objectives for benzene for the *Industrial/Commercial and Construction Worker Inhalation Exposure Route* and the *Soil Component of the Groundwater (Class 2) Ingestion Exposure Route* and for ethylbenzene for the *Soil Component of the Groundwater (Class 2) Ingestion Exposure Route*. Laboratory results from the December 1997 investigation are listed in Table 2. A map indicating the soil sampling locations is attached in Appendix 2, Figure 1.

In June 1998, a total of ten (10) additional soil borings were completed to define the apparent extent of petroleum impacted soils. Analytical data indicated the presence of soil contamination above IEPA Tier 1 Soil Remediation Objectives for benzene for the *Industrial/Commercial and Construction Worker Inhalation Exposure Route* and the *Soil Component of the Groundwater (Class 2) Ingestion Exposure Route* and for ethylbenzene for the *Soil Component of the Groundwater (Class 2) Ingestion Exposure Route*. Laboratory results for the June 1998 investigation are listed in Table 3. A map indicating the soil sampling locations is attached in Appendix 2, Figure 1.

Groundwater was encountered during the June 1998 investigation. Consequently, a groundwater investigation was also initiated. Four (4) monitoring wells were installed at the site during June 1999. Soil and groundwater samples were collected and analyzed from each well location. Soil



analytical data indicated the presence of contamination above IEPA Tier 1 Soil Remediation Objectives for benzene for the *Soil Component of the Groundwater (Class 2) Ingestion Exposure Route*. Groundwater laboratory results for the June 1999 investigation are listed in Table 5. Groundwater analytical data indicated the presence of contamination above IEPA Tier 1 Groundwater Remediation Objectives for benzene for the *Groundwater Component of the Groundwater (Class 2) Ingestion Exposure Route*. A map of monitoring well locations is attached in Appendix 2, Figure 1.

In June 2000, MACTEC initiated enhanced biodegradation remedial activities, in accordance with a Corrective Action Plan approved by the IEPA-LUST Section on April 3, 2000. Remedial activities consisted of the injection of oxygen-release compound (ORC®) slurry into the saturated subsurface and the installation of ORC® "socks" into wells. In May 2001, MACTEC completed a second ORC® injection event in accordance with the Corrective Action Plan approved by the IEPA-LUST Section in correspondence dated April 3, 2000. Significant decrease in BTEX concentrations occurred after the second application of ORC®.

MACTEC submitted to IEPA a CACR using a Tier 3 evaluation that concluded that the existing groundwater contamination would not migrate beyond the property boundaries of the site. However, due to the site being located within a setback zone of a potable water supply well for the municipality of Normal, the IEPA denied the CACR and stipulated that the site must meet Tier 1 Remediation Objectives.

MACTEC proposes to utilize in-situ chemical oxidation as an aggressive remedial design approach to remediate soil and groundwater contamination above Tier 1 Remediation Objectives.

### **3.0 High Priority Corrective Action Plan**

MACTEC has reviewed proposals submitted by subcontractors that specialize in in-situ chemical oxidation remedial system implementation. The cost estimates and information provided by ORIN Remediation Technologies (ORIN) were utilized in the preparation of this Plan.

#### **3.1 Bench Test**

MACTEC proposes to complete two soil borings (BT-1 and BT-2) located within the contaminant plume. One (1) soil core (Shelby Tube) will be collected from the unsaturated zone and one (1) soil core (Shelby Tube) will be collected from the saturated zone for each location; each sample will be collected from the stratigraphic interval with the highest photoionization detector (PID) reading in the unsaturated and saturated zone. Drilling activities will be completed under the supervision of an Illinois Licensed Professional Geologist from MACTEC. Standard protocol will be followed to prevent cross-contamination, and maintain sampling quality assurance/quality control. The proposed sampling locations are indicated in Appendix 2, Figure 1.

The Shelby Tubes will be submitted to ORIN Remediation Technologies (ORIN-[www.orinrt.com](http://www.orinrt.com)) for bench testing to determine the most effective chemical oxidation product mixture for the site. ORIN's preliminary review of the site characteristics and contaminant data indicates that the use (or combination) of reagents (i.e. hydrogen peroxide, Fenton's Reagent and/or PermeOx<sup>®</sup> Plus) will be effective for the site.

### **3.2 Field-Scale Injection**

Upon completion of the bench test and determination of the chemical oxidation constituent(s), MACTEC will initiate field-scale chemical oxidation injection. ORIN proposes the injection of 50 gallons of 15% reagent into 41 injection points to remediate the contaminant plume.

According to ORIN, based on site data and characteristics, a second chemical oxidation injection event should not be required. However, should a second injection be necessary, a maximum of 33% of the reagents required for the initial chemical oxidation would be needed. Analytical data from post-remediation closure sampling (refer to Section 3.3) would be reviewed to determine effective chemical oxidation constituent(s) required for the second phase of chemical oxidation injection.

The attached budget includes costs for a second chemical oxidation injection event presuming 33% reagent will be required.

The proposal given by ORIN is attached in Appendix 4. A second, more costly proposal from an alternative chemical oxidation subcontractor is attached in Appendix 4.

### **3.3 Post-Remediation Closure Sampling**

Sixty (60) days following initial chemical injection, closure samples of groundwater will be collected from MW-1, MW-2, MW-3, MW-4, ORC-5, ORC-6, ORC-7, ORC-8, and ORC-9 (refer to Appendix 2, Figure 2); In addition, soil closure samples will be collected from soil borings C-1 through C-13 (refer to Appendix 2, Figure 1).

If closure sampling indicates the presence of residual contaminants above IEPA Tier 1 Remediation Objectives, a second chemical oxidation injection event will be implemented. Thus, a second post-remediation closure sampling event will be required. The attached budget includes costs for a second post-remediation closure sampling event.

### **3.4 Cost Comparison**

A cost comparison of the proposed HPCAP (Appendix 3-\$127,794.31) versus conventional remedial technologies (Table 6 and 7-\$527,660) concludes that the proposed HPCAP is more cost-effective and time-efficient than conventional technologies.

Table 6 - Soil Excavation Cost Estimate

TASK	VOLUME/TIME	UNIT PRICE	ESTIMATED COST
Landfill Disposal	3,466 cu. yds.	\$30/cu.yd	\$145,600
Hauling	231 truckloads	\$250/truck	\$57,750
Excavation & Equip.	20 - 10 hr. days	\$140/hr.	\$28,000
Job Foreman	20 - 10 hr. days	\$80/hr.	\$16,000
Geologist	20 - 10 hr. days	\$80/hr.	\$16,000
PID Rental	20 days	\$100/day	\$2,000
Sample Analysis	24 closure samples	\$80/sample	\$1,920
Backfill (inc. hauling)	3,466 cu. yds.	\$15/cu.yd.	\$51,990
Laborer (for compaction of fill)	10 - 10 hr. days	\$50/hr.	\$5,000
Compactor Rental	10 days	\$50/day	\$500
<b>ESTIMATED TOTAL</b>			<b>\$324,760</b>

The estimated cost for conventional soil excavation and off-site disposal is \$324,760.

Table 7 – Groundwater Pump and Treat Cost Estimate

TASK	VOLUME/TIME	UNIT PRICE	ESTIMATED COST
Design and Permitting	100 hours	\$86/hour	\$8,600
Remediation Equipment	Pump, control panel, air stripper, building	\$27,500	\$27,500
Trench Installation	Labor, soil disposal, construction equipment	\$22,400	\$22,400
System Start-up	Labor, equipment	\$19,400	\$19,400
Annual O&M	5 years-quarterly well monitoring, monthly system monitoring, reporting	\$25,000/year	\$125,000
<b>ESTIMATED TOTAL</b>			<b>\$202,900</b>

The estimated cost for conventional groundwater remediation is \$202,900.  
 The sum of the estimated costs for conventional remediation is \$527,660.

#### 4.0 Conclusions and Recommendations

The results of previous investigations conclude that the contaminant plume has been delineated. Laboratory results from previous investigations indicated that soil contamination exceeds the Tier 1 Soil Remediation Objectives for benzene for the *Inhalation Exposure Route* and *Soil Component of the Groundwater Ingestion Exposure Route* and exceeds the Tier 1 Soil Remediation Objectives for ethylbenzene for the *Soil Component of the Groundwater Ingestion Exposure Route*; analytical results for groundwater sampling indicated benzene concentrations exceed the Tier 1 Groundwater Remediation Objective.

A cost comparison of the proposed HPCAP (Appendix 3-\$127,794.31) versus conventional remedial technologies (Table 6 and 7 total \$527,660) concludes that the proposed HPCAP is more cost-effective and time-efficient than conventional technologies.

MACTEC proposes to utilize in-situ chemical oxidation as an aggressive remedial design approach to remediate residual soil and groundwater contamination above Tier 1 Remediation Objectives.

TABLE 1 – UST EXCAVATION SOIL SAMPLING RESULTS

Sample	Location	Analyte	Concentration (mg/kg)	Exposure Rate - Specific Values for Soils			Soil Component of the Groundwater Protection Rule Values
				Ingestion (mg/kg)	Inhalation (mg/kg)	Inhalation (mg/kg)	
South Wall SW	8'	Benzene	6.5	200	15	4,300	2.1
		Toluene	22.0	410,000	650	410,000	42
		Ethylbenzene	43.0	200,000	400	20,000	58
		Xylenes (total)	130.0	1,000,000	410	410,000	410
West Base WB	15'	Benzene	0.94	200	1.5	4,300	2.1
		Toluene	0.004	410,000	650	410,000	42
		Ethylbenzene	0.021	200,000	400	20,000	58
		Xylenes (total)	0.004	1,000,000	410	410,000	410
East Base EB	15'	Benzene	0.21	200	1.5	4,300	2.1
		Toluene	0.005	410,000	650	410,000	42
		Ethylbenzene	0.005	200,000	400	20,000	58
		Xylenes (total)	<0.002	1,000,000	410	410,000	410
South West Wall SWW	6'	Benzene	0.570	200	1.5	4,300	2.1
		Toluene	0.094	410,000	650	410,000	42
		Ethylbenzene	0.68	200,000	400	20,000	58
		Xylenes (total)	2.2	1,000,000	410	410,000	410
North East Base NEB	15'	Benzene	<0.002	200	1.5	4,300	2.1
		Toluene	<0.002	410,000	650	410,000	42
		Ethylbenzene	<0.002	200,000	400	20,000	58
		Xylenes (total)	<0.002	1,000,000	410	410,000	410
East Wall EW	6'	Benzene	<0.002	200	1.5	4,300	2.1
		Toluene	<0.002	410,000	650	410,000	42
		Ethylbenzene	<0.002	200,000	400	20,000	58
		Xylenes (total)	<0.002	1,000,000	410	410,000	410
North Wall NW	7'	Benzene	<0.002	200	1.5	4,300	2.1
		Toluene	<0.002	410,000	650	410,000	42
		Ethylbenzene	<0.002	200,000	400	20,000	58
		Xylenes (total)	<0.002	1,000,000	410	410,000	410
East Wall South EWS	6'	Benzene	<0.002	200	1.5	4,300	2.1
		Toluene	<0.002	410,000	650	410,000	42
		Ethylbenzene	<0.002	200,000	400	20,000	58
		Xylenes (total)	<0.002	1,000,000	410	410,000	410

TABLE 2 - DECEMBER 1997 SOIL SAMPLING RESULTS

Sample	Location	Exposure Route - Specific Values for Soils						Soil Component or Groundwater by Estable Route	
		Industrial/Commercial		Construction Work		Inhalation (mg/kg)	Class IIC (mg/kg)		
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)				
GP-1	6-8'	Benzene	<0.0012	2.1	200	1.5	4,300	2.1	0.17
		Toluene	<0.0012	1.0	410,000	650	410,000	42	29
		Ethylbenzene	<0.0012	4.4	200,000	400	20,000	58	19
		Xylenes (total)	<0.0012	12.0	1,000,000	410	410,000	410	150
GP-2	9-11'	Benzene	2.1	2.1	200	1.5	4,300	2.1	0.17
		Toluene	1.0	1.0	410,000	650	410,000	42	29
		Ethylbenzene	4.4	4.4	200,000	400	20,000	58	19
		Xylenes (total)	12.0	12.0	1,000,000	410	410,000	410	150
GP-3	10-12.5'	Benzene	8.5	8.5	200	1.5	4,300	2.1	0.17
		Toluene	4.5	4.5	410,000	650	410,000	42	29
		Ethylbenzene	20.0	20.0	200,000	400	20,000	58	19
		Xylenes (total)	78.0	78.0	1,000,000	410	410,000	410	150
GP-4	10-12.5'	Benzene	2.3	2.3	200	1.5	4,300	2.1	0.17
		Toluene	0.89	0.89	410,000	650	410,000	42	29
		Ethylbenzene	3.6	3.6	200,000	400	20,000	58	19
		Xylenes (total)	12.0	12.0	1,000,000	410	410,000	410	150
GP-5	13-15'	Benzene	0.15	0.15	200	1.5	4,300	2.1	0.17
		Toluene	0.03	0.03	410,000	650	410,000	42	29
		Ethylbenzene	0.22	0.22	200,000	400	20,000	58	19
		Xylenes (total)	0.12	0.12	1,000,000	410	410,000	410	150

TABLE 3 -- JUNE 1998 SOIL SAMPLING RESULTS

Sample	Location	Analyte	Concentration (mg/kg)	Exposure Route - Specific Values for Soils			Class II (mg/kg)
				Ingestion (mg/kg)	Inhalation (mg/kg)	Restrictions for Workers	
				Specific Protection of the Groundwater			
				Restrictions for Residential			
P-1	6-8'	Benzene	0.01	200	1.5	4,300	0.17
		Toluene	0.069	410,000	650	410,000	29
		Ethylbenzene	0.085	200,000	400	20,000	19
		Xylenes (total)	0.055	1,000,000	410	410,000	50
P-2	6-8'	Benzene	0.036	200	1.5	4,300	0.17
		Toluene	<0.0013	410,000	650	410,000	29
		Ethylbenzene	<0.0013	200,000	400	20,000	19
		Xylenes (total)	0.0019	1,000,000	410	410,000	150
P-3	6-8'	Benzene	0.054	200	1.5	4,300	0.17
		Toluene	0.0028	410,000	650	410,000	29
		Ethylbenzene	0.048	200,000	400	20,000	19
		Xylenes (total)	0.11	1,000,000	410	410,000	150
P-4	8-10'	Benzene	<0.0012	200	1.5	4,300	0.17
		Toluene	<0.0012	410,000	650	410,000	29
		Ethylbenzene	<0.0012	200,000	400	20,000	19
		Xylenes (total)	<0.0012	1,000,000	410	410,000	150
P-5	6-8'	Benzene	<0.0012	200	1.5	4,300	0.17
		Toluene	<0.0012	410,000	650	410,000	29
		Ethylbenzene	<0.0012	200,000	400	20,000	19
		Xylenes (total)	<0.0012	1,000,000	410	410,000	150
P-6	13-15'	Benzene	1.0	200	1.5	4,300	0.17
		Toluene	0.45	410,000	650	410,000	29
		Ethylbenzene	2.0	200,000	400	20,000	19
		Xylenes (total)	8.9	1,000,000	410	410,000	150
P-7	4-8'	Benzene	<0.0012	200	1.5	4,300	0.17
		Toluene	<0.0012	410,000	650	410,000	29
		Ethylbenzene	<0.0012	200,000	400	20,000	19
		Xylenes (total)	<0.0012	1,000,000	410	410,000	150

TABLE 3 (CONTINUED) -- JUNE 1998 SOIL SAMPLING RESULTS

Sample	Location	Analyte	Concentration (mg/kg)	Exposure Route Specific Values for Soils			Soil Component of the Groundwater Protection Rule Value
				Industrial Commercial (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	
P-8	6-8'	Benzene	<0.0013	200	1.5	4,300	2.1
		Toluene	<0.0013	410,000	650	410,000	42
		Ethylbenzene	<0.0013	200,000	400	20,000	38
		Xylenes (total)	0.0022	1,070,000	410	410,000	410
P-9	4-6'	Benzene	<0.0012	200	1.5	4,300	2.1
		Toluene	<0.0012	410,000	650	410,000	42
		Ethylbenzene	<0.0012	200,000	400	20,000	38
		Xylenes (total)	<0.0012	1,080,000	410	410,000	410
P-10	4-6'	Benzene	<0.0013	200	1.5	4,300	2.1
		Toluene	<0.0013	410,000	650	410,000	42
		Ethylbenzene	<0.0013	200,000	400	20,000	38
		Xylenes (total)	<0.0013	1,060,000	410	410,000	410



TABLE 4 - JUNE 1999 SOIL SAMPLING RESULTS

Sample	Location	Analyte	Concentration (mg/kg)	Exposure Route - Specific Values for Soils			Soil Concentration of Volatile Organic Compounds (mg/kg)	Soil Concentration of Inorganic Solutes (mg/kg)
				Ingestion (mg/kg)	Inhalation (mg/kg)	Injection (mg/kg)		
MW-1	7.5-10'	Benzene	<0.005	200	1.5	4,300	2.1	0.17
		Toluene	<0.005	410,000	650	410,000	42	29
		Ethylbenzene	<0.005	200,000	400	20,000	58	19
		Xylenes (total)	<0.010	1,000,000	410	410,000	410	150
MW-2	2.5-5'	Benzene	<0.005	200	1.5	4,300	2.1	0.17
		Toluene	<0.005	410,000	650	410,000	42	29
		Ethylbenzene	<0.005	200,000	400	20,000	58	19
		Xylenes (total)	<0.010	1,000,000	410	410,000	410	150
MW-3	5-7.5'	Benzene	<0.005	200	1.5	4,300	2.1	0.17
		Toluene	<0.005	410,000	650	410,000	42	29
		Ethylbenzene	<0.005	200,000	400	20,000	38	9
		Xylenes (total)	<0.010	1,000,000	410	410,000	410	150
MW-4	5-7.5'	Benzene	0.77	200	1.5	4,300	2.1	0.17
		Toluene	3.8	410,000	650	410,000	42	29
		Ethylbenzene	0.055	200,000	400	20,000	58	19
		Xylenes (total)	17.0	1,000,000	410	410,000	410	150
MW-4	14-15'	Benzene	0.013	200	1.5	4,300	2.1	0.17
		Toluene	<0.005	410,000	650	410,000	42	29
		Ethylbenzene	<0.005	200,000	400	20,000	58	19
		Xylenes (total)	0.009	1,000,000	410	410,000	410	150



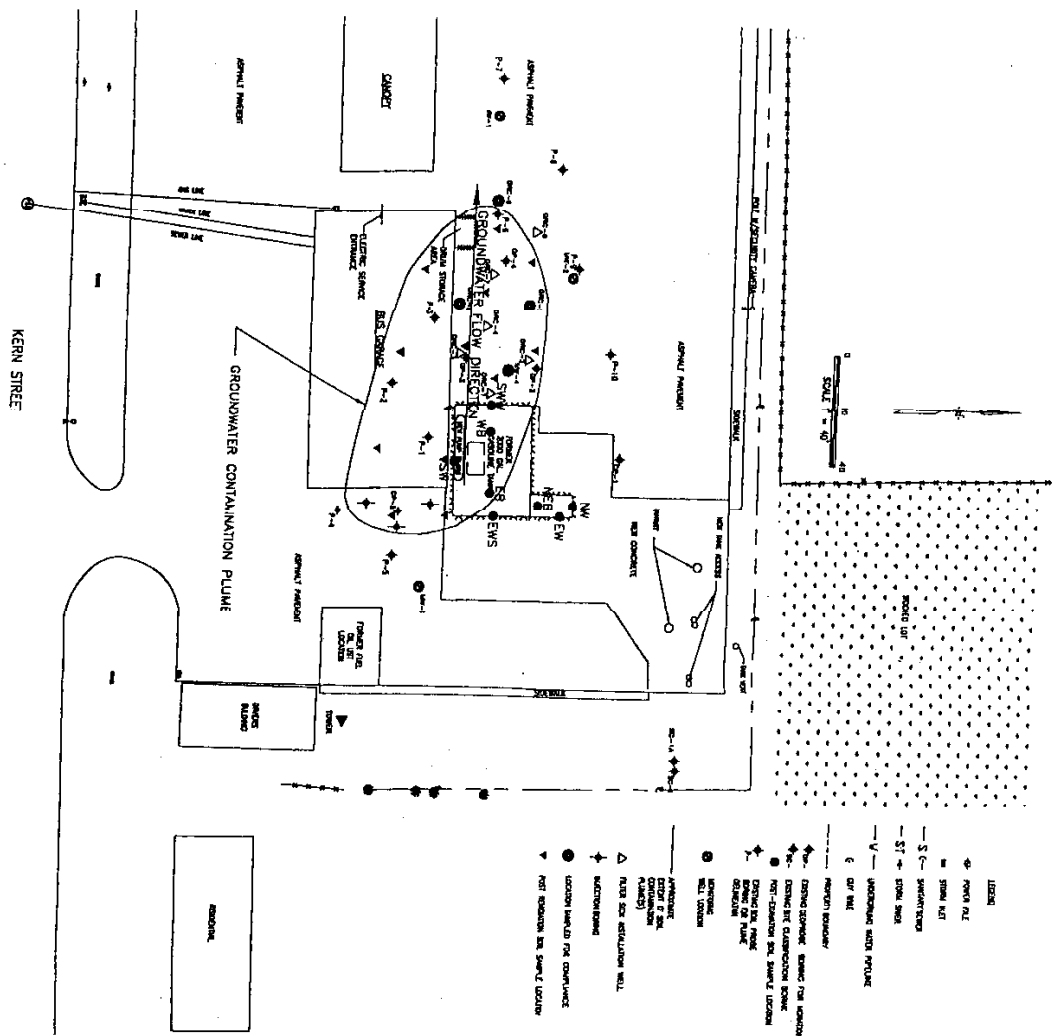
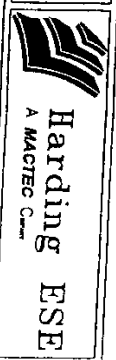


FIGURE 2  
 SITE MAP  
 MCLEAN CUSD NO. 5  
 NORMAL, ILLINOIS





**BUDGET AND BILLING FORM FOR  
LEAKING UNDERGROUND STORAGE  
TANK SITES**

**A. SITE INFORMATION**

Site Name: McLean County School District No. 5

Site Address: 900 Kern Street City: Normal

Zip: 61761

County: McLean IEPA Generator No.: 1130905057

IEMA Incident No.: 971126 IEMA Notification Date: 6/24/97

Date this Form was Prepared: 9/10/02

This form is being submitted as a:

- Budget Proposal
- Budget Amendment (Budget Amendments must include only the costs over the previous budget.)  
Amendment Number: 4
- Billing Package for costs incurred pursuant to 35 Illinois Administrative Code (IAC), Part 732 ("new program").  
Name(s) of report(s) documenting the costs requested: \_\_\_\_\_  
Date(s): \_\_\_\_\_

This form is being submitted for the Site Activities indicated below (check one):

- Early Action
- Site Classification
- Low Priority Corrective Action
- High Priority Corrective Action
- Other (indicate activities) \_\_\_\_\_

**DO NOT SUBMIT "NEW PROGRAM" COSTS AND "OLD PROGRAM" COSTS AT THE SAME TIME, ON THE SAME FORMS.**

A-1

If eligible for reimbursement, where should reimbursement checks be sent? Please note that only owners or operators of USTs may be eligible for reimbursement. Therefore, payment can only be made to an owner or operator.

Pay to the order of: McLean CUSD No. 5

Send in care of: Mr. Stan Pieper

Address: 1809 W. Hovey Avenue

City: Normal State: Illinois Zip: 61761

Number of Petroleum USTs in Illinois presently owned or operated by the owner or operator; any subsidiary, parent or joint stock company of the owner or operator; and any company owned by any parent, subsidiary or joint stock company of the owner or operator:

Fewer than 101: X 101 or more: \_\_\_\_\_

Number of USTs at the site: 4 (Number of USTs includes USTs presently at the site and USTs that have been removed.)

Number of incidents reported to IEMA: 1

Incident Numbers assigned to the site due to releases from USTs: 971126

Please list all tanks which have ever been located at the site and are presently located at the site.

Product Stored	Size (gallons)	Did UST have a release?		Incident No.	Type of Release
		Yes	No		
Gasoline	7,000	Yes	No	971126	Leak
Diesel	10,000	Yes	No	N/A	N/A
Gasoline	2,500	Yes	No	N/A	New tank
Diesel	10,000	Yes	No	N/A	New tank
		Yes	No		
		Yes	No		
		Yes	No		
		Yes	No		
		Yes	No		
		Yes	No		

This form must be submitted in duplicate.

**B. PROPOSED BUDGET SUMMARY AND BUDGET TOTAL**

- 1. Investigation Costs: \$ 7,760.00
- 2. Analysis Costs: \$ 3,290.00
- 3. Personnel Costs: \$ 33,900.00
- 4. Equipment Costs: \$ 795.00
- 5. Field Purchases and Other Costs: \$ 75,099.63
- 6. Handling Charges: \$ 6,949.68

**TOTAL PROPOSED BUDGET = \$ 127,794.31**

Illinois Environmental Protection Agency

Owner/Operator and Professional Engineer Budget Certification Form for Leaking Underground Storage Tanks Sites

In accordance with 415 ILCS 5/57, if an owner or operator intends to seek payment from the UST Fund, an owner or operator must submit to the Agency, for the Agency's approval or modification, a budget which includes an accounting of all costs associated with the implementation of the investigative, monitoring and/or corrective action plans.

I hereby certify that I intend to seek payment from the UST Fund for performing High Priority Corrective Action activities at McLean CUSD No. 5(971126)

LUST site. I further certify that the costs set forth in this budget are necessary activities and are reasonable and accurate to the best of my knowledge and belief. I also certify that the costs included in this budget are not for corrective action in excess of the minimum requirements of 415 ILCS 5/57 and no costs are included in this budget which are not described in the corrective action plan. I further certify that costs ineligible for payment from the Fund pursuant to 35 Illinois Administrative Code Section 732.606 are not included in the budget proposal or amendment. Such ineligible costs include but are not limited to:

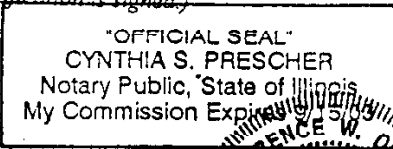
- Costs associated with ineligible tanks.
- Costs associated with site restoration (e.g., pump islands, canopies).
- Costs associated with utility replacement (e.g., sewers, electrical, telephone, etc.).
- Costs incurred prior to IEMA notification.
- Costs associated with planned tank pulls.
- Legal defense costs.
- Costs incurred prior to July 28, 1989.
- Costs associated with installation of new USTs or the repair of existing USTs.

Owner/Operator: Stan Peiper, Unit 5 Schools Title: Director of Bldg. & Grounds

Signature: Stan Peiper Date: 1-9-03

Subscribed and sworn to before me the 9th day of January, 2003.  
*(Budget Proposals and Budget Amendments must be notarized when the certification is signed.)*

Cynthia S. Prescher Seal: (Notary Public)

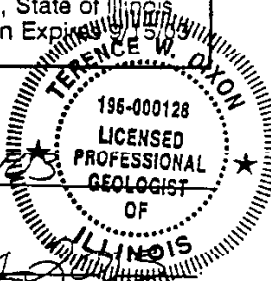


P.E. TERENCE W. Dixon

Seal:

P.E. Signature: Terence W. Dixon

Date: 1/13/03



Subscribed and sworn to before me the 13th day of January, 2003.  
*(Budget Proposals and Budget Amendments must be notarized when the certification is signed.)*

Billye J. Keister Seal: (Notary Public)



The Agency is authorized to require this information under 415 ILCS 5/1. Disclosure of this information is required. Failure to do so may result in the delay or denial of any budget or payment requested hereunder. This form has been approved by the Forms Management Center.



The Agency is authorized to require this information under Section 4 and Title XVI of the Environmental Protection Act (415 ILCS 5/4, 5/17). Failure to disclose this information may result in a civil penalty of not to exceed \$50,000.00 for the violation and an additional civil penalty of not to exceed \$10,000.00 for each day during which the violation continues (415 ILCS 5/42). Any person who knowingly makes a false material statement or representation in any label, manifest, record, report, permit, or license, or other document filed, maintained or used for the purpose of compliance with Title XVI commits a Class 4 felony. Any second or subsequent offense after conviction hereunder is a Class 3 felony (415 ILCS 5/37.17). This form has been approved by the Forms Management Center.

## Illinois Environmental Protection Agency Leaking Underground Storage Tank Program Corrective Action Plan

### A. Site Identification

IEMA Incident #: 971126 IEPA LPC # (10-digit): 1130905057  
Site Name: McLEAN COUNTY SCHOOL DISTRICT No. 5  
Site Address (Not a P.O. Box): 900 KERN STREET  
City: NORMAL County: McLEAN ZIP Code: 61761

### B. Site Information

1. Will the owner/operator seek reimbursement from the Underground Storage Tank Fund?  
Yes  No
2. If yes, is the budget attached?  
Yes  No
3. Is this an amended plan?  
Yes  No
4. Identify the material(s) released: GASOLINE
5. This Corrective Action Plan is being submitted pursuant to:
  - a. 35 Ill. Adm. Code Section 731.166:
    - i. A release of petroleum from a UST was reported to IEMA prior to September 13, 1993 and the owner/operator has NOT elected to proceed under Title XVI of the Environmental Protection Act
    - ii. The material released was not petroleum.
  - b. 35 Ill. Adm. Code Section 732.404:
    - i. A groundwater quality standard or objective for any applicable indicator contaminant has been exceeded at the property boundary line or 200 feet from the leaking UST system.
    - ii. The leaking UST system is within the setback zone or regulated recharge area of a potable water supply well.

- iii. There is evidence that migration of petroleum or petroleum vapors may threaten human health or human safety.
  - iv. Class III Special Resource Groundwater exists within 200 feet of the site.
  - v. A surface body of water has been adversely affected by the presence of a visible sheen or free product layer.
- c. 35 Ill. Adm. Code Section 732.312
  - d. 415 ILCS 5/57-57.17 (includes Public Act 92-0554)

**C. Proposed Methods of Remediation**

- 1. Soil IN-SITU CHEMICAL OXIDATION
- 2. Groundwater IN-SITU CHEMICAL OXIDATION

**D. Soil and Groundwater Investigation Results**

Provide the following:

- 1. Description of investigation activities performed to define the extent of soil and/or groundwater contamination;
- 2. Analytical results and cleanup objectives in tabular format;
- 3. Laboratory reports;
- 4. Boring logs;
- 5. Monitoring well logs; and
- 6. Site maps to scale and oriented north showing:
  - a. Soil sample locations;
  - b. Monitoring well locations; and
  - c. Plumes of soil and groundwater contamination.

**E. Technical Information - Corrective Action Plan**

Provide the following:

- 1. A discussion of how the corrective action plan shall remediate the release;
- 2. A list of sampling parameters and corresponding remediation objectives;
- 3. The basis for determining sampling parameters and remediation objectives;
- 4. Media sampling plan to verify completion of remediation;
- 5. Current and future use of the property;
- 6. Proposed preventive, engineering and institutional controls;
- 7. A schedule for implementation and projected completion of the plan;
- 8. Engineering design specifications, diagrams, calculations, manufacturers's specifications, systems analyses, site maps, etc.;
- 9. A description and results of bench/pilot studies;
- 10. Itemized cost estimates of alternative versus conventional technologies; and

Corrective Action Plan

11. For alternative technologies the following must be provided:

- a. A demonstration that the proposed technology has a substantial likelihood of achieving compliance with all applicable regulations and all corrective action remediation objectives necessary to comply with the Environmental Protection Act and the regulations and to protect human health and the environment;
- b. A demonstration that the proposed technology will not adversely affect human health or the environment;
- c. Copies of all Agency permits necessary to authorize the use of the alternative technology; and
- d. Results of the monitoring program implemented to determine whether the proposed technology will achieve compliance with the applicable regulations and remediation objectives.

**F. Signatures**

I certify under penalty of law that this plan, supporting documents and all attachments were prepared under my direction or supervision. To the best of my knowledge and belief, this plan, supporting documents and all attachments are true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**UST Owner**

Company/Name: MCLEAN CUSD No 5  
Owner Contact: STAN PIPER  
Address: 1809 W. HOVEY  
City, State, ZIP: NORMAL, IL 61761  
Phone: 309 452-0541  
Signature: Stan Piper  
Date: 1-9-03

**UST Operator (if different than UST Owner)**

Name: SAME  
Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, ZIP: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_

**Consultant**

Firm: MACTEC  
Contact: TERENCE W DIXON, PG  
Title: PROJECT MANAGER  
Address: 8901 N. INDUSTRIAL ROAD  
City, State, ZIP: PEORIA IL 61615  
Phone: 309 693-5697  
Signature: TW Dixon  
Date: 1/13/03



**E. INVESTIGATION COSTS**

High Priority Corrective Action  
 Bench Test Soil Sampling  
 Closure Sampling  
 Not Applicable X

Method I \_\_\_\_\_ Method II \_\_\_\_\_ Method III \_\_\_\_\_

1. **Drilling Costs** - This includes the costs for drilling labor, drill rig usage, and other drilling equipment. Borings which are to be completed as monitoring wells should be listed here. Costs associated with disposal of cuttings should not be included here. An indication must be made as to why each boring is being conducted (i.e., classification, monitoring wells, migration pathways).

2 borings to 15 feet = 30 feet to be bored for Bench Test Soil Sampling  
13 borings to 15 feet = 195 feet to be bored for Post-Remediation Closure Sampling  
13 borings to 15 feet = 195 feet to be bored for Post-Remediation Closure Sampling  
 \_\_\_\_\_ borings to \_\_\_\_\_ feet = \_\_\_\_\_ feet to be bored for \_\_\_\_\_  
 \_\_\_\_\_ borings to \_\_\_\_\_ feet = \_\_\_\_\_ feet to be bored for \_\_\_\_\_

Total Feet to be Bored: 420

Borings: 420 feet x \$ 15.00 per foot = \$ 6,300.00 (or)

Hours \_\_\_\_\_ x \$ \_\_\_\_\_ per hour = \$ \_\_\_\_\_

\_\_\_\_\_ borings through \_\_\_\_\_ ft of bedrock = \_\_\_\_\_ Ft bedrock to be bored

\_\_\_\_\_ borings through \_\_\_\_\_ ft of bedrock = \_\_\_\_\_ Ft bedrock to be bored

Total Feet bedrock to be Bored: \_\_\_\_\_

Borings: \_\_\_\_\_ Ft bedrock x \$ \_\_\_\_\_ per ft bedrock = \$ \_\_\_\_\_ (or)

\_\_\_\_\_ Hours x \$ \_\_\_\_\_ per Hour = \$ \_\_\_\_\_

3 # of Mobilizations @ \$ 250.00 per mobilization = \$ 750.00

Other Costs	Number of Units	Unit Cost	Total Cost
Concrete coring	28	150.00	\$300.00
Decontamination	6	50.00	\$300.00
Concrete patching	28	30.00	\$60.00
Bentonite chips	1	50.00	\$50.00

2. **Professional Services** (e.g., P.E., geologist) - These costs must be listed in Section I, the Personnel section of the forms.

3. **Monitoring Well Installation Materials** - Costs listed here must be costs associated with well casing, well screens, filter pack, annular seal, surface seal, well covers, etc. List the items below in a line and materials format.

Material	Number of Wells	Unit Cost	Total Cost

4. **Disposal Costs** - This includes the costs for disposing of boring cuttings and any water generated while performing borings or installing wells.

Disposal of Cuttings: \_\_\_\_\_ drums x \$ \_\_\_\_\_ per drum = \$ \_\_\_\_\_

Disposal of Water: \_\_\_\_\_ gallons x \$ \_\_\_\_\_ per gallon = \$ \_\_\_\_\_

Transportation Costs: \$ \_\_\_\_\_

Describe how the water/soil will be disposed: \_\_\_\_\_

**Total Investigation Costs:** \$ 7,760.00

F. ANALYSIS COSTS

1. Physical Soil Analysis - This must only include analysis costs for classification of soil types at the site.

Moisture Content samples x \$ per sample = \$

Soil Classification samples x \$ per sample = \$

Indicate method to be performed:

Soil Particle Size samples x \$ per sample = \$

Ex-situ Hydraulic Conductivity/Permeability samples x \$ per sample = \$

Indicate the method to be performed:

Rock Hydraulic Conductivity/Permeability samples x \$ per sample = \$

Natural Organic Carbon Fraction (foc) samples x \$ per sample = \$

Indicate the ASTM or SW-846 method to be performed:

samples x \$ per sample = \$

samples x \$ per sample = \$

samples x \$ per sample = \$

samples x \$ per sample = \$

samples x \$ per sample = \$

2. Soil Analysis Costs - This must be for laboratory analysis only.

26 BTEX samples x \$ 85.00 per sample = \$ 2,210.00

PNA samples x \$ per sample = \$

LUST Pollutants samples x \$ per sample = \$

pH Samples x \$          per sample = \$           
         Paint Filter samples x \$          per sample = \$           
         TCLP Lead samples x \$          per sample = \$           
         Flash Point samples x \$          per sample = \$           
         Lab and/or Field Blank samples x \$          per sample = \$           
         samples x \$          per sample = \$           
         samples x \$          per sample = \$           
         samples x \$          per sample = \$           
         samples x \$          per sample = \$           
         samples x \$          per sample = \$         

3. **Groundwater Analysis Costs** - This must be for laboratory analysis only.

18 BTEX samples x \$ 60.00 per sample = \$ 1,080.00  
         PNA samples x \$          per sample = \$           
         LUST Pollutants samples x \$          per sample = \$           
         pH Samples x \$          per sample = \$           
         Lab and/or Field Blank samples x \$          per sample = \$           
         Flash Point samples x \$          per sample = \$           
         samples x \$          Per sample = \$           
         samples x \$          Per sample = \$           
         samples x \$          Per sample = \$           
         samples x \$          Per sample = \$           
         samples x \$          Per sample = \$           
         samples x \$          Per sample = \$         

**TOTAL ANALYSIS COSTS = \$ 3,290.00**



**G. PERSONNEL**

All personnel costs that are not included elsewhere in the budget/billing form must be listed here. Costs must be listed per task, not personnel type. The following are some examples of tasks: Drafting, data collection, plan, report, or budget preparation for \_\_\_\_\_ (i.e., site classification work plan, 45 day report, or high priority corrective action budget), sampling, field oversight for \_\_\_\_\_ (i.e., drilling/well installation, corrective action, or early action), of maintenance of \_\_\_\_\_. The above list is not inclusive of all possible tasks.

Sr. Project Engineer : 8.0 hours x \$ 120.00 per hour = \$ 960.00  
 (Title)

Task to be performed for the above hours: Corrective Action Plan and Budget review

Sr. Project Engineer : 8.0 hours x \$ 120.00 per hour = \$ 960.00  
 (Title)

Task to be performed for the above hours: Owner/operator and subcontractor coordination

Sr. Project Engineer : 4.0 hours x \$ 120.00 per hour = \$ 480.00  
 (Title)

Task to be performed for the above hours: Post-remediation closure data review

Sr. Project Engineer : 4.0 hours x \$ 120.00 per hour = \$ 480.00  
 (Title)

Task to be performed for the above hours: Reimbursement review

Project Manager : 16.0 hours x \$ 95.00 per hour = \$ 1,520.00  
 (Title)

Task to be performed for the above hours: Subcontractor bids/specs; proposal review

Project Manager : 32.0 hours x \$ 95.00 per hour = \$ 3,040.00  
 (Title)

Task to be performed for the above hours: Corrective Action Plan and Budget

Technician (CADD) : 40 hours x \$ 60.00 per hour = \$ 240.00  
 (Title)

Task to be performed for the above hours: Corrective Action Plan (CADD)

Staff Scientist (Geologist) : 56.0 hours x \$ 80.00 per hour = \$ 4,480.00  
 (Title)

Task to be performed for the above hours: Field activities coordination; implementation of chemical oxidation

Environmental Technician : 56.0 hours x \$ 60.00 per hour = \$ 3,360.00  
 (Title)

Task to be performed for the above hours: Implementation of chemical oxidation

Admin. Assistant : 8.0 hours x \$ 45.00 per hour = \$ 360.00  
 (Title)

Task to be performed for the above hours: Plan and Budget; correspondence; clerical

Project Manager : 4.0 hours x \$ 95.00 per hour = \$ 380.00  
 (Title)

Task to be performed for the above hours: Post-remediation soil sampling logistics; coordination

Staff Scientist (Geologist) : 16.0 hours x \$ 80.00 per hour = \$ 1,280.00  
 (Title)

Task to be performed for the above hours: Post-remediation soil sampling

Environmental Technician : 16.0 hours x \$ 60.00 per hour = \$ 960.00  
 (Title)

Task to be performed for the above hours: Post-remediation soil/groundwater sampling

Environmental Technician : 8.0 hours x \$ 60.00 per hour = \$ 480.00  
 (Title)

Task to be performed for the above hours: Post-remediation groundwater sampling

Project Manager : 16.0 hours x \$ 95.00 per hour = \$ 1,520.00  
 (Title)

Task to be performed for the above hours: 2nd chemical oxidation injection design, implementation(if required)

Staff Scientist (Geologist) : 20.0 hours x \$ 80.00 per hour = \$ 1,600.00  
 (Title)

Task to be performed for the above hours: 2nd chemical oxidation injection field implementation (if required)

Environmental Technician : 20.0 hours x \$ 60.00 per hour = \$ 1,200.00  
 (Title)

Task to be performed for the above hours: 2nd chemical oxidation injection field implementation (if required)

Staff Scientist (Geologist) : 16.0 hours x \$ 60.00 per hour = \$ 960.00  
 (Title)

Task to be performed for the above hours: Post-remediation soil sampling (if required)

**TOTAL PERSONNEL COSTS: \$ 24,260.00 SUBTOTAL**

**G. PERSONNEL**

All personnel costs that are not included elsewhere in the budget/billing form must be listed here. Costs must be listed per task, not personnel type. The following are some examples of tasks: Drafting, data collection, plan, report, or budget preparation for \_\_\_\_\_ (i.e., site classification work plan, 45 day report, or high priority corrective action budget), sampling, field oversight for \_\_\_\_\_ (i.e., drilling/well installation, corrective action, or early action), or maintenance of \_\_\_\_\_. The above list is not inclusive of all possible tasks.

Environmental Technician : 16.0 hours x \$ 60.00 per hour = \$ 960.00  
 (Title)

Task to be performed for the above hours: Post-remediation soil groundwater sampling (if required)

Environmental Technician : 8.0 hours x \$ 60.00 per hour = \$ 480.00  
 (Title)

Task to be performed for the above hours: Post-remediation groundwater sampling (if required)

Project Manager : 40.0 hours x \$ 95.00 per hour = \$ 3,800.00  
 (Title)

Task to be performed for the above hours: Corrective Action Completion Report

Sr. Project Engineer : 8.0 hours x \$ 120.00 per hour = \$ 960.00  
 (Title)

Task to be performed for the above hours: Corrective Action Plan Report review

Admin. Assistant : 8.0 hours x \$ 45.00 per hour = \$ 360.00  
 (Title)

Task to be performed for the above hours: Corrective Action Completion Report; clerical

Technician (CADD) : 4.0 hours x \$ 60.00 per hour = \$ 240.00  
 (Title)

Task to be performed for the above hours: Corrective Action Completion Report (CADD)

Project Manager : 16.0 hours x \$ 95.00 per hour = \$ 1,520.00  
 (Title)

Task to be performed for the above hours: Monitoring well abandonment coordination; reimbursement

Environmental Technician : 16.0 hours x \$ 60.00 per hour = \$ 960.00  
 (Title)

Task to be performed for the above hours: Monitoring wells (9) abandonment

Admin. Assistant : 8.0 hours x \$ 45.00 per hour = \$ 360.00  
(Title)

Task to be performed for the above hours: Reimbursement, clerical, correspondence

: hours x \$ per hour = \$  
(Title)

Task to be performed for the above hours:

: hours x \$ per hour = \$  
(Title)

Task to be performed for the above hours:

: hours x \$ per hour = \$  
(Title)

Task to be performed for the above hours:

: hours x \$ per hour = \$  
(Title)

Task to be performed for the above hours:

: hours x \$ per hour = \$  
(Title)

Task to be performed for the above hours:

: hours x \$ per hour = \$  
(Title)

Task to be performed for the above hours:

: hours x \$ per hour = \$  
(Title)

Task to be performed for the above hours:

: hours x \$ per hour = \$  
(Title)

Task to be performed for the above hours:

: hours x \$ per hour = \$  
(Title)

Task to be performed for the above hours:

TOTAL PERSONNEL COSTS: \$ 9,640.00 Subtotal  
24,260.00 + \$9,640.00 = \$33,900.00 TOTAL PERSONNEL COSTS

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This form must be submitted in duplicate.

### H. EQUIPMENT COSTS

All equipment used must be listed below in a time and materials format. Handling charges should not be added here; use Section J.

Equipment	Own or Rent?	Time Used	Unit Rate	Total Cost/Item
Disposable bailers	O	18	\$10.00	\$180.00
Water level indicator	O	3	\$30.00	\$ 90.00
Photoionization detector	O	3	\$100.00	\$300.00
Field vehicle	R	3	\$75.00	\$225.00

Subtotal Page H-1 \$795.00

This form must be submitted in duplicate.

Equipment	Own or Rent?	Time Used	Unit Rate	Total Cost/Item

Subtotal Page H-2 0.00  
 Total (Pages H-1 and H-2) \$795.00

### I. FIELD PURCHASES AND OTHER COSTS

All field purchases must be listed below in a time and materials format. Handling charges must not be added here; use Section J, Handling Charges to calculate the handling charges.

Field Purchases	Quantity	Price/Item	Total Cost	Do Handling Charges Apply?
Ice	5	\$2.00	\$10.00	Yes
Film/photo development	2	\$25.00	\$50.00	Yes
Mileage - company vehicles	400	\$0.365	\$146.00	No
Subtotal Page I-1			\$206.00	

This form must be submitted in duplicate.

**Other Costs** - A listing and description of all other costs which will be/were incurred and are not specifically listed on this form should be attached. The listing should include a cost breakdown in a time and materials format.

ORIN Remediation Technologies - chemical oxidation injection

Phase I - \$56,311.00

Phase II - \$18,582.63

TOTAL OTHER COSTS = \$ 74,893.63

Subtotal Page I-1	<u>\$206.00</u>
Total Pages I- and I-2	<u>\$75,099.63</u>



**J. HANDLING CHARGES**

Handling charges are eligible for payment on subcontractor billings and/or field purchases only if they are equal to or less than the amounts determined by the following table:

Subcontractor or Field Purchase Cost \$1 - \$5,000 \$5,001 - \$15,000 \$15,001 - \$50,000 \$50,001 - \$100,000 \$100,001 - \$1,000,000	Eligible Handling Charges as a Percentage of Cost 12% \$600 + 10% of amt. Over \$5,000 \$1,600 + 8% of amt. Over \$15,000 \$4,400 + 5% of amt. Over \$50,000 \$6,900 + 2% of amt. Over \$100,000
--	--

**A. Subcontractor Charges**

Subcontractor	Section in these Forms where Cost is Listed	Subcontract Amount	Eligible Handling Charge
Tremont Exploration	I-2	\$7,760.00	\$876.00
PDC Laboratories	F-2	\$3,290.00	\$394.80
Vehicle rental	H-1	\$ 225.00	\$27.00
Ice	I-1	\$ 10.00	\$1.20
Film/photo development	I-1	\$ 50.00	\$6.00
ORIN Remediation Technologies	I-2	\$74,893.63	\$5,644.68
			\$6,949.68
Subtotal J-1 Subtotal:			\$86,228.63



**L. HIGH PRIORITY CORRECTIVE ACTION**

Corrective Action at High Priority Sites may involve both soil and groundwater remediation. Below provide a summary of costs for the remediation type(s) chosen and attach the appropriate sections of the budget/billing forms to support the summary of costs.

**A. Preparation of the Correction Action Plan**

- 1. Investigation Costs: \$ 7,760.00
- 2. Analysis Costs: \$ \_\_\_\_\_
- 3. Personnel Costs: \$ 8,040.00
- 4. Equipment Costs: \$ \_\_\_\_\_
- 5. Field Purchases and Other Costs: \$ \_\_\_\_\_
- 6. Handling Charges: \$ \_\_\_\_\_

**B. Groundwater Remediation**

- 1. Analysis Costs: \$ \_\_\_\_\_
- 2. Personnel Costs: \$ \_\_\_\_\_
- 3. Equipment Costs: \$ \_\_\_\_\_
- 4. Field Purchases and Other Costs: \$ \_\_\_\_\_
- 5. Handling Charges: \$ \_\_\_\_\_

Of the above costs, please provide a break down of the costs associated with operation and maintenance (O&M), if applicable, as requested below:

\_\_\_\_\_ Months of O&M x \$ \_\_\_\_\_ per month = \$ \_\_\_\_\_

**C. Excavation and Disposal**

- 1. Analysis Costs: \$ \_\_\_\_\_
- 2. Personnel Costs: \$ \_\_\_\_\_
- 3. Equipment Costs: \$ \_\_\_\_\_
- 4. Field Purchases and Other Costs: \$ \_\_\_\_\_
- 5. Handling Charges: \$ \_\_\_\_\_

Of the above costs, please provide a break down of the costs associated with excavation, transportation, and disposal as requested below:

Excavation: \_\_\_\_\_ yards<sup>3</sup> x \$ \_\_\_\_\_ per yards<sup>3</sup> = \$ \_\_\_\_\_  
Transportation: \_\_\_\_\_ yards<sup>3</sup> x \$ \_\_\_\_\_ per yards<sup>3</sup> = \$ \_\_\_\_\_  
Disposal: \_\_\_\_\_ yards<sup>3</sup> x \$ \_\_\_\_\_ per yards<sup>3</sup> = \$ \_\_\_\_\_

D. Alternate Technology, Type chemical oxidation

- 1. Investigation Costs: \$ \_\_\_\_\_
- 2. Analysis Costs: \$ 3,290.00
- 3. Personnel Costs: \$ 25,860.00
- 4. Equipment Costs: \$ 795.00
- 5. Field Purchases and Other Costs: \$ 75,099.63
- 6. Handling Charges: \$ 6,949.68

Of the above costs, please provide a break down of the following costs as requested below if applicable:

Excavation: \_\_\_\_\_ yards<sup>3</sup> x \$ \_\_\_\_\_ per yards<sup>3</sup> = \$ \_\_\_\_\_  
Transportation: \_\_\_\_\_ yards<sup>3</sup> x \$ \_\_\_\_\_ per yards<sup>3</sup> = \$ \_\_\_\_\_  
Treatment: \_\_\_\_\_ yards<sup>3</sup> x \$ \_\_\_\_\_ per yards<sup>3</sup> = \$ \_\_\_\_\_  
Operation and Maintenance (O&M):  
\_\_\_\_\_ Months of O&M x \$ \_\_\_\_\_ per month = \$ \_\_\_\_\_

E. Backfill Costs

- 1. Personnel Costs: \$ \_\_\_\_\_
- 2. Equipment Costs: \$ \_\_\_\_\_
- 3. Field Purchases and Other Costs: \$ \_\_\_\_\_
- 4. Handling Charges: \$ \_\_\_\_\_

Of the above costs, please provide a break down of the following costs as requested below if applicable:

Type of Backfill: \_\_\_\_\_  
\_\_\_\_\_ yards<sup>3</sup> x \$ \_\_\_\_\_ per yards<sup>3</sup> = \$ \_\_\_\_\_  
Type of Backfill: \_\_\_\_\_  
\_\_\_\_\_ yards<sup>3</sup> x \$ \_\_\_\_\_ per yards<sup>3</sup> = \$ \_\_\_\_\_

### M. JUSTIFICATION FOR BUDGET AMENDMENTS

If this form is being submitted for an amendment, you must submit a narrative justifying the need for the amendment. If the amendment includes a revision in a corrective action proposal, a new proposal must be submitted.

MACTEC Engineering and Consulting, Inc. (MACTEC) f/k/a Harding ESE, Inc. submitted to IEPA a CACR using a Tier 3 evaluation that concluded that the existing groundwater contamination would not migrate beyond the property boundaries of the site. However, due to the site being located within a setback zone developed by the municipality of Normal, the IEPA denied the CACR and stipulated that the site must meet Tier 1 Remediation Objectives.

MACTEC proposes to utilize in-situ chemical oxidation as an aggressive remedial design approach to remediate residual soil and groundwater contamination above Tier 1 Remediation Objectives.

BB:jk972441S.WPD

M-1

This form must be submitted in duplicate.

# PROJECT PRICE BREAKDOWN

Site Name : MACHTEC LUST site

## Bench Test Price Breakdown

Lump Sum (Includes labor and analytical)

\$4,000

## Pilot Scale Injection Price Breakdown

Project Design and permitting	\$2,500	
Onsite Injection Program	\$23,110	
- Labor		
- Equipment and Subcontractors		
Chemicals	\$21,729	
Documentation	\$1,800	
Per diem and mobilization and demobilization	\$7,171	
	Estimated Price of Injection	\$56,311

## Basis of Price

Days on site	5	days
Concentration of reagents	15.00%	percent
Number of injection points	41	points
Gallons per injection point	50	gallons
Area to be treated	120	sq. feet
Thickness to be treated	10	feet



December 6, 2002

Mr. Terence W. Dixon, PG  
MACTEC  
8901 N. Industrial Road  
Peoria, Illinois 61615

**Re: Initial Cost Estimate 1202-IE-218A / McLean CUSD Site**

Dear Mr. Dixon:

Geo-Cleanse International, Inc. (GCI) is pleased to present the following initial cost estimate for applying the Geo-Cleanse<sup>®</sup> remediation technology to saturated soil and groundwater contamination at the McLean CUSD site in Bloomington, IL. GCI has extensive experience with in-situ and ex-situ chemical oxidation utilizing a variety of different oxidant based systems. Based upon the information provided to us, GCI proposes the use of Fenton's reagent for this particular site. This estimate is based on preliminary site information received from MACTEC and does not constitute acceptance of a site by GCI or a final proposal. This information should not be used for permitting, contracting or final work plan preparation. This initial estimate is only intended to provide preliminary costing information to determine if the Geo-Cleanse<sup>®</sup> Process offers a viable remedial alternative.

The geology within the contaminated zone is identified as silty clay. The contaminants of concern are petroleum hydrocarbons with an average concentration of 210 ppm sorbed to saturated soils and 1,000 ppb dissolved in groundwater.

**Special Conditions:**

This initial estimate is based on the following assumptions:

- Based on data reviewed, 60 foot x 120 foot area to be treated.
- Treatment area thickness: 10 feet
- 32 injectors are required.
- Radius of influence = 10 feet
- Number of injector layers = 1
- A total of 64,000 pounds of hydrogen peroxide (50%) to be injected during a 22-day, 2-mobilization field effort.
- An estimated 3,000 pounds of hydrogen peroxide (50%) are to be injected each day. The 50% peroxide is injected simultaneously with a minimum 1 to 1 ratio of our catalyst blend so the actual percentage of the injected hydrogen peroxide is 5% to 16%.
- There are no carbonate solids in the treatment zone.
- There are no sub-surface utilities (i.e. natural gas, sewer, or electrical power lines) in the treatment zone.

The initial estimated cost based upon the information provided to GCI to date is \$196,702, which includes the full-scale, and polishing treatments. If additional site delineation data is available, this cost estimate may be able to be refined. This cost estimate includes the costs associated with a Geo-Cleanse® Injection Program except water, electricity, and drilling. A drilling estimate is provided on our pricing sheets but this dollar value is not included in our overall estimated cost.

GCI maintains a fully equipped and staffed laboratory that enables us to offer bench scale testing. Bench scale testing can provide information about contaminant mass reductions and chemical oxidant efficiencies that can be expected during a full-scale treatment. Bench scale testing, although not required, can help to refine the full-scale chemical oxidation program. If you would like an estimate for a bench test, please let us know.

Our contaminant mass calculations and costing sheets, which form the basis of this initial nonbinding estimate, are attached. Please review this initial estimate and determine if you would like to go forward with a firm proposal. If you would like to pursue a firm proposal, please forward to GCI the complete site delineation data and desired scope of work for our review and interpretation. A sheet summarizing delineation data particularly helpful for Geo-Cleanse® project design is attached.

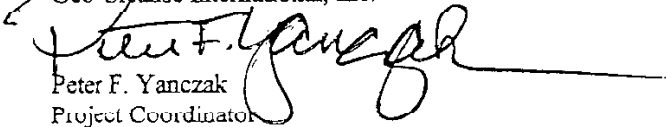
This document and its contents are the property of Geo-Cleanse International, Inc. It is delivered in the expressed condition that it is not to be disclosed, reproduced in whole or part, or used for any other purpose other than in connection with the Geo-Cleanse® Process as applied by Geo-Cleanse International, Inc. No right is granted to the recipient to disclose or use any information contained in this document. United States patents protect the Geo-Cleanse® Process and only Geo-Cleanse International, Inc. or those acting with a written license from Geo-Cleanse International, Inc. may apply the Geo-Cleanse® Process.

If you have any questions or comments regarding this estimate, please feel free to contact MariKay Fish or myself at (908) 206-1250 or via e-mail at [mfish@geocleanse.com](mailto:mfish@geocleanse.com).

Thank you for considering the Geo-Cleanse® Process to assist you in your remedial needs.

Sincerely,

Geo-Cleanse International, Inc.

  
Peter F. Yanczak

Project Coordinator



## SITE DATA DESIRED FOR GEO-CLEANSE PROJECT DESIGN

The site information desired for final Geo-Cleanse project design is typically included in a very thorough remedial investigation report. Specifically, we search for the following information:

### I. General Site Information.

- A. Map(s) with buildings, overhead or underground utilities, sample locations, etc.
- B. Topographic map.
- C. Site history, especially regarding the plume origin, previous remediation, etc.
- D. Site hazards and access for drill rig, Geo-Cleanse treatment rig, peroxide tanker.

### II. Soil Data.

- A. Detailed lithologic descriptions and geologic cross sections.
- B. Soil density.
- C. All soil boring logs from the site.
- D. All soil analytical data in tabular form.
- E. Contaminant isopleth maps (by compound and by discrete depth intervals).

### III. Groundwater Data.

- A. Detailed lithologic descriptions of the aquifer (boring logs).
- B. Depths of aquiclude/aquitard intervals.
- C. Depth to groundwater and seasonal variations.
- D. Hydraulic conductivity.
- E. Porosity.
- F. Water quality (pH, alkalinity and iron concentration).
- G. All groundwater analytical data in tabular form.
- H. Observations/thickness of free product layers.
- I. Contaminant isopleth maps (by compound and by aquifer if more than one).
- J. Groundwater piezometric surface map.

### IV. Bedrock Data (if applicable).

- A. All groundwater quality data described in Section III.
- B. Depth to bedrock, and unconsolidated soil data described in Section II.
- C. Depth to water and seasonal variations.
- D. Distribution, strike and dip of fracture sets and discrete zones.
- E. Packer testing results (pump tests, temperature, resistivity, etc.).

Initial Cost Estimate Overview		
IE # 1202-IE-218A / MACTEC: McLean CUSD Site		
	Primary	Polish
Project Design	\$ 4,160	\$ 1,850
Injector Fabrication / Installation	\$ 8,500	\$ 2,300
On Site Injection Program	\$ 66,460	\$ 38,000
Reagents	\$ 27,020	\$ 14,220
Project Documentation	\$ 3,450	\$ 5,950
Mobilization	\$ 13,708	\$ 11,083
<b>Total</b>	<b>\$ 123,298</b>	<b>\$ 73,403</b>
<b>PROJECT GRAND TOTAL \$ 196,702</b>		

**Initial Cost Estimate Assumptions Overview**  
These estimates form the basis for the line item costs that follow.

**Mobilization Costs**

Per Diem Rate (per person / per day)	\$ 125
Crew Transportation (Miles or Tickets per person)	\$ 1,000
Car Rental (per week)	\$ 500
Treatment Unit Transportation (each unit)	\$ 3,000

**Primary Treatment**

Number of Injectors	32	Design/Documentation Hours	
Number of Days for Drilling	5	Design	Documentation
Number of Drilling Oversight Crew	1	Injection Supervisor	10   5
Pounds of Hydrogen Peroxide	42,000	Geologist	20   30
Number of Injection Crew	2	Project Manager	10   5
Number of Treatment Units	1	Health & Safety	5   0
Number of Days for Injection	14	Staff Engineer	2   0
Number of Crew Rotations	2		

**Polish Treatment**

Number of Injectors	4	Design/Documentation Hours	
Number of Days for Drilling	2	Design	Documentation
Number of Drilling Oversight Crew	1	Injection Supervisor	5   10
Pounds of Hydrogen Peroxide	22,000	Geologist	10   50
Number of Injection Crew	2	Project Manager	5   10
Number of Treatment Units	1	Health & Safety	0   0
Number of Days for Injection	8	Staff Engineer	0   0

**PRIMARY TREATMENT PROGRAM**

**DESIGN COSTS**

Injection System Design / Permit Assistance / Work Plan / Health & Safety Plan

Additional costs will be incurred if project design meeting(s) with consultant is requested.

Injection Supervisor	\$ 90 / hr x	<u>10</u> hrs	\$ 900
Geologist	\$ 80 / hr x	<u>20</u> hrs	\$ 1,600
Project Manager	\$ 90 / hr x	<u>10</u> hrs	\$ 900
Health and Safety Supervisor	\$ 90 / hr x	<u>5</u> hrs	\$ 450
Staff Engineer	\$ 80 / hr x	<u>2</u> hrs	\$ 160
Document preparation and delivery services ( flat rate)			\$ 150

**DESIGN COSTS SUBTOTAL \$ 4,160**

**INJECTOR FABRICATION / INSTALLATION COSTS**

Materials / Installation Oversight

Materials	• Screens	<u>32</u> injectors x	\$ 125 per injector	\$ 4,000
	• Riser & Fittings			

Drilling Support	\$900 / day x	<u>5</u> days x	<u>1</u> personnel	\$ 4,500
	• Geologist	• PPE		
	• Supplies	• Water Quality Test Kits (pH, chloride, iron, hardness)		

Drill Rig and Crew	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>Consultant Budget</td> <td>\$ 12,800</td> </tr> </table>	Consultant Budget	\$ 12,800
Consultant Budget	\$ 12,800		
	(Estimate \$400 / Injector)		
	• Completion Materials (sand, bentonite, grout, vaults)		
	• Consultant budget; not included in cost estimate		

**INJECTOR FABRICATION / INSTALLATION SUBTOTAL \$ 8,500**

**ON SITE INJECTION PROGRAM**

14 Days (10-Hour Day)

Engineering and Technical Services

*Field Crew*

Injection Supervisor	\$ 90 / hr x	<u>140</u> hrs	\$ 12,600
Injection Specialists	<u>1</u> personnel x \$ 80 / hr x	<u>140</u> hrs	\$ 11,200

*Technical Support*

Geologist	\$ 80 / hr	<u>10</u> hrs	\$ 800
Project Manager	\$ 90 / hr	<u>14</u> hrs	\$ 1,260
		<b>Personnel Subtotal</b>	<b>\$ 25,860</b>

**ON SITE INJECTION PROGRAM (CONTINUED)**

Injection Equipment	<u>14</u> Days x	\$ 2,800 per rig / per day	\$ <u>39,200</u>
• Application Unit	• PID Meter	• PPE	
• Injector Heads	• CO2 Meter	• pH Test Kit	
• Transfer Pump	• Water Level Tape	• Iron Test Kit	
• Chloride Test Kit	• Sample Jars	• Safety Shower	
• H2O2 Test Kit	• Bailers		
Vent Flow Balance System	\$100 / day		\$ 1,400
Special Equipment			\$ -
Special Equipment			\$ -
Equipment Subtotal			\$ <u>40,600</u>

**ONSITE INJECTION PROGRAM SUBTOTAL \$ 66,460**

**REAGENTS**

42,000 pounds

Chemicals		\$ 0.55 per lb	\$ <u>23,100</u>
• H2O2	• All Catalyst Reagents		
Transportation		\$0.06 per lb	\$ <u>2,520</u>
Trailer Rental	\$ 100 / day x <u>14</u> days		\$ <u>1,400</u>

**REAGENTS SUBTOTAL \$ 27,020**

**PROJECT DOCUMENTATION**

Effectiveness Evaluation Report, Injector Construction Details, Monitoring Data  
Additional costs will be incurred if project documentation meeting(s) with consultant is requested.

Injection Supervisor	\$ 90 / hr x	<u>5</u> hrs	\$ <u>450</u>
Geologist	\$ 80 / hr x	<u>30</u> hrs	\$ <u>2,400</u>
Project Manager	\$ 90 / hr x	<u>5</u> hrs	\$ <u>450</u>
Document preparation and delivery services ( flat rate)			\$ <u>150</u>

**PROJECT DOCUMENTATION SUBTOTAL \$ 3,450**

**MOBILIZATION CHARGES**

Drilling Oversight Transportation	<u>1</u> personnel	\$ <u>1,000</u>
Drilling Oversight Vehicle Rental	<u>0.8</u> week(s)	\$ <u>417</u>
Drilling Oversight Per Diem	<u>1</u> personnel x <u>5</u> days	\$ <u>625</u>
Injection Crew Transportation	<u>2</u> personnel <u>2</u> rotations	\$ <u>4,000</u>
Injection Crew Per Diem	<u>2</u> personnel x <u>14</u> days	\$ <u>3,500</u>
Injection Crew Vehicle Rental	<u>2.3</u> week(s)	\$ <u>1,167</u>
Treatment Unit Transportation	<u>1</u> unit(s)	\$ <u>3,000</u>

**MOBILIZATION SUBTOTAL \$ 13,708**

**PRIMARY TREATMENT TOTAL \$ 123,298**

**POLISH TREATMENT PROGRAM**

**DESIGN COSTS**

Injection System Design / Permit Assistance / Work Plan / Health & Safety Plan

Additional costs will be incurred if project design meeting(s) with consultant is requested.

Injection Supervisor	\$ 90 / hr x	<u>5</u>	hrs	<u>\$ 450</u>
Geologist	\$ 80 / hr x	<u>10</u>	hrs	<u>\$ 800</u>
Project Manager	\$ 90 / hr x	<u>5</u>	hrs	<u>\$ 450</u>
Health and Safety Supervisor	\$ 90 / hr x	<u>0</u>	hrs	<u>\$ -</u>
Staff Engineer	\$ 80 / hr x	<u>0</u>	hrs	<u>\$ -</u>
Document preparation and delivery services ( flat rate)				<u>\$ 150</u>

**DESIGN COSTS SUBTOTAL \$ 1,850**

**INJECTOR FABRICATION / INSTALLATION COSTS**

Materials / Installation Oversight

Materials	• Screens	<u>4</u>	injectors x	<u>\$ 125</u>	per injector	<u>\$ 500</u>
	• Riser & Fittings					

Drilling Support	\$900 / day x	<u>2</u>	days x	<u>1</u>	personnel	<u>\$ 1,800</u>
	• Geologist				• PPE	
	• Supplies				• Water Quality Test Kits (pH, chloride, iron, hardness)	

Drill Rig and Crew	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>Consultant Budget</td> <td>\$ 3,200</td> </tr> </table>	Consultant Budget	\$ 3,200
Consultant Budget	\$ 3,200		
	(Estimate \$400 / Injector)		
	• Thread Machine		
	• Completion Materials (sand, bentonite, grout, vaults)		
	• Consultant budget; not included in cost estimate		

**INJECTOR FABRICATION / INSTALLATION SUBTOTAL \$ 2,300**

**ON SITE INJECTION PROGRAM**

8 Days (10-Hour Day)

Engineering and Technical Services

*Field Crew*

Injection Supervisor	\$ 90 / hr x	<u>80</u>	hrs	<u>\$ 7,200</u>	
Injection Specialists	<u>1</u> personnel x	\$ 80 / hr x	<u>80</u>	hrs	<u>\$ 6,400</u>

*Technical Support*

Geologist	\$ 80 / hr	<u>6</u>	hrs	<u>\$ 480</u>
Project Manager	\$ 90 / hr	<u>8</u>	hrs	<u>\$ 720</u>
			<b>Personnel Subtotal</b>	<b>\$ 14,800</b>

**ON SITE INJECTION PROGRAM (CONTINUED)**

Injection Equipment	8	Days	x	\$ 2,800	per rig / per day	\$	22,400
• Application Unit		• PID Meter			• PPE		
• Injector Heads		• CO2 Meter			• pH Test Kit		
• Transfer Pump		• Water Level Tape			• Iron Test Kit		
• Chloride Test Kit		• Sample Jars			• Safety Shower		
• H2O2 Test Kit		• Bailers					
Vent Flow Balance System		\$100 / day				\$	800
Special Equipment						\$	-
Special Equipment						\$	-
Equipment Subtotal						\$	23,200

ONSITE INJECTION PROGRAM SUBTOTAL \$ 38,000

**REAGENTS**

22,000 pounds

Chemicals		\$ 0.55	per lb	\$	12,100
• H2O2	• All Catalyst Reagents				
Transportation		\$ 0.06	per lb	\$	1,320
Trailer Rental		\$ 100 / day	x 8 days	\$	800

REAGENTS SUBTOTAL \$ 14,220

**PROJECT DOCUMENTATION**

Effectiveness Evaluation Report, Injector Construction Details, Monitoring Data

Additional costs will be incurred if project documentation meeting(s) with consultant is requested.

Injection Supervisor	\$ 90 / hr	x 10 hrs	\$	900
Geologist	\$ 80 / hr	x 50 hrs	\$	4,000
Project Manager	\$ 90 / hr	x 10 hrs	\$	900
Document preparation and delivery services ( flat rate)			\$	150

PROJECT DOCUMENTATION SUBTOTAL \$ 5,950

**MOBILIZATION CHARGES**

Drilling Oversight Transportation	1	personnel	\$	1,000
Drilling Oversight Vehicle Rental	0.3	week(s)	\$	167
Drilling Oversight Per Diem	1	personnel x 2 days	\$	250
Injection Crew Transportation	2	personnel x	\$	4,000
Injection Crew Per Diem	2	personnel x 8 days	\$	2,000
Injection Crew Vehicle Rental	1.3	week(s)	\$	667
Treatment Unit Transportation	1	unit(s)	\$	3,000

MOBILIZATION SUBTOTAL \$ 11,083

POLISH TREATMENT TOTAL \$ 73,403

Contaminant Mass Calculation for the MACTEC: McLean CUSD Site  
1102-IE-218  
Total Petroleum Hydrocarbons

**1. Soil**

Length (ft) = 120 ft  
Width (ft) = 60 ft  
Thickness (ft) = 8 ft

Soil Density (lb/cu yd) = 3,371 lb/cu yd  
Soil Contamination (ppm) = 210 ppm

Soil Quantity (cubic yards) = 2,133 cu yds

$$\text{Soil Contaminant Mass} = \frac{210.0 \text{ lb TPH}}{1,000,000 \text{ lb soil}} \times \frac{3,371 \text{ lbs soil}}{\text{cu yd soil}} \times 2,133 \text{ cu yds soil} = 1,510 \text{ lbs TPH}$$

**2. Dissolved Phase**

Length = 120 ft  
Plume Area (sq ft) = 7,200 sq ft  
Average Thickness (ft) = 8 ft  
Porosity (in decimal) = 0.30  
Average TPH Concentration (ppb) = 1,000 ppb

Width = 60 ft

$$\text{Volume of Contaminated Water (gal)} = 7,200 \text{ sq ft} \times 8 \text{ ft thick} \times 0.30 \text{ (porosity)} \times \frac{7.48 \text{ gal}}{\text{cubic foot}} = 125,254 \text{ gal}$$

$$\text{Dissolved Contaminant Mass (lbs)} = 11,255,904 \text{ gal water} \times \frac{8.345 \text{ lbs}}{\text{gal water}} \times \frac{1,000 \text{ lbs TPH}}{\text{billion lbs water}} = 94 \text{ lbs dissolved TPH}$$

**3. Free Phase**

Length = 0 ft  
Plume Area (sq ft) = 0 sq ft  
Average Actual Thickness (ft) = 0 ft (actual product thickness = measured well thickness / 4)  
Porosity (in decimal) = 0

Width = 0 ft

$$\text{Free Phase Volume} = 0 \text{ sq ft} \times 0 \text{ ft thick} \times 0.00 \text{ (porosity)} = 0 \text{ cu ft}$$

$$\text{Free Phase Mass} = 0 \text{ cu ft} \times \frac{7.48 \text{ gal}}{\text{cu foot}} \times \frac{6.3 \text{ lb}^*}{\text{gal TPH}} = 0 \text{ lbs free phase}$$

\* 6.3 lbs/gal is assumed as the average density of TPH

**Amount of 50% Hydrogen Peroxide Required**

1. Soil = 1,510 lbs  
2. Dissolved Phase = 94 lbs  
3. Free Phase = 0 lbs  
1,604 Total lbs TPH

Stoichiometric H<sub>2</sub>O<sub>2</sub> Requirements: 1,604 lbs TPH x  $\frac{10 \text{ lbs H}_2\text{O}_2}{\text{lb TPH}}$  = 16,041 lbs H<sub>2</sub>O<sub>2</sub> required

Minimum H<sub>2</sub>O<sub>2</sub> Requirements: 32 injectors x  $\frac{2,000 \text{ lbs H}_2\text{O}_2}{\text{injector}}$  = 64,000 pounds H<sub>2</sub>O<sub>2</sub>

Cost estimate will include the higher of either the stoichiometric or minimum H<sub>2</sub>O<sub>2</sub> requirement.



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276  
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601

ROD R. BLAGOJEVICH, GOVERNOR      RENEE CIPRIANO, DIRECTOR

217/782-6762

CERTIFIED MAIL

7002 2030 0001 1879 0642

FEB 19 2003

McLean County School District No. 5  
Attn: Stan Pieper  
1809 W. Hovey  
Normal, Illinois 61761-4339

Re:   LPC # 1130905057 -- McLean County  
      Normal/McLean County School District No. 5  
      900 Kern Street  
      LUST Incident No. 971126  
      LUST Technical File

Dear Mr. Pieper:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the High Priority Corrective Action Plan (plan) submitted for the above-referenced incident. This plan, dated January 13, 2003, was received by the Illinois EPA on January 15, 2003. Citations in this letter are from the Environmental Protection Act (Act) and 35 Illinois Administrative Code (35 Ill. Adm. Code).

Pursuant to Section 57.7(c)(4) of the Act and 35 Ill. Adm. Code 732.405(c), the plan is modified. The following modifications are necessary, in addition to those provisions already outlined in the plan, to demonstrate compliance with Title XVI of the Act and 35 Ill. Adm. Code 732:

1. Class II groundwater has not been demonstrated, so target Tier 1 objectives should be Class I standards.
2. Additional groundwater monitoring will be required following the completion of remediation activities. A minimum of two (2) quarters of groundwater sampling should meet the Tier 1 Class 1 objectives. Additional quarters may be required.



ROCKFORD - 4302 North Main Street, Rockford, IL 61103 - (815) 398-3300      W. Harrison St., Des Plaines, IL 60016 - (847) 294-4000  
ELGIN - 393 South State, Elgin, IL 60123 - (847) 608-3300      PEORIA - 3475 N. University St., Peoria, IL 61614 - (309) 693-5463  
BUREAU OF LAND - PEORIA - 7620 N. University St., Peoria, IL 61614 - (309) 693-5462      CHAMPAIGN - 2125 South First Street, Champaign, IL 61820 - (217) 278-5800  
SPRINGFIELD - 4500 S. Sixth Street Rd., Springfield, IL 62706 - (217) 786-6892      COLLINSVILLE - 2009 Mall Street, Collinsville, IL 62234 - (618) 346-5120  
MARION - 2309 W. Main St., Suite 110, Marion, IL 62959 - (618) 993-7200



*217 782-6070*

*Substance management*

*Monitoring Operational*

*Burr Filson - inventory form*

*HAZOP - m/c/m  
- injection pressure  
- compliance*

Please note that all activities associated with the remediation of this release proposed in the plan must be executed in accordance with all applicable regulatory and statutory requirements, including compliance with the proper permits and the Underground Injection Control Program for Class V wells.

In addition, the budget for the High Priority Corrective Action Plan is modified pursuant to Section 57.7(c)(4) of the Act and 35 Ill. Adm. Code 732.405(c). Based on the modifications listed in Section 2 of Attachment A, the amounts listed in Section 1 of Attachment A are approved. Please note that the costs must be incurred in accordance with the approved plan. Be aware that the amount of reimbursement may be limited by Sections 57.8(e), 57.8(g) and 57.8(d) of the Act, as well as 35 Ill. Adm. Code 732.604, 732.606(s), and 732.611.

Please note that, if the owner or operator agrees with the Illinois EPA's modifications, submittal of an amended plan and/or budget, if applicable, is not required (Section 57.7(c)(4) of the Act and 35 Ill. Adm. Code 732.503(f)). Additionally, pursuant to Section 57.8(a)(5) of the Act and 35 Ill. Adm. Code 732.405(e), if reimbursement will be sought for any additional costs that may be incurred as a result of the Illinois EPA's modifications, an amended budget must be submitted.

NOTE: Amended plans and/or budgets must be submitted and approved prior to the issuance of a No Further Remediation (NFR) Letter. Costs associated with a plan or budget that have not been approved prior to the issuance of an NFR Letter will not be reimbursable.

All future correspondence must be submitted to:

Illinois Environmental Protection Agency  
Bureau of Land - #24  
Leaking Underground Storage Tank Section  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, IL 62794-9276

Please submit all correspondence in duplicate and include the Re: block shown at the beginning of this letter.

An underground storage tank system owner or operator may appeal this decision to the Illinois Pollution Control Board. Appeal rights are attached.

Page 3

If you have any questions or need further assistance, please contact Valerie Davis at the above number.

Sincerely,

*Clifford L. Wheeler*

Clifford L. Wheeler  
Unit Manager  
Leaking Underground Storage Tank Section  
Division of Remediation Management  
Bureau of Land

CLW:VAD\

Attachments (2)

c: Harding ESE  
Division File

Attachment A

Re: LPC # 1130905057 -- McLean County  
Normal/McLean County School District No. 5  
900 Kern Street  
LUST Incident No. 971126  
LUST Technical File

SECTION 1

The budget was previously approved for:

\$ 17,127.00	Investigation Costs
\$ 6,691.00	Analysis Costs
\$ 80,130.00	Personnel Costs
\$ 3,338.00	Equipment Costs
\$ 16,413.00	Field Purchases and Other Costs
\$ 3,563.00	Handling Charges

As a result of the Illinois EPA's modification(s) in Section 2 of this Attachment A, the following amounts are approved:

\$ 7,760.00	Investigation Costs
\$ 3,290.00	Analysis Costs
\$ 33,900.00	Personnel Costs
\$ 750.00	Equipment Costs
\$ 75,064.63	Field Purchases and Other Costs
\$ 6,949.68	Handling Charges

Therefore, the total cumulative budget is approved for:

\$ 24,887.00	Investigation Costs
\$ 9,981.00	Analysis Costs
\$ 114,030.00	Personnel Costs
\$ 4,088.00	Equipment Costs
\$ 91,477.63	Field Purchases and Other Costs
\$ 10,512.68	Handling Charges

## SECTION 2

1. \$ 80.00 for an adjustment in (see below). The Illinois EPA has determined that these costs are not reasonable as submitted (Section 57.7(c)(4)(C) of the Act and 35 Ill. Adm. Code 732.606(hh)). One of the overall goals of the financial review is to assure that costs associated with materials, activities, and services are reasonable (35 Ill. Adm. Code 732.505(c)). Please note that additional information and/or supporting documentation may be provided to demonstrate the costs are reasonable.

- -\$ 45.00 Field Vehicle (3 days).
- -\$ 5.00 Ice (5)
- -\$ 30.00 Film/Photo development (2)

VAD\

## Appeal Rights

An underground storage tank owner or operator may appeal this final decision to the Illinois Pollution Control Board pursuant to Sections 40 and 57.7(c)(4)(D) of the Act by filing a petition for a hearing within 35 days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed 90 days by written notice from the owner or operator and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

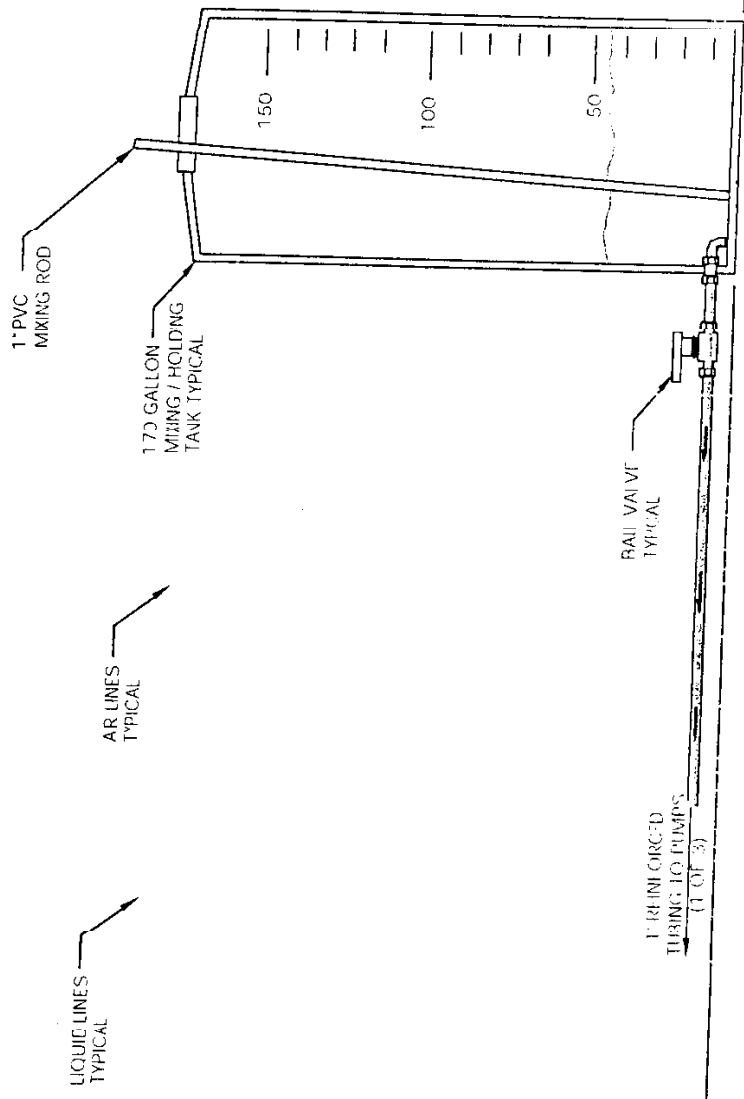
For information regarding the filing of an appeal, please contact:

Dorothy Gunn, Clerk  
Illinois Pollution Control Board  
State of Illinois Center  
100 West Randolph, Suite 11-500  
Chicago, IL 60601  
312/814-3620

For information regarding the filing of an extension, please contact:

Illinois Environmental Protection Agency  
Division of Legal Counsel  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, IL 62794-9276  
217/782-5544

EXHIBIT  
**3**

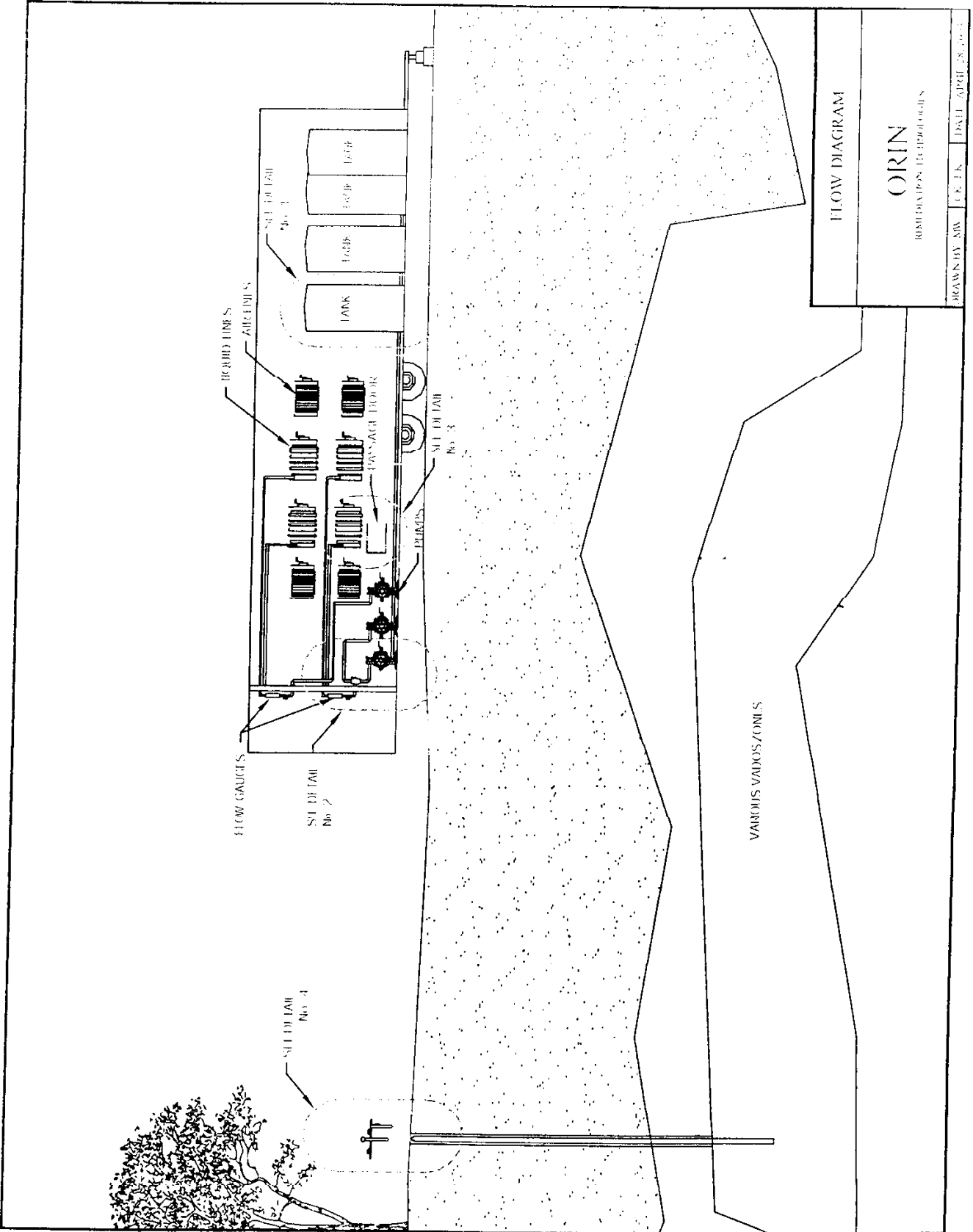


DETAIL 1

ORIN  
REHABILITATION PROJECT

ORGANIZATION: C.E.C. DATE: APRIL 2000





ORIN, FLOW DIAGRAM & DETAILS

FLOW DIAGRAM

ORIN

REMEDIATION TECHNOLOGIES

DRAWN BY MW C.E. J.K. DATE: APRIL 28, 2003



### III. HAZARDOUS COMPONENTS

NOTE: OSHA establishes a PEL of 15 mg/m<sup>3</sup> ( total dust ) and 5 mg/m<sup>3</sup> ( respirable dust ) for "Particulates Not Otherwise Regulated." The ACGIH TLV is 10 mg/m<sup>3</sup> for these particles. Risks include reduced visibility and physical irritation.

#### EXPOSURE LIMITS

NAME	CAS NO.	%	PEL	TLV	OTHER
Sodium Peroxidisulfate	7775-27-1	100%	None	10 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>

No carcinogenicity designated by NTP, IARC, OSHA, or others.

### IV. CHEMICAL AND PHYSICAL PROPERTIES

The pH level corresponds to 560 grams in 1 liter H<sub>2</sub>O @ 68° F.

BOILING POINT:	Not applicable
VAPOR PRESSURE:	Not applicable
MELTING POINT:	Decomposes @ 356° F
VAPOR DENSITY:	Not applicable
SOL. IN WATER:	550 g/l
SPECIFIC GRAVITY:	2.59 ( H <sub>2</sub> O = 1 )
pH:	2.6
EVAPORATION RATE:	Not applicable
APPEARANCE/ODOR:	White crystals with no odor

### V. HEALTH HAZARD DATA & FIRST AID PROCEDURES

## VI. EXPOSURE CONTROL MEASURES

<b>EYE PROTECTION:</b>	Eye protection is required.
<b>PROTECTIVE GLOVES:</b>	Wear chemical resistant gloves.
<b>RESPIRATORY PROTECTION:</b>	Atmospheric levels should be maintained below the exposure limits listed in Section III by using engineering controls. If not feasible, use an approved air-purifying respirator with approved filters and/or sorbents.
<b>OTHER PROTECTION:</b>	If repeated or prolonged skin contact or contamination is likely, protective clothing should be worn.
<b>VENTILATION:</b>	Provide general and/or local exhaust ventilation in enclosed areas to maintain airborne concentrations at a minimum. Refer to "Industrial Ventilation" by ACGIH for a manual of recommended practices.
<b>PERSONAL HYGIENE / WORK PRACTICES:</b>	Establish good personal hygiene and work practices. Always wash hands and face before eating, drinking, or smoking.

## VII. FIRE AND EXPLOSION HAZARD DATA

<b>FLASH POINT (METHOD USED)</b>	Non-combustible
<b>FLAMMABLE LIMITS - LOWER:</b>	None
<b>FLAMMABLE LIMITS - UPPER:</b>	None
<b>EXTINGUISHING MEDIA:</b>	Use water, CO <sub>2</sub> , or dry powder.
<b>FIRE FIGHTING</b>	Evacuate enclosed and

**DISPOSAL METHOD:** This material is an oxidizer defined by DOT, therefore a hazardous waste ( per RCRA ) due to Ignitability. Disposal should be conducted by an EPA permitted disposal facility. Contact Degussa at (205) 443- 4000 ext. 2287 for assistance.

## **IX. PRECAUTIONS FOR SAFE HANDLING, STORAGE, AND USE**

Store tightly closed in a cool, dry area separated from flammable materials. Avoid contamination; avoid exposure to heat and moisture.

## **X. SHIPPING INFORMATION**

<b>PRIMARY HAZARD:</b>	Oxidizer
<b>SECONDARY HAZARD:</b>	None
<b>DOT SHIPPING NAME:</b>	Sodium Persulfate
<b>HAZARD CLASS:</b>	Oxidizer
<b>UN #:</b>	1505
<b>UN CLASS:</b>	5.1
<b>PACKING GROUP #:</b>	III
<b>49 CFR REFERENCE:</b>	173.213, 173.240 ( HM-181 )
<b>LABEL(S):</b>	Oxidizer
<b>PLACARD(S):</b>	Oxidizer
<b>SHIPPING RESTRICTIONS: Passenger Aircraft</b>	25 kg maximum per package
<b>SHIPPING RESTRICTIONS: Cargo only Aircraft:</b>	100 kg maximum per package
<b>AUTHORIZED CONTAINER TYPE(S):</b>	See 49 CFR section referenced above.

## **XI. ADDITIONAL INFORMATION**

# MATERIAL SAFETY DATA SHEET

PermeOx® Plus



MSDS Ref. No: 1305-79-9-2  
Version: US/Canada  
Date Approved: 06/06/2002  
Revision No: 8

---

## 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** PermeOx® Plus

**SYNONYM(s):** PermeOx-Solid Peroxygen, Calcium Superoxide, Calcium Peroxide

**GENERAL USE:** Permeox is a solid peroxygen chemical designed for environmental applications. The product provides controlled release of oxygen in-situ which permeates throughout the substrate.

### MANUFACTURER

FMC Corporation  
Active Oxidant Division  
1735 Market Street  
Philadelphia, PA 19103  
**General Information:** (866) 860-4760

### Emergency Telephone Numbers:

**CHEMTREC (U.S.):** (800) 424-9300  
**Emergency Phone** (303) 595-9048  
(Medical) Call Collect  
**Emergency Phone** (716) 879 0100  
(Plant/Other) Call Collect

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS#</u>	<u>Wt.%</u>
Calcium Peroxide	1305-79-9	>75
Calcium Hydroxide	1305-62-0	<25

---

## 3. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

**SENSITIVITY TO IMPACT:** Oxidizable materials can be ignited by grinding and may become explosive.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Oxygen that supports combustion and calcium hydroxide.

---

## 6. ACCIDENTAL RELEASE MEASURES

**RELEASE NOTES:** Confine spill and place into container; dilute with a large quantity of water for disposal. Do not return product to the original container. Runoff to sewer may create fire or explosion hazard (do not flush powdered material to sewer).

---

## 7. HANDLING AND STORAGE

**HANDLING:** Avoid contact by using personal protective equipment. Use respiratory protective equipment when release of airborne dust is expected. If compounded with organics or combustible materials be sure to exclude moisture.

**STORAGE:** Keep material dry. Store in a clean cool place. Do not store near or expose to heat sources i.e., steam pipes, radiant heaters, hot hair vents or welding sparks. Avoid contact with reducing agents. Reacts with moisture. Keep container tightly closed when not in use.

**COMMENTS: VENTILATION:**

Provide mechanical general and/or local exhaust ventilation to prevent release of dust into work environment. If ventilation is inadequate or not available, use dust respirator and eye protection.

---

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE LIMITS

<u>Chemical Name</u>	<u>TWA</u> <u>(ACGIH)</u>	<u>STEL/Ceiling</u> <u>(ACGIH)</u>	<u>PEL</u> <u>(OSHA)</u>	<u>STEL/Ceiling</u> <u>(OSHA)</u>
Calcium Hydroxide	5 mg/m <sup>3</sup>		5 mg/m <sup>3</sup>	

**ENGINEERING CONTROLS:** Provide mechanical local exhaust ventilation to prevent release of dust into the work area. If release is expected use respiratory protection.

## 11. TOXICOLOGICAL INFORMATION

**EYE EFFECTS:** Severely irritating to unwashed eyes. Minimally irritating to washed eyes. (rabbit) [Ref. FMC I88-1053]

**SKIN EFFECTS:** Non-irritating (rabbit) [Ref. FMC I88-1054]

**DERMAL LD<sub>50</sub>:** >10 g/kg (rat) [Ref. FMC ICG/T-79.026]

**ORAL LD<sub>50</sub>:** >5 g/kg (rat) [Ref. FMC I88-1052]

**INHALATION LC<sub>50</sub>:** >17 mg/L (1 hr.) (rat) [Ref. FMC ICG/T-79.026]

**TARGET ORGANS:** Eyes and respiratory passages

**ACUTE EFFECTS FROM OVEREXPOSURE:** Dust is irritating to eyes, nose, throat, and lungs.

**CHRONIC EFFECTS FROM OVEREXPOSURE:** No data available for the product.

### CARCINOGENICITY:

IARC: Not listed

NTP: Not listed

OSHA: Not listed

OTHER: ACGIH: Not listed

---

## 12. ECOLOGICAL INFORMATION

**ECOTOXICOLOGICAL INFORMATION:** Effect of low concentrations on aquatic life are unknown. [Ref. NIOSH RTECS No. 79-100]

**CHEMICAL FATE INFORMATION:** As indicated by chemical properties oxygen is released into the environment.

---

## 13. DISPOSAL CONSIDERATIONS

**DISPOSAL METHOD:** Dissolve in water to allow the release of oxygen and dispose via a treatment system in accordance with governmental agencies regulations. Contact appropriate regulatory agency prior to disposal.

---

## 14. TRANSPORT INFORMATION

TSCA STATUS (40 CFR 710): Listed  
RCRA STATUS: Calcium Peroxide: Waste No. D001

## CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM):  
Product Identification No.: 1457  
Hazard Classification: Class D, Div 2, Subdiv. B, Class C (Oxidizer)  
Ingredient Disclosure List: Listed (calcium hydroxide)

---

## 16. OTHER INFORMATION

### REVISION SUMMARY

This MSDS replaces Revision #7, dated March 19, 2002. Changes in information are as follows:

Section 16 (Other Information): HMIS Headings

HMIS RATING	
HEALTH:	2
FLAMMABILITY	0
PHYSICAL HAZARD:	1
PERSONAL PROTECTION (PPE):	J

NFPA RATING	
HEALTH:	2
FLAMMABILITY	0
REACTIVITY:	1
SPECIAL:	OX

### Key

4 = Severe  
3 = Serious  
2 = Moderate  
1 = Slight  
0 = Minimal

### HMIS RATINGS NOTES:

Protection = J (Safety goggles, gloves, apron & combination dust & vapor respirator)

The contents and format of this MSDS are in accordance with OSHA Hazard Communication Standard and Canada's Workplace Hazardous Information System (WHMIS).

National Fire Protection Association (NFPA)

SPECIAL = OX (Oxidizer)