KELLY AFB
TEXAS

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 3349

Kelly Air Force Base
Environmental Restoration Advisory Board
Workshop
6:30 p.m.
Oct 24 2000 6:30 p.m.
Kelly AFB Workshop

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
Mr. Armando Quintanilla
Mr. Mark Puffer
Mr. Scott Lampright (Mr. Mixon's alt.)
Mr. Sam Murrah
Mrs. Dominga Adames
Mr. Roy Botello
Mr. Názirite Pérez

Government Members:

Mr. Adam Antwine, (Mr. McCullough's alt.),
RAB Installation Co-Chair
Mr. Nicolas Rodriguez, Jr., BMWD
Mr. Jim Clark, (Mr. Sanchez's alt.), SAMHD

Members Absent Without Alternate:

Mr. Alfred Rocha
Mr. Kent Iglesias
Ms. Laura Stankosky
Ms. Tanya Huerta
Ms. Annalisa Peace
Mr. Tony Martinez
Mr. Paul Person
Mr. Mark Weegar
Mr. John A. Jacobi
Mr. Edward Weinstein

I. Call to Order

A. Dr. Gene Lené, Co-Chair, called the meeting to order at 6:37 p.m.
B. Mr. John Folk-Williams explained the meeting ground rules and goals.

II. Review, Discuss, and Comment on Potential Solution Sets and Criteria

A. Mr. William Ryan, Air Force Base Conversion Agency (AFBCA), and Mr. Mark Stoker, AFBCA Contractor, explained the framework of the potential technical solutions for Zone 4. The framework consisted of description of the engineering solution, time frame, potential neighborhood construction, disturbances, and operations, potential health or safety risks, access required, cost and implementation issues. The potential solutions would be reviewed at the public forum on November 1, 2000. The RAB was told that at the next workshop a narrowed down list of potential technical solutions for contaminated groundwater would be available for their review. Mr. Stoker stated that the designs presented now are based on groundwater flow but have not been modeled. Once modeling was done and public input considered then the narrowed down list of engineering options would be developed. He said there were now nine solutions and

one baseline. The baseline is not intended as a solution but is required by regulations in order to compare a solution against doing nothing. Mr. Stoker explained the plume map, how the overlay was placed, the enlargement of the neighborhoods, and what the area would look like in a close-up of the alternatives. (see Attachment 1)

B. Discussion:

Comment - Mr. Armando Quintanilla stated that natural attenuation should not be used in any solution and that he had spoken to Congressman Rodriguez about it.

1. Q - Mr. George Rice asked if the document that contained the Zone 4 data was available.
   A - Mr. Ryan said it would be out by November 15.
2. Q - Mr. Quintanilla said he was confused. He said at the last RAB they had been briefed on a base that had been cleaned up in only 18 months.
   A - Mr. Rice said he was familiar with the project and it was not done that fast.
   A - Mr. Adam Antwine, AFBCA RAB Co-Chair, thought that the area had been a landfill not an entire base.

Comment - Ms. Peggy Grybos said what was needed was an overview of the whole program and the solutions, plus an explanation of the baseline.

3. Q - Mr. Quintanilla asked if the plume map covered all 20,000 homes.
   A - Mr. Ryan said it included the entire Zone 4 area.
4. Q - Mr. Quintanilla said, "Not East Kelly Gardens just Zone 4?"
   A - Mr. Ryan explained to Mr. Quintanilla the area covered in Zone 4
5. Q - Mr. Sam Murrah asked if these were the final proposed solutions.
   A - Ms. Vanessa Musgrave told him they were only a draft list of proposed solutions.

Comment - Mrs. Dominga Adames said that this next meeting was typical of the treatment they had been getting and that she wanted answers about the fuel tanks. She said the Air Force keeps asking for the public's concerns, but then disregards them. They needed to address the concerns of the community.

C. Potential Technical Solution A: Pump and Treat Plumewide with Groundwater Interception Trench at the River. Estimated 180 Horizontal Wells and 45 treatment plants. Treats groundwater at the surface. Estimate two to five years to build and cost approximately more than $100 million.

1. Discussion:

1. Q - Mr. Rice asked why there were so many little treatment plants. Why not one big one?
   A - Mr. Ryan said the volume of water is very large and the amount of trenching required for a central treatment plant was thought to be too much. However, that may change when the modeling is done.
2. Q - Ms. Grybos asked what happened to the water after it was cleaned.
   A - Mr. Ryan said he didn't know, but when the final solution was presented this question would be answered.
3. Q - Ms. Grybos asked if this approach had been used before and how long had it taken for it to clean the plume.
   A - Mr. Ryan said that this technology had been used before, but we will provide a time range on the posters for this situation.
4. Q - Mr. Rice asked why only horizontal wells were proposed.
   A - Mr. Ryan explained that horizontal wells covered more area and are more likely to collect water.

D. Potential Technical Solution B: Limited Pump and Treat with Phytoremediation along

the River and Monitored Natural Attenuation. Estimated 4 Horizontal Wells and 7 treatment plants. Treats groundwater at the surface. Estimate one to two years to build and potentially cost between $20 million and $100 million.

1. Discussion:

1. Q - Ms. Grybos asked about the wide range of costs from $20M to $100M.
   A - Mr. Ryan told her the price range would be narrowed once the modeling was completed.

Comment - Mr. Scott Lamplighter commented that this was a large amount of information and he questioned the ability of the public to understand all of the different alternatives that were being presented. Further he was concerned that there was not enough detailed information (well spacing, exact costs and times) from which the public would use to make recommendations.

Comment - Mr. Scott Courtney, AFBCA Contractor, stated the this presentation was to bring people in on the process early so they would understand all the factors that have to be taken into consideration.

Comment - Mr. Rice said he appreciated being involved in the process early on.

2. Q - Mr. Quintanilla asked what would happen to the water after it was treated.
   A - Mr. Gary Panozzo, AFBCA Contractor, explained that these were just concepts and that they were at the beginning of the process. That question would be answered later and that no decisions had been made on possible uses of cleaned water.

Comment - Mr. Quintanilla expressed his concern that the cleaned water is not wasted and its reuse should be a major part of the projects.

Comment - Mr. Ryan pointed out that no decisions had been made and that we needed these meetings to tell us what the public needed to make a decision.

E. Potential Technical Solution C: Pump and Treat Plumewide with reinjection. Estimated 360 Horizontal Wells and 45 treatment plants. Treats groundwater at the surface. Estimate two to five years to build and cost approximately more than $100 million.

1. Discussion:

Comment - Ms. Grybos would like to see case studies of where the solutions have been used.

1. Q - Mr. Mark Puffer asked if funding was already in place and would it be there in the future.
   A - Mr. Antwine responded that some money was in place and other funds would follow.
2. Q - Mr. Quintanilla asked if the Air Force would pay for the chosen solution.
   A - Mr. Antwine said yes.
3. Q - Mr. Quintanilla asked about this solution years ago and was told it would not work. Will it work?
   A - Mr. Walt Peck, AFBCA, said that is not known. The public asked us to consider it and we are considering it.

Comment - Mr. Roy Botello suggested simplifying the material to be presented.

Comment - Ms. Grybos suggested using a chart that showed the potential solutions side-by-side for easy comparisons.

Comment - Mrs. Adames expressed her concern that the public has lost trust in the government and that it was up to the Air Force to show the community it can be trusted. She said to be truthful and don't say it will take 10 years to cleanup when it won't.

F. Potential Technical Solution D: Flow-Through Reactive Walls Plumewide. Estimated

10 Flow-Through Walls and 0 treatment plants. Treats groundwater below the surface. Estimate one to two years to build and cost approximately more than $100 million.

1. Discussion:
   1. Q - Mr. Botello asked if the reactive walls break down the contaminants 100%.
      A - Mr. Panozzo said yes they do.
   2. Q - Ms. Grybos asked why it was so expensive.
      A - Mr. Panozzo explained the cost was in trenching required for the reactive walls.

G. Potential Technical Solution E: Limited Number of Flow-Through Reactive Walls with Monitored Natural Attenuation. Estimated 3 Flow-Through Walls and 0 treatment plants. Treats groundwater below the surface. Estimate one to two years to build and cost approximately between $20 million and $100 million.

1. Discussion:
   1. Q - Mr. Puffer asked if the reactive walls will need to be redone or replaced as they age.
      A - Mr. Ryan responded that the walls may need to be redone as they age.
   2. Q - Ms. Grybos asked if this is a hybrid monitored natural attenuation solution (MNA) and what percentage is MNA.
      A - Mr. Courtney replied it is a hybrid system, as are all the potential solutions. It is difficult to determine percentage that is MNA, as the reactive walls will be in the areas of higher concentrations.

H. Potential Technical Solution F: Existing Source Control Systems and Monitored Natural Attenuation. No new wells and existing treatment plants. Treats groundwater at the surface. Minimum time for added monitoring wells, other systems already in place, and cost approximately no more than $20 million.

1. Discussion:
   1. Q - Ms. Grybos asked what percentage of this solution is MNA.
      A - Mr. Ryan said 75% of the area but only 25% where the mass of contaminates are located.

I. Potential Technical Solution G: Limited Microorganism Breakdown and Monitored Natural Attenuation. Estimated 7,000 Injection Wells and 0 treatment plants. Treats groundwater below the surface. Estimate two years to build and cost approximately more than $100 million.

1. Discussion:
   1. Q - Mr. Puffer asked how much will each well cost and how well they will work.
      A - The well cost will vary and we are looking at as many as 8 wells per lot in high contamination areas. It is hard to predict effectiveness.

J. Potential Technical Solution H: Limited Oxygen Treatment with Monitored Natural Attenuation. Estimated 90 Horizontal Wells and 0 treatment plants, but will require chemical storage buildings. Treats groundwater below the surface. Estimate four years to build and cost approximately more than $100 million.

1. Discussion:
   1. Q - Mrs. Adames said that when monitoring wells were put in she was told that they were safe, now she is told it is dangerous.
      A - Mr. Antwine responded that monitoring wells are safe as they do not inject anything into the groundwater. These wells are injection wells.

   Comment - Mr. Quintanilla expressed that he believed this solution did not protect human life and the environment and should be discarded.

   2. Q - Ms. Grybos asked if the characteristics of each zone were so different that a different solution was required for each.

A - Mr. Peck explained that each zone had its own problems, in fact different characteristics that meant what would work in one zone might not work in another.

K. Potential Technical Solution I: Limited Air Injection/Vapor Removal and Monitored Natural Attenuation. Estimated 5,000 Vertical Wells and 10 air treatment plants. Treats groundwater below the surface. Estimate four years to build and cost approximately more than $100 million.

1. Discussion: None

L. Baseline Comparison: No Action – Presented for comparison purposes only as required by federal regulations.

1. Discussion:

1. Q - Mr. Názirite Pérez asked if the plume depiction is accurate and how did it get so far.

A - Mr. Ryan said the plume is drawn from the latest data (collected in 1999). Contamination worked its way into the shallow groundwater and as the groundwater moves so does the contamination. Remember the sources are more than 20 years old.

2. Q - Mr. Rice asked if by getting all the TCE you will get all the PCE and DCE.

A - Mr. Panozzo said TCE was used just to show the maximum extent of the plume and modeling will cover the other contaminants.

3. Q - Mr. Quintanilla asked if there were any metals.

A - Mr. Ryan responded that there may be very little chromium.

4. Q - Mr. Quintanilla asked if the city council or Judge Krier had been briefed.

A - Mr. Antwine said that meetings were planned but no dates had been set. He added that AFBCA had extended an open invitation to talk with city and county leaders at anytime.

M. Mr. Folk-Williams asked if anyone had any other input. No one did. It was suggested that if the members thought of inputs before the pubic forum they could provide them to Mr. Folk-Williams or Ms. Musgrave.

III. Review Public Meeting Approach and Format

A. Ms. Musgrave, AFBCA explained the table and poster station arrangement for the next public forum. There would be a series of nine poster station sessions. GKDA, Metropolitan Health and the RAB were also offered tables. She explained the meeting was for presentation of potential solutions to draw inputs that will help in narrowing down to solutions that meet the community's concerns.

B. Discussion:

1. Q - Mr. Quintanilla asked, "Will you define the area of the plume and are you only presenting Zone 4?" He went on to say that the people want to know the boundary of the area for cleanup.

A - Mr. Ryan said they have a box showing the area under Zone 4 and that that area was going to be addressed.

2. Q - Mr. Sam Murrah asked if the box was for soil or water?

A - Mr. Ryan said it is for the treatment of groundwater.

Comment - Mr. Murrah said that they were going around the cleanup the wrong way by not cleaning the soil. It had to be two different deals. He said you needed to treat the soil first then the water later.

3. Q - Mr. Rice said he missed the general sessions where you heard everyone's questions and comments. He asked if they could work that in.

A - Mr. Ryan said that possibly they could break into small groups, take questions, talk, and then report back when the different sessions ended.

IV. Meeting Miscellaneous

A. Mr. Rice asked Mr. Antwine to explain his quote in the newspaper. Is the base only cleaning those areas that exceed the MCL or cleaning to drinking water standards or to pristine levels? Mr. Antwine explained the base operates under state rules that require a cleanup to drinking water standards. Mr. Rice made the comment that he thought that meant MNA would then be ruled out. Mr. Antwine responded that he did not know if MNA would or would not be part of a solution.

B. Ms. Grybos brought up the issue of real estate disclosure. Mr. Antwine said they had talked to the Real Estate Board and confirmed that the seller should disclose any known problems with the property being sold. It was pointed out that the Air Force can only provide the information it has, such as existing wells and what was found in them. The Air Force will have at the meeting seller disclosure forms. In addition, it was mentioned that not all homes in the area have water under them.

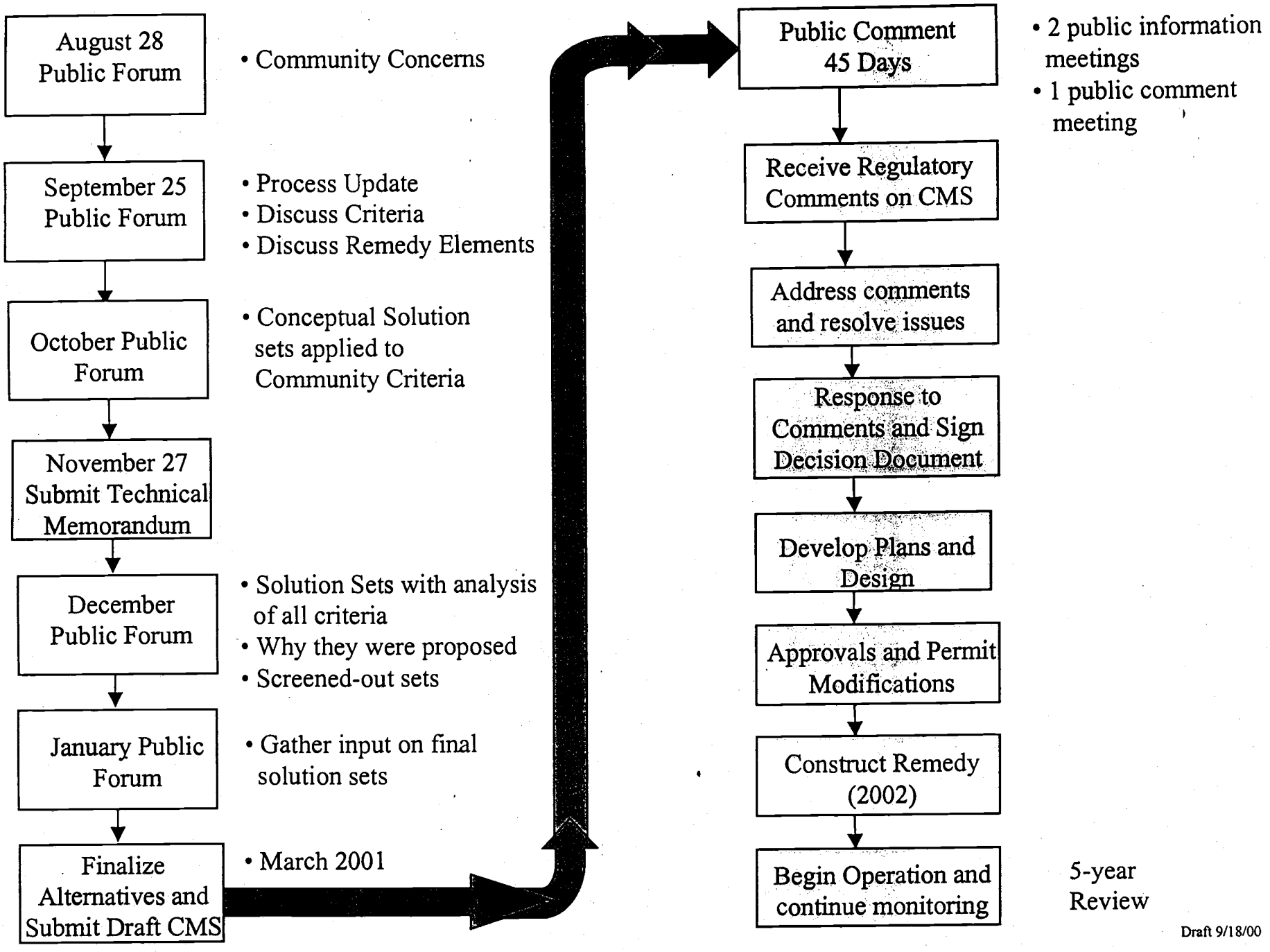
C. Mr. Antwine reminded members of the standing offer for tours of the various zones.

D. Meeting was adjourned at approximately 9:00 p.m.

Attachments (*Provided at the meeting to all RAB members)

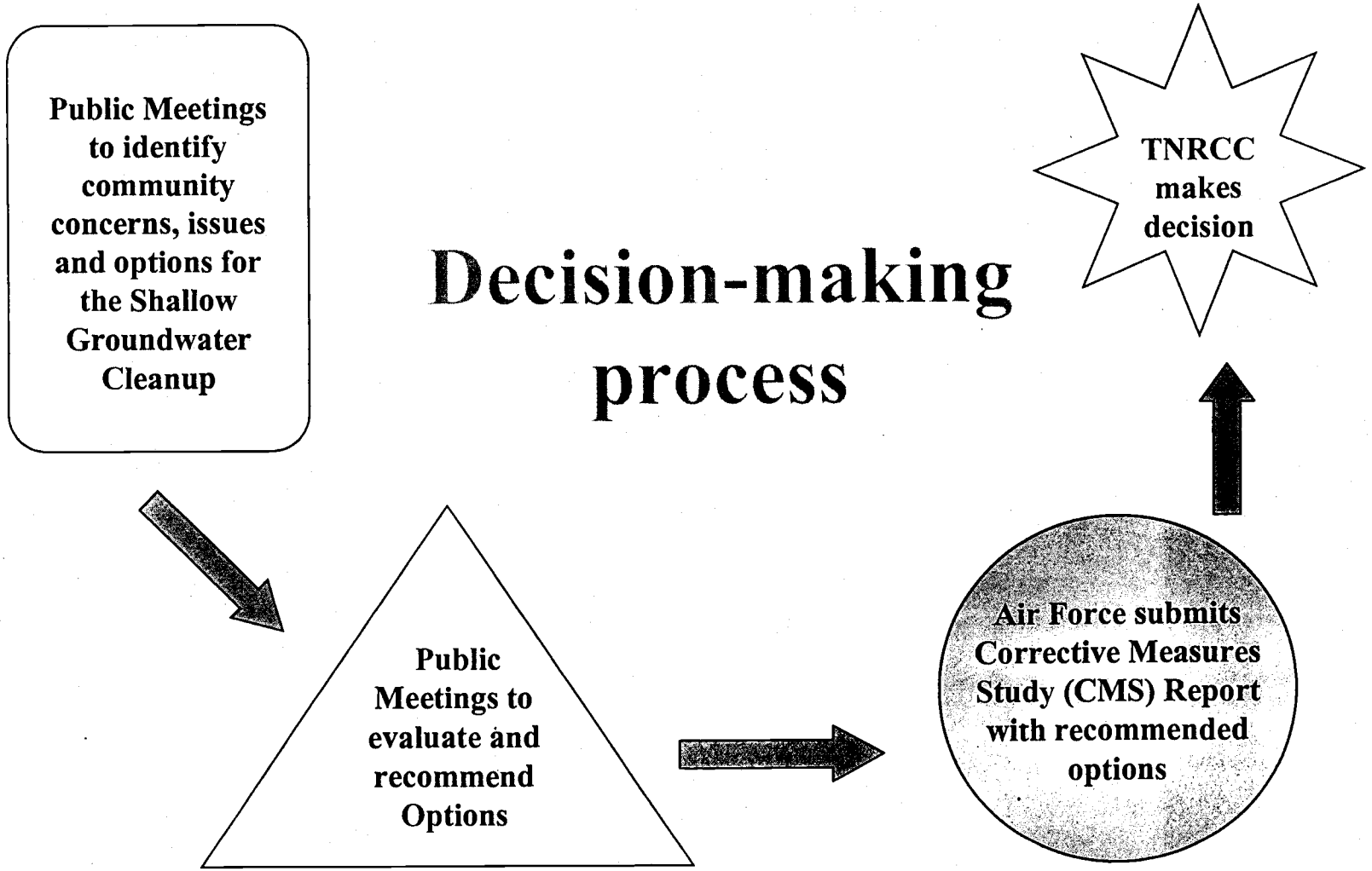
1. *Potential Technical Solutions Set
2. *Draft examples of handouts for the November Public Forum

Community Workshop and Zone 4 CMS Process



Draft 9/18/00

Moving Toward a Solution



DRAFT

ANALYSIS TABLE (SOLUTION EVALUATION)

POTENTIAL SOLUTION SETS AND EVALUATION CRITERIA FOR SHALLOW GROUNDWATER CLEANUP

COMMUNITY CRITERIA	SOLUTION SET A	SOLUTION SET B	SOLUTION SET C	SOLUTION SET D	SOLUTION SET E	SOLUTION SET F	SOLUTION SET G	SOLUTION SET H	SOLUTION SET I	BASELINE/ NO ACTION COMPARISON
Public health concerns are addressed or referred to appropriate agencies.										
Public health concerns are addressed during the cleanup.										
The option uses techniques to protect people and the environment during construction and operation of the cleanup.										
The groundwater will be cleaned to drinking water standards.										
The groundwater levels will protect human health and the environment.										
The groundwater will be cleaned to pristine conditions.										
The Edwards Aquifer is protected.										
There is testing to ensure that locally grown foods are safe to eat.										
The option addresses on-base and off-base contamination.										

DRAFT

Positive effects are sought for homeowners and businesses: measures to preserve or restore property values during the cleanup are considered.										
The ability to obtain property access to implement the remedy is considered.										
Property value concerns are addressed or referred to appropriate agencies.										
Shallow groundwater will be cleaned up to drinking water standards in six years or less.										
There is an Air Force commitment for full disclosure of environmental information.										
Long-term Air Force commitment is demonstrated with funding, staffing, and public participation.										
State or federal agencies can enforce the option.										
Full-time jobs and job training for environmental work are provided.										
Industries will provide equal pay for equal work.										
The benefits of the options adequately justify the costs.										
The money is being spent to the best benefit of the community.										
The option complies with local zoning laws and codes.										
The option complies with other applicable laws such as funding or legal limits on use of government funds.										

DRAFT

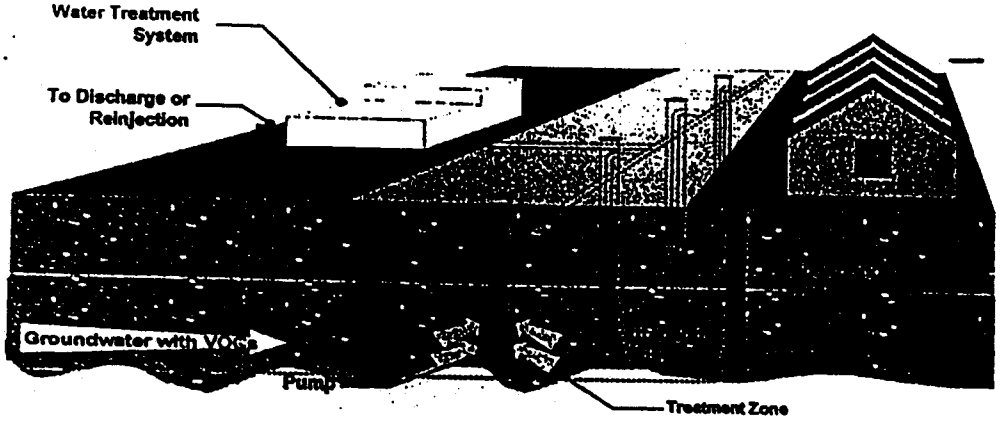
A determination of which parts of the options community members support, have reservations about, or oppose.										
Other quality of life concerns are addressed or referred to the appropriate agency, such as infrastructure improvements, disruption of the neighborhood, etc.										

☆

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

Pump and Treat

Description

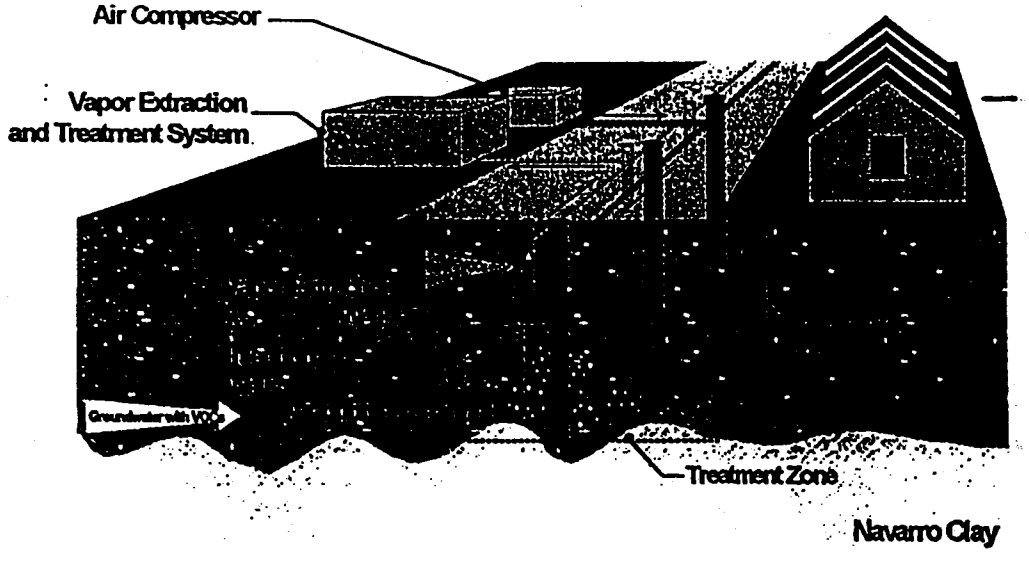


Pump and Treat contains and treats contaminated groundwater. It continuously pumps groundwater and treats it in a treatment plant on the surface. The groundwater can be pumped through vertical wells (as illustrated in the diagram) or through horizontally drilled wells.

The water that is pumped from the ground is treated through a water treatment system, such as air strippers, carbon filters, or an Ultraviolet Oxidation system. The treated water can then be discharged to a sanitary or storm sewer, re-injected into the ground or put to beneficial use.

Air Sparging with Vapor Extraction

Description

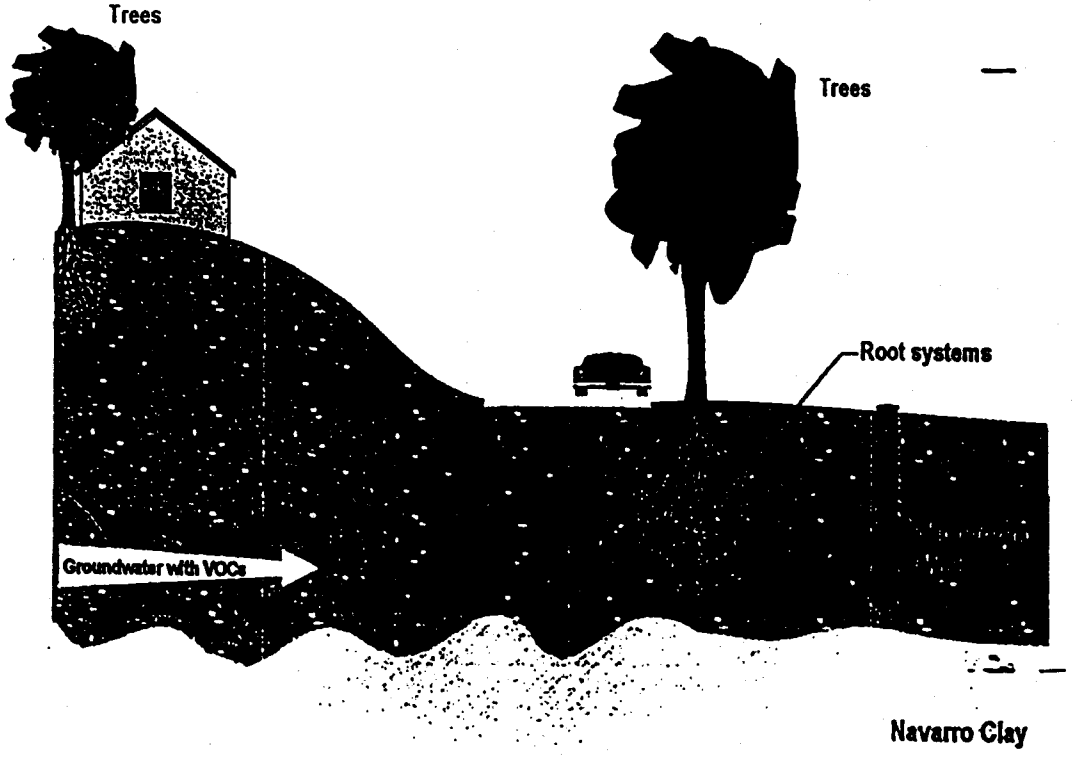


Air sparging with vapor extraction (AS/VE) , is a simple continuous process that physically separates contaminants from groundwater by turning them into vapors or gases and then collecting them. Air sparging means pumping air into the ground below the water table. The air will rise up through the groundwater and pull the pollutants out of the water. The vapors and gases are collected by applying a vacuum through a system of underground wells above the water table (this process is called vapor extraction). AS/VE systems are used for contaminants that have a tendency to evaporate easily. The contaminant found in shallow groundwater are volatile organic compounds and evaporate easily.

Air sparging is accomplished through a series of injection wells that are drilled to depths below the water table. Air piping must run from an air compressor to each injection well. The vapor extraction wells are similar, although they are not drilled to below the watertable. The vapors extracted through the vapor extraction wells are typically treated at a treatment plant located on the surface. Treatment plants may treat the vapors using carbon adsorption, or burning (incineration, catalytic oxidation). The treatment plant and air compressors will be located through out the area to be treated.

Phytoremediation

Description



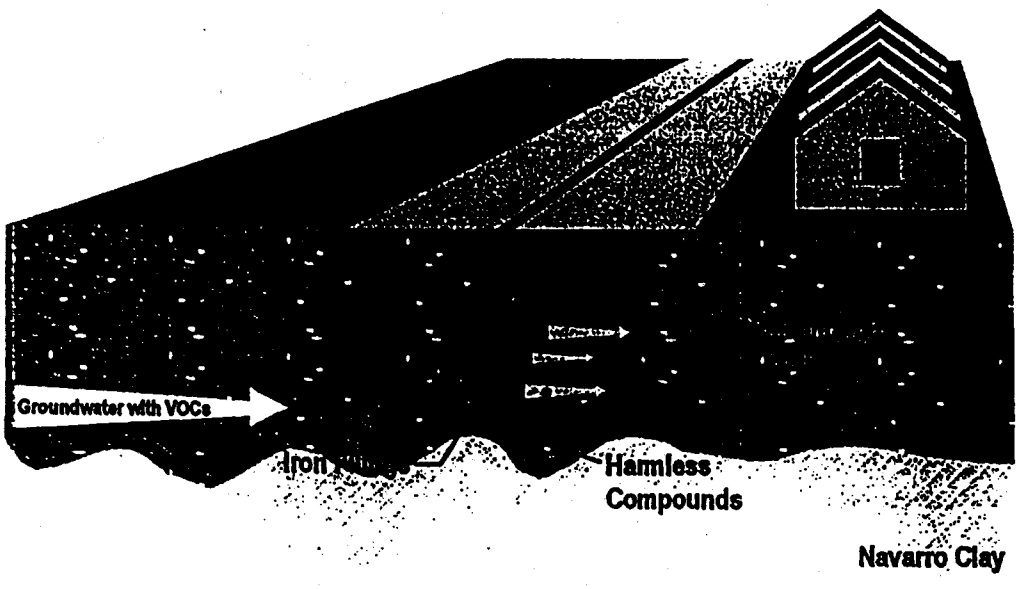
Phytoremediation means using living plants to clean up, or remediate, sites by removing pollutants from the water. Plants can help remove and break down some pollutants, including the solvents found in shallow groundwater.

For phytoremediation, trees are the most frequently used plant. Certain large trees have roots that can reach shallow groundwater. Contaminants are removed, destroyed, or degraded in root area.

The most promising application of phytoremediation is where groundwater is near the surface along creeks or rivers.

Reactive Barriers

Description



Reactive barriers, or treatment walls, are structures installed underground to continuously treat contaminated groundwater. Treatment walls are put in place by first constructing a trench across the flow path of contaminated groundwater. The trench is then filled with a material chosen based on the types of contaminants found at a site.

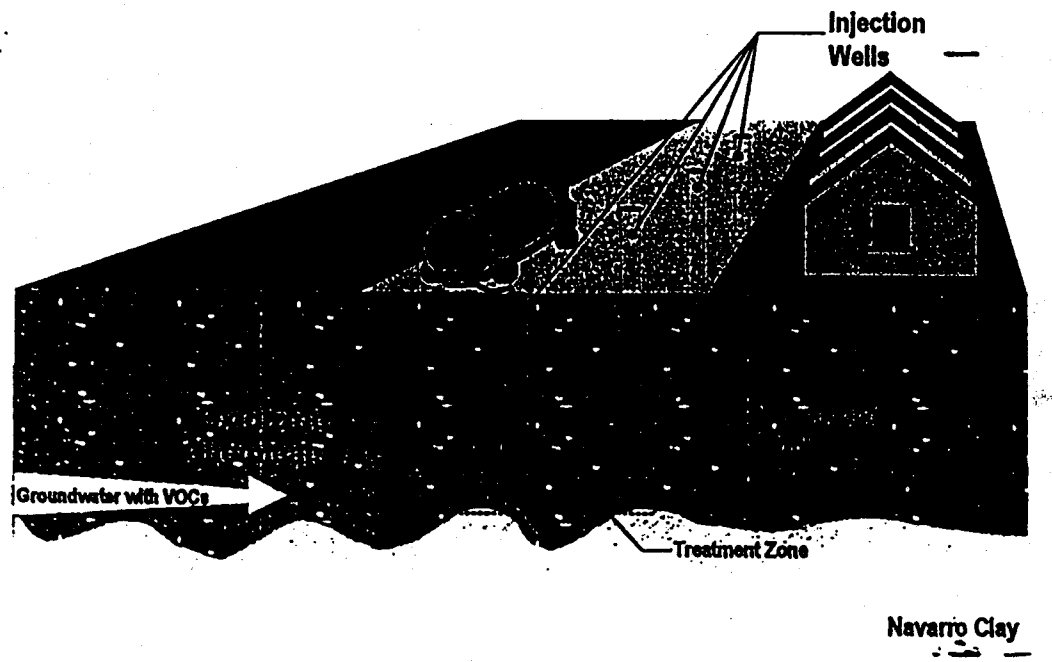
As the contaminated groundwater flows through the treatment wall, the contaminants are chemically changed into less toxic or nontoxic substances. For chlorinated solvents iron filings are the most commonly used treatment material. The iron filings will chemically reduce and strip off the chlorines from the solvents, converting them to harmless compounds.

Reactive barriers can be effective in treating the water that passes through them, but they cannot treat pollutants that are already downstream of them. By placing several parallel walls in a contaminated area, it might be possible to speed up the clean-up.

Since the reactive barriers are typically built using heavy equipment, their construction may result in temporary street closures and other construction-related disturbances.

In Situ Oxidation

Description



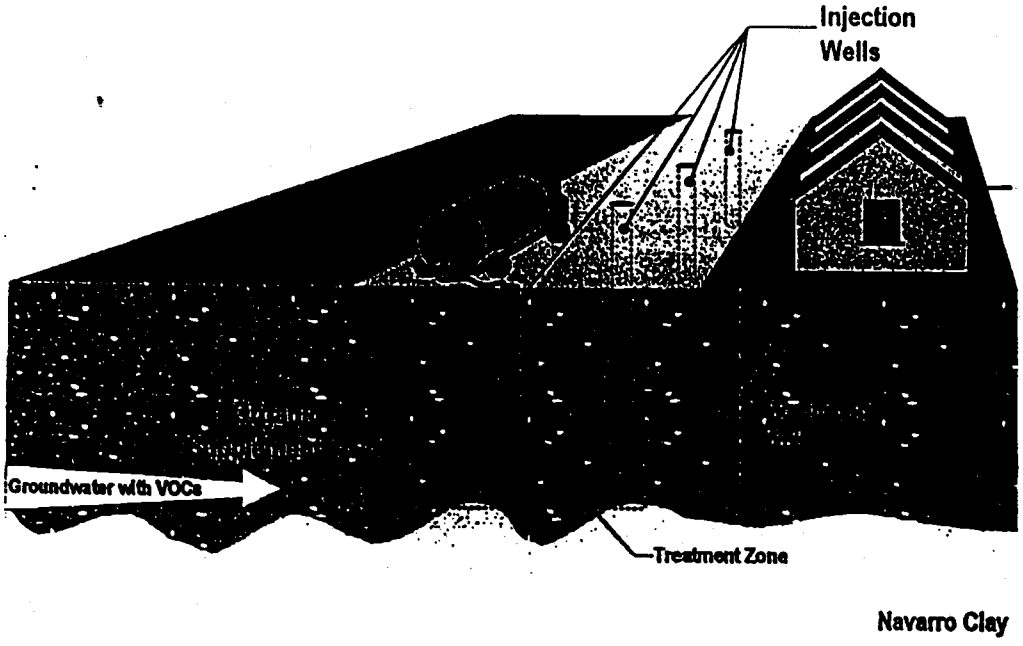
In situ, or in place, oxidation is a technology that uses chemicals to treat contaminated groundwater. The chemicals are injected into wells and treatment takes place below the surface.

Two common compounds used for in situ oxidation are hydrogen peroxide or potassium permanganate. When they contact the pollutants, they all are turned into less toxic or nontoxic substances through chemical reactions.

To be effective, in situ oxidation requires that relatively large amounts of the oxidizing chemicals be injected into the ground. The chemicals must be reinjected periodically for the process to remain effective.

Enhanced Biodegradation

Description

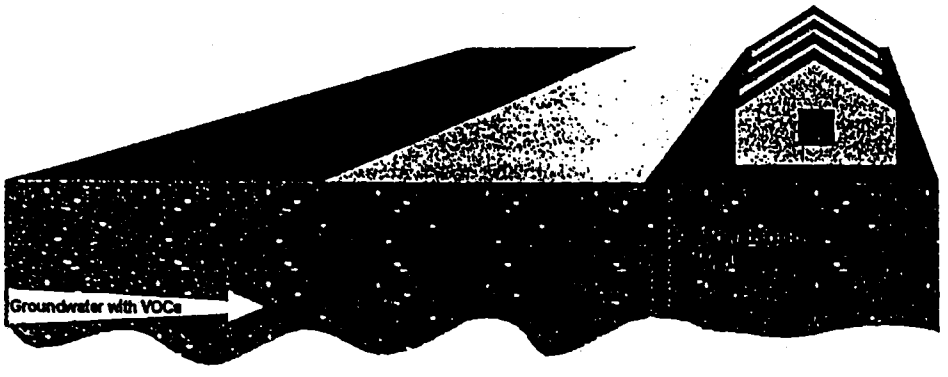


Enhanced biodegradation is a treatment process for groundwater contamination. Biodegradation uses naturally occurring microorganisms (bacteria) to degrade, or break down, hazardous substances into less toxic or nontoxic substances. Microorganisms, just like humans, eat and digest organic substances for nutrients and energy.

To speed up the natural breakdown of fuels or solvents, enhanced biodegradation helps create the best environmental conditions for the microorganisms to break down the contaminants.

Monitored Natural Attenuation

Description



Monitored Natural Attenuation (MNA) is a technology that takes advantage of ongoing natural processes to reduce contaminant concentrations. These processes may include:

Biodegradation

Chemical or biological stabilization

Dispersion mixing

Volatilization

Dilution

Sorption

MNA involves intensive groundwater sampling, and evaluating of contaminamt reduction rates to verify how it is working. It may be an acceptable clean-up approach when used with other active technologies and can be done in time frames comparable to other technologies.

DRAFT

Criteria for Community-Based Technical Solutions

To comply with Federal regulations, the Air Force must follow certain government criteria when proposing a solution for the cleanup of contamination affecting the shallow groundwater in Zone 4. In addition to the regulatory criteria, the Air Force has asked the community to provide their own criteria for the shallow groundwater cleanup process. The Air Force, Environmental Protection Agency (EPA), and Texas Natural Resource Conservation Commission (TNRCC), must balance all of these criteria when choosing a solution. In an effort to identify a potential solution that balances all criteria, we need your assistance.

Below is a summary of the criteria. Tell us how important to you the criteria listed below are by numbering them from 1 through 8. (Consider 1 as most important and 8 as least important).

_____ A. Protecting public health.

_____ B. Protecting the environment such as trees, plants and gardens, animals and livestock and the Edwards Aquifer.

_____ C. Construction disturbances such as trenching, drilling, dust, noise, road closures and detours.

_____ D. Construction safety risks such as trenching, drilling, traffic detours and hazards.

_____ E. Periodic but long-term operational disturbances such as noise, random detours, presence of maintenance crews.

_____ F. Periodic but long-term operational health risks such as exposure to vapors, contaminated water, fire, or possible explosions.

_____ G. Property access for the placement of wells, piping or treatment plants within neighborhoods.

_____ H. Cleanup cost the amount of money needed for the solution over time.

Comments:

_____

_____

_____

_____

_____

DRAFT CRITERIA TO EVALUATE POTENTIAL SOLUTIONS

Expressed Community Interests

1. **Community Acceptance** (expressed community interests or a determination of which parts of the options community members support, have reservations about, or oppose.)

Health and Safety

a. Public health concerns are addressed or referred to appropriate agencies.
b. Public health concerns are addressed during the cleanup.
c. The option uses techniques to protect people and the environment during construction and operation of the cleanup.
d. The groundwater will be cleaned to drinking water standards.
e. The groundwater levels will protect human health and the environment.
f. The groundwater will be cleaned to pristine conditions.
g. The Edwards Aquifer is protected.
h. There is testing to ensure that locally grown foods are safe to eat.

Property Values

i. The option addresses on-base and off-base contamination.
j. Positive effects are sought for homeowners and businesses: measures to preserve or restore property values during the cleanup are considered.
k. The ability to obtain property access to implement the remedy is considered.
l. Property value concerns are addressed or referred to appropriate agencies.

Technical

m. Shallow groundwater will be cleaned up to drinking water standards in six years or less.

Other

n. There is an Air Force commitment for full disclosure of environmental information.
o. Long-term Air Force commitment is demonstrated with funding, staffing, and public participation.
p. State or federal agencies can enforce the option.
q. Full-time jobs and job training for environmental work are provided.
r. Industries will provide equal pay for equal work.
s. The benefits of the options adequately justify the costs.
t. The money is being spent to the best benefit of the community.
u. The option complies with local zoning laws and codes.
v. The option complies with other applicable laws such as funding or legal limits on use of government funds.
w. A determination of which parts of the options community members support, have reservations about, or oppose.
x. Other quality of life concerns are addressed or referred to the appropriate agency, such as infrastructure improvements, disruption of the neighborhood, etc.

Government Criteria: What do the regulators look for?

Government rules and regulations require that the Air Force evaluate potential options against the following criteria.

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.

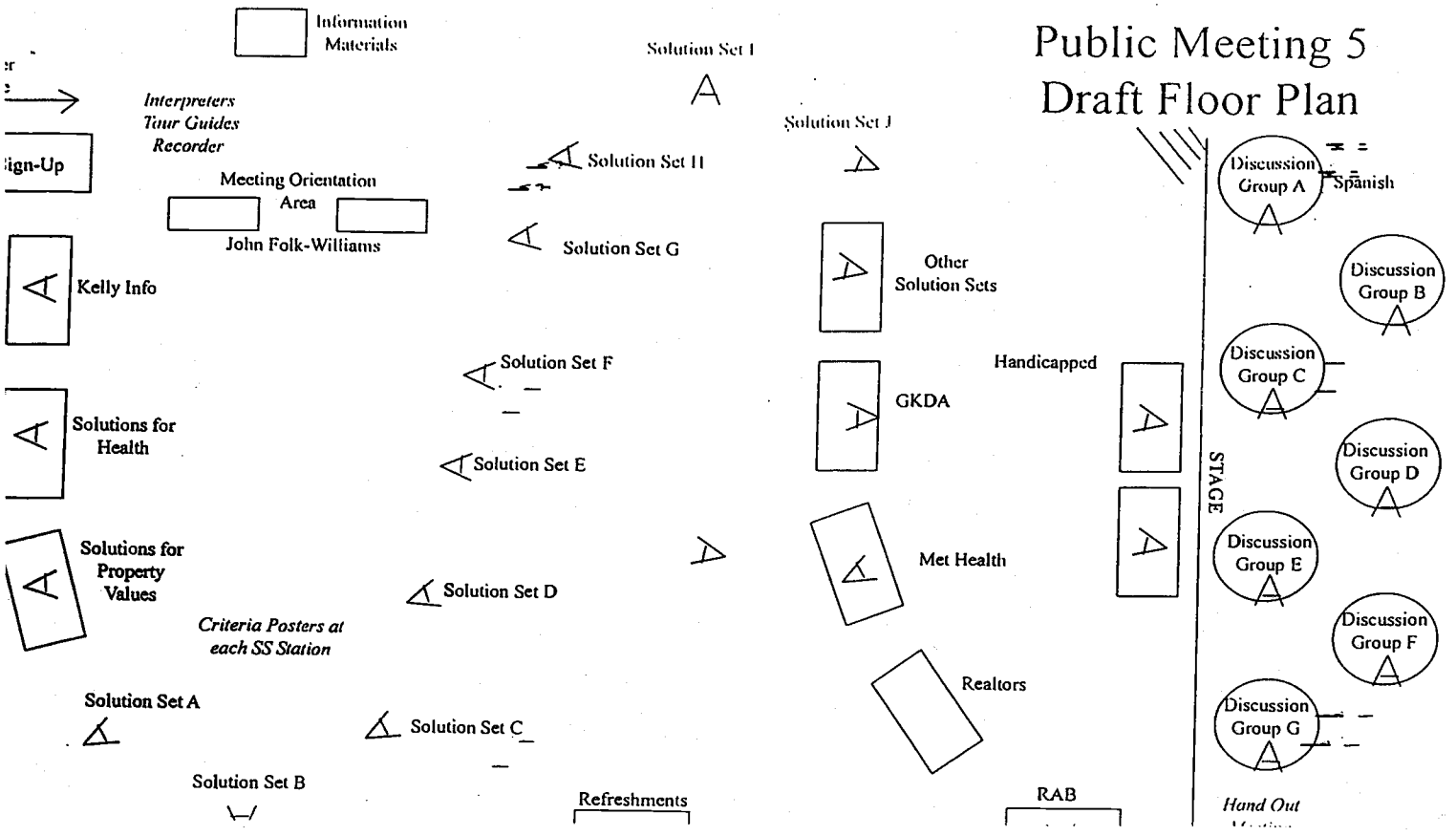
e. The ease of conducting additional cleanup actions is considered.
f. The ability to monitor the effectiveness of the cleanup is considered.

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.

Comments or suggestions:

Public Meeting 5
Draft Floor Plan



Potential Health Options

Work with and support the Bexar County Metropolitan Health District on a special program that might include public education, neighborhood health surveys, historical health research, medical evaluations, etc.

- Sign Memorandum of Agreement between AFBCA and Bexar County Metropolitan Health District
- Assist in providing funding for this special program. Request money from Air Force.

Provide additional one-time sampling of neighborhood soil, air, or groundwater targeted by the community.

- Contract a lab to do the sampling (Independent, State or Federal lab, Air Force).

Conduct local garden sampling.

- Work with appropriate agency to get analysis of local garden produce and other edible plants.

Educate health professionals and the community about potential health issues.

- Work with the Bexar County Metropolitan Health District.
- Conduct training for health professionals only on the specific concerns/health problems that face the community. Include health resources.
- Conduct training for the community on the specific concerns/health problems that they are interested in.
- After training, have the health professionals use their training and meet one-on-one with the community.
- Provide a contact for environmental health issues (Air Force or Met Health).

Provide a bottled water program.

- Implement a bottled water program to homes above plume.
- Provide a voucher program for residents to obtain water.
- Other water ideas?

Work with other agencies on a program to protect the Edwards Aquifer recharge zone and water resources.

- Properly abandon "orphan" Edwards wells within the plume area.

Properly abandon wells that may be in the contaminated shallow groundwater.

- Additional notices out to the community asking if they have a well.
- From responses and existing information determine which existing wells need to be properly abandoned.

Other suggestions . . .

Potential Property Values Options

Adopt a city-wide ordinance to prevent wells in the shallow groundwater.
- Work with the COSA and TNRCC to prevent citizens from drilling wells that will extract water from contaminated shallow groundwater.
- Provide city-wide public meetings to educate the community on the difference between a shallow groundwater well and an Edwards well, including the difference in water quality.
- Cite Texas Risk Reduction Program (TRRP) rules as they pertain to the Texas Water Code and the Texas Health and Safety Code.

OR

Place deed notice on individual properties to prevent exposure to contaminated shallow groundwater.
- Per Texas Property Code, a person must disclose all known defects on a parcel of property.
- Per Texas Risk Reduction Standard for contaminants left in place, ensure that the recording agency is aware of the areas that have contamination and records the appropriate information.

Provide data and information about the shallow groundwater to the Bexar County Tax Appraisal District (BAD).
- Provide Bexar County Tax Appraisal District with information received from sampling and remediation efforts on the extent of the cleanup in order to provide homeowners with accurate appraisals.

Provide infrastructure improvements (for example the Quintana Road project).
- Establish criteria that will be used.
- Work with the city to continue these improvements.
- Assist with soil testing and disposal.

Educate local realtors and lenders.
- Provide local realtors and lenders with materials on the shallow groundwater, the associated contamination, and how it affects the community (people and property).
- Provide training courses to these realtors and lenders on the shallow groundwater contamination.

Monitor property values.
- Establish/assign a group to conduct monitoring (BAD, SA Board of Realtors, other).
- Set a specific area to monitor and monitoring period. (i.e. annually).
- Set up reporting procedures to report the results to the community.

Compensation.
- Buy-out/Property value compensation - Review legal basis and established methodology for compensation.
- Reimbursement for use of private property during implementation.

Coordinate projects with other government programs (i.e. TXDOT, Metropolitan Planning Authority).
- Work with other government programs to ensure that what they are doing within the community correlates with the overall redevelopment of Kelly AFB.

Conduct river improvement projects.
- Work with the San Antonio River Authority to include the community's requests in their river improvement projects.

In coordination with GKDA, plan a green buffer zone between Kelly AFB and the residential area.
- Prevent construction of new buildings in areas near a residential area.
- On vacant property near residential areas plant trees and grass. Make a public park, if feasible.

Provide for an independent assessment and monitoring of the shallow groundwater cleanup.
- Hire an independent contractor to monitor the cleanup of the shallow groundwater (TAPP program) and have the contractor report the results directly to the community.

Other suggestions . . .

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE