APACHE POWDER SUPERFUND SITE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION 9 • JULY 2005

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the Environmental Protection Agency's (EPA's) Preferred Plan for cleaning up remaining contamination at the Apache Powder Superfund Site (Site) located near St. David, Arizona (see Figure 1). Based on public comments received on this Proposed Plan, EPA will select revised remedies for the cleanup of the Southern Area Shallow Aquifer Groundwater and Soils at the Site. These revised remedies are considered fundamental changes to EPA's original 1994 Record of Decision (ROD) which selected groundwater and soils remedies and was subsequently amended in 1997 and 2000 with two Explanation of Significant Differences (ESDs).

EPA is also making some additional changes or modifications to support these fundamental remedy changes. The purpose of this document is to inform the community about these proposed changes and solicit comments.

EPA PROPOSED CHANGES AND MODIFICATIONS TO THE REMEDY

* Change the remedy for the cleanup of Southern Area Groundwater (contaminated with nitrate and perchlorate) from constructed wetlands to monitored natural attenuation and continue the use of institutional controls;
* Change the remedy for contaminated soils in former ponds on the Site from containment with a clay cap to containment with a native soil cap and include the use of institutional controls;
* Expand EPA's cleanup standards by selecting a groundwater cleanup standard for perchlorate, a new contaminant of concern;
* Modify EPA's soils cleanup standards by adopting ADEQ's risk assessment procedures, in addition to cleanup levels, to determine the appropriate final

Mark Your Calendar - Dates To Remember

PUBLIC MEETING ON PROPOSED PLAN:

EPA will hold a public meeting to explain the Proposed Plan and all the cleanup alternatives being considered. Oral and written comments will also be accepted at the meeting.

July 19, 2005
7:00 pm
St. David Schools, Auditorium
70 Patton Street
St. David, Arizona

PUBLIC COMMENT PERIOD:

EPA will accept written comments on the Proposed Plan during the public comment period. Written comments must be postmarked no later than August 4, 2005. (See contacts at the end of this Proposed Plan.)

July 6 - August 4, 2005

remedy if residual contamination remains in soils; and

* Modify the Northern Area wetlands remedy by adopting discharge standards for a secondary discharge location at the Northern Area wetlands to improve operational efficiency and to establish performance standards when this contingency discharge location is used.

For the proposed fundamental changes, EPA directed Apache Nitrogen Products, Inc. (ANP) to complete supplemental feasibility studies to compare new proposed remedy alternatives to previously considered remedies. The feasibility studies evaluated the proposed remedies against the nine criteria established in the National Contingency Plan, the primary guidance document for Superfund (see Figure 2). EPA proposes to amend previous cleanup decisions because of new information on the contamination and how to best clean it up. This Proposed Plan includes a summary of the cleanup alternatives identified and re-evaluated for use at the Site.

A 30-day public comment period will be held from July 6 through August 4, 2005 and a public meeting is scheduled for July 19, 2005 in St. David to discuss the EPA's proposed cleanup remedies.

This document is issued by EPA, lead agency for site activities, and the Arizona Department of Environmental Quality (ADEQ), the support agency. EPA, in consultation with ADEQ, will select a final remedy for the Site after reviewing and considering all information submitted during the public comment period. In consultation with ADEQ, EPA may modify the Preferred Alternatives or select other response actions presented in this Plan based on public comments. Therefore, the public is encouraged to review and comment on the Proposed Plan.

EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 300.430 (f)(2) of the National Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the Supplemental Feasibility Study Report for the Southern Area Groundwater, the Supplemental Feasibility Study Report for the Remaining Contaminated Soils Areas, and other documents contained in the Administrative Record file for this Site. EPA and the State encourage the public to review these documents to gain a more comprehensive

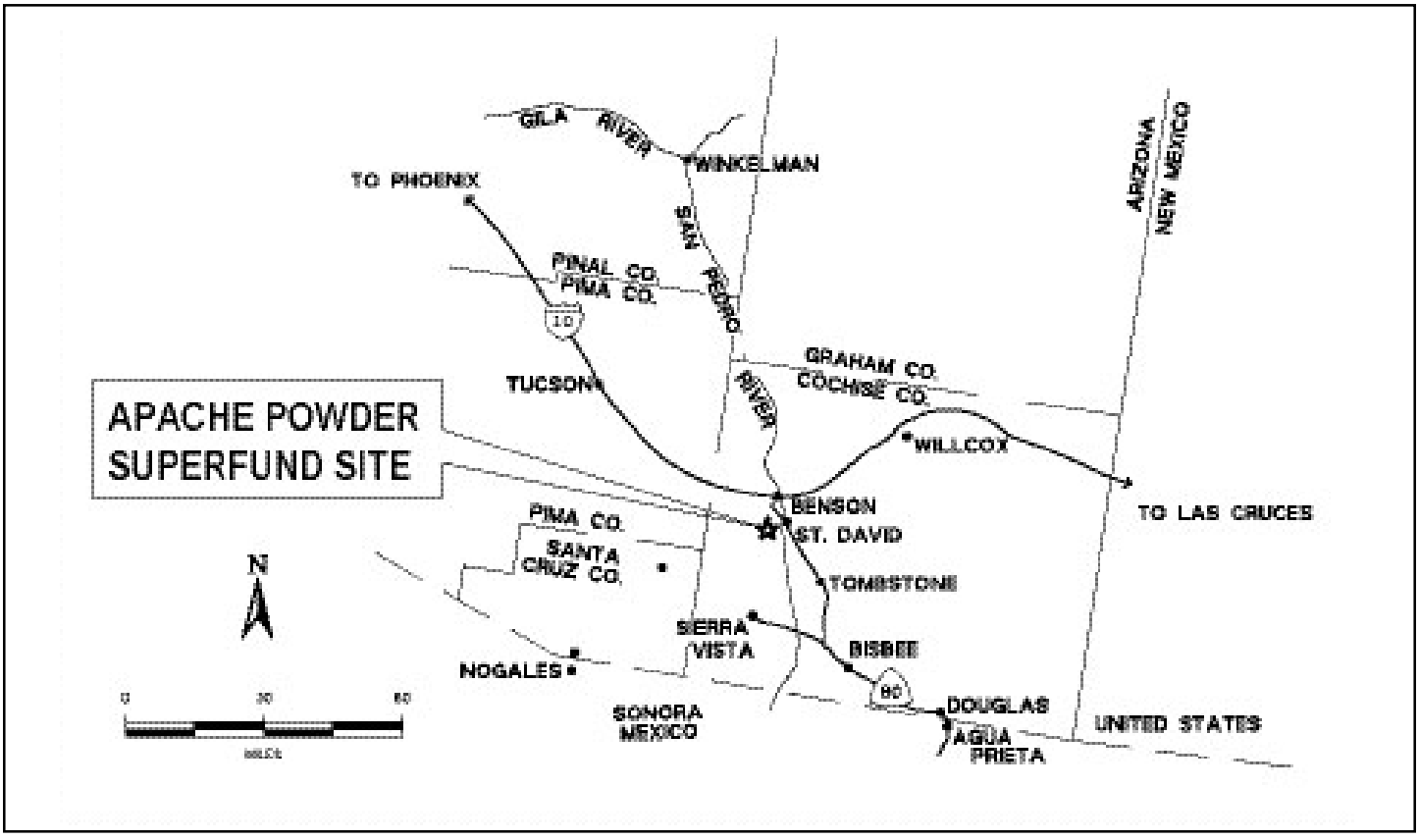

Figure 1: Location of Apache Powder Superfund Site, Cochise County, Arizona

understanding of the Site and Superfund activities that have been conducted there. The Administrative Record file is available locally at the Benson Library. Some files are also available for review at ADEQ's Southern Regional Office in Tucson (see page 15).

SITE CHARACTERISTICS AND PRIOR CLEANUP ACTIONS

GROUNDWATER CONTAMINATION

The primary groundwater contaminants at the Apache Powder Superfund Site are nitrate, which was discovered in the early 1980s, and perchlorate which was discovered in 1998. Nitrate is present in the Northern Area of the Site, and both nitrate and perchlorate are contaminants of concern (COCs) in the Southern Area. The groundwater contamination is confined to the shallow aquifer west of the San Pedro River and was initially investigated in the 1990s as one unit. However, when perchlorate was detected in the Southern Area the agencies began to address these two areas separately as described below.

As a result of the discovery of nitrate contamination of the shallow aquifer groundwater, both EPA and ADEQ began oversight of groundwater cleanup activities in the early 1990s.

Under a 1994 EPA Unilateral Administrative Order (UAO) and remedy decision documents, ANP has conducted the following actions:

* In October 1994, ANP completed the construction of eight deep aquifer replacement wells for the households that had been using bottled water since 1989 because of nitrate contamination in the shallow aquifer.
* EPA's 1994 ROD selected the use of a brine concentrator to treat extracted contaminated water from the perched system and use of constructed wetlands to biologically degrade the nitrate in the shallow aquifer.
* In 1995, ANP began operating the brine concentrator, a closed-loop system, so that wastewaters were no longer discharged to the unlined evaporation ponds. ANP has continued to dewater the perched system by active extraction and evaporation of residual perched groundwater.
* In November 1997, based on further refinement of the remedy in EPA's 1997 ESD, ANP completed

SITE HISTORY

Apache Nitrogen Products, Inc. (ANP) began operations in 1922 as a manufacturer of industrial chemicals and explosives. Currently, ANP manufactures nitric acid, solid and liquid ammonium nitrate, and nitrogenous fertilizer solutions. Prior to 1971, facility wastewater was discharged on-site into dry washes which flow to the San Pedro River contaminating the shallow aquifer, both in the Northern Area and Southern Area of the Site, and the surface water of the San Pedro River. This wastewater was composed of wash-down and blow-down waters from its power house cooling tower, nitric acid plant, and from the loading, unloading and storage of raw materials and products. During the period of 1971 until 1995, ANP discharged wastewater into unlined evaporation ponds on ANP's property creating a perched system that contaminated the adjacent shallow aquifer in the Southern Area of the ANP facility.

The Apache Powder Superfund Site was first identified as an environmental problem in the early 1980s and EPA placed the Site on the National Priorities List (NPL) or Superfund list in 1990. ANP completed a remedial investigation and feasibility study report (RI/FS) in 1994. EPA signed a Record of Decision (ROD) that same year selecting the Agency's proposed remedies. ANP has been conducting remedial design (RD) and remedial action (RA) required by Superfund during the intervening years under EPA's 1994 Unilateral Administrative Order (UAO). ANP also has been concurrently conducting other cleanup actions under regulatory requirements of the Arizona Department of Environmental Quality (ADEQ) under a 1994 Consent Decree. In 1997 and 2000, EPA made additional modifications to the original 1994 ROD remedy in two Explanation of Significant Differences (ESDs).

REMEDY SELECTION

Nine Criteria Analysis

1. **Overall Protection of Human Health and the Environment**
   How risks are eliminated, reduced or controlled through treatment, engineering or institutional controls.

2. **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)**
   Federal and state environmental statutes met and/or grounds for waiver provided.

3. **Long-term Effectiveness**
   Maintain reliable protection of human health and the environment over time, once cleanup goals are met.

4. **Reduction of Toxicity, Mobility or Volume (TMV) Through Treatment**
   Ability of a remedy to reduce the toxicity, mobility and volume of the hazardous contaminants present at the site.

5. **Short-term Effectiveness**
   Protection of human health and the environment during construction and implementation period.

6. **Implementability**
   Technical and administrative feasibility of a remedy, including the availability of materials and services needed to carry it out.

7. **Cost**
   Estimated capital, operation and maintenance costs of each alternative.

8. **State Acceptance**
   State concurs with, opposes or has no comment on the preferred alternative.

9. **Community Acceptance**
   Community concerns addressed; community preferences considered.

FINAL REMEDY

construction on a 4.5-acre constructed wetlands (Northern Area Remediation System or NARS) to treat nitrate-contaminated groundwater extracted from the Northern Area of the Site (see Figure 5).

* In 1998-1999, ANP planted the wetlands and began extracting contaminated groundwater to fill the wetlands. ANP completed the establishment phase of the wetlands in 2004 and began full-scale pumping, treatment and discharge in 2005.

In 1998, when perchlorate was discovered in the shallow aquifer in the Southern Area, EPA directed ANP to conduct further field investigations and analysis of whether constructed wetlands or another remedy would be more appropriate for the Southern Area. Additional actions were conducted in the Southern Area as follows:

* Beginning in 1998, ANP conducted a Southern Area groundwater investigation including resampling the San Pedro River over several years. The investigation indicated that nitrate and perchlorate contamination is hydraulically confined in the Southern Area in the Molinos Creek Sub-Aquifer (see Figure 3). A portion of the contamination has migrated beyond the ANP facility boundary underneath private property.

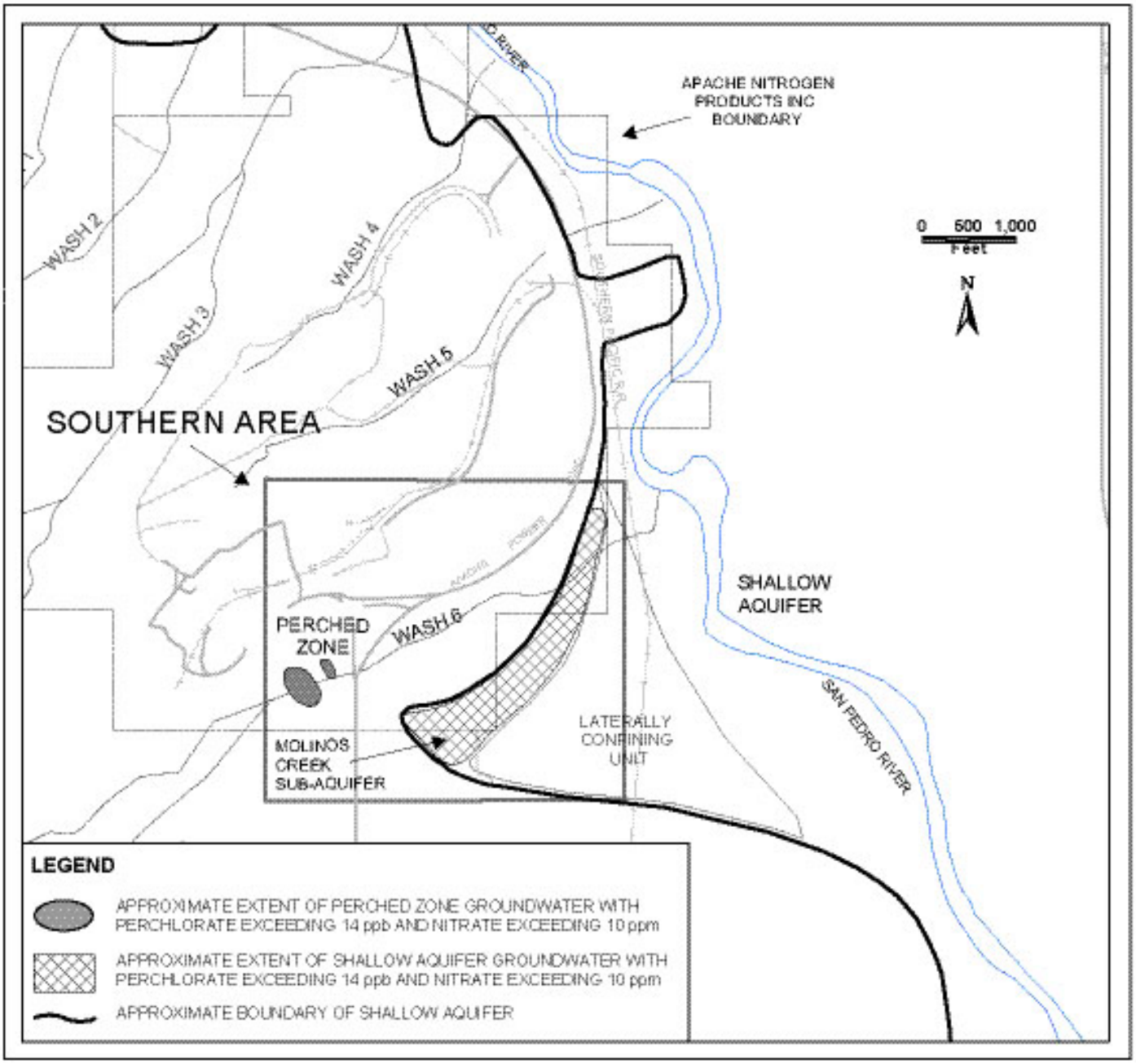

Figure 3: Groundwater Contamination in Southern Area

* In 2000-2003, ANP completed several studies, including a monitored natural attenuation study, culminating in a Supplemental Feasibility Study for the Southern Area Groundwater.

In this proposed action, EPA is changing the remedy for the Southern Area from constructed wetlands to a different remedy that will address both nitrate and perchlorate and will protect public health.

In 2000, EPA directed ANP to reinvestigate the Northern Area to identify the extent of nitrate contamination in the shallow aquifer and surface water of the San Pedro River. During testing, ANP detected nitrate above the state and federal drinking water standard of 10 parts per million (ppm) in wells beyond the groundwater capture zone of the Northern Area wetlands system (see Figure 4) and some northern sections of the river. EPA continues to evaluate new data to determine whether further refinements will be necessary to fully capture the nitrate contamination in the Northern Area. Results of on-going investigation and groundwater modeling will be used by EPA to determine if further modifications to the remedy may be necessary in the future.

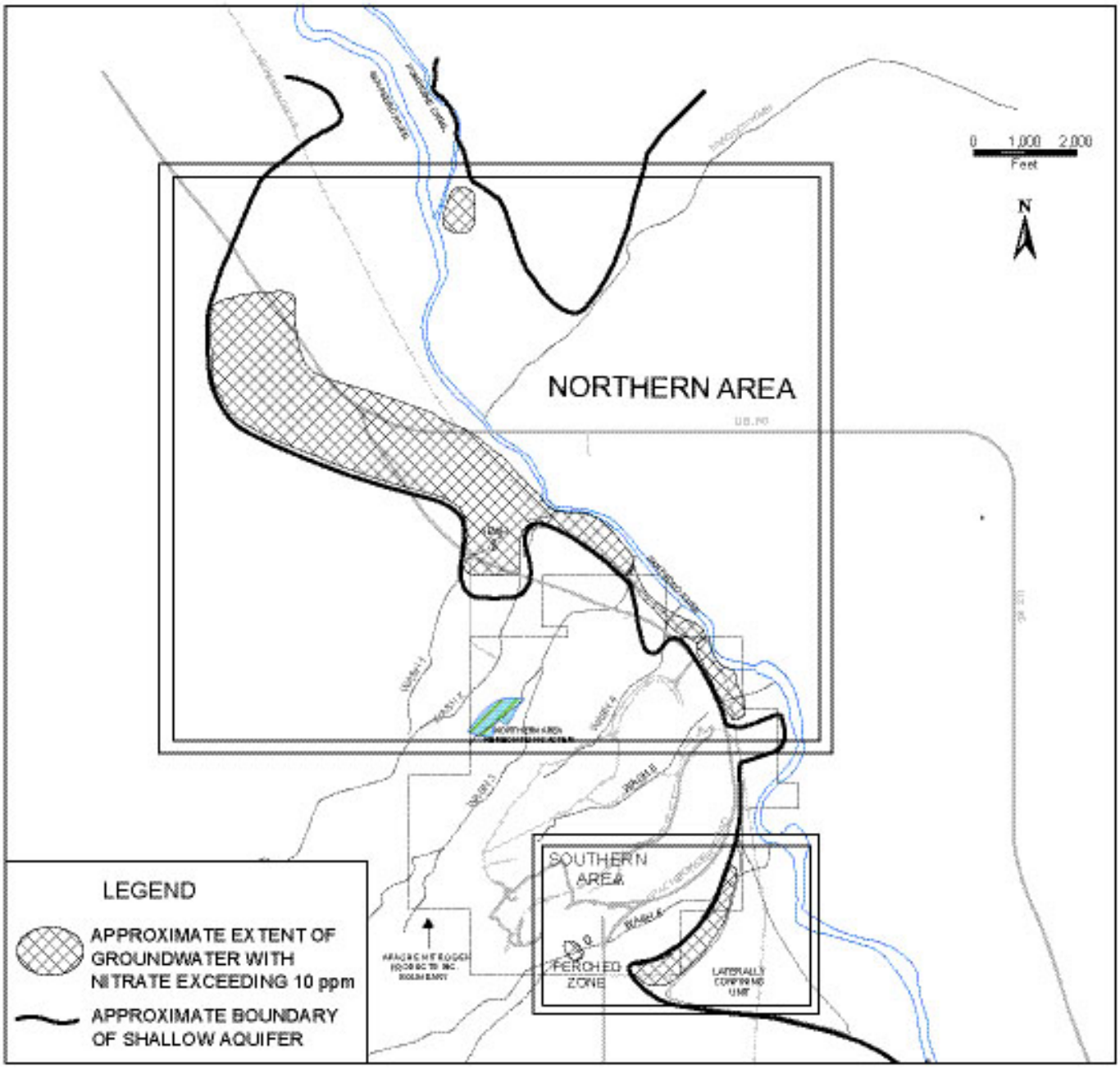

Figure 4: Location of Northern Area Extent of Nitrate Contamination in Shallow Aquifer

Since the construction of the wetlands in the Northern Area, the treated effluent has not been sufficiently consistent for EPA to allow ANP to discharge it at the intended discharge location near the shallow aquifer. Because this system was not consistently meeting the cleanup standard of 10 ppm for nitrate, and because of unresolved regulatory concerns regarding coliform (e-coli) standards for the San Pedro River, EPA directed ANP to discharge to an alternate discharge point in Wash 3 located approximately one mile away from the San Pedro River. The e-coli issue has now been resolved and unlike prior years, the NARS is now treating the nitrate consistently to below 10 ppm. As of June 2005, the NARS-treated effluent was below 5 ppm nitrate. The NARS-treated effluent is now being discharged at the primary discharge location in Wash 3, in close proximity to the shallow aquifer and the San Pedro River (see Figure 5).

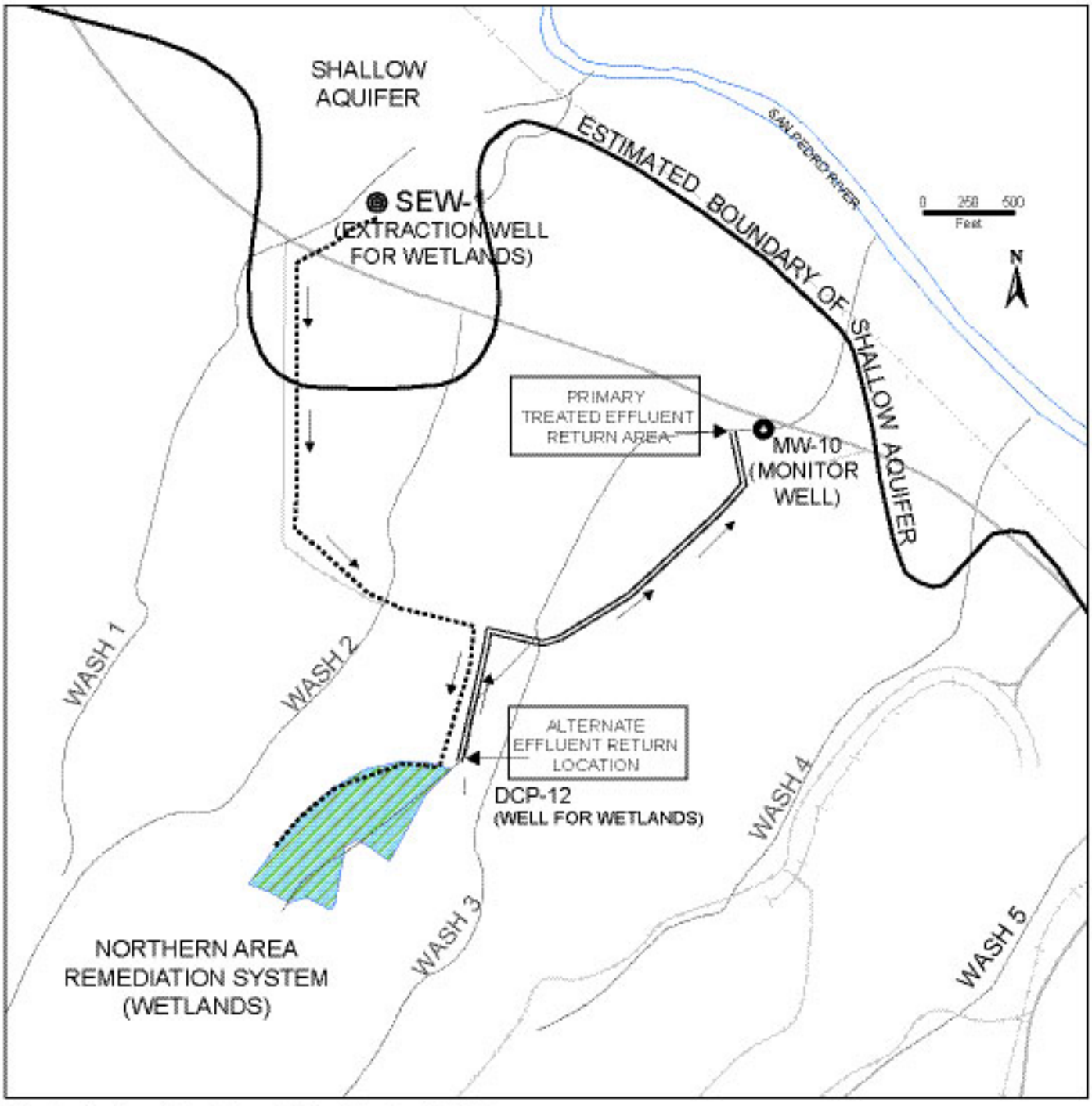

Figure 5: Northern Area Remediation System (NARS)

SOILS CONTAMINATION

The primary soil contaminants at the Site were trinitrotoluene (TNT), dinitrotoluene (DNT), lead and vanadium pentoxide. Other minor contaminants detected at low levels include arsenic, nitrate, perchlorate, beryllium and antimony. The following actions have been taken to address soil contamination:

* During the early 1990s, ANP conducted an investigation of the contaminated soils areas at the Site. EPA and ADEQ identified several areas of soil contamination including contaminated evaporation ponds to be addressed (see Figure 6).
* In the 1994 ROD, EPA selected remedial actions for all identified areas with soils contamination. For most areas, EPA required excavation to specified cleanup levels with off-site disposal. However for one area, the "*inactive*" evaporation ponds, EPA required containment with a clay cap.
* Following the ROD, EPA issued an Order for cleanup of historic or inactive areas of the Site and ADEQ entered into a Consent Decree with ANP for cleanup of other areas of the Site where manufacturing operations were still ongoing. ADEQ and EPA divided regulatory oversight for the contami-

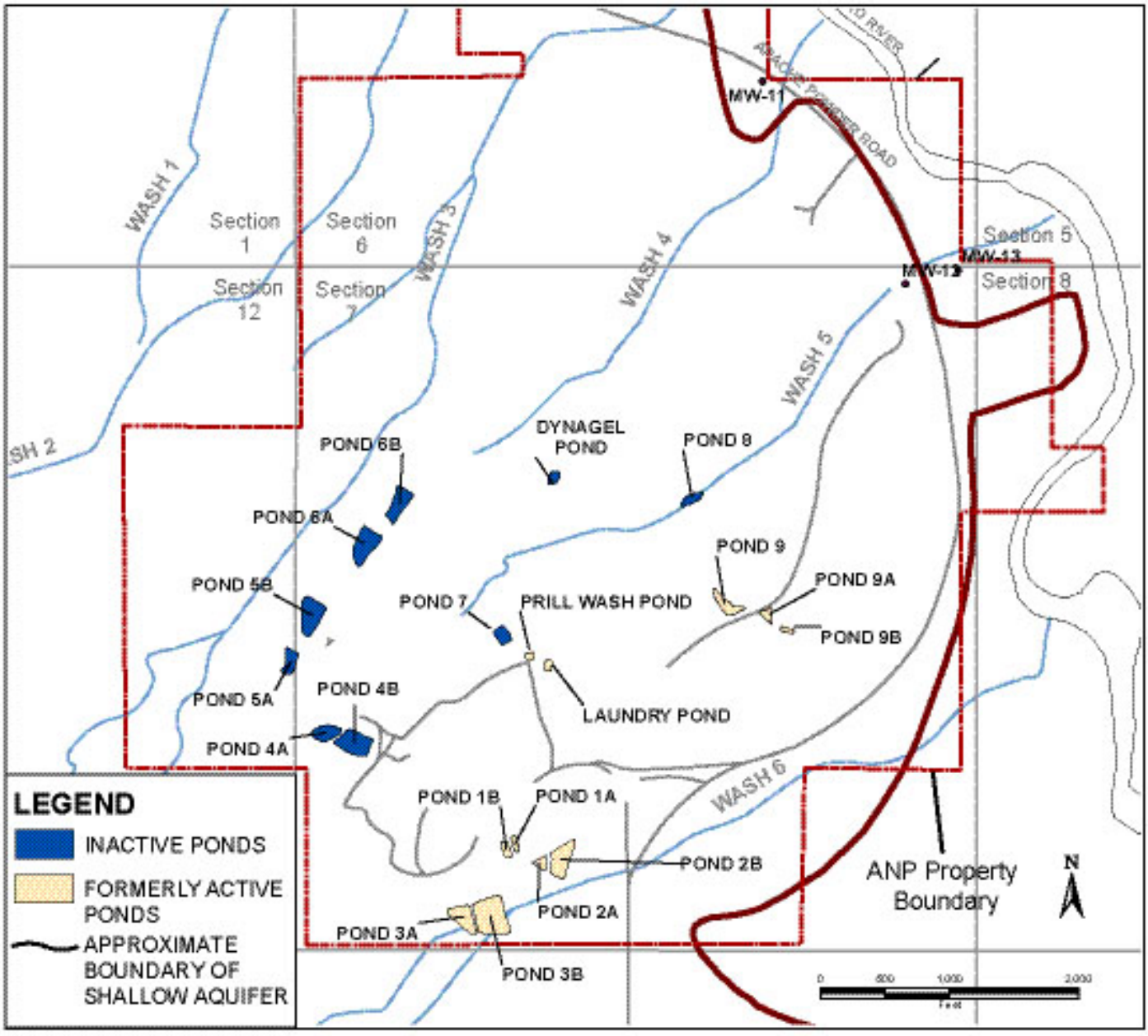

Figure 6: Formerly Active and Inactive Ponds

nated evaporation ponds; EPA took responsibility for the *inactive* ponds and ADEQ took responsibility for the *formerly active* ponds.

* In 1997, because new areas of soils contamination were identified, EPA modified the soils remedy requiring ANP to investigate and clean up these new areas including excavating, treating, containing, capping and or disposing of these soils as determined necessary by EPA.
* In 1999 and 2000, ANP excavated over 1,200 tons of contaminated soils which were transported off-site for treatment and/or disposal. ANP cleaned up all known areas of soils contamination except for the contaminated soils in all the evaporation ponds.
* In 2000, EPA further modified the soils remedy to modify the soil cleanup standards.
* In 2001-2002, ADEQ decided that the remedy for the *formerly active ponds* should be consistent with the soil remedies selected under Superfund for the *inactive* ponds.

Because of new soils data, EPA directed ANP in 2004 to complete an updated alternatives analysis for close out of all the evaporation ponds. EPA is proposing in this action to revise the previous remedy for the *inactive* ponds. This new remedy will also apply to the *formerly active* ponds remaining to be closed out under ADEQ's Consent Decree.

SCOPE OF THIS ACTION AND REMEDIAL ACTION OBJECTIVES

Based on new information, including the discovery of perchlorate in the Southern Area, EPA has decided further changes and modifications to the remedy are appropriate. The proposed remedial actions for the Southern Area Groundwater and the residual soils contamination in ponds are the most significant decisions remaining at the Site. EPA established Remedial Action Objectives to prevent current and future exposure to contaminated media through a combination of treatment and containment of soil and groundwater, as follows:

* Restore the aquifer to drinking water standards for nitrate and EPA's site-specific cleanup level for perchlorate within a reasonable time frame;
* Minimize future migration of groundwater contamination;
* Restrict future use of the Site to non-residential uses;
* Reduce or eliminate further contamination of groundwater and surface water to allow the beneficial reuse of these resources; and
* Reduce or eliminate the direct contact threat associated with contaminated soil.

SUMMARY OF SITE RISKS

As part of the Superfund process, EPA evaluates the potential risk a site may pose to the public and environment. EPA conducted a baseline risk assessment in September 1992, with additional risk information incorporated into the June 1994 Feasibility Study Report, to determine the current and future effects of contaminants on human health and the environment. The Site's current use is industrial, and this is the anticipated future land use for the main operational areas of the Site. The areas adjacent to the Site outside the ANP facility boundary are used for residential and agricultural purposes. The potential future use of the groundwater will be as a drinking water source for the community once safe cleanup levels have been achieved. Therefore, in looking at potential risk and future use of the Site, the Preferred Alternatives identified in this Proposed Plan are necessary to protect public health, welfare or the environment.

ECOLOGICAL RISK EVALUATION

In November 2004, ANP completed a screening ecological risk assessment to determine if there were any potential significant ecological impacts from chemicals detected at the Site. The Report concluded, after screening all areas of the Site with residual soil contamination, that these locations either did not contain contaminants of ecological concern or that these locations were not suitable as habitat. The Report further indicated that remedial measures to address contaminants may actually cause unnecessary disturbance to the ecological community. Therefore, the actions described in this Proposed Plan are necessary solely to address potential public health impacts.

FUNDAMENTAL CHANGES TO THE REMEDY

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate and compare the different remediation alternatives in order to select a remedy (see Figure 2, page 4). For both the Southern Area Shallow Aquifer Groundwater and Contaminated Soils and Sediments in Ponds, the Proposed Plan summarizes the performance of each alternative against the nine criteria, noting how each alternative compares to the other options under consideration. The "Detailed Analysis of Alternatives" can be found in the respective Supplemental Feasibility Study (SFS) Reports for each media component located in the Benson Library.

ALTERNATIVES FOR SOUTHERN AREA GROUNDWATER

EPA's preferred alternative for cleanup of the Southern Area Shallow Aquifer Groundwater is Alternative 3 (Monitored Natural Attenuation or MNA) (see Figure 7) with continued use of institutional controls and informational outreach to caution the public to avoid using the shallow aquifer groundwater for drinking water until contaminants reach safe levels. ANP will continue source control (continued de-watering of the perched zone). Figure 3 shows the location of the contaminated Southern Area Shallow Aquifer and the perched zone. Alternatives 2 (Reverse Osmosis) and 4 (Ion Exchange) are both effective and implementable technologies for treating nitrate and perchlorate, but they also generate process waste streams which would need to be managed and disposed of off-site with resulting much higher costs. EPA does not consider the No Action Alternative 1 effective or protective for the Southern Area Shallow Aquifer Groundwater.

The alternatives evaluated were:

* Alternative 1 - No Action EPA's guidance requires this alternative to be evaluated to establish a baseline for comparison. (Estimated Cost $0)
* Alternative 2 - Reverse Osmosis (RO) Contaminated groundwater is extracted, treated by passing the water through a membrane separation process under high pressure and recharged into the shallow aquifer. RO is a proven, engineered technology for removal of nitrate and perchlorate, but it generates a solid sludge that must be disposed. (Estimated Cost $5.1 million)
* Alternative 3 - Monitored Natural Attenuation - *EPA's Preferred Alternative* Contaminated groundwater is allowed to degrade naturally through biological processes without implementing extraction or treatment technologies. (Estimated Cost $768,000)
* Alternative 4 - Ion Exchange Contaminated groundwater is extracted, treated by passing the water through an ion exchange resin and recharged into the shallow aquifer. Ion exchange is a proven, engineered technology for removal of nitrate and perchlorate, but it generates used resin that must be disposed of or recycled. (Estimated Cost $4.1 million)

MNA is the Preferred Alternative because it is expected to achieve substantial and long-term risk reduction in a reasonable time frame. Under favorable conditions, natural processes act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants (both nitrate and perchlorate) in the groundwater. The evaluation of MNA included a comprehensive site characterization and measures to treat or otherwise control the source (the perched zone) of the groundwater contamination in the Southern Area (see Figure 7). The progress of natural attenuation toward the Site's remediation objectives will be carefully monitored to ensure that it will meet Site cleanup objectives within a time frame that is reasonable compared to those of other methods. Some of the contaminated groundwater in the Southern Area has migrated beyond ANP's boundary underneath nearby private property. However, long-term impacts on existing water supplies or resources are not anticipated as a result of implementing the MNA remedy because of the hydraulic isolation of the Molinos Creek Sub-Aquifer.

Some of the specific reasons that MNA is the preferred alternative are based on the findings of the *Characterization of Groundwater Systems in the Southern Area Report* (Hargis + Associates, June 10, 2003) and *Applicability of Monitored Natural Attenuation Report* (Hargis + Associates, July 9, 2003):

* *Natural Conditions Contain Contamination in Southern Area*. The buried St. David clay surface is dissected by a system of ancient channels eroded by the "ancestral" San Pedro River and a local ancient tributary informally named Molinos Creek Sub-Aquifer. The Molinos Creek Sub-Aquifer remains separated from the San Pedro River by fine-grained sediments called the laterally confining unit (see Figure 3). The Sub-Aquifer roughly trends north-

SOUTHERN AREA SHALLOW AQUIFER GROUNDWATER

ALTERNATIVE EVALUATION TABLE

Evaluation Criteria	Alternative 1 No Action	Alternative 2 Reverse Osmosis (RO)	Alternative 3 Monitored Natural Attenuation (MNA) *EPA's Preferred Alternative*	Alternative 4 Ion Exchange
Overall Protectiveness	○	●	●	●
Compliance with State and Federal Requirements	○	●	●	●
Long-term Effectiveness	○	●	●	●
Implementability	not applicable	●	●	●
Short-term Effectiveness	not applicable	●	●	●
Reduction of Toxicity, Mobility or Volume by Treatment	○	●	●	●
Estimated Project Costs	$0	$5.1 million	$768,000	$4.1 million
State Agency Acceptance	ADEQ has verbally concurred with EPA's preferred alternative.			
Community Acceptance	Community acceptance of the preferred alternative will be evaluated after the public comment period.			

● = Fully meets criterion ◒ = Partially meets criterion ○ = Does not meet criterion

Note: EPA's prefers Alternative 3 (MNA) because natural geologic and hydrogeologic conditions contain the nitrate and perchlorate contamination in the Southern Area and MNA is most cost-effective. MNA is effective in reducing the mass and concentrations of both contaminants naturally without the need to engineer and manage an energy-demanding physical treatment plant.

Figure 7: Alternative Evaluation table Southern Area Shallow Aquifer

south along the ANP south-eastern boundary and acts as an hydraulic "sink" that contains the perchlorate and nitrate contamination in the Southern Area.

* *MNA is Effective for Both Nitrate and Perchlorate.* MNA is an effective remedy for reducing the mass and concentration of dissolved nitrate and perchlorate. Nitrate and perchlorate-reducing bacteria are present in the Southern Area.
* *Institutional Controls Will Continue to be Used to Prevent Use of Contaminated Groundwater Until Cleanup Levels are Achieved.* Institutional controls, including on-going communications with affected landowners and the community regarding groundwater use, will continue to be used to caution the public about using contaminated shallow aquifer groundwater as drinking water until cleanup levels are reached. Other institutional controls could include: the placement of a Declaration of Environmental Use Restriction on ANP property to restrict the installation of new drinking water wells into the shallow aquifer for potable purposes; completion of periodic updated well inventories by ANP for all wells within one mile of the contamination based on state well permitting and drilling records and property transfers; and reporting requirements that ANP would have to fulfill to ensure distribution of information on use restrictions and the known extent of contamination to interested or affected parties.
* *Natural Processes Are Expected to Achieve Remedial Objectives in a Reasonable Time Frame Compared to Other Objectives.* Groundwater computer model projections indicate that MNA can attain groundwater cleanup goals for both perchlorate and nitrate within a time frame comparable to the remedy selected for the Northern Area of the Site (within 30 years).
* *Performance Monitoring Required for Site*. Monitoring will continue to be employed to protect public health from potential exposure to contaminated groundwater. EPA proposes frequent groundwater monitoring to track the effectiveness of natural attenuation and check for potential uncontrolled migration towards drinking water supplies. Performance standards will be established for the MNA remedy in the amended ROD including a requirement that a comprehensive well-monitoring network be established or expanded as necessary. Additionally, adequate monitoring will be conducted to ensure that the concentrations of COCs in specific monitoring wells continue to decline and that contamination does not migrate beyond the boundaries of the monitoring network.
* *Contingency Measures will be Implemented if Natural Attenuation is Unable to Achieve Cleanup Goals.* If concentrations of COCs should begin to increase in the designated monitoring wells or if contamination should be detected beyond the boundary of the monitoring network, the MNA remedy will be re-evaluated within six months of the detection of these changes. The MNA remedy also will be re-evaluated during each five-year review. If, based on any such re-evaluation, it is determined that the MNA remedy is not performing as projected, then EPA will consider well-head treatment, other pump-and-treat remedies, or alternative treatment technologies. If necessary, EPA may modify the remedy for the Southern Area to allow such a remedy change.

ALTERNATIVES FOR CONTAMINATED SOILS IN PONDS

EPA's Preferred Alternative for cleanup of the Contaminated Soils and Sediments in Ponds (see Figure 8) at the Apache Powder Superfund Site is a combination of Alternative 4 (Containment with a Native Soil Cap) and Alternative 2 (Institutional Controls). This is a change from the 1994 ROD which selected use of containment with a clay cap for the residual soil contamination to be left on the ANP facility. These alternatives are compared against EPA's nine criteria shown in Figure 2. Alternatives 3 (Containment with a Clay Cap) and Alternative 4 (Containment with a Native Soil Cap) are both effective and implementable. However, because the primary exposure pathway is inhalation or ingestion, both types of caps are equally protective and a native soil cap is significantly lower in cost. EPA does not consider the No Action Alternative 1 effective or protective for the contaminated soils in ponds.

The alternatives evaluated were:

* Alternative 1 - No Action EPA's guidance requires this alternative to be evaluated to establish a baseline for comparison. (Estimated Cost $0)
* Alternative 2 - Institutional Controls - *EPA's Preferred Alternative, along with Alternative 4* Administrative and/or legal mechanisms actions

CONTAMINATED SOILS IN PONDS

ALTERNATIVE EVALUATION TABLE

Evaluation Criteria	Alternative 1 No Action	Alternative 2 Institutional Controls *EPA's Preferred Alternative in combination with Alternative 4*	Alternative 3 Containment with Clay Cap	Alternative 4 Containment with Native Soil Cap *EPA's Preferred Alternative in combination with Alternative 2*
Overall Protectiveness	○	◒	●	●
Compliance with State and Federal Requirements	○	○	●	●
Long-term Effectiveness	○	●	●	●
Implementability	not applicable	●	●	●
Short-term Effectiveness	not applicable	●	◒	◒
Reduction of Toxicity, Mobility or Volume by Treatment	○	○	◒	◒
Estimated Project Costs	$0	$85,000	$2.04 million	$430,000
State Agency Acceptance	ADEQ has verbally concurred with EPA's preferred alternative.			
Community Acceptance	Community acceptance of the preferred alternative will be evaluated after the public comment period.			

● = Fully meets criterion ◒ = Partially meets criterion ○ = Does not meet criterion

Note: Alternatives 3 and 4 both meet most of EPA's evaluation criteria, but the estimated total project costs for Alternative 4 are significantly lower than for Alternative 3. While Alternative 2 (Institutional Controls) independently would not be effective, the use of deed restrictions in combination with Alternative 4 creates a more effective remedy than Alternative 4 by itself.

Figure 8: Alternative Evaluation Table Contaminated Soils in Ponds

designed to reduce or eliminate exposure to contaminated soils, such as deed restrictions that would be used to limit future use to non-residential uses and to prevent exposure to contaminated soils remaining at the Site. (Estimated Cost $85,000)

* Alternative 3 - Containment with Clay Cap Ponds with residual soil contamination that exceeds EPA's cleanup standards would be regraded and covered with an engineered clay cap. A deed restriction would also be necessary because residual contamination would remain on-Site. (Estimated Cost $2.04 million)
* Alternative 4 - Containment with Native Soil Cap - *EPA's Preferred Alternative, along with Alternative 2* Ponds with residual soil contamination that exceeds EPA's cleanup standards would be regraded and covered with a native soil cap. (Estimated Cost $430,000)

EPA's Preferred Alternative is a native soil cap comprised of at least two feet of clean fill. This will prevent exposure (inhalation and ingestion) to contaminated soils and sediments and reduce potential water infiltration. It will be as protective as a clay cap (the remedy previously selected in the 1994 ROD) because these ponds are underlain with St. David clay.

EPA's preference is to combine the native soil cap with institutional controls and maintenance measures:

* Declaration of Environmental Use Restriction (DEUR);
* Access restriction, such as fencing and/or signage, for areas with a DEUR;
* Engineering controls, including management of storm-water runoff and prevention of ponding and infiltration; and
* Maintenance of the native soil cap and monitoring its performance.

The Amended ROD will set forth the details of which engineering or institutional controls will be applicable to specific ponds.

OTHER CHANGES OR MODIFICATIONS TO THE REMEDY

CLEANUP STANDARDS FOR GROUNDWATER

EPA and the State of Arizona have not established a drinking water standard for perchlorate. EPA proposes a Site-specific cleanup standard for perchlorate of 14 ppb, which is the Arizona Department of Health Services' Health Based Guidance Level (HBGL). An HBGL is similar to an EPA Preliminary Remediation Goal (PRG), which is an initial cleanup goal developed on readily available information. An HBGL is meant to set a level that will be protective of human exposure, including exposure by sensitive populations. The Arizona HBGL is not inconsistent with EPA's Integrated Risk Information System (IRIS) reference dose. A reference dose is the amount of chemical to which a person, including sensitive populations, could be exposed over a lifetime without adverse health effects.

ADOPTION OF STATE SOILS REMEDIATION LEVELS PROCESS FOR RISK ASSESSMENT

Minor modifications to the remedy are needed where residual soils contamination remains at the Site. This residual soil contamination may not pose a public health risk and, therefore, may not need further cleanup. To address this, EPA is further modifying the soils cleanup standards selected in EPA's 2000 ESD (which adopted the State's residential Soil Remediation Levels, or SRLs, as EPA's soils cleanup standards for specific compounds) by also now adopting ADEQ's risk assessment procedures for determining site-specific risk-based cleanup standards and recommended remedial actions.

DISCHARGE STANDARDS FOR TREATED EFFLUENT FROM WETLANDS

The 1994 ROD required the treated effluent from the wetlands to meet a nitrate cleanup standard of 10 ppm when it was discharged into the shallow aquifer. However, the ROD and the 1997 ESD modifications to the wetlands remedy did not include any provisions if the effluent did not meet the 10 ppm standard nor allow for operational flexibility. In this action, EPA is proposing to allow some operation flexibility to the NARS, including provisions for an alternate discharge point as follows:

* Discharges of treated effluent at the primary discharge location must be at or below 10 ppm nitrate at all times.
* To allow for operational flexibility and interruptions to treatment due to unforeseen causes, effluent may be discharged at the secondary discharge location up to 20 percent of the time. Discharges at the secondary discharge location may exceed 10 ppm nitrate in accordance with the State's tributary rule.

* Discharges of e-coli from the NARS are exempt from meeting total counts of coliform because the e-coli is not a result of humans but from the use and visitation of wildlife to the wetlands.

SUMMARY OF PROPOSED ACTIONS

EPA's preferred remedy for completing the cleanup of the Southern Area Shallow Aquifer groundwater is monitored natural attenuation (MNA) of the contamination with continued dewatering of the perched zone and a deed restriction on ANP's property to prevent the contaminated water from being used until cleanup levels are reached. EPA's preferred remedy for the cleanup of the contaminated soils and sediments in the ponds is containing the contaminated soils underneath a cap of native soils and the use of deed restrictions to prevent future use of these areas for residential use. EPA believes both of these preferred remedies are protective of public health and the environment.

COMMUNITY PARTICIPATION

Community input is an important part of the Superfund decision-making process. You are encouraged to comment on the Proposed Plan either in person at the July 19 public meeting or in writing during the public comment period (July 6 - August 4, 2005). Please send written comments to Andria Benner (see contact information).

FOR MORE INFORMATION

If you have any questions about the Apache Powder Superfund Site or this Proposed Plan, please contact any of the people listed below:

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EPA's toll-free number is **(800) 231-3075** and ADEQ's toll-free number is **(888) 271-9302**.

(Please leave a message and your call will be returned.)

EPA's Website:
www.epa.gov/region09/waste/sfund

INFORMATION REPOSITORIES

All documents related to this Proposed Plan and previous Site documents can be found at:

Benson Library
302 South Huachuca
Benson, Arizona 85602
(520) 586-9535
Mon & Thurs 10:00 am - 7:00 pm
Tues & Wed 10:00 am - 6:00 pm
Fri 10:00 am - 5:00 pm
Sat 10:00 am - 1:00 pm

Superfund Records Center
95 Hawthorne Street, Suite 403
San Francisco, California 94105
(415) 536-2000
Mon-Fri 8:00 am - 5:00 pm