Final Environmental Assessment

for the proposed

Town of Huachuca City Water Distribution System Improvements

January 2005

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for the proposed

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Huachuca City Water System Improvements EA

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1.0 Background

1.1 Introduction

The United States (U.S.) Environmental Protection Agency (EPA) is charged with disbursement of grants under the Border Environment Infrastructure Fund (BEIF) program for infrastructure projects within 100 kilometers of the international boundary between the U.S. and Mexico. The Proposed Action under consideration for funding is the rehabilitation and improvement of the public water distribution system of the Town of Huachuca City, Arizona (hereinafter Huachuca City or Town, for sake of brevity). Disbursement of EPA border funds requires certification by the Border Environment Cooperation Commission (BECC). BECC certifies projects only after evaluating several factors including environmental impacts. This environmental assessment (EA) is part of the BECC certification process.

1.2 Environmental Assessment Process

EPA has determined that it will follow the National Environmental Policy Act (NEPA) and EPA regulations contained in Title 40 Code of Federal Regulations (CFR) Part 6 for environmental impacts in the U.S. from projects located in the U.S. or Mexico (EPA 1997a). Potential transboundary effects are addressed under each environmental topic, but none were identified.

1.3 Purpose and Need for Proposed Action

The purpose of the Proposed Action is to address low water pressure problems in Huachuca City, including inadequate pressures for fire protection. Users in the area west of Highway 90 in the Upper Zone have complained of low pressures in their businesses and residences during periods of high demand. This area has approximately 26 service connections. Water flow and pressures available in that area are not adequate for fire protection. In the past, the fire department has closed Highway 90 to traffic and used fire hydrants east of the road during emergencies. The low pressures and water flows are a result of the small diameter pipes (2-in and 4-in) installed along Highway 90. In addition, this portion is only connected to the main distribution system at one point (a 6-inch line along Clark St), creating long runs that dead end to the north and south. These issues have been addressed in the Feasibility Analysis Report, Huachuca City, Arizona, prepared by Nolte Associates, March 2004. The proposed water lines will improve water flow to that area to meet peak hour flow conditions (6-inch alternative) or both peak hour and fire flow conditions (8-inch alternative).

EPA intends to authorize the use of North American Development Bank (NADBank) BEIF by Huachuca City to implement the Proposed Action. These funds will be used to finance engineering, expansion and rehabilitation of the existing water supply. The proposed project will protect public health by increasing system water pressure from six pounds per square inch (psi) to more than 30 psi. Low pressures within a water distribution system present the potential for water contamination due to infiltration or backflow into the system. This could result in an impact to human health for water users in the Town. Arizona Department of Environmental Quality water system guidelines

require a potable water system to be designed to maintain a pressure of at least 20 psi at ground level at all points in the distribution system under all conditions of flow. In addition, improvements to the system would aid Huachuca City's ability to fight fires. With higher fire flow pressures, if a fire were to occur the fire department would be better able to extinguish the fire before it imposes a threat on the people who either live or work in Huachuca City.

1.4 Scope of EA

This EA focuses on a proposed water infrastructure project in Huachuca City, Arizona area and the potential direct, indirect, secondary, and cumulative (adverse and beneficial) environmental impacts to the U.S. and Mexico from construction and operation of the proposed improvements. The following general topics have been addressed within this EA:

- Physical Environment [including air quality, visibility, odor, geology, soils, surface and groundwater resources]
- Biological Environment [including vegetation, wetlands, wildlife and T& E species]
- Cultural Environment [including historic and archaeological sites]
- Social Environment [including land use, infrastructure, hazardous and solid waste, energy, natural resources, noise, public health and safety, population, economics, and environmental justice]
- Transboundary Impacts
- Cumulative Impacts

No environmental topics were eliminated for analysis prior to discussion in this document.

In preparing an EA, EPA examines various federal cross-cutting laws and Executive Orders (EOs) in accordance with 40 CFR 6.300. These laws and Eos, and their applicability to the proposed project, are described below:

National Natural Landmarks - The Secretary of the Interior is authorized to designate areas as National Natural Landmarks for listing on the National Registry of Natural Landmarks pursuant to the Historic Act of 1935, 16 U.S. Code (USC) 461 *et seq*. In conducting the environmental review of the Proposed Action, EPA is required to consider the existence and location of natural landmarks, using information provided by the National Park Service (NPS) pursuant to 36 CFR 62.6(d). No natural landmarks listed on the National Registry of Natural Landmarks were identified within the Project Area.

Cultural Resources Data - The *Archeological and Historic Preservation Act* (AHPA) of 1974, 16 USC 469 *et seq*. provides for the preservation of cultural resources if an EPA activity may cause irreparable loss or destruction of significant scientific, prehistoric, or archeological data. In accordance with the AHPA, the responsible official or the Secretary of the Interior is authorized to undertake data recovery and preservation activities. Consultation with the Arizona State Museum (ASM, the Arizona State Historic Preservation Office (ASHPO), and Native American tribes are discussed in Section 3.3.

Cultural Resources - The *National Historic Preservation Act* (NHPA), as amended, 16 U.S.C. 470, directs federal agencies to integrate historic preservation into all activities which either directly or indirectly involve land use decisions. The NHPA is administered by the National Park Service (NPS), the Advisory Council on Historic

Preservation (ACHP), State Historic Preservation Officers (SHPOs), and each federal agency. Implementing regulations include 36 CFR Part 800: *Regulations of the Advisory Council on Historic Preservation Governing the NHPA Section 106 Review Process*. Section 106 of the NHPA requires federal agencies to take into consideration the impact that an action may have on historic properties which are included on, or are eligible for inclusion on, the National Register of Historic Places (NRHP). The Section 106 review process is usually carried out as part of a formal consultation with the SHPO, the ACHP, and other parties, such as Indian tribes, that have knowledge of, or a particular interest in, historic resources in the area of the undertaking. Consultation with the Arizona State Historic Preservation Office (ASHPO), the Arizona State Museum (ASM), and tribes are discussed in Section 3.3.1. The Section 106 review process will be completed before any ground-breaking activities occur related to the Proposed Action.

Wetlands Protection - EO 11990, "Protection of Wetlands" of 1977, requires federal agencies conducting certain activities to avoid, to the extent possible, adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands, if a practicable alternative exists. Discharge of dredge or fill material into wetlands and other waters of the U.S. are also regulated under Section 404 of the Clean Water Act. No wetlands in the U.S. would be filled or otherwise impacted by the Proposed Action.

Floodplain Management - EO 11988, "Floodplain Management" of 1977, requires federal agencies to evaluate the potential effects of actions they may take in a floodplain to avoid, to the extent possible, any adverse effects associated with the direct and indirect development of a floodplain. None of the components of the Proposed Action occurs within a U.S. floodplain (FEMA, 1989).

Important Farmlands - EPA Policy to Protect Environmentally Significant Agricultural Lands requires EPA to consider the protection of the nations' significant/important agricultural lands from irreversible conversion to uses that result in their loss as an environmental or essential food production resource. Moreover, the Farmland Protection Policy Act (FPPA), 7 USC 4201 *et seq*., and the U.S. Department of Agriculture's (USDA) implementing procedures require federal agencies to evaluate the adverse effects of their actions on prime and unique farmland, including 1-4 farmland of statewide and local importance. The project would affect, no prime, unique, or important farmland. Project facilities would be entirely located within dedicated alley, road or highway rights-of-way.

Coastal Zone Management Act - The Coastal Zone Management Act (CZMA), 16 USC 1451 *et seq.,* requires that federal agencies in coastal areas be consistent with approved State Coastal Zone Management Programs, to the maximum extent possible. If an EPA action may affect a coastal zone area, the responsible official is required to assess the impact of the action on the coastal zone. The Proposed Action would not affect a coastal zone area. The nearest coastal zone is more than 300 miles from the proposed project location.

Coastal Barrier Resources Act - The Coastal Barrier Resources Act (CBRA), 16 USC 3501 *et seq*., generally prohibits new federal expenditures and financial assistance for development within the Coastal Barrier Resources System (CBRS) and therefore protects ecologically sensitive U.S. coastal barriers. This project does not affect any coastal barrier resources.

Wild and Scenic Rivers - The Wild and Scenic Rivers Act (WSRA), 16 USC 271 *et seq*., establishes requirements applicable to water resource projects affecting wild, scenic, or recreational rivers within the National Wild and Scenic Rivers System, as well as rivers designated on the National Rivers Inventory. No designated wild and scenic rivers occur within the Project Area (NPS(a), 2002).

Fish and Wildlife Protection - The Fish and Wildlife Coordination Act (FWCA), 16 USC 661 *et seq*., requires federal agencies involved in actions that will result in the control or structural modification of any natural stream or body of water for any purpose, to take action to protect the fish and wildlife resources that may be affected by the action. No U.S. streams or water bodies would be modified by this project. Project facilities would be entirely located within dedicated alley, road or highway rights-of-way.

Endangered Species Protection - The Endangered Species Act (ESA), 16 USC 1536 *et seq*., prohibits agencies from jeopardizing threatened or endangered species or adversely modifying habitats essential to their survival. No impacts on endangered species or to critical habitats are anticipated from the Proposed Action. Project facilities would be entirely located within dedicated alley, road or highway rights-of-way.

Wilderness Protection - The Wilderness Act (WA), 16 USC 1131 *et seq*., establishes a system of National Wilderness Areas. The WA establishes a policy for protecting this system by generally prohibiting motorized equipment, structures, installations, roads, commercial enterprises, aircraft landings, and mechanical transport. No wilderness areas occur within the Project Area. Project facilities would be entirely located within dedicated alley, road or highway rights-of-way.

Air Quality - The Clean Air Act (CAA) requires federal actions to conform to any state implementation plan approved or promulgated under Section 110 of the Act. For EPA actions, the applicable conformity requirements specified in 40 CFR Part 51, Subpart W; 40 CFR Part 93, Subpart B; and the applicable state implementation plan must be met. Under the Federal Rule on General Conformity, 40 CFR Part 93, a conformity determination is required only when emissions occur in a non-attainment area. Impacts to air quality from the Alternatives are discussed in Section 3.1.1.

Environmental Justice - EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," and the accompanying presidential memorandum, advise federal agencies to identify and address, whenever feasible, disproportionately high and adverse human health or environmental effects to minority communities and/or low-income communities. Environmental justice considerations are discussed in Section 3.10.

1.4.1 Permits Required to Implement the Proposed Project

An encroachment permit from the Arizona Department of Transportation (ADOT) will be required for the proposed water lines to utilize or pass through state highway ROW, in particular at the two places where the water lines would cross under Highway 90. In addition, ADOT's approval of a project traffic safety plan will be required.

Arizona Department of Environmental Quality (ADEQ) will review the detailed engineering design for the water system improvements, and their concurrence on the design will be obtained prior to project implementation.

1.4.2 Agency Consultation

The draft EA was prepared with input from Border Environment Cooperation Commission (BECC) and from the U.S. EPA. In addition, data contacts were made with the Natural Resources Conservation Service, Arizona State Parks and Arizona State Museum, as detailed in Section 4.2. Other consultation and agency input was requested of the agencies listed in Section 4.3, as part of the A-95 review process for proposed federal actions. U.S. EPA personnel contacted Native Americans including the Hopi, the Pascua Yaqui, the Tohono O'odham Nation, Gila River Reservation and the Ak-Chin Reservation to determine if the proposed project may affect any cultural resources known to them.

2.0 Existing Conditions and Alternatives

2.1 Current Conditions

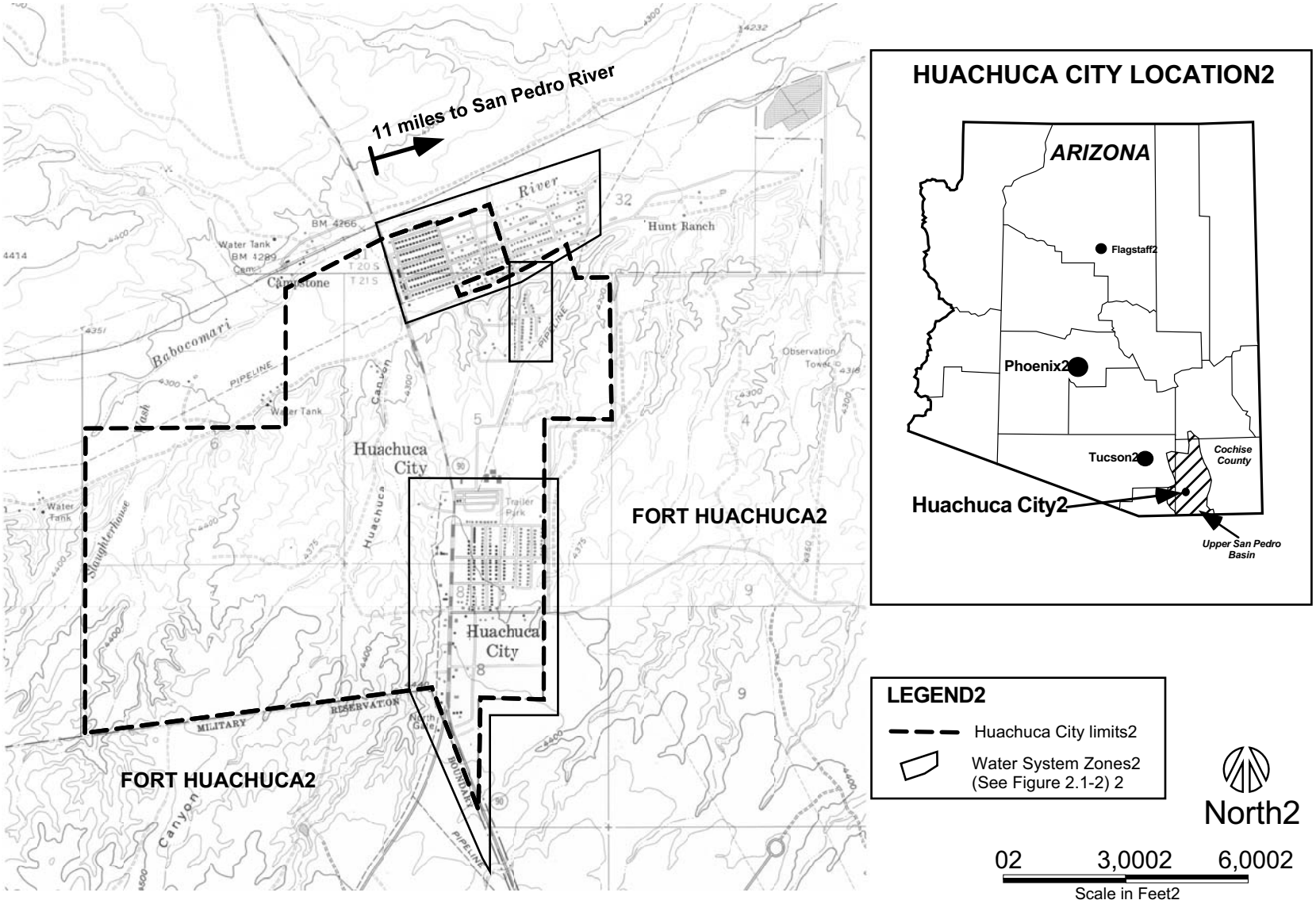
Huachuca City is located in the southeastern part of Arizona in Cochise County, along Highway 90. The Town is 20 miles from the US-Mexico border, 64 miles southeast of Tucson and 190 miles southeast of Phoenix. The Town is at an elevation of 4,245 feet. The average daily maximum temperature is about 90° F in the summer (June) and the average daily minimum about 34° F (January) in the winter. The average annual total precipitation in the area is 14.64 inches. Figure 2.1-1 provides a location map and general overview of the Town. Huachuca City was incorporated in 1958. The Town has a mayor-council form of government and provides residents with water, sewer and solid waste services, as well as local police and fire protection. The Town's economy is influenced by the United States Army's Fort Huachuca, located south and east of town.

The 2000 US Census reported a population of 1,751 habitants, a decrease from the 1,786 habitants reported in the 1990 Census.

2.1.1 Public Water Supply System

The water distribution system is divided into three main areas or service zones (upper, middle and lower) due to the topography of the area and the various sources of supply. The water system serves the entire Huachuca City and an unincorporated subdivision (Babocomari Vista) in Cochise County. The number of total connections in the system is 767, of which approximately 40 are commercial users and 727 are residential customers (Nolte, 2004).

As shown in Figure 2.1-2, the Upper Zone covers the entire area south of the storage tank. The source of water for this area is the Howard Well and La Sombre Well, in conjunction with the storage tank and the booster pump station. Due to its poor water quality the La Sombre Well is not currently used. According to the water operators, water from the La Sombre Well has a bad odor. Recent water quality tests indicate water from that well exceeds the trigger value for nitrate. A copy of the report from the testing laboratory is included in Appendix A of the Feasibility Analysis Report prepared by Nolte Associates (Nolte, 2004). Details of the existing distribution system in the Upper Zone are shown in Figure 2.1-3.



BASEMAP: USGS 7.5' Quadrangle, Huachuca City and Fort Huachuca, 1976; Nolte Associates, 2002. SOURCE: BRG Consulting, Inc., 2002.

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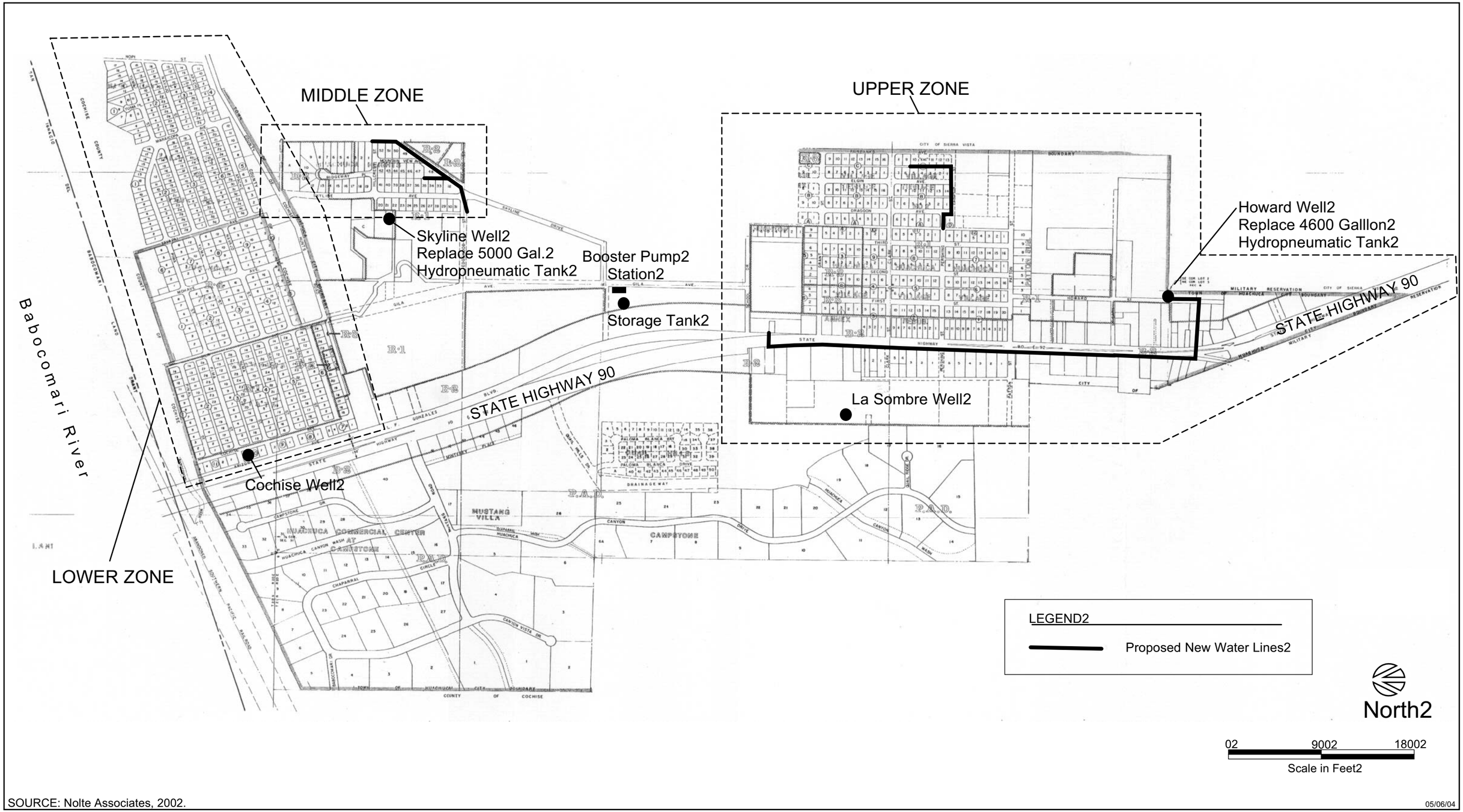
Huachuca City Water System Improvements EA2

Huachuca City Location and Vicinity Map2

FIGURE .1-12



SOURCE: Nolte Associates, 2002.

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Huachuca City Water System Improvements EA2

Huachuca City Water System and Proposed Improvements2

FIGURE

.1-2

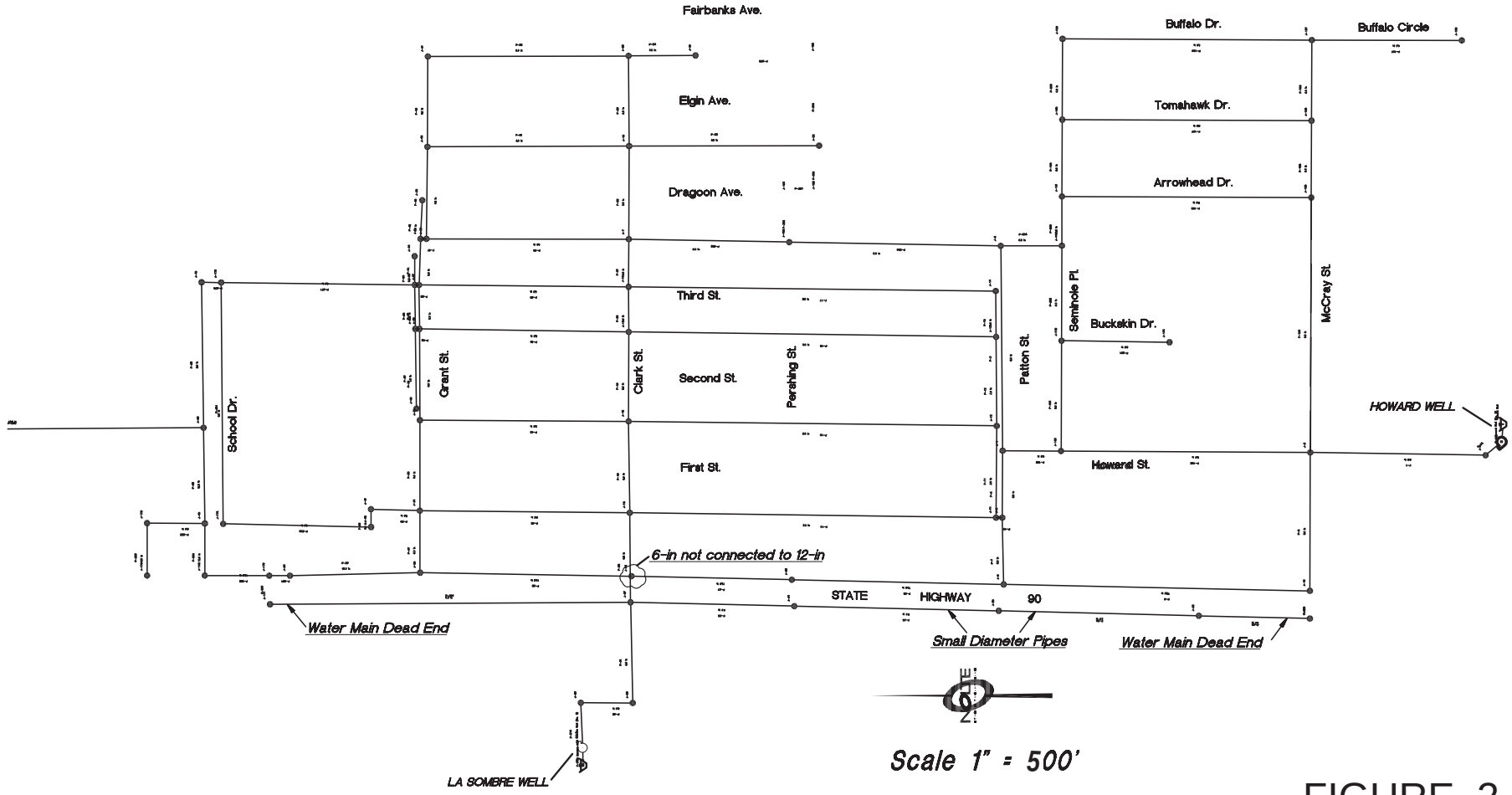


FIGURE 2.1-3

DATE: 06/01/04 TIME: 4:34 p.m. SERVER: NONE SERVICE: NONE PATH: N:\SD0947\Cadd\ DRAWING NAME: HUACHUCA CITY WATER_EXISTING.DWG PLOTTING VIEW: NONE DESIGNER: NONE PROJ. MGR: NONE	NOLTE BEYOND ENGINEERING 12000 AVENUE OF SCIENCE, SUITE 101, SAN DIEGO, CA. 92128 858.385.0500 TEL. 858.385.0400 FAX WWW.NOLTE.COM	Upper Zone HUACHUCA CITY WATER SYSTEM PREPARED FOR: TOWN OF HUACHUCA CITY DATE SUBMITTED: 10/2002	SHEET NUMBER 1 OF 1 SHEETS JOB NUMBER SD0947

XREFS: exmq, X11X17L

The Middle Zone is served by the Skyline Well, the storage tank and booster pump station. It includes the Huachuca Heights subdivision, located northeast of the storage tank. Details of the existing distribution system in the Middle Zone are shown in Figure 2.1-4.

The Lower Zone includes the Town's northern area along the Babocomari River, and is separated by a significant change in elevation from both the Upper and Middle zones. The Cochise Well supplies water to the Lower Zone. The Lower Zone is connected by a 10-inch line to the storage tank, which serves as a secondary water supply in case of a power failure at the well. In such circumstances, water would flow by gravity from the tank to the Lower Zone. The Middle and Lower zones are also connected by an 8-inch line with a pressure-reducing valve due to the pressure differences between the two systems. However, water is transferred from the Middle Zone to the Lower Zone only if the pressure in the lower zone falls substantially. Table 2.1-1 shows the approximate elevations and the hydraulic grade line for each zone.

TABLE 2.1-1
Elevation and Hydraulic Grade Line (HGL) for the Upper, Middle and Lower Zones

Zone	Elevation (ft.)	HGL (ft.)
Upper	4,394	4,532
Middle	4,340	4,536
Lower	4,245	4,383

Source: Nolte Associates, Inc., 2004.

Huachuca City receives its entire water supply from underground wells. The well depths, static levels and well pump capacity are shown in Table 2.1-2. A hydro pneumatic tank is installed in each well site to maintain a stable pressure range and protect the pump equipment from pressure surges in the system.

TABLE 2.1-2
Well Depths, Static Levels and Well Pump Capacity

Well Site	Well Depth (ft.)	Static Level (ft.)	Well Pump Capacity
Cochise Well	316	86	500 gpm @ 300-ft TDH
La Sombre Well	311	197	326 gpm @ 478-ft TDH
Skyline Well	400	199	400 gpm @ 340-ft TDH
Howard Well	502	297	300 gpm @ 500-ft TDH

Source: Nolte Associates, Inc., 2002.

The storage tank has a total volume of 750,000 gallons. The tank provides storage for emergency water supply and flow to the Upper and Middle zones. The tank is currently filled from both the Howard and Skyline wells. The storage tank is connected by a 12-inch line along the east side of Highway 90 with the Howard Well and through an 8-inch

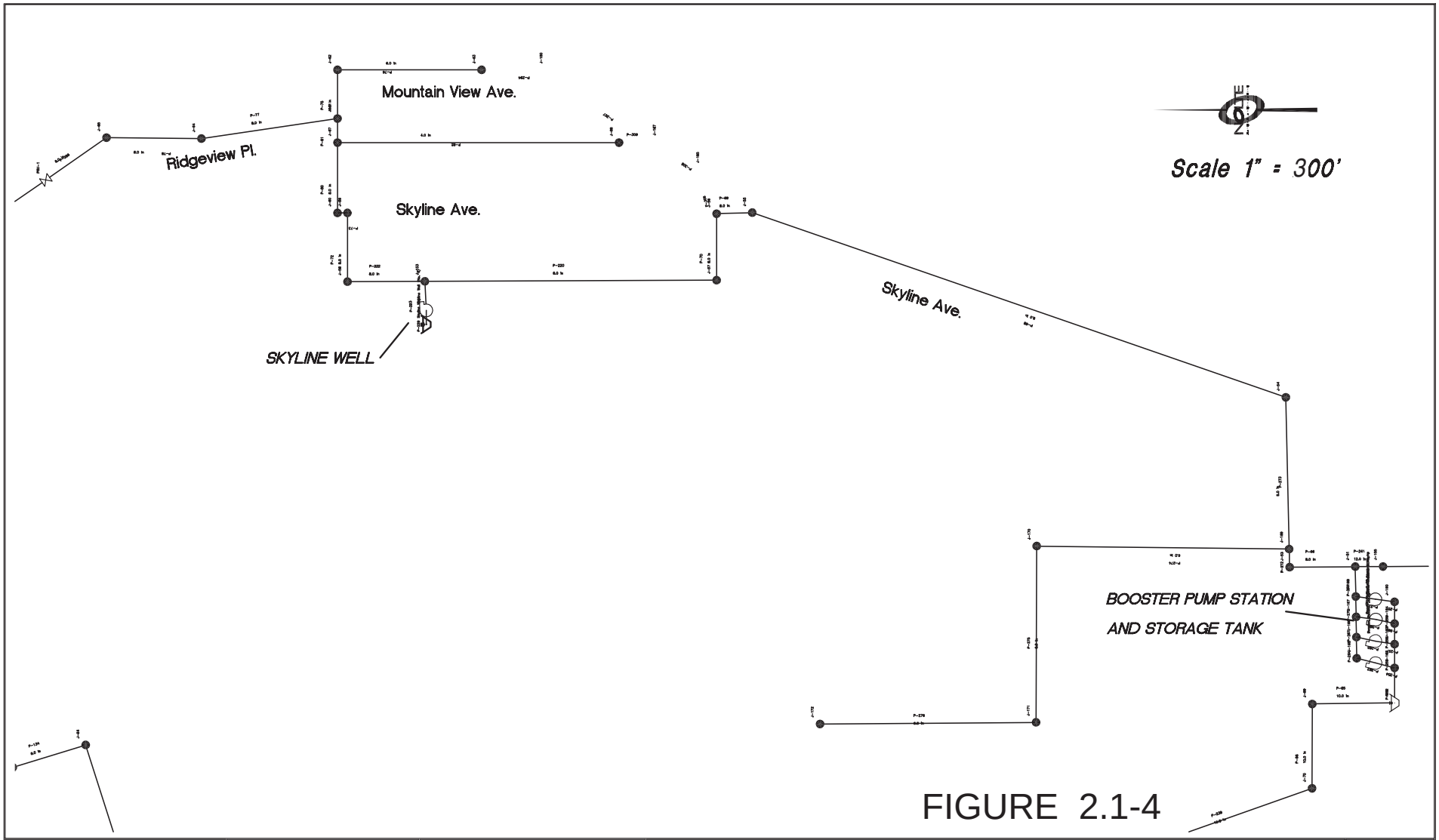


FIGURE 2.1-4

DATE: 06/01/04 TIME: 4:34 p.m. SERVER: NONE SERVICE: NONE PATH: N:\SD0947\Cadd\ DRAWING NAME: HUACHUCA CITY WATER_EXISTING.DWG PLOTTING VIEW: NONE DESIGNER: NONE PROJ. MGR: NONE	NOLTE BEYOND ENGINEERING 12000 AVENUE OF SCIENCE, SUITE 101, SAN DIEGO, CA. 92128 858.565.6550 TEL. 858.565.0460 FAX WWW.NOLTE.COM	**Middle Zone** **HUACHUCA CITY WATER SYSTEM** PREPARED FOR: TOWN OF HUACHUCA CITY DATE SUBMITTED: 10/2002	SHEET NUMBER 1 OF 1 SHEETS JOB NUMBER SD0947

XREFS: exmap, X11X17L

line to the Skyline Well. Both lines are connected to a pressure sustaining valve used to maintain pressure in the distribution system and allowing excess water to fill the tank. The tank has a draining system for cleaning or repairs and a gravity overflow system in case the solenoid valve to fill the tank fails to close.

The booster pump station consists of five centrifugal pumps and is located by the storage tank. The booster pump station is designed to maintain a pressure of 40 psi throughout the system during maximum peak flow and a pressure of 20 psi during maximum peak flow plus fire flow. As mentioned, the booster station consists of five pumps, two 20-horsepower (HP) pumps (A and B) and three 60-HP (pumps C, D and E). Only two of the 60-HP pumps can operate simultaneously with the two 20 HP pumps. The remainder 60 HP pump is a standby.

Water is supplied to the distribution system by the water wells and/or by water drawn from the storage tank by the booster pump station. The operation of the booster pump station and the well pumps is controlled by water pressure.

Water users in the area west of Highway 90 in the Upper Zone have complained about low pressure in their houses and businesses during periods of high water use. Water operators suggest this is caused by small diameter pipes installed in that area, including some two-inch lines. In addition, there is only one connection point to the main distribution system east of the highway, creating long runs that dead end to the north and south. However, no Notification of Non-Compliance has been issued by any regulatory agency regarding the existing water system.

Unaccounted-for-water in the system was determined by comparing the total volume pumped by all wells to the volume billed to the water customers (metered). The unaccounted-for-losses amount to about 21 percent of the total water produced. This volume includes unmetered water used for irrigation of parks, restrooms in parks, the main city office building, and water used for dust control in the landfill. These unmetered uses are the likely source of most of unaccounted-for-water. Water losses in the system are not considered significant.

2.1.2 Demand Scenarios

Several water demand scenarios were examined using a hydraulic model developed by Nolte Associates using WaterCAD v.4.5 from Haestad Methods. Maximum Day plus Fire Flow presented the worst-case scenario for the water distribution and pumping system. Fire flows were placed at several locations in the distribution system to determine the pressures that would be maintained. Data obtained from the model for these scenarios are included in Appendix B of the Nolte report (Nolte, 2004).

The Huachuca City Fire Chief required a fire flow of 2,500-gpm for the commercial area west of Highway 90 and 1,500-gpm for residential areas (Nolte, 2004). These values were used in the hydraulic model.

During peak hour flow conditions, the existing system experiences low pressures in the area west of Highway 90. The model also indicates low pressures of approximately 10 psi on nodes in the south end, near McCray Park. The low pressures are caused by the small diameter pipes in that area, which experience a high head loss during peak flow conditions.

Fire flow analysis for the Lower Zone indicates that adequate pressure and a fire flow of 1,500-gpm can be maintained at the east end of the system (fire hydrant at the intersection of Hopi and Yuma St) with no system changes. The pressure-reducing valve on the eight-inch pipeline connecting the Middle Zone and the Lower Zone opens as required to supply a portion of the fire flow demand. The pressure at the nodes near the fire hydrant would be about 40 psi.

Fire flow analysis for the residential area in the Upper zone indicates that adequate pressure and a fire flow of 1,500-gpm can be maintained at the node at the intersection of Buffalo Drive and McCray Street with no system changes. The pressure in that node would be about 30 psi. For this scenario, both the booster pump station and the Howard Well pump would be operating.

2.1.3 Alternatives Selection Criteria

The project area is defined as developed areas within Huachuca City. Figure 2.1-2 shows the Project Area with proposed improvements (Alternative 2). The other physical alternatives defining the range of potential environmental impacts include No Action (Alternative 1) and installation of a smaller water line west of Highway 90 (Alternative 3). Nolte examined other system components in their engineering and economic analysis (alternative types of pumps at the booster station, repair of the existing hydropneumatic tanks instead of replacement, repair of discharge piping from the water supply wells instead of replacement, and the use of different types of control systems). None of these actions would result in environmental impacts outside the range of the three alternatives evaluated below.

2.2 Description of Alternatives (Including the Proposed Action)

2.2.1 Alternative 1 - No Action

The existing water supply systems would not be expanded or rehabilitated under Alternative 1. If the No Action Alternative is selected, the current situation would continue as the project would not be engineered and constructed. There would be continued low pressures during periods of high demand on the area west of Highway 90, and inadequate fire protection for businesses and residences in the area west of Highway 90.

2.2.2 Alternative 2 - Proposed Action

Alternative 2, the Proposed Action, would allow Huachuca City to rehabilitate and replace its potable water distribution lines consistent with the recommendations presented in the Feasibility Analysis Report, Huachuca City, Arizona, Water Distribution System Improvements (Nolte, 2004). A new eight-inch line would be installed on the west side of the highway, adjacent to the existing smaller lines.

The proposed system improvements include:

- New eight-inch diameter pipeline west of Highway 90 connected to the 12-inch line east of the highway by two eight-inch crossings under the highway (Figure 2.2-1).
- Connection of dead ends on Pershing Street and on an alley off Clark Street to create a stronger looped system in the Upper Zone (Figure 2.2-1).
- Connection of dead ends on Mountain View Avenue and adjacent alley to create a stronger looped system in the Middle Zone (Figure 2.2-2).
- Replacement of two leaking 4,600-gallon hydropneumatic tanks at Skyline and Howard Wells (Figures 2.2-1 and 2.2-2).
- Addition of two pressure zone control values at the Cochise well and the storage tank (Figure 2.1-2),
- Addition of controls, monitoring and reporting devices to the control network at the booster station and well sites.
- Replacement of existing discharge piping at the well sites.

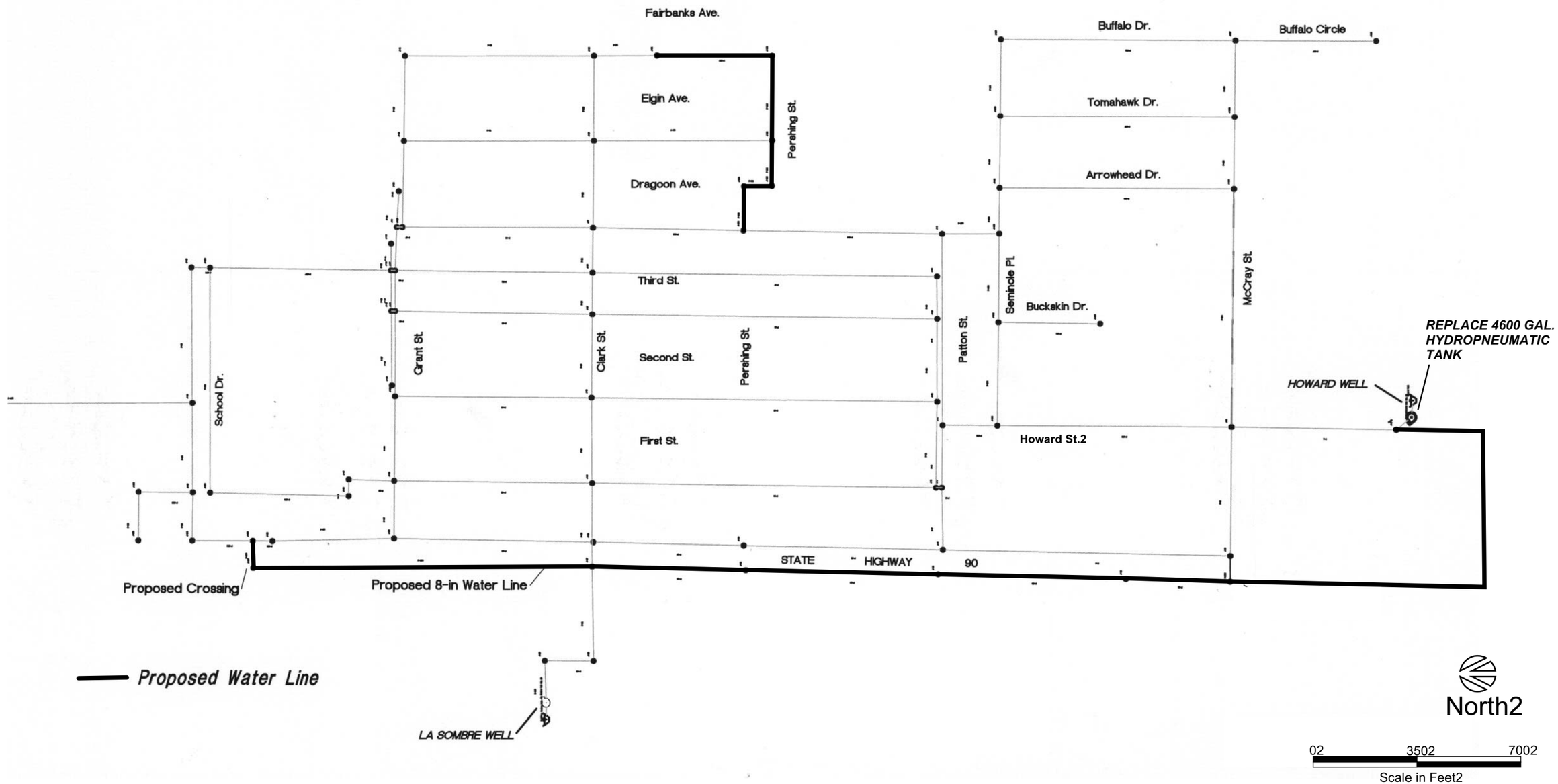
The new water lines would be installed in trenches three to four feet deep, and located within alley, street or highway right-of-way. The only exception would be the connection between Highway 90 and Howard Street, just south of Howard Well. That connection will be placed in a proposed new easement adjacent to the property line of an existing church. Approximately 200 to 300 feet of water line would be installed per day. Trenches would be backfilled or covered with metal plates to allow access by adjacent residences and businesses during construction. A permit would be obtained from ADOT for crossing of Highway 90.

One equipment staging/material laydown area, approximately 100 feet by 100 feet would be required. The staging/material laydown area would be located on any available existing vacant lot in town containing no native habitat.

A construction cost estimate was prepared for implementing the recommended improvements to the water distribution system. Total construction costs of Alternative 2 are estimated at $180,340. An additional $281,330 would be necessary to cover administrative, inspection and engineering costs. Total project costs for Alternative 2 are estimated at $461,670. A detailed discussion of cost estimates for Alternative 2 is provided in the Feasibility Analysis Report (Nolte, 2004).

2.2.3 Alternative 3 – Smaller Water Line West of Highway 90

Alternative 3 would install a 6-inch line on the west side of Highway 90, which would meet peak hour flow demands, but not fire flow requirements. Proposed actions in Alternative 3 are similar to those in Alternative 2, however 6-inch pipes would be used, thereby reducing the overall costs. Construction costs are estimated at $358,720. Therefore, total costs of Alternative 3 are estimated at $380,365. A detailed discussion of cost estimates for Alternative 3 is provided in the Feasibility Analysis Report (Nolte, 2004).



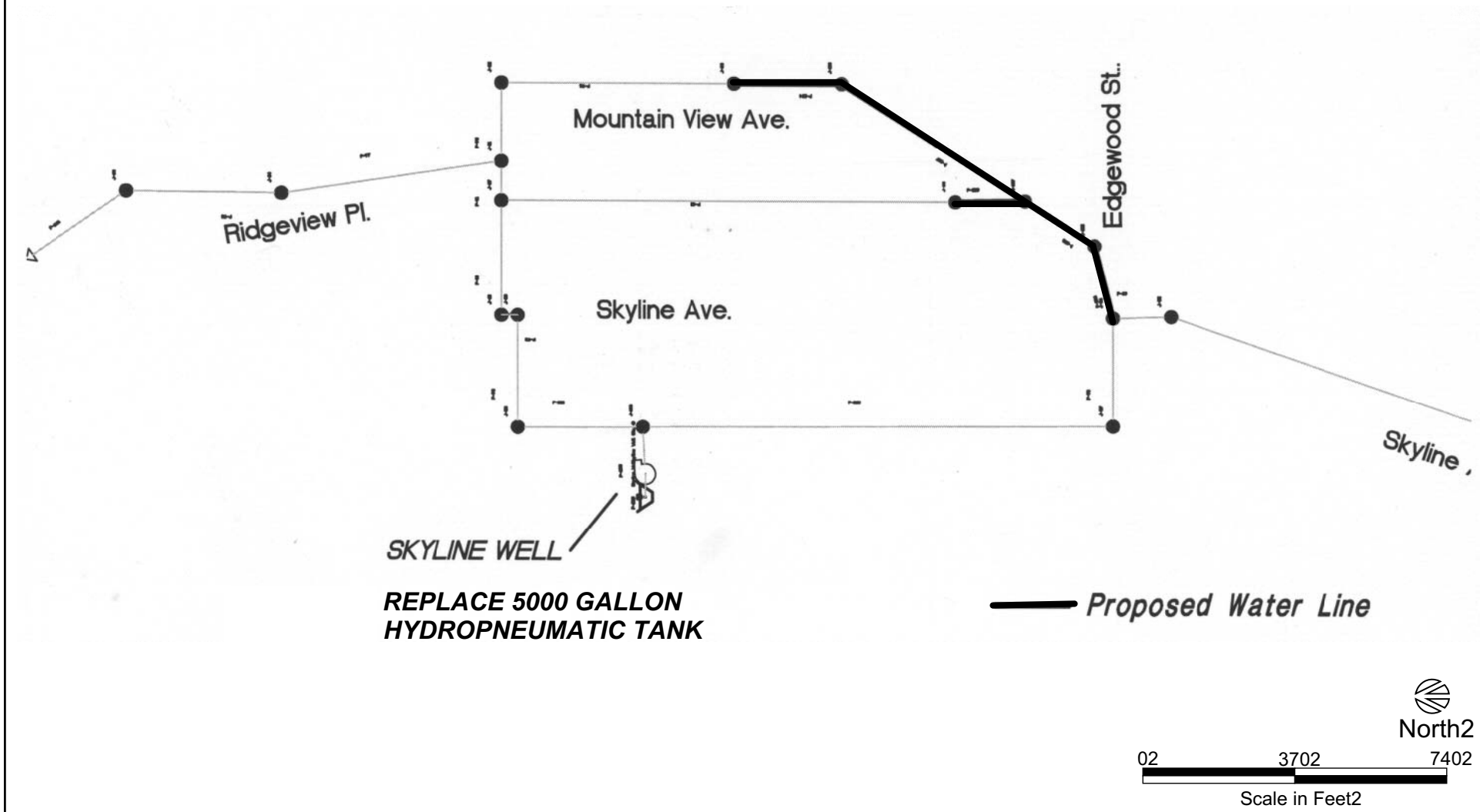
SOURCE: Nolte Associates, 2002.

03/10/04

Huachuca City Water System Improvements EA2

Proposed Water System Improvements, Upper Zone2

FIGURE .2-12



SOURCE: Nolte Associates, 2002.

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Huachuca City Water System Improvements EA 2

Proposed Water System Improvements, Middle Zone2

FIGURE

.2-2

2.2.4 Comparison of the Alternatives

Table 2.2-1 presents a comparison of water service parameters under the three water distribution system alternatives.

TABLE 2.2-1
Comparison of Water Service Parameters for the Project Alternatives

Water Service Parameter	Existing Conditions	Alternative 1 – No Action	Alternative 2	Alternative 3
Meets Fire Flow?	No	No	Yes	No
Minimum Fire Flow Pressure	0 psi	0 psi	>20 psi	<20 psi
Meets Peak Hour Flow?	No	No	Yes	Yes
Minimum Peak Hour Pressure	6 psi	6 psi	>50 psi	>30 psi

Source: Nolte Associates, Inc., 2004.

Alternative 2, the Proposed Action, is preferred by the Town because it provides adequate peak hour water pressure, would meet fire flow requirements, and, with mitigation, would result in no significant environmental impacts.

3.0 Affected Environment and Environmental Consequences

3.1 Physical Environment

3.1.1 Climate, Air Quality, Visibility, and Odor

Climate for the Huachuca City area varies by both season and elevation. The daily mean maximum temperature for the warmest month, June, is 91°F. The average winter low temperature is 32°F. Average winter daytime high temperatures in the basins vary between 55 and 60°F. The area receives 12 to 30 inches of rainfall yearly. This precipitation is seasonal and distributed somewhat unevenly over the area. Less than 16 inches per year falls in the lower basin elevations, while 30 inches or more may fall in the surrounding mountains. About half of the rainfall occurs during the "monsoon" season between June and August (Danzer, 2002).

The prevailing wind direction in the Huachuca City area is from the southwest with mean speeds between 12 and 15 miles per hour. The nearest National Weather Service (NWS) station is located at the Sierra Vista Fire Station No. 1 at 1327 East Fry Blvd. Potential odor-producing facilities within the Huachuca City area include a landfill located along the eastern boundary, east of the post office, and a sewage treatment plant located northeast of Town off of Hunt Road. Facility compliance with applicable state regulations, and the prevailing southwesterly winds, result in a minimal level of odors affecting residential areas.

According to the Arizona Department of Environmental Quality (ADEQ) the Town of Huachuca City and vicinity is considered to be in attainment with all air quality standards (ADEQ, 2002). Good visibility is generally associated with good air quality. Although no visibility averages have been recorded for Huachuca City, the Chiricahua Wilderness Area, located approximately 50 miles to the northeast, is similarly located in an air quality attainment area and has visibilities ranging from 53 to 129 miles (EPA, 2002).

Environmental Consequences

Alternative 1 would result in no changes to the existing water system, or to air quality. Under Alternative 2 and 3, temporary and minor dust fugitive emissions may be created during construction. The fugitive dust could impact PM-10 concentrations and visibility in the immediate vicinity of excavations, but would not be expected to significantly contribute to air quality degradation in the Huachuca City area. Standard dust suppression techniques such as watering of active construction areas, aggregate piles and cleared areas would substantially minimize these air quality impacts. Odor would not be an issue for the proposed potable water system improvements. The land use analysis indicates that no growth would be induced which would have an effect on pollutant emissions. Therefore, Alternatives 1, 2 and 3 would have no significant impact on climate, air quality, visibility and odor.

3.1.2 Geology and Soils

Affected Environment

The project area is located within the Upper San Pedro basin of southeastern Arizona. The basin contains approximately 1,875 square miles and consists of the northwest-trending San Pedro River Valley and the surrounding mountains. Elevations along the valley floor range from 4,200 feet above mean sea level at the International Boundary to 3,300 feet above mean sea level along the basin's northern boundary. The Huachuca, Mustang, Whetstone, and Rincon Mountains form the basin's western boundary and the Mule, Dragoon, Little Dragoon, and Winchester Mountains form the eastern boundary. The bordering mountain range from 5,000 to nearly 10,000 feet in elevation (Arizona Department of Water Resources (ADWR), 1997). Project area geology consists of Pliocene to middle Miocene sedimentary rocks (AGS, 1998).

Soils within Huachuca City are classified as Libby-Gulch complex with inclusions of Ubik, Combate, Comoro, and Riveroad soils in the drainageways. Soils within the project area are formed from parent material of mixed alluvium. Project areas soils tend to be well-drained with slow to moderately slow permeability rates. In addition, the soils tend to have low to moderate runoff rates and moderate to high shrink-swell potential (USDA/NRCS, 1999). The project area does not contain any farmlands designated Prime and Unique by the U.S. Department of Agriculture (Camp, *personal communication*, 2002).

Environmental Consequences

Proposed construction activities for Alternatives 2 and 3 include improvements to existing water system pipes and the installation of approximately 6,665 feet of water lines. Construction and design of the proposed project would be consistent with the criteria contained in Engineering Bulletin No. 10, Guidelines for the Construction of Water Systems, issued by the Arizona Department of Environmental Quality. In addition, Best Management Practices (BMPs) (e.g., turbidity curtains, sediment traps, straw bales, etc.) and other mitigation measures (e.g., maintaining

vegetated buffer zones between construction areas and waters of the U.S.) will be used to minimize erosion and sedimentation around construction areas. Therefore, no significant impacts to geology and soils are expected to occur as a result of the implementation of the proposed project.

Current conditions would be expected to continue under Alternative 1.

3.1.3 Water Resources

Surface Water

Affected Environment

The San Pedro River is the Upper San Pedro basin's major surface-water drainage, and is located 11 miles east of Huachuca City. The San Pedro River enters the basin at the International Boundary near Palominas, AZ and flows northwest for approximately 62 miles before leaving the basin north of Benson at "the Narrows". The San Pedro River is mostly ephemeral and only flows in response to local rainfall. The river does have a perennial stretch of about 18 miles near Charleston, that is created by bedrock that forces groundwater to the surface (ADWR, 2002).

The Babocomari River flows east toward the San Pedro River, and is located at the north edge of Huachuca City. It is ephemeral throughout most of its length although a reach near the headwaters about 15 miles above it confluence with the San Pedro and another reach about four miles above the confluence sustain perennial flow due to special geologic conditions (ADWR, 2002). These two reaches of the Babocomari sustain perennial flow for approximately 12 miles. Flows in the Babocomari and its tributaries are not regularly gauged. Streamflow measured by Schwartzman in 1990 ranged from 0.01 cubic feet per second (cfs) to 2.72 cfs depending on the stream section in March and from 0.29 cfs and 0.35 cfs in the only three sections where measurable flow occurred in June (ADWR, 2002).

Huachuca City does not withdraw water from either the San Pedro or the Babocomari Rivers.

The Federal Emergency Management Agency (FEMA) produces Flood Insurance Rate Maps (FIRMs) used by Federal, State, and local governments, real estate analysts, insurance providers, appraisers, land developers and the public to identify flood risks based upon local hydrology, topology, precipitation, flood protection measures such as levees, and other scientific data. According to the FIRM for the Huachuca City area (Appendix A, Figure A), the entire project area lies outside the 100-year floodplain (FEMA, 1989).

Sixty miles of the San Pedro River, from the Mexican border to Tres Alamos, was listed in Arizona's 1998 Water Quality Limited Waters List (303(d) list). ADEQ identified fecal coliform, nitrates and turbidity as water quality stressors in this area (ADEQ 1998). However, the 17-mile reach from the Babocomari River to Dragoon Wash was de-listed in 2002 (ADEQ, 2002). The Babocomari River is not on the 303(d) list (ADEQ, 1998 and 2000).

The Wild and Scenic Rivers Act of 1968 designates selected rivers of the Nation which possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. These rivers are

to be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. According to the official list of Wild and Scenic Rivers, there are no designated Wild and Scenic Rivers within or in the vicinity of the project area (NPS(a), 2002).

Environmental Consequences

Alternatives 1, 2, and 3 are not expected to have any long-term adverse impacts on surface water quality in the United States or Republic of Mexico. In the short-term, construction of water supply and wastewater collection lines associated with Alternatives 2 and 3 may result in sediment discharges and increased suspended solids and turbidity downstream from construction activities. Best management practices (BMPs) (e.g., turbidity curtains, sediment traps, straw bales, etc.) and other mitigation measures (e.g., maintaining vegetated buffer zones between construction areas and waters of the U.S.) will be used to minimize erosion and sedimentation around construction areas. Sediment impacts, should they occur, will be temporary and are not expected to increase annual total suspended solid (TSS) loads over time. The current conditions would be expected to continue under Alternative 1.

In the long-term, direct, indirect, or cumulative impacts to surface water quantity of the United States are not expected from Alternatives 1, 2 or 3 because Huachuca City neither withdraws from nor discharges water to San Pedro River or any other Water of the United States. Furthermore, no substantial increase in groundwater use would occur as a result of the proposed or alternative actions (See the Groundwater Section below). Therefore, surface waters would not be affected indirectly by the proposed or alternative action. Alternatives 1, 2 and 3 would not result in impacts to surface water resources in Mexico because Huachuca City neither withdraws from nor discharges water to San Pedro River or any other river leading from or into Mexico.

Groundwater

Affected Environment

Huachuca City pumps groundwater from the Upper San Pedro Basin. The basin contains approximately 1,875 square miles and lies entirely within the Basin and Range physiographic province (ADWR, 2002). It consists of the northwest-trending San Pedro River Valley and the surrounding mountains. The Huachuca, Mustang, Whetstone, and Rincon Mountains form the basin's western boundary and the Mule, Dragoon, Little Dragoon, and Winchester Mountains form the eastern boundary. Groundwater movement in the basin is from the higher elevations in the mountains towards the valley and then northwest along the riverbed. The quality of groundwater in the Upper San Pedro basin generally is suitable for most uses (ADWR, 2002). Groundwater is discharged from the basin by pumpage from wells, evapotransportation from phreatophytes and crops, evaporation from open water in the riverbed, and discharge from springs and seeps (ADWR, 2002). Mountain-front recharge is the main source of recharge for the regional aquifer and streambed infiltration is the main source of recharge for the streambed alluvium in the San Pedro River floodplain (ADWR, 2002). The total amount of groundwater in storage in the Upper San Pedro basin is estimated to be 59 million acre-feet. (ADWR, 2002).

The water distribution system in Huachuca City is divided into three main areas or service zones (upper, middle and lower) due to the topography of the area and the various sources of supply. The water system serves the entire Huachuca City and an unincorporated subdivision (Babocomari Vista) in Cochise County.

Huachuca City receives its entire water supply from three underground wells. The well depths, static levels and well pump capacity are shown in Table 2.1-2. The La Sombre well is not used at the present time due to the presence of nitrates and a bad odor (Nolte, 2004).

The number of total connections in the system is approximately 767 (Nolte, 2002). Table 3.1-1 shows the monthly maximum, minimum, and average water consumption per capita in gallons per day for the years 2000 and 2001, and part of 2002. Water consumption per capita per year remained relatively constant.

Table 3.1-1
Maximum Month, Minimum Month and Average Water Consumption (gpcd)

YEAR	MAXIMUM MONTH	MINIMUM MONTH	ANNUAL AVERAGE
2000	220	91	136
2001	285	86	141
2002	219	23	132

Source: Nolte Associates, Inc., 2004.

Environmental Consequences

No changes are expected to occur under Alternative 1.

Alternatives 2 and 3 include the rehabilitation and expansion of the public water distribution system of Huachuca City. The addition of new pipes to the system would improve peak hour water pressure to some residents and businesses within the service area. However, no additional water use would occur. Required amounts of water would simply be available at non-peak flow rates during peak hour use. Therefore, the usage of groundwater from the residents of Huachuca City would remain unchanged and no impact to the groundwater resources of the Upper San Pedro basin would occur as a result of Alternative 2 or 3.

Alternatives 2 and 3 would not result in impacts to ground water resources in Mexico, since no additional pumping of groundwater would occur as a result of Alternatives 2 or 3.

3.2 Biological Environment

The biological environment includes the biotic or living components of the ecosystem present within the Project Area. Biotic components include vegetation; special aquatic sites such as wetlands; wildlife; and threatened, endangered, or other special status species. Descriptions of the affected environment and environmental consequences for each of these components are given below, based on the Biological Assessment for operations at Fort Huachuca, located directly to the southwest of Huachuca City (U.S. Army, 2002).

3.2.1 Vegetation and Wetlands

Affected Environment

The vegetation of the Huachuca City area is representative of the basin and range region of southeastern Arizona. Plant species composition and vegetation productivity is largely determined by rainfall distribution (as influenced by topography). At lower elevations within the San Pedro River Valley, xerophytic (adapted to life in dry environments) shrubs and grasses provide sparse vegetative cover, while on the moister slopes of the Huachuca Mountains, stands of trees and shrubs predominate (U.S. Army, 2002). The variety of vegetation present in the Huachuca City area ranges from shrublands, open grasslands, and mesquite-grass savannas of the lowlands, through the oak-grass savannas and oak woodlands of the foothills, to the pinyon-juniper and pine woodlands of upper elevations (U.S. Army, 2002).

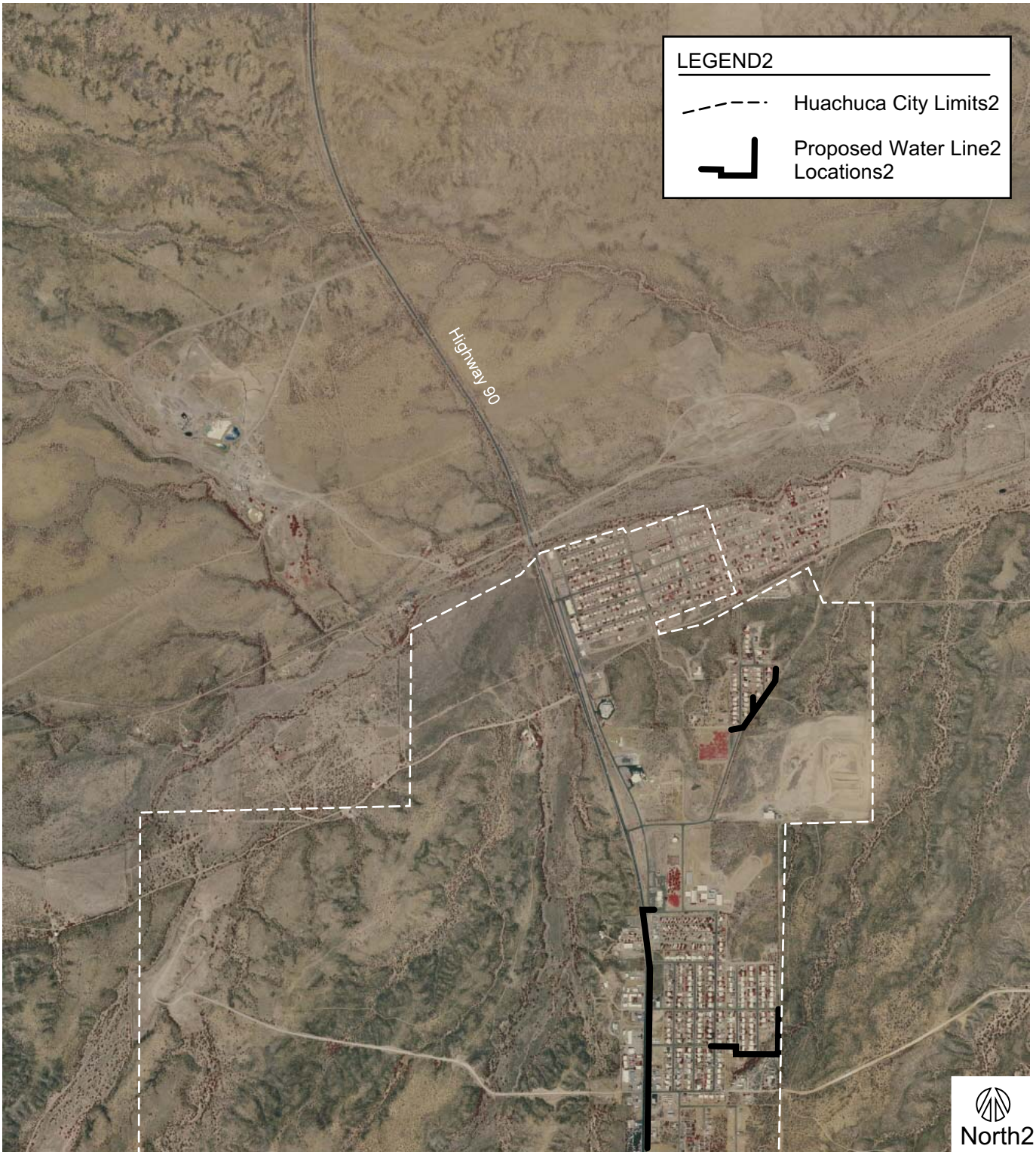
The present distribution and composition of vegetation in the region has been affected by a series of natural and human-caused disturbances. These include intense grazing until 1887, a major earthquake in 1887, fires and heavy rainfall following the earthquake, intermittent drought, woodcutting, continued moderate grazing, fire suppression, and troop training (U.S. Army, 2002). Large areas of semi-desert grassland have been invaded by velvet mesquite, *Prosopis velutina*, since the turn of the century.

Congress designated the San Pedro National Conservation Area (NCA) on November 18, 1988. This 40-mile stretch of land along the San Pedro River, located approximately 10 miles to the east of Huachuca City, preserves the desert riparian ecosystem. Under the stewardship of the Bureau of Land Management (BLM), the NCA contains more than 56,000 acres of public land in Cochise County, between the U.S.-Mexican border and St. David. The NCA supports more than 350 species of birds, 80+ species of mammals, two native and several introduced species of fish (Friends of the San Pedro River, 2002).

The U.S. Army Corps of Engineers (ACE) administers Section 404 of the Clean Water Act, governing the placement of dredged or fill materials into wetlands and other Waters of the U.S. Based on a review of U.S. Geologic Services (USGS) topographic maps, no potential wetland areas have been identified within the project area (developed Huachuca City). Relationships between locations of the Proposed Action, existing developed areas of Huachuca City, and areas containing native habitats are depicted in the 1996 aerial photo in Figure 3.2-1. A map showing 2002 developed land uses in Huachuca City is also provided under Land Use, Section 3.4 of this EA.

Environmental Consequences

All construction activities would take place entirely within dedicated alley, road or highway rights-of-way. The entire area directly affected by the proposed project consists of developed urban or suburban landscapes. Under these conditions, habitat for native species is typically degraded and where vegetation exists, it is often dominated by non-native plants, and noxious or other weedy species. Therefore, no impacts to native habitat would occur. No discharges to wetlands, floodplains, riparian areas or other Waters of the U.S. from activities associated with Alternatives 2 and 3 are proposed; therefore, there would be no impacts to these resources. Alternative 1 would maintain the current situation and therefore, would not produce any effects.



BASEMAP: U.S.G.S, 1996. SOURCE: BRG Consulting, Inc., 2002.2

11/07/0

BRG CONSULTING, INC.2

Huachuca City Water Improvements EA2

1996 Aerial Photo, Huachuca City2 and Vicinity2

FIGURE 3.2-1

Alternatives 1, 2 and 3 are not expected to generate any transboundary impacts to vegetation and wetlands in Mexico, since all ground disturbance would occur in the United States in the areas, approximately 20 miles downstream and downwind of the border. Furthermore, no increase in groundwater use is anticipated as a result of the proposed or alternative actions.

3.2.2 Wildlife and Threatened and Endangered Species

Affected Environment

The significant wildlife diversity found in the areas surrounding Huachuca City is directly related to the habitat diversity in this region. The isolation of the Huachuca Mountains from the other mountain ranges in the area results in "mountain islands." These areas are known for their diversity of vegetation types, usually along an elevational gradient, and typically exhibit high degrees of species endemism. In addition, proximity to Mexico results in some wildlife species here that are not known to occur elsewhere in the US, or are more commonly associated with the tropics. As a result, southeastern Arizona possesses one of the greatest diversities of bird species of any similarly-sized region in North America (U.S. Army, 2002). More than 400 species occur here each year, and a total of almost 500 species have been recorded (U.S. Army, 2002). Another example of the diversity of the region is the 75 species of amphibians and reptiles that occur in the Huachuca Mountains and Upper San Pedro River (U.S. Army, 2002). Also, more than 180 species of butterfly have the potential to occur in various habitats throughout the general vicinity of Huachuca City. Information on species abundance and trends generally has not been collected by Fort Huachuca in recent years.

The area around Huachuca City has a very diverse population of mammals. Large mammals include Coues whitetailed deer (*Odocoileus virginianus couesi*), desert mule deer (*O. hemionus crooki*), pronghorn antelope (*Antilocapra americana*), collared peccary or javelina (*Tayassu tajacu*),mountain lion (*Felis concolor*), coati (*Nasua nasua*), and black bear (*Ursus americanus*). At least 14 species of bats occur in the area, many of which are Arizona species of special concern (U.S. Army, 2002).

The U.S. Army prepared a list of all federally listed, proposed and candidate species defined by the US Fish and Wildlife Service under the federal Endangered Species Act that have occurred or may have occurred historically, and those with potential habitat within Fort Huachuca (U.S. Army, 2002). This list is considered generally applicable to Huachuca City since it is located immediately adjacent to the Fort.

Endangered Species: *species that are in imminent jeopardy of extinction*
Canelo Hills Ladies' tresses (*Spiranthes delitescens*)
Huachuca water umbel (*Lilaeopsis schaffneriana*)
Southwestern willow flycatcher (*Empidonax traillii extimus*)
Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)
Northern aplomado falcon (*Falco femoralis septentrionalis*)
Whooping crane (*Grus americana*)
Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*)
Jaguar (*Panthera onca*)
Ocelot (*Felis pardalis*)

Mexican gray wolf (*Canis lupus baileyi*)
Sonora tiger salamander (*Ambystoma tigrinum stebbinsi*)
Gila Topminnow (*Poeciliopsis occidentalis occidentalis*)
Desert pupfish (*Cyprinodon macularius*)
Razorback sucker (*Xyrauchen texanum*)

Threatened Species: *species that are in imminent jeopardy of becoming endangered*
Cochise pincushion cactus (*Coryphantha robbinsorum*) 6
Bald eagle (*Haliaeetus leucocephalus*)
Mexican spotted owl (*Strix occidentalis lucida*)
Chiricahua leopard frog (*Rana chiricahuensis*)
NM ridge-nosed rattlesnake (*Crotalus willardi obscurus*)
Loach Minnow (*Rhinichthys cobitis*)
Spikedace (*Meda fulgida*)

Candidate Species: *species for which there is sufficient information to support a proposal for listing under the ESA (formerly known as Category 1 candidates).*
Lemmon fleabane (*Erigeron lemmonii*)
Huachuca springsnail (*Pyrgulopsis thompsoni*)
Yellow-billed Cuckoo (*Coccyzus americanus*)
Black-tailed prairie dog (*Cynomys ludovicianus*)
Gila Chub (*Gila intermedia*)

Proposed Species: *species that are proposed for federal listing under Section 4 of the ESA*
Mountain plover (*Charadrius montanus*)

No documented occurrences of the aforementioned species were found in Huachuca City by a review of the Arizona Department of Fish's Heritage Data Management System. No species considered endangered by the Mexican authorities are located in the project area (EPA, 2001).

Environmental Consequences

Since the construction activities of the proposed project would occur within previously disturbed areas, there would be a minimal effect on wildlife and no effect on threatened and endangered species. Alternatives 2 and 3 involve construction and rehabilitation of water pipelines which could possibly affect some wildlife temporarily through noise and dust. The nature of the construction activities would be temporary and limited in extent. In addition, the proposed water lines would be installed entirely within dedicated alley, road or highway rights-of-way and as such, would limit impacts to listed wildlife species. Project laydown and staging areas would be limited to approximately 1/4 acre, located on an existing vacant lot containing no intact native habitat. There would be no effects on threatened or endangered species since these species or their critical habitat do not occur within the developed portions of Huachuca City where the Proposed Action is located. Alternative 1 would maintain current conditions and therefore, would not produce any additional effects.

No impacts to aquatic species are anticipated from any of the Alternatives.

Since there would be no impact to wildlife and threatened and endangered species in the U.S., and no Mexican endangered species are located in the area, Alternatives 1, 2 and 3 are not expected to generate transboundary impacts to wildlife and threatened and endangered species in Mexico.

3.3 Cultural Resources

Cultural resources are any prehistoric or historic district, site, or building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. They include archaeological resources (both prehistoric and historic), historic architectural resources, and traditional cultural resources. Only significant cultural resources (as defined in 36 CFR 60.4) are considered for potential adverse impacts from an action. Significant archaeological and architectural resources are either eligible for listing, or listed on, the National Register of Historic Places (NRHP). Significant traditional cultural resources are identified by Indian tribes or other groups, and may also be eligible for the NRHP.

Affected Environment

The San Pedro River Valley and its various tributaries contain evidence of human activity dating back to 11,000 A.D. including mammoth hunting sites and evidence of Hohokam culture habitation. The “modern” era of European contact and influence began with the arrival of the Spanish explorer Coronado, who led an expedition along the San Pedro River in 1540.

Prior to 1875, ranching was the primary activity in the Santa Cruz, Sonoita and San Pedro Valleys. By 1877, Apache attacks and raids from Mexican bandits had become such a constant threat that the U.S. Army Sixth Cavalry was dispatched to develop a presence in the vicinity to protect the settlers. For this reason, the Fort is included in the National Historic Landmarks Program (NHLP) with the National Register Number of 74000443 (NPS(b), 2002). Camp Huachuca was established at the mouth of Central Canyon at the foot of the Huachuca Mountains. In 1878, Camp Huachuca was designated as a permanent Army post and was renamed Fort Huachuca in 1882. As Fort Huachuca’s presence provided a progressively more settled environment, miners, ranchers, farmers and merchants settled near the Fort. These settlements eventually developed into the City of Sierra Vista. In 1954, Fort Huachuca was selected as the permanent site of the Army’s Electronic Proving Grounds and a period of intense construction and development followed.

The site of present-day Huachuca City was first known as Camp Stone Station and originated as a stop on the now-abandoned Southern Pacific Railroad between Patagonia and Tombstone. Huachuca City developed at this site and was incorporated by Cochise County on December 8, 1958. Huachuca City assumed its present municipal boundary on March 10, 1960 with the inclusion of the Huachuca Vista Annex subdivision.

A request for archaeological resource data was made to the State Historic Preservation Office (SHPO) and to the Arizona State Museum. No recorded archaeological sites were found within 50 feet of the project Area of Potential Effect (APE). However, Arizona Highway 90 has been in operation at its current location for more than 50 years, and is considered an historic resource. The Arizona SHPO reviewed the Draft EA document and, in a letter dated

July 19, 2004 and included in EA Appendix B, indicated that additional cultural resource research was required to comply with Section 106 of the National Historic Preservation Act. The Hopi Tribe also recommended a Class III archaeological survey of the proposed action. As a result, Archaeological Research Services (ARS) was retained to conduct such a survey, and did so in November 2004. The ARS report is attached to this EA as Appendix C, except for locations of known cultural resource sites (Figure 1) which is not included to protect cultural resource confidentiality. Figure 1 will be provided, if requested, to agencies engaged in cultural resource preservation.

ARS conducted research at four Arizona cultural resource data repositories regarding archaeological site files and archival data for locations within 0.5 mile (0.8 kilometer) of the proposed facilities. Ten previously-recorded archaeologic sites were identified within the study area, and documentation for seven previous archaeological investigations was found. However, none of these sites would be affected by the proposed facilities. In addition, the locations of three historic roads were found within the study area, but no surface manifestations now exist as a result of more recent development. Subsequently, ARS personnel conducted a Class III, non-collection, no disturbance cultural resources survey, resulting in 100 percent coverage of the ground surface along the proposed alignments. A single linear transect in the center of each alignment was surveyed. As a result of the survey along the proposed alignments, no prehistoric sites or artifacts were found, but State Route 90, a historic archaeological site, was documented. Although portions of the original State Route 90 alignment, which was constructed between 1940 and 1947, have been recommended as potentially eligible for inclusion in the National Register of Historic Places (NRHP), that is not the case for the portion adjacent to the proposed facilities. That section was constructed in 1966 on a different route than the original highway, and is considered a non-contributing element of the site's overall NRHP eligibility.

Tribes with cultural affiliations in the area were identified based on maps provided by the Arizona SHPO. These tribes included the Hopi, the Pascua Yaqui, the Tohono O'odham Nation, Gila River Reservation and the Ak-Chin Reservation. The US EPA contacted these tribes directly to determine if the proposed action may affect any traditional cultural resources known to them. The Hopi recommended preparation of a Class III survey, and requested a copy of such a survey if one was completed. The Tohono O'odham also requested a copy of the Class III survey. EPA will provide copies of the survey to the two tribes, as requested. No natural landmarks listed on the National Registry of Natural Landmarks were identified within or in the vicinity of the Project Area (NPS(c), 2002). Also, no designated historic sites from the NRHP were identified within the project APE (NPS(c), 2002).

Environmental Consequences

The nature of the project, under Alternatives 2 and 3, limits impacts to existing road or highway rights-of-way in urban areas, where cultural resources, if they had existed previously, were removed or disturbed by the road-building. No known cultural resource sites would be crossed by the proposed pipelines, based on research by the Arizona State Museum (ASM, 2002). Based on the archaeological survey, no known prehistoric or historic properties would incur adverse impacts as a result of the proposed action. However, it is important to note that if any previously undetected, unreported cultural features or deposits are encountered during project-related construction activities, these activities must be discontinued in the immediate area of the remains, and a professional archaeologist consulted to evaluate their nature and significance. This provision will be included as part of the construction documents for this project.

Historic Highway 90 would not be changed, since the new water lines would not be installed in the portion that is considered potentially historic. Furthermore, the lines would be installed in the unpaved shoulder parallel to the pavement and under it at two crossings using "bore and jack" (hydraulic drilling) technology. Existing conditions would continue under Alternative 1. Tribes with cultural affiliations in the project area have been contacted by the EPA, and the Hopi recommended that a Class III survey be undertaken. This was done, and no cultural resources were identified that would be affected by the proposed or alternative actions. Therefore, no significant effects to cultural resources are expected to occur through the implementation of any of the Alternatives.

Alternatives 2 and 3 would not result in any impacts to cultural resources in Mexico since all ground disturbance would occur in the United States. No ground disturbance would occur with Alternative 1.

3.4 Land Use and Infrastructure

Affected Environment

Huachuca City is located in the southeastern part of Arizona in Cochise County, along State Highway 90. The Town is 20 miles from the US-Mexican Border, 64 miles southeast of Tucson and 190 miles southeast of Phoenix. The Town is at an elevation of 4,245 feet, 15 miles south of Kartchner Caverns State Park. Huachuca City was incorporated in 1958 and has a mayor-council form of government. The United States Army's Fort Huachuca, located six miles south of town, economically and socially influences the town (WLB, 2002).

Due to its location, residential construction and retirement living have increased in recent years. Huachuca City's business district consists of retail businesses, restaurants, industrial properties and manufactured home businesses. Highway 90 forms the central commercial corridor, with the most intense commercial use found from the intersection of the highway with School Avenue southward to the Town's boundary with Sierra Vista. Huachuca City's proximity to the border and land availability makes it attractive for industrial and business development (Nolte, 2004).

Available housing in the area consists of single-family dwellings, apartments and mobile homes. The Town contains three distinct residential neighborhoods: Lower Huachuca to the north, Hillcrest/Skyline in the Town's northeast and Upper Huachuca in the Town's southeastern area. The east-central area of town includes the Town Hall, fire station-police station complex, park areas, the school campus and the lands committed to the recycling center and landfill. West of Highway 90, the land area is predominantly vacant, except for the gravel pit operation and some small areas of residential use (WLB, 2002). Existing land uses in Huachuca City as of 2002 are shown in Figure 3.4-1 (WLB, 2002).

The 40-acre Huachuca Commercial Center, providing improved commercial and industrial sites, is currently under construction. In addition, several new developments are under consideration in and near Huachuca City. However, according to Marilyn Slade, Town Manager, these projects are not expected to proceed with development for a year or more (pers. comm., Slade, Nov. 6, 2002). This information was confirmed by the Town Public Works Director, Billy McLain, in March 2004. These include two residential developments comprising a total of 1,000 dwelling units are located on the north side of the Town, one north of the Babocomari River east of Highway 90, and one in the

northwestern part of Town, west of Highway 90 (Nolte, 2004). Also, a 45-acre commercial and manufactured housing project has been proposed in the northeastern part of Town (pers. comm., Slade, Nov. 6, 2002).

Environmental Consequences

Water pipelines are public utilities and are generally considered to be consistent uses within local streets and alleys. Construction activities of Alternatives 2 and 3 could potentially interfere with access to uses, thereby creating adverse effects. However, due to the temporary nature of construction and proposed construction practices (i.e., the use of trench plating to maintain access and flagmen to control traffic), the impacts related to access would not be significant.

Nearly all construction associated with Alternatives 2 and 3 would occur entirely within dedicated road or highway rights-of-way adjacent to Highway 90 or existing residential uses, or within existing well sites. Therefore, existing or planned land uses in Huachuca City would not be affected by the implementation of the proposed project. The only exception would be along the connection between Highway 90 and Howard Street. There, the Town would obtain an easement for the line along property lines, within the parking lot for Antioch Baptist Church, thus avoiding disturbance of any existing or proposed structures. The Town would also obtain a permit from ADOT to cross under Highway 90 at two locations. No disturbance to the highway use would occur, since the water lines would be installed under the pavement by hydraulic drilling.

Kartchner Caverns State Park is located 15 miles to the north and would not be affected by the installation and enhancement of the water distribution system of Huachuca City. The proposed project would alleviate an existing problem with water pressure systems. The project facilities are sized based on water pressure requirements needed to fight fires. Furthermore, Nolte population projections used in the facility modeling are more conservative than the official Southeast Arizona Governments Organization (SEAGO) projections. For the year 2005, the SEAGO projection is a population of 2,152 people, and the Nolte projection is 1,849 people. The project would not induce population growth because it does not increase the water supply, or extend water service beyond areas that are already served.

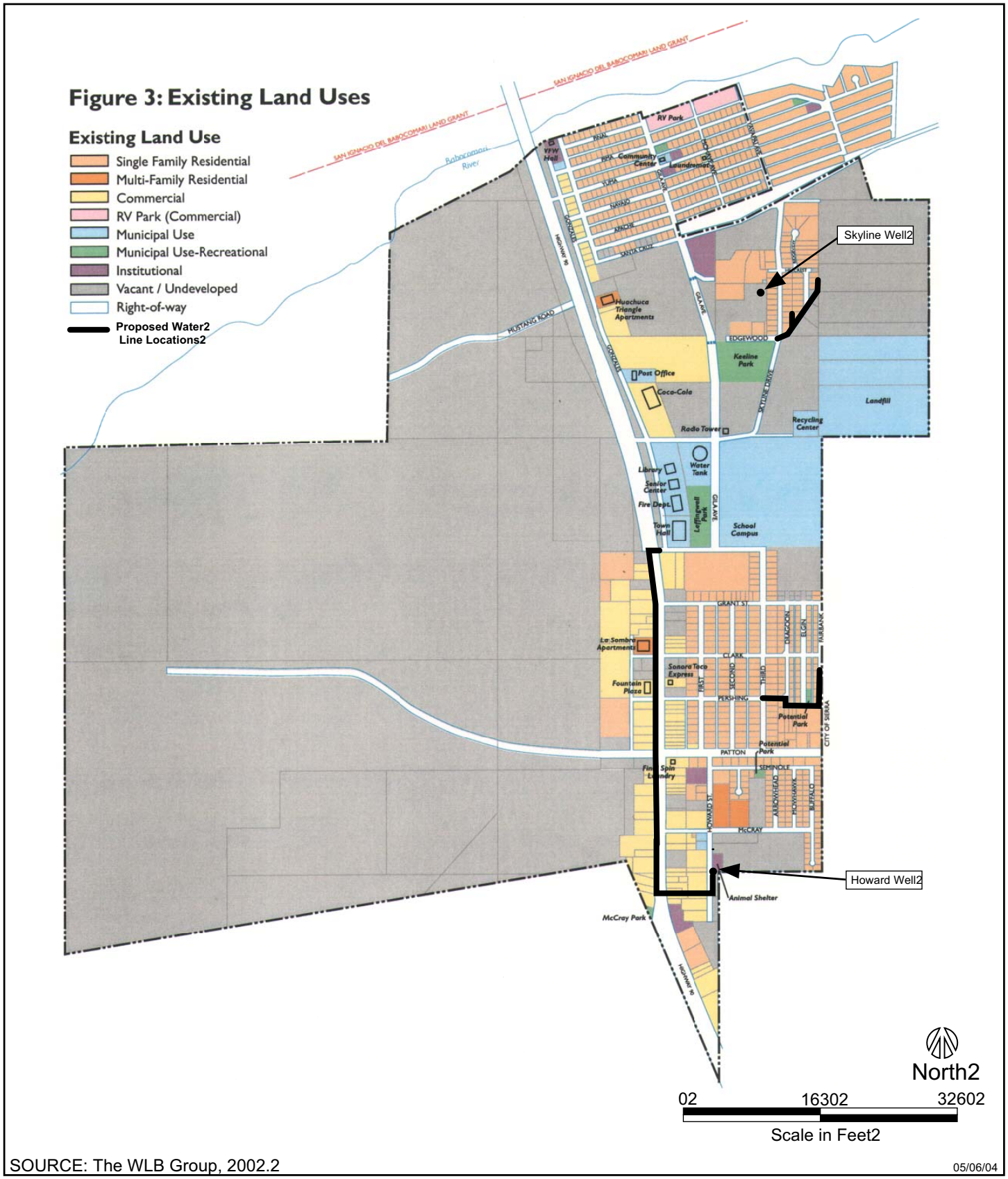
Under Alternative 1, land use and infrastructure would remain unchanged.

Alternatives 1, 2 and 3 are not expected to generate transboundary impacts to land use and infrastructure in Mexico, since all such changes are minor, and would occur in the U.S., approximately 20 miles from the international boundary.

3.5 Hazardous and Solid Waste

Affected Environment

A broad hazardous waste assessment of the communities associated with the proposed action was performed to define the potential for contamination to be encouraged during excavation associated with the alternatives. The first step was a search of EPA's Resource Conservation and Recovery Act (RCRA) Info. RCRA Info is a database of facilities known to generate or handle hazardous waste. This search identified two facilities in the Huachuca City.



SOURCE: The WLB Group, 2002.2

05/06/04

Huachuca City Water Improvements EA2

Existing Land Uses, Huachuca City, 2002

FIGURE 3.4-12

One facility located about 4 miles north of the project area is the Precision Machine Service, which has reported hazardous waste activities. The other facility is located about four miles north of the project area and is called the Granite Construction Company, which has reported multiple use activities.

The second step in the assessment was a search of EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). The CERCLIS system is another database. This database includes facilities and sites that have been subject to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) because of releases or other circumstances that present the potential for community impacts. CERCLA sites are often referred to as "Superfund" sites. The CERCLIS search did not identify any CERCLA Superfund sites in the Project Area.

The third step in the assessment was a preliminary review of the project area's land uses and their corresponding potential to present a risk for creating known or unknown contaminant deposits in area soils or contaminant plumes in local groundwater that might overlay existing or proposed water systems. Facilities of concern included, but not limited to, gasoline service stations, dry cleaners, auto repair facilities and other businesses that handle hazardous materials, but would not be included in the RCRIS or CERCLIS databases. In summary, like most communities, the project area is expected to include small, isolated locations where leaking tanks, faulty storage facilities, failing drainage systems or inappropriate practices have lead to soil and groundwater contamination. The possibility exists that existing pipelines or proposed pipelines may pass through these areas of contamination.

Environmental Consequences

Alternative 1 would not involve excavation, so hazardous materials that may be present in the environment would not be encountered and there would be no generation of solid wastes. Alternative 1 would not have any significant hazardous or solid waste impacts.

Alternatives 2 and 3 would involve installation of new pipes for the water system. The practices to be implemented in the event that contaminated soils or groundwater encountered during excavation are standardized by local, state, and federal regulations and procedures. Local government workers and any contractors hired to perform or oversee excavation would be trained to identify locations, site circumstances and soil and water characteristics that present the potential to create a hazardous materials issue. The protocol to be followed under specific conditions is understood and followed by workers in the field. This protocol includes a series of steps to be followed from contaminant verification through handling, storage, transportation and disposal of hazardous materials and wastes. Consultation with the appropriate governmental authorities is prescribed by local, state and federal regulations, and would be followed.

Given these practices, no significant risks to workers or environmental impacts would be expected to result. Liability for the costs associated with contaminants from adjacent land uses would be based on a variety of laws and regulations associated with hazardous materials and waste. In summary, the party responsible for the discharge of waste is liable for clean-up costs. These matters will require site specific investigations and negotiations. Because the closest known hazardous waste activity is four miles from the project area, it is not expected to generate any significant impacts to the project area. The proposed project would consist of digging and filling in a trench within the existing rights-of-way of Highway 90, and several Huachuca City streets and alleys. No substantial amounts of solid

waste would be generated. Because the project involves no work in Mexico and is located downstream and downwind from Mexico, no transboundary effects related to waste would occur.

3.6 Energy and Natural Resources

Affected Environment

Huachuca City purchases electricity from Sulphur Springs Valley Electric Cooperative (ADC, 1999). The electricity distribution system appears adequate for the City's current needs as no evidence of brownouts or other forms of power shortages was identified. Southwest Gas Corporation provides natural gas to the Town of Huachuca City (ADC, 1999).

Natural resource consumption at Huachuca City is anticipated to be similar to natural resource consumption in similar communities in the southwest. Water is the natural resource potentially affected by the Proposed Action. Water use in the Project Area is discussed in the Surface Water and Groundwater sections of this EA. The current pipeline system supplies water to existing homes and businesses, and to community fire hydrants for use in extinguishing fires. Water use in 2001 totaled 888,901 hcf (Nolte, 2004)

Environmental Consequences

The Proposed Action primarily consists of laying additional pipes underground, which would not cause any increase in electricity usage. In addition, two leaking hydropneumatic tanks would be replaced. None of the alternatives proposed for the project would result in any significant impacts on energy supplies or natural resources.

Alternatives 2 and 3 are proposed to help increase the water pressure in portions of the community. The increased pressure would bring peak-hour water pressure to levels present during non-peak periods. It would also provide adequate fire-fighting water flows. Thus, the Proposed Action would not increase the amount of water used, and would not induce population growth. If the Town's population were to grow, the community would need to identify additional water supplies, in accordance with existing laws and regulations.

3.7 Noise

Affected Environment

Proposed project pipelines are located in two residential areas, one between Skyline Drive and Hillcrest Street and the other between School Drive and McCray Street, and along the west side of Highway 90. No existing background sound level measurements were made for this study. However, according to Marilyn Slade, Town Manager, sound levels in the community are generally low (Slade, 2002). The community has no noise ordinance. It is expected that background sound levels are typical of small, rural communities and are influenced by: wind, traffic, occasional construction activities, and other common community noises. Given the anecdotal information on general sound levels, it is anticipated that typical daytime sound levels in residential areas range from 50-60 dB(A), and in commercial areas along Highway 90 would be in the 60 – 70 dB(A) range.

Environmental Consequences

Project construction would utilize skip loaders, haul trucks, and backhoes. An inventory of construction equipment noise reference levels is given in Table 3.7-1 based on actual field measurements taken over a period of time at various construction sites (Bricken, 1996 and BRG Inc., 2002).

TABLE 3.7-1
Construction Equipment Noise Generation Levels at 30 Feet From the Source

Equipment Type	Maximum Level (dbA)	Average Levels (dbA)
Skip Loader	78	75
Haul Truck	72	68
Backhoe	94	83

Source: Gordon Bricken and Associates, 1996; BRG Consulting, Inc., 2002.

None of the Alternatives would result in any long-term operational impacts. These would be no change in the overall operation of the water system, and the flow of water in the new underground pipes would not be perceptible to human ears.

Background noise levels would be elevated during construction activities associated with Alternatives 2 and 3. Construction noises on a linear project like this tend to be short in duration and concentrated around the immediate work area. Construction would be completed on approximately 200 to 300 feet per day (Nolte, 2002). Thus, no individual resident or business would be affected for more than a day or two. Replacement of the two tanks would take no more than two weeks of intermittent construction work for each (Nolte, 2004). Construction-related noise would be mitigated through the use of standard procedures such as specific, weekday hours of construction. Many municipalities regulate construction noise. Typical ordinances limit construction noise to between 7 a.m. to 7 p.m., with a sound level limit of 75 decibels at the residential property line (e.g., San Diego Municipal Code, 2002). Residents are most sensitive to noise after 7 p.m. and before 7 a.m. Alternative 1 would not impose any noise impacts due to construction, because no construction would occur.

Although construction noise impacts would occur for Alternatives 2 and 3, they would be temporary as a result of construction activities continually moving along the pipeline route, and would be further mitigated through adherence to a mitigation provision that all construction occur between the hours of 7:00 a.m. and 7:00 p.m. As mitigated, Alternatives 2 and 3 would result in no significant construction noise impacts.

3.8 Public Health and Safety

Affected Environment

Current health concerns are associated with low water pressures that occur in various parts of Huachuca City. Users in the area west of Highway 90 in the Upper Zone have complained of low pressures in their businesses and residences during periods of high demand, as low as six psi. Low pressures within a water distribution system

present the potential for water contamination due to infiltration or backflow of contaminated water into the system. This could result in an impact to human health for water users in the Town. Arizona Department of Environmental Quality water system guidelines require a potable water system to be designed to maintain a pressure of at least 20 psi at ground level at all points in the distribution system under all conditions of flow. This area has approximately 26 service connections. In addition, water flow and pressures available in that area are not adequate for fire protection. In the past, the fire department has closed Highway 90 to traffic and used fire hydrants east of the highway during emergencies. The low pressures and water flows are a result of the small diameter pipes installed along Highway 90. In addition, this portion is only connected to the main distribution system at one point (a 6-inch line along Clark St.), creating long runs that dead end to the north and south. With the current low water pressures, the town is under a serious risk of fires that would be very difficult to extinguish, given the current water conditions. The Huachuca City Fire Marshal requires a fire flow of 2,500-gpm for the commercial area west of Highway 90 and 1,500-gpm for residential areas.

Environmental Consequences

Alternative 1 would result in a continuation of public health and safety concerns within the Project Area. Without proper water pressure, the Town would always be at a high risk of water system contamination and of fires. Alternative 3 would meet peak hour flow requirements, but would not have adequate fire flow pressure. Therefore, Alternative 3 could result in significant impacts to public health and safety, because the Town would not have enough water pressure to fight fires effectively. However, Alternative 2 would be beneficial to the Town and to the safety of all individuals living in Huachuca City by meeting both peak hour flow and fire flow requirements.

Construction of Alternatives 2 and 3 may create traffic safety issues where trenching work is adjacent to street or highway travel ways. Such potential safety impacts shall be mitigated by preparation and submittal of a traffic safety plan, to the satisfaction of Arizona Department of Transportation. Thus, the project's construction would be consistent with all regulations and procedures under the Arizona Department of Transportation (ADOT's) safety and health section, which protects the safety and health of both workers and residents. With mitigation, neither Alternative 2 nor Alternative 3 would impose any significant adverse impacts to public health and safety.

None of the alternatives would result in changes to the Town's water supply sources or to its treatment. The same water supply would be used for all three alternatives. The only difference would be the diameter, water-carrying capacity, and water pressure of the water system pipes. As discussed above, the existing low-pressure situation increases the potential for water system contamination and disease. Alternatives 2 and 3 would avoid this problem. Therefore under Alternative 2 and 3, there would be an improvement to the water supply regarding the potential for waterborne diseases. Standard watering procedures for construction areas, as described in the air quality section of this EA, would serve to minimize both the dissemination of project-related dust, and the spread of any disease organisms that might be present in the soil. Therefore, Alternatives 2 and 3 would not result in increased risks to human health through disease.

3.9 Population and Economics

Affected Environment

Huachuca City began as a stop on the now-abandoned Southern Pacific Railroad between Tombstone and Patagonia, and was incorporated in 1958. Huachuca City's economy is closely tied to the U.S. Army's Fort Huachuca, headquarters for the Army's Information Systems Command, Intelligence Center and School, Electronic Proving Ground and Communications Electronic Installation Agency. At 20 miles from Mexico's border, the town has potential for development under the twin plant industrial concept where manufacturing facilities are sited in northern Mexico and paired with distribution facilities in the southern U.S. The 40-acre Huachuca Commercial Center (for improved industrial/commercial sites) is being constructed. Numerous scenic attractions can be found in surrounding Cochise County and in northern Mexico.

As of the 2000 Census, Huachuca City maintained a population of 1,751; a net decrease of 31 inhabitants from the Census of 1990. Projections from the coming 30-year period illustrate continued growth for Huachuca City according to the Arizona Department of Economic Security (ADES) official projections. A second set of projections illustrates potential growth based on the growth rate recorded from 1970 to 2000. Regional trends for Cochise County projects continued population growth (see Table 3.9-1). The unemployment rate in 1999 for Huachuca City was 7.3 percent, for Cochise County was 5.3 percent, and Arizona was 5.9 percent. The median family income in 1999 for Huachuca City was $33,938, compared with $38,005 for all of Cochise County, and $46,723 for Arizona (U.S. Census Bureau 2000). Development of several residential and commercial projects are anticipated over the next few years, as discussed under Section 3.4 of this EA.

TABLE 3.9-1
Past Population and Future Projections for Huachuca City and Cochise County

	1970	1980	1990	2000	2005	2010	2015	2020	2025	2030
Huachuca City (DES)	1,241	1,661	1,782	1,751	2,152	2,229	2,298	2,362	2,419	2,469
Huachuca City (based on 1970-2000 growth rate)	1,241	1,661	1,782	1,751	1,938	2,021	2,104	2,186	2,269	2,351
Cochise County	61,918	85,686	97,625	117,755	129,580	137,775	143,793	149,990	155,429	160,049

Source: US Census Bureau (for 1970-2000 data); Arizona Department of Economic Security (for 2005-2030 period).

Environmental Consequences

Alternative 1 may affect population and economic development adversely because of continued low water pressure (unattractive to potential business interests) and because of the effect of low water pressure on local fire insurance rates. However, Alternatives 2 and 3 may also have an impact on the economics of Huachuca City. This would be dependent on the total cost of the project allocated to the Town, and on how the Town decides to pay for the project. If they decide to have residents pay for the project, then this could pose an economic impact to some households because Huachuca City, as discussed in the environmental justice section, contains a high percentage of low-income

families. However, since repayment amounts and terms have not yet been determined by BECC, based on an affordability analysis by NADBank, and since the Town has not yet determined how to allocate project costs to its water rate payers, further discussion of such issues is considered too speculative at this time.

3.10 Environmental Justice

Affected Environment

A baseline Environmental Justice (EJ) screening process was used to identify minority or low-income communities within the Project Area. Preliminary screening of potential EJ issues is based on two general statistics. First, the screening process is used to ascertain whether the minority population percentage in the affected area is either greater than 5 percent or meaningfully greater than the minority percentage in the general population of the county and state. The concept of race is used by the Census Bureau reflects self-identification by people according to the race with which they most clearly identify (U.S. Census Bureau, 1990). Second low-income populations are identified using either Department of Health and Human Services (HHS) poverty guidelines or the Department of Housing and Urban Development (HUD) statutory definition of very low-income for the purposes of housing benefits (EPA 1997b). The percentage of impoverished people in the affected area is compared with the percentage of people living below the poverty limit in the general population to determine if a significant difference exists. According to the Arizona Department of Economic Security (ADES) Census 2000 report, Huachuca City had a lower proportion of its population that were minority than the County of Cochise or the State of Arizona. However, Huachuca City did have a higher percentage of population with low-income than the County of Cochise and the State of Arizona. This means that the EJ issue within the project area must be considered (see Table 3.10-1).

TABLE 3.10-1
Poverty and Minority Status in 1999 for Arizona, Cochise County, and Huachuca City

Designated Place	% Population With Income Below Poverty	%Minorities
Arizona	13.9	36.2
Cochise County	17.7	39.9
Huachuca City	19.3	31.5

Source: Census 2000 Summary File 3

Environmental Consequences

Alternatives 2 and 3 have a potential for EJ impacts. However, as demonstrated elsewhere in this document, there would not be any environmental impact upon these individuals except for temporary impacts to access, noise, and air quality, which would be mitigated to a less than significant level. Also, the proposed improvements are designed to serve Huachuca City and will not benefit other higher-income or lower-minority populations. Therefore, there would be no significant impacts related to the environmental justice issue for Alternatives 2 and 3. Alternative 1 would be a continuation of current practices where the population would continue to experience substandard water service.

3.11 Cumulative Impacts and Other Environmental Issues Considered

3.11.1 Cumulative Impacts

NEPA Sec. 1508.7 states that "A cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Cumulative impacts of Alternative 2 and 3 have been analyzed for all topics included in Section 3 of this EA. As discussed there, potential impacts include temporary construction impacts relative to air quality, noise, and traffic safety issues. However, these potential impacts would be mitigated to a level less than significant by implementation of the mitigation measures listed in within appropriate sections of Section 3. Furthermore, because the part of the project associated with the installation water pipes is a linear one, project impacts would be brief (one to two days) at any one location. As explained in Section 3.8, Alternative 1 would not change the current conditions and would continue to pose an impact to public safety.

According to Billy McLain, Public Works Director, the only development project expected to proceed in Huachuca City in 2004 is a warehouse on the west side of the highway, southwest of the Town Hall. No other new development projects are proposed in the next year within Huachuca City (McLain, March 9, 2004). The town limits were chosen as an appropriate boundary within which to address potential cumulative impacts given the temporary nature of most project impacts and the localized nature of the adverse effects. Two residential projects in the northern and western parts of the community have been discussed, but no formal plans have been completed or submitted. Given the lack of specifics available at this time, any environmental analysis would be highly speculative. Based on the type of impacts identified, the short term nature of the impacts, and the lack of project proximity to any other major concurrent development project in the area, no significant cumulative impacts are expected as a result of Proposed Action implementation.

3.11.2 Significant Unavoidable Adverse Impacts

There are no significant unavoidable adverse impacts associated with the construction or operation of the Proposed Action. All potentially significant impacts such as those associated with air quality, biological resources, geology/soils, water quality, and traffic safety would either be less than significant due to absence of sensitive resources, be mitigated to less than a level of significance as a result of implementation of the listed mitigation measures or would be avoided through compliance with applicable regulations.

3.11.3 Relationship Between Local, Short-Term Use of the Environment and the Maintenance/Enhancement of Long Term Beneficial Uses

Short-term uses of the environment associated with the Proposed Action include project construction disturbances such as construction noise, dust and access restrictions. Implementation of the Proposed Action would increase the water pressure in several portions of the water system, and thereby increase the effectiveness of firefighting. In addition, low peak-hour water pressure for residential and commercial use would be corrected as well. With incorporation of the recommended mitigation measures, the proposed action would have no significant short-term or long-term direct, indirect, or cumulative environmental impacts. The sites for the proposed pipelines are within existing rights-of-way for alleys, streets and highways within Huachuca City. As such, they are already disturbed, and contain no sensitive environmental resources. Therefore, the Proposed Action would cause no adverse change in the maintenance of long-term beneficial uses of the environment in the project area.

3.11.4 Irreversible and Irretrievable Commitment of Resources

Approval of the Proposed Action would result in a short-term irreversible and irretrievable commitments of energy and other resources associated with pipeline construction, including metals, lumber and forest products, concrete, sand and gravel, asphalt, petrochemicals, and other construction materials. However, there would be no long-term commitment of resources as a result of operation of the Proposed Action. The water system would not require any additional resources or energy to operate following Proposed Action construction.

4.0 Consultation and Coordination

4.1 List of Preparers

This Environmental Assessment Report was prepared for the Town of Huachuca City and the Border Environmental Cooperation Commission by BRG Consulting, Inc., at 304 Ivy Street, San Diego, California 92101. The following persons participated in its preparation:

<u>BRG Consulting, Inc.</u>

Erich R. Lathers, President and Principal in Charge
Ralph C. Kingery, Project Manager
Patrick J. Zabrocki, Planner II
Kathie D. Wilkerson, Planner II
Mary E. Brady, Production Manager
Edward Arcadia, Graphics
Mettja Hong, Graphics

Carl Sepponen and Julian Palacios, Nolte Associates (provided project description information)

4.2 Agencies and Persons Contacted

During the preparation of this EA, the following individuals and organizations were contacted regarding current conditions, potential environmental impacts, and project information.

Bilsbarrow, 2005

Personal Communication with Matthew Bilsbarrow, State Historic Preservation Office, January 13, 2005.

Bilsbarrow, 2004

Personal Communication with Matthew Bilsbarrow, State Historic Preservation Office, August 2, 2004.

Camp, 2002

Personal Communication with Philip Camp, State Soils Scientist, U.S.D.A., Natural Resources Conservation Service. October 17, 2002.

Griffith, 2002

Personal Communication with Carol Griffith, Deputy SHPO, Arizona State Parks Dept., November 5, 2002.

Hulsey, 2002

Personal Communication with Charles Hulsey, Project Manager, WLB Group. October 2002.

Karl, 2002

Personal Communication with Rick Karl, AZSITE database, Arizona State Museum, November 8, 2002.

McLain, 2004

Personal Communication with Billy McLain, Public Works Director, Town of Huachuca City, March 9, 2004.

Slade, 2002

Personal communication with Marilyn Slade, Town Manager, November 6, 2002.

4.3 Organizations to Which Copies of the Draft EA Were Mailed for Review and Comment

Border Environment Cooperation Commission (BECC/COCEF)
U.S. Environmental Protection Agency
U.S. Department of Agriculture, Rural Development
U.S. Army Corps of Engineers
U.S. Federal Emergency Management Agency
U.S. Fish and Wildlife Service
Arizona Department of Environmental Quality
Arizona Department of Transportation
Arizona State Historic Preservation Office
Cochise County, Arizona, Planning Department
Cochise County Arizona, Highway and Floodplain Department

Comments from BECC and from EPA have already been obtained and incorporated into this draft document. EPA sent letters to Native American groups with cultural affiliations in the area based on maps provided by the Arizona SHPO, including the Hopi, the Pascua Yaqui, the Tohono O'odham Nation, Gila River Reservation and the Ak-Chin Reservation. The Hopi Tribe recommended that a Class III archaeological survey be conducted in the locations for the proposed facilities. This was done, as is discussed in Sections 3.3 and 4.4 of this EA.

Comments from the other agencies listed have been solicited directly. In addition, a public notice was published in the July 1, 2004 Sierra Vista Herald describing the proposed project, anticipated impacts, proposed mitigation measures, and contact persons for additional information. Three comment letters were received from the Cochise County Highway and Floodplain Department; from the U.S. Federal Emergency Management Agency (FEMA), and from the Arizona State Historic Preservation Office. The comment letters are reproduced in Appendix B of this document, along with the distribution list for the Draft EA, and a copy of the newspaper notice. All comments received have been addressed in Section 4.4 below.

4.4 Responses to Comments

The Cochise County letter of July 15, 2004 included no comments on the project itself. However, it did note that any construction to be done in a County ROW or floodplain requires an appropriate permit. The project will comply with that condition.

The FEMA letter of July 16, 2004, made no specific comments about the proposed project. Rather, it listed requirements for projects proposed within various types of flood areas. The EA addresses potential flood issues on pages 18 and 19. A copy of the Flood Insurance Rate Map (FIRM) for the project area is provided in EA Appendix A, which shows that none of the project components would be located within areas of potential flooding. The project will comply with all applicable FEMA flood regulations, but most are anticipated to be non-applicable due to the project setting.

The letter of July 19, 2004 from the Arizona State Historic Preservation Office requested additional information in order for their office to accept the submitted EA as being in compliance with requirements for consultation under Section 106 of the National Historic Preservation Act. On July 30, 2004, BRG Consulting, Inc. provided additional information in a letter to the Arizona SHPO regarding cultural resources studies conducted for the project. As stated in the Assessment, page 25, BRG contacted the Arizona SHPO office in November 2002 regarding potential cultural resources in the vicinity, and were provided with a list of tribes with cultural affiliations in the area. Those tribes have been identified in the EA (pages 25-26), and were contacted by the US EPA relative to the proposed project.

BRG was also referred at that time to the Arizona State Museum for information about specific sites that might be in the area. BRG personnel talked with Rick Karl at the State Museum, who provided BRG with a cultural resources (AZSITE) map of the project vicinity, and the statement that "no cultural resources are recorded in AZSITE within the project area you specified." According to the map, the nearest sites are no closer than 400 meters from the proposed water line locations. BRG also checked with the National Park Service regarding the location of sites on the National Register of Historic Places, and found none that would be affected by the proposed water lines. Given that

information, and the fact that the proposed water lines would be located within disturbed areas within existing road rights-of-way, led us to conclude that the project would result in no significant effects to cultural resources.

Based on a telephone conversation on August 2, 2004 with Matthew Bilsbarrow of the SHPO office, the remaining issue regarding Section 106 compliance was consultation with the tribes having cultural affiliations in the project area. The U.S. EPA contacted the tribes identified, and requested their input regarding whether any cultural resources important to those tribes would be affected by the proposed project. The only response received was from the Hopi Tribe, who recommended that a Class III survey be done where the facilities are proposed, and requested a copy of the survey report when completed. The Tohono O'odham also requested a copy of the report by email to EPA. A copy of the Hopi letter to EPA is included in Appendix B, along with the letters of other agencies.

Based on input from the Arizona SHPO, and from the Hopi Tribe, the firm Archaeological Research Services, Inc. was retained to conduct both site file research and a Class III survey along the alignments proposed for the water system improvements. This work was completed and documented in November 2004, and, as described in Section 3.3 and Appendix C of this EA, no known prehistoric or historic resources were found at the project sites, or would be affected by the proposed action. A project condition will be implemented, that if any previously undetected, unreported cultural features or deposits are encountered during project-related construction activities, these activities must be discontinued in the immediate area of the remains, and a professional archaeologist consulted to evaluate their nature and significance.

Therefore, no significant impact to archaeological, historic or tribal cultural resources is anticipated as a result of the proposed project.

5.0 REFERENCES

Archaeological Research Services, Inc., 2004

Archaeological Research Services, Inc. *A Class III Cultural Resources Survey of the Existing Municipal Water Distribution System and Proposed New Alignments in Huachuca City, Cochise County, Arizona November 16, 2004. (See Appendix C of this EA).*

ADEQ 1998

Arizona Department of Environmental Quality. *Arizona's 1998 Water Quality Limited Waters List.* July 1998.

ADWR 1997

Arizona Department of Water Resources, Arizona Water Information. Updated 1997. www.adwr.state.az.us/AZwaterinfo

ADWR, 2002

Arizona Department of Water Resources, 2002. Description of the Upper San Pedro Watershed. http://www.water.az.gov/adwr/Content/WaterInfo/OutsideAMAs/SoutheasternArizona/Basins/uppersanpedro.html

AGS 1998
Arizona Geologic Services. Geologic Map 1998.
http://www-glg.la.asu.edu/%7Esreynolds/azgeomap/azgeomap_home.htm

Arizona Department of Commerce (ADC), 1999
Huachuca City Community Profile. 1999.

Arizona Department of Economic Security, 2000
Census 2000 Report. 2000. www.de.state.az.us/links/ecnomic/webpage/page2.html.

Arizona Department of Environmental Quality (ADEQ). www.adeq.state.az.us/environ/air/plan/listing.html

Arizona Department of Transportation (ADOT), 2002
Safety and Health. 2002. www.dot.state.az.us/ABOUT/sh/index.htm.

BRG Consulting, Inc., 2002
San Diego County Administration Center (CAC) Waterfront Park DraftEIR. 2002. pg. 2.6-9.

Danzer, S., 2002
A Quick Overview of Fort Huachuca. 2002. ag.arizona.edu/research/itam/location_climate.pdf. Visited on October 18, 2002.

EPA, 2002
U.S. Environmental Protection Agency Website. Visibility – Chiricahua Wilderness, Arizona. Available at http://www.epa.gov/air/vis/chir_t.html. Last updated on March 29, 2002.

EPA, 2001
Douglas, Arizona Wastewater Collection and Potable Water Distribution Improvement Project EA. April 16, 2001.

FEMA, 1989
Federal Emergency Management Agency, April 1989. FIRM Panel Number 0400160005E.P.

Friends of the San Pedro River, 2002
Friends of the San Pedro River Homepage. Available at http://www.theriver.com/public/fspr. Visited on November 1, 2002.

Gordon Bricken and Associates, 1996
Environmental Noise Analysis Garfield Elementary School Site Expansion City of San Diego. 1996. pg. 25.

Nolte, 2004
Feasibility Analysis Report Huachuca City, AZ – Water Distribution System Improvements. Prepared by Nolte Associates for the Border Environmental Cooperation Commission. March 2004.

NPS(a), 2002
National Park Service, 2002. *Wild and Scenic Rivers by State.* Available at http://www.nps.gov/rivers/wildriverslist.html#az. Visited October 31, 2002.

NPS(b), 2002

National Park Service. National Historic Landmarks Program Database – Fort Huachuca. Available at http://tps.cr.nps.gov/nhl/detail.cfm?ResourceId=1424&ResourceType=District. Visited November 6, 2002.

NPS(c), 2002

National Park Service. National Registry of Historic Places Website, http://www.cr.nps.gov/nr/. Visited Oct., 2002.

U.S. Army, 2002

Programmatic Biological Assessment for Ongoing and Programmed Future Military Operations and Activities at Fort Huachuca, Arizona. Prepared by the Environmental and Natural Resources Division Directorate of Installation Support, U.S. Army Garrison, Fort Huachuca, Arizona. July 2002.

USDA/NRCS, 1999

Soil Survey of Cochise County, Arizona, Douglas-Tombstone Part. U.S. Department of Agriculture – Natural Resources Conservation Service. 1999.

U.S. Environmental Protection Agency, 2002

Envirofacts Information About Zip Code 85616. 2002. http://oaspub.epa.gov/enviro/ef_home3.html?p_zipcode=85616&p_type=zip&x=23&y=6.

U.S. Environmental Protection Agency, 2001

Region IX. Douglas, Arizona Wastewater Collection and Potable Water Distribution Improvement Project. 2001.

WLB, 2002

Town of Huachuca City, General Development Plan (Draft). Prepared by The WLB Group for the Town of Huachuca City, 2002.