



KELLY AFB  
TEXAS

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ADMINISTRATIVE RECORD  
COVER SHEET

AR File Number 3289

**KELLY RESTORATION ADVISORY BOARD**  
**TECHNICAL REVIEW SUBCOMMITTEE**  
**MEETING AGENDA**

**14 November 2000, 6:45 P.M.**  
**St. Mary's University, Garni Science Hall**

- |             |                                                                                                                                                                |             |                                              |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------|
| <b>I.</b>   | <b>Introduction</b><br>A. Agenda Review and Handouts                                                                                                           | 6:30 - 6:40 | Dr. Lené                                     |
| <b>II.</b>  | <b>TAPP Review of the Site S-8 CMI Workplan</b>                                                                                                                | 6:40 - 7:10 | Mr. Jeff Neathery,<br>Neathery Environmental |
| <b>III.</b> | <b>Zone 4 RFI Highlights</b>                                                                                                                                   | 7:10 - 7:35 | Mr. Walter Peck, AFBCA                       |
| <b>IV.</b>  | <b>Low-Level Radioactive Wastes<br/>Sites Relative Risk Rating</b>                                                                                             | 7:35 - 7:50 | Mr. Jack Shipman,<br>AFBCA                   |
| <b>V.</b>   | <b>Results of Testing New Off Base Wells</b>                                                                                                                   | 7:50 - 8:10 | Mr. Don Buelter, AFBCA                       |
| <b>VI.</b>  | <b>Administrative</b><br>A. BCT Update<br>B. Spill Summary Report<br>C. Documents to TRS/RAB<br>D. Action Items<br>E. Agenda/Location/Time of Next TRS Meeting | 8:10 - 8:30 | Dr. Lené                                     |
| <b>VII.</b> | <b>Adjournment</b>                                                                                                                                             | 8:30        |                                              |

Nov. 2000

## MEETING MINUTES

### KELLY AFB TECHNICAL REVIEW SUBCOMMITTEE (TRS) TO THE RESTORATION ADVISORY BOARD (RAB)

14 November 2000, St. Mary's University, Garni Science Hall  
Dr. Lené, TRS Chairman

- I. Introduction:** The TRS meeting began at 6:40 p.m. Attachment 1 is the attendance report.
- II. TAPP Review of Site S-8 CMI Workplan:** Mr. Jeff Neathery, Neathery Environmental Services, presented his draft report. He emphasized that the workplan was reviewed as a "stand alone" document and no other documents were examined.
- A. He made the following observations/conclusions:
1. The aquifer modeling assumed the aquifer was confined. He was concerned that the aquifer may be unconfined and suggested modeling that would allow a comparison between an unconfined aquifer and a confined aquifer.
  2. There is no mention of the presence of dense non-aqueous phase liquids (DNAPLs). Testing appeared to be for light non-aqueous phase liquids (LNAPLs).
  3. Water levels appear higher than the well screens. Such a condition could preclude the capture of LNAPLs.
  4. The report states the plumes do not cross the base boundary line, yet there is evidence of contamination in a well at the property line. *Note:* Ms. Rhonda Hampton, Air Force Base Conversion Agency (AFBCA) Project Manager, reported that the most recent test shows the plume does not leave the base.
  5. The workplan calls for a two-well system to replace the existing 12-well system. Mr. Neathery is concerned the new system will not perform better than the existing system. *Note:* Ms. Hampton reported that one well has been installed and is performing according to the modeling prediction.
- B. Mr. Neathery made the following recommendations:
1. Re-evaluate data contained in this and prior reports.
  2. Collect more data to assess the possible presence of DNAPLs and the extent of the plume.
  3. Perform more testing and modeling.
  4. Re-evaluate the proposed remedial system based on new data.
- C. Ms Leslie Brown, AFBCA, reminded the committee that any questions needed to be submitted to Mr. Neathery by 21 November 2000 and the final report would be given at the 16 January 2001 RAB meeting.
- III. Zone 4 RFI Status:** Mr. William Ryan, AFBCA, explained that the Zone 4 Operable Units (OU) are OU-1 and OU-2. OU-1 deals with soils within the East Kelly Industrial Waste Collection System on St. Phillips College property. OU-2 is impacted ground water on East Kelly and from Site MP. Work is progressing on each OU. Findings on specific sites can be found in Attachment 3. The project is on schedule with the final corrective measure study projected to be completed in April 2001.
- A. Discussion:
- Q - Mr. George Rice asked to what level the groundwater would be cleaned.  
A - Mr. Ryan told him the water would be cleaned to levels required by TNRCC and EPA standards which are MCLs, i.e. drinking water standards.
- Q - Mr. Rice asked if the final Corrective Measures Study (CMS) report would have a preferred solution.  
A - Mr. Ryan told him it would.

**IV. Low-level Radioactive Wastes Sites Relative Ratings:** Mr. Jack Shipman, AFBCA, provided a short briefing on the relative rankings of the sites were evaluated using the relative risk ranking process. (His report was previously presented to the full RAB and referred to the TRS for recommendation.) There are three sites under consideration and all are preliminarily ranked low. The TRS will recommend that the RAB accept the ratings and add them to the Kelly AFB's list of sites that have a Relative Risk Rating. (See attachment 4.)

**A. Discussion:**

Q - Mr. Armando Quintanilla asked if the Air Force disposed of the depleted uranium weights from the C-5B Galaxy aircraft.

A - Mr. Shipman explained that since the weights had very low radiation, nearly background level, they were containerized and sent to be recycled.

**V. Results of Testing New Off-base Wells:** Mr. Ryan provided the committee with the validated groundwater sampling data from nine monitoring wells drilled off base, north of Kelly AFB (See attachment 5.) Drilled in August 2000, the wells provide information that fills in data gaps. Three wells between the 36th Street gate and Highway 90 were dry, but since the recent rains, they now have water and will be retested.

**VI. Administrative:**

A. Base Conversion Team (BCT) handouts were presented to Dr. Lené. (See attachment 6) Mr. Ryan told the committee the BCT meeting highlights were the TRS agenda items III, IV, and V. The BCT also discussed: (1) the procedural steps needed to close down the base's hydrant system, (2) the interim system at building 522 and its optimization, (3) DNAPL removal concept for site MP and, (4) the progress on building 300 remedial facility investigation.

B. Spill Summary Report: There were no spills during the month of October 2000 (See attachment 7). A spill was reported on 9 November 2000 in the 1592 fuel tank area and spill pads had been used to collect the residue fuel. A full report will be given at the next committee meeting.

C. Documents to TRS/RAB: There were seven new documents (See attachment 8).

D. Action Items: No Action Items.

E. Next TRS meeting: The next TRS meeting will be held 12 December 2000 at 6:30 p.m. in St. Mary's Garni Science Hall.

**VII. Adjournment:** The TRS adjourned at 8:40 p.m.

**Attachments:**

1. Attendance Report
2. Draft TAPP Presentation of Site S-8 CMI Workplan Review
3. Zone 4 RFI Status Presentation
4. Low-level Radioactive Wastes Sites Relative Ratings (previously provided to all RAB members)
5. Results of Testing New Off-base Wells Presentation
6. BCT Minutes and Handouts, November 2000
7. Spill Summary Report
8. Documents List

**MINUTAS DE LA JUNTA**  
SUBCOMITÉ DE REVISIÓN TÉCNICA (TRS, por sus siglas en inglés) DE LA BASE  
DE LA FUERZA AÉREA KELLY  
PARA LA JUNTA ASESORA DE RESTAURACIÓN DE KELLY (RAB, por sus siglas  
en inglés)

14 de noviembre de 2000, Sala Garni Science Hall, Universidad de St. Mary's

Dr. Gene Lené, Presidente en el TRS

- I. Introducción:** La reunión del TRS comenzó a las 6:40 de la tarde. El Documento Adjunto # 1 es el reporte de asistencia a la misma.
- II. Revisión bajo el Programa de Asistencia Técnica y Participación Pública (TAPP por sus siglas en inglés) del Plan de Trabajo para la Implementación de Medidas Correctivas (CMI por sus siglas en inglés) del Sitio S-8:** El Sr. Jeff Neathery de Neathery Environmental Services presentó su informe en borrador. Enfatizó que el plan de trabajo se revisó como un documento “que habla por sí mismo” y no se examinó ningún otro documento.
- A. Hizo las siguientes observaciones / conclusiones:
1. El modelo del acuífero asumió que el acuífero estaba confinado. Le preocupa que el acuífero pueda no estar confinado y sugirió un modelo que permitiera una comparación entre un acuífero no confinado y un acuífero confinado.
  2. No se menciona nada sobre la presencia de líquidos en fase densa no acuosa (DNAPLs por sus siglas en inglés). Las pruebas parecen ser para líquidos en fase ligera no acuosa (LNAPLs por sus siglas en inglés).
  3. Los niveles de agua parecen estar más altos que los filtros de los pozos. Tal condición podría impedir la captación de LNAPLs.
  4. El informe indica que las plumas no cruzan la línea del límite de la base, aun cuando hay evidencia de contaminación en un pozo en la línea de propiedad. *Nota:* La Srta. Rhonda Hampton, Gerente de Proyectos de la Agencia de Conversión de Bases de la Fuerza Aérea (AFBCA por sus siglas en inglés), reportó que las pruebas más recientes muestran que la pluma no sale de la base.
  5. El Plan de Trabajo indica que un sistema de dos pozos reemplace al sistema existente de 12 pozos. El Sr. Neathery está preocupado de que el nuevo sistema no funcione tan bien como el sistema existente. *Nota:* La Srta. Hampton reportó que se ha instalado un pozo y que está funcionando de acuerdo a la predicción del modelo.
- B. El Sr. Neathery hizo las siguientes recomendaciones:
1. Re-evaluar los datos contenidos en éste y en reportes anteriores.
  2. Recopilar más datos para evaluar la presencia posible de DNAPLs y la extensión de la pluma.
  3. Llevar a cabo más pruebas y modelos.

4. Re-evaluar el sistema de corrección propuesto con base en los nuevos datos.
- C. La Srta. Leslie Brown de la AFBCA le recordó al comité que las preguntas necesitan ser enviadas al Sr. Neathery para el 21 de noviembre del 2000, y que el reporte final se hará en la junta del RAB del 16 de enero del 2001.

**III. Situación de la Investigación de la Facilidat bajo RCRA (RFI, por sus siglas en inglés) de la Zona 4:** El Sr. William Ryan de la AFBCA explicó que las Unidades Operables (OU por sus siglas en inglés) en la Zona 4 son la OU-1 y OU-2. La OU-1 trata los suelos dentro del Sistema de Recolección de Agua de Desecho Industrial de East Kelly en la propiedad del St. Phillips College. La OU-2 es el agua subterránea impactada en East Kelly y del Sitio MP. El trabajo sigue su curso en cada OU. Lo que se ha encontrado sobre los sitios específicos se puede localizar en el Documento Adjunto # 3. El proyecto se encuentra dentro de su programación y el estudio final de las medidas correctivas se terminará en abril del 2001.

A. Discusión:

- P – El Sr. George Rice preguntó a qué nivel se limpiaría el agua subterránea.
- R – El Sr. Ryan le dijo que el agua se limpiaría a los niveles requeridos por los estándares de la Comisión para la Conservación de Recursos Naturales de Texas (TNRCC, por sus siglas en inglés) y de la Agencia de Protección Ambiental (EPA, por sus siglas en inglés) que son los niveles máximos de contaminación (MCLs, por sus siglas en inglés), esto es, los estándares de agua potable.
- P - El Sr. Rice preguntó si el reporte del Estudio final de Medidas Correctivas (CMS por sus siglas en inglés) tendría una solución preferida.
- R – El Sr. Ryan le dijo que sí.

**IV. Calificaciones Relativas de los Sitios con Desechos Radioactivos de Bajo Nivel:** El Sr. Jack Shipman de la AFBCA proporcionó un resumen breve sobre las calificaciones relativas de los sitios que se evaluaron usando el proceso de calificación de riesgos relativos. (Su reporte fue presentado previamente a todo el RAB y se refirió al TRS para que éste emitiera su recomendación). Hay tres sitios bajo consideración y todos se calificaron de manera preliminar como bajos. El TRS recomendará que el RAB acepte las calificaciones y las añada a la lista de sitio de la Base Aérea Kelly que tienen un Calificación de Riesgos Relativos. (Ver el Anexo 4).

A. Discusión:

- P – El Sr. Armando Quintanilla preguntó si la Fuerza Aérea había desechado los pesos de uranio agotado de la aeronave C-5B Galaxy.
- R – El Sr. Shipman explicó que puesto que los pesos tenían muy poca radiación, casi a niveles de fondo, se pusieron en contenedores y se enviaron para ser reciclados.

**V. Resultados de las Pruebas de los Nuevos Pozos Fuera de la Base:** El Sr. Ryan proporcionó al comité los datos validados de muestreo de agua subterránea de nueve pozos de vigilancia que se perforaron fuera de la base, al norte de la Base Aérea Kelly (Ver Documento Adjunto # 5). Los pozos, que fueron perforados en agosto del 2000, proporcionan datos que llenan la información faltante. Tres pozos entre la puerta de la

Calle 36 y la Carretera 90 estaban secos, pero desde las recientes lluvias, ahora tienen agua y se volverán a hacer pruebas de ellos.

## **VI. Asuntos Administrativos**

- A. Se presentaron los folletos del Equipo de Conversión de la Base (BCT por sus siglas en inglés) al Dr. Lené (Ver Documento Adjunto # 6). El Sr. Ryan le dijo al comité que los puntos importantes de la junta del BCT eran los puntos III, IV y V del TRS. El BCT también discutió (1): los procedimientos necesarios para cerrar el sistema de bocas de riego de la base, (2) el sistema provisional en el edificio 522 y su optimización, (3) el concepto de remoción de DNAPL para el sitio MP y (4) el avance en la investigación de la instalación correctiva del edificio 300.
- B. Reporte del Resumen de Derrames: No hubo derrames reportados durante el mes de octubre del 2000 (Ver Documento Adjunto # 7). Se reportó un derrame el 9 de noviembre de 2000 en el área del tanque de combustible 1592 y se habían usado almohadillas para derrames para recoger el combustible residual. Se dará un reporte completo en la siguiente junta del comité.
- C. Documentos entregados al TRS/RAB: Hubo siete documentos nuevos (Ver Documento Adjunto # 8).
- D. Puntos de Acción: No hubo Puntos de Acción.
- E. Siguió reunión del TRS. La siguiente reunión del TRS se llevará a cabo el 12 de diciembre de 2000 a las 6:30 de la tarde en el Garni Science Hall de St. Mary.

**VII. Conclusión:** La reunión del TRS concluyó a las 8:40 de la noche.

Anexos:

1. Lista de Asistencia
2. Presentación en borrador del TAPP sobre la Revisión del Plan de Trabajo del CMI del Sitio S-8
3. Presentación de la Situación del RFI de la Zona 4
4. Clasificaciones Relativas de los Sitios con Desechos Radioactivos de Bajo Nivel (que se proporcionaban previamente a todos los miembros del RAB)
5. Resultados de la Presentación de las Pruebas de los Nuevos Pozos Fuera de la Base
6. Minutas y Folletos del BCT de noviembre de 2000
7. Reporte del Resumen de Derrames
8. Lista de Documentos



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS SAN ANTONIO AIR LOGISTICS CENTER (AFMC)  
KELLY AIR FORCE BASE, TEXAS

14 NOV 2000

MEMORANDUM FOR: REMEDIAL ACTION BOARD/TECHNICAL REVIEW  
SUBCOMMITTEE (RAB/TRS)

FROM: SA-ALC/EMC  
307 Tinker Drive, Bldg. 306  
Kelly AFB, TX 78241-5917

SUBJECT: Monthly Spill Report for October 2000

There have been no reportable quantity or otherwise notable spills for the month of October 2000. Should you have any further questions or require additional information, please contact Mr. Jerry Pantoja at 925-3100 ext. 310 or email [jerry.pantoja@kelly.af.mil](mailto:jerry.pantoja@kelly.af.mil).

Sincerely

  
SEAN O'BRIEN, Capt, USAF  
Director, Environmental Management

**Document Review**  
of the  
**Corrective Measures Implementation  
Work Plan  
For Site S-8  
Kelly Air Force Base, Texas**

Prepared for  
**Kelly Air Force Base  
Restoration Advisory Board**

*Attach. # 2*

## PURPOSE

The purpose of this project is to review the Corrective Measures Implementation Work Plan for Site S-8, Kelly Air Force Base, Texas hereafter referred to as the REPORT. The Report was prepared by Science Applications International Corporation (SAIC) dated September 1999. The review is to include a simple explanation of the work to be performed and a technical review of the proposed work. This review was conducted for the Kelly Air Force Base Restoration Advisory Board (CLIENT). Under Contract F41622-98-A-5884 Call 0001.

## **REVIEWERS**

The REPORT was reviewed by Jeffrey S. Neathery, R.G., C.P.G. of **Neathery Environmental Services** and Christopher C. Mathewson, Ph.D., P.E., R.E.G. of **Texas A&M University**.

## LIMITATIONS

The REPORT was reviewed as a “stand alone” document. No other documents were examined during the review of the REPORT. It is assumed that the background information included in the REPORT is accurate. It is further assumed that all of the data collected and relied upon in the REPORT is also accurate. All conclusions and recommendations contained herein are made solely on the contents of the REPORT.

# REPORT CONTENTS

The Report consists of three major components. These include:

Corrective Measures Implementation  
Work Plan for Groundwater

Informal Technical Information Report  
Informational System Optimization and Evaluation

Site S-8 Interim Remediation System  
Design Bid Package

# **Corrective Measures Implementation (CMI)**

## **Work Plan for Groundwater**

This section of the report describes the final groundwater corrective measures for Site S-8 including the design, construction, operation, maintenance and performance of the monitoring system. The proposed Corrective Action System will consist of two recovery wells to collect and treat contaminants in the shallow aquifer and passive bailers with hydrophobic filters to collect light nonaqueous phase liquids.

# **Informal Technical Information Report (ITIR)**

## **Informational System Optimization and Evaluation**

This section of the report was prepared to present the findings of the Interim System Optimization project for Site S-8. The ITIR presents the results of the re-evaluation of the contaminants of concern, aquifer geometry and parameters and the location of new pumping wells to ensure maximum containment of the residual plume and maximum mass removal of contaminants.

## **Site S-8 Interim Remediation System Design Bid Package**

This appears to be a bid package to remove the interim remediation system and install the new system. All of the specifications appear to be lifted from a standard document. The drawings are site specific. The “nuts and bolts” of this section were not analyzed in detail.

## PREVIOUS INVESTIGATIONS

There have been several investigations performed at the site. Some as part of the basewide monitoring and some site specific. These include

Preliminary Assessment/Site Inspection (1983 - 1986)

Focused Feasibility Studies (1991)

Remedial Investigation (1993)

Feasibility Study (1996)

Optimization of the Interim Remedial System (1997)

The results of these reports were used in CIM Work plan. These documents were not reviewed as part of this scope of work.

## AQUIFER CONDITIONS

Section 2.4.1 of the CMI states that the gravels in the alluvial aquifer “may or may not be completely saturated throughout the site, which may also influence flow”.

Section 3.3 of the CMI states that “Groundwater flow is influenced by the heterogeneous composition of the alluvial aquifer material and the topographic features of the Navarro Clay surface.”

Section 3.1 of the ITIR “confirms that the shallow aquifer is highly heterogeneous”. “The heterogeneity of the aquifer is demonstrated by the presence of channels or other areas filled with sediments with significantly higher (2 to 3 orders of magnitude) hydraulic conductivity than the surrounding soil.”

## **OBSERVATIONS**

In the aquifer modeling performed for the site, confined conditions were assumed.

Were other models run assuming water table conditions? Was a comparison of the two methods evaluated?

## **CONTAMINANTS OF CONCERN**

Section 2.4.2 of the CMI characterizes the contamination and lists the chemicals of concern. It states that elevated levels of contaminants in only three wells, will dictate which chemicals are of concern and which are not. All of these wells are located near the source of the contamination and not off base.

## OBSERVATIONS

It may be possible that contaminants that exceed the acceptable levels may be found in other wells.

Some of the chemicals of concern have a higher density than water and tend to sink in the water column. Here they can accumulate as dense non-aqueous phase liquids (DNAPLs). There is no mention of the presence of DNALPs. All testing methods appear to be for LNAPLs.

## **GROUNDWATER CONTAMINATION**

The LNAPL contamination is shown on several distribution maps. The report states that “Based on these observations of nine years of data, the LNAPL plume is interpreted to be stationary and not growing in size.”

## OBSERVATIONS

This does not correspond with the distribution maps. LNAPL thickness measures in MW004 would be considered invalid due to the screen being below the water table. This is reflected in Figure 2-8. When the water level rises above the screen, no LNAPLs are present.

## OBSERVATIONS

From the cross section presented on Figure 2-3, it appears that all MW103 and MW013 are screened below the low water level reading and that MW004 is screened below the high water level reading. This could result in artificially low contaminant readings.

## OBSERVATIONS

There appears to be some interpretation of the distribution of the concentrations on the contaminant maps for vinyl chloride and chlorobenzene near the UPRR property boundary to the east. The maps as drawn show that the dissolved phase plume does not cross the property boundary. However, a well at the property boundary has a detection limit of 0.31 ppb which is groundwater protection standard for vinyl chloride. It is possible that groundwater contaminated with vinyl chloride in excess of the groundwater protection standards exists beyond the UPRR property boundary.

## CORRECTIVE MEASURES

The 1992 - 1999 Interim remedial Action included the installation of a groundwater recovery system that included 12 recovery wells. The total pumpage from the system ranged from 15 gpm to 40 gpm. It was deemed that this was not adequate to contain the plume.

The 12 well system will to be replaced by a 2 well system. One of the wells used in the 12 well system (MW016) will be used in the new 2 well system. During a pumping test in October of 1977 MW016 produced 60 gpm. The current groundwater model proposes pumping from MW016 at 40 gpm.

## **CONCLUSIONS (cont.)**

- There is concern that the 2 well recovery system will perform better than the existing 12 well system.

## CONCLUSIONS

The review of the REPORT performed by **Neathery Environmental Services** revealed the following:

- The monitoring wells used in the evaluation of contamination appear to be screened below the water table.
- The LNAPL plume appears to be growing and offsite migration of the dissolved phase is possible.
- Complicated aquifer characteristics may not lend itself to groundwater modeling that would provide accurate results.

## OBSERVATIONS

If a 12 well system cannot contain the plume, how can a two well system? Why was it not feasible to increase the pumping rates from the 12 well system to contain the plume?

Section 4.1 of the ITIR states “The cross section shown in Figure 4.1 clearly illustrates the lateral discontinuity of the aquifer material in this area.”

## RECOMMENDATIONS

Based on the results of this assessment, **Neathery Environmental Services** recommends the following

- A re-evaluation of the data contained in this and prior reports. The data should be reviewed.
- Additional data should be collected to assess the possible presence of DNALPs and off-site migration.
- Perform the electromagnetic (or other appropriate type) again in order to obtain valid results.

## **RECOMMENDATIONS (cont.)**

- Additional aquifer modeling may be performed and compared to the current model.
- A re-evaluation of the proposed remedial system based upon the new data.

*ATTACH. #3*

	<h3>Zone 4 RFI/CMS Status</h3>
	<p><b>Walter Peck, AFBCA/EM</b> <b>Scott Courtney, BAH</b> <b>Bob Goodson, CH2M HILL</b> <b>Mark Stoker, CH2M HILL</b></p> <p>1</p>

	<h3>Zone 4 RFI/CMS</h3>
	<ul style="list-style-type: none"><li>• <b>Background (brief, I promise!)</b></li><li>• <b>Interim Results</b></li><li>• <b>RFI Report Organization</b></li><li>• <b>Report Status</b><ul style="list-style-type: none"><li>- RFI</li><li>- HHRA</li><li>- ERA</li><li>- CMS</li></ul></li></ul> <p>2</p>

## Zone 4 RFI/CMS Background

- Draft Final RI for OU-1 submitted June 1998
- EPA/TNRCC comments received by April 1999
- Comment resolution meeting May 1999
- Contract for additional data collection awarded January 2000
- Additional OU-1 data collected in April 2000
- Contract to complete RFI/CMS awarded June 2000
- Additional OU-1/OU-2 data collected in Sept 2000



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## Zone 4 Operable Units

- Operable units defined primarily for data presentation and interpretation
  - OU-1 ~ 400 ac
  - OU-2 ~16,500 ac
- What is OU-1?
  - Soil within East Kelly and IWCS on college property
  - Does not include DRMO sites to be closed under RCRA permit
  - Site SS051, AOC MW125, AOC MW160 and AOC Yard 68
- What is OU-2?
  - Groundwater impacted primarily by Kelly sites SS051 and SS040 extending to the east and southeast of those sites
    - *clarify IRP and RCRA nomenclature*



4

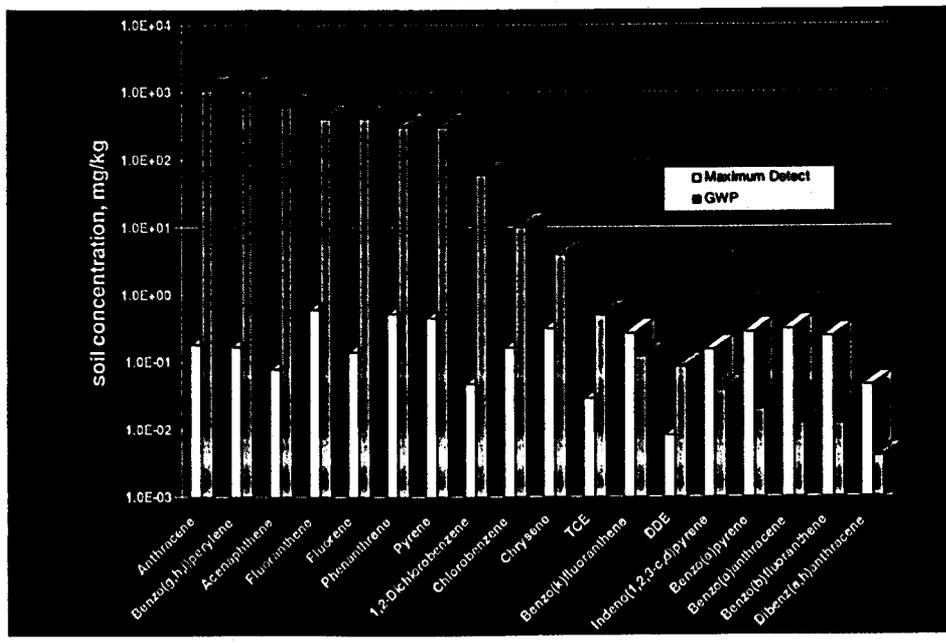
## RFI OU-1: Site SS051

- Present & discuss all data collected at SS051
  - RFI will "beef up" the site characterization
- Data gap analysis performed
  - new data collected around the storm sewers
  - no new soil contamination found
  - Minor VOC soil contamination
- Residual PAHs
  - low concentrations in soil
  - potential impact from overlying asphalt
  - low solubility/mobility
  - not detected in groundwater
- Goal: RRS #2 closure
  - subject to groundwater remediation



5

## Site SS051



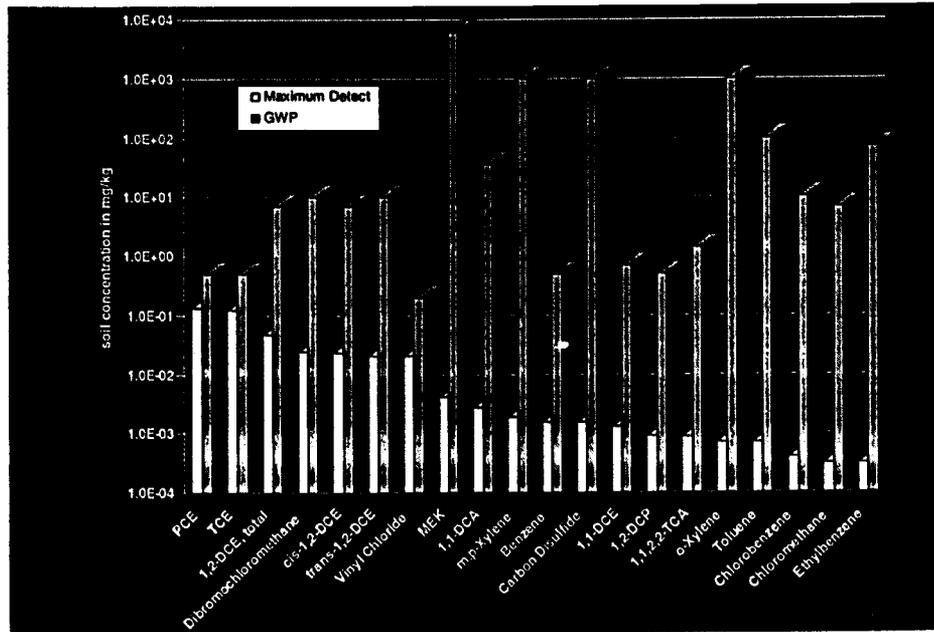
## RFI OU-1: AOC MW160

- Site of former OWS/UST (closed)
  - CVOCs detected in soil during closure investigation
  - MW160 installed in 1994 as a result of OWS/UST closure
  - Additional soil samples collected to provide more detail on vertical and lateral extent
  - All concentrations below SAI and GWP
  - Extent delineated to PQLs
- Goal: RRS #2 closure
  - no remediation required



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### Soil Results from AOC MW160



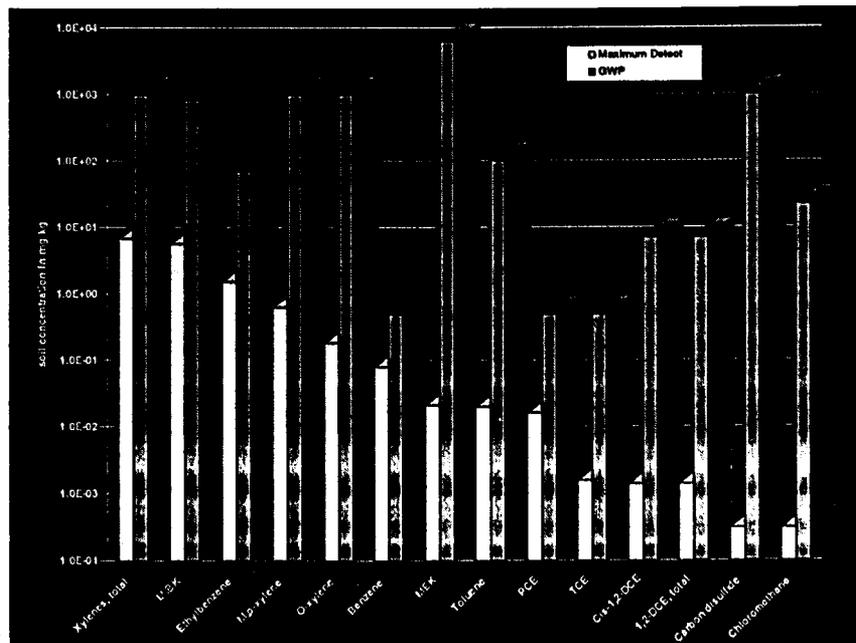
## RFI OU-1: AOC MW125

- Area of concern around well MW125
  - Soils impacted by BTEX, PAHs and CVOCs
  - Additional soil samples collected
    - detail on vertical and lateral extent
- Soil Data
  - VOCs pass SAI and GWP
  - PAHs exceed SAI and GWP
    - direct comparison
- Offsite Source Demonstration
  - Data from TXDOT and potential Superfund site(s)
  - Concentrations decrease away from perimeter
  - source area not on Kelly, primary source is former refinery
  - no further AF action

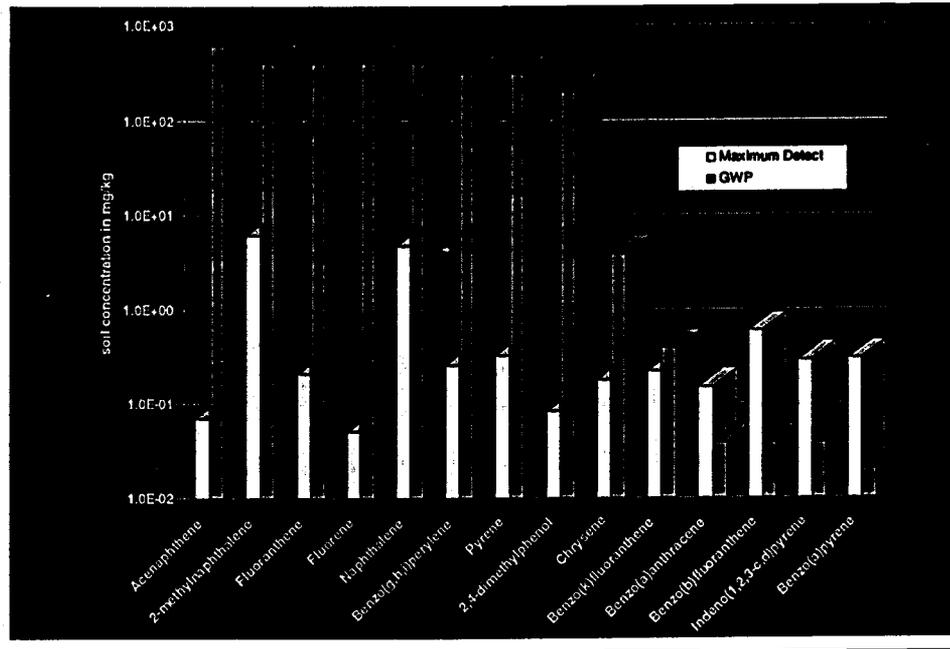


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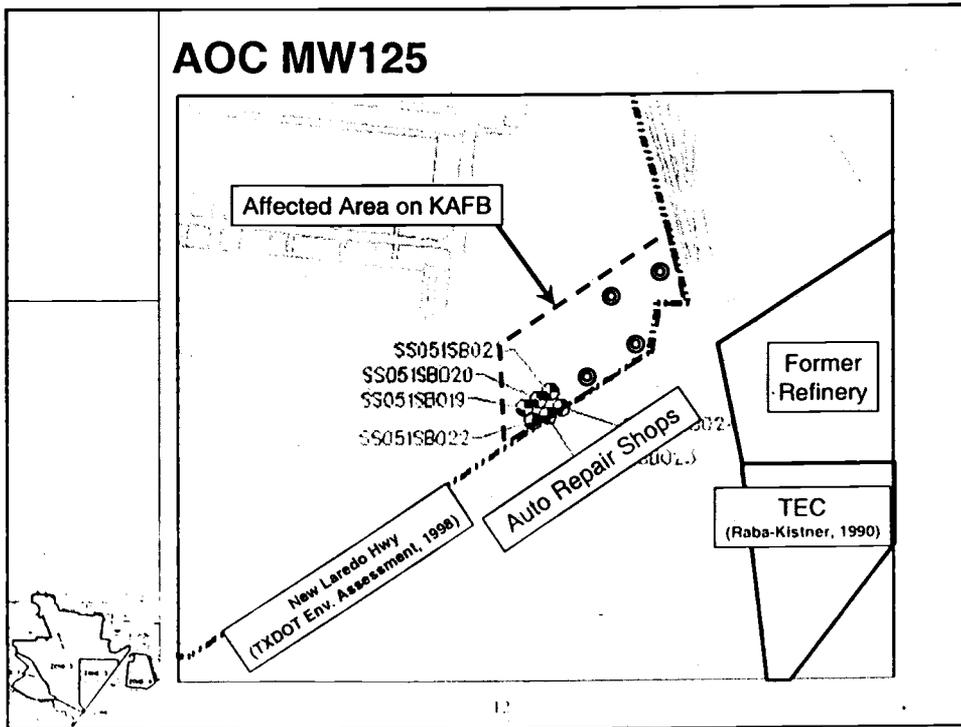
## AOC MW125 - VOCs



### AOC MW125 - PAHs



### AOC MW125



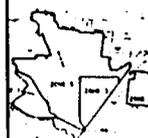
	<h2 style="text-align: center;">RFI OU-1: AOC Yard 68</h2>
	<ul style="list-style-type: none"> <li>• Outdoor storage for about 60 years             <ul style="list-style-type: none"> <li>– During closure of IRP Site SS009 <u>metals</u> were detected in caliche/asphalt that were not related to herbicide spill at SS009</li> </ul> </li> <li>• Yard 68 Conditions             <ul style="list-style-type: none"> <li>– Metals concentrations above Black Clay background, but below SAI and GWP (by SPLP)</li> <li>– TNRCC comments from 1998 RI requested extent of metals</li> <li>– Soil disturbed by recent construction (rail car rehab facility)</li> </ul> </li> <li>• Closure of SS009 included:             <ul style="list-style-type: none"> <li>– soil removal</li> <li>– closure to RRS #2 standards</li> <li>– deed recordation of 32 acres                 <ul style="list-style-type: none"> <li>• <i>much larger than SS009</i></li> <li>• <i>included metals affected soils in Yard 68</i></li> </ul> </li> <li>– Recommend no further action</li> </ul> </li> </ul> <p style="text-align: center;">13</p>

	<h2 style="text-align: center;">RFI OU-1: Verification Samples</h2>
	<ul style="list-style-type: none"> <li>• Data grouped by site/AOC             <ul style="list-style-type: none"> <li>– use site history, professional judgement and chemical data to determine potential release sites</li> </ul> </li> <li>• Samples collected outside of Sites/AOCs             <ul style="list-style-type: none"> <li>– verification sampling of <u>pesticide</u> hit                 <ul style="list-style-type: none"> <li>• <i>results showed concentrations highest at the surface</i></li> <li>• <i>pesticide residual</i></li> <li>• <i>result of application of pesticides as intended</i></li> </ul> </li> <li>– <u>metals</u> at background (Oct 99)</li> <li>– <u>PAHs</u> from asphalt</li> <li>– demonstrate no release</li> </ul> </li> <li>• Recommend no further action</li> </ul> <p style="text-align: center;">14</p>

	<h2 style="text-align: center;">RFI Report Organization</h2> <ul style="list-style-type: none"> <li>• <b>Four volumes</b> <ul style="list-style-type: none"> <li>– Introductory material</li> <li>– OU-1 RFI (soils)</li> <li>– OU-2 RFI (groundwater)</li> <li>– Appendices</li> </ul> </li> <li>• <b>HHRA and ERA stand-alone reports</b></li> </ul>
	<p>15</p>

	<h2 style="text-align: center;">Volume I: Introductory Materials</h2> <ul style="list-style-type: none"> <li>• <b>Purpose and objectives</b></li> <li>• <b>Background</b> <ul style="list-style-type: none"> <li>– Kelly AFB intro, IRP intro, <u>IRP/RCRA cross reference table</u></li> </ul> </li> <li>• <b>Zone 4 description and history</b> <ul style="list-style-type: none"> <li>– history, site/AOC descriptions</li> </ul> </li> <li>• <b>Summary of previous investigations</b></li> <li>• <b>RRR requirements</b></li> <li>• <b>Environmental setting</b></li> </ul>
	<p>16</p>

	<h2>Volume II: RFI OU-1</h2> <ul style="list-style-type: none"> <li>• Report will address comments from review of 1998 version</li> <li>• Additional detail:             <ul style="list-style-type: none"> <li>– DRMO sites                 <ul style="list-style-type: none"> <li>• <i>detail provided in RCRA permit-required closure documents</i></li> </ul> </li> <li>– Potential for sites to be current/past sources of groundwater contamination</li> </ul> </li> </ul>
	<p style="text-align: center;">17</p>

	<h2>Volume II: RFI OU-1 (soil)</h2> <ul style="list-style-type: none"> <li>• <b>Data collection process/rationale</b> <ul style="list-style-type: none"> <li>– 1994 soil gas survey through Sept 2000 soil sampling</li> </ul> </li> <li>• <b>Hydrogeologic Setting</b></li> <li>• <b>Groundwater quality</b> <ul style="list-style-type: none"> <li>– summary of OU-2</li> </ul> </li> <li>• <b>Nature and extent of contamination</b> <ul style="list-style-type: none"> <li>– site/AOC specific</li> <li>– conceptual site model                 <ul style="list-style-type: none"> <li>• <i>release mechanism, affected media, transport pathways and exposure media</i></li> </ul> </li> <li>– release determination (RRS #1)</li> <li>– comparison to RRS #2 criteria (SAI/GWP)</li> </ul> </li> <li>• <b>Summary and Conclusions</b></li> </ul>
	<p style="text-align: center;">18</p>

### Volume III: RFI OU-2 (groundwater)

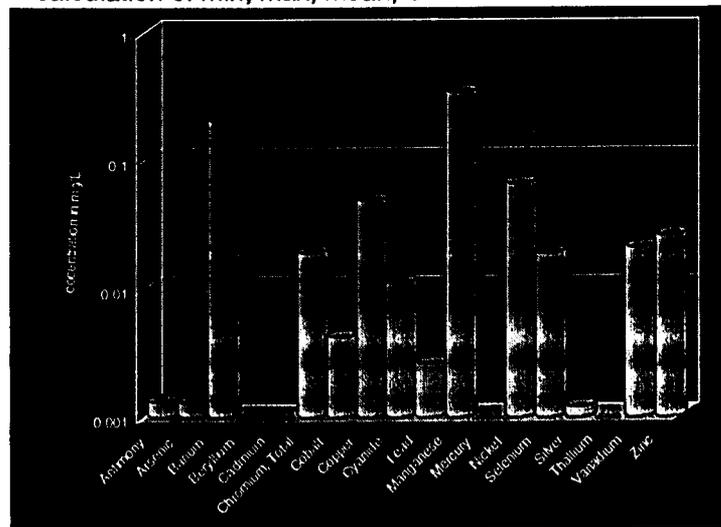
- Data collection process/rationale
  - 1994 soil gas/groundwater grab sample survey through Sept 2000 well installation
  - aquifer testing
- Hydrogeologic setting
  - aquifer thickness, top of Navarro, cross sections, flow directions and rates
  - describe preferential flow paths



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### Volume III: RFI OU-2 (groundwater)

- Background estimation
  - selection of downgradient unaffected wells
  - calculation of min, max, mean, UTL

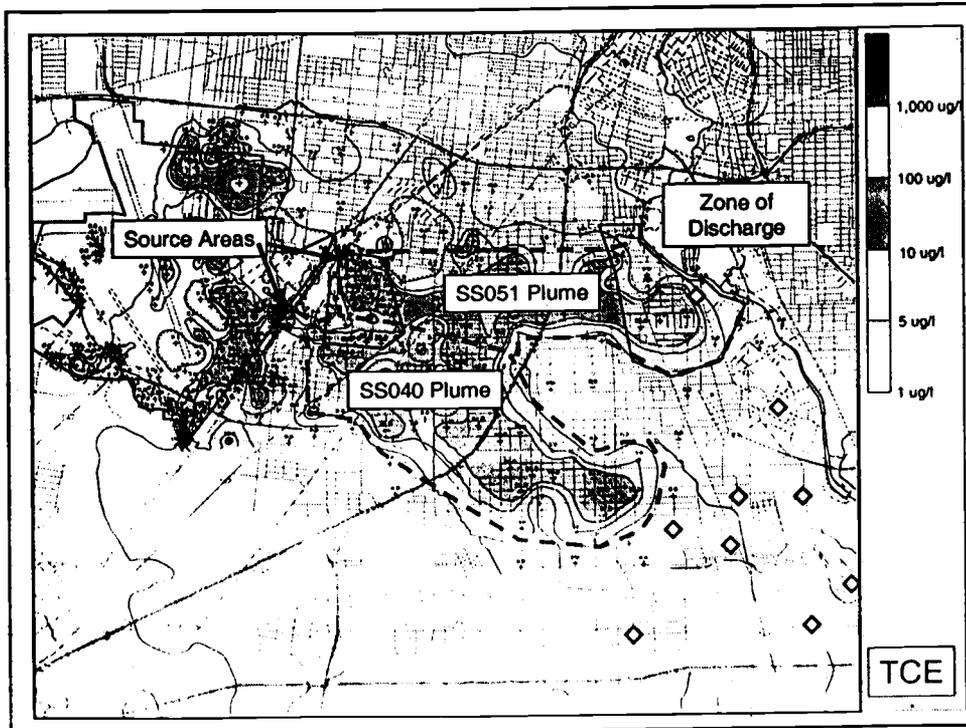


## Volume III: RFI OU-2 (groundwater)

- Nature and Extent of Contamination
  - discussed by plume (SS040 & SS051)
  - Source description
    - queried all historical groundwater data from IRPIMS
  - Selection of COCs
    - metals compared to background
    - all detected organics
      - if present at least once in historical data
  - Comparison to RRS #2 GW standards (MCLs)
    - plume maps showing areas exceeding GW



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	<h2 style="text-align: center;">Volume III: RFI OU-2 (groundwater)</h2> <ul style="list-style-type: none"> <li>• Extent of CVOC affected groundwater                     <ul style="list-style-type: none"> <li>– all data collected through Sept 2000                             <ul style="list-style-type: none"> <li>• <i>including new wells for this project and other AF projects</i></li> <li>• <i>north of US 90</i></li> </ul> </li> <li>– delineate AF related plumes</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>• Impact to the San Antonio River                     <ul style="list-style-type: none"> <li>– incorporates river data collected by the USGS and SARA</li> <li>– Navarro/Midway outcrop in streambed and banks</li> <li>– plume discharges to the river primarily through seeps</li> <li>– in-stream concentrations are non-detectable</li> <li>– biological impacts, if any will be discussed in the ERA for Zone 4</li> </ul> </li> </ul> <p style="text-align: center;">23</p>

	<h2 style="text-align: center;">Volume III: RFI OU-2 (groundwater)</h2> <ul style="list-style-type: none"> <li>• COC fate and transport                     <ul style="list-style-type: none"> <li>– distribution of fate and transport parameters</li> <li>– plume “footprinting” by multivariate data analysis                             <ul style="list-style-type: none"> <li>• <i>SEQUENCE diagramming</i></li> </ul> </li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>• Flow and transport model                     <ul style="list-style-type: none"> <li>– prepared by HGL</li> <li>– model extends to the San Antonio River</li> <li>– includes Stinson Field</li> <li>– show historical plume growth</li> </ul> </li> <li>• Potential off-site sources</li> </ul> <p style="text-align: center;">24</p>

	<h2>Volume IV: Appendices</h2> <ul style="list-style-type: none"> <li>• <b>Data summary tables</b> <ul style="list-style-type: none"> <li>– SOV survey results</li> <li>– Soil data</li> <li>– Groundwater data</li> </ul> </li> <li>• <b>Data quality evaluation</b></li> <li>• <b>Boring logs</b></li> <li>• <b>Well construction diagrams</b></li> </ul>
	<p style="text-align: center;">25</p>

	<h2>Human Health Risk Assessment</h2> <ul style="list-style-type: none"> <li>• <b>HHRA for OU-1</b> <ul style="list-style-type: none"> <li>– No RRS #3 being proposed</li> <li>– No risk assessment necessary</li> </ul> </li> <li>• <b>HHRA for OU-2</b> <ul style="list-style-type: none"> <li>– current and future exposure scenarios</li> <li>– groundwater exposure scenarios                             <ul style="list-style-type: none"> <li>• <i>current may include gardening, car washing, lawn irrigation and exposure at the river</i></li> <li>• <i>future to include ingestion for potable use</i></li> </ul> </li> <li>– groundwater to indoor air</li> </ul> </li> </ul>
	<p style="text-align: center;">26</p>

	<h2 style="text-align: center;">Ecological Risk Assessment</h2> <ul style="list-style-type: none"> <li>• Team members from the “basewide” ERA             <ul style="list-style-type: none"> <li>– use the same processes</li> </ul> </li> <li>• OU-1 and OU-2 combined into one report</li> <li>• Impacted habitat             <ul style="list-style-type: none"> <li>– primarily groundwater seeps along the San Antonio River</li> <li>– marginal terrestrial habitat evaluated</li> </ul> </li> <li>• SARA study critical to this effort</li> <li>• VOCs below Tier 2 screening levels</li> </ul>
	<p>27</p>

	<h2 style="text-align: center;">CMS</h2> <ul style="list-style-type: none"> <li>• Combined for OU-1 and OU-2</li> <li>• Standard CMS approach             <ul style="list-style-type: none"> <li>– screen technologies</li> <li>– assemble, screen and evaluate remedial alternatives</li> <li>– includes evaluation of boundary extraction systems for Zones 3 and 4</li> </ul> </li> <li>• RRSs &amp; TRRP to be evaluated             <ul style="list-style-type: none"> <li>– for example, alternatives will be prepared that will include a plume management zone</li> </ul> </li> <li>• Potential technologies             <ul style="list-style-type: none"> <li>– scale of impacted media greater for groundwater than soil</li> <li>– pump and treat, reactive walls, enhanced insitu biodegradation, and natural attenuation</li> </ul> </li> </ul>
	<p>28</p>

	<p><b>CMS</b></p> <ul style="list-style-type: none"> <li>• Public participation is critical to project</li> <li>• Tech memo: screening of alternatives             <ul style="list-style-type: none"> <li>– presents 3 or 4 realistic alternatives</li> <li>– includes screening against public acceptance criteria</li> </ul> </li> <li>• Public forums             <ul style="list-style-type: none"> <li>– monthly</li> <li>– broad cross section of community</li> <li>– public acceptance criteria</li> </ul> </li> </ul>
	<p style="text-align: center;">29</p>

	<p><b>Delivery Dates to TNRCC/EPA</b></p> <ul style="list-style-type: none"> <li>• Late November/ early December 2000             <ul style="list-style-type: none"> <li>– RFI (four volumes)</li> <li>– HHRA</li> <li>– ERA</li> </ul> </li> <li>• February 2000             <ul style="list-style-type: none"> <li>– CMS screening of alternatives</li> </ul> </li> <li>• April 2001             <ul style="list-style-type: none"> <li>– CMS report</li> </ul> </li> </ul>
	<p style="text-align: center;">30</p>

**Relative Risk Evaluation**

**Radioactive Sites, Kelly AFB  
(As of 13 Oct 00)**

**OUT OF A TOTAL OF 27 SITES:**

<u>Bldg No.</u>	<u>Shop Description</u>	<u>Rad Material/Waste</u>	<u>Zone</u>	<u>RRE</u>
- 4 sites received NFA status from both the USAFRIC and the EPA on 14 Sep 00				
306	Env Management Office	Fmr Radiac Detection Instr Stor	3	RESP COMPLETE
329	Former Electrical Repair Shop	Waste Electron Tubes/Exciters	3	RESP COMPLETE
1470	Fmr Air Freight Terminal Ship/Rec	Multi Sources	5	RESP COMPLETE
3810	Former Radioactive Storage Area	DU	4	RESP COMPLETE
- 4 sites have had their permits terminated by the USAF Radioisotope Commission (RIC) in 1998-99. Levels were indistinguishable from background. Final NFA Reports will be submitted to the EPA this year (FY00). Should Be NFA by Dec 00				
298	Fmr ATRAP Trailers	Multi Sources	3	RESP COMPLETE
318	Fmr TIE Laboratory	Chromatograph	3	RESP COMPLETE
340	Fmr Electrical Repair Shop	Waste Elec Tubes/Exciters	3	RESP COMPLETE
375-3	Fmr C-5 Flight Controls Shop (1994-98)	Depleted Uranium (DU)	3	RESP COMPLETE
- 5 sites underwent Scoping Surveys in 1999. Levels were indistinguishable from background. Final NFA Reports were submitted to the EPA in Jun 00. As of 14 Sep 00, EPA is requiring additional information before NFA status.				
361 (129)	Fmr Instrument Room (1922-29)	Radium Paint	3	RESP COMPLETE
365 (133)	Fmr Instrument Room (1929-34)	Radium Paint	3	RESP COMPLETE
375-1	Fmr Instrument Shop (1957-94)	Multi Sources	3	RESP COMPLETE
385	Fmr Aircraft Radioactive Washrack	Multi Sources	3	RESP COMPLETE
1562	Fmr Haz/Rad Mat/Waste Staging Area	Multi Sources	5	RESP COMPLETE
- 2 sites have completed Characterization Surveys/Remediation (Mar-Apr 00). Levels are now indistinguishable from background. Final NFA reports were submitted to the RIC and EPA in May 00. Should Be NFA by Nov 00.				
1420	Fmr NW Compound "O" Room	DU	5	RESPONSE COMP
620	Former Rad Waste Staging Area	Multi Sources	2	RESPONSE COMP
- 3 sites have completed Characterization Surveys (Mar-Apr 00). Final Characterization Reports will be submitted to the RIC, EPA, TNRCC and TDH this year (FY00). All need extensive Remediation in FY01. Funding was approved in Sep 00.				
375-2 (2LM)	Fmr C-5 Flight Controls Shop (1977-94)	DU Counterweights	3	LOW
324	Former Radium Paint Shop (1934-42)	Radium	3	LOW
326	Former Radium Paint Shop (1942-52)	Radium	3	LOW
- 9 sites have been programmed to undergo Scoping Surveys in Jan 01. Funding was approved in Sep 00. (All but 1556 are minor)				
308	Fmr Electronic Support Equip Repair Shop	Waste Electron Tubes/Exciters	3	NOT EVALUATED
331	Electronic Repair Shop	Waste Electron Tubes/Exciters	3	NOT EVALUATED
360	Former Metal Shop	Metal Density Guage	3	NOT EVALUATED
379	Corrosion Control Facility	2 Static Eliminators	3	NOT EVALUATED
1537	2 Fmr Central Shipping/Receiving Areas	Multi	5	NOT EVALUATED
1556	Kelly Main Radioactive Storage Warehouse	Multi	5	NOT EVALUATED
1621	Kelly Bioenvironmental Office	Radiac Instr/XRF Probes	5	NOT EVALUATED
3001	DRMO Scale House	Met Thick Scan/XRF Probe	4	NOT EVALUATED
3050	DRMO Main Office	Met Thick Scan/XRF Probe	4	NOT EVALUATED

# RELATIVE RISK SITE EVALUATION WORKSHEET

## SITE BACKGROUND INFORMATION

Installation/Property Name for FUDS: KELLY AFB Date Entered /Updated (day, month, year): 13 OCT 00  
 Location (City/County State): SAN ANTONIO, TX (BEXAR) Media Evaluated (GW, SW, Sediment, Soil, Sed Eco, Soil Eco.): NONE  
 Site (Name/DSERTS ID)/Project (Name/Project No.) for FUDS: WR-375 Phase of Execution (SI, RI, FS, EE/CA, IRA, RD/RA, or equiv. RCRA Stage): RD/RA  
 Point of Contact (Name/Phone): JACIL SHIPMAN Agreement Status (enter appropriate DERP Site code): Z  
5-3100, X340

## SITE SUMMARY

(Include only the key elements of information used to conduct the relative risk site evaluation. Attach map view of site if desired.)

**Brief Site Description (include site type, materials disposed of, dates of operation, and other relevant information):**

- FLIGHT CONTROLS SHOP LOCATED IN THE 24M AREA OF B375 IN OPERATION FROM 1977-94, COUNTERWEIGHTS ON C-5 AILERONS WERE REMOVED & REPLACED. COUNTERWEIGHTS CONTAINED DEPLETED URANIUM DU CONTAMINATION REMAINS IN CRACKS IN FORMER SHOP AREA.

**Brief Description of Pathways (Groundwater, Soil, Surface Water (Human), Surface Water (Ecological), Sediment (Human), Sediment (Ecological)):**

- INHALATION OF AIR OR DUST CONTAMINATED W/ RADIATION
- INGESTION OF CONTAMINATED BUILDING MATERIALS
- CONTACT W/ CONTAMINATED BUILDING MATERIALS

**Brief Description of Receptors (Human and Ecological):**

- HUMANS WORKING IN AN OCCUPATIONAL OFFICE/INDUSTRIAL ENVIRONMENT

<sup>1</sup> The term *Site* is defined as a discrete area for which suspected contamination has been verified and requires further response action. A *Site* by definition has been, or will be, entered into RMIS/DSERTS. For the FUDS Program, "projects" equates to sites for current installations.

## GROUNDWATER

CONTAMINANT  
HAZARD  
FACTOR<sup>1</sup>  
(CHF)

Contaminant	Max. Concentration (ug/l)	Comparison Value (ug/l)	Ratio <sup>2</sup>
<b>Total</b>			

<sup>1</sup> Evaluate for human contaminants only  
<sup>2</sup> Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (If Total > 100) \_\_\_\_\_

Moderate (If Total 2-100) \_\_\_\_\_

Minimal (If Total < 2)

MIGRATION  
PATHWAY  
FACTOR  
(MPF)

**Evident** - Analytical data or observable evidence indicates that contamination in the groundwater is moving or has moved away from the source area  
**Potential** - Contamination in the groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates that the potential for contaminant migration from the source via the groundwater is limited (due to geological structures or physical controls)

(Place an "X" next to one below)

Evident \_\_\_\_\_

Potential \_\_\_\_\_

Confined

Brief Rationale for Selection: NO SW CONTAMINATION AT THIS SITE  
ALL SITES ARE INSIDE BUDS

RECEPTOR  
FACTOR  
(RF)

**Identified** - There is a threatened water supply downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer)

**Potential** - There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture, (equivalent to Class I, IIA, or IIIB aquifer)

**Limited** - There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only)

(Place an "X" next to one below)

Identified \_\_\_\_\_

Potential \_\_\_\_\_

Limited

Brief Rationale for Selection: NO SW CONTAMINATION AT THIS SITE  
ALL SITES ARE INSIDE BUDS

Groundwater Category LOW  
(High, Medium, Low)

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### SURFACE WATER/HUMAN ENDPOINT

CONTAMINANT  
HAZARD  
FACTOR  
(CHF)

Contaminant	Max. Concentration (ug/l)	Comparison Value (ug/l)	Ratio <sup>1</sup>
<b>Total</b>			

<sup>1</sup>Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (if Total > 100) \_\_\_\_\_

Moderate (if Total 2-10) \_\_\_\_\_

Minimal (if Total < 2)

MIGRATION  
PATHWAY  
FACTOR  
(MPF)

**Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure

**Potential** - Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates a low potential for contaminant migration from the source to a potential point of exposure (could be due to presence of geological structures or physical controls)

(Place an "X" next to one below)

Evident \_\_\_\_\_

Potential \_\_\_\_\_

Confined

Brief Rationale for Selection: - ALL SITES ARE INSIDE BLDGS  
NO SURFACE WATER CONTAMINATION

RECEPTOR  
FACTOR  
(RF)

**Identified** - Receptors identified that have access to surface water or sediment to which contamination has moved or can move

**Potential** - Potential for receptors to have access to surface water or sediment to which contamination has moved or can move

**Limited** - Little or no potential for receptors to have access to surface water or sediment to which contamination has moved or can move

(Place an "X" next to one below)

Identified \_\_\_\_\_

Potential \_\_\_\_\_

Limited

Brief Rationale for Selection: - ALL SITES ARE INSIDE BLDGS  
NO SURFACE WATER CONTAMINATION

Surface Water/Human Endpoint Category  
(High, Medium, Low)

LOW

## SEDIMENT/HUMAN ENDPOINT

CONTAMINANT  
HAZARD  
FACTOR  
(CHF)

Contaminant	Max. Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio <sup>1</sup>
<b>Total</b>			

<sup>1</sup>Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (if Total > 100)

Minor (if Total 2-100)

Minimal (if Total < 2)

MIGRATION  
PATHWAY  
FACTOR  
(MPF)

**Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure  
**Potential** - Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates a low potential for contaminant migration from the source to a potential point of exposure (could be due to presence of geological structures or physical controls)

(Place an "X" next to one below)

Evident

Potential

Confined

Brief Rationale for Selection:

ALL SITES ARE INSIDE BLDGS.  
NO SEDIMENT CONTAMINATION

RECEPTOR  
FACTOR  
(RF)

**Identified** - Receptors identified that have access to surface water or sediment to which contamination has moved or can move  
**Potential** - Potential for receptors to have access to surface water or sediment to which contamination has moved or can move

**Limited** - Little or no potential for receptors to have access to surface water or sediment to which contamination has moved or can move

(Place an "X" next to one below)

Identified

Potential

Limited

Brief Rationale for Selection:

ALL SITES ARE INSIDE BLDGS.  
NO SEDIMENT CONTAMINATION

**Sediment/Human Endpoint Category**

(High, Medium, Low)

LOW

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### SURFACE WATER/ECOLOGICAL ENDPOINT

CONTAMINANT  
HAZARD  
FACTOR  
(CHF)

Contaminant	Max. Concentration (ug/l)	Comparison Value (ug/l)	Ratio <sup>1</sup>
<b>Total</b>			

<sup>1</sup>Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)  
 Significant (if Total > 100) \_\_\_\_\_  
 Moderate (if Total 2-100) \_\_\_\_\_  
 Minimal (if Total < 2)

MIGRATION  
PATHWAY  
FACTOR  
(MPF)

**Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure  
**Potential** - Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates a low potential for contaminant migration from the source to a potential point of exposure (could be due to presence of geological structures or physical controls)

(Place an "X" next to one below)  
 Evident \_\_\_\_\_  
 Potential \_\_\_\_\_  
 Confined

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SURFACE WATER CONTAMINATION

RECEPTOR  
FACTOR  
(RF)

**Identified** - Receptors identified that have access to surface water or sediment to which contamination has moved or can move  
**Potential** - Potential for receptors to have access to surface water or sediment to which contamination has moved or can move

**Limited** - Little or no potential for receptors to have access to surface water or sediment to which contamination has moved or can move

(Place an "X" next to one below)  
 Identified \_\_\_\_\_  
 Potential \_\_\_\_\_  
 Limited

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SURFACE WATER CONTAMINATION

Surface Water/Ecological Endpoint Category  
 (High, Medium, Low)

LOW

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SOIL\*

Contaminant  
HAZARD  
FACTOR<sup>1</sup>  
(CHF)

Contaminant	Max. Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio <sup>2</sup>
<b>Total</b>			

<sup>1</sup> Evaluate for human contaminants only  
<sup>2</sup> Ratio = Max. C/concentration/Comparison Value

(Place an "X" next to one below)

Significant (if Total >100) \_\_\_\_\_

Moderate (if Total 2-100) \_\_\_\_\_

Minimal (if Total <2)

MIGRATION  
PATHWAY  
FACTOR  
(MPF)

**Evident** - Analytical data or observable evidence that contamination is present at, is moving toward, or has moved to a point of exposure

**Potential** - contamination has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Low possibility for contamination to be present at or migrate to a point of exposure

(Place an "X" next to one below)

Evident \_\_\_\_\_

Potential \_\_\_\_\_

Confined

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SOIL CONTAMINATION

RECEPTOR  
FACTOR  
(RF)

**Identified** - Receptors identified that have access to contaminated soil

**Limited** - Little or no potential for receptors to have access to contaminated soil

**Potential** - Potential for receptors to have access to contaminated soil

(Place an "X" next to one below)

Identified \_\_\_\_\_

Potential \_\_\_\_\_

Limited

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SOIL CONTAMINATION

Soil Category LOW  
(High, Medium, Low)

\*Soil samples should be from a depth of 0-6 inches. If samples are not available from the 0-6 inch interval, results from depths up to, but not exceeding, 24 inches can be used.

# RELATIVE RISK SITE EVALUATION WORKSHEET

## SITE BACKGROUND INFORMATION

Installation/Property Name for FUIDS: KELLY AFB Date Entered /Updated (day, month, year): 13 OCT 00  
 Location (City/County State): SAN ANTONIO, BEXAR, TX Media Evaluated (GW, SW, Sediment, Soil, Sed Eco, Soil Eco.): NONE  
 Site (Name/DSERTS ID)/Project (Name/Project No.) for FUIDS: WR-324 Phase of Execution (SI, RI, FS, EE/CA, IRA, RD/RA, or equiv. RCRA Stage): RD/RA  
 Point of Contact (Name/Phone): JACK SHIPMAN Agreement Status (enter appropriate DERP Site code): Z  
5-3100/x340

## SITE SUMMARY

(Include only the key elements of information used to conduct the relative risk site evaluation. Attach map view of site if desired.)

**Brief Site Description** (Include site type, materials disposed of, dates of operation, and other relevant information):

- RADIUM PAINT SHOP FROM 1934-42 REPAIRED & REFURBISHED AIRCRAFT INSTRUMENTS AND PARTS ADDING RADIOACTIVE RADIUM PAINT TO SURFACES. RESIDUAL RADIATION REMAINS IN FLOORS & WALLS.

**Brief Description of Pathways** (Groundwater, Soil, Surface Water (Human), Surface Water (Ecological), Sediment (Human), Sediment (Ecological)):

- INHALATION OF AIR OR DUST CONTAMINATED W/ RADIOACTIVITY  
 - INGESTION OF CONTAMINATED BUILDING MATERIALS  
 - CONTACT WITH CONTAMINATED BUILDING MATERIALS

**Brief Description of Receptors** (Human and Ecological):

- HUMANS WORKING IN AN OCCUPATIONAL OFFICE/INDUSTRIAL ENVIRONMENT

<sup>1</sup> The term Site is defined as a discrete area for which suspected contamination has been verified and requires further response action. A Site by definition has been, or will be, entered into RMIS/DSERTS. For the FUIDS Program, "projects" equates to sites for current installations.

## GROUNDWATER

**CONTAMINANT HAZARD FACTOR<sup>1</sup> (CHF)**

Contaminant	Max. Concentration (ug/l)	Comparison Value (ug/l)	Ratio <sup>2</sup>
<b>Total</b>			

<sup>1</sup> Evaluate for human contaminants only  
<sup>2</sup> Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)  
 Significant (if Total > 100) \_\_\_\_\_  
 Moderate (if Total 2-100) \_\_\_\_\_  
 Minimal (if Total < 2)

**MIGRATION PATHWAY FACTOR (MPF)**

**Evident** - Analytical data or observable evidence indicates that contamination in the groundwater is moving or has moved away from the source area  
**Potential** - Contamination in the groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates that the potential for contaminant migration from the source via the groundwater is limited (due to geological structures or physical controls)

(Place an "X" next to one below)  
 Evident \_\_\_\_\_  
 Potential \_\_\_\_\_  
 Confined

Brief Rationale for Selection: NO GW CONTAMINATION AT THIS SITE  
ALL SITES ARE INSIDE BLDGS

**RECEPTOR FACTOR (RF)**

**Identified** - There is a threatened water supply downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer)

**Potential** - There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture, (equivalent to Class I, IIA, or IIB aquifer)

**Limited** - There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only)

(Place an "X" next to one below)  
 Identified \_\_\_\_\_  
 Potential \_\_\_\_\_  
 Limited

Brief Rationale for Selection: NO GW CONTAMINATION AT THIS SITE  
ALL SITES ARE INSIDE BLDGS

**Groundwater Category** LOW  
 (High, Medium, Low)

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### SURFACE WATER/HUMAN ENDPOINT

**CONTAMINANT HAZARD FACTOR (CHF)**

Contaminant	Max. Concentration (ug/l)	Comparison Value (ug/l)	Ratio <sup>1</sup>
<b>Total</b>			

<sup>1</sup>Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (if Total > 100) \_\_\_\_\_

Moderate (if Total 2-100) \_\_\_\_\_

Minimal (if Total < 2)

**MIGRATION PATHWAY FACTOR (MPF)**

**Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure

**Potential** - Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates a low potential for contaminant migration from the source to a potential point of exposure (could be due to presence of geological structures or physical controls)

(Place an "X" next to one below)

Evident \_\_\_\_\_

Potential \_\_\_\_\_

Confined

Brief Rationale for Selection: - ALL SITES ARE INSIDE BLDGS  
NO SURFACE WATER CONTAMINATION

**RECEPTOR FACTOR (RF)**

**Identified** - Receptors identified that have access to surface water or sediment to which contamination has moved or can move

**Potential** - Potential for receptors to have access to surface water or sediment to which contamination has moved or can move

**Limited** - Little or no potential for receptors to have access to surface water or sediment to which contamination has moved or can move

(Place an "X" next to one below)

Identified \_\_\_\_\_

Potential \_\_\_\_\_

Limited

Brief Rationale for Selection: - ALL SITES ARE INSIDE BLDGS  
NO SURFACE WATER CONTAMINATION

**Surface Water/Human Endpoint Category**  
(High, Medium, Low)

LOW

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## SEDIMENT/HUMAN ENDPOINT

**CONTAMINANT  
HAZARD  
FACTOR  
(CHF)**

Contaminant	Max. Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio <sup>1</sup>
<b>Total</b>			

<sup>1</sup>Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (if Total > 100)

Moderate (if Total 2-100)

Minimal (if Total < 2)

**MIGRATION  
PATHWAY  
FACTOR  
(MPF)**

**Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure

**Potential** - Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates a low potential for contaminant migration from the source to a potential point of exposure (could be due to presence of geological structures or physical controls)

(Place an "X" next to one below)

Evident

Potential

Confined

Brief Rationale for Selection:

ALL SITES ARE INSIDE BLDGS.  
NO SEDIMENT CONTAMINATION

**RECEPTOR  
FACTOR  
(RF)**

**Identified** - Receptors identified that have access to surface water or sediment to which contamination has moved or can move  
**Potential** - Potential for receptors to have access to surface water or sediment to which contamination has moved or can move

**Limited** - Little or no potential for receptors to have access to surface water or sediment to which contamination has moved or can move

(Place an "X" next to one below)

Identified

Potential

Limited

Brief Rationale for Selection:

ALL SITES ARE INSIDE BLDGS.  
NO SEDIMENT CONTAMINATION

**Sediment/Human Endpoint Category**

(High, Medium, Low)

LOW

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### SURFACE WATER/ECOLOGICAL ENDPOINT

**CONTAMINANT HAZARD FACTOR (CHF)**

Contaminant	Max. Concentration (ug/l)	Comparison Value (ug/l)	Ratio <sup>1</sup>
<b>Total</b>			

<sup>1</sup>Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (if Total > 100) \_\_\_\_\_

Moderate (if Total 2-100) \_\_\_\_\_

Minimal (if Total < 2)

**MIGRATION PATHWAY FACTOR (MPF)**

**Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure

**Confined** - Information indicates a low potential for contaminant migration from the source to a potential point of exposure (could be due to presence of geological structures or physical controls)

**Potential** - Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

(Place an "X" next to one below)

Evident \_\_\_\_\_

Potential \_\_\_\_\_

Confined

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SURFACE WATER CONTAMINATION

**RECEPTOR FACTOR (RF)**

**Identified** - Receptors identified that have access to surface water or sediment to which contamination has moved or can move

**Limited** - Little or no potential for receptors to have access to surface water or sediment to which contamination has moved or can move

**Potential** - Potential for receptors to have access to surface water or sediment to which contamination has moved or can move

(Place an "X" next to one below)

Identified \_\_\_\_\_

Potential \_\_\_\_\_

Limited

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SURFACE WATER CONTAMINATION

**Surface Water/Ecological Endpoint Category**

(High, Medium, Low)

LOW



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**SOIL\***

**Contaminant  
HAZARD  
FACTOR<sup>1</sup>  
(CHF)**

Contaminant	Max. Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio <sup>2</sup>
<b>Total</b>			

<sup>1</sup> Evaluate for human contaminants only  
<sup>2</sup> Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)  
Significant (if Total >100) \_\_\_\_\_  
Moderate (if Total 2-100) \_\_\_\_\_  
Minimal (if Total <2)

**MIGRATION  
PATHWAY  
FACTOR  
(MPF)**

**Evident** - Analytical data or observable evidence that contamination is present at, is moving toward, or has moved to a point of exposure

**Potential** - contamination has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Low possibility for contamination to be present at or migrate to a point of exposure

(Place an "X" next to one below)  
Evident \_\_\_\_\_  
Potential \_\_\_\_\_  
Confined

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SOIL CONTAMINATION

**RECEPTOR  
FACTOR  
(RF)**

**Identified** - Receptors identified that have access to contaminated soil

**Potential** - Potential for receptors to have access to contaminated soil

**Limited** - Little or no potential for receptors to have access to contaminated soil

(Place an "X" next to one below)  
Identified \_\_\_\_\_  
Potential \_\_\_\_\_  
Limited

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS.  
NO SOIL CONTAMINATION

**Soil Category** LOW  
(High, Medium, Low)

\*Soil samples should be from a depth of 0-6 inches. If samples are not available from the 0-6 inch interval, results from depths up to, but not exceeding, 24 inches can be used.

# RELATIVE RISK SITE EVALUATION WORKSHEET

## SITE BACKGROUND INFORMATION

Installation/Property Name for FUDS: KELLY AFB Date Entered /Updated (day, month, year): 13 OCT 00  
 Location (City/County State): SAN ANTONIO, BEXAR, TX Media Evaluated (GW, SW, Sediment, Soil, Sed Eco, Soil Eco.): NONE  
 Site (Name/DSERTS ID)/Project (Name/Project No.) for FUDS: WR-326 Phase of Execution (SI, RI, FS, EE/CA, IRA, RD/RA, or equiv. RCRA Stage): RD/RA  
 Point of Contact (Name/Phone): JACK SHIPMAN Agreement Status (enter appropriate DERP Site code): Z  
5-3100/x340

## SITE SUMMARY

(Include only the key elements of information used to conduct the relative risk site evaluation. Attach map view of site if desired.)

**Brief Site Description** (include site type, materials disposed of, dates of operation, and other relevant information):

- RADIUM PAINT SHOP FROM 1942-52 REPAIRED & REFURBISHED AIRCRAFT INSTRUMENTS AND PARTS ADDING RADIOACTIVE RADIUM PAINT TO SURFACES. RESIDUAL RADIATION REMAINS IN FLOORS & WALLS.

**Brief Description of Pathways** (Groundwater, Soil, Surface Water [Human], Surface Water [Ecological], Sediment [Human], Sediment [Ecological]):

- INHALATION OF AIR OR DUST CONTAMINATED W/ RADIOACTIVITY  
 - INGESTION OF CONTAMINATED BUILDING MATERIALS  
 - CONTACT WITH CONTAMINATED BUILDING MATERIALS

**Brief Description of Receptors** (Human and Ecological):

- HUMANS WORKING IN AN OCCUPATIONAL OFFICE / INDUSTRIAL ENVIRONMENT

<sup>1</sup> The term Site is defined as a discrete area for which suspected contamination has been verified and requires further response action. A Site by definition has been, or will be, entered into RMIS/DSERTS. For the FUDS Program, "projects" equates to sites for current installations.

## GROUNDWATER

**CONTAMINANT  
HAZARD  
FACTOR<sup>1</sup>  
(CHF)**

Contaminant	Max. Concentration (ug/l)	Comparison Value (ug/l)	Ratio <sup>2</sup>
<b>Total</b>			

<sup>1</sup> Evaluate for human contaminants only  
<sup>2</sup> Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (If Total > 100) \_\_\_\_\_

Moderate (If Total 2-100) \_\_\_\_\_

Minimal (If Total < 2)

**MIGRATION  
PATHWAY  
FACTOR  
(MPF)**

**Evident** - Analytical data or observable evidence indicates that contamination in the groundwater is moving or has moved away from the source area

**Potential** - Contamination in the groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates that the potential for contaminant migration from the source via the groundwater is limited (due to geological structures or physical controls)

(Place an "X" next to one below)

Evident \_\_\_\_\_

Potential \_\_\_\_\_

Confined

Brief Rationale for Selection: NO GW CONTAMINATION AT THIS SITE  
ALL SITES ARE INSIDE BLDGS

**RECEPTOR  
FACTOR  
(RF)**

**Identified** - There is a threatened water supply downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer)

**Potential** - There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture, (equivalent to Class I, IIA, or IIB aquifer)

**Limited** - There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only)

(Place an "X" next to one below)

Identified \_\_\_\_\_

Potential \_\_\_\_\_

Limited

Brief Rationale for Selection: NO GW CONTAMINATION AT THIS SITE  
ALL SITES ARE INSIDE BLDGS

**Groundwater Category** LOW  
(High, Medium, Low)

**SURFACE WATER/HUMAN ENDPOINT**

**CONTAMINANT HAZARD FACTOR (CHF)**

Contaminant	Max. Concentration (ug/l)	Comparison Value (ug/l)	Ratio <sup>1</sup>
<b>Total</b>			

<sup>1</sup>Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (if Total > 100) \_\_\_\_\_

Moderate (if Total 2- \_\_\_\_\_)

Minimal (if Total < 2)

**MIGRATION PATHWAY FACTOR (MPF)**

**Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure

**Potential** - Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates a low potential for contaminant migration from the source to a potential point of exposure (could be due to presence of geological structures or physical controls)

(Place an "X" next to one below)

Evident \_\_\_\_\_

Potential \_\_\_\_\_

Confined

Brief Rationale for Selection: - ALL SITES ARE INSIDE BUDGS  
NO SURFACE WATER CONTAMINATION

**RECEPTOR FACTOR (RF)**

**Identified** - Receptors identified that have access to surface water or sediment to which contamination has moved or can move

**Potential** - Potential for receptors to have access to surface water or sediment to which contamination has moved or can move

**Limited** - Little or no potential for receptors to have access to surface water or sediment to which contamination has moved or can move

(Place an "X" next to one below)

Identified \_\_\_\_\_

Potential \_\_\_\_\_

Limited

Brief Rationale for Selection: - ALL SITES ARE INSIDE BUDGS  
NO SURFACE WATER CONTAMINATION

**Surface Water/Human Endpoint Category**  
(High, Medium, Low)

LOW

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## SEDIMENT/HUMAN ENDPOINT

CONTAMINANT  
HAZARD  
FACTOR  
(CHF)

Contaminant	Max. Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio <sup>1</sup>
<b>Total</b>			

<sup>1</sup>Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (if Total > 100)

Moderate (if Total 2-100)

Minimal (if Total < 2)

MIGRATION  
PATHWAY  
FACTOR  
(MPF)

**Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure

**Potential** - Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates a low potential for contaminant migration from the source to a potential point of exposure (could be due to presence of geological structures or physical controls)

(Place an "X" next to one below)

Evident

Potential

Confined

Brief Rationale for Selection:

ALL SITES ARE INSIDE BLDGS.  
NO SEDIMENT CONTAMINATION

RECEPTOR  
FACTOR  
(RF)

**Identified** - Receptors identified that have access to surface water or sediment to which contamination has moved or can move

**Potential** - Potential for receptors to have access to surface water or sediment to which contamination has moved or can move

**Limited** - Little or no potential for receptors to have access to surface water or sediment to which contamination has moved or can move

(Place an "X" next to one below)

Identified

Potential

Limited

Brief Rationale for Selection:

ALL SITES ARE INSIDE BLDGS.  
NO SEDIMENT CONTAMINATION

**Sediment/Human Endpoint Category**

(High, Medium, Low)

LOW

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**SURFACE WATER/ECOLOGICAL ENDPOINT**

CONTAMINANT HAZARD FACTOR (CHF)

Contaminant	Max. Concentration (ug/l)	Comparison Value (ug/l)	Ratio <sup>1</sup>
Total			

<sup>1</sup>Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)  
 Significant (if Total > 100) \_\_\_\_\_  
 Moderate (if Total 2-100) \_\_\_\_\_  
 Minimal (if Total < 2)

MIGRATION PATHWAY FACTOR (MPF)

**Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure  
**Potential** - Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Information indicates a low potential for contaminant migration from the source to a potential point of exposure (could be due to presence of geological structures or physical controls)

(Place an "X" next to one below)  
 Evident \_\_\_\_\_  
 Potential \_\_\_\_\_  
 Confined

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SURFACE WATER CONTAMINATION

RECEPTOR FACTOR (RF)

**Identified** - Receptors identified that have access to surface water or sediment to which contamination has moved or can move  
**Potential** - Potential for receptors to have access to surface water or sediment to which contamination has moved or can move

**Limited** - Little or no potential for receptors to have access to surface water or sediment to which contamination has moved or can move

(Place an "X" next to one below)  
 Identified \_\_\_\_\_  
 Potential \_\_\_\_\_  
 Limited

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SURFACE WATER CONTAMINATION

Surface Water/Ecological Endpoint Category  
 (High, Medium, Low)

LOW

### SEDIMENT/ECOLOGICAL ENDPOINT

CONTAMINANT  
HAZARD  
FACTOR  
(CHF)

Contaminant	Max. Concentration	units	Comparison Value	units	Ratio <sup>1</sup>
<b>Total</b>					

<sup>1</sup>Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (if Total > 100) \_\_\_\_\_

Moderate (if Total 2-100) \_\_\_\_\_

Minimal (if Total < 2)

MIGRATION  
PATHWAY  
FACTOR  
(MPF)

**Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure

**Potential** - Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined**

**Confined** - Information indicates a low potential for contaminant migration from the source to a potential point of exposure (could be due to presence of geological structures or physical controls)

(Place an "X" next to one below)

Evident \_\_\_\_\_

Potential \_\_\_\_\_

Confined

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SEDIMENT CONTAMINATION

RECEPTOR  
FACTOR  
(RF)

**Identified** - Receptors identified that have access to surface water or sediment to which contaminant has moved or can move

**Potential** - Potential for receptors to have access to surface water or sediment to which contaminant has moved or can move

**Limited** - Little or no potential for receptors to have access to surface water or sediment to which contaminant has moved or can move

(Place an "X" next to one below)

Identified \_\_\_\_\_

Potential \_\_\_\_\_

Limited

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SEDIMENT CONTAMINATION

**Sediment/Ecological Endpoint Category**  
(High, Medium, Low)

LOW

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SOIL\*

Contaminant  
HAZARD  
FACTOR<sup>1</sup>  
(CHF)

Contaminant	Max. Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio <sup>2</sup>
<b>Total</b>			

<sup>1</sup> Evaluate for human contaminants only  
<sup>2</sup> Ratio = Max. Concentration/Comparison Value

(Place an "X" next to one below)

Significant (if Total >100) \_\_\_\_\_

Moderate (if Total 2-100) \_\_\_\_\_

Minimal (if Total <2)

MIGRATION  
PATHWAY  
FACTOR  
(MPF)

**Evident** - Analytical data or observable evidence that contamination is present at, is moving toward, or has moved to a point of exposure

**Potential** - contamination has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined

**Confined** - Low possibility for contamination to be present at or migrate to a point of exposure

(Place an "X" next to one below)

Evident \_\_\_\_\_

Potential \_\_\_\_\_

Confined

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SOIL CONTAMINATION

RECEPTOR  
FACTOR  
(RF)

**Identified** - Receptors identified that have access to contaminated soil

**Limited** - Little or no potential for receptors to have access to contaminated soil

**Potential** - Potential for receptors to have access to contaminated soil

(Place an "X" next to one below)

Identified \_\_\_\_\_

Potential \_\_\_\_\_

Limited

Brief Rationale for Selection: ALL SITES ARE INSIDE BLDGS  
NO SOIL CONTAMINATION

Soil Category LOW  
(High, Medium, Low)

\*Soil samples should be from a depth of 0-6 inches. If samples are not available from the 0-6 inch interval, results from depths up to, but not exceeding, 24 inches can be used.

*Attach. #6*

**Draft Final  
TECHNICAL REPORT**

**TASK NO. 13**

**ZONE 5**

**OFF BASE MONITORING WELL INSTALLATION AND  
GROUND WATER SAMPLING REPORT**

**FOR**

**KELLY AIR FORCE BASE**

**NOVEMBER 2000**

**Contract No.: F41624-97-D-8013, D.O. 0031**

**Project No.: 1381731.03169702**

**Montgomery Watson  
4525 South Wasatch Blvd., Suite 200  
Salt Lake City, Utah 84124**

TABLE 1

## MONITORING WELL COMPLETION SUMMARY

Monitoring Well Designation	Borehole Diameter (inches)	Borehole Depth (feet bgs)	Well Diameter (inches)	Screened Interval (feet bgs)	Screen Length (feet)	Screen Type	Completion Type	Static Water Level (feet bgs) <sup>(a)</sup>
SS050MW461	8.25	33.5	2-inch	22-32	10	SS, 0.01	FM	26.46
SS050MW463	8.25	46	2-inch	35-45	10	SS, 0.01	FM	28.10
SS050MW464	8.25	42	2-inch	30.5-40.5	10	SS, 0.01	FM	27.55
SS050MW465	8.25	33	2-inch	22-32	10	SS, 0.01	FM	24.41
SS050MW466	8.25	43	2-inch	31-41	10	SS, 0.01	FM	28.30
SS050MW467	8.25	43.5	2-inch	32-42	10	SS, 0.01	FM	30.60
SS050MW474	8.25	32	2-inch	20.5-30.5	10	SS, 0.01	FM	Dry
SS050MW475	8.25	34.5	2-inch	23-33	10	SS, 0.01	FM	Dry
SS050MW476	8.25	35.5	2-inch	24-34	10	SS, 0.01	FM	Dry

(a) Measured on August 28, 2000

SS Stainless Steel  
 FM Flush Mount  
 bgs below ground surface

TABLE 2

ANALYTICAL DATA  
(Page 1 of 5)

Lab Sample Number	17008-02	17026-02	17026-03	17039-02	10739-03	17061-02
Site Number	GW Zone 5					
Sample Log Date	13-Aug-00	17-Aug-00	17-Aug-00	22-Aug-00	22-Aug-00	28-Aug-00
Station Number	SS050MW461	SS050MW463	SS050MW464	SS050MW466	SS050MW465	SS050MW467
Sample Log Time	1350	948	1410	1415	1035	1255
Lab QC Lot Number	17008 QC	17026QC	17026QC	17039QC	17039QC	17061QC
<b>Analyte(units)</b>						
<b>Volatile Organic Compounds SW-846 8260B (µg/l)</b>						
Benzene	1.38	<0.17	<0.17	<0.17	<0.17	<0.17
Bromobenzene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bromochloromethane	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
Bromodichloromethane	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Bromoform	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Bromomethane	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
n-Butylbenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
sec-Butylbenzene	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
tert-Butylbenzene	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Carbon tetrachloride	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11
Chlorodibromomethane	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chloroethane	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
Chloroform	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28
Chloromethane	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
2-Chlorotoluene	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
4-Chlorotoluene	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
1,2-Dibromo-3-chloropropane	<0.88	<0.88	<0.88	<0.88	<0.88	<0.88
1,2-Dibromoethane	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromomethane	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
1,2-Dichlorobenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
1,3-Dichlorobenzene	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
1,4-Dichlorobenzene	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
Dichlorodifluoromethane	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00

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TABLE 2

ANALYTICAL DATA  
(Page 2 of 5)

Lab Sample Number	17008-02	17026-02	17026-03	17039-02	10739-03	17061-02
Site Number	GW Zone 5					
Sample Log Date	13-Aug-00	17-Aug-00	17-Aug-00	22-Aug-00	22-Aug-00	28-Aug-00
Station Number	SS050MW461	SS050MW463	SS050MW464	SS050MW466	SS050MW465	SS050MW467
Sample Log Time	1350	948	1410	1415	1035	1255
Lab QC Lot Number	17008 QC	17026QC	17026QC	17039QC	17039QC	17061QC

Analyte(units)

Volatile Organic Compounds SW-846 8260B (µg/l) (continued)

1,1-Dichloroethane	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,2-Dichloroethane	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1-Dichloroethene	<0.94	<0.94	<0.94	<0.94	<0.94	<0.94
cis-1,2-Dichloroethene	<0.25	<0.25	30.6	<0.25	<0.25	<0.25
trans-1,2-Dichloroethene	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53
1,2-Dichloropropane	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,3-Dichloropropane	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
2,2-Dichloropropane	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
1,1-Dichloropropene	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Ethylbenzene	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13
Hexachlorobutadiene	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Isopropylbenzene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
p-Isopropyltoluene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Naphthalene	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
n-Propylbenzene	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Styrene	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13
1,1,1,2-Tetrachloroethane	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
1,1,2,2-Tetrachloroethane	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Tetrachloroethene	<0.13	8.52	287	<0.13	<0.13	<0.13
Toluene	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13
1,2,3-Trichlorobenzene	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
1,2,4-Trichlorobenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25

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**TABLE 2**  
**ANALYTICAL DATA**  
(Page 3 of 5)

Lab Sample Number	17008-02	17026-02	17026-03	17039-02	10739-03	17061-02
Site Number	GW Zone 5					
Sample Log Date	13-Aug-00	17-Aug-00	17-Aug-00	22-Aug-00	22-Aug-00	28-Aug-00
Station Number	SS050MW461	SS050MW463	SS050MW464	SS050MW466	SS050MW465	SS050MW467
Sample Log Time	1350	948	1410	1415	1035	1255
Lab QC Lot Number	17008 QC	17026QC	17026QC	17039QC	17039QC	17061QC
<b>Analyte(units)</b>						
<b>Volatile Organic Compounds SW-846 8260B (µg/l) (continued)</b>						
1,1,2-Trichloroethane	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
1,1,1-Trichloroethane	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichloroethene	<0.13	3.15	3.27	<0.13	<0.13	<0.13
Trichlorofluoromethane	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
1,2,3-Trichloropropane	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2,4-Trimethylbenzene	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1,3,5-Trimethylbenzene	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16
Vinyl chloride	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
o-Xylene	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16
m+p-Xylene	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
<b>Surrogates</b>						
Dibromofluoromethane	109	102	102	104	105	104
1,2-Dichloroethane-d4	99	98	99	96	100	97
Toluene-d8	107	105	106	105	96	105
4-Bromofluorobenzene	105	100	100	99	98	101
<b>Polynuclear Aromatic Hydrocarbons SW-846 8310 (µg/l)</b>						
Naphthalene	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55
Acenaphthylene	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
Acenaphthene	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92
Fluorene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Anthracene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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**TABLE 2**  
**ANALYTICAL DATA**  
(Page 4 of 5)

Lab Sample Number	17008-02	17026-02	17026-03	17039-02	10739-03	17061-02
Site Number	GW Zone 5					
Sample Log Date	13-Aug-00	17-Aug-00	17-Aug-00	22-Aug-00	22-Aug-00	28-Aug-00
Station Number	SS050MW461	SS050MW463	SS050MW464	SS050MW466	SS050MW465	SS050MW467
Sample Log Time	1350	948	1410	1415	1035	1255
Lab QC Lot Number	17008 QC	17026QC	17026QC	17039QC	17039QC	17061QC
<b>Analyte(units)</b>						
<b>Polynuclear Aromatic Hydrocarbons SW-846 8310 (µg/l) (continued)</b>						
Fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Pyrene	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55
Benzo(a)anthracene	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26
Chrysene	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
Benzo(b)fluoranthene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Benzo(k)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Benzo(a)pyrene	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
Indeno(1,2,3-c,d)pyrene	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Dibenzo(a,h)anthracene	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(g,h,i)perylene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
<b>Surrogate (Percent)</b>						
Decafluorobiphenyl	37	33	41	70	46	69
<b>Volatile Organic Compounds SW-846 8260B (µg/l)</b>						
<b>Metals SW-846 6010 and 7000 series (mg/l)</b>						
Barium	0.155	<0.001	0.139	0.15	0.08	0.13
Beryllium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Chromium	<0.007	<0.007	<0.007	<0.007	0.010 B	<0.007
Cobalt	0.014	0.014	0.014	<0.006	<0.006	<0.006
Copper	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Manganese	0.334	0.010	0.041	0.12	0.09	0.0031
Nickel	0.051	<0.008	<0.008	0.01	0.026 B	0.009 B
Silver	<0.008	<0.008	0.011	<0.008	<0.008	<0.008

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TABLE 2

ANALYTICAL DATA  
(Page 5 of 5)

Lab Sample Number	17008-02	17026-02	17026-03	17039-02	10739-03	17061-02
Site Number	GW Zone 5					
Sample Log Date	13-Aug-00	17-Aug-00	17-Aug-00	22-Aug-00	22-Aug-00	28-Aug-00
Station Number	SS050MW461	SS050MW463	SS050MW464	SS050MW466	SS050MW465	SS050MW467
Sample Log Time	1350	948	1410	1415	1035	1255
Lab QC Lot Number	17008 QC	17026QC	17026QC	17039QC	17039QC	17061QC

Analyte(units)

Volatile Organic Compounds SW-846 8260B (µg/l) (continued)

Metals SW-846 6010 and 7000 series (mg/l)

Vanadium	<0.003	0.006	0.008	0.006	0.01	0.006
Zinc	<0.008	<0.008	<0.008	0.009 B	0.013 B	0.011 B
Antimony	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Arsenic	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002
Selenium	<0.001	<0.001	<0.001	0.002	<0.001	<0.001
Thallium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Total Petroleum Hydrocarbons TX1005 (mg/l)

TPH (C6-C28)	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00
TPH (C6-C10)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
TPH (C10-C28)	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00

µg/l micrograms per liter  
 mg/l milligrams per liter  
 TPH Total petroleum hydrocarbons  
 GW Groundwater  
 NR Not reported

## BCT Meeting 14 November 2000

The meeting was held on Tuesday, 14 November 2000 at 9:00 am in the WPI Office, 12th floor conference room.

### Members Present and Support Personnel:

Name	Organization	Present	Absent
Brown, Leslie	AFBCA/DK	X	
Buelter, Don	AFBCA/DK	X	
Callaway, Laurie	BCA (KPMG)	X	
Farrell, Philip	GKDA		X
Landez, Norma	AFBCA/DK		X
Meshako, Chuck	AFBCA/DK	X	
Neff, Richelle	UNITEC	X	
Peck, Walter	AFBCA/DK	X	
Power, Abigail	TNRCC	X	
Price, Lisa Marie	EPA	X	
Rohne, Russell	AFBCA/DK	X	
Ryan, William	AFBCA/DK	X	
Stankosky, Laura	EPA		X
Stough, Mark	AFBCA/DK	X	
Underwood, Tim	BCA (KPMG)	X	
Weegar, Mark	TNRCC	X	
Wehner, Ellie	TNRCC	X	

### Dates for upcoming meetings:

December 12, 2000

January 9, 2000

February 13, 2000

A HAC N. # 6

**BCT AGENDA**  
**14 November 2000**

Item #	Lead	Support	Discussion Topic	Comments	How will we know it's done?	Disposition
1.	Underwood, T.	BCT Members	Redevelopment Update	Update the BCT regarding redevelopment status at Kelly AFB.	Team receives update.	Closed. Boeing and GKDA are discussing construction of two hangers. One hanger will be located behind Building 375. Boeing and GKDA are still discussing construction of a hanger north of the runway. The board has approved design of the hangers but they have not approved construction. The Community College District is interested in leasing Building 210 for Aerospace Training. SAWS should approve the transfer of water utilities 14 November 2000. The Mexican government is interested in leasing space to open a Mexican business development center in San Antonio. The decision to transfer the EPCF is unresolved. The Secretary of the Air Force is evaluating the transfer issue.
2.	Stough, M.	CH2M Hill	Compliance Plan Monitoring Requirements	Present a strategy for removing SVOCs from the compliance plan monitoring requirements and provide summary of annual sampling event.	Team reaches consensus on strategy for modifying the compliance plan sampling requirements.	Open. The Air force presented 3 years of analytical data for SVOCs. According to the Compliance Plan, if ground water protection standards are not exceeded for 3 consecutive years at all wells in a non-regulated unit then the Air Force may request a modification to the Compliance Plan. The TNRCC will review the Compliance Plan and the requirements to remove SVOCs from the Compliance Plan. The Air Force will identify wells that have been non-detect over the past three years. The Air Force presented a summary of the annual sampling event. Due to drought conditions this year, samples were collected from only 378 out of 511 wells sampled. The Air Force will determine which of the dry wells are Point of Compliance wells. The Air Force will also identify chronic dry wells.
3.	TNRCC	Westerman, B.	Hydrant System	Discuss hydrant system closure process.	Discussion is complete.	Open. The Air Force and TNRCC agreed that sections of the hydrant system with fuel contaminated soil will be closed under the PST rules. Sections of the hydrant system with co-mingled soil contamination will be closed under the Corrective Action Program. A meeting was scheduled for 4 December 2000 to discuss the issue in more detail. Regarding USTs, the Air Force stated that some USTs are listed in the Compliance Plan. The TNRCC stated that USTs listed in the Compliance Plan can be closed under the PST rules and the Compliance Plan can be modified to remove those USTs.
4.	Peck, W.	Stoker, M. Goodson, B.	Zone 4 RFI/CMS	Provide an update of the status of the RFI/CMS reports.	Team receives update.	Closed. The Air Force provided an overview of the Zone 4 RFI report. The report is divided into four volumes: introduction, OU-1, OU-2, and appendices. The Zone 4 human health risk assessment and ecological risk assessment will also be submitted with the Zone 4 RFI report. The report is scheduled to be submitted by 30 November.
5.	Hampton, R.	SAIC	Site S-4 Interim System	Present the on base system design and construction schedule.	Discussion is complete.	Closed. The Site S-4 interim system design package has been submitted to the Air Force. Construction of the system is scheduled to begin in December 2000. Construction is expected to be complete by March 2001.

Item #	Lead	Support	Discussion Topic	Comments	How will we know it's done?	Disposition
6.	Hampton, R.	SAIC	Building 522 Interim System	Provide update on the status of the Building 522 interim system.	Discussion is complete.	Open. Two new recovery wells have been installed at CS-2 north bank to optimize the existing system. The optimized system consists of five wells, three existing recovery wells along Leon Creek and the two new recovery wells north of Citrus Road. The previous interim system consisted of 13 recovery wells. System performance tests are underway on the two new wells. The results will be presented at the December BCT meeting. Installation of the Building 522 interim system is in progress. A soil vapor extraction system is being installed in the Building 522 sump area.
7.	Hampton, R.	SAIC	Building 258 CMS	Provide update on the status of the CMS and present alternatives. Discuss data from newly installed recovery wells.	Discussion is complete.	Closed. The Building 258 RFI report was submitted to TNRCC and the EPA in October 2000. The Air Force reviewed the 8 August 2000 BCT presentation and then presented revised CMS alternatives. Four recovery wells were installed at this site over the summer to remove DNAPL, however DNAPL was not detected in any of the four wells. The suspected DNAPL area is smaller than originally proposed. Additional soil borings will be advanced to better delineate the DNAPL area.
8.	Hampton, R.	SAIC	300 Area RFI and Zone 2 and 3 CMS	Provide an update on the status of the RFI and CMS.	Discussion is complete.	Closed. The Air Force presented the proposed format for the 300 Area RFI report. Groundwater will be addressed as one unit but soil will be addressed by source area. The Air Force also discussed the Zone 2 and 3 modeling effort. The HydroGeologic basewide model will be used to zoom into the study area. The Air Force will input new soil boring data into the model and recalibrate it. The transport model will use total solvents.
9.	Power, A.		IWCS Closure Plan	Discuss IWCS Closure Plan Report	Discussion is complete.	Closed. The Air Force is evaluating whether the IWCS can be closed under Risk Reduction 2 standards or Risk Reduction 3 standards. The EPA has reviewed the IWCS Closure Plan report but TNRCC is not going to review the closure plan. The TNRCC will review the closure report when it is submitted.
10.	EG&G		EG&G Presentation	Discuss alternate management structure.	Discussion is complete.	Closed. EG&G presented an alternate management structure for the restoration program at Kelly.
11.	Ryan, W.	Buelter, D. Peck, W. Rohne, R.	Zone Updates	Provide team with update of current activities in Zones 2, 3, 4 and 5.	Team receives updates.	Closed. Handouts distributed for Zones 2, 3 and 4.
12.	Ryan, W.	Weegar, M. Price, L.	List of Future Deliverables (Regulators/RAB)	Each month, provide a list of upcoming documents for review.	Team receives list of upcoming documents for review.	Closed. Handout distributed.
13.	Ryan, W.	BCT Members	Begin December Agenda	Each month, begin to establish the next month's agenda at the end of the BCT meeting.	Team approves agenda items.	Closed. December agenda items are: <ul style="list-style-type: none"> <li>• Site CS-2 North Bank Performance Test Results (Hampton, R.)</li> <li>• Site S-4 Construction Status (Hampton, R.)</li> <li>• Compliance Plan Monitoring Requirements <ul style="list-style-type: none"> <li>- Revisit strategy (Stough, M.)</li> <li>- Review rules and compliance plan (Landez, N.)</li> </ul> </li> <li>• Hydrant System Update (Westerman, B.)</li> <li>• Zone 4 RFI/CMS Update (Peck, W.)</li> </ul>

**KELLY AFB - ZONE FOUR  
RECENT PROGRESS / DEVELOPMENTS UPDATE  
14 NOV 2000**

**ZONE-WIDE ACTIVITIES:**

**OU-1 RI** - The final round of additional field sampling has been completed. Submission of the report is expected by the end of November.

**OU-2 RI** - Additional monitoring well and soil boring locations required for extent determination and for modeling data have been installed and sampled. Preparation of the RFI report continues with submission scheduled by 30 Nov 00.

**ZONE 4 CMS** - Project is well underway and has largely completed the technology screening process. Preliminary versions of possible combinations of technologies were introduced at the 01 Nov 00 public meeting. Extensive input from the public meeting process has been received and is to be integrated into the remaining phases. An Interim Report showing the potential systems under development, their relative costs and effectiveness, as well as a thorough analysis of the screening process, is expected near the end of Jan 01.

**IRA Boundary Control.** - The system has been completed and is operational. Official opening of the system was conducted 06 Jul 00. Operation by the O & M contractor has begun, with work continuing on a few construction contract punch list items.

**Shallow Aquifer Assessment** - Response to comments on SAA Phase III Draft Final were forwarded to regulators. SAA Phase IV Draft Final completed and forwarded to regulators for comment in April 00. Comments received from EPA.

**San Antonio River Sampling** - USGS and SARA fieldwork completed during June 1999. The final ITIRs have been received. ITIRs forwarded to regulators and are awaiting any comments. EPA has provided comments; awaiting comments from TNRCC. The revised SARA report containing the second phase sampling was provided to the TNRCC on 08 Jun 00. Once comments received and reviewed, reports can go final.

**ATSDR** - Provided information to Historical Air Emissions Report and Informal Technical Information Report, Zone 4 OU-2 and Site S-4 Soil Vapor Monitoring. ATSDR plans to release several documents as part of the PHA in 2000.

**SWMU Assessment** -- Historical survey and research of aerial photographs completed. The field sampling process is currently underway. The final report is expected by Feb 01.

**Oil Water Separator Removal** -- Contract for removal of three East Kelly OWS initiated using Performance Based Contracting. Fieldwork has been completed and conformation sampling data received. A closure report has been submitted to the regulators and awaits approval.

**DRMO FACILITIES:**

**Bldg 3096** - Revision 1 to the Closure report, including comment responses from previous submissions, completed and forwarded 20 Apr 00. Currently awaiting final review and concurrence on unit closure from TNRCC. The TNRCC letter regarding this closure request has been received and referred for action.

**Yard N** - No change. Closure requested, Oct 98. TNRCC review date projected as 30 Sep 99.

**Bldg 3065** - TNRCC letter confirming final closure was received.

**Lot Z04** - Final Closure Report submitted to the TNRCC on 23 Nov 99. Approval received from TNRCC. Survey and deed recordation documents were prepared and deed recordation has been completed.

**Yard 13** - The review of the draft data study has been conducted and the draft final has been received. Data gap sampling has been conducted and results received, with an IRA removal action to follow in Dec 00 or Jan 01.

PROJECT	STATUS	DELIVERABLE DATE
*RCRA* 51 Project	Closure reports for nine sites in Zones 2, 3 & 5 are being prepared. Additional fieldwork must be accomplished to determine extent of contamination and deed recordation boundaries.	Draft Final Closure Reports: TBD.
300 Area RFI	Fieldwork has been completed. Report being prepared.	Draft Final 300 Area RFI Report: <sup>Jan</sup> Nov 00
600 Area RFI	OWSs have been removed or closed in place. Closure Reports being generated.	
Building 258 RFI	Work continues on CMS report. Will be submitted concurrently with Zone 2 and 3 CMS.	Draft Final RFI Report: Submitted Sep 00
Building 367 Hydrant System	Tanks have been removed. Submitted information to TNRCC PST program. Samples have been collected for closure of PST.	Draft Final Tank Closure Report: TBD
Building 522 Soil Vapor Extraction System	System installation has ongoing. System installation to be complete by 30 Dec 00	
EPCF RFI	Fieldwork has been completed. Data analysis is taking place.	
GW Optimization Projects	Site E-3 Optimization Upgrade: In operation. Site CS-2 NB Optimization Upgrade: In operation. Site S-4: Completing design work for supplemental optimization on base. Evaluating Upgrades for IWTP/CS2-SB	
IWCS Closure Project	Final Draft of Report submitted. All field work and risk assessment support RRS 3 closure outlined in approved closure strategy documentation. Comments received from EPA. Awaiting comments from TNRCC.  Cleaning of lines has been completed. Rinsate sampling completed. Abandonment of lines, manholes and lift stations will be completed in fall.	Final Draft IWCS Closure Plan: Submitted 20 Apr 00.
Petroleum Storage Tank Removals	PST closure reports for Building 643 (test cell), Building 376 and Building 1512 to be submitted Dec 00. Hydrant system at Building 1592, including removal of two above ground storage tanks, will begin in Nov 00.	

NOVEMBER 14, 2000, BCT ZONE 2 AND 3 STATUS REPORT

	Southern Hydrant system cleaning and grouting continues. Estimated completion Jan 01.	
Quick Closure Project	Waste tanks at Building 360 have been removed. Sumps in Building 360 have been removed. Liner over basement has been installed. OWS at building 303, 348 and 652 have been removed. Appropriate reports being generated.	
Quintana Road Culvert	4,225 feet of culvert has been installed (100% complete). Street work and associated surface work all that remains. King Street extension project has installed 900 feet of approximately 3500 feet of culvert.	
RCRA Regulated Units	Site SD-1: Final Report Submitted. Received approval letter from TNRCC for closure of site pending Eco Risk results. Site SA-2: Final Report Submitted 11 Feb 00. Comments received from TNRCC dated 1 Jun 00. Kelly AFB has requested an additional 120 days to submit response to comments.	Site SA-2 Final Closure Report: 11 Feb 00
Site S-4 Closure Report (Soil)	Closure has been approved by TNRCC. AF is preparing supplemental material for report.	
Site S-4 CMS	Public comment period on CMS ended on 5 Nov 99. Comment resolution with TNRCC and EPA has been completed. Final Report preparation ongoing.	Final CMS Report: 18 Dec 00
Site S-8 CMI-Work Plan	Hearing was requested. Submittal currently under review by TNRCC.	
Zone 2 and 3 CMS	Project underway.	Draft Final CMS: Apr 01
Zone 2 RFI	Final reports for Site S-3 and Building 522 were submitted Sep 00. Received approval letters from EPA. Site E-1 Draft Final report will be submitted in Dec 00.	Site E-1 Draft Final Report - Dec 00 Sites 522 and S-3 Final RFI Reports - Submitted Sep 00
Zone 2 Site Closures	Additional soil samples need for sites FC-2, S-9, OT-1 to meet RRS2 requirements. Based on 21 Sep 00 meeting with TNRCC and EPA, Zone 2 sites may be combined.	Draft Final Closure Report: TBD



# NOTICE To Residents



The Air Force Base Conversion Agency (AFBCA) is committed to keeping you informed of activities occurring at Kelly Air Force Base (AFB).

In a few weeks, contractors will begin site preparations for the removal of facilities near Building 1592 at Kelly AFB. This is an area inside the Kelly fence along Growden Drive. The project includes fuel storage tanks, buildings, concrete and asphalt, including loose gravel from the adjacent area. It will include demolition, excavation, and site restoration.

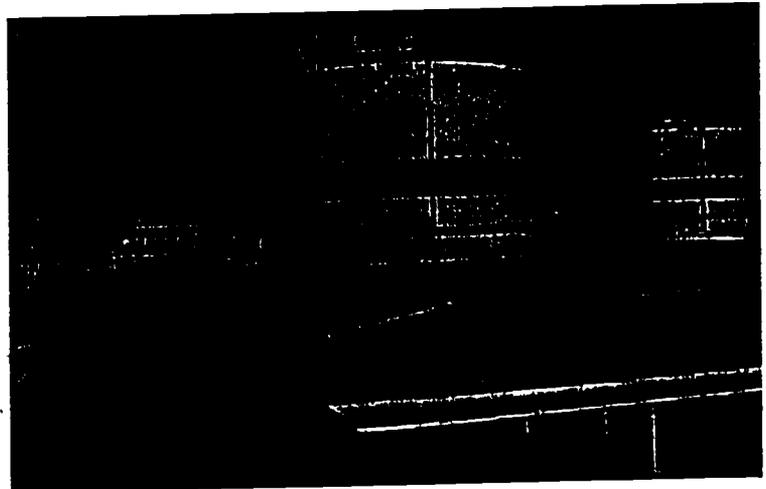
**Demolition:** Two fuel pumping systems and tanks located on the northwest side of the base will be removed. These tanks are visible from Growden Drive and the North Kelly Gardens area. The cleanup project will include the removal of the fill station pipes, fuel tanks, and concrete dikes. Air and soil testing will be conducted regularly during the removal to ensure protection of human health and safety.

**Excavation:** Contractors will remove loose gravel, concrete dikes and protective awnings, and dispose of debris and materials.

**Restoration:** The site will be restored to match the surrounding natural conditions, including complete re-grading with fresh topsoil. Grass sod will be placed throughout the entire project area.

The project is expected to begin the week of November 20, 2000 and take approximately 3-4 months. All work will be done inside the Kelly fenceline, but will be visible to the neighborhood. Project bulletins will be distributed to the North Kelly Gardens community throughout the duration of the project. The next project bulletin is expected to be distributed to local residents in early December.

If you have any questions, please call 240-4627.



*Demolition to remove the two fuel tanks visible from Growden Drive will begin the week of November 20.*



## Interested in a Site Tour?

On Thursday, November 16, 2000 beginning at 4:00 p.m., a tour of the project site will be provided. A bus will be provided for all interested residents. If you are interested in participating in the tour, please make reservations with Dick Walters at 925-7951.



# AVISO

## A LOS RESIDENTES



La Agencia para la Conversión de Bases de la Fuerza Aérea (AFBCA) se ha comprometido a mantenerle a usted informado en cuanto a las actividades que están ocurriendo en la Base Aérea de Kelly (AFB).

Dentro de unas cuantas semanas, los contratistas van a empezar las preparaciones del sitio para la eliminación de las instalaciones alrededor del edificio conocido como Building 1592 en Kelly AFB. Esta es la área dentro de la cerca de Kelly por la calle Growden. El proyecto incluye los tanques de almacenamiento de combustibles, edificios, hormigón y asfalto, incluyendo grava suelta del área adyacente. El proyecto incluirá demolición, excavación y restauración del sitio.

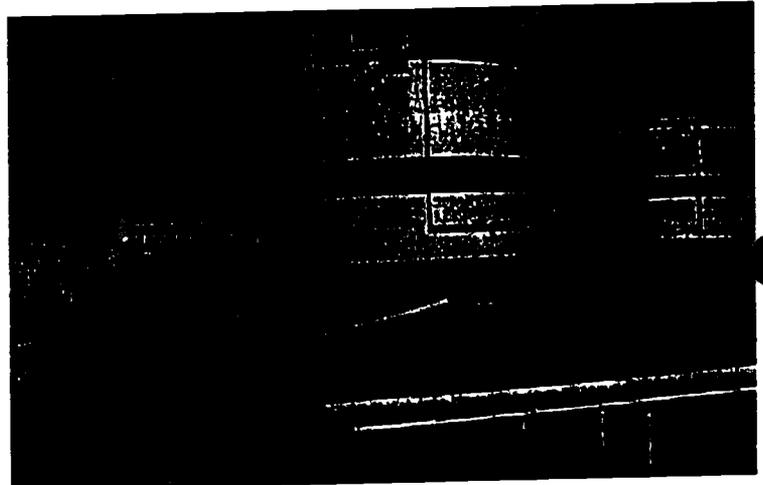
**Demolición:** Dos sistemas de bombeo de combustibles y tanques ubicados en el lado noroeste de la base serán derribados. Estos tanques se pueden ver desde Growden Drive y la área de North Kelly Gardens. El proyecto de limpieza incluirá eliminación de la tubería de la estación de abastecimiento, tanques de combustible y diques de hormigón. Ensayos de aire y suelo se llevarán a cabo regularmente durante la eliminación para asegurar la protección de la salud pública y el medio ambiente.

**Excavación:** Los contratistas eliminarán grava suelta, diques de hormigón y toldos protectivos. Todos los escombros y otros materiales serán llevados del sitio.

**Restauración** El sitio será restaurado para armonizar con las condiciones naturales del entorno, incluyendo nivelación con una nueva capa superficial de suelo. El área entera del proyecto será cubierta con césped.

Se espera que el proyecto empezará durante la semana del 20 de noviembre de 2000. Durará entre tres y cuatro meses. Todo el trabajo será hecho dentro de la cerca de Kelly pero será vivible a la vecindad. Boletines del proyecto serán distribuidos durante el proyecto. Se espera que el boletín siguiente será distribuido a los residentes a principios de diciembre.

Si tenga alguna pregunta, favor de llamar al 240-4627.



*La demolición para eliminar los tanques de almacenamiento visibles por la calle Growden comanza la semana del 20 de noviembre.*

### *¿Se interesa en una visita al sitio?*

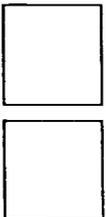
El jueves, 16 de noviembre, empezando a las 4 de la tarde, se ofrecerá una gira del sitio del proyecto. Un autobús estará disponible para todos los residentes que se interesan en participar. Si usted quiere participar, favor de hacer reservaciones con al señor Dick Walters, teléfono 925-7951.



# **Bulk Fuel Storage Facility 1592 Demolition**

## **Community Relations Workplan**

**BCT presentation  
November 14, 2000**



# Community Relations Plan

## Purpose

- Provide bilingual accurate, consistent, easy-to understand information to the public in a timely manner concerning the demolition, excavation and site restoration project at Facility 1592.

## Target location

- Highway 90 (north), General McMullen (1600 to 1800 block, east), 36th Street (2300 to 26000 block, west), and Beech (3800 to 3900 block south) to Weir (3765 to 3900 block, south).

## Notification Techniques

- Mailings, site tours, media coverage, public service announcements, personal interviews and telephone calls, 24/7 cellular telephone for inquiries, and email.

# Notification Techniques

## Project Bulletin

- Regular project bulletins will be prepared
  - hand delivered within 3 block radius of project
  - mailed

## Project Cellular Phone

- Any one can call 240-4627 (24/7) to request information or express concerns
- Phone calls or personal visits between other events

# Notification Techniques, Cont.

## Site Tours

- Arrangements are being made for 2 site tours
  - Elected officials (TBA)
  - North Kelly Gardens residents (November 16)
    - Residents are asked to call Dick Walters to arrange for bus transportation to the site

## Media

- Public service announcements will be broadcast regularly concerning project activities
- News releases will be provided to the local newspapers, radio and television stations
- News conference when hydraulic scissors demolish tanks

## Internal Communications

- Regular personal and email communication will occur between contractors, Kelly, and others

# Stakeholder Identification

## External Stakeholders

- North Kelly Gardens residents
- RAB Members
- TNRCC/EPA
- City department agencies
- Elected officials
- Internal project team
- On base personnel
- Others

## Internal Stakeholders

- AFBCA
- AFCEE
- Contractors

# Anticipated Notification Schedule

## Project Bulletins

- Project Overview Notice      Nov 10 (completed)
- Tank Scrubbing Activity      Nov 29
- Demolition Activity      Dec 8
- Excavation      Jan 4
- Site Restoration      Feb 7

# Questions?

**Call 240-4627      Lynette Bennett**

Pati Gonzalez 925-3100 ext. 251

Vanessa Musgrave 925-2055

Dick Walters 925-7951



# Kelly RCRA Compliance Plan Sampling / Groundwater Monitoring Project

*Kelly TPM - Mark Stough*

*COR - Pat Atkinson*

*CH2M HILL PM - Rick Rogus*



**CH2MHILL**

# Topics

- ◆ SVOC Study
  
- ◆ Summary of the Annual Sampling event
  - Summary of Dry Wells
  - Dedicated Equipment
  - Sampling Methods
  - Groundwater Plumes Update
  - QA/QC Blank Contamination
  - 2001 January Semiannual CP Report



# SVOC Study

- ◆ A study was conducted in the Summer of 2000 to determine if the SVOCs could be removed from future sampling events.
- ◆ We determined that 395 basewide wells were sampled consecutively for 3 years (97-99) for SVOCs.



# Results of the Study

- ◆ 320 of the 395 (81%) wells were below CP limits for all SVOCs.
- ◆ 363 of the 395 (92%) wells were below CP limits if the common laboratory contaminants were disregarded.



# Possible Scenarios for Modifying the CP Monitoring Requirements

- Eliminate SVOCs from groundwater sampling events in:
  - ▲ *Zones 1,2,4 and 5*
  - ▲ *Zones 4 and 5*
- Address SVOCs removal in individual CMI Workplans.



# Summary of Dry Wells

- ◆ 460 wells were contracted to be sampled.
- ◆ 511 wells were attempted to be sampled.
- ◆ 378 wells were sampled (due to extreme dry conditions).
- ◆ 6 of 22 (27%) Background Wells were not sampled (dry).
- ◆ 10 of 40 (25%) Point of Compliance Wells were not sampled (dry).



# Dedicated Equipment

- ◆ Bladder Pumps were installed in 123 monitoring wells.
- ◆ Tubing was installed in 281 monitoring wells.
- ◆ The resulting time savings in field sampling is estimated at 1/2 hour per well. Therefore 6 wells could be sampled per day by each field team instead of 4 wells. This assumes all wells have sufficient water.



# Sampling Methods

- ◆ 337 of the 378 wells sampled (89%), followed the micropurge method.
- ◆ 41 wells could not be sampled (11%) using the micropurge method due to insufficient water columns at depths > 25 feet.
- ◆ Well conditions do not always allow the use of the micropurge method. These situations would require an alternate method of purging.



# Groundwater Plumes Update

- ◆ While generating the draft plume maps for the January report, it appears that the plumes, in general, are stable.
- ◆ Downgradient of site MP, there has been a significant decrease in contaminant concentrations in some wells since the installation of the slurry wall.
  - Individual well results:
    - ▲ 440 to 7.98 ug/l TCE, 390 to 9.09 ug/L PCE
    - ▲ 51 to 37.7 ug/L TCE, 78 to 57 ug/L PCE
    - ▲ 100 to 83.6 ug/L TCE, 210 to 116 ug/L PCE



# QA/QC Blank Contamination

- ◆ The 1999 event's blank contamination issue arose from the high percentage of 2-butanone (MEK) detects and high concentrations in the field blanks.
  - 91% of the field blanks had detectable concentrations up to 18 ug/L.
  
- ◆ The 2000 event's MEK values in the field blanks returned to normal in both concentration and frequency.
  - 9% of the field blanks had detectable concentrations up to 4.5 ug/L.



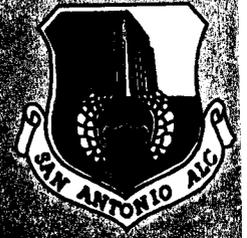
# 2001 January Semiannual CP Report (Jul-Dec 2000)

- ◆ The final report will be delivered in January 2001. (7-volumes)
- ◆ Included Events
  - Annual Sampling results (maps, DSTs, etc)
  - Leon Creek results
  - RCRA results
  - Waterlevel results

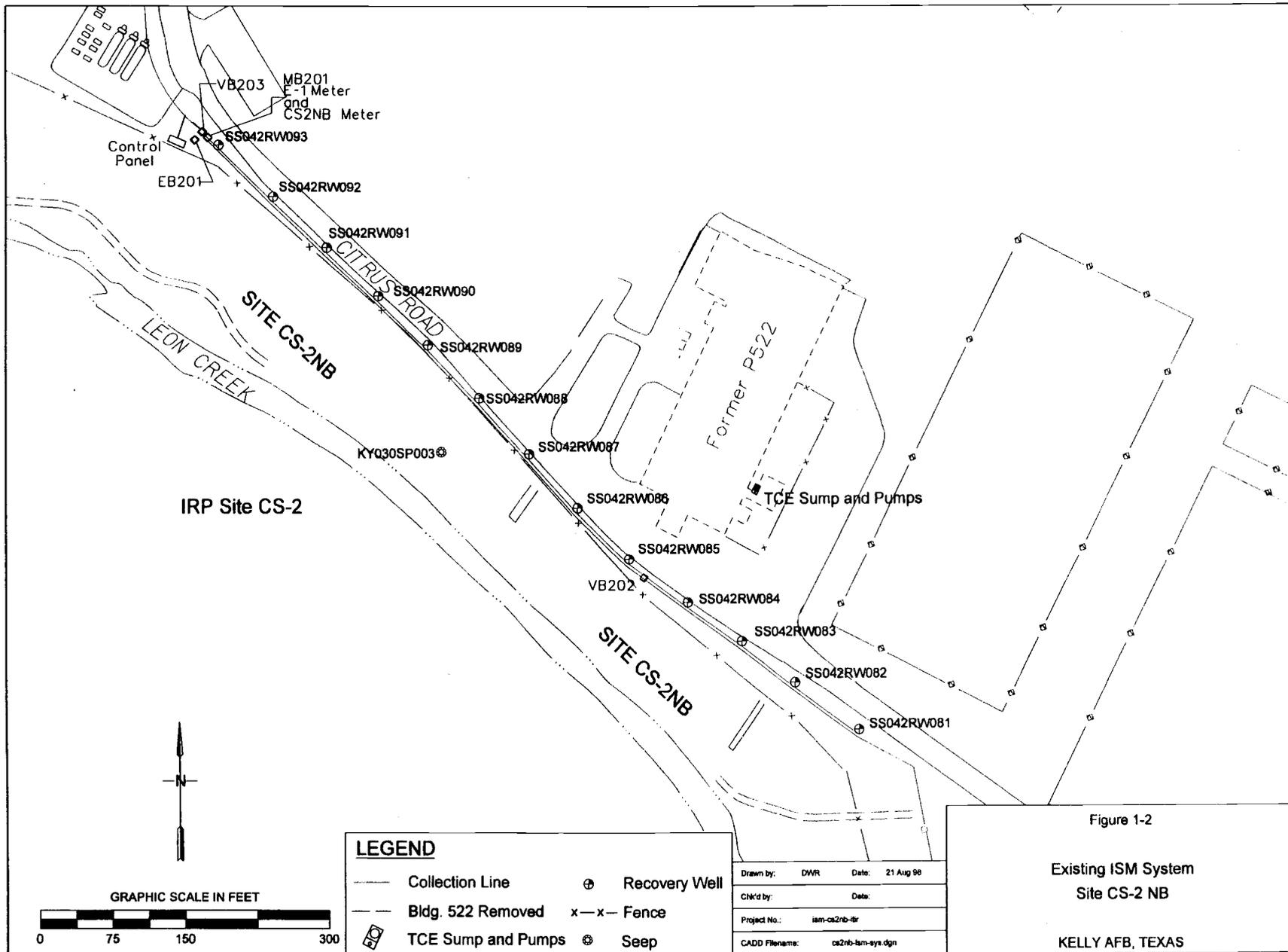


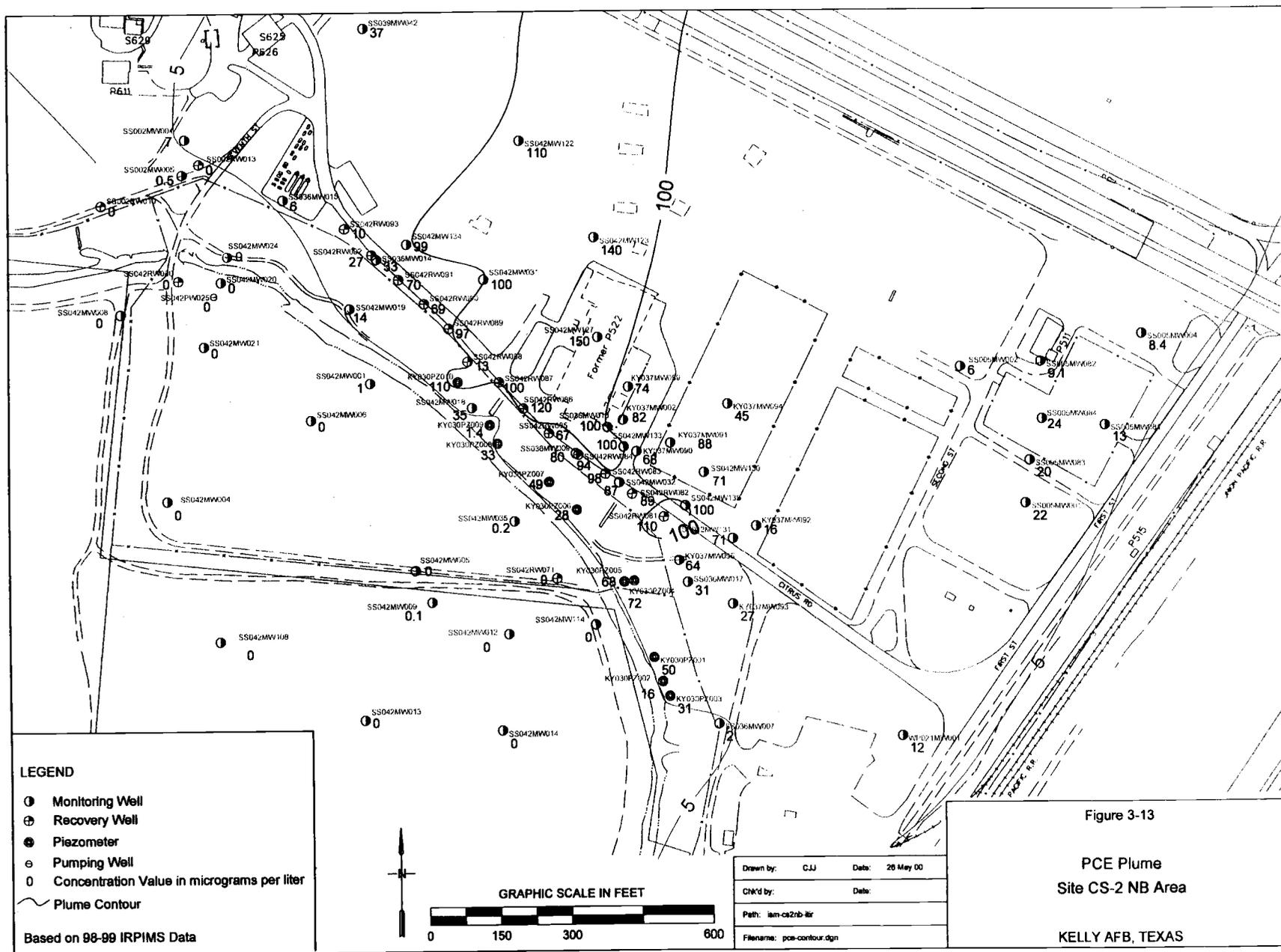


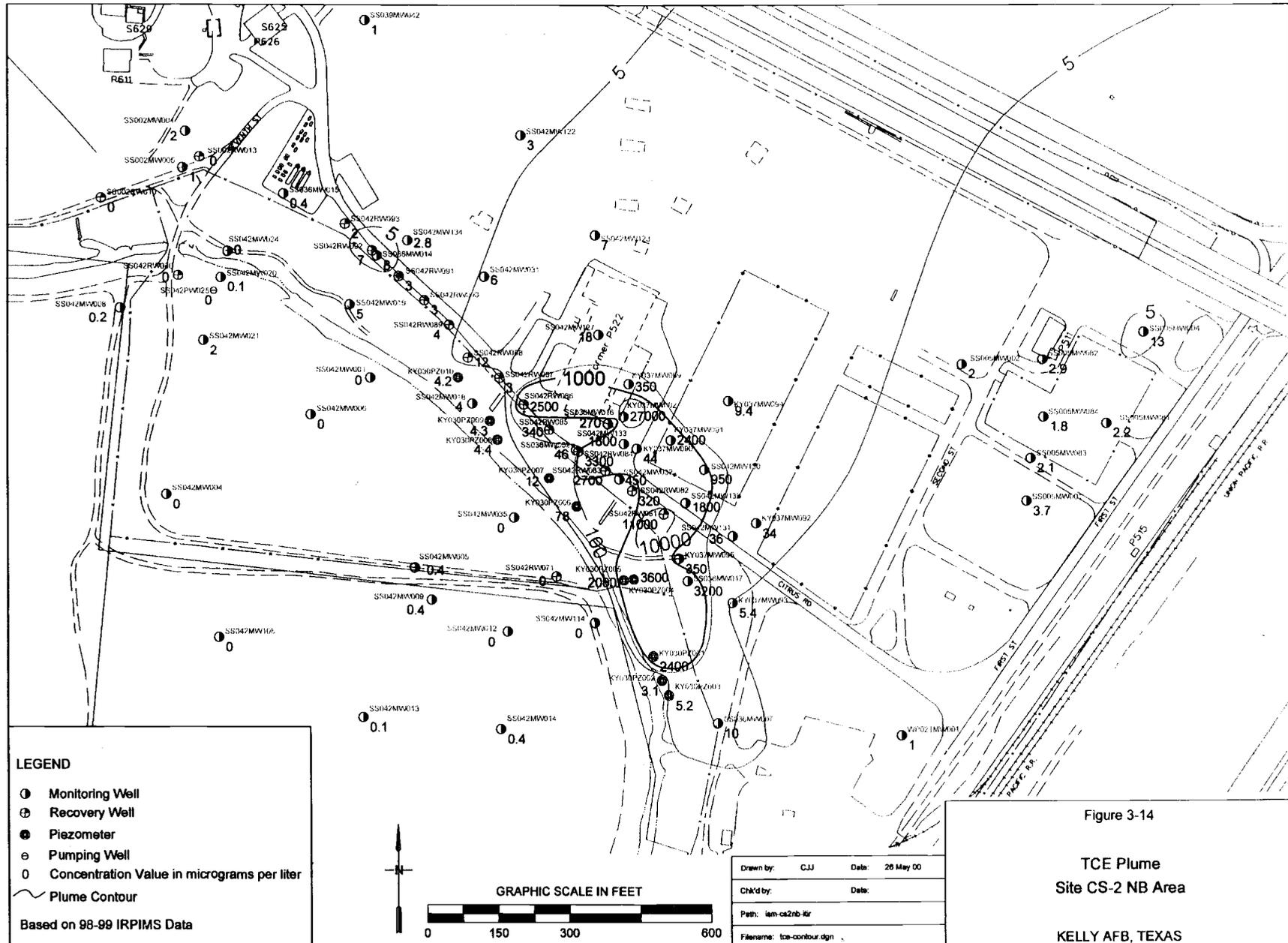
# Site CS-2NB



- Site Location
- Interim System
  - 13 Recovery Wells
- Groundwater Plume





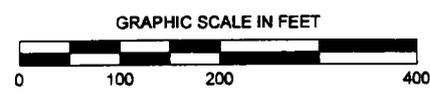
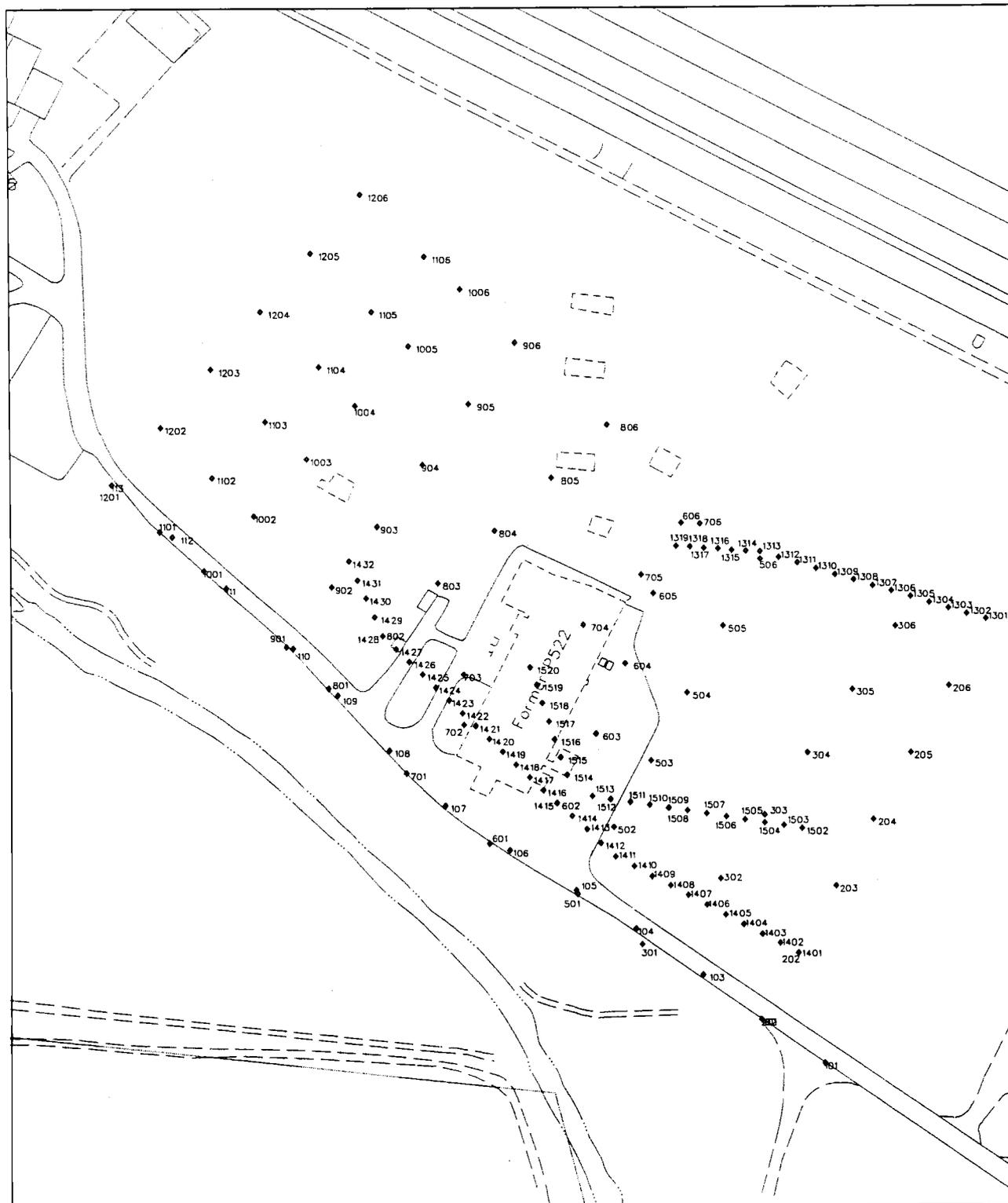




# Site CS-2NB Optimization

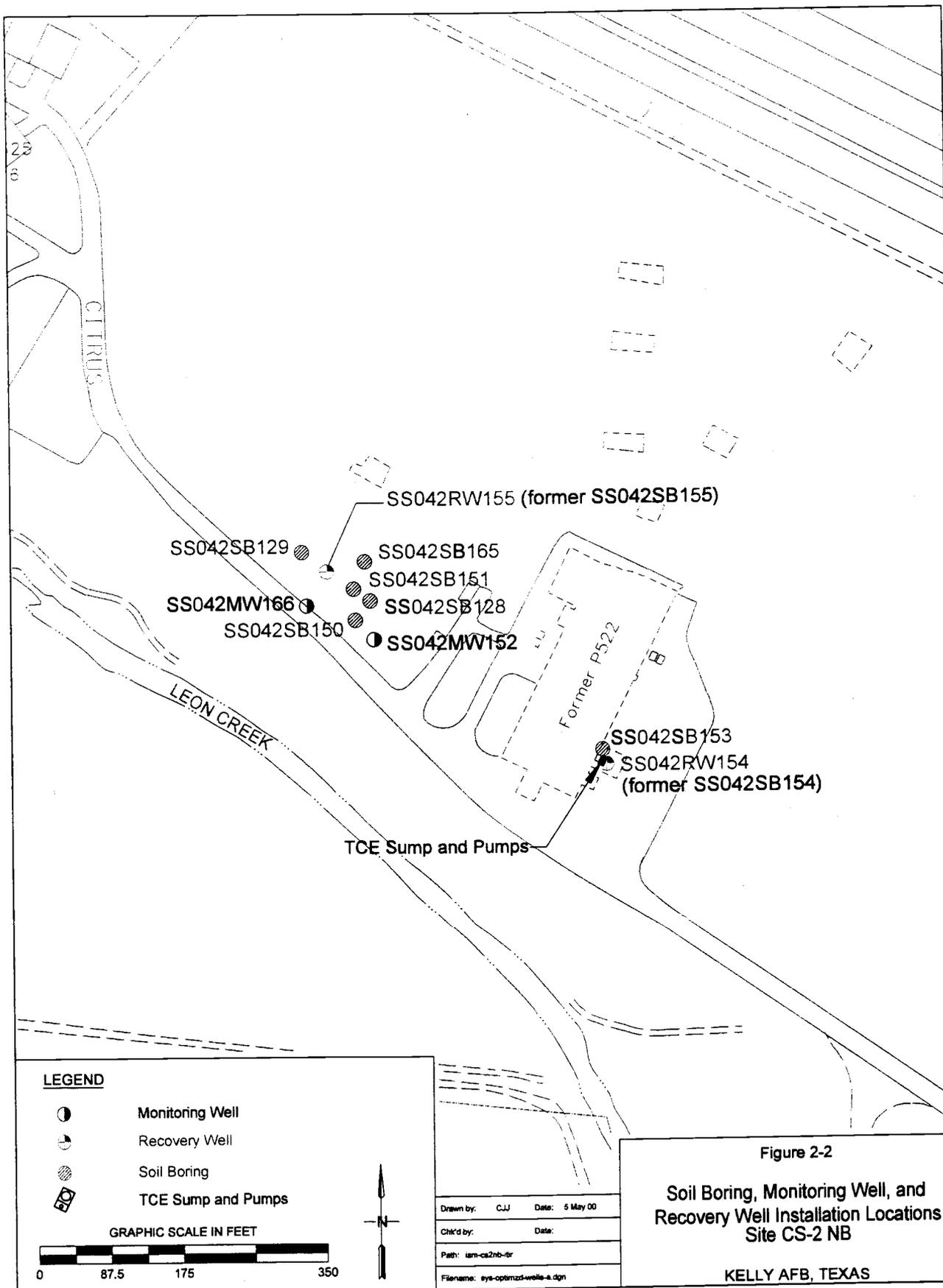


- Geophysical Survey
- SS042RW154
  - Aquifer Testing
  - Capture Area
  - Data Evaluation
- SS042RW155
  - Aquifer Testing
  - Capture Area
  - Data Evaluation



Drawn by:	CJJ	Date:	8 May 00
Ch'ed by:		Date:	
Path:	lam-ca2nb-8r		
Filename:	seismic-shot-pt.dgn		

Figure 2-1  
Shallow Seismic Reflection Survey  
Site CS-2 NB  
KELLY AFB, TEXAS



**LEGEND**

-  Monitoring Well
-  Recovery Well
-  Soil Boring
-  TCE Sump and Pumps

GRAPHIC SCALE IN FEET



Drawn by:	CJJ	Date:	5 May 00
Chk'd by:		Date:	
Path:	ism-ca2rb-0r		
Filename:	eye-optmzst-wells-4.dgn		

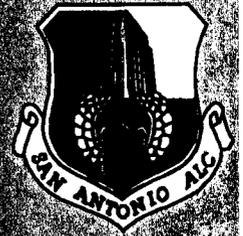
Figure 2-2

**Soil Boring, Monitoring Well, and Recovery Well Installation Locations Site CS-2 NB**

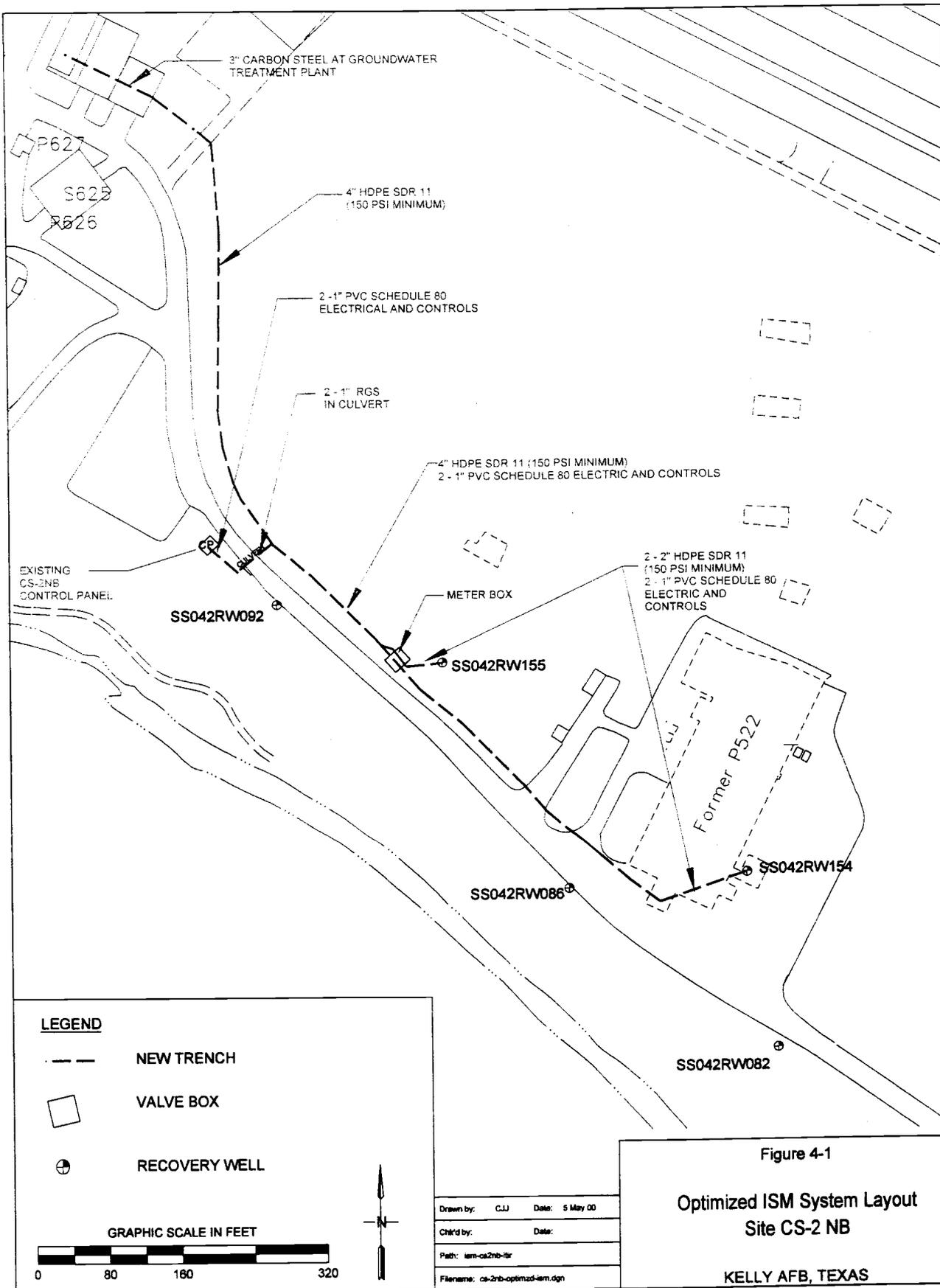
KELLY AFB, TEXAS



# Site CS-2NB System Optimization



- Groundwater Plume
- System Design
- System Construction





# Site CS-2NB Performance Testing and Reporting



- System Performance Test
  - November 2000
- Performance ITIR
  - December 2000

## EXECUTIVE SUMMARY

Science Applications International Corporation conducted an RFI at Former Maintenance Storage Area Site S-3 located in Zone 2 at Kelly AFB. As a result of stipulations presented in Compliance Plan No. CP 50310 (issued in 1998) by TNRCC, this investigation (1) determined the nature and extent of contamination resulting from past activities at the base, (2) identified contaminant transport mechanisms and pathways, and (3) gathered data to support recommendations for corrective actions. The focus of the RFI was to obtain site-specific data to supplement existing data from previous investigations. The RFI activities are required to fill critical data gaps and complete characterization of contaminant sources and the nature and extent of soil and groundwater contamination associated with releases of hazardous wastes or waste constituents.

The U.S. Army Corps of Engineers, Tulsa District is assisting Kelly AFB and the Air Force Base Conversion Agency in complying with TNRCC and USEPA requirements. The above plan stipulates meeting the following regulatory requirements at varied sites: RFIs, Corrective Measures Studies, Corrective Measures Implementation, and monitoring and reporting of environmental contamination.

In accordance with the Compliance Plan, Kelly AFB is required to conduct corrective action and groundwater monitoring programs in pursuit of releases from specific solid and hazardous waste management units listed in the Compliance Plan. The information collected during this RFI will be used to either determine the need for the next step in the corrective action process or to support the recommendation for no further action. Should further action be necessary, the data collected during the RFI will be used to support the decision-making process for identifying potential technologies.

Site S-3 is an inactive Maintenance Storage Area formerly used for drum storage and shop maintenance materials. Materials such as 1,2-dichlorobenzene and tetrachloroethene were stored in sealed drums on an asphalt-paved area enclosed by the existing fence. Ambient temperature and subsequent liquid volume changes in the drums resulted in several incidents of reported leakage.

The intent of the field investigation, conducted from 11 May 1999 to 9 June 1999 and supplemented in July and August 2000, was to characterize source areas, determine nature and extent of contamination, identify contaminant transport mechanisms and pathways, and gather data to support recommendations for further corrective actions, if necessary. Field activities were performed in the following three-phased approach: source characterization, soil characterization, and groundwater characterization.

Interpretations of the nature and extent of contamination are based on direct comparison of validated analytical results for individual site samples and the RFI decision criteria. However, analytical results not meeting the data validation criteria were not used and are discussed in detail in the accompanying *Data Validation Report*. Determining which contaminants are site contaminants resulting from a release of hazardous waste or waste constituents requires a case-by-case assessment of the frequency of constituents occurrence and concentrations. Following analyses of this RFI data, these detections were observed:

- Surface soil samples—tetrachloroethene, methylene chloride, toluene, arsenic, cadmium, and selenium. The extent of tetrachloroethene, methylene chloride, toluene, arsenic, cadmium, and selenium is defined. No contaminants were detected in surface soil above TNRCC Risk Reduction Standard No. 2 levels.
- Subsurface soil samples—tetrachloroethene, methylene chloride, toluene, arsenic, cadmium, lead, silver, and vanadium. The extent of tetrachloroethene, methylene chloride, toluene, arsenic, cadmium, lead, silver, and vanadium is defined. Arsenic was detected above TNRCC Risk Reduction Standard No. 2 levels. Synthetic precipitation leaching procedure analyses indicated arsenic concentrations in soil are not leaching to groundwater.
- Groundwater samples—tetrachloroethene, trichloroethene, total 1,2-dichloroethene, arsenic, barium, lead, nickel, thallium, and zinc. The extent of arsenic, lead, nickel, thallium, zinc, trichloroethene and total 1,2-dichloroethene is defined. The extent of tetrachloroethene and barium extends both upgradient and downgradient of former site operations. Tetrachloroethene, trichloroethene, lead, and thallium were detected above TNRCC Risk Reduction Standard No. 2 levels.

In summary, historical data and data collected during the performance of this RFI indicate arsenic concentrations above TNRCC groundwater protective concentrations in subsurface soil. However, synthetic precipitation leaching procedure analyses indicate the inorganics do not appear to be leaching to groundwater. Data also indicate inorganic and solvent concentrations above Risk Reduction Standard No. 2 levels in groundwater. The likely source of volatile organic compound contamination appears to be an off-site plume migrating onto the site from the north.

Therefore, the following two actions are recommended at Site S-3:

- Closure of surface and subsurface soil under Risk Reduction Standard No. 2.
- Evaluation of solvent and inorganic contamination in groundwater as part of the Zone 2 Corrective Measures Implementation.

## 1. INTRODUCTION

This Interim Stabilization Measures (ISM) Report presents the results of the interim systems evaluation and optimization project conducted for the currently operating groundwater ISM at CS-2 North Bank (NB) at Kelly Air Force Base (AFB), Texas, pursuant to Contract No. F41650-95-D-2004-5022. Work was conducted in accordance with the Final Site CS-2 NB ISM Work Plan (U.S. Air Force [USAF] 1999a).

The Site CS-2 NB ISM system is located in the southern portion of the base and is situated north of Leon Creek within Installation Restoration Program (IRP) Groundwater Zone 2 (Figure 1-1). Investigations in the CS-2 NB area began in the late 1980s and continues to the present. The initial major study was the remedial investigation (RI) conducted from 1989 through 1992 (USAF 1992). Soil and groundwater Feasibility Study (FS) reports were finalized in 1995 and 1996, respectively. The current ISM consists of 13 groundwater recovery wells (Figure 1-2) and was installed in 1993 to contain a groundwater plume migrating from upgradient sources. Site CS-2 NB was not designated an IRP site due to the absence of records documenting any previous waste operations or spills in the area. However, due to its proximity to IRP Site CS-2 and because it is located in the north bank of Leon Creek, the ISM is known as CS-2 North Bank system or CS-2 NB.

The existing ISM at CS-2 NB conveys contaminated groundwater from 13 groundwater recovery wells to the groundwater treatment plant (GWTP). Contaminated groundwater is treated at the GWTP by ultraviolet oxidation and then conveyed through the Environmental Process Control Facility (EPCF). The treated effluent is then discharged through a permitted outfall into Leon Creek.

The Site CS-2 NB portion of the optimization project, as its name indicates, was initiated with the intent of optimizing the existing ISM to contain and remediate contaminated groundwater in the area of Site CS-2 NB in the most effective and efficient manner. Historical data indicates that the existing ISM has not performed as designed because contaminated groundwater flows from seeps into Leon Creeks (both above and below water level). The poor performance of the ISM is likely due to placement of groundwater recovery wells in less than optimal locations in the aquifer.

The existing ISM system was evaluated and optimized for the hydraulic containment of contaminated groundwater, preventing further migration. Aquifer testing and groundwater modeling were used to determine the configuration for the optimum well containment system for Site CS-2 NB.

This ISM Report details the re-evaluation of contaminants of potential concern, aquifer geometry and hydrogeological parameters, and location of groundwater recovery wells with the goal of maximizing containment of the groundwater plume and mass removal of contaminants. The results of the following tasks support the recommendations offered in this report:

- Evaluation of the performance of existing groundwater recovery wells by a thorough review of operation and maintenance (O&M) records, and the execution of step tests on individual groundwater recovery wells.
- Placement of new groundwater recovery wells based on recent channel delineation and evaluation of the residual contaminant plume.
- Evaluation of aquifer parameters.
- Determination of the specific groundwater recovery capacity and capture zones of selected groundwater recovery wells.
- Analysis of the potential conversion of aquifer test wells to groundwater recovery wells.
- Recommendation of an optimized groundwater containment system.

This report is organized as follows:

- Section 1 introduces the purpose of the ISM optimization project and the ISM Report.
- Section 2 describes the optimization project and related fieldwork.
- Section 3 presents current site conditions at Site CS-2 NB.
- Section 4 describes the optimized ISM at Site CS-2 NB.

## EXECUTIVE SUMMARY

1

2 Science Applications International Corporation was contracted by Kelly Air Force  
3 Base and the Air Force Base Conversion Agency to conduct a source and soil Resource  
4 Conservation and Recovery Act Facility Investigation (RFI) at the Former Building 258  
5 Solid Waste Management Unit (Building 258 Site) (alias Site OT-2 and Site MP) located  
6 in Installation Restoration Program Zone 3. The purpose of this RFI according to  
7 Compliance Plan No. CP-50310 issued to Kelly AFB by the Texas Natural Resource  
8 Conservation Commission is to (1) characterize source areas, (2) determine the nature  
9 and extent of soil contamination resulting from the past activities at the site, (3) identify  
10 contaminant transport mechanisms and exposure pathways, and (4) gather data to support  
11 recommendations for corrective actions. The findings of this RFI will be used to design  
12 Corrective Measures Studies for the sources within the site area.

13 Building 258 Site is located along the eastern border of Kelly AFB within Zone 3 and is  
14 surrounded by industrial buildings and offices and the Union Pacific railyard to the east.  
15 It consists of the soil and groundwater contaminated by releases of solvents and other  
16 wastes from former Buildings 258 and 259, both of which housed automotive repair  
17 facilities from 1932 through the 1940s and metal plating and degreasing operations from  
18 the 1950s until 1980. The buildings were demolished in 1981, and the site was converted  
19 to an asphalt-covered parking lot. Other waste management facilities located at the site  
20 include portions of the Industrial Wastewater Collection System and former underground  
21 fuel tanks.

22 The principal contaminant source at the Building 258 Site is an estimated 48,000 gallons  
23 of dense nonaqueous phase liquid (DNAPL, mainly tetrachloroethene) that occupies a  
24 depression in the surface of the Navarro Clay at a depth of about 40 feet below ground  
25 surface. No sources were identified in surface soil, which consists of asphalt and road  
26 base material. Chlorinated solvents such as tetrachloroethene, trichloroethene, and  
27 cis-1,2-dichloroethene and metals such as arsenic, lead, and chromium were detected in  
28 subsurface soil beneath the footprint of the former buildings. Only the chlorinated  
29 solvents in soil have affected groundwater quality.

30 Two interim stabilization measures have been installed in the site area. A five-well pump  
31 and treat system was installed in 1995 to prevent the off-site migration of the  
32 groundwater contamination from the Building 258 Site source area. From 1997 to 1998,  
33 this five-well system was evaluated and optimized. A more effective three-well recovery  
34 system was designed and installed in March 1998. Since the optimized recovery system  
35 began operating, downgradient contaminant concentrations have decreased significantly.  
36 A slurry wall was constructed in March 1999 to enclose the DNAPL source and  
37 contaminated soil beneath the footprints of the former buildings. Although there is some  
38 degree of hydraulic communication between groundwater inside and outside the wall,  
39 currently a pumping well inside the wall is able to maintain an inward gradient. Over  
40 2,000 gallons of DNAPL have been removed from the site and properly disposed off-base  
41 since March 1999.

1 The Building 258 Solid Waste Management Unit Resource Conservation and Recovery  
2 Act Facility Investigation has defined the nature and extent of contamination in  
3 subsurface soil and the dense nonaqueous phase liquid source area. The slurry wall  
4 delineates the extent of the dense nonaqueous phase liquid. Subsurface soil contaminated  
5 with metals and solvents has also been defined. The entire area will be deed recorded,  
6 and therefore no further delineation is necessary. A plume of contaminated groundwater  
7 (less than 30 feet below ground surface and with concentrations of tetrachloroethene,  
8 trichloroethene, and other chlorinated solvents above the Texas Natural Resource  
9 Conservation Commission corrective action limits) extends from beneath the former  
10 buildings to off-base areas where it commingles with contamination from Zone 4 sources.  
11 The RCRA Facility Investigation for groundwater contamination from the Building 258  
12 Site will be presented in the Zone 4 RCRA Facility Investigation scheduled for delivery  
13 in the fall of 2000.

14 Currently, the only potential exposure pathway to Building 258 Site contaminants is for  
15 construction workers excavating subsurface soil. All other soil exposure pathways are  
16 incomplete because surface soil is not a source area. In addition, there are no known  
17 contaminant migration pathways through the several hundred feet of clay that separate  
18 the shallow aquifer and the Edwards Aquifer. There are no significant ecological  
19 receptors in the Building 258 area (and the industrial portion of the base) because of the  
20 lack of habitat. Most of the existing habitat at Kelly Air Force Base is associated with  
21 Leon Creek on the west (opposite) side of the base.

22 Risk-based screening of all of the subsurface soil contaminants detected at the  
23 Building 258 Site resulted in the following list of chemicals that are considered to be  
24 related to releases from past activities at the site and occur at concentrations above  
25 residential Texas Natural Resource Conservation Commission Risk Reduction Standard  
26 No. 2 values:

#### **Subsurface Soil**

Tetrachloroethene  
Trichloroethene  
1,1,2-Trichloroethane  
cis-1,2-Dichloroethene  
Arsenic

27 The nature and extent of the source and soil contamination has been adequately defined  
28 to prepare a Corrective Measures Study for these media associated with Building 258.

**CLOSURE REPORT  
REMOVAL OF OIL/WATER SEPARATORS  
EAST KELLY AIR FORCE BASE  
SAN ANTONIO, TEXAS**

**EXECUTIVE SUMMARY**

This **Closure Report** documents fields activities and associated tasks involved with the removal and site-closure of three (3) oil/water separators (OWS) at Buildings 3786, 3826, and 3828 at East Kelly Air Force Base (AFB), Kelly AFB, Texas. IT Corporation (IT) performed this project in accordance with the Statement of Objective (SOO) dated June 5, 2000 for Delivery Order (DO) 51 of the United States Air Force Center for Environmental Excellence (AFCEE) under Remedial Action Contract No. F41624-97-D-8024.

The objectives of this OWS removal and site closure project were to perform the following tasks at Buildings 3786, 3826, and 3828:

- Determine the location and type of equipment at each site.
- Remove such equipment, any impacted soil, and collect confirmation samples.
- Characterize and properly dispose of remediation derived waste.
- Achieve site closure of at least Texas Natural Resource Conservation Commission (TNRCC) Risk Reduction Standard (RRS) 2 for soil media at industrial land use sites.

The analysis and closure of groundwater through environmental sampling was not a part of this DO.

The regulatory standard for closure of the OWSs was the Groundwater Protection Standard for Industrial Use (GWP-Ind). This standard for industrial land use is defined as the concentration of chemicals in soil assumed to be protective of groundwater considering the potential for cross-media contamination of groundwater from contaminated soil.

The following confirmation soil sampling was performed subsequent to removal of the OWSs and impacted soil.

- At Building 3786, four samples (plus one quality control sample) from the walls, one sample from the floor, and three samples from the pipeline trenches were collected from the excavation.
- At Building 3826, four soil samples from the walls and one sample from the floor were collected from the excavation.
- At Building 3828, four soil samples were collected from the walls, one was collected from the floor, and two samples were collected from along the former drain and drain line.

Tetrachloroethene (PCE) was detected in Building 3828 samples CW01-02 and CF03-07. The areas surrounding these sample locations were over-excavated and re-sampled. Confirmation

samples were re-submitted for PCE analysis and the results revealed no concentration of PCE above TNRCC RRS 1 standards.

Laboratory analytical data from the Building 3786 confirmation soil samples revealed no contaminants of concern at concentrations exceeding TNRCC RRS 1 standards.

Barium was detected in Building 3826 sample CW03-04 and Building 3828 sample CW01-02 at concentrations of 140 mg/kg and 123 mg/kg, respectively. Cadmium was detected in Building 3828 sample CF02-06 at a concentration of 0.69. Cadmium and barium are inorganic compounds not typically associated with OWS operations. These inorganic compounds were detected at concentrations which slightly exceeded their upper tolerance limit (UTL) for Kelly AFB. These inorganic compound detections are considered naturally occurring background distribution outliers for these analytes, and are not indicative of metals contamination at Buildings 3826 and 3828.

PCE was detected in Building 3828 samples CW01-02 and CF03-07 at concentrations of 8.87 µg/kg and 5.26 µg/kg, respectively. The areas around these sample locations were overexcavated and resampled. PCE was not detected in the second round of confirmation samples.

In conclusion, a review of data collected at Building 3786, 3826, and 3828 was performed with respect to the TNRCC risk reduction rules, as codified in Subchapters A and S of 30 Texas Administrative Code (TAC), Chapter 335. It is concluded that Buildings 3786, 3826, and 3828 meet the requirements as specified in Subchapter A and S, require no further action, and will be closed under RRS 1 requirements.

Table ES-1 summarizes the sites closed under this DO.

**TABLE ES-1  
SUMMARY OF SITE CLOSURE**

Site Location	Removal Date	Materials Removed	RRS Closure
Building 3786	August 4, 2000	OWS, associated piping, and concrete pad	RRS 1
Building 3826	August 9, 2000	OWS, sump, and pump	RRS 1
Building 3828	August 8, 2000	OWS and drain	RRS 1

## EXECUTIVE SUMMARY

This report documents the removal and closure of a solid waste management unit (SWMU) at Building 347, Kelly Air Force Base (AFB), San Antonio, Texas. The SWMU at Building 347 is registered on the Kelly AFB Notice of Solid Waste Registration (31750) as System Number 28 (SWMU No. 28). The present assessment consisted of two 6,000-gallon fiberglass underground storage tanks (UST). One of the two tanks (Tank 6) contained unused calibration fluid, and the other tank (Tank 7) contained used or waste calibration fluid. These two tanks are the last of a total of ten tanks that have been removed from SWMU No. 28.

Field activities associated with this closure included: (1) removal and disposal of the USTs, their contents, and rinsate water; (2) capping of former calibration fluid pipes; (3) collection of screening samples to assess hydrocarbon concentrations in the excavation cavity; (4) soil assessment to evaluate potential risk to human health and the environment; (5) collection and analysis of closure verification samples; (6) collection and analysis of soil removed from the excavation and backfilling of the tank cavity; (7) surveying of excavation boundaries for deed recordation; and (8) resurfacing with concrete.

During assessment, medium-specific concentrations (MSC) and closure criteria were evaluated for surface and subsurface soils. Exposure scenarios for other potentially impacted media (surface water, air) were evaluated and eliminated from further consideration for this report.

Based on screening sample results, the following analyses were performed: Volatile Organic Compounds (VOC), Semivolatile Organic Compounds (SVOC), and Total Metals. None of the chemicals of concern (COC) established for this assessment were present at concentrations which exceeded Risk Reduction Standard No. 2 (RRS2).

Based upon media-specific soil sampling and exposure pathway analysis, conditions for closure under RRS2 have been met. The residual COC concentrations pose no threat to human health as defined by TNRCC 30 TAC Chapter 335, Subchapter S. Based upon the sampling and analyses, Kelly AFB recommends that the surface and subsurface soils surrounding SWMU No. 28 at Building 347 be granted partial site closure by TNRCC under Risk Reduction Standard No. 2.



**FINAL PAGE**

**ADMINISTRATIVE RECORD**

**FINAL PAGE**