KELLY AFB
TEXAS

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 3347

Kelly Air Force Base Restoration Advisory Board Workshop
19 September 2000 6:30 p.m.
Kelly AFB Chapel

Members/Alternates Present:

Community Members:

Dr. Gene Lené
RAB Community Co-Chair
Mr. George Rice
Ms. Peggy Grybos
Mr. Phillip Farrell (Mr. Roberson's alt), GKDA
Ms. Tanya Huerta
Mr. Paul Person
Mr. Scott Lampright (Mr. Mixon's alt.)
Mr. Sam Murrah
Mrs. Dominga Adames
Mr. Tony Martinez

Public Members:

Mr. Adam Antwine, (Mr. McCullough's Alt.)
RAB Installation Co-Chair
Mr. John A. Jacobi, TDH
Mr. Sam Sanchez, SAMHD

Members Absent Without Alternate:

Mr. Názirite Pérez
Mr. Mark Puffer
Mr. Alfred Rocha
Mr. Roy Botello
Ms. Annalisa Peace
Mr. Kent Iglesias
Ms. Laura Stankosky
Mr. Mark Weegar
Mr. Nicolas Rodriguez, Jr., BMWD
Mr. Edward Weinstein
Mr. Armando Quintanilla

I. Call to Order

A. Dr. Gene Lené, Co-Chair, called the meeting to order at 6:30 p.m.

B. Mr. John Folk-Williams explained that this workshop is designed to allow the RAB to work in parallel with the upcoming September 25 public forum. He also reviewed the meeting goals.

II. Review of the Shallow Groundwater Decision Process

A. Mr. William Ryan, Air Force Base Conversion Agency (AFBCA), walked the RAB through the decision process. He pointed out that the Air Force usually develops a set of solutions and then asks the community to comment. However, in the case of Kelly AFB the Air Force is first gathering community concerns, issues, and options for the cleanup and will then incorporate them into potential solution sets. Those potential solutions will be evaluated by the community and their recommendations will be featured in the Draft Corrective Measures Study (CMS) submitted to the Texas Natural Resource Conservation Commission (TNRCC) (see Attachment 1).

B. Discussion:

Q - Mr. George Rice asked if the CMS was available.

A - Mr. Ryan said the report would not be ready until March. However, the

Comment: Mr. Sam Sanchez stated that taking all the comments and correlating them

into a solution was a complicated process.

Comment: Ms. Tanya Huerta expressed concern that the public does not have the expertise to evaluate the solutions. Ms. Huerta questioned the community's ability and technical expertise to take public input and convert it to criteria. She is not comfortable with what happens between the first stage of public meetings, which is to evaluate and recommend options and the second stage, which has the Air Force submitting the CMS with, recommended options to the TNRCC.

Response: Mr. Ryan said that to date three public meetings had been held to collect community issues and concerns. Each potential solution would be looked at in light of the criteria derived from the public input. At the next RAB workshop, the RAB had to take a hard look at the criteria and remedy elements. The Air Force (AF) wants the community to look at the developed criteria to make sure it addresses their concerns.

A - Mr. Ryan said that this is done for each potential solution set and will be presented in December.

Comment: Several RAB members expressed concern that not enough of the public was involved, and that the material should be simplified.

Comment: Ms. Peggy Grybos suggested that the inclusion of a survey, as part of a newsletter, would be a good way to get more input.

Response: Mr. Ryan said that her input would be considered.

Q - Mr. Sam Murrah asked if soil cleanup would be addressed.

A - Mr. Ryan said soil cleanup would be addressed as part of the shallow groundwater cleanup.

Q - Mr. Martinez asked if the TNRCC would be holding public meetings on the CMS.

A - Mr. Ryan said that is the AF's responsibility, and two educational/information meetings would be held. The AF would hold one meeting dedicated to receiving public comments.

Comment: Mrs. Dominga Adames complained that meeting notices were not arriving in a timely manner. She offered to pass notices to her neighbors.

Response: Ms. Vanessa Musgrave, AFBCA, told her they were aware of the delays and were working to correct the problem.

Comment: Mrs. Adames complained that by the time the neighborhoods find out anything, everything is already done.

Response: Mr. Ryan assured her that nothing had been decided on the CMS Zone 4.

III. Discuss Criteria to Evaluate Future Potential Alternative

A. Mr. Tim Underwood, AFBCA Contractor, led a discussion on the criteria used in evaluating potential solution alternatives. He explained the AF is not screening the criteria input, but accepting it. The goal is to ensure that all of the remedy elements the community wants are included. In order to obtain the community-based solution, it is important that the discussion on criteria be within the community.

B. Discussion:

Comment: Ms. Huerta questioned the technical nature of the wording from the introduction through the draft criteria. She also stated that she could not recognize the community's words. Ms. Grybos joined her in stating that the contractor was

the stations would answer questions and record any comments. Spanish speakers would be available either with the group or at the poster station. The small group leaders would provide an overall presentation of the community-based solution program and work with the groups in developing criteria and categories of concern. The group leaders would also solicit potential solution suggestions.

B. Discussion:

Comment: Ms. Huerta asked for more tables at the public forums besides those already identified. Mr. Sanchez suggested a health table manned by the AF or SAMHD. Mr. Rice asked for something that would explain property rights and deed restrictions.

Response: Mr. Underwood suggested tables on health solutions and property values. He also pointed out that there was a complaint from the last meeting of there being too many tables.

Comment: Ms. Huerta suggested displaying an organization chart of who is responsible for what action.

Response: Mr. Underwood agreed; he said it would be done.

Comment: Dr. Lené asked if the RAB should be represented with a RAB poster explaining who they are and what they do. He volunteered to man the table.

Response: The RAB agreed that would be a good idea.

V. Meeting Wrap Up

A. Mr. Antwine reminded new members that the offer for an orientation tour was still open. Interested members were directed to Ms. Musgrave.

B. Mr. Antwine also reported progress is being made on the removal of fuel tanks located near Growdon Drive. Every effort is being made to minimize disruption in the area due to the removal actions. A tour of the area and a removal activity timetable would be available in the next 30 days. Mr. Dick Walters, Public Affairs, will get with Mrs. Adames to ensure the North Kelly Garden neighbors can participate.

VI. Adjourned at 8:40 p.m.

Attachments

1. Community Workshop and Zone 4 CMS Process handout

#10
Junta Asesora de Restauración de la Base la Fuerza Aérea Kelly

19 de septiembre 2000, 6:30 p.m.
Capilla de Kelly AFB (por sus siglas en inglés)

Miembros / Suplentes presentes:

Miembros de la Comunidad:

Dr. Gene Lené, Copresidente representando a la comunidad	**Miembros representando al gobierno:**
Sr. Geoge Rice	Sr. Adam Antwine (suplente del Sr. McCullough), Copresidente de instalación del RAB (por sus siglas en inglés)
Srta. Peggy Grybos	Sr. Mark Weegar, TNRCC (por sus siglas en inglés)
Sr. Phillip Farrell (suplente del Sr. Roberson), GKDA (por sus siglas en inglés)	Srta. Laura Stankosky, USEPA (por sus siglas en inglés)
Srta. Tanya Huerta	Sr. Sam Sánchez, SAMHD (por sus siglas en inglés)
Sr. Paul Person	Sr. John A. Jacobi, TDH (por sus siglas en inglés)
Sr. Scott Lampright (suplente del Sr. Mixon)	Sr. Nicolás Rodríguez, Jr., BMWD (por sus siglas en inglés)
Sr. Sam Murrah	
Sra. Dominga Adames	
Sr. Tony Martínez	
Miembros ausentes sin suplente:	
Sr. Názirite Pérez	Srta. Laura Stankosky
Sr. Mark Puffer	Sr. Mark Weegar
Sr. Alfredo Rocha	Sr. Nicolás Rodríguez, Jr., BMWD (por sus siglas en inglés)
Sr. Roy Botello	Sr. Edward Weistein
Srta. Annalisa Peace	Sr. Armando Quintanilla
Sr. Kent Iglesias	

I. Se abre la sesión

A. El Dr. Gene Lené, Copresidente, abrió la sesión a las 6:30 p.m.
B. El Sr. John Folk-Williams explicó que esta mesa de trabajo está diseñada para permitirle al RAB (por sus siglas en inglés) que trabaje en conjunto con la sesión pública programada para el 25 de septiembre. También se revisaron los objetivos de la reunión.

II. Revisión del proceso de decisión del agua subterránea poco profunda

A. El Sr. William Ryan de la Agencia de Conversión de la Base de la Fuerza Aérea, explicó detalladamente el proceso de decisión. Enfatizó que generalmente la Fuerza Aérea desarrolla un conjunto de soluciones y luego le pide a la comunidad que dé sus comentarios. Sin embargo, en el caso de Kelly AB (por sus siglas en inglés), la Fuerza Aérea primero está reuniendo las preocupaciones, problemas y opciones que tiene la comunidad para la limpieza y después los incorporará al posible conjunto de soluciones. La comunidad evaluará las posibles soluciones y sus recomendaciones se publicarán en el Estudio de Medidas Correctivas (CMS, (por sus siglas en inglés) que se le presentará a la Comisión para la Conservación de Recursos Naturales de Tejas (TNRCC, por sus siglas en inglés), (ver documento adjunto No. 1).

B. Discusión:

P - El Sr. George Rice preguntó si estaba disponible el CMS (por sus siglas en inglés)

R – El Sr. Ryan dijo que el informe no estará disponible sino hasta marzo. Sin embargo, [NOTA DEL TRADUCTOR: oración incompleta en el documento original]

Comentario – El Sr. Sam Sánchez expresó que el trabajo de reunir todos los comentarios y unificarlos para obtener una solución era un proceso complicado.

Comentario – La Srta. Tanya Huerta mencionó que su preocupación era que el público no tiene la experiencia necesaria para evaluar las soluciones. La Srta. Huerta cuestionó la capacidad y experiencia técnica de la comunidad como para escuchar información pública y convertirla en un criterio. No se siente a gusto con lo que sucede entre la primera etapa de las reuniones públicas, que es cuando se hace la evaluación y se hacen recomendaciones de opiniones y la segunda etapa, que es cuando la Fuerza Aérea presenta a la TNRCC (por sus siglas en inglés) el CMS (por sus siglas en inglés) con las opciones recomendadas.

R – El Sr. Ryan dijo que a la fecha se habían realizado tres sesiones públicas para reunir problemas y preocupaciones de la comunidad. Cada una de las posibles soluciones se analizarán a la luz del criterio que derive de la información recibida del público. En la siguiente mesa de trabajo el RAB (por sus siglas en inglés) tenía que analizar detenidamente el criterio y los elementos de corrección. La Fuerza Aérea (AF, por sus siglas en inglés) quiere que la comunidad analice el criterio desarrollado para asegurarse de que está considerando sus preocupaciones.

R – El Sr. Ryan dijo que esto se hace para cada posible solución y que se presentará en diciembre.

Comentario: Varios de los miembros del RAB (por sus siglas en inglés) expresaron su preocupación de que no había muchas personas de la comunidad que estaban participando y que se debían simplificar los materiales.

Comentario: La Srta. Peggy Grybos sugirió que se incluyera una encuesta, como parte del boletín, lo que sería una buena manera de recibir más información.

R – El Sr. Ryan dijo que se consideraría su sugerencia.

P – El Sr. Sam Murrah preguntó si se podía hablar de la limpieza del terreno.

R – El Sr. Ryan contestó que ese tema se manejaría como parte de la limpieza del agua subterránea poco profunda.

P – El Sr. Martínez preguntó que si la TNRCC (por sus siglas en inglés) iba a tener reuniones públicas sobre el CMS (por sus siglas en inglés).

R – El Sr. Ryan dijo que eso es responsabilidad de la Fuerza Aérea y que ya se habían llevado a cabo dos reuniones educativas / informativas. La Fuerza Aérea tendrá una reunión dedicada a recibir comentarios públicos.
Comentario: La Sra. Dominga Gámez se quejó de que no estaban llegando a tiempo las notificaciones de las reuniones. Se ofreció a entregar estas notificaciones a sus vecinos.
R – La Sra. Vanessa Musgrave, AFBCA (por sus siglas en inglés), le contestó que estaban conscientes de los retrasos y que estaban trabajando para corregir el problema.
Comentario: La Sra. Adames se quejó de que para cuando los vecinos se enteraban de algo, ya se habían tomado las decisiones.
R – El Sr. Ryan le aseguró que todavía no se había decidido nada en cuanto al CMS (por sus siglas en inglés) de la Zona 4.

III. Diálogo sobre el criterio para evaluar las posibles alternativas futuras

A. El Sr. Tim Underwood, contratista de la AFBCA, dirigió la discusión sobre el criterio que se utiliza para evaluar las posibles alternativas futuras. Explicó que la Fuerza Aérea no está haciendo pruebas de detención de la información recibida sino que lo está aceptando. El objetivo es asegurar que se incluyan todos los elementos de corrección que quiera la comunidad. Para poder obtener una solución, con base a la información de la comunidad, es importante que haya un diálogo en la comunidad sobre el criterio.
B. Discusión:
Comentario: La Srta. Huerta cuestionó la naturaleza técnica del texto de la presentación del criterio borrador. También dijo que no reconocía las palabras de la comunidad. La Srta. Grybos se unió diciendo que el contratista estaba parafraseando las preocupaciones de la comunidad y que en algunos casos, excluía parte de las programaciones de tiempo. De acuerdo a su ejemplo, dijo que el comentario de seis años para limpiar el agua subterránea se había excluido de las preocupaciones comunitarias.
R – La Srta. Musgrave explicó que muchas personas habían ofrecido un criterio similar con diferentes períodos de tiempo. Se había acordado que se utilizará un rango de años.
R – El Sr. Underwood y la Srta. Musgrave dijeron que trabajarían en ello.
Comentario: El Sr. Sam Sánchez expresó que se les estaba colocando en categorías muy generales y que la Srta. Grybos había sugerido que el título fuera “categorías generales de preocupaciones”.
R – El Sr. Underwood estuvo de acuerdo con ella y dijo que iba a buscar la manera de hacer cambios.
Comentario: El Sr. Rice mencionó que muchos de los comentarios sobre la limpieza que él había escuchado en las reuniones, no se habían incluido. Y que la manera que se había escrito el criterio, hace que se cuestionen los motivos de las personas que los están preparando.

Comentario: El Sr. Tony Martínez dijo que se le está diciendo a la comunidad que las soluciones se basan en sus comentarios, pero que los comentarios se han generalizado y que se le debe explicar eso a la comunidad.
R – La Srta. Musgrave expresó que ya tenían de 264 a 274 comentarios y que todos recibirían una respuesta. La lista de comentarios-preguntas sigue creciendo. El Sr. Underwood dijo que todas las preguntas reales recibirán una respuesta real.
Comentario: La Srta. Huerta dijo que la lista de comentarios debe estar disponible para que la vean las personas. Los comentarios no deben generalizarse, pero deben de expresar lo que en realidad se dijo.
R – La Srta. Musgrave sugirió que la Fuerza Aérea podía mostrar los comentarios y el criterio parafraseado. El Sr. Adam Antwine dijo que podían hacer una referencia cruzada entre las preocupaciones y el criterio. Todos estuvieron de acuerdo que ésta sería una buena solución a un problema potencial y aclararía el problema.
Comentario: El Sr. Rice preguntó que dónde, en el criterio, se hablaba del problema de justicia ambiental.
R – El Sr. Underwood dijo que algunos puntos de la justicia ambiental se mencionaban en el criterio, pero que como algunos no se aplicaban a la limpieza, no se habían incluido. Citó los ejemplos de igualdad de pago por igualdad de trabajo y más empleos diciendo que estos no son parte de las acciones de limpieza. La Srta. Musgrave señaló que esos comentarios no podían ser incluidos. Agregó, además, que esos puntos se enviaran a las personas y agencias correctas para que proporcionaran respuestas.
Comentario: El Sr. Rice quería que se incluyera la re-inyección de agua como una tecnología de limpieza.

C. En la sesión pública de septiembre, se podrán proporcionar a la Srta. Musgrave más comentarios sobre los materiales que se van a usar. Su número de teléfono es 925-2205.

IV. El papel que desempeñara el RAB (por sus siglas en inglés) en la siguiente sesión pública para las soluciones en base a los comentarios de la comunidad

A. La Srta. Musgrave y el Sr. Underwood describieron el formato de la sesión pública de septiembre. El plan era que un grupo pequeño visitara varias estaciones con información sobre la tecnología. En cada estación, les darían una breve explicación de esa tecnología. Las personas presentes en la estación, contestarían las preguntas y registrarían cualquier comentario. Habrá personas que hablan español ya sea con el grupo o en la estación. El líder del pequeño grupo hará una presentación general del programa de soluciones con base en los comentarios de la comunidad y trabajará con los grupos para desarrollar el criterio y las categorías de sus preocupaciones. El líder del grupo también solicitaría sugerencias de las posibles soluciones.

B. Discusión:
Comentario: La Srta. Huerta pidió que hubiera más mesas en la sesión pública aparte de las que se habían identificado. El Sr. Sánchez sugirió que hubiera una mesa de salud con personal de la Fuerza Aérea o de SAMHD (por sus siglas en inglés). El Sr. Rice solicitó que hubiera algo que explicara los derechos de propiedad y las restricciones de los títulos de propiedad.
R – El Sr. Underwood sugirió que hubiera mesas sobre las soluciones de salud y de los valores de la propiedad. También señaló que había habido una queja en la última reunión de que había muchas mesas.
Comentario: La Srta. Huerta sugirió que se mostrara un organigrama señalando quién es responsable de qué acción.
R – El Sr. Undewood estuvo de acuerdo; dijo que así se haría.
Comentario: El Dr. Lené preguntó si debía haber un cartelón del RAB (por sus siglas en inglés) explicando lo que es y lo que hace. Él se ofreció voluntariamente para estar en esa mesa.
R – El RAB (por sus siglas en inglés) estuvo de acuerdo que era una buena idea.

V. Conclusiones

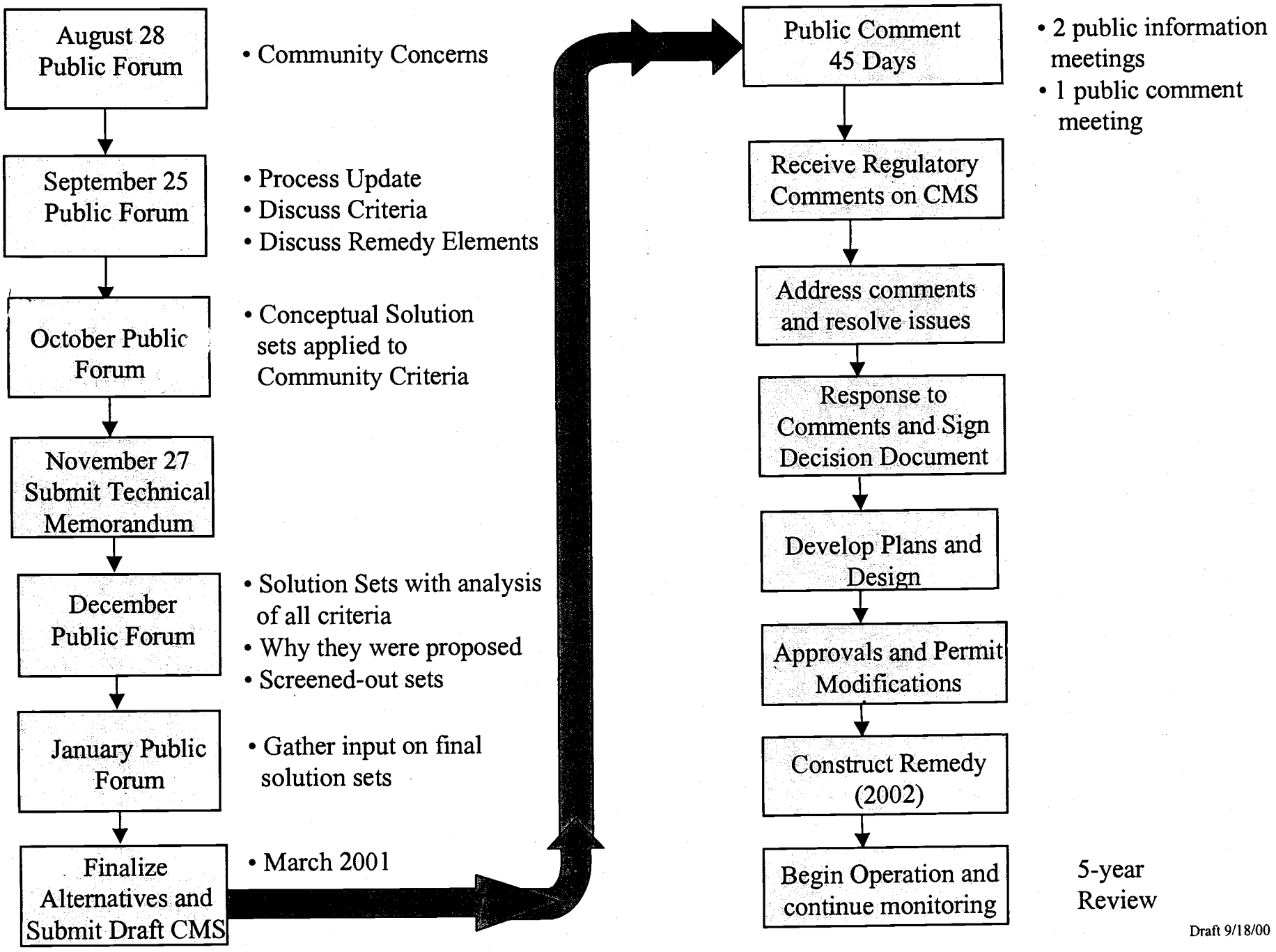
A. El Sr. Antwine le recordó a los nuevos miembros que todavía están invitados a hacer la visita de orientación. Los miembros que estén interesados deben hablar con la Srta. Musgrave.
El Sr. Antwine también reportó el avance que se está realizando en cuanto a la remoción de los tanques de combustibles localizados cerca de Growdon Drive. Se están haciendo todos los esfuerzos posibles para que la interrupción en el área sea la más mínima. En los siguientes 30 días se tendrá disponible una visita por el área y una programación de tiempos de las actividades de remoción. El Sr. Dick Walters, de asuntos públicos, se reunirá con la Srta. Adames para asegurar que puedan participar los vecinos del North Kelly Garden.

VI. Se concluyó la sesión a las 8:40 p.m.

Documentos adjuntos

1. Folleto del avance del CMS de la Zona 4 y de la mesa de trabajo en la comunidad.

Community Workshop and Zone 4 CMS Process



Draft 9/18/00

Considerations for
Monitored Natural Attenuation Supplemental Groundwater Technology to Cleanup Solvents

There are several major issues that must be considered when evaluating cleanup technologies. Those issues are summarized in the categories listed below. Each includes some examples of the considerations that must be answered to further evaluate the potential effectiveness of monitored natural attenuation in use with other cleanup solutions.

This information is provided so that the public will have an opportunity to provide input that can be considered by the Air Force and regulatory agencies. If you have any questions about any of the information provided or how your input will be used please contact the Air Force Base Conversion Agency public hotline at 210-925-0956.

System Installations-Location, Number, and Size: • Number and depth of monitoring wells • Monitoring frequency and additional analyses	Treatment Processes: • Biodegradation • Dispersion • Dilution	Construction and Operation Issues: • Limited noise • Limited traffic management with temporary detours
Property Access: • Property needed for monitoring wells • Continuous, long-term access needed for maintenance • Concerns of adjacent property owners	Time: • Time to design system of monitoring wells and construct • Time to remove or destroy the contaminants	Cost-effectiveness: • Cost to design monitoring well system and construct • Cost to operate, maintain and monitor the wells • Cost to close and remove wells

Comments or suggestions:

Considerations for
Pump and Treat Groundwater Technology for Solvents

There are several major issues that must be considered when evaluating cleanup technologies. Those issues are summarized in the categories listed below. Each includes some examples of the considerations that must be answered to further evaluate the potential effectiveness of pump and treat technology.

This information is provided so that the public will have an opportunity to provide input that can be considered by the Air Force and regulatory agencies. If you have any questions about any of the information provided or how your input will be used please contact the Air Force Base Conversion Agency public hotline at 210-925-0956.

System Installations-Location, Number and Size: • Plume-wide • Spots only • Perimeter • Centerline Leading edge of plumes	Groundwater Treatment Processes: • Activated carbon filters • Ultraviolet oxidation • Air stripping • Disposal of treatment wastes	Construction and Operation Issues: • Treated water discharge, reinjection, or reuse • Noise • Dust controls • Traffic management with temporary detours • Utilities • Disposal of construction wastes
Property Access: • Property needed for treatment plant(s) • Property needed for extraction, reinjection, and monitoring wells • Property needed with continuous, long-term access • Right-of-way needed for piping and utilities • Concerns of adjacent property owners	Time: • Time to design and construct the cleanup • Time to reduce or eliminate the contaminants (i.e., operation, maintenance, and monitoring) • Time to close and remove installations	Cost-effectiveness: • Cost to design and construct • Cost to operate, maintain, and monitor • Cost to dispose of construction and operation wastes • Cost to close and remove installations

Comments or suggestions: See back page

Considerations for
Underground Reactive Wall Groundwater Technology to Cleanup Solvents

There are several major issues that must be considered when evaluating cleanup technologies. Those issues are summarized in the categories listed below. Each includes some examples of the considerations that must be answered to further evaluate the potential effectiveness of underground reactive wall technology.

This information is provided so that the public will have an opportunity to provide input that can be considered by the Air Force and regulatory agencies. If you have any questions about any of the information provided or how your input will be used please contact the Air Force Base Conversion Agency public hotline at 210-925-0956.

System Installations-Location, Number, and Size: • Length, width, and depth of the wall • Number of walls that must be installed • Where they should be placed (i.e., across the flowpath, at discharge points, etc.)	Groundwater Treatment Processes: • Iron filings	Construction and Operation Issues: • Noise • Dust controls • Traffic management with temporary detours • Utilities • Disposal of construction wastes
Property Access: • Property needed for trenches • Property needed for monitoring wells • Property needed with continuous, long-term access • Concerns of adjacent property owners	Time: • Time to design and construct the cleanup • Time to reduce or eliminate the contaminants (i.e., operation, maintenance, and monitoring) • Time to close and remove installations	Cost-effectiveness: • Cost to design and construct • Cost to operate, maintain, and monitor • Cost to dispose of construction and operation wastes • Cost to close and remove installations

Comments or suggestions:

Considerations for
Enhanced Biodegradation Groundwater Technology to Cleanup Solvents

There are several major issues that must be considered when evaluating cleanup technologies. Those issues are summarized in the categories listed below. Each includes some examples of the considerations that must be answered to further evaluate the potential effectiveness of enhanced biodegradation technology.

This information is provided so that the public will have an opportunity to provide input that can be considered by the Air Force and regulatory agencies. If you have any questions about any of the information provided or how your input will be used please contact the Air Force Base Conversion Agency public hotline at 210-925-0956.

System Installations-Location, Number, and Size: • Plume-wide • Spots only • Perimeter • Centerline • Leading edge of plumes	Treatment Processes: • Subsurface biological breakdown after injecting nutrients underground	Construction and Operation Issues: • Noise • Dust controls • Traffic management with temporary detours • Utilities • Disposal of construction wastes
Property Access: • Property needed for treatment plants and monitoring wells • Property needed with continuous, long-term access • Concerns of adjacent property owners • Right-of-way needed	Time: • Time to design and construct the cleanup • Time to remove or destroy the contaminants (i.e., operation, maintenance, and monitoring) • Time to close and remove installations	Cost-effectiveness: • Cost to design and construct • Cost to operate, maintain, and monitor • Cost to dispose of construction and operation wastes • Cost to close and remove installations

Comments or suggestions:

DRAFT DRAFT DRAFT DRAFT

Possible options and Evaluation Criteria For Shallow Groundwater Cleanup

Kelly AFB, TX

Note for AF Reviewers: A potential solution needs to be developed for a public ocncern stated as " Access to leans for property improvement" One idea might be to discuss this concern with appropriate City officials and/or HUD representatives.

Introduction

These draft criteria were developed from federal and state regulations and public input. Once finalized, they will be used to evaluate each possible option or combination of options to address the cleanup of shallow groundwater. The TNRCC will review and approve the Corrective Measures Study (CMS) prior to implementation. The United States EPA will also review the CMS and provide comments and advice. Environmental regulatory agencies are charged to ensure that CMS is in compliance with all laws and regulations that guide environmental cleanup activities.

This tentative list of potential responses and cleanup options was developed by (need 1-2 sentences on rationale/process). They were initially selected because they are technically feasible to address the types of contaminants of concern in the hydrogeological conditions of the shallow groundwater.

We request that the public review these criteria, ask questions, and provide comments. Please consider whether we have sufficiently carried through your concerns in the criteria. If you have comments on the criteria please write them on this paper and leave them at the registration desk as you leave. You may also send them to the address below. Comments will be used to revise the criteria. In this way we can ensure your concerns are part of the evaluation and decision process.

Also, please take this opportunity to learn more about the details that must be considered as each potential option is evaluated. Experts are available at each table to explain these consideration and answer your questions to the best of their ability. These will be part of the detailed evaluation of each option.

Criteria (to be added to the table)

1. **Protect Human Health and the Environment**

a. Does the option reduce, control, or eliminate current or potential future exposure to contaminants?

b. Are edible, locally-grown foods safe to eat?

c. Is the Edwards aquifer protected? Is protection maintained?

D. Shallow wells are controlled?

E. Does it addres E.J.

F. Control Fenton Releases.

2. **Attain Federal , State (and Local) Regulations**

a. Does the option attain environmental cleanup laws and standards?

* Will the groundwater be cleaned to pristine conditions?
* Will the groundwater be cleaned to drinking water standards?

b. Does the option comply with applicable regulations for waste management during construction, operation and monitoring?

c. does the option comply with other applicable laws?

* does the option comply with funding laws? Does it address only air-Force related contamination?
* Does the option comply with local zoning laws and codes regarding _____?

d. Does the option address the contamination from a chemical, location and action basis? (this needs work on phrasing)

E. Does it address or take into account E.J.

3. **Long-term Reliability and Effectiveness (and permanence?)**

a. Does the option use permanent solutions?

b. Does the option include sufficient long-term monitoring and performance reports?

c. Does the option address on-and off-base contamination?

d. How long does it take to achieve cleanup goals and standards?

e. Does the option demonstrate long-term Air Force commitment to complete the cleanup with funding, staffing, and public participation?

f. Is the option one that can be adequately enforced by state or federal officials? Does the option include enforcement mechanisms?

g. Will the option provide positive effects for homeowners and businesses?

h. What is the magnitude fo the contamination that may not be cleaned up? What is the potential risk? Does the option address how to manage the residual waste and risk effectively?

i. Are the controls in the option adequate and reliable?

4. Reduce Toxicity, Mobility, or Volume of Waste

a. Will the option reduce the potential risk to people and the environment by treating or containing the contamination?

b. What is the volume of materials (contaminants?) destroyed or treated?

c. What is the level or degree of expected reduction of waste?

d. What is the degree to which treatment is irreversible?

e. What is the type and quantity of residual contamination remaining?

f. What is the treatment process used and what materials are treated?

5. Short-term Effectiveness (through completion of cleanup)

a. Will the option protect people and the environment during construction of the remedy?

b. Will the option protect people and the environment during operation of the remedy?

c. How are workers protected during construction and operation of the cleanup?

d. What are the environmental impacts of the construction and operation of the remedy?

e. How long will it take to achieve the cleanup goals and objectives?

6. Implementability

a. Will it be possible to obtain access to government or private property?

b. Will it be possible to conduct the option considering effects to the area during construction and operation, and for long-term monitoring and maintenance?

c. Is the option technically feasible?

d. How reliable is the technology?

e. How easy might it be ~~to undertake~~ For additional cleanup action, if necessary?

f. how easy is it to monitor the effectiveness of the remedy?

g. how easy will it be to coordinate and obtain approvals from other agencies?

h. Are the materials and services for the remedy available?

i. What is the ability to construct and operate the technology?

7. Cost

a. Do the benefits of the options adequately justify the costs?
b. Is the money being spent to the best benefit of the community?
c. What arethe capital costs of the remedy?
d. What are the long-term operation and maintenance costs of the remedy?
e. What is the present worth of the remedy?

8. Community Acceptance

What is the community comment regarding:

a. Property values?
* for Residents?
* for Businesses?
b. Community public health issues?
c. Full disclosure of environmental information?
d. Other quality of life concerns including neighborhood improvements or neighborhood or business disruption?

9. Control of source Area

a. Does the option include measures such as removal, treatment or containment of contaminants to ensure more is not added whether on- or off-base?

3. Does the option protect human health during work/contact exposure phase

DRAFT

Potential Technical Solutions For Shallow Groundwater Cleanup

Please review the potential solutions for shallow groundwater cleanup that appear on the list below. Information is available on each type of technology in the fact sheets provided. If you have other technologies that may be useful in the cleanup please write them in the space below.

These potential solutions were developed from technical engineering information and suggestions from members of the public. They will be examined further and evaluated against the regulatory and other criteria as required.

Potential Shallow Groundwater Cleanup Solutions

1. Continue current cleanup systems and monitor what is naturally attenuating.
2. Expand Zone 4 and Metal Plating shop cleanup solutions and monitor what is naturally attenuating.
3. Pump groundwater to the surface and clean in a treatment building at the surface.
4. Underground reactive wall.
5. Air sparging underground and vapor extraction and to the surface and treat.
6. Enhanced biodegradation underground.
7. *In situ* ("in place") oxidation underground.
8. Phytoremediation (i.e., planting trees and bushes).
9. Other Suggestions:

Comments:

Name (optional): _____

Address (optional): _____

DRAFT

Potential Health-related Options With Shallow Groundwater Cleanup

Please review the potential options to address public health-related issues during the shallow groundwater cleanup project that appear on the list below. If you have other suggestions that may be useful please write them in the space below. They will be reviewed and discussed with appropriate health agencies.

These potential solutions were developed from information and suggestions from members of the public and health agencies. They will be examined further and evaluated with health agencies.

Potential Health Approaches

1. Special program by the Bexar County Metropolitan Health Department that might include public education, neighborhood health surveys, historical health researches, clinical evaluations, etc.
2. Environmental sampling of soil, air, or groundwater on demand.
3. Local garden sampling.
4. Outreach to health professionals and the community.
5. Bottled water program.
6. Edwards Aquifer recharge zone protection.
7. Well capping.
8. Other suggestions:

Comments:

Name (optional): _____

Address (optional): _____

Potential Property Value Options With Shallow Groundwater Cleanup

Please review the potential options to address concerns regarding property values during the shallow groundwater cleanup project that appear on the list below. If you have other suggestions that may be useful please write them in the space below. They will be reviewed and discussed with appropriate real estate, tax, appraisers, and economic agencies.

These potential solutions were developed from information and suggestions from members of the public, local government and environmental agencies. They will be examined further and evaluated with those agencies.

Potential Property Value Approaches

1. City-wide ordinance OR deed restrictions on individual properties.
2. Provide data and information to the Bexar County Tax Appraisal District.
3. Infrastructure improvements.
4. Outreach to realtors and lenders.
5. Study to monitor property values.
6. Compensation to those with lowered property values.
7. Coordinate with other government programs (i.e., TXDOT, Metropolitan Planning Authority).
8. River improvement projects.
9. Storm water projects and sanitary sewer improvements.
10. Green buffer zone between Kelly AFB and the residential area.
11. Independent assessment and monitoring of the shallow groundwater cleanup.
12. Other suggestions:

Comments:

Name (optional): _____

Address (optional): _____

DRAFT DRAFT

Potential Evaluation Criteria for Shallow Groundwater Cleanup Kelly AFB, TX

Introduction

These draft criteria were developed from federal and state rules and regulations and public input. Once finalized, they will be used to evaluate each possible option or combination of options to address the cleanup of solvents from Kelly AFB found in shallow groundwater off-base of Kelly AFB. The Texas Natural Resource Conservation Commission (TNRCC) will review and approve the Corrective Measures Study (CMS) for Zone 4 before we move forward with it. The United States EPA will also review the CMS and provide comments and advice on it. Environmental regulatory agencies are charged to ensure that the CMS is in compliance with all laws and regulations that guide environmental cleanup activities. A formal public comment period will be held on the draft CMS, and the comments and responses to them will be provided to the regulatory agencies for their consideration as well.

We request that you look over this draft list of factors to consider, ask questions, and provide comments. Please consider whether we have sufficiently carried through your concerns in the criteria list. If you have comments on the list please write them on this paper and leave them at the registration desk as you leave. You can share them with an Air Force representative at the public meeting who may record them on a flip chart. You may also send them to the address below. Comments will be used to revise the list of evaluation factors. In this way we can ensure your concerns are part of the evaluation and decision process.
Comments and questions on the criteria can be sent to:

Air Force Base Conversion Agency/DK
143 Billy Mitchell Boulevard
Kelly AFB, TX 78241- 6014
210-925-0956

DRAFT CRITERIA TO EVALUATE POTENTIAL SOLUTIONS

1. Community Acceptance

a. A determination of which parts of the options community members support, have reservations about, or oppose.

b. There is testing to ensure locally-grown foods are safe to eat.

c. The Edwards Aquifer is protected.

d. The groundwater will be cleaned to pristine conditions.

e. The groundwater will be cleaned to drinking water standards or levels that will protect human health and the environment.

f. The option complies with other applicable laws such as funding or legal limits on use of government funds.

g. The option complies with local zoning laws and codes.

h. The option addresses on-base and off-base contamination.

i. Long-term Air Force commitment is demonstrated with funding, staffing and public participation.

j. State or federal agencies can enforce the option.

k. Positive effects are sought for homeowners and businesses: measures to preserve or restore property values during the cleanup are considered.

l. The option uses techniques to protect people and the environment during construction and operation of the cleanup.

m. Public health concerns are addressed during the cleanup.

n. The ability to obtain property access to implement the remedy is considered.

o. The benefits of the options adequately justify the costs.

p. The money is being spent to the best benefit of the community.

q. There is an Air Force commitment for full disclosure of environmental information.

r. Property value concerns are addressed or referred to appropriate agencies.

s. Public health concerns are addressed or referred to appropriate agencies.

t. Other quality of life concerns are addressed or referred to the appropriate agency, such as infrastructure improvements, disruption of the neighborhood, etc.

2. Protect Human Health and the Environment

a. The option reduces, controls, or eliminates current or potential future exposure to contaminants.

b. How the option provides for protection of human health and the environment.

3. Attain Federal, State (and Local) Regulations

a. The option meets applicable or relevant environmental cleanup laws and standards.

b. The option complies with regulations that apply specifically to the chemicals involved, the location, or the specific action proposed.

4. Long-term Reliability, Effectiveness, and Permanence

a. The degree to which the option uses irreversible and permanent solutions.

b. The option considers the potential risk of the treated and untreated wastes that remain.

c. The option has adequate and reliable controls to manage treated and untreated wastes remaining at the site or in final disposal.

d. The option includes sufficient long-term monitoring and performance reporting.

5. Reduction of Toxicity, Mobility, or Volume of Waste Through Treatment

a. The option considers the degree to which treatment or recycling is used to reduce toxicity, mobility, or volume of wastes.

b. The option considers the amount of contaminants that will be destroyed, treated, or recycled.

c. The degree to which the treatment is irreversible.

d. The type and quantity of contaminants that will remain following treatment.

e. The degree to which the option reduces the principal hazards at the site.

6. Short-term Effectiveness (through completion of cleanup)

a. Short-term risks to the community during implementation of the remedy are considered and mitigation measures are adequate.

b. Potential effects on workers and the effectiveness of protective measures are considered.

c. Potential environmental effects of the remedy and the effectiveness of mitigation measures are evaluated.

d. The time to design and construct the cleanup and achieve the cleanup goals or standards is assessed.

7. Implementability

a. Technical feasibility to construct and operate the cleanup is considered.

b. Administrative feasibility to coordinate with other agencies and the time needed to obtain approvals such as permits is assessed.

c. Availability of services, equipment, specialized skills, and materials, including locations to store or dispose of wastes, are adequately considered.

d. Reliability of the technology is clearly presented.

e. The ease of conducting additional cleanup actions is considered.

f. The ability to monitor the effectiveness of the cleanup is considered.

8. Cost

a. All start-up costs are considered.

b. All long-term operation, maintenance, and monitoring costs are considered.

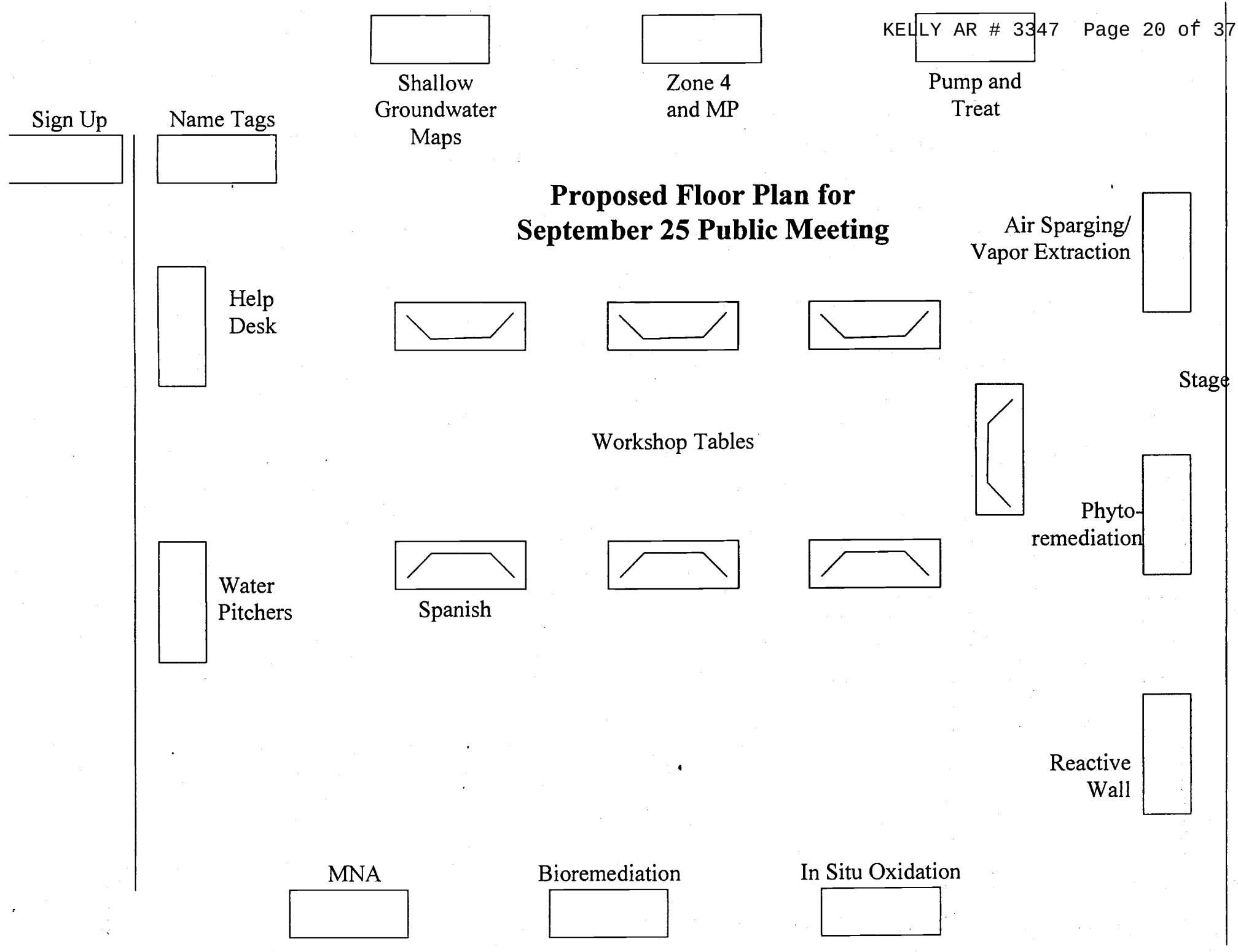
c. The net present value of all costs is evaluated.

9. Control of Source Area

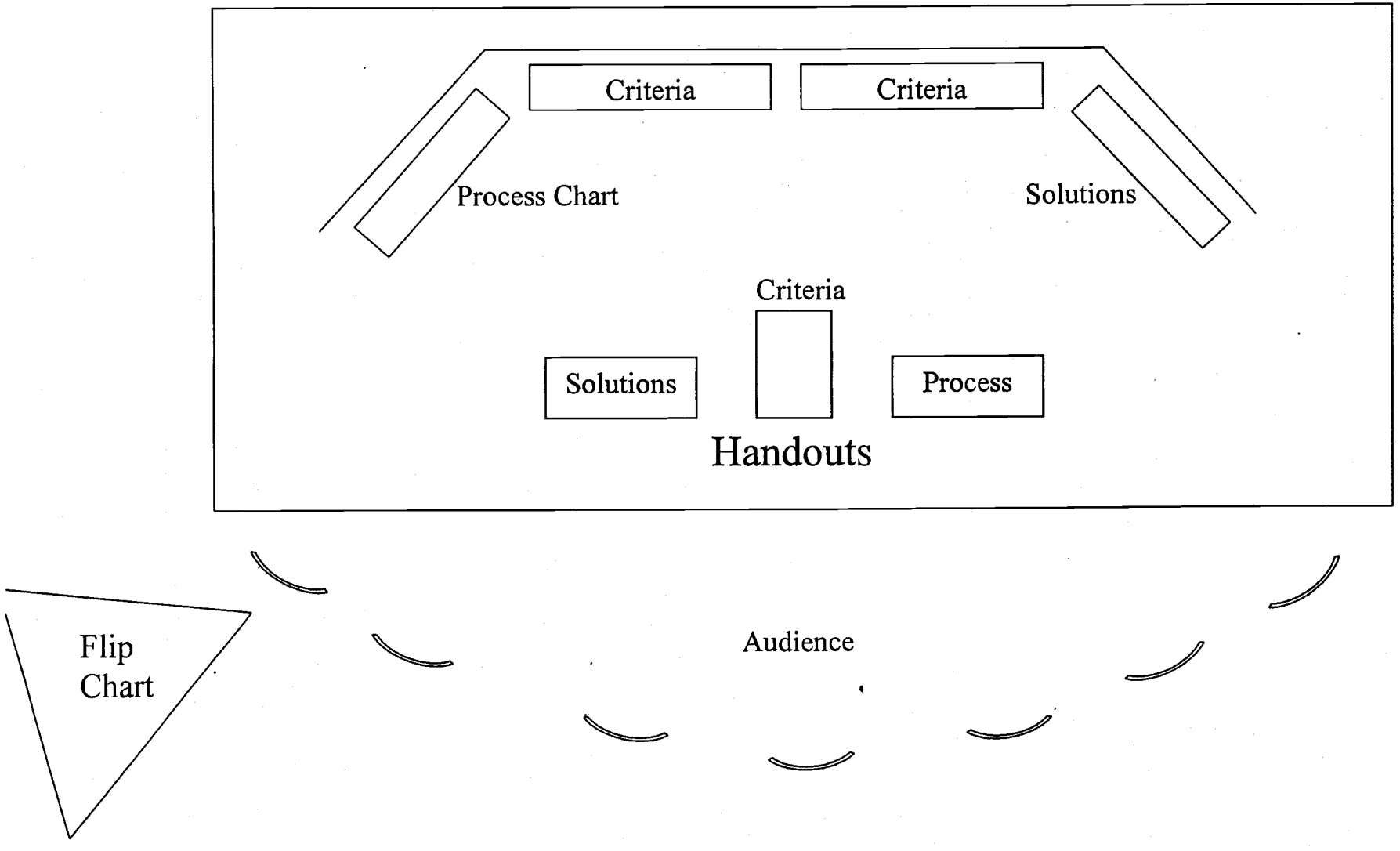
a. The option complies with applicable regulations for waste management during construction, operation and monitoring.

b. The option is evaluated to ensure that more contamination is not added to the environment, through measures such as removal, treatment or containment of contaminants on-base or off-base.

Proposed Floor Plan for September 25 Public Meeting



Proposed Layout for Each Workstation



ANALYSIS TABLE (SOLUTION EVALUATION)

POTENTIAL SOLUTION SETS AND EVALUATION CRITERIA FOR SHALLOW GROUNDWATER CLEANUP

CRITERIA	SOLUTION SET #1 WORK TO DATE	SOLUTION SET #2	SOLUTION SET #3	SOLUTION SET #4	SOLUTION SET #5	SOLUTION SET #6	SOLUTION SET #7	BASELINE/ NO ACTION COMPARISON ☆

☆ The no-action solution is a regulatory requirement that must be evaluated. It only serves as a benchmark for comparison to other potential solutions.

Kelly Air Force Base Public Meeting

Monday, September 25, 2000
Kennedy High School Auditorium
1922 S. General McMullen Dr.
San Antonio, TX

Schedule:

6 p.m. – 8:30 p.m. Small work group discussions of evaluation criteria and potential solutions.

8:30 p.m.– 9 p.m Discussion Summaries from each work group.

- ✓ Learn about the shallow groundwater "Decision-Making Process."
- ✓ Discuss draft criteria by which to evaluate potential cleanup options.
- ✓ Learn about potential shallow groundwater technologies.
- ✓ Hear ideas from other workgroups.

Moving Toward A Solution . . .

Kelly Air Force Base Junta Pública

Lunes, 25 de septiembre de 2000
Kennedy High School Auditorium
1922 S. General McMullen Dr.
San Antonio, TX

Horario:

6 p.m. – 8:30 p.m. talleres y discusiones sobre la evaluación de los criterios y soluciónes posibles para la limpieza

8:30 p.m. – 9 p.m. Sumarios de las discusiones de cada grupo

- ✓ Aprenda sobre el "Proceso de Tomar Decisiones" para la agua subterránea de poca profundidad.
- ✓ Comentarios sobre el borrador de criterios, que se usarán para evaluar las opciones potenciales para la limpieza.
- ✓ Aprenda sobre las tecnologías que se pueden usar para la limpieza.
- ✓ Escuche las ideas que resultan de las discusiones de cada grupo de trabajo.

Hacia una solución . . .

Environmental Awareness

How Do We Evaluate Kelly AFB Cleanup Alternatives?

Monday, September 25, 2000
Kennedy High School
Auditorium
1922 S. General McMullen Dr.
San Antonio, TX
6 p.m. - Information Session on Possible Cleanup Solutions
7 - 9 p.m. - Workshops on Evaluation and Decision Process

- Learn about the decision-making process
- Learn how technologies can be applied to cleanup
- Review criteria to evaluate cleanup alternatives

(Spanish translators will be available)

This is the fourth public meeting of seven sponsored by the Air Force Base Conversion Agency (AFBCA) at Kelly AFB to develop and evaluate the cleanup decision process. For further information, contact the AFBCA Community Relations Office at 925-3100, ext. 235 or 203.

Environmental Awareness

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This is the fourth public meeting of seven sponsored by the Air Force Base Conversion Agency (AFBCA) at Kelly AFB to develop and evaluate the cleanup decision process. For further information, contact the AFBCA Community Relations Office at 925-3100, ext. 235 or 203.

¿Cómo Evaluemos las Alternativas para la Limpieza en Kelly AFB?

Lunes, el 25 de septiembre de 2000
Auditorio de la Kennedy High School
1922 S. General McMullen Drive
San Antonio, Texas
6 p.m. - Session de información de soluciones posibles para la limpieza
7 - 9 p.m. - Talleres para la evaluación y el proceso de decisión

- Aprenda sobre el proceso de decisión
- Aprenda cómo se pueden aplicar las tecnologías
- Repase los criterios de evaluación de las alternativas para la limpieza

(Intérpretes estarán disponibles)

Ésta es la cuarta junta en una serie de siete patrocinada por la AFBCA de Kelly AFB para desa-rrollar y evaluar el proceso de decisión para la limpieza de Kelly. Para mayor información llame al Oficina de Relaciones Públicas de la AFBCA a 925-3100, ext. 235 o 203.

Air Force Base Conversion Agency at Kelly Air Force Base

Future Opportunities For Creating Solutions

Oportunidades Futuras Para Crear Soluciones

Public Meeting

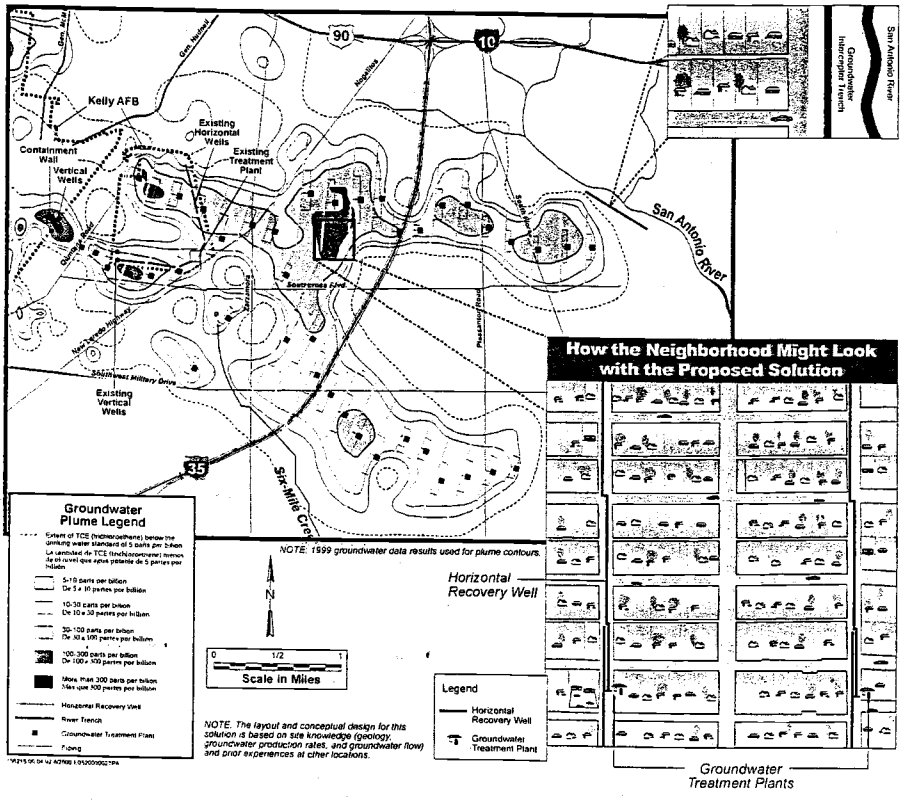
Over the next four months we will be asking for your assistance in developing more specific solutions for Shallow Groundwater Cleanup and addressing your concerns such as public health and property values. We will review the schedule for the decision process and ask for specific input on draft evaluation criteria and potential solutions. We look forward to your participation to arrive at a community-based solution. Please come! For more information regarding these meetings and locations, call the AFBCA Community Relations Office at 925-3100 ext. 203 or 235.

Durante los meses entrantes, estaremos solicitando su asistencia para poder desarrollar soluciones específicas para la limpieza del agua subterránea de poca profundidad, tomando en cuenta sus intereses. Anticipamos su participación para poder obtener una solución que apoya la comunidad. Los esperamos! Vengan a compartir sus ideas y sus preguntas con nosotros. Para más información acerca de estas juntas y sus lugares, favor de llamar al 925-3100 ext. 203 o 235.

Monday, September 25, 2000
Shallow Groundwater Solutions
6 p.m. – 9 p.m.
Kennedy High School Auditorium
1922 S. General McMullen Drive
San Antonio

Lunes, 25 de septiembre de 2000 a las 6 de la tarde
Soluciones para el Agua Subterránea de Poca Profundidad

Potential Technical Solution A: Zone 4 Pump and Treat Plumewide with Groundwater Interception Trench at River



Description:

Estimated Location: Horizontal wells (500 to 1,000 feet long) approximately every 1,000 feet with connecting underground pipes.

Estimated Number of Horizontal Wells: Approximately 180.

Estimated Number of Treatment Plants: Approximately 45.

Treatment of Groundwater: Treatment plant on the surface.

Estimated Number of Monitoring Wells: Additional wells will be needed. Number to be determined.

Listed below are some of the features that must be considered to determine how feasible a technology might be.

Estimated Design and Construction Times:

Approximately two years to design and two to five years to construct.

Potential Off-Base Construction Disturbances:

Construction equipment will cause noise and dust. Trenching and drilling will require road closures and detours, and has the potential to disrupt utilities.

Potential Operational Disturbances:

Treatment plants produce constant noise. Noise levels might be moderate. Maintenance disruptions may be moderate. Few traffic disruptions are expected.

Potential Health or Safety Risks:

Road closures and detours will be needed during construction for safety. Construction will also result in the removal of groundwater, soil, drilling fluids, and pavement that will need to be managed. Some of these materials will have contaminants in them. There is also a potential exposure to uncontrolled drilling fluids, which may reach the surface during construction. During operation, potential health or safety risks may arise if a leak occurs since this technology will bring contaminated water to the surface through pipes.

Off-Base Property Access:

Access to public and private property may be required to install the treatment plants, horizontal wells, piping, and trench.

Estimated Time to Cleanup to Drinking Water Standards: To be determined.

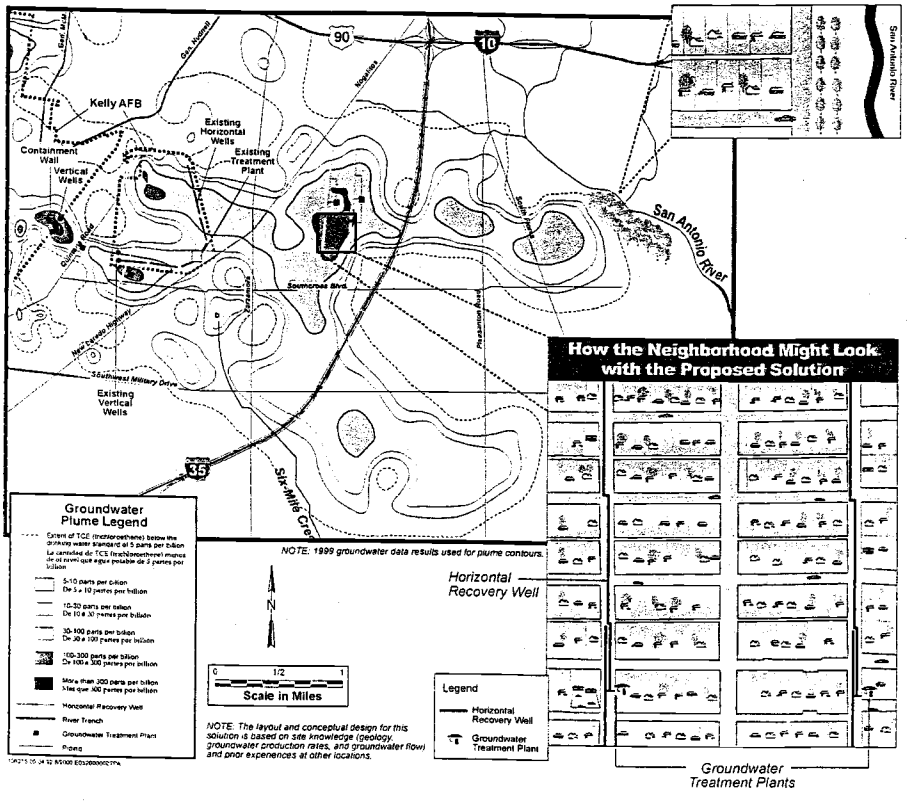
Implementation:

Could be difficult to implement due to private property access, disruptions on public property, construction and installation issues for numerous well locations, and digging permits. Caution must be taken to avoid existing utility lines.

Estimated Cost: Approximately more than $100 million.

Other non-technical solutions will be added to address health and property values issues.

Potential Technical Solution B: Zone 4 Limited Pump and Treat with Phytoremediation along the River and Monitored Natural Attenuation



Description:

Estimated Location: Horizontal wells (500 to 1,000 feet long) to be located in higher concentration areas, approximately every 1,000 feet with connecting underground pipes.

Estimated Number of Horizontal Wells: Approximately 28.

Estimated Number of Treatment Plants: Approximately seven.

Treatment of Groundwater: Treatment plant on the surface.

Estimated Number of Monitoring Wells: Additional wells will be needed. Number to be determined.

Listed below are some of the features that must be considered to determine how feasible a technology might be.

Estimated Design and Construction Times:

Approximately one year to design and one to two years to construct.

Potential Off-Base Construction Disturbances:

Construction will be limited to areas of higher concentrations. Construction equipment will cause noise and dust. Drilling will require road closures and detours, and has the potential to disrupt utilities.

Potential Operational Disturbances:

Treatment plants produce constant noise. Noise levels might be moderate. Maintenance disruptions may be moderate. Few traffic disruptions are expected.

Potential Health or Safety Risks:

Road closures and detours will be needed during construction for safety. Construction will also result in the removal of groundwater, soil, and pavement that will need to be managed. Some of these materials will have contaminants in them. There is also a potential exposure to uncontrolled drilling fluids, which may reach the surface during construction. During operation, potential health or safety risks may arise if a leak occurs since this technology will bring contaminated water to the surface through pipes.

Off-Base Property Access:

Access to public and private property may be required to install the treatment plants and wells, pipes, and planting of trees.

Estimated Time to Cleanup to Drinking Water Standards: To be determined.

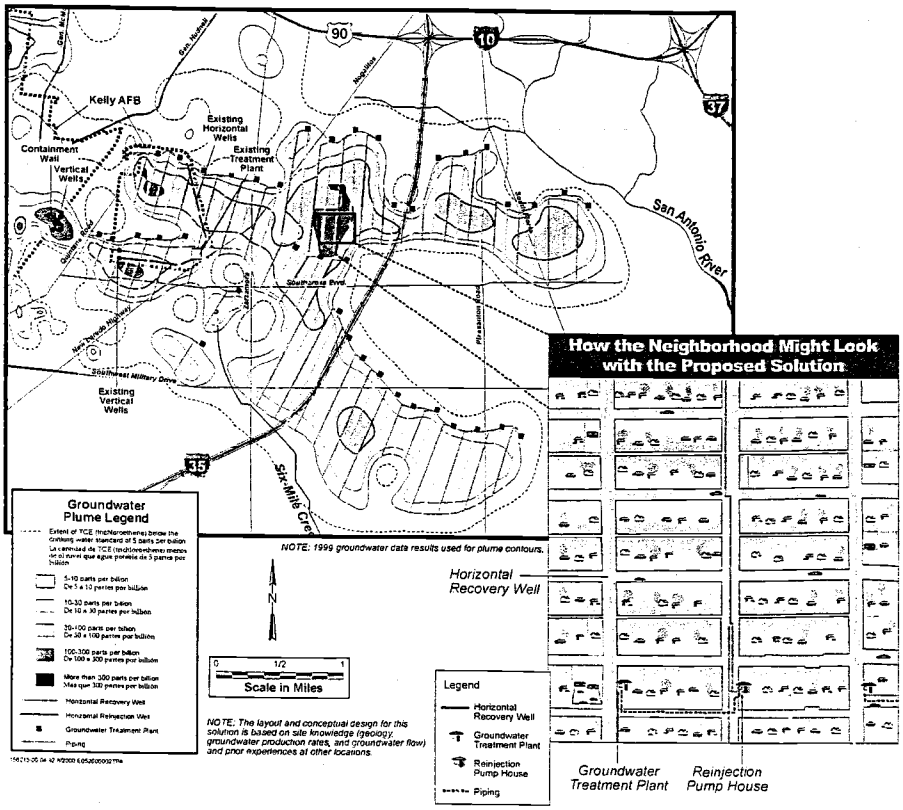
Implementation:

Moderately difficult to implement due to private property access, disruptions on public property, construction and installation issues for well locations, and digging permits. Caution must be taken to avoid existing utility lines.

Estimated Cost: Approximately $20 to $100 million.

Other non-technical solutions will be added to address health and property values issues.

Potential Technical Solution C: Zone 4 Pump and Treat Plumewide with Reinjection



Description:

Estimated Location: Horizontal wells (500 to 1,000 feet long) will be installed throughout the plume, approximately every 500 feet with connecting underground pipes. Half the wells will be used to remove groundwater. The other half will be used to reinject treated groundwater.

Estimated Number of Horizontal Wells: Approximately 360.

Estimated Number of Treatment Plants: Approximately 45.

Treatment of Groundwater: In treatment plant on the surface.

Estimated Number of Monitoring Wells: Additional wells will be needed. Number to be determined.

Listed below are some of the features that must be considered to determine how feasible a technology might be.

Estimated Design and Construction Times:

Approximately two years to design and two to five years to construct.

Potential Off-Base Construction Disturbances:

Construction equipment will cause noise and dust. Trenching and drilling will require road closures and detours, and has the potential to disrupt utilities.

Potential Operational Disturbances:

Treatment plants produce constant noise. Noise levels might be moderate. Maintenance disruptions may be moderate. Few traffic disruptions are expected.

Potential Health or Safety Risks:

Road closures and detours will be needed during construction for safety. Construction will also result in the removal of groundwater, soil, and pavement that will need to be managed. Some of these materials will have contaminants in them. There is also a potential exposure to uncontrolled drilling fluids, which may reach the surface during construction. During operation, potential health or safety risks may arise if a leak occurs since this technology will bring contaminated water to the surface through pipes.

Off-Base Property Access:

Access to public and private property may be required in order to install the treatment plants, wells, and piping.

Estimated Time to Cleanup to Drinking Water Standards: To be determined.

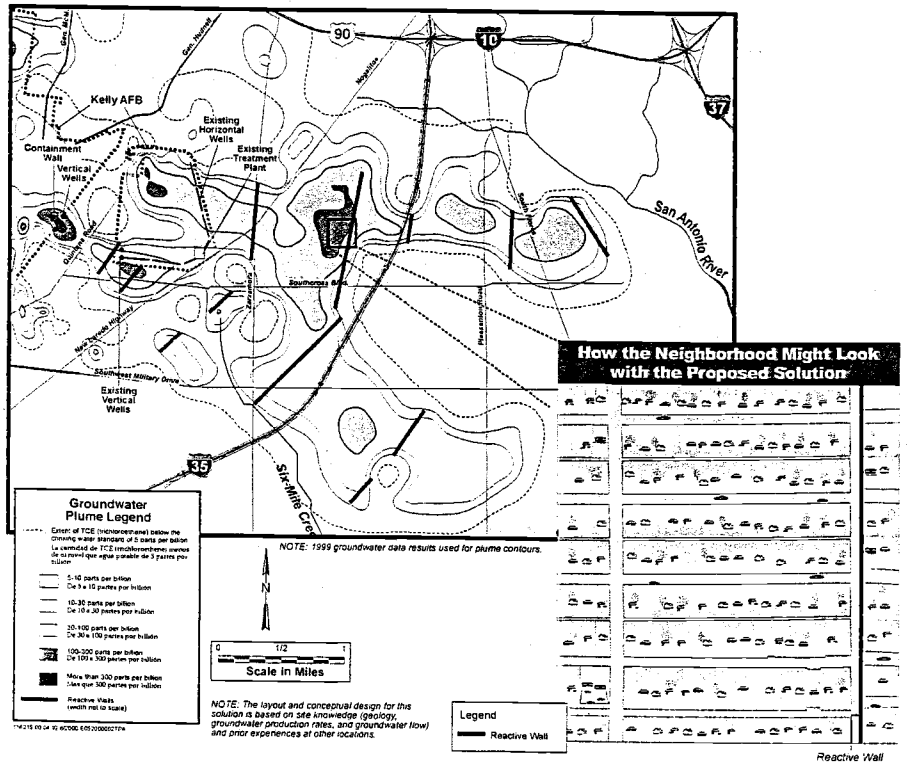
Implementation:

Very difficult to implement due to private property access, disruptions on public property, construction and installation issues for numerous well locations, and digging permits. Caution must be taken to avoid existing utility lines.

Estimated Cost: Approximately more that $100 million.

Other non-technical solutions will be added to address health and property values issues.

Potential Technical Solution D: Zone 4 Flow-Through Reactive Walls Plumewide



Description:

Estimated Location: Underground flow-through walls (30 to 40 feet deep and 3 to 5 feet wide) approximately every 5,000 feet. Walls are made of soil mixtures, such as soil and iron filings.

Estimated Number of Flow-Through Walls: Approximately 10.

Estimated Number of Treatment Plants: None.

Treatment of Groundwater: Below the surface.

Estimated Number of Monitoring Wells: Additional wells will be needed. Number to be determined.

Listed below are some of the features that must be considered to determine how feasible a technology might be.

Estimated Design and Construction Times:

Approximately two years to design and one to two to construct.

Potential Off-Base Construction Disturbances:

Construction equipment will cause noise and dust. Trenching will require road closures and detours, and has the potential to disrupt utilities.

Potential Operational Disturbances:

Maintenance of walls could include complete re-construction.

Potential Health or Safety Risks:

Road closures and detours will be needed during construction for safety. Construction will also result in the removal of groundwater, soil, and pavement that will need to be managed. Some of these materials will have contaminants in them.

Off-Base Property Access:

Access to private and public property may be required to install flow-through reactive walls and additional monitoring wells.

Estimated Time to Cleanup to Drinking Water Standards: To be determined.

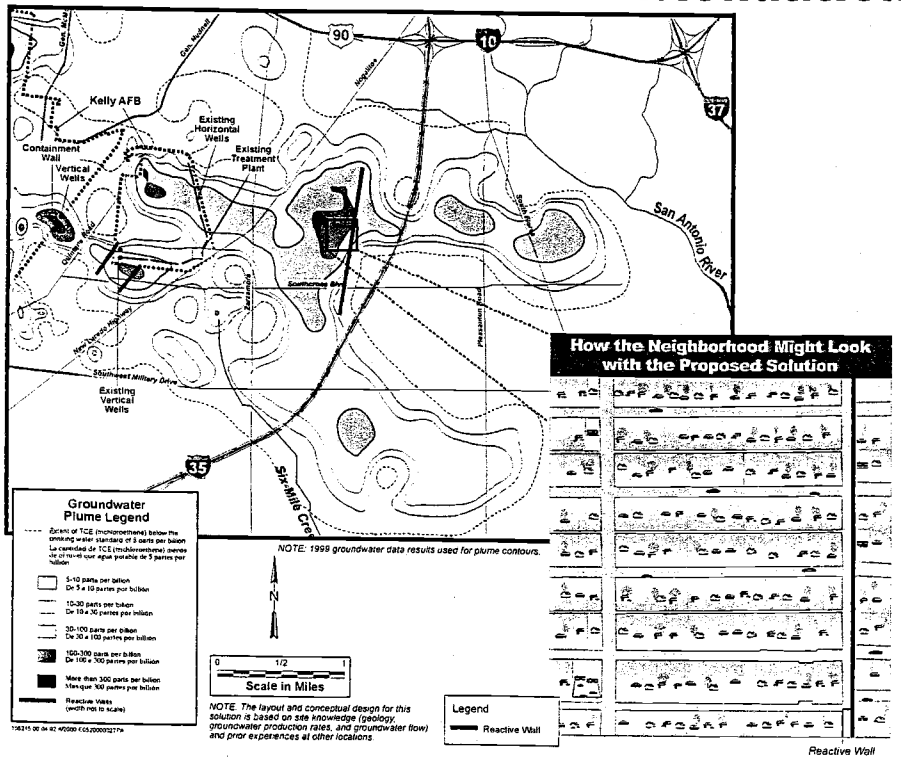
Implementation:

Very difficult to implement due to the depth and length of the trenches, private property access, disruptions on public property, and digging permits. Caution must be taken to avoid existing utility lines.

Estimated Cost: More than $100 million.

Other non-technical solutions will be added to address health and property values issues.

Potential Technical Solution E: Zone 4 Limited Number of Flow-Through Reactive Walls with Monitored Natural Attenuation



Reactive Wall

Description:

Estimated Location: Underground flow-through walls (30 to 40 feet deep and 3 to 5 feet wide) approximately every 5,000 feet in areas of higher concentrations. Walls are made of soil mixtures, such as soil and iron filings.

Estimated Number of Flow-Through Walls: Approximately three.

Estimated Number of Treatment Plants: None.

Treatment of Groundwater: Below the surface.

Estimated Number of Monitoring Wells: Additional wells will be needed. Number to be determined.

Listed below are some of the features that must be considered to determine how feasible a technology might be.

Estimated Design and Construction Times:
Approximately two years to design and one to two years to construct.

Potential Off-Base Construction Disturbances:
Construction equipment will cause noise and dust. Trenching will require road closures and detours, and has the potential to disrupt utilities.

Potential Operational Disturbances:
Maintenance of walls could include complete re-construction.

Potential Health or Safety Risks:
Road closures and detours will be needed during construction for safety. Construction will also result in the removal of groundwater, soil, and pavement that will need to be managed. Some of these materials will have contaminants in them.

Off-Base Property Access:
Access to private and public property may be required to install flow-through reactive walls and additional monitoring wells.

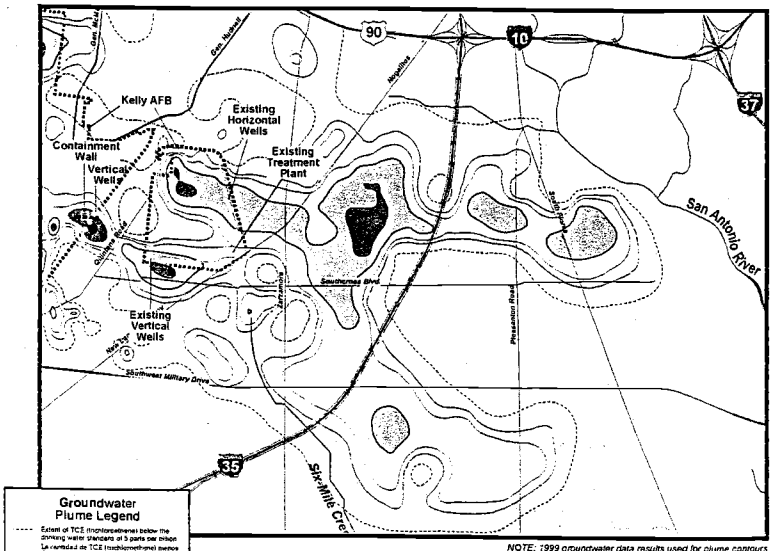
Estimated Time to Cleanup to Drinking Water Standards:
To be determined.

Implementation:
Moderately difficult to implement due to depth and length of trenches, private property access, disruptions on public property, and digging permits. Caution must be taken to avoid existing utility lines.

Estimated Cost: Approximately $20 - $100 million.

Other non-technical solutions will be added to address health and property values issues.

Potential Technical Solution F: Zone 4
Existing Source Control Systems and Monitored Natural Attenuation



NOTE: 1999 groundwater data results used for plume contours.

NOTE: The layout and conceptual design for this solution is based on site knowledge (geology, groundwater production rates, and groundwater flow) and prior experiences at other locations.

Description:

Estimated Location: Existing source control systems: horizontal and vertical pump and treat wells, containment wall, and treatment plants.

Estimated Number of Horizontal Wells: No new ones.

Estimated Number of Treatment Plants: Existing treatment plants.

Treatment of Groundwater: In existing treatment plants on the surface.

Estimated Number of Monitoring Wells: Additional wells will be needed. Number to be determined.

Listed below are some of the features that must be considered to determine how feasible a technology might be.

Estimated Design and Construction Times:

Minimal amount of time required for design and installation of additional monitoring wells. All other systems are already in place.

Potential Off-Base Construction Disturbances:

Minimal off-base construction disturbances to install new wells. All other systems are already in place.

Potential Operational Disturbances:

Noise levels might be low. Maintenance disruptions may be few. Few traffic disruptions are expected.

Potential Health or Safety Risks:

Minimal future construction related health or safety risks to install new monitor wells. All other systems are already in place. During operation, potential health or safety risks may arise if a leak occurs since this technology will bring contaminated water to the surface through pipes. However, these systems are on Air Force/GKDA property with limited public access.

Off-Base Property Access:

Access to private and public property may be required to install additional monitoring wells.

Estimated Time to Cleanup to Drinking Water Standards:

To be determined.

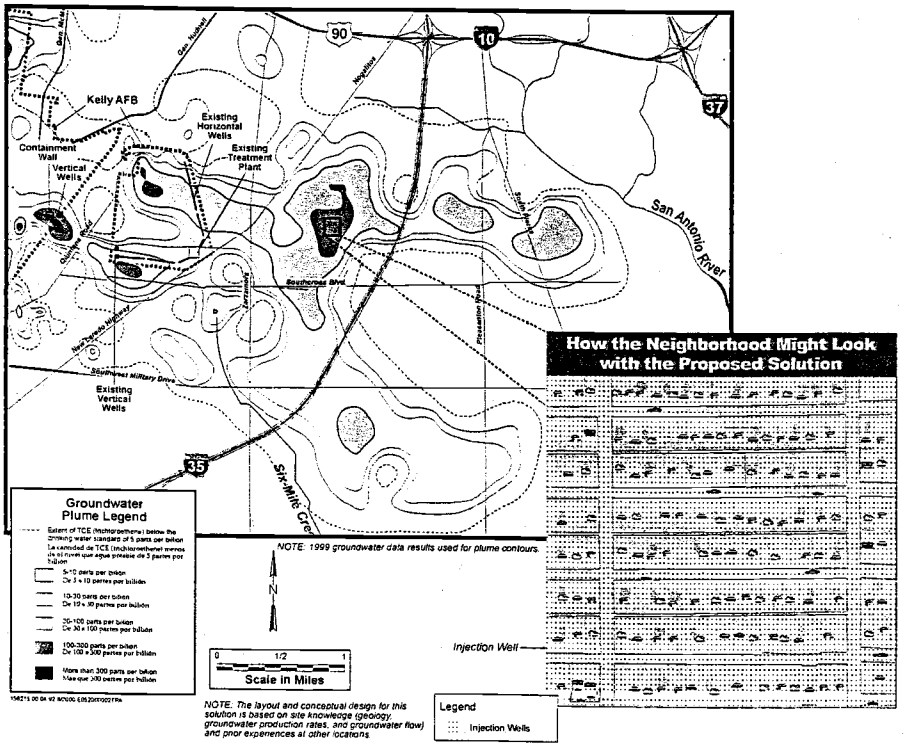
Implementation:

Not very difficult to implement as most systems are in place and only a few additional monitoring wells will need to be installed. Caution must be taken to avoid existing utility lines.

Estimated Cost: Not more than $20 million.

Other non-technical solutions will be added to address health and property values issues.

Potential Technical Solution G: Zone 4 Limited Microorganism Breakdown and Monitored Natural Attenuation



NOTE: The layout and conceptual design for this solution is based on site knowledge (geology, groundwater production rates, and groundwater flow) and prior experiences at other locations.

Description:

Estimated Location: Injection wells on a 25-foot grid in areas of high concentrations.

Estimated Number of Injection Wells: Approximately 7,000 (based on expected flow distance from wells).

Estimated Number of Treatment Plants: None.

Treatment of Groundwater: Below the surface.

Estimated Number of Monitoring Wells: Additional wells will be needed. Number to be determined.

Listed below are some of the features that must be considered to determine how feasible a technology might be.

Estimated Design and Construction Times:
Approximately one year to design and two years to construct.

Potential Off-Base Construction Disturbances:
Drilling equipment will cause noise and dust. Drilling will require road closures and detours, and has the potential to disrupt utilities.

Potential Operational Disturbances:
Noise levels might be moderate. Maintenance disruptions may be high. Many traffic disruptions are expected.

Potential Health or Safety Risks:
Road closures and detours will be needed during construction for safety. Construction will also result in the removal of groundwater, soil, and pavement that will need to be managed. Some of these materials will have contaminants in them. During operations, microorganism breakdown could generate vinyl chloride.

Off-Base Property Access:
Access to private and public property will be required to install injection wells.

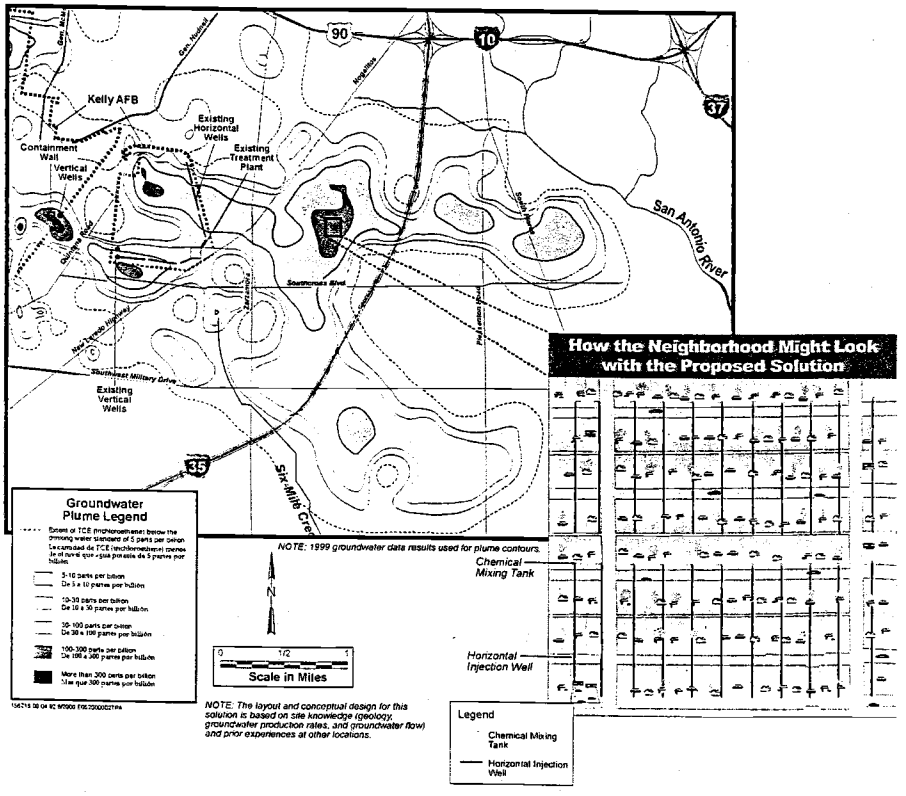
Estimated Time to Cleanup to Drinking Water Standards:
To be determined. Would require a pilot study to determine effectiveness. This solution has proven to be effective in areas of concentrations.

Implementation:
Might be very difficult to get access to all the property for numerous injection wells. Caution must be taken to avoid existing utility lines.

Estimated Cost: Approximately more than $100 million.

Other non-technical solutions will be added to address health and property values issues.

Potential Technical Solution H: Zone 4 Limited Oxygen Treatment with Monitored Natural Attenuation



NOTE: The layout and conceptual design for this solution is based on site knowledge (geology, groundwater production rates, and groundwater flow) and prior experiences at other locations.

Description:

Estimated Location: Horizontal wells (500 to 1,000 feet long) approximately every 100 feet in areas of high concentrations with connecting pipes to chemical mixing tanks in secured buildings.

Estimated Number of Horizontal Wells: Approximately 90.

Estimated Number of Treatment Plants: None. However, buildings required to store chemicals.

Treatment of Groundwater: Below the surface.

Estimated Number of Monitoring Wells: Additional wells will be needed. Number to be determined.

Listed below are some of the features that must be considered to determine how feasible a technology might be.

Estimated Design and Construction Times:
Approximately two years to design and four years to construct.

Potential Off-Base Construction Disturbances:
Construction and drilling equipment will cause noise and dust. Trenching and drilling will require road closures and detours, and has the potential to disrupt utilities.

Potential Operational Disturbances:
Noise levels might be moderate. Maintenance disruptions may also be moderate. Minimal traffic disturbances are expected.

Potential Health or Safety Risks:
Road closures and detours will be needed during construction for safety. Construction will also result in the removal of groundwater, soil, and pavement that will need to be managed. Some of these materials will have contaminants in them. There is also a potential exposure to uncontrolled drilling fluids, which may reach the surface during construction. During operation, potential health or safety risks could occur due to using chemicals such as peroxide or potassium permanganate that would be injected into wells below private property. In addition, some chemicals must be stored on-site in storage tanks. Though precautions would be taken, storage tanks could leak or explode.

Off-Base Property Access:
Access to public and private property may be required to install the horizontal wells and piping.

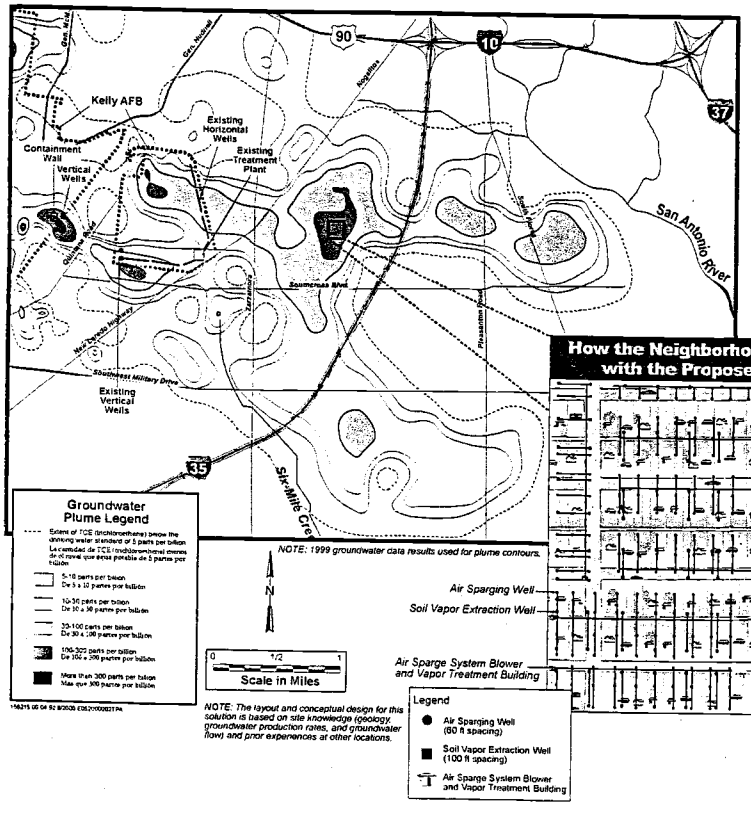
Estimated Time to Cleanup to Drinking Water Standards: To be determined.

Implementation:
Very difficult to implement due to private property access, disruptions on public property, construction and installation issues for well locations, and digging permits. Caution must be taken to avoid existing utility lines.

Estimated Cost: More than $100 million.

Other non-technical solutions will be added to address health and property values issues.

Potential Solution I: Zone 4 Limited Air Injection/Vapor Removal and Monitored Natural Attenuation



Description:

Estimated Location: Air injection wells every 60 feet and vapor extraction wells every 100 feet in high concentration areas.

Estimated Number of Vertical Wells: Approximately 5,000.

Estimated Number of Treatment Plants: Approximately 10 air treatment plants.

Treatment of Groundwater: Below surface.

Estimated Number of Monitoring Wells: Additional wells will be needed. Number to be determined.

Listed below are some of the features that must be considered to determine how feasible a technology might be.

Estimated Design and Construction Times:
Approximately two years to design and four years to construct.

Potential Off-Base Construction Disturbances:
Construction and drilling equipment will cause noise and dust. Drilling will require road closures and detours, and has the potential to disrupt utilities.

Potential Operational Disturbances:
Noise levels will be high. Maintenance disruptions may be high. Few traffic disruptions are expected.

Potential Health or Safety Risks:
Road closures and detours will be needed during construction for safety. Construction will also result in the removal of groundwater, soil, and pavement that will need to be managed. Some of these materials will have contaminants in them. During operation, potential health or safety risks may arise since contaminants are brought to the surface. Some vapors could potentially escape the vapor extraction wells.

Off-Base Property Access:
Access to private and public property will be required to install wells.

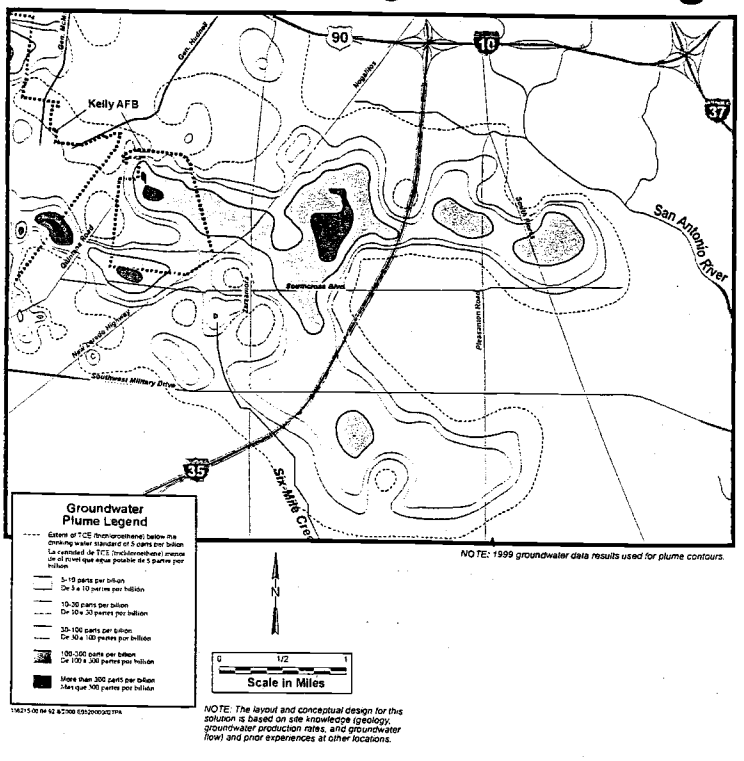
Estimated Time to Cleanup to Drinking Water Standards: To be determined.

Implementation:
Very difficult to implement due to the large number of injection wells requiring potential access to private property and disruptions to public property. Caution must be taken to avoid existing utility lines.

Estimated Cost: More than $100 million.

Other non-technical solutions will be added to address health and property values issues.

Baseline Comparison: Zone 4
No Action - Presented for comparison purposes only as required by federal regulations



NOTE: 1999 groundwater data results used for plume contours.

NOTE: The layout and conceptual design for this solution is based on site knowledge (geology, groundwater production rates, and groundwater flow) and prior experiences at other locations.

Description:
Estimated Location: None.
Estimated Number of Horizontal Wells: None.
Estimated Number of Treatment Plants: None.
Treatment of Groundwater: None.
Estimated Number of Monitoring Wells: None.

Listed below are some of the features that must be considered to determine how feasible a technology might be.

Estimated Design and Construction Times: None.
Potential Off-Base Construction Disturbances: None.
Potential Operation Disturbances: None.
Potential Health and Safety Risks: None.
Off-Base Property Access: None.
Estimated Time to Cleanup to Drinking Water Standards: None.
Implementation: None.
Estimated Cost: Not applicable.

FINAL PAGE

ADMINISTRATIVE RECORD

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