Groundwater Restoration Plan for the AT&SF Tie-Treater Superfund Site, New Mexico

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Prepared by:

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1. Introduction, Purpose, and Authority

The Groundwater Restoration Plan for the AT&SF Tie-Treater Superfund Site (Groundwater RP) has been prepared by the New Mexico Office of Natural Resources Trustee (ONRT) to address restoration actions arising from a natural resource damage settlement at the AT&SF Tie-Treater Superfund Site (Site) in Albuquerque, New Mexico.

In 2004, the ONRT[1.] and the United States Department of the Interior (DOI), acting through the United States Fish and Wildlife Service (Service), collectively referred to as "Trustees", entered into a negotiated settlement with the Burlington Northern and Santa Fe Railway Company (BNSF) and the United States Department of the Treasury (on behalf of the U.S. Railroad Administration), in the amount of $1,100,000 for natural resource damages to the Site. As mandated by the Consent Decree (Civil Action 04-1101), $38,807.40 was paid to DOI and the State of New Mexico for costs previously incurred to assess the injuries and loss of natural resources and $1,061,192.60 was placed by the United States Department of Justice into a court registry trust account and designated for use by the Trustees to plan and implement restoration projects designed to restore, rehabilitate, replace and/or acquire the equivalent of natural resources injured, destroyed or lost as a result of the release of hazardous substances at or from the Site. From the $1,061,192.60, $661,192.60 was designated for use by the ONRT to plan and implement groundwater restoration projects and $400,000 was paid to ONRT and DOI to plan and implement projects specific to wildlife habitat damages. The restoration of wildlife habitat was addressed in the February 2007 restoration plan titled "Final Wildlife Habitat Restoration Plan for the AT&SF Tie-Treater Superfund Site, New Mexico" (a copy of this document is available at ONRT's website at http://www.onrt.state.nm.us/).

The Trustees are required to use the settlement money to plan and implement restoration actions designed to compensate the public for natural resource injuries. The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, commonly known as the Federal "Superfund" law) designates natural resource Trustees, and requires that before the settlement monies can be used for restoration activities, a Restoration Plan must be developed with a minimum of a 30-day public notice and comment period. The Groundwater RP was developed in accordance with these requirements. For more information on the public notice and comment period for the Groundwater RP see Section 1.3.

1. Under Section 107(f) of the CERCLA, 42 USC § 9607(f), Section 311 of the Clean Water Act (CWA), 33 USC § 1321, and other applicable law, including Subpart G of the National Contingency Plan (NCP), 40 CFR §§ 300.600-300.615, the governor of each state appoints a Trustee for natural resources. The New Mexico Natural Resources Trustee, acting through the New Mexico Office of Natural Resources Trustee (collectively, "ONRT") is the designated natural resource Trustee for the State of New Mexico. ONRT derives additional authority from the New Mexico Natural Resources Trustee Act, NMSA 1978, §§ 75-7-1 to- 45 (1993).

The Groundwater RP provides information regarding the affected environment, describes and evaluates the different restoration alternatives considered, and explains the selection of the restoration projects that ONRT proposes to implement to compensate for groundwater injuries at the Site.

According to the guidance provided by Federal natural resource damage assessment (NRDA) regulations [43 CFR § 11.82(d)], the selected alternative is to be feasible, safe, cost-effective, address injured natural resources, consider actual and anticipated conditions, have a reasonable likelihood of success, and be consistent with applicable laws and policies. The selected restoration actions also must not conflict with the ongoing cleanup projects at the Site.

The restoration actions proposed in this document are based on conceptual plans that do not yet include full implementation design details. At this time ONRT will commence planning and implementation of selected restoration projects.

1.1 Overview of the Site

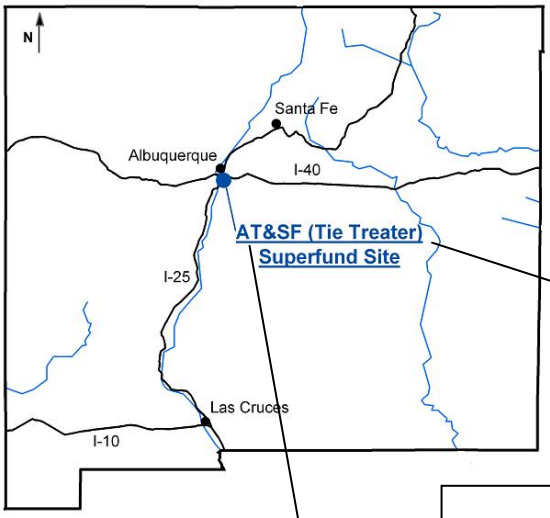
The Site is located at 3300 Second Street SW, Albuquerque, Bernalillo County, New Mexico, near the Rio Grande in an industrial portion of the city (Figure 1). The Site and the land to the east and north contain light industry. Land to the west and south of the Site is predominately agricultural. The Rio Grande and the Rio Grande Valley State Park are located approximately one mile to the west.

The Site is a former railroad tie treating plant that operated from March 1908 to January 1972. Wood products treated included railroad ties, bridge timbers, and fence posts. The facility operations in the early years involved preservation of wood products without the benefits of drying agents. The preservatives used at the Site were typically straight creosote, and a creosote and oil mixture. Creosote is a very complex mixture of numerous organic compounds known as polycyclic aromatic hydrocarbons (PAHs). Many of the PAHs are considered carcinogenic substances. From 1914 to 1926, some wood products were treated with zinc chloride. Additionally other compounds were utilized during the plant operations that included drying agents or weed control that contained copper and arsenic respectively. Washdown waters, spills and leakage were disposed of in an unlined impoundment covering approximately 3.4 acres.

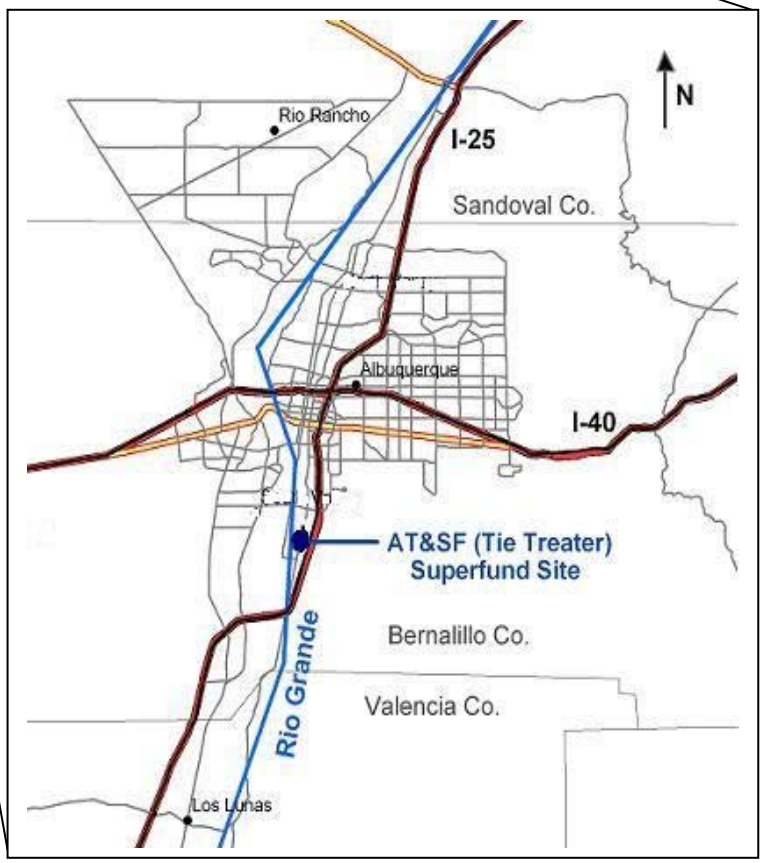
In July 1990, approximately 8,250 tons of creosote-contaminated soil and debris were removed. The approximate surface area excavated was 45,000 square feet with the depth of excavation varying from two to five feet. The site was listed on the United States Environmental Protection Agency's (EPA) National Priorities List ("Superfund" list) on December 16, 1994. The Site is currently backfilled with clean soil, capped and graded so as to minimize any future infiltration of surface waters. Additional soil and groundwater cleanup actions are being undertaken at the Site as required by the EPA's Record of Decision executed in June 27, 2002.

Figure 1

Location of AT&SF (Tie Treater) Superfund Site



State Map



Detailed Map

In 2004, a settlement was reached with BNSF and a Consent Decree for natural resource damages was filed in the U.S. District Court (District of New Mexico) between the Trustees and BNSF (Case No. CIV-04-1101). The Trustees identified BNSF as the potentially responsible party. As a result of this settlement, ONRT has $661,193 available for groundwater restoration planning and implementation. The Groundwater RP focuses on the use of these settlement funds to identify and implement appropriate restoration projects.

1.2 NRDA Restoration

NRDA is a process by which Trustees of natural resources determine what types of, and how many, restoration actions are necessary to compensate the public for injuries to natural resources. Restoration is the act of creating or improving natural resources and the services those resources provide to the public. The measure of compensation is the "cost of restoration, rehabilitation, replacement, and/or acquisition of the equivalent of the injured natural resources and the services those resources provide" [43 CFR § 11.80(b)].

Restoration is necessary to compensate for natural resource injuries that occurred before any cleanup activities of the Site, and to compensate for any residual natural resource injuries that may still exist after cleanup.

The restoration money recovered in NRDA settlements can only be used to restore, rehabilitate, replace, or acquire the equivalent of the natural resources injured, destroyed, or lost as a result of the release of hazardous substances [42 USC § 9607(f)]. The amount of restoration required to compensate for the resource injuries depends on the size of the area, what types of resources are injured, the overall severity of the injuries, and the time period over which the resources are injured, including any injury that remains after cleanup.

1.3 Public Participation

A Draft Groundwater RP was available for public comment for 30 days, starting October 7 and ending on November 7, 2007. ONRT did not receive any comments during the public review period, therefore, the restoration projects presented in the Draft Groundwater RP have not been modified.

2. Goals For Restoration

The goal of ONRT is to restore, replace, enhance or acquire natural resources and their services equivalent to natural resources services that were injured as a result of groundwater contamination at the Site. In accordance with both ONRT policy and CERCLA [USC 42 §9607(f)(1)], restoration projects should have a strong relationship to

the injured resources and the services they provide. In this particular case, the projects should have a strong linkage to water resources and the services they provide to the ecosystem and humans.

ONRT has adopted a policy of favoring "in-kind" restoration, which means that restoration should focus on restoring the same types of resources as the ones that were injured. This is sometimes termed "like for like" restoration. In contrast, "out of kind" restoration restores resources that are different from the ones that were lost but that provide similar services as to those that were lost. These projects are given lower priority compared to in-kind projects, but can be reasonable substitutes if in-kind projects are not feasible.

The ONRT has assessed a number of possible restoration projects. The ONRT evaluated each of the restoration projects based on relevant considerations including, but not limited to, the criteria listed below:

- Project is consistent with ONRT goals;
- Project is technically and administratively feasible with limited planning costs;
- Project is strongly connected to improving water resources;
- Project provides an overall net benefit to the environment;
- Project provides benefits quickly and benefits will last for a long time;
- Project can provide the identified benefits cost-effectively;
- Project has a high potential for long-term success;
- Project location.

3. Restoration Alternatives

As stated in Section 1. above, the groundwater damage settlement with BNSF and the United States Department of the Treasury was $661,193 which is to be allocated for groundwater restoration planning and implementation of restoration projects. This settlement amount was deposited in an interest-bearing account and has earned an additional $44,458 in interest. Therefore, a total amount of $705,651 is currently available for restoration planning and implementation of groundwater restoration projects. The selected alternatives carry out the intent of the NRDA regulations, are consistent with restoration goals outlined in the Groundwater RP, and are cost-effective. Below we describe the proposed alternatives and the non-selected restoration alternative developed from the identified projects.

3.1 The Proposed Alternatives

Groundwater conservation and protection of groundwater quality are ranked as the favored project category types. The proposed projects, the Bosque Non-Native Phreatophyte Vegetation Removal and the Domestic Connections to Municipal Sanitary Sewer and/or Water Systems, are expected to conserve groundwater as well as

improve and help protect the quality of groundwater. The following sections describe and evaluate the proposed projects.

3.1.1 Bosque Non-Native Phreatophyte Vegetation Removal

The goal of this restoration project is to conserve groundwater resources through the removal and treatment of non-native phreatophyte plants in the Middle Rio Grande bosque. These non-native plant species include salt cedar, Russian olive, Siberian elm, mulberry, Tree of Heaven and others. Water conservation through the eradication of non-native plant species has been well established. However, measurement of actual water savings is a complex undertaking and would require site-specific knowledge of many variables including, but not limited to: acreage, density and type of existing vegetation; acreage, density and type of replacement vegetation; soil type; depth to water table; water quality (i.e., salinity); and weather conditions (i.e., temperature/humidity). Assuming that non-native vegetation would be replaced with a combination of native vegetation types (from grasses, annual plants, shrubs and trees), a water savings of 1 acre-foot per acre per year (AF/ac/yr) could be realized through the eradication of non-native phreatophyte plants. Other benefits from the implementation of this project would include: reduction of fire danger, opportunity for re-settlement/expansion of native vegetation, and improvement of wildlife habitat, water quality, aesthetics, and recreation. The overall goal of the restoration project is the restoration and protection of the Rio Grande watershed. Current drought conditions have highlighted the need to preserve and protect our limited water resources. The Rio Grande watershed represents a primary source of water in this region, and bosque restoration efforts have been shown to have a significant impact on the quality and availability of water. A healthy bosque offers the following benefits:

- Consumes less water: a well-managed bosque would conserve water and would facilitate the conveyance and delivery of water;
- It is a more natural and hydrological efficient watershed;
- Lowers wildfire risk: the removal of dense stands of non-native plant species and a well-managed replacement with native species would minimize the fuel load of the bosque;
- Promotes a more diverse and healthy wildlife population;
- Offers an environment conducive for recreation activities.

Two types of non-native phreatophyte removal methods will be used for this proposed project: 1) mechanical extraction and, if required, 2) stump cut with herbicide application. Mechanical extraction will be the principal removal method which provides a higher mortality rate of invasive species through the removal of the plant's root system. The stump-cut method may be used where there is limited access to the site or when heavy machinery use is not appropriate. Mulching of the resulting woody debris will be used with both treatments methods and herbicide application is to be used as part of the short and long-term regrowth maintenance of the sites.

The Mid-Region Council of Governments (MRCOG) will be the principal partner for the non-native phreatophyte removal project. As a regional governmental organization, MRCOG can address issues that cross jurisdictional boundaries. MRCOG will, on behalf of ONRT, engage entities with jurisdiction over the Rio Grande bosque to coordinate restoration efforts and to develop long-range maintenance plans. It should be noted that since early 2005, the ONRT, in collaboration with the MRCOG, the Middle Rio Grande Conservancy District (MRGCD) and local communities, has successfully funded non-native phreatophyte removal of over 500 acres of bosque in Sandoval, Bernalillo and Valencia Counties.

It is ONRT's preference to implement this project close to where the injury occurred in the South Valley area of Albuquerque. However, the bosque in this area, as well as in the majority of the bosque in Bernalillo County, has already gone through extensive non-native plant thinning and removal efforts since 2004. There are, however, large sections of bosque south of the South Valley that are still infested with invasive plants. ONRT is therefore proposing to implement this project in areas south of the South Valley such as Isleta Pueblo and/or Valencia County (see Figure 2). The actual removal locations will be determined with the input of several government entities [MRCOG, MRGCD, Isleta Pueblo, the U.S. Army Corps of Engineers (USACE), regional Soil & Water Conservation Districts, and appropriate cities/villages].

The ONRT proposes to utilize approximately $500,000 of the $705,651 groundwater settlement amount to plan and implement this project. Based on ONRT's previous experience with non-native phreatophyte removal efforts in the bosque, the average estimated cost for non-native phreatophyte extraction is $2,500 per acre. This estimated cost varies depending on existing non-native densities, topography, access, etc. ONRT estimates $500,000 would result in approximately 200 acres of non-native phreatophyte removal.

The success of this proposed restoration project can be measured by the acres of land cleared. The acre-feet of water conserved by removal of the non-native pheatophytes will be calculated from the actual number of acres cleared. The estimated water savings in the first year of non-native phreatophyte removal on 200 acres is 200 AF of water [1 AF/yr of water saved per acre x 200 acres of bosque cleared of non-native phreatophytes = 200 AF/yr]. In addition, the removal of non-native phreatophytes provides an ongoing water savings benefit over the years in a properly maintained bosque. The ONRT would require the appropriate land owner/manager to be responsible for long-term maintenance of the bosque. The maintenance would consist of the continued suppression of non-native vegetation by mechanical means (mowing, chipping, grinding, mulching, or extraction) and/or chemical means (herbicide applications such as cut-stump or foliar application).

ONRT recognizes the importance of fire prevention in an urbanized environment. The benefits resulting from the thinning of non-native plant species in the bosque are several including: minimizing the chances of fires by reducing the density of vegetation

(i.e., reduction of fuel); improved access to wildfire areas for first responders; and slowing the spread of fires.

This project is technically feasible. Implementation of the project will not result in any additional injuries to groundwater resources, and it will compensate for injuries at the Site. This project will not adversely affect endangered species or sensitive areas. Activities, such as mechanical removal, will be performed outside of the bird-nesting season, which is typically recognized in the Middle Rio Grande as starting in mid-April through the beginning of September. Some temporary impacts are anticipated to wildlife species that may already be present in the removal areas. It is likely that some established exotic plants that will be removed would have provided food and/or shelter to certain wildlife species. These impacts would be expected to be temporary as native plant species would reestablish in the areas cleared of exotic plants. No landscape alterations are expected with the exception of the mulching of woody debris. The proposed project will have negligible impact on the human environment as no land use change will occur, and it is consistent with relevant federal and state laws and policies. The scope of this project is consistent with the Trustee's directive to restore, replace and/or acquire the equivalent of groundwater resources injured, destroyed or lost at the Site. The project will result in overall improvements to groundwater levels, groundwater and habitat quality, wildlife values, and long-term health and sustainability of the Rio Grande Bosque.

Associated with this proposed restoration project, ONRT is pursuing an opportunity to leverage funds for additional bosque improvements. ONRT has applied for a $284,000 grant from the New Mexico Water Trust Board to implement a native plant re-vegetation project in the Rio Grande Valley State Park. ONRT's goal is to re-vegetate portions of the bosque that have undergone non-native phreatophyte plant removal. The revegetation will focus first on those areas cleared by ONRT. Additional information on this potential re-vegetation project will be posted on ONRT's website, http://www.onrt.state.nm.us/).

3.1.2 Domestic Connections to Municipal Sanitary Sewer and/or Water Systems

This proposed project would provide funding for connections to the municipal sanitary sewer and/or water systems for residents who currently use septic systems or domestic drinking water wells and who did not qualify for the Bernalillo County Public Work's Partners in Improvement and Protection of the Environment (PIPE) assistance program. The Bernalillo County Public Works Department (BCPWD) ran a program that provided financial assistance to help qualified homeowners who were previously using septic tanks and well water and to connect to the municipal sanitary sewer and water systems. The county estimates that around 193 dwellings were not connected to the sanitary sewer system, and about 84 dwellings were not connected to the municipal water system due to financial assistance limitations. This project proposes to use approximately $200,000 to connect some of these remaining dwellings to both the municipal water system and the wastewater sewer system.

The objectives of this proposed project are twofold: (1) protect groundwater from future contamination by decreasing the use of septic systems, and (2) decrease the demand for groundwater by switching users from private wells (which use groundwater) to a municipal supply (which uses primarily surface water).

Per the New Mexico Environment Department, on-site septic systems have contaminated more acre-feet of groundwater and more public and private water supply wells in New Mexico than all other sources combined. By reducing the use of septic systems, the risk of groundwater contamination is decreased. Similarly, by providing residents with municipal water, their demand for well water will decrease. Additional project benefits include providing cleaner, more reliable drinking water to local residents and decreased externalities from the use of septic systems (e.g., odor).

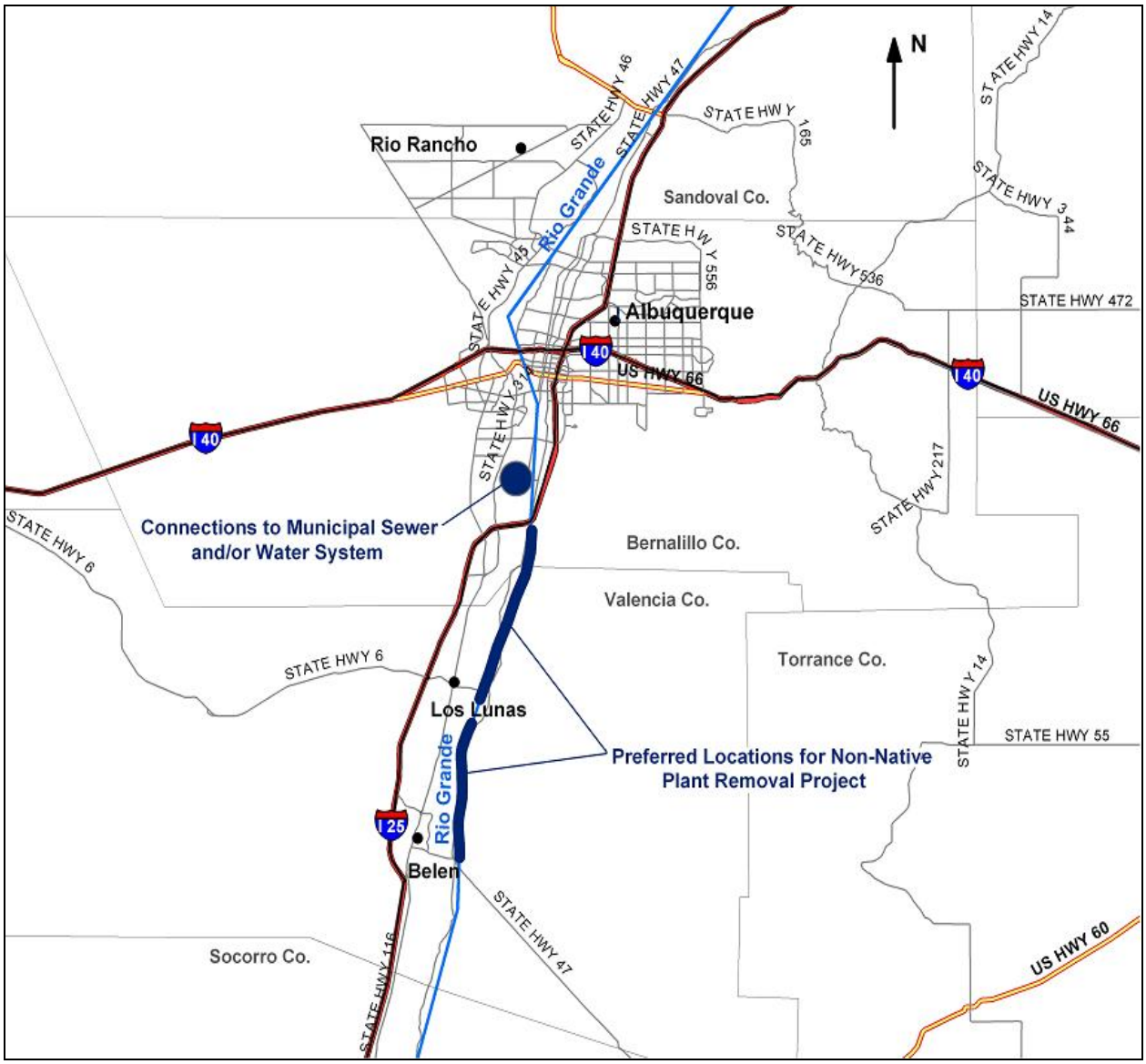
ONRT is proposing to use the remainder of the groundwater settlement, approximately $200,000, for the planning and implementation of this project. The estimated cost of this project, in the form of financial assistance to each household, is approximately $4,100 per house to connect to the sewer system and $3,500 to hookup to the municipal drinking water system. Assuming that a household would need both sewer and water, connections could be provided for approximately 26 households. The project would be administered and implemented by the BCPWD in the approximate area shown on Figure 2.

This project is technically feasible and is expected to benefit groundwater that is near the injured groundwater at the Site. Removing septic systems from the region and changing water supplies to the municipal system will provide a reliable source of clean drinking water and will improve both the quality and quantity of groundwater in the region. Implementation of the project will not result in any additional injuries to groundwater resources, and it will compensate for injuries at the Tie-Treater Site. Some temporary inconveniences will likely be experienced by residents during the actual connection/hookup process (i.e., residents will be temporarily without water or sanitary service). The proposed project will have negligible impact on the human environment and it is consistent with relevant federal and state laws and policies. The scope of this project is consistent with the Trustee's directive to restore, replace and/or acquire the equivalent of groundwater resources injured, destroyed or lost at the Site.

Figure 2

Locations of Proposed Restoration Projects:

- **Bosque Non-Native Plant Removal Project**
- **Domestic Connections to Municipal Sewer and/or Water System**



3.2 Non-Selected Alternative

City of Albuquerque Open Space Division (AOSD) Bosque Monitoring Sites Fuel Reduction Project

The goal of this project is to minimize fire danger from approximately 140 acres of bosque in the Rio Grande Valley State Park by conducting the immediate removal of non-native vegetation. This project is located on three separate sites in the South Valley bosque that until recently were used as biological/wildlife monitoring sites. The project would be implemented by the AOSD. Because of the fire danger these specific areas pose, and because AOSD has the operating responsibility and authority over the Park, AOSD must implement the removal of non-native vegetation by March 2008.

Although similar in scope to the proposed restoration project recommended in Section 3.1.1 above, this project was not selected because the AOSD has stated that funding to implement this project will be available. Therefore, this project will proceed with or without funding from the Tie Treater settlement.

4. Signatory

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