KELLY AFB
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ADMINISTRATIVE RECORD
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AR File Number 3266

Kelly Restoration Advisory Board (RAB)
Technical Review Subcommittee (TRS)

Meeting Agenda
December 13, 2004, 6:30 p.m.
Environmental Health & Wellness Center
911 Castroville Road
(formerly Las Palmas Clinic)

I.	**Introduction**		Dr. David Smith
	a.	Agenda Review	
	b.	Packet Review	
II.	A.	**Technical Assistance for Public Participation (TAPP) Review of the Zones 2/3 Corrective Measures Study**	Mr. Jeff Neathery
	B.	**Question & Answer Session/Community Comment on the TAPP Review**	Dr. David Smith
III.	**Administrative**		
	a.	BRAC Cleanup Team (BCT) Update	Ms. Norma Landez
	b.	Spill Summary Report	Ms. Norma Landez
	c.	Documents to TRS/RAB	Ms. Sonja Coderre
	d.	RAB Recruitment	Ms. Sonja Coderre
	e.	Action Items	Dr. David Smith
	f.	Approve August TRS meeting transcript and summary and June meeting minutes	Dr. David Smith

IV. Next RAB Meeting
Kennedy High School: January 18, 2005, 6:30 p.m.*

V. Next TRS Meeting
Brentwood Middle School: February 8, 2005, 6:30 p.m.*

VI. Adjournment

**Meeting dates and locations are subject to change.*

December 13, 2004
Technical Review Subcommittee (TRS) Meeting
of the Kelly Restoration Advisory Board (RAB)
Environmental Health and Wellness Center
911 Castroville Road
San Antonio, Texas 78237

~~Draft~~ Meeting Minutes

RAB Community Member Attendees:
Mr. Robert Silvas, Community Co-Chair
Ms. Esmeralda Galvan
Mr. Sam Murrah
Mr. David Pylar
Mr. Armando Quintanilla
Mr. Michael Sheneman

RAB Government Member Attendees:
Mr. Mark Weegar, Texas Commission on Environmental Quality (TCEQ)
Mr. Gary Martin, Greater Kelly Development Authority (GKDA)
Mr. Gary Miller, Environmental Protection Agency (EPA) Region VI

Other Attendees:
Mr. Ashley Allinder, Air Force Real Property Agency (AFRPA)
Mr. Don Buelter, AFRPA
Ms. Sonja Coderre, AFRPA
Ms. Kyle Cunningham, Public Center for Environmental Health (PCEH)
Ms. Leigh-Ann Fabianke, AFRPA Contractor
Ms. Coriene Hannapel, Community Member
Ms. Blanca V. Hernandez, Environmental Health and Wellness Center (EHWC)
Ms. LeAnn Herren, AFRPA Contractor
Ms. Cheri Kirkpatrick, AFRPA Contractor
Ms. Norma Landez, AFRPA
Mr. Jeff Neathery, TAPP Contractor
Ms. Abbi Power, TCEQ
Dr. David Smith, Facilitator
Mr. Tim Sueltenfuss, AFRPA Contractor
Ms. Robyn Thompson, AFRPA Contractor
Mr. Glenn Wilkinson, Community Member

The meeting was called to order at 6:45 p.m.

I. Introduction – Dr. David Smith
Dr. David Smith began the meeting by welcoming RAB members and other attendees.

II. Technical Assistance for Public Participation (TAPP) Review of the Zones 2/3 Corrective Measures Study - Mr. Jeff Neathery

Mr. Jeff Neathery presented a TAPP review of the Zones 2/3 Corrective Measures Study.

Question & Answer/Community Comment Session followed regarding the TAPP Review.

III. Administrative

A. BRAC Cleanup Team (BCT) Update - Ms. Norma Landez
A BCT update was given.

B. Spill Summary Report – Ms. Norma Landez
A spill summary report was given.

C. Documents to TRS/RAB - Ms. Sonja Coderre
A report was give of documents included in the Information Repositories.

D. RAB Recruitment – Ms. Sonja Coderre
RAB members were reminded of January elections and encouraged to invite community members.

E. Action Items - Dr. David Smith
The action items from the previous TRS meeting were reviewed. All actions were completed.

F. Approve August TRS meeting transcript and summary and June meeting minutes – Dr. David Smith
The August TRS meeting transcript and summary and the June TRS meeting minutes were approved by the RAB community members in attendance.

Mr. Glenn Wilkinson provided a community comment.

IV. Meeting Adjournment
Mr. Robert Silvas moved for adjournment. Motion carried.

The meeting was adjourned at 8:45 p.m.

These minutes have been composed in accordance with Robert's Rules of Order as per the request of the RAB members.

R. Silvas 10/11/05 Adam Antwine 10/11/05

Robert Silvas Date **Adam Antwine** Date
Community Co-chair Installation Co-chair

Subcomité de Revisión Técnica de Kelly (TRS)
RESUMEN DE LA JUNTA

13 de diciembre de 2004
Centro de Higiene y Bienestar Ambiental.
911Castroville Road
San Antonio, TX 78237

1. **Asistentes:**

Sr. Ashley Allinder
Sr. Don Buelter
Sra. Sonja Coderre
Sra. Kyle Cunningham
Sra. Leigh-Ann Fabianke
Sra. Esmeralda Galvan
Sra. Coriene Hannapel
Sra. Blanca V. Hernandez
Sra. LeAnn Herren
Sra. Cheri Kirkpatrick
Sra. Norma Landez
Sr. Gary Martin
Sr. Gary Miller
Sr. Sam Murrah
Sr. Jeff Neathery
Sr. David Pylar
Sra. Abbi Power
Sr. Armando Quintanilla
Sr. Michael Sheneman
Sr. Robert Silvas
Dr. David Smith
Sr. Tim Sueltenfuss
Sra. Robyn Thompson
Sr. Mark Weegar
Sr. Glenn Wilkinson

2. **Introducción.** El Dr. David Smith, Intermediario de RAB/TRS, hizo la apertura de la junta a las 6:45 p.m. El Dr. David Smith anunció que la meta de la junta era revisar y comentar sobre documentos técnicos, específicamente la Revisión de la Asistencia Técnica para la Participación Pública (TAPP) en el Estudio de Medidas Correctivas (CMS, por sus siglas en inglés.) de las Zonas 2/3. El Dr. Smith revisó la agenda de la junta y los paquetes de la junta.

3. **A. Asistencia Técnica para la Participación Pública (TAPP) en el Estudio de Medidas Correctivas de las Zonas 2/3.** El Sr. Jeff Neathery de Servicios Ambientales Neathery, presentó una revisión de TAPP del Estudio de Medidas Correctivas de las Zonas 2/3, incluyendo una explicación del trabajo efectuado y una revisión técnica del documento.

   B. Sesión de Preguntas y Respuestas /Comentarios de la Comunidad sobre la Revisión de TAPP. El Sr. Neathery respondió las preguntas de los miembros de RAB que asistieron y de la audiencia, concernientes a la revisión de TAPP del Estudio de Medidas Correctivas de las Zonas 2/3 y asuntos relacionados.

4. **Administración.** La Sra. Norma Landez presentó el Reporte Sumario de Actualización y Derrame del Equipo de Limpieza (BCT, por sus siglas en inglés) de la Realineación y Clausura de la Base (BRAC, por sus siglas en inglés.) La Sra.Coderre se presentó como la nueva Funcionaria de Asuntos Públicos y listó los documentos que fueron incluidos en los Depósitos de Información desde la última junta de TRS. La Sra.Coderre les recordó a los miembros de RAB las próximas elecciones de enero y los motivó para que inviten a los

miembros de la comunidad a lanzar sus candidaturas. El Dr. Smith revisó las acciones a tomar de la junta previa de TRS y declaró que todas las acciones fueron cumplidas. La transcripción y el resumen de la junta de TRS de agosto y las minutas de la junta de TRS de junio fueron aprobadas por los miembros de la comunidad RAB asistentes.

5. **Comentarios de la Comunidad.** Al Sr. Glenn Wilkinson, un miembro de la comunidad, se le concedieron tres minutos del tiempo para comentarios de la comunidad.

6. **Próxima Junta.** La siguiente junta de RAB programada regularmente, será llevada a cabo el martes 18 de enero de 2005, a las 6:30 p.m. en la Preparatoria Kennedy. La siguiente junta de TRS programada regularmente será llevada a cabo el martes 8 de febrero 2005, a las 6:30 p.m. en la Secundaria Brentwood.

7. **Cierre.** 8:45 p.m.

DEPARTMENT OF THE AIR FORCE
AIR FORCE REAL PROPERTY AGENCY

6 December 2004

Ms. Sonja S. Coderre
Public Affairs Officer
143 Billy Mitchell Blvd Ste 1
San Antonio TX 78226-1816

Dear Restoration Advisory Board (RAB) Members

Thank you for your continued interest in the Kelly environmental cleanup program. For your reference, I have included a summary of the 9 November 2004 Special RAB meeting.

This summary is a brief overview of what occurred at the Special RAB meeting. A court reporter prepared a word-by-word transcript of the RAB meeting that will be made available for review. You will receive a copy of that transcript at the 18 January RAB meeting. If you would like to request a copy of the transcript prior to the January meeting, please call 925-0956. After the transcript has been approved, a copy will be placed at the following Information Repositories:

- San Antonio Central Public Library
  600 North Soledad, 2nd Floor Government Documents Section
  San Antonio TX 78205

- Former Kelly AFB Library
  250 Goodrich Drive, Bldg 1650, Room 138
  San Antonio TX 78226

- Environmental Health and Wellness Center
  911 Castroville Road
  San Antonio TX 78237

I appreciate the opportunity to share information on the Kelly environmental cleanup program with you. If you have any questions, please feel free to contact us at (210) 925-0956.

Sincerely

SONJA S. CODERRE

Attachment:
9 November 2004 Special RAB Meeting Summary

Kelly Special Restoration Advisory Board (RAB)
Technical Review Subcommittee (TRS)
SUMMARY

November 9, 2004
Kennedy High School Cafeteria
1922 S. General McMullen Dr.
San Antonio, TX 78226

1. **Attendees:**

Mr. Don Barker
Ms. Sandra Converse
Ms. Kyle Cunningham
Ms. Larisa Dawkins
Ms. Leigh-Ann Fabianke
Dr. David A. Fowler
Mr. Ramon A. Garcia
Mr. Rodrigo Garcia
Ms. Sarah Garcia
Mr. Henry Galindo
Ms. Esmeralda Galvan
Ms. LeAnn Herren
Mr. Brian Howard
Ms. Jill Johnston
Mr. Brian M. Kaplan
Ms. Cheri Kirkpatrick
Ms. Norma Landez
Ms. Maria Teran-McIver
Mr. Carlos San Miguel
Mr. Gary Miller
Mr. Sam Murrah
Mr. Pete Muzquiz
Ms. Jannie O'Neal
Mr. Nazarite Perez
Ms. Abbi Power
Mr. Armando Quintanilla
Mr. Genaro Rendon
Mr. Sam Sanchez
Mr. Jeffrey Shire
Mr. Michael Sheneman
Mr. Robert Silvas
Mr. Kelley Siwecki
Mr. Brendan Smith
Dr. David Smith
Mr. Tim Sueltenfuss
Ms. Robyn Thompson
Mr. Glenn Wilkenson
Mr. James Wittmer
Mr. David Yantz

2. **Introduction.** Dr. David Smith, RAB/TRS Facilitator, opened the meeting at 6:35 p.m. and called the roll. A quorum was achieved just after the meeting began. Dr. David Smith announced that Mr. William Ryan would be filling Mr. Adam Antwine's seat as government co-chair for this Special RAB meeting. The Pledge of Allegiance was said and then a moment of silence was observed. Dr. David Smith announced that the goal of the meeting was to review and comment on the Agency for Toxic Substances and Disease Registry (ATSDR) Health Consultation, Past Air Emissions Report for Kelly Air Force Base.

3. **ATSDR Briefing.** Dr. David A. Fowler and Mr. Brian M. Kaplan of the ATSDR presented a briefing on the ATSDR Health Consultation, Past Air Emissions Report for Kelly Air Force Base.

4. **Community Comment/Question-and-Answer Session on the ATSDR Past Air Emissions Report.** Dr. David A. Fowler, Mr. Brian M. Kaplan and Ms. Maria Teran-McIver responded

to questions from the audience and RAB members in attendance concerning the ATSDR Report and related subjects.

5. **Technical Assistance for Public Participation (TAPP) Update.** Ms. Larisa Dawkins presented a briefing on what the TAPP is and how it works. She also provided a status update of the TAPP program budget.

6. **Community Comment/Question-and-Answer Session on the TAPP update.** Ms. Larisa Dawkins responded to questions from the audience and RAB members in attendance concerning the TAPP Update and related subjects.

7. **Meeting Wrap-Up.** Dr. David Smith stated that action items will be discussed at the next regularly scheduled RAB meeting. Meeting summaries will also be approved at the next regular RAB meeting. Dr. David Smith also reminded the RAB members and the community that RAB elections will take place at the January 18, 2005 RAB meeting.

8. **Next Meeting.** The next regularly scheduled RAB meeting is set for Tuesday, January 18, 2005, at 6:30 p.m. at Kennedy High School. The next regularly scheduled TRS meeting is set for Monday, December 13, 2004, at 6:30 p.m. at the Environmental Health and Wellness Center.

9. **Adjourn.** The meeting adjourned at 9:45 p.m.

Document Review

Corrective Measures Study Zones 2 and 3
Draft Final
Former Kelly Air Force Base

Prepared for:
Kelly Air Force Base
Restoration Advisory Board

Neathery Environmental Services

Purpose of Review

Conduct a review of the CMS report prepared by Science Applications International Corporation (SAIC) to include:

- **a simple explanation of work performed**
- **a technical review of the document**

Neathery Environmental Services

Document Reviewers

Jeffrey S. Neathery, P.G., C.P.G.
Neathery Environmental Services

Christopher Mathewson, Ph.D., P.E., P.G
Texas A&M University

Limitations

The report was reviewed as a "stand alone" document. Information contained in Section 3 (Description of Current Conditions and Conceptual Site Model) relied on information from other sources. For the purpose of this review, the external information is assumed to be accurate.

Report Components

Acronyms and Abbreviations
Executive Summary
1.0 Introduction/Purpose
2.0 Media Cleanup Standards
3.0 Description of Current Conditions & Conceptual Site Model
4.0 Development & Detailed Analysis of Source Area Alternatives
5.0 Development & Detailed Analysis of Groundwater Alternatives
6.0 Recommended Alternatives
7.0 References

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Purpose of the CMS

The purpose of the CMS is to "evaluate an recommend soil and groundwater final remediation alternatives for Zones 2 and 3 sites determined to have chemicals of concern that exceed Risk Reduction No. 2 criteria".

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Source Areas

Fourteen source areas were evaluated with respect to Risk Reduction No. 2 criteria. Eight sites were found to exceed the Risk reduction No. 2 criteria.

Zone 2	Zone 3
Site E-1	Building 258
Building 522	Building 301
	Building 324
	Building 348
	Building 360 NW corner
	Building 360 Basement

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Media Cleanup Standards

Media cleanup standards were calculated for the chemicals of concern (COC) found at each of the 8 sites that exceed Risk Reduction No. 2 standards. Cleanup standards were calculated for both soil and groundwater. Soil cleanup for the 8 sites are addressed individually. The groundwater plume will be addressed as one unit.

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Evaluation Criteria

- Overall Protection of Human Health & Environment
- Attainment of Media Cleanup Standards
- Control Source of Releases
- Compliance with Applicable Standards for Management of Wastes
- Long Term Reliability and Effectiveness
- Reduction of Toxicity, Mobility or Volume
- Short Term Effectiveness
- Implementability and Cost

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Source Area Alternatives for Site E-1

Alt 1 – No Action
Alt 2 – Continued Operation of Collection Trench
Alt 3 – Continued Operation of Collection Trench with Soil Flushing
Alt 4 – Excavation of Contaminated Soils
Alt 5 – Vadose Zone Soil Excavation and Continued Trench Operation
Alt 6 – Minimal Excavation combined with Soil Vapor Extraction with Six-phase Heating
Alt 7 – Soil Vitrification
Alt 8 – Bioaugmentation and Excavation

Neathery Environmental Services

Cost Summary for Site E-1

Source Area Alternatives	Capital Cost	O&M Cost	Total	O&M Duration
Alt 1 – No Action – discontinue collection trench operation	$0	$0	$0	NA
Alt 2 – Operate existing system	$17,424	$64,887,143	$64,904,567	600 yrs
Alt 3 – Operate existing system and flush soils with discharge water	$197,800	$16,221,786	$16,419,586	150 yrs
Alt 4 – Excavation of vadose and limited saturated soils backfill with a layer of organic substrate and continue to operate existing system.	$4,416,089	$6,104,966	$10,521,055	60 yrs
Alt 5 – Excavation of vadose soils only and continue to operate existing system	$3,389,320	$12,977,429	$16,366,748	120 yrs
Alt 6 – Excavation of surface soils with Electrical Resistive Heating (ERH), followed by limited trench operation.	$3,761,171	$508,747	$4,269,918	5 yrs monitor & trench operation
Alt 7 – Soil Vitrification	$25,820,033	$167,099	$25,987,131	5 yrs monitor
Alt 8 – Bioaugmentation and excavation of vadose soils only	$3,827,301	$1,311,676	$5,138,977	5 yrs operation, 5 yrs monitor

Neathery Environmental Services

Comparative Analysis of Alternatives for Site E-1

Criteria	Alt 1 No Action	Alt 2 Operate Existing System	Alt 3 Operate Existing System and Flush Vadose Soils	Alt 4 Excavation of Vadose and Limited Saturated Soils, Backfill with a Layer of Organic Substrate, Continue to Operate Existing System	Alt 5 Excavation of Vadose Soils, Continue to Operate Existing System	Alt 6 Excavation of Surface & Metals Soils, six-phase Heating	Alt 7 Soil Vitrification	Alt 8 Bioaugmentation and Excavation of Vadose Soils
Overall protection of human health and the environment	○	●	●	●	●	●	●	●
Attainment of media cleanup standards	○	●	●	●	●	●	●	●
Control of source releases	○	●	●	●	●	●	●	●
Compliance with waste management standards	○	●	●	●	●	●	●	●
Long-term reliability and effectiveness	○	●	◐	●	●	●	●	◐
Reduction in the toxicity, mobility, or volume of wastes	○	◐	●	●	●	●	●	●
Short-term effectiveness	○	●	●	◐	◐	●	●	●
Implementability	●	●	●	●	●	●	◐	◐
Cost	●	○	○	○	○	◐	○	◐

Neathery Environmental Services

Recommended Alternative for Site E-1

Alt 1 – No Action
Alt 2 – Continued Operation of Collection Trench
Alt 3 – Continued Operation of Collection Trench with Soil Flushing
Alt 4 – Excavation of Contaminated Soils
Alt 5 – Vadose Zone Soil Excavation and Continued Trench Operation
Alt 6 – Minimal Excavation combined with Soil Vapor Extraction with Six-phase Heating
Alt 7 – Soil Vitrification
Alt 8 – Bioaugmentation and Excavation

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Source Area Alternatives for Building 522

Alt 1 – No Action
Alt 2 – Maintain and Optimize Current SVE System
Alt 3 – Excavation with Organic Substrate Backfill
Alt 4 – Bioaugmentation and Soil Vapor Extraction
Alt 5 – Soil Vapor Extraction with Six-phase Heating

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Cost Summary for Building 522

Source Area Alternatives	Capital Cost	O&M Cost	Total	O&M Duration
Alt 1 - No Action-discontinue operation of current system	$0	$0	$0	NA
Alt 2 - Maintain current SVE and optimize	$121,475	$335,728	$457,203	5 years
Alt 3 - Excavation (vadose & saturated), Dewatering for Excavation, backfill with a layer of organic substrate	$649,971	$80,739	$730,710	5 yrs monitor
Alt 4 - Bioaugmentation and Optimized SVE	$384,052	$747,735	$1,131,788	10 yrs operation, 5 yrs monitor
Alt 5 - Soil Vapor Extraction with Six-phase Heating	$1,376,969	$80,739	$1,457,708	5 yrs monitor

Neathery Environmental Services

Comparative Analysis of Alternatives for Building 522

Criteria	Alt 1 No Action	Alt 2 Maintain Current SVE and Optimize	Alt 3 Excavation, Backfill with a Layer of Organic Substrate	Alt 4 Bioaugmentation and SVE	Alt 5 SVE with Six-phase Heating
Overall protection of human health and the environment	○	●	●	●	●
Attainment of media cleanup standards	○	●	●	●	●
Control of source releases	○	◐	●	◐	●
Compliance with waste management standards	○	●	●	●	●
Long-term reliability and effectiveness	○	◐	●	◐	●
Reduction in the toxicity, mobility, or volume of wastes	○	◐	●	◐	●
Short-term effectiveness	○	●	●	●	●
Implementability	●	●	●	●	●
Cost	●	◐	◐	◐	◐

Neathery Environmental Services

Recommended Alternative for Building 522

Alt 1 – No Action
Alt 2 – Maintain and Optimize Current SVE System
Alt 3 – Excavation with Organic Substrate Backfill
Alt 4 – Bioaugmentation and Soil Vapor Extraction
Alt 5 – Soil Vapor Extraction with Six-phase Heating

Neathery Environmental Services

Source Area Alternatives for Building 301

Alt 1 – No Action
Alt 2 – Permeable Reactive Barrier Maintenance
Alt 3 – Excavation with Organic Substrate Backfill
Alt 4 – Excavation and Bioaugmentation
Alt 5 - Soil Vapor Extraction
Alt 6 – Soil Vapor Extraction with Six-phase Heating

Neathery Environmental Services

Cost Summary for Building 301

Source Area Alternatives	Capital Cost	O&M Cost	Total	O&M Duration
Alt 1 - No Action	$0	$0	$0	NA
Alt 2 - No further action other than maintain PRB	$0	$10,083,894	$10,083,894	150 yrs
Alt 3 - Excavation (vadose & limited saturated), Dewatering for Excavation, backfill with a layer of organic substrate, maintain PRB	$6,628,600	$5,049,744	11,678,344	75 yrs maintain PRB
Alt 4 - Bioaugmentation and Excavation, maintain PRB	$3,145,899	$6,145,723	$9,291,622	75 yrs maintain PRB
Alt 5 - Soil Vapor Extraction with Water Table Depression, maintain PRB	$1,300,255	$7,383,340	$8,683,595.	75 yrs maintain PRB
Alt 6 - Soil Vapor Extraction with Electrical Resistive Heating (ERH), maintain PRB	$2,010,899	$5,050,832	$7,061,731	75 yrs maintain PRB

Neathery Environmental Services

Comparative Analysis of Alternatives for Building 301

Criteria	Alt 1 No Action	Alt 2 No further action other than maintain PRB	Alt 3 Excavation, backfill with a layer of organic substrate, maintain PRB	Alt 4 Bioaugmentation and Excavation, maintain PRB	Alt 5 Soil Vapor Extraction, maintain PRB	Alt 6 Six-phase Heating , maintain PRB
Overall protection of human health and the environment	○	●	●	●	●	●
Attainment of media cleanup standards	○	●	●	●	●	●
Control of source releases	○	●	●	●	●	●
Compliance with waste management standards	○	●	●	●	●	●
Long-term reliability and effectiveness	○	●	●	●	◐	●
Reduction in the toxicity, mobility, or volume of wastes	○	◐	●	●	●	●
Short-term effectiveness	○	●	●	●	●	●
Implementability	●	◐	●	◐	●	●
Cost	●	○	○	◐	◐	◐

Neathery Environmental Services

Recommended Alternative for Building 301

Alt 1 – No Action
Alt 2 – Permeable Reactive Barrier Maintenance
Alt 3 – Excavation with Organic Substrate Backfill
Alt 4 – Excavation and Bioaugmentation
Alt 5 - Soil Vapor Extraction
Alt 6 – Soil Vapor Extraction with Six-phase Heating

Neathery Environmental Services

Source Area Alternatives for Building 360 NW Corner

Alt 1 – No Action
Alt 2 – Permeable Reactive Barrier Maintenance
Alt 3 – Excavation
Alt 4 – Soil Vapor Extraction
Alt 5 – Soil Vapor Extraction with Six-phase Heating

Neathery Environmental Services

Cost Summary for Building 360 NW Corner

Alternatives	Capital Cost	O&M Cost	Total	O&M Duration
Alt 1 - No Action	$0	$0	$0	0
Alt 2 - No further action other than maintain PRB	$0	$71,190,876	$71,190,876	400 yrs maintain PRB
Alt 3 - Excavation to RRS No. 2 residential	$5,680,032	$127,365	$5,807,397	5 yrs monitor after excavation
Alt 4 - Soil Vapor Extraction	$600,299	$938,974	$1,539,273	12 yrs operate SVE
Alt 5 - Electric Resistive Heating & SVE	$2,149,702	$92,053	$2,241,755	5 yrs monitor after ERH

Neathery Environmental Services

Comparative Analysis of Alternatives for Building 360 NWC

Criteria	Alt 1 No Action	Alt 2 No Further Action other than Maintain PRB	Alt 3 Excavation	Alt 4 Soil Vapor Extraction	Alt 5 Six-phase Heating
Overall protection of human health and the environment	○	●	●	●	●
Attainment of media cleanup standards	○	●	●	◐	●
Control of source releases	○	●	●	●	●
Compliance with waste management standards	○	●	●	●	●
Long-term reliability and effectiveness	○	●	●	◐	●
Reduction in the toxicity, mobility, or volume of wastes	○	◐	●	●	●
Short-term effectiveness	○	●	●	●	●
Implementability	●	●	○	●	◐
Cost	●	○	◐	◐	◐

Neathery Environmental Services

Recommended Alternative for Building 360 NW Corner

Alt 1 – No Action
Alt 2 – Permeable Reactive Barrier Maintenance
Alt 3 – Excavation
Alt 4 – Soil Vapor Extraction
Alt 5 – Soil Vapor Extraction with Six-phase Heating

Neathery Environmental Services

Source Area Alternatives for Building 360 Basement

Alt 1 – No Action
Alt 2 – Permeable Reactive Barrier Maintenance
Alt 3 – Bioaugmentation
Alt 4 – Soil Vapor Extraction with Six-phase Heating

Neathery Environmental Services

Cost Summary for Building 360 Basement

Alternatives	Capital Cost	O&M Cost	Total	O&M Duration
Alt 1 – No Action	$0	$0	$0	NA
Alt 2 – No further action other than maintain PRB	$0	$44,796,195	$44,796,195	250 yrs maintain PRB
Alt 3 – Bioaugmentation	$247,105	$299,973	$547,078	3 yr bioaugmentation operation, 3 yrs monitor after bioaugmentation
Alt 4 – Electric Resistive Heating & SVE	$940,592	$92,053	$1,032,645	5 yrs monitor after ERH

Neathery Environmental Services

Comparative Analysis of Alternatives for Building 360 bsmt

Criteria	Alt 1 No Action	Alt 2 No Further Action other than Maintain PRB	Alt 3 Bioaugmentation	Alt 4 Six-phase Heating
Overall protection of human health and the environment	○	●	●	●
Attainment of media cleanup standards	○	●	●	●
Control of source releases	○	●	●	●
Compliance with waste management standards	○	●	●	●
Long-term reliability and effectiveness	○	●	●	●
Reduction in the toxicity, mobility, or volume of wastes	○	◐	●	●
Short-term effectiveness	○	●	●	●
Implementability	●	●	◐	◐
Cost	●	○	◐	◐

Neathery Environmental Services

Recommended Alternative for Building 360 Basement

Alt 1 – No Action
Alt 2 – Permeable Reactive Barrier Maintenance
Alt 3 – Bioaugmentation
Alt 4 – Soil Vapor Extraction with Six-phase Heating

Neathery Environmental Services

Source Area Alternatives for Building 258

Alt 1 – No Action
Alt 2 – DNAPL Extraction and Groundwater Recovery
Alt 3 – Slurry Wall Repair with Limited PRB Installation
Alt 4 – DNAPL Extraction and Extracted Groundwater PRB
Alt 5 – Excavation
Alt 6 – Soil Vapor Extraction with Six-phase Heating
Alt 7 – DNAPL Extraction with Soil Vapor Extraction

Neathery Environmental Services

Cost Summary for Building 258

Alternatives	Capital Cost	O&M Cost	Total	O&M Duration
Alt 1 – No Action	$0	$387,251	$387,251	0
Alt 2 – DNAPL Extraction & Groundwater Recovery	$175,152	$12,891,549	$13,066,701	100 yrs pump & treat for residual recovery
Alt 3 – Slurry Wall Repair & Limited PRBs	$1,836,195	$94,570,050	$96,406,246	1,000 yrs maintain wall
Alt 4 – DNAPL Extraction & PRB on Extracted Groundwater	$1,803,272	$11,110,183	$12,913,455	100 yrs maintain wall and pump
Alt 5 – Excavation	$12,605,967	$2,085,076	$14,691,043	5 yrs pump and treat for residual recovery
Alt 6 – Electrical Resistive Heating	$5,674,496	$5,288,118	$10,962,614	23 yrs pump and treat for residual recovery
Alt 7 – DNAPL Extraction and SVE	$528,665	$13,913,422	$14,442,087	5 yrs SVE, 100 yrs pump and treat for residual recovery

Neathery Environmental Services

Comparative Analysis of Alternatives for Building 258

Criteria	Alt 1 No Action	Alt 2 DNAPL Extraction & Groundwater Recovery	Alt 3 Slurry Wall Repair & Limited PRBs	Alt 4 DNAPL Extraction & PRB on Extracted Groundwater	Alt 5 Excavation	Alt 6 Electrical Resistive Heating	Alt 7 DNAPL Extraction and SVE
Overall protection of human health and the environment	○	●	●	●	●	●	●
Attainment of media cleanup standards	○	◐	●	◐	●	●	◐
Control of source releases	○	●	●	●	●	●	●
Compliance with waste management standards	○	●	●	●	●	●	●
Long-term reliability and effectiveness	○	●	●	●	●	●	●
Reduction in the toxicity, mobility, or volume of wastes	○	◐	●	◐	◐	●	◐
Short-term effectiveness	○	●	●	●	◐	●	●
Implementability	●	●	●	●	●	●	●
Cost	●	◐	○	◐	◐	◐	◐

Neathery Environmental Services

Recommended Alternative for Building 253

Alt 1 – No Action
Alt 2 – DNAPL Extraction and Groundwater Recovery
Alt 3 – Slurry Wall Repair with Limited PRB Installation
Alt 4 – DNAPL Extraction and Extracted Groundwater PRB
Alt 5 – Excavation
Alt 6 – Soil Vapor Extraction with Six-phase Heating
Alt 7 – DNAPL Extraction with Soil Vapor Extraction

Neathery Environmental Services

Source Area Alternatives for Building 348

Alt 1 – No Action
Alt 2 – Institutional Controls Only
Alt 3 – Excavation and LNAPL Pumping
Alt 4 – Soil Vapor Extraction and Passive Bailing

Neathery Environmental Services

Cost Summary for Building 348

Source Area Alternatives	Capital Cost	O&M Cost	Total	O&M Duration
Alt 1 – No Action	$0	$0	$0	NA
Alt 1 – No Action with Institutional Controls (monitor GW for PCB)	$17,424	$422,895	$440,319	NA
Alt 3 – Excavation (vadose zone) & LNAPL pumping	$158,767	$1,044,120	$1,202,887	30 years LNAPL
Alt 4 – SVE and passive bailing	$68,058	$586,216	$654,273	1 year SVE and 30 years LNAPL

Neathery Environmental Services

Comparative Analysis of Alternatives for Building 348

Criteria	Alt 1 No Action	Alt 2 No Action with Institutional Controls	Alt 3 Excavation & LNAPL Pumping	Alt 4 SVE and Passive Bailing
Overall protection of human health and the environment	○	●	●	●
Attainment of media cleanup standards	○	○	●	●
Control of source releases	○	○	●	●
Compliance with waste management standards	○	○	●	●
Long-term reliability and effectiveness	○	◐	●	●
Reduction in the toxicity, mobility, or volume of wastes	○	○	●	●
Short-term effectiveness	○	●	●	●
Implementability	●	●	●	●
Cost	●	◐	○	◐

Neathery Environmental Services

Recommended Alternative for Building 343

Alt 1 – No Action
Alt 2 – Institutional Controls Only
Alt 3 – Excavation and LNAPL Pumping
Alt 4 – Soil Vapor Extraction and Passive Bailing

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Source Area Alternatives for Building 324

Alt 1 – No Action
Alt 2 – Institutional Controls Only
Alt 3 – Excavation
Alt 4 – Soil Vapor Extraction

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Cost Summary for Building 324

Source Area Alternatives	Capital Cost	O&M Cost	Total	O&M Duration
Alt 1 – No Action	$0	$0	$0	NA
Alt 2 – No Action with Institutional Controls (monitor GW for PCE)	$24,055	$389,511	$413,566	30 years
Alt 3 – Excavation (vadose zone)	$312,239	$0	$312,239	NA
Alt 4 - Soil Vapor Extraction	$82,820	$35,440	$118,259	1 year

Neathery Environmental Services

Comparative Analysis of Alternatives for Building 324

Criteria	Alt 1 No Action	Alt 2 No Action with Institutional Controls	Alt 3 Excavation	Alt 4 SVE
Overall protection of human health and the environment	○	●	●	●
Attainment of media cleanup standards	○	○	●	●
Control of source releases	○	○	●	●
Compliance with waste management standards	○	○	●	●
Long-term reliability and effectiveness	○	◐	●	●
Reduction in the toxicity, mobility, or volume of wastes	○	○	●	●
Short-term effectiveness	○	●	●	●
Implementability	●	●	●	●
Cost	●	◐	●	●

Neathery Environmental Services

Recommended Alternative for Building 324

Alt 1 – No Action
Alt 2 – Institutional Controls Only
Alt 3 – Excavation
Alt 4 – Soil Vapor Extraction

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Source Area Alternatives for Groundwater

Alt 1 – No Action – Cease to Operate Groundwater System
Alt 2 – Operate All Current Systems
Alt 3 – Replace Existing System with Permeable Reactive Barrier at Zones 2 & 3 Boundary
Alt 4 – Replace CS-2NB Recovery Wells with Permeable Reactive Barrier
Alt 5 – Replace IWTP and CS-2NB Recovery Wells with Permeable Reactive Barrier

Neathery Environmental Services

Cost Summary for Groundwater

Groundwater Alternatives	Capital Cost	O&M Cost	Total	O&M Duration
Alt 1 – No Action - Cease to Operate the Groundwater Recovery System	$0	$0	$0	NA
Alt 2 – Operate All Current Systems	$0	$12,768,900	$12,087,328	20 years
Alt 3 – Replace the Existing System with PRB at Zones 2 and 3 Boundary	$2,665,108	$8,199,004	$10,323,591	25 years
Alt 4 – Replace CS-2NB Recovery Wells with PRB	$3,369,743	$8,606,003	$11,382,401	25 years
Alt 5 – Replace IWTP and CS-2NB Recovery Wells with PRBs	$4,189,134	$5,924,181	$9,631,598	25 years

Neathery Environmental Services

Comparative Analysis of Alternatives for Groundwater

Criteria	Alt 1 No Action	Alt 2 Operate All Current Systems	Alt 3 Replace the Existing System with PRB at Zones 2 and 3 boundary	Alt 4 Replace CS-2NB Recovery Wells with PRB	Alt 5 Replace IWTP and CS-2NB Recovery Wells with PRBs
Overall protection of human health and the environment	○	●	●	●	●
Attainment of media cleanup standards	○	◐	◐	◐	◐
Control of source releases	NA	NA	NA	NA	NA
Compliance with waste management standards	○	●	●	●	●
Long-term reliability and effectiveness	○	●	●	●	●
Reduction in the toxicity, mobility, or volume of wastes	○	●	●	●	●
Short-term effectiveness	○	●	●	●	●
Implementability	●	●	●	●	●
Cost	●	◐	◐	◐	◐

Neathery Environmental Services

Recommended Alternative for Groundwater

Alt 1 – No Action – Cease to Operate Groundwater System
Alt 2 – Operate All Current Systems
Alt 3 – Replace Existing System with Permeable Reactive Barrier at Zones 2 & 3 Boundary
Alt 4 – Replace CS-2NB Recovery Wells with Permeable Reactive Barrier (and Chromium Bioremediation)
Alt 5 – Replace IWTP and CS-2NB Recovery Wells with Permeable Reactive Barrier

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Technical Review

Page 3-5 and 3-6, Figures 3-2 and 3-3.
Sand pattern different.
Soil Boring SB115 is different in the two Figures
Geologic interpretation has minor technical flaws

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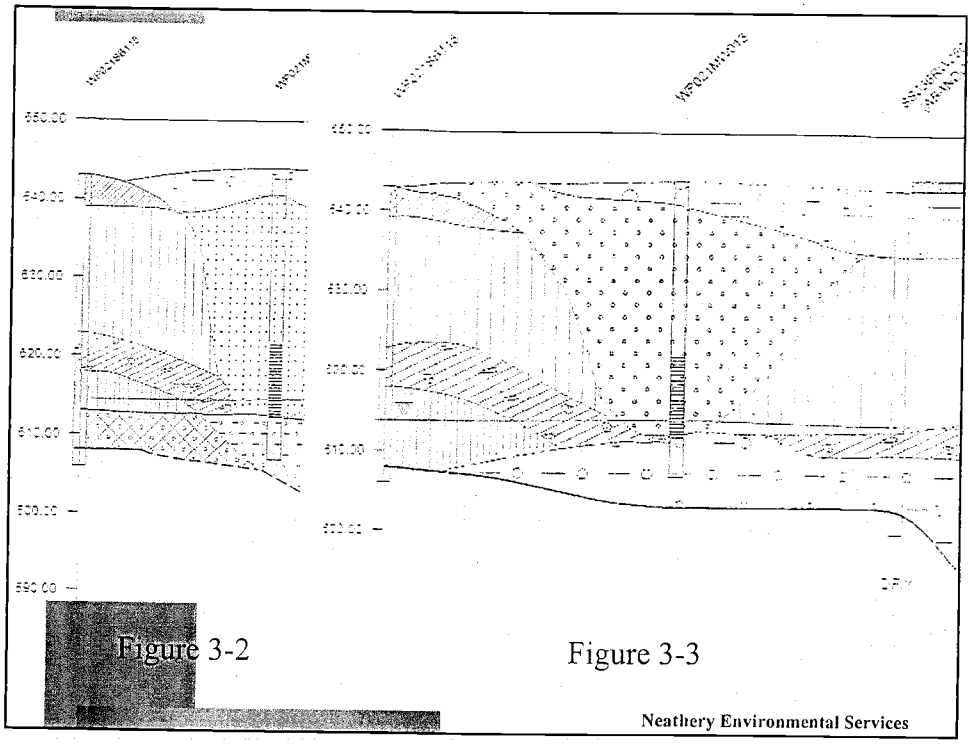

Figure 3-2

Figure 3-3

Neathery Environmental Services

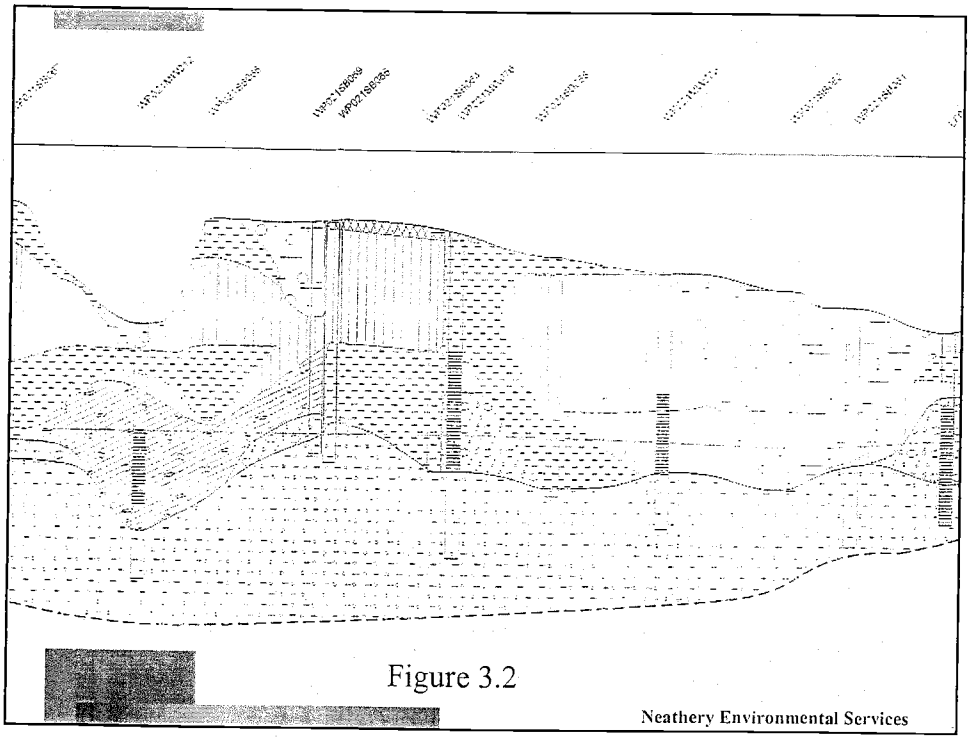

Figure 3.2

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Technical Review

Page 3-25, Figure 3-12.

Gravel strata in SS040RW262 is inverted

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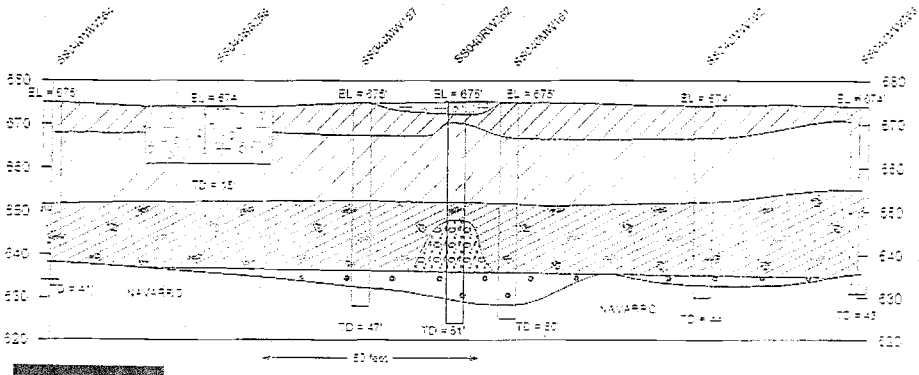

Figure 3.12

Neathery Environmental Services

Technical Review

Page 3-29, Line 2.

PCE terminology used in text – Tetrachloroethene used in table.

3.2.1.7 Building 324

PCE in subsurface soils is the only contamination present that exceeds the RRS No. 2 value (USAF 2004), as shown in Table 3-7.

Table 3-7
Summary of Site-Specific Subsurface COC
Building 324 Area

Chemical of Concern	Location of Maximum Detection	Maximum Detected Concentration	RRS No. 2 Value
Tetrachloroethene	KY123SB010	650 ppb	500 ppb

Bolded concentrations exceed RRS No. 2 values.

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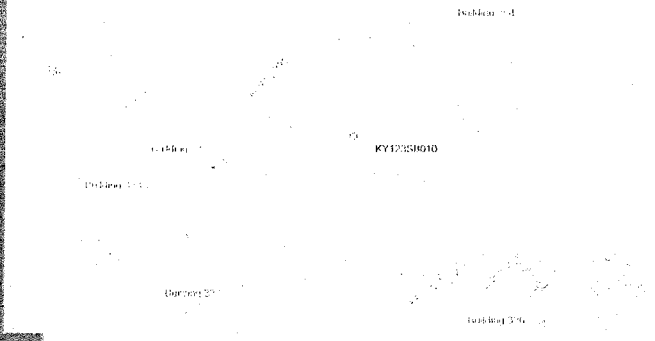
Technical Review

Page 3-30, Figure 3-15.

Borings KY123SB007, 008 and 009 not shown.

Is contamination area circular?



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Technical Review

Page 4-10, Lines 23 and 24.

8,000 gallons of vegetable oil seems like a lot (one gallon per 3.4 yards of soil)

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Technical Review

Page 4-12, Figure 4-2.

How will the groundwater trench continue to operate if excavated? Are there provisions for the protection or replacement of the trench? Are there additional costs? This comment also applies to Figures 4-3 and 4-6.

Page 4-17, Figure 4-5.

How will vitrification impact the trench?

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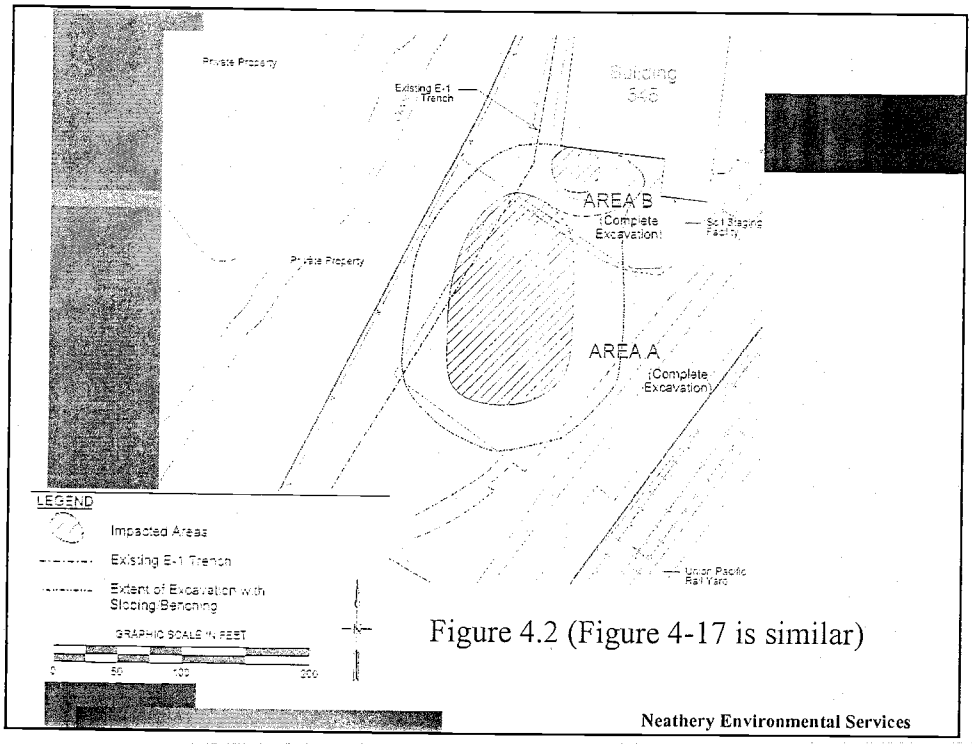
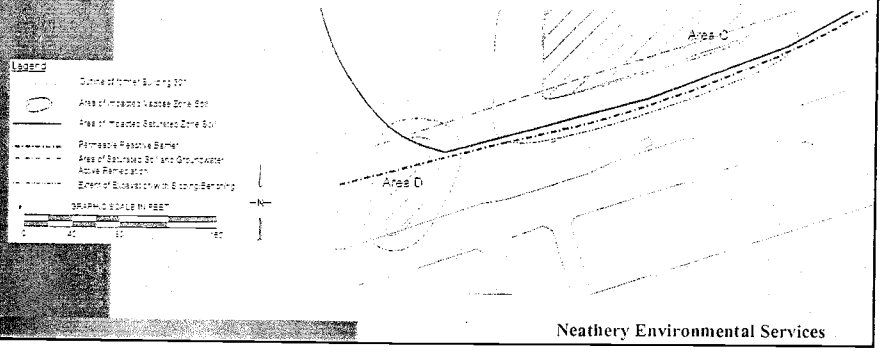


Figure 4.2 (Figure 4-17 is similar)

Technical Review

Page 4-28, Figure 4-11.

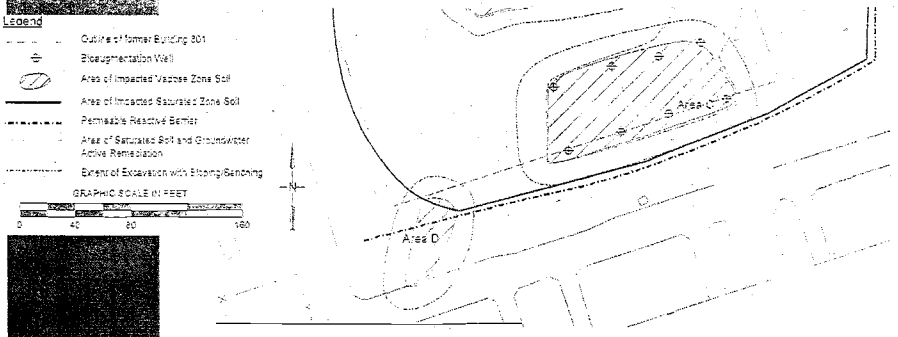
What happens to the permeable reactive barrier in Area D when the soils are excavated? Will it be protected or replaced? Are there additional costs?



Technical Review

Page 4-30, Figure 4-12.

There are no bioaugmentation activities proposed for Area D.



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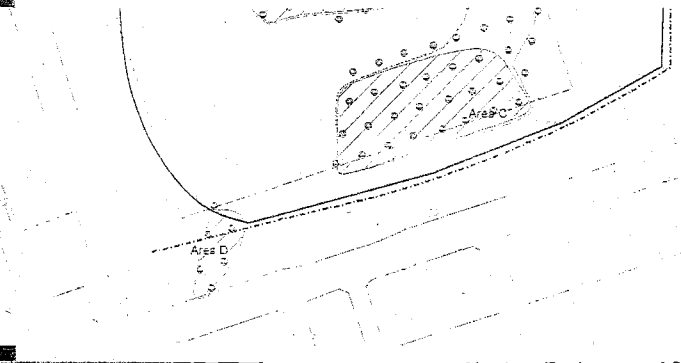
Technical Review

Page 4-31, Figure 4-13.

Will the Soil Vapor Extraction efficiency be impacted by the permeable reactive barrier?



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Technical Review

Page 4-33, Figure 4-14.

Will heating impact the permeable reactive barrier?

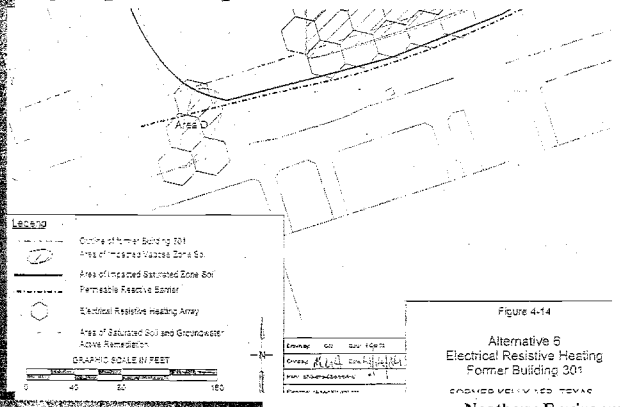

Figure 4-14

Alternative 5
Electrical Resistive Heating
Former Building 301

Neathery Environmental Services

Technical Review

Page 4-38, Lines 11-13.

Since the vapor extraction wells and electrodes will be installed vertically, the surface equipment should keep this area relatively unusable for the duration of the remedial activities.

4.3.4.1.5 Alternative 5: SVE with Six-phase Heating

SVE enhanced by six-phase heating will be used to address the contaminated soils in the northwest corner of Building 360. Six-phase heating will be implemented in hexagonal arrays (30 foot diameters) of vertically inserted electrodes covering the entire impacted area. The active electrodes will extend to approximately 10 feet bgs. A combination of neutral electrode and soil vapor extraction wells will be located at the center of each hexagon. SVE wells will also ring the treatment area to intercept vaporized contaminants migrating from the site. Temporary aboveground systems will be required for power distribution and voltage control, soil vapor extraction blowers, condensate collection, and vapor treatment. The estimated time required for treatment by six-phase heating is 6 months. Industrial activities in the immediate area of the six-phase heating will only be temporarily disrupted during well and electrode installation.

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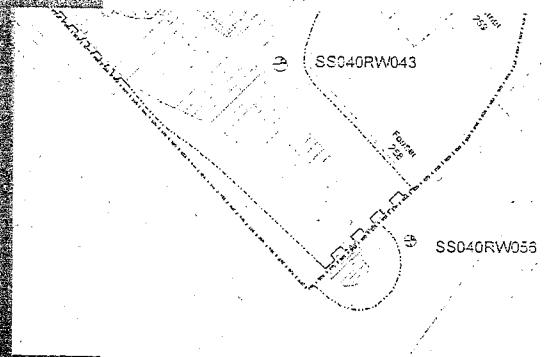
Technical Review

Page 4-51, Figure 4-23.

There will need to be sheet piling on both sides of the slurry wall in the southwest corner.



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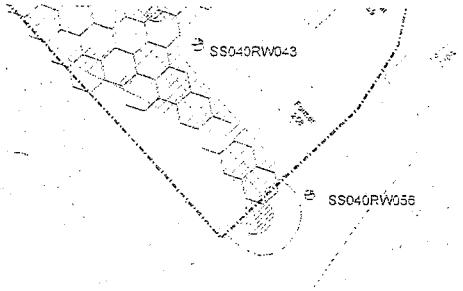
Technical Review

Page 4-52, Figure 4-24.

If the area outside the slurry wall will be excavated, there will need to be sheet piling to protect the slurry wall. There is no mention of the excavation outside the slurry wall. (Page 4-50, Lines 21-38)



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Technical Review

Page 4-55, Lines 6-8.

Can you dismiss the calibration fluid just because it as not been characterized chemically?

4.3.6 BUILDING 348 OWS AND CALIBRATION FLUID SPILL

The contaminants for this area include PCE in the subsurface at the site of the former OWS and LNAPL (calibration fluid) in the subsurface in the parking area and street on the east side of Building 348. The lateral extent of PCE contamination is limited to the immediate area of the former OWS. The estimated volume of contaminated soil is 122 yd^3. The calibration fluid has not been characterized chemically; only fingerprint and total petroleum hydrocarbons (TPH) analyses have been performed. Thus, there are no chemical contaminants that exceed site cleanup criteria. The LNAPL remedial action goal is therefore removal to the maximum extent practicable (MEP). The volume of LNAPL estimated to be present in the subsurface is 62,000 gallons. Table 4-7 summarizes the remediation alternatives for the areas of the Building 348 former OWS and of the calibration fluid.

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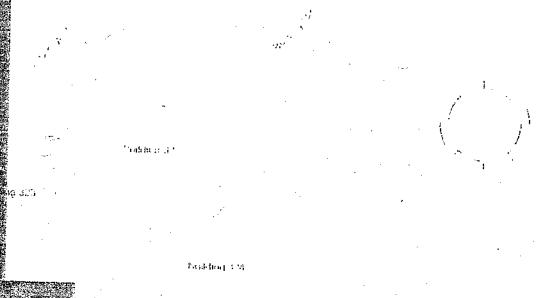
Technical Review

Page 4-62, Figure 4-30.

Is the extent of the contamination circular? Are there controls? The same comment applies to Page 64, Figure 4-31.



Neathery Environmental Services

Technical Review

Page 4-76, Table 4-11.

What are the cost criteria for the three circles? The same comment applies to All the Comparative Analyses tables.

releases	○	◉	◉	◉	◉	◉	◉	◉
Compliance with waste management standards	○	◉	◉	◉	◉	◉	◉	◉
Long-term reliability and effectiveness	○	◉	◐	◉	◉	◉	◉	◐
Reduction in the toxicity, mobility, or volume of wastes	○	◐	◉	◉	◉	◉	◉	◉
Short-term effectiveness	○	◉	◉	◐	◐	◉	◉	◉
Implementability	◉	◉	◉	◉	◉	◉	◐	◐
Cost	◉	○	○	○	○	◐	○	◐

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Technical Review

Page 5-20, Table 5-4.

Delete the reference to Building 522 on the groundwater alternative table.

Chart for Comparative Analysis of Groundwater Alternatives
for Building 522 Corrective Measures

Criteria	Alt 1 No Action	Alt 2 Operate All Current Systems	Alt 3 Replace the Existing System with PRB at Zones 2 and 3 boundary	Alt 4 Replace CS-2NB Recovery Wells with PRB	Alt 5 Replace IWTP and CS-2NB Recovery Wells with PRBs
Overall protection of human health and the environment	○	◉	◉	◉	◉
Attainment of media cleanup standards	○	◐	◐	◐	◐
Control of source releases	NA	NA	NA	NA	NA

Neathery Environmental Services

Technical Review

Page 6-1, Lines 7-22.

The report states that for Site E-1, Alternative 4 is preferable to Alternatives 6 or 8 due to lower assurance of contaminant removal.

Table 4-11 (page 4-76) shows that Alternative 6 is equal or better in all categories.

Neathery Environmental Services

Comparative Analysis of Alternatives for Site E-1

Criteria	Alt 1 No Action	Alt 2 Operate Existing System	Alt 3 Operate Existing System and Flush Vadose Soils	Alt 4 Excavation of Vadose and Limited Saturated Soils, Backfill with a Layer of Organic Substrate, Continue to Operate Existing System	Alt 5 Excavation of Vadose Soils, Continue to Operate Existing System	Alt 6 Excavation of Surface & Metals Soils, six-phase Heating	Alt 7 Soil Vitrification	Alt 8 Bioaugmentation and Excavation of Vadose Soils
Overall protection of human health and the environment	○	◉	◉	◉	◉	◉	◉	◉
Attainment of media cleanup standards	○	◉	◉	◉	◉	◉	◉	◉
Control of source releases	○	◉	◉	◉	◉	◉	◉	◉
Compliance with waste management standards	○	◉	◉	◉	◉	◉	◉	◉
Long-term reliability and effectiveness	○	◉	◐	◉	◉	◉	◉	◐
Reduction in the toxicity, mobility, or volume of wastes	○	◐	◉	◉	◉	◉	◉	◉
Short-term effectiveness	○	◉	◉	◐	◐	◉	◉	◉
Implementability	◉	◉	◉	◉	◉	◉	◐	◐
Cost	◉	○	○	○	○	◐	○	◐

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Technical Review

Page 6-2, Lines 1-14.

The report states that for Building 522, Alternative 4 is preferable. According to Tables 4-13 and 4-14, Alternative 5 appears to be the best. It meets all the criteria, is only moderately higher in costs, and is 10 years shorter in duration.

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Cost Summary for Building 522

Source Area Alternatives	Capital Cost	O&M Cost	Total	O&M Duration
Alt 1 - No Action-discontinue operation of current system	$0	$0	$0	NA
Alt 2 - Maintain current SVE and optimize	$121,475	$335,728	$457,203	5 years
Alt 3 - Excavation (vadose & saturated), Dewatering for Excavation, backfill with a layer of organic substrate	$649,971	$80,739	$730,710	5 yrs monitor
Alt 4 - Bioaugmentation and Optimized SVE	$384,052	$747,735	$1,131,788	10 yrs operation, 5 yrs monitor
Alt 5 - Soil Vapor Extraction with Six-phase Heating	$1,376,969	$80,739	$1,457,708	5 yrs monitor

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Comparative Analysis of Alternatives for Building 522

Criteria	Alt 1 No Action	Alt 2 Maintain Current SVE and Optimize	Alt 3 Excavation, Backfill with a Layer of Organic Substrate	Alt 4 Bioaugmentation and SVE	Alt 5 SVE with Six-phase Heating
Overall protection of human health and the environment	○	◉	◉	◉	◉
Attainment of media cleanup standards	○	◉	◉	◉	◉
Control of source releases	○	◐	◉	◐	◉
Compliance with waste management standards	○	◉	◉	◉	◉
Long-term reliability and effectiveness	○	◐	◉	◐	◉
Reduction in the toxicity, mobility, or volume of wastes	○	◐	◉	◐	◉
Short-term effectiveness	○	◉	◉	◉	◉
Implementability	◉	◉	◉	◉	◉
Cost	◉	◐	◐	◐	◐

Neathery Environmental Services

Technical Review

Page 6-3, Lines 13-17.

For Building 360 (basement area), the report states difficulties with the bioaugmentation tests, yet recommends bioaugmentation. Alternative 4 appears to rate the same.

6.1.5 SELECTION OF RECOMMENDED ALTERNATIVE FOR BUILDING 360 BASEMENT AREA

Based on the evaluation of alternatives presented in Section 4.5, one alternative was retained for final consideration. This is Alternative 3: bioaugmentation. The other three alternatives were rejected for various reasons. Alternative 1 leaves the majority of the contaminant mass in place and, thus, does not satisfy the RRS No. 2 requirement for contaminant removal. Alternative 2 relies solely on the PRB for protection against contaminant migration and, as a consequence, must be maintained over a long period of time before the source mass is depleted. Alternative 4 is comparable in cost to Alternative 3, but higher. Based on experience with hydraulic control aspects of the Building 360 bioaugmentation test, a bioaugmentation measure may be difficult to implement successfully, thus, an evaluation of recirculation versus flooding mode of bioaugmentation should be performed during the design stage. Alternative 3 is the recommended alternative.

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Comparative Analysis of Alternatives for Building 360 bsmt

Criteria	Alt 1 No Action	Alt 2 No Further Action other than Maintain PRB	Alt 3 Bioaugmentation	Alt 4 Six-phase Heating
Overall protection of human health and the environment	○	◉	◉	◉
Attainment of media cleanup standards	○	◉	◉	◉
Control of source releases	○	◉	◉	◉
Compliance with waste management standards	○	◉	◉	◉
Long-term reliability and effectiveness	○	◉	◉	◉
Reduction in the toxicity, mobility, or volume of wastes	○	◐	◉	◉
Short-term effectiveness	○	◉	◉	◉
Implementability	◉	◉	◐	◐
Cost	◉	○	◐	◐

Neathery Environmental Services

Technical Review

Page 6-3, Lines 18-35.

For Building 258 Alternative 2 scores marginally in attainment of cleanup standards and reduction of toxicity, mobility or volume of waste. Alternative 6 scores better in these areas and cost less.

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Comparative Analysis of Alternatives for Building 258

Criteria	Alt 1 No Action	Alt 2 DNAPL Extraction & Groundwater Recovery	Alt 3 Slurry Wall Repair & Limited PRBs	Alt 4 DNAPL Extraction & PRB on Extracted Groundwater	Alt 5 Excavation	Alt 6 Electrical Resistive Heating	Alt 7 DNAPL Extraction and SVE
Overall protection of human health and the environment	○	◉	◉	◉	◉	◉	◉
Attainment of media cleanup standards	○	◐	◉	◐	◉	◉	◐
Control of source releases	○	◉	◉	◉	◉	◉	◉
Compliance with waste management standards	○	◉	◉	◉	◉	◉	◉
Long-term reliability and effectiveness	○	◉	◉	◉	◉	◉	◉
Reduction in the toxicity, mobility, or volume of wastes	○	◐	◉	◐	◐	◉	◐
Short-term effectiveness	○	◉	◉	◉	◐	◉	◉
Implementability	◉	◉	◉	◉	◉	◉	◉
Cost	◉	◐	○	◐	◐	◐	◐

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Conclusions

- The report was well organized, written clearly and easily understood. There were no distractions caused by typographic error or production problems.
- There are some technical issues that need revision or clarification.
- The recommended alternatives for some of the areas do not seem to correspond with the apparent best alternatives as presented in the tables.

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Recommendations

- Revise or clarify the technical issues listed in this report.
- The recommended alternatives need to be re-evaluated or better explanations provided. The recommended alternative should be apparent from the tables.

Neathery Environmental Services

RAB RECRUITMENT

Goal:

To recruit community members for the January 18, 2005, Kelly RAB community member elections. RAB members have an interest and knowledge of the cleanup and restoration events at Kelly and a desire to work in the cooperative spirit to further efforts in a positive manner

Strategies:

- Use mail, group, and one-on-one contact to spread the message about Kelly and inspire interest in the community
- Use this interest to recruit members for the upcoming elections

Audience:

- Community members who live in the immediate area surrounding Kelly or who have ever worked at Kelly
- Anyone in San Antonio and the surrounding area who has an interest in the environmental and restoration efforts at Kelly

Actions:

- Developed RAB application materials in English and Spanish
- Mailed RAB recruitment packages to an initial list in October 2004
- Called community members involved in local efforts and sent out personalized packets
- Made numerous follow-up calls to people who received RAB recruitment packages
- Mailed out recruitment packages to people who called the public information line and requested them
- Placed an ad in the *San Antonio Business Journal*, *Southside Reporter*, *Lackland Talespinner*, *Kelly Observer*, and *San Antonio Express-News* Neighbors section (All ads ran at least two times)
- Provided RAB application packets at all Speakers' Bureau events and tours
- Posted RAB information fliers on mailboxes in Billy Mitchell Village

- Contacted local schools, businesses, and Greater Kelly Development Authority; obtained permission to run ads in their newsletters (Edgewood, Lockheed-Martin)

- Mailed out RAB application packets in November to everyone on the Kelly newsletter mailing list (more than 400 people)

- Contacted Congressman-elect Henry Cuellar's office to inform them of our recruitment efforts; faxed an application packet to Cuellar's Chief of Staff

- Provided recruitment materials at all RAB and TRS meetings

- Informed people in person and via telephone of January elections to solicit applications and names of people who might be interested in serving on the RAB

- Called people who have expressed an interest in participating on the RAB; sent out applications to interested parties

- Asked RAB members to inform community members and other interested parties of the elections

- Sent application packets to the Southwest Workers' Union

Results:

- As of December 2, we have received four applications (two of the four are current RAB members)

Future Plans:

- Continue to reach out to the community through mailings and newspaper advertisements

- Use word of mouth to enhance recruitment efforts

- Encourage RAB members to solicit applicants from the community they represent

Kelly Restoration Advisory Board (RAB)
Technical Review Subcommittee (TRS)
SUMMARY

10 August 2004
Environmental Health and Wellness Center
911 Castroville Rd.
San Antonio, TX 78237

1. **Attendees:**

Mr. Ashley Allinder	Ms. Norma Landez
Mr. Don Buelter	Mr. Gary Martin
Ms. Rose Campos	Dr. Joel Michalek
Mr. Armando Quintanilla	Mr. Gary North
Ms. Larisa Dawkins	Ms. Abbi Power
Mr. Rodrigo Garcia	Dr. David Smith
Ms. Esmeralda Galvan	Mr. Tim Sueltenfuss
Ms. Coriene Hannapel	Ms. Maria Teran-MacIver
Ms. Tanya Huerta	Ms. Robyn Thompson

2. **Introduction.** Dr. David Smith, RAB/TRS Facilitator, opened the meeting at 6:30 p.m. He explained the new process of using a court reporter to produce meeting transcripts. The transcript and a transcript summary will replace the standard meeting minutes.

3. **ATSDR Reports.** Ms. Maria Teran-MacIver of the Agency for Toxic Substances and Disease Registry (ATSDR) in Atlanta, Georgia summarized three ATSDR documents that have been released as final:

   - 1999 Public Health Assessment
   - Potential Current Air Emissions Exposure for On-base Personnel
   - Past Exposure to Drinking Water from On-base Wells 313 and 314

   Two additional documents, the Health Outcome Data Consultation and the East Kelly Public Health Assessment, have not been released at this time. Ms. Teran-MacIver hopes to release the two documents this fall following a public comment period.

4. **Agent Orange.** Dr. Joel Michalek of the Air Force Health Study Laboratory (AFHSL), Brooks City Base, San Antonio, Texas addressed questions compiled from previous RAB meetings regarding the herbicide commonly known as Agent Orange. He presented a summary of an ongoing Agent Orange study, including background information, current status of the project, scientific terminology commonly used in the report, the three arms of

the study (medical, reproductive outcome, and mortality), and identification of study-related staff within the organization.

5. **Permeable Reactive Barriers (PRBs).** Mr. Don Buelter of the Air Force Real Property Agency/Division Kelly (AFRPA/DC-K) summarized the installation and operation of PRBs at Buildings 301, 360, and 1530; 34th Street; Commercial Street; and Malone Street. Mr. Buelter stated that all PRBs should be installed by the end of the calendar year. If completed, preliminary samples will be taken in November.

6. **BRAC Cleanup Team (BCT).** Ms. Norma Landez (AFRPA/DC-K) reported that the BCT meeting in August was cancelled due to a lack of agenda items. The next BCT meeting will be held on 14 September 2004. Ms. Landez will provide an update at the special RAB meeting scheduled for 14 September 2004.

7. **Spill Summary Report.** Ms. Larisa Dawkins (AFRPA/DC-K) reported that there have been no spills since the last TRS.

8. **Information Repository.** Ms. Larisa Dawkins reported that three items are being placed in the Kelly Information Repositories:

   - 354-B/Industrial Wastewater Collection System Revised Final Closure Report
   - 654-B/Semiannual Compliance Report for July 2004
   - 2004 RAB meeting audio tapes

9. **Action Items.** No action items were assigned.

10. **Next Meeting.** The next regularly scheduled TRS meeting has been replaced with a special RAB meeting to discuss the July 2004 Semiannual Compliance Report. The special RAB meeting will be held Tuesday, 14 September 2004, at 6:30 p.m. at the Environmental Health and Wellness Center. The next regularly scheduled TRS meeting is set for Tuesday, 9 November 2004, at the Environmental Health and Wellness Center. The next regularly scheduled RAB meeting is set for Tuesday, 19 October 2004, at Kennedy High School.

11. **Adjourn.** The meeting adjourned at 9:06 p.m.

Restoration Advisory Board (RAB)
Technical Review Subcommittee (TRS) Meeting Minutes
Environmental Health and Wellness Center

June 8, 2004

Attendees:
Mr. Adrian Cortes, RAB Community Representative Alternate
Ms. Gloria Ramos-Cortes, RAB Community Representative Alternate
Mr. Henry Galindo, RAB Community Representative
Mr. Sam Murrah, RAB Community Representative
Mr. Pete Muzquiz, RAB Community Representative
Mr. Rodrigo Garcia, RAB Community Representative
Mr. Nazirite Perez, RAB Community Representative
Mr. Don Buelter, Air Force Real Property Agency (AFRPA)
Mr. John Glass, AFRPA
Mr. Ashley Allinder, AFRPA
Ms. Norma Landez, AFRPA
Ms. Larisa Dawkins, AFRPA
Mr. Gary Martin, Greater Kelly Development Authority (GKDA)
Ms. Kyle Cunningham, Metro Health
Ms. Linda Kaufman, Metro Health
Mr. Gary Miller, U.S. Environmental Protection Agency (EPA)
Mr. Mark Weegar, Texas Commission on Environmental Quality (TCEQ)
Ms. Abigail Power, TCEQ
Mr. Tim Sueltenfuss, Booz Allen Hamilton (Booz Allen)
Ms. Megan Mabee, Booz Allen
Ms. Christine Best, Booz Allen
Ms. Susan Hook, Booz Allen
Ms. Lynn Myrick, Booz Allen
Dr. David Smith, Smith and Associates (Facilitator)
Ms. Brittany Watts, Smith and Associates
Mr. Rick Rogus, CH2M HILL
Ms. Coriene Hannapel
Ms. Allyson Feist
Ms. Amy Pletz
Ms. Robin Campos
Reverend Bee Dee Doublet
Ms. Rose Ramos
Ms. Lupe Rios
Ms. Rebecca Silva
Ms. Diane Alvarez
Ms. Blanca Ridgeway

The meeting began at 6:31 p.m.

Introductions
Dr. David Smith
Dr. Smith introduced himself as the meeting facilitator and welcomed all RAB members and meeting attendees. He stated that the purpose of the TRS meeting is for the RAB to review technical information.

Mr. Nazirite Perez asked if the RAB Charter was going to be discussed. Dr. Smith said it was not on the agenda for this meeting but will be addressed at the July RAB meeting.

Dr. Smith reviewed the meeting agenda and the supplemental packet information.

January 2004 Semiannual Compliance Plan Report
(July-December 2003)
Mr. Rick Rogus
Mr. Rogus introduced himself as a contractor with CH2M HILL and stated that he would be providing a brief review of the compliance plan report data. He said that the purpose of the project was to fulfill the monitoring and reporting requirements of the compliance plan issued by the Texas Commission on Environmental Quality (TCEQ). He stated that his presentation would give an annual "snapshot" of groundwater plumes.

He explained that during the compliance plan breakout, CH2M HILL reviewed 14 Solid Waste Management Units (SWMUs), 4 Resource Conservation and Recovery Act (RCRA)-permitted units, and Leon Creek. They did annual groundwater sampling of the waste management areas and sampled 461 monitoring wells on and off base from April - June 2003. Those samples were analyzed for volatile organic compounds (VOCs), metals, cyanide, pesticides, and polychlorinated biphenyls (PCBs [Zones 1 and 2 only]). He stated that there have been decreases in the magnitude of chlorinated solvents in the source areas and just downgradient of the remedial systems that have shown to be occurring in the following areas: Zone 4 off base, around recovery systems in Zone 2 near Leon Creek, WP022 (E-3) source area, and downgradient of Site SS040 (i.e. Site MP). He added that the VOC concentrations in the shallow groundwater have been reduced over time at E-3 and now remain stable and confined within the recovery system perimeter.

Mr. Rogus explained that Leon Creek is a small, shallow, slow-moving urban stream flowing through western San Antonio. He added that there is a lack of tree cover along the creek that causes high water temperatures. It is also highly susceptible to flash flooding and has become a receptacle for urban runoff. He stated that when they reviewed Leon Creek, they did physical, chemical, and biological assessments. During July 2003 they measured the stream flow in four segments, flow from selected seeps (six), outfalls (five), and surface water elevations at 23 stations. He added that they created sketches and took photographs to document changes in the stream's physical appearance.

In July 2003, CH2M HILL did a chemical assessment of the creek and sampled 31 surface water stations, 28 sediment stations, eight outfalls, and five seeps, and then analyzed the samples for VOCs, semi-volatile organic compounds (SVOCs), metals, cyanide, and pesticides/PCBs. During July 2003, they also conducted the following tests at eight stream stations and three reference stations: chronic toxicity, fish tissue, and an EPA rapid bioassessment.

Mr. Rogus said that the initial screening showed five surface water and 27 sediment contaminants exceeding the Texas Water Quality Standard (TWQS) guidelines, which are conservative, general guidelines. The chronic toxicity results showed potential surface water sediment toxicity at some of the stations. He added that an ecological risk assessment is being conducted to follow up on these results.

Mr. Adrian Cortes asked if he could have a copy of the report. Mr. Rogus replied that the report is four volumes of nearly 1,000 pages. He said the reports are available for the community to review at the San Antonio Central Library and the Environmental Health and Wellness Center (EHWC).

Mr. Cortes asked if oils were dumped at any of the sites like E-3. Ms. Norma Landez replied that oils were managed at the site but were removed along with the soil. She added that the Air Force then dug a pit and installed a containment system in 1994. She said that the plume has shrunk since then.

Ms. Coriene Hannapel asked what is done with the water after the remediation process. She stated that at Carswell AFB in Fort Worth, they found traces of contaminants in the water after treatment. She asked if the Air Force tests the water that is discharged into Leon Creek after it has been cleaned.

Ms. Landez replied that there are wells installed to check the water periodically to ensure that it meets state standards.

Mr. Mark Weegar added that the state monitors what is discharged to Leon Creek. He said they are required to meet discharge permit standards, and are allowed to discharge certain concentrations in Leon Creek.

Mr. Cortes asked if the Air Force is meeting its discharge permit standards. He also asked what is found in the water after it is treated. Mr. Weegar stated that the TCEQ is not so much concerned with what comes out of the groundwater because the goal is to remediate the site and the higher the chemical concentrations in the water, the more efficient the remediation system is.

Mr. John Glass added that the water is governed by the state regulatory permit. He said the Air Force samples monitoring wells to verify that the water is clean. He stated that their goal is to see that the plume shrinks so they can close the site. He added that site E-3 is progressing towards closure as the remediation is working very well there.

Mr. Weegar said that the monitoring wells help define the plume area. He added that there are always higher levels of contamination near source areas. They installed recovery wells to help recover groundwater that is contaminated around those areas along with the remediation systems. He said that the annual reports determine how well the systems work and what can be done to optimize these systems to move faster through the cleanup. He added that they thoroughly check the systems to ensure they are working properly as they are based on modeling. They can be adjusted to work better if needed.

Permeable Reactive Barrier (PRB) Performance Update
Mr. John Glass

Mr. Glass of the Air Force Real Property Agency (AFRPA) introduced himself and stated that he would be reviewing each PRB site and the results to date. He stated that the Zone 5 Plume A PRB was installed to prevent additional off-base migration of plume A and accelerate degradation of the off-base portion of the plume. He said that the chemicals of concern were trichloroethylene (TCE [primary]), 1,2-dichloroethene (DCE), and vinyl chloride (VC). He added that the PRB installation was completed in September of 2002. The plume has retreated, and the PRB is in place to prevent any further contamination. The PRB was 650 feet in length. To date, the off-base portion of the plume is currently below the maximum concentration limits (MCLs).

Mr. Rodrigo Garcia asked if there was any residual contamination that needs to be pumped out of the PRB for maintenance reasons. Mr. Glass replied no.

Mr. Glass stated that the purpose of the Building 301 PRB was to contain the groundwater source there. He added that the chemicals of concern were perchloroethylene (PCE [primary]), TCE, 1,2-DCE, and VC. The PRB installation was completed in late June 2003 with a total length of 690 feet. The first round of samples was collected in December 2003. Nine wells were sampled, and the results indicated low concentrations (or nondetect) of contaminants within the wall. A second round of samples will be collected in June 2004. Those results should be available by the July 20th RAB.

Mr. Glass stated that the purpose of the building 360 PRB was to contain the groundwater source there. The chemicals of concern were PCE (primary), TCE, 1,2-DCE, and VC. He said that the installation of the PRB was completed in March 2004. The PRB was 800 feet in length with a slurry wall of 400 feet. The first round of samples was collected in May 2004 and the results should be available at the July 20th RAB.

Ms. Hannapel stated that she reviewed a report given to her by Mr. Doug Karas that stated the concentration levels at Building 301 had risen. Mr. Glass responded that there are variants in the plume points, and many things can affect the levels as the seasons and water pathways change. He said that the PRBs do not always work 100 percent effectively at first. There are many variables during the sampling periods. He added that the levels are not measured in months, but years. The annual monitoring helps determine if the PRB is working properly.

Mr. Cortes asked what effect the water has on the community. Mr. Glass replied that based on the exposure pathways, there is no effect on the community. Mr. Weegar added that there are worse effects to the community from the cars they drive than this water.

Mr. Glass stated that the purpose of the 34th Street PRB was to prevent co-mingling of the off-base groundwater source with S-1 plume. The chemicals of concern in this area are PCE (primary), TCE, 1,2-DCE, and VC. The installation was completed in April 2004. The PRB is 540 feet in length, with a planned 100-foot extension in late summer 2004. The first rounds of samples are anticipated to be collected in approximately four months.

Mr. Garcia asked about the exposure levels by the community. Mr. Weegar stated that people do not drink this water. He added that there has also been a fishing advisory at Leon Creek warning people not to consume the fish. He said that the Air Force and the state work together hand-in-hand to make sure people are not affected. He concluded that the concentrations of the chemicals in the water do not affect air quality.

Zones 2 and 3 Corrective Measures Study (CMS)
Mr. Ashley Allinder
Mr. Allinder of AFRPA explained that sites were identified through the RCRA Facility Investigation process. The CMS evaluates and recommends soil and groundwater final remediation alternatives. AFRPA has submitted the Draft Final Zones 2 and 3 CMS to the TCEQ and EPA upon completion.

He said the criteria for detailed evaluation of alternatives were the protection of human health and the environment. In order to meet this need, the Air Force had to attain media cleanup standards; control sources of release; comply with applicable standards for management of wastes; view long-term reliability and effectiveness; watch for reduction of toxicity, mobility, or volume; and monitor short-term effectiveness and cost. He said that source removal involves excavation, soil vapor extraction, electrical-resistive heating, bioaugmentation, and soil flushing. Source control involves technologies such as installing a slurry wall, PRB, pump-and-treat system, and vitrification. For the groundwater in Zones 2 and 3, he said they preferred the following controls:

- Building 301 - iron PRB
- Building 360 - iron PRB and slurry wall
- Building 258 - slurry wall and hydraulic containment
- Zones 2 and 3 groundwater plume - iron PRB and slurry wall
  - 940-linear foot PRB
  - 820-linear foot slurry wall

Mr. Allinder said that the Zones 2 and 3 CMS is available for review at the San Antonio Central Library, Kelly Library, and the EHWC. A proposed plan is being developed for the Zones 2 and 3 CMS report, which will provide information regarding the evaluated and preferred alternatives for each site. He added that there will be an information session for the Zones 2 and 3 CMS and Proposed Plan prior to the July 20th RAB meeting. This is a great opportunity to ask questions and provide comments on these documents.

Administrative

BRAC Cleanup Team (BCT) Update
Ms. Norma Landez
Ms. Landez stated that there was not a BCT meeting this month. However, there will be one in July, and those details will be reported at the July RAB meeting.

Spill Summary Report
Ms. Brittany Watts
Ms. Watts stated that there were no spills to report.

Documents submitted to the TRS
Ms. Watts
Ms. Watts stated that there were many documents submitted and a list was provided in the RAB member packets.

Action Items
Dr. Smith
Dr. Smith reviewed the action items from the December 2003 TRS meeting:

- **Provide copies of Texas Department of Health's Leon Creek fishing advisory report to RAB members.**
  Copies of this report are provided under the project update tab of RAB member binders.

- **Kelly to verify that Site OT-1 Air Emissions information has been reported to the Agency for Toxic Substances and Disease Registry (ATSDR).**
  The Air Force has not been able to verify that ATSDR received a copy of the report; however, the Air Force provided ATSDR with all the documents that it had concerning past air emissions. A final exhaustive list of all references utilized by ATSDR will accompany the Final Past Air Emissions Report.

- **Provide listing of Interstate Technology and Regulatory Council (ITRC) technical training available for consideration as RAB/TRS training.**
  Copies of this list are provided under the project update tab in RAB member binders.

- **Provide updates on natural attenuation.**
  The Air Force will continue to provide updates on the environmental cleanup at Kelly.

- **Provide copies of 2004 Annual Work Plan to RAB members for the development of future Technical Assistance for Public Participation (TAPP) funding requests.**
  Copies of this plan are provided under the project update tab in RAB member binders.

There were no action items resulting from the June meeting.

Dr. Smith announced that the next RAB meeting was scheduled for July 20, 2004, at Kennedy High School Auditorium at 6:30 p.m. He also stated that the next TRS meeting was scheduled for August 10, 2004, at the EHWC.

The meeting adjourned at 8:32 p.m.

Proposed Meeting Agenda Items

December • TAPP Review of the Zone 2/3 CMS (Mr. Neathery)	**January** • Elections	**February** • TAPP Review of the ATSDR Past Air Emissions Study (Dr. Squibb, University of Maryland)	**March** • RAD Update: Building 361
April • Update on all projects (Mr. Buelter)	**May**	**June**	**July**
August	**September**	**October**	**November**

Pending agenda items: 1. Alternative Water Uses

[redacted]
San Antonio, TX 78213
December 8, 2004

Mayor Edward D. Garza
[redacted]

Dear Mayor Garza,

The U.S. Agency for Toxic Substances and Disease Registry (ATSDR) recently released a health consultation on past toxic air emissions from the former Kelly Air Force Base (AFB). ATSDR concluded that the uncertainty of available data and the elevation of leukemia incidences in the downwind runway approaches in zip codes 78211, 78226, 78227, 78235, 78236, 78241, 78237, and 78242 warranted further evaluation.

Mayor, in order to comply with ATSDR's findings, the Executive Committee of the Kelly AFB Restoration Advisory Board (RAB) respectfully requests that the Public Center for Environmental Health contract with Southwest Research, the University of Texas Health Science Center, or any other agency for an independent evaluation of leukemia incidences linked to 1, 3-butadene emissions as outlined in ATSDR's health consultation document and PowerPoint presentation made to the RAB on November 9, 2004.

Mayor, funds are currently available to comply with this request. The San Antonio Metropolitan Health District has established the Public Center for Environmental Health through a $5 million grant ($500,000 per year for 10 years) from the U.S. Air Force. The purpose of this grant is to investigate the relationships between environmental contaminants from Kelly AFB and the adverse health effects to area residents north and southeast of the base.

To comply with this request will require the contractor to gather relevant health and toxicological data, mortality information, expert research, house-to-house surveys and blood testing of a significant number of residents living within the boundaries of the zip codes outlined in the ATSDR health consultation document.

The final document from the subcontractor should describe the methodology used to estimate exposures to air emissions and leukemia incidences. Information in the document should be organized for easy readability by the affected community. Scientific details and methodology information should be placed in the appendices. The main body of the document should contain a summary of the public health assessment, findings and recommendations with supporting information in the appendices.

Mayor, our next meeting is scheduled for January 18, 2005. It is our desire to present your response to the entire RAB and affected community members on this date.

Your support and approval of this health evaluation is earnestly solicited by the RAB executive committee. We also stand ready to meet with you or answer any questions you may have. Please call me at (210) 340-0980 for further information or if you would like to address the Board and affected community members at our next meeting on January 18, 2005.

Sincerely,

Robert Silvas
Interim RAB Community Co-chair

CC: RAB members and alternates
Councilman Richard Perez
Councilwoman Patti Radle
Councilman Enrique Barrera
Congressman Ciro D. Rodriguez
Congressman-elect Henry Cuellar
Senator John Cornyn
Senator Kay Bailey Hutchison
Air Force Center for Environmental Excellence
Air Force Real Property Agency
Air Force Institute for Operational Health
Agency for Toxic Substances and Disease Registry
Public Center for Environmental Health
San Antonio Metropolitan Health Department
Honorable Nelson Wolf
Bexar County Commissioner Robert Tejeda

[redacted]
San Antonio, TX 78213
December 17, 2004

Adelina Carrillo
[redacted]

Dear Ms. Carillo,

As per our earlier conversation, I am writing regarding the former Kelly Golf Course. I would like to request a tour and to find out about the future use of this golf course. I would also like to know who made the decision to close the golf course, and find out how to access this area for additional soil sampling and investigation of buried materials. Additionally, please provide me with a list of current Community Council on Restoration (CCR) members and a 2005 schedule of meeting dates.

Sincerely,

Mr. Robert Silvas
Interim Co-chair
Kelly Restoration Advisory Board

Cc: Colonel Thelma Hales
Mr. Wilberson, 37th Civil Engineering Environmental Flight

[redacted]
San Antonio, TX 78213
December 20, 2004

Distribution: Mr. Rodrigo Garcia, Jr.
Mr. Daniel Gonzales
Mr. Sam Murrah

Dear RAB Member,

Thank you for serving on the Kelly Restoration Advisory Board (RAB). At the end of December, your term will officially end. Elections for the open seats will be held at the January 18, 2005, RAB meeting.

If you would like to run for re-election, you do not have to submit an official election application. Simply indicate your desire to continue serving on the board to the co-chairs at the beginning of the January 18 meeting. Board members not up for re-election will vote on new members.

If you know anyone who is not currently serving on the RAB who would like to run for election, please encourage them to call the number below to request an application. Applications are due by January 4, 2005.

If you have any questions or comments, please contact me at (210) 340-0980 or the Kelly Public Information Line at (210) 925-0956.

Sincerely,

Robert Silvas
Interim RAB Community Co-chair

cc:
RAB Members and alternates

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE