FINDING OF NO SIGNIFICANT IMPACT
PROPOSED U.S. BORDER PATROL STATION
SANDERSON, TERRELL COUNTY, TEXAS

The Proposed Action would involve the acquisition of land, construction of a U.S. Border Patrol (USBP) station, and relocation of agents from an existing facility to the new facility. The primary purpose of the Proposed Action is to further the USBP's mission of reducing illegal drug trafficking along the U.S.-Mexico border by maximizing the effectiveness of the USBP in the Marfa Sector. The proposed facility would be located on an approximately 33-acre tract of land at the southeast comer of U.S. Highway 90 and Highland Plaza Ave. in Sanderson, Terrell County, Texas. The new station is necessary to accommodate an increased number of agents who will be assigned to the Marfa Sector. The EA identifies the affected environment, project alternatives, and addresses the potential environmental consequences of the alternatives.

In addition to the Proposed Action, there were three other alternatives evaluated as part of this environmental impact analysis: 1) No action; 2) Expanding the Existing Facility; and 3) Purchase Land at Two Alternate Sites. The No Action Alternative was carried throughout the analysis, and would be reflected in the baseline environmental conditions of the area. Under the No Action Alternative, there would be continued socioeconomic concerns relating to the illegal drug trafficking and criminal activity. The remaining two alternatives were eliminated from further discussion because they did not meet USBP/INS mission and operation requirements. The preferred alternative (building a USBP station at the southeast comer of U.S. Highway 90 and Highland Plaza Ave.) meets the USBP's operational and administrative needs. The new station would consist of the following structures or components: a single-story building (14,000 square feet sf); one aboveground gasoline storage tank; a 39,858 sf drive/parking area; a dog kennel; and a radio tower.

There would be no significant adverse effects to the natural environment associated with the Proposed Action. The proposed action would not affect any federal species listed or proposed for listing as threatened or endangered in accordance with the Endangered Species Act. With environmental design measures specified as part of the Proposed Action, there would be negligible impacts to area land use, soils, water resources, biological resources, and cultural resources. No direct or indirect cumulative effects will result from the Proposed Action. Under the Proposed Action, there is a possible beneficial socioeconomic impact to the area in the form of a reduction in drug trafficking and related criminal activities.

A review of the EA and coordination with the appropriate agencies indicate that implementation of the proposed action would not have significant impacts on the quality of the physical and biological environment. All requirements of the National Environmental Policy Act have been satisfied. Therefore, preparation of an Environmental Impact Statement is not required.

Rich Diefenbeck Date: 2/6/01

Rich J. Diefenbeck, Director
Headquarters, Facilities and Engineering Division
U.S. Immigration and Naturalization Service

ENVIRONMENTAL ASSESSMENT

PROPOSED CONSTRUCTION OF THE U.S. BORDER PATROL STATION IN SANDERSON, TERRELL COUNTY, TEXAS

Prepared for:

UNITED STATES DEPARTMENT OF JUSTICE
IMMIGRATION AND NATURALIZATION SERVICE

February 12, 2001

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Executive Summary

This Environmental Assessment (EA) is prepared in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969. The EA addresses the potential impacts of the Immigration and Naturalization Service (INS) proposed property purchase, construction of a U.S. Border Patrol (USBP) station, and relocation of agents from an existing facility to the new facility. The proposed facility would be located on an approximately 33-acre tract of land north of U.S. Highway 90 and west of Highland Plaza Ave. in Sanderson, Terrell County, Texas.

The purpose is to construct a new facility to accommodate an increased number of agents who will be assigned to the Marfa Sector, Sanderson Station. The current Sanderson Station can accommodate up to 5 personnel, but has inadequate ancillary facilities and does not have the capability to expand to include these facilities. A new station would allow for the necessary expansion of agent staff size as well as more efficient and effective operations in a modern facility that can best support the USBP mission. The new station would consist of the following structures or components: a single-story building (14,000 square feet sf); one aboveground gasoline storage tank; a 39,858 sf drive/parking area; a dog kennel; and a radio tower.

This EA addresses four alternatives to the proposed action: no action, expanding the existing facility, purchasing the preferred site and purchasing optional sites. The No Action Alternative would not allow for the needed expansion. Expanding the existing facility was eliminated from detailed analysis because it could not meet USBP/INS mission and operation requirements. The two optional sites were eventually eliminated due to terrain and drainage. The proposed action meets the USBP's operational and administrative needs and directives.

There would be no significant adverse effects to the natural environment associated with the proposed project. The proposed action would not significantly affect the air quality, noise, or socioeconomics and would not pose significant hazardous material concerns in the project area. The proposed action would not affect any federal species listed or proposed for listing as threatened or endangered in accordance with the Endangered Species Act. A cultural resources survey detected no archaeological in the proposed project area. With environmental design measures specified as part of the proposed action, there would be negligible impacts to area land use, soils, wetlands and waters of the United States or groundwater resources, biological resources, and historic properties.

Potential soil erosion and related surface water runoff impacts are possible during construction of the proposed action. Procedures and methods that would be implemented to mitigate impacts to soils and surface water resources would be developed in the National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan (SWPPP) for the proposed action. Recommendations outlined in the SWPPP would reduce surface water runoff to receiving drainages located downslope of the project site.

1.0 INTRODUCTION

This environmental assessment (EA) presents the potential impacts associated with the proposed construction of a U.S. Border Patrol (USBP) station in Sanderson, Texas (Figure 1-1). The lead agency for this project is the Immigration and Naturalization Service (INS).

1.1 Existing Conditions

The INS is the federal agency responsible for enforcing the laws regulating the admission of foreign-born persons (i.e. aliens) to the United States and for administering various immigration benefits, including the naturalization of resident aliens. As part of the INS, the USBP is responsible for maintaining control of the borders and coastlines of the United States and its territories by preventing illegal crossings by aliens between ports of entry, the interdiction of narcotics, and other law enforcement activities. The USBP is a highly mobile force of uniformed agents who spend most of their time patrolling the areas along the 8,000 miles of international boundaries in vehicles, aircraft, or boats, as well as on horseback and by foot.

The Marfa Sector USBP is responsible for carrying out this mission in the western Texas-Mexico border region and is active in curbing the flow of illegal immigrants and contraband into the United States. The current Marfa Sector Border Patrol station located in Sanderson employs seven full-time agents. This Sector has noted the increase of illegal activity along the border directly south of Sanderson. This border area is described as a section of the river, which is easily traversed. Increased Border Patrol efforts at other stations have also increased the attractiveness of this section as a potential crossing area.

1.2 Project Description

The INS proposes to purchase an approximately 33-acre (ac) tract of land, north of U.S. Highway 90 and west of Highland Plaza Ave., from a private landowner in order to construct a station in Sanderson, Terrell County, Texas (see Figure 1-2). The facility to be constructed would include: a single-story building (14,000 sf); one aboveground gasoline storage tank; a 39,858 sf drive/parking area; a dog kennel; and a radio tower. The USBP agents stationed at the current Sanderson Station would be relocated to the new facility when construction is complete. This station will have the capacity to accommodate 50 agents and their respective vehicles.

1.3 Purpose of the Proposed Action

The purpose of the proposed action is to construct a new facility to serve as the Sanderson Station. The new facility is necessary to accommodate an increased number of agents. The current Sanderson Station can accommodate up to five agents per shift with an inadequate amount of acreage available at the present site for expansion. A new station would allow for a comfortable expansion in staff and more efficient and effective operations in a modern facility that can best support the USBP mission.

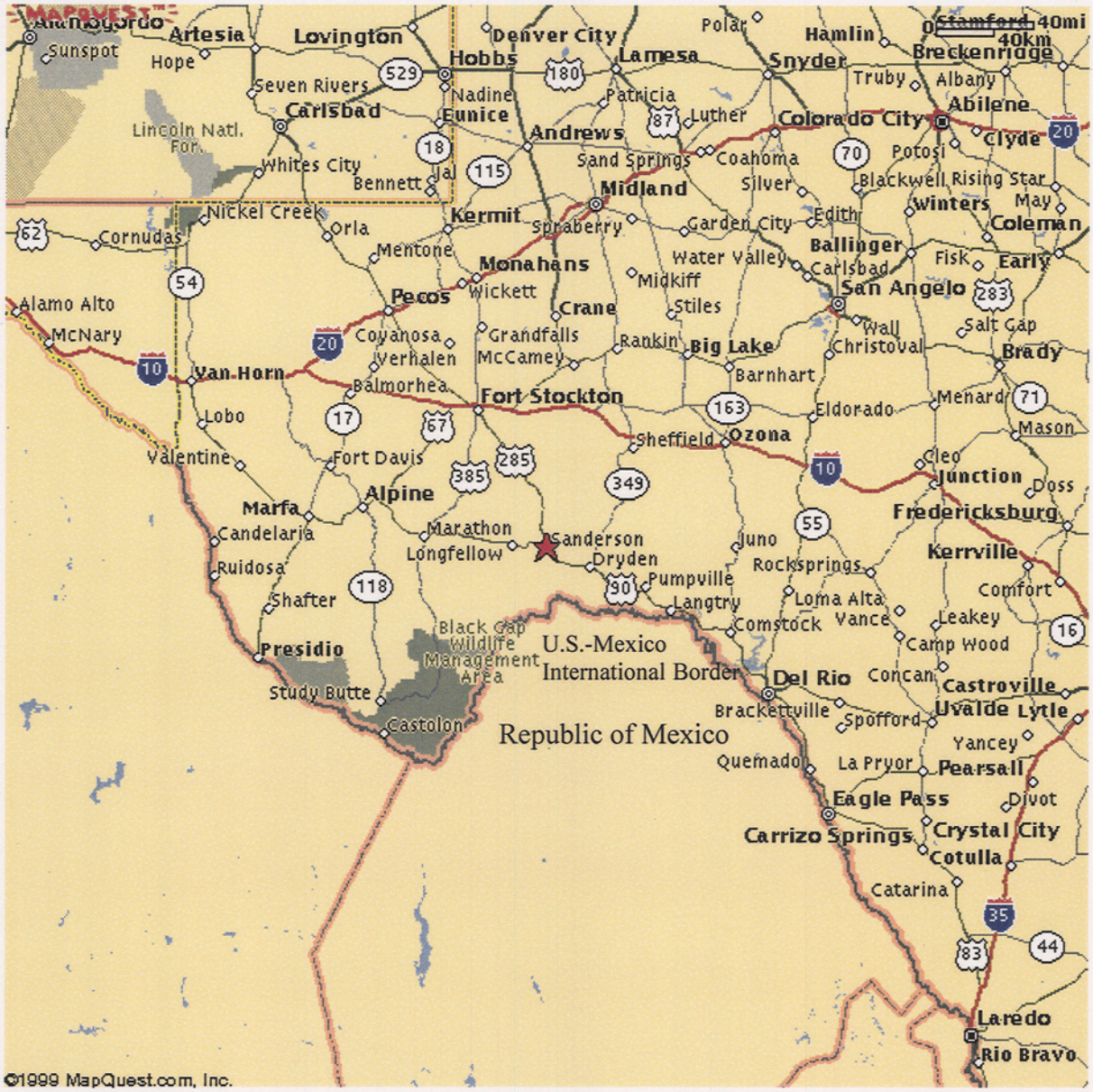

Figure 1.1 Sanderson, TX

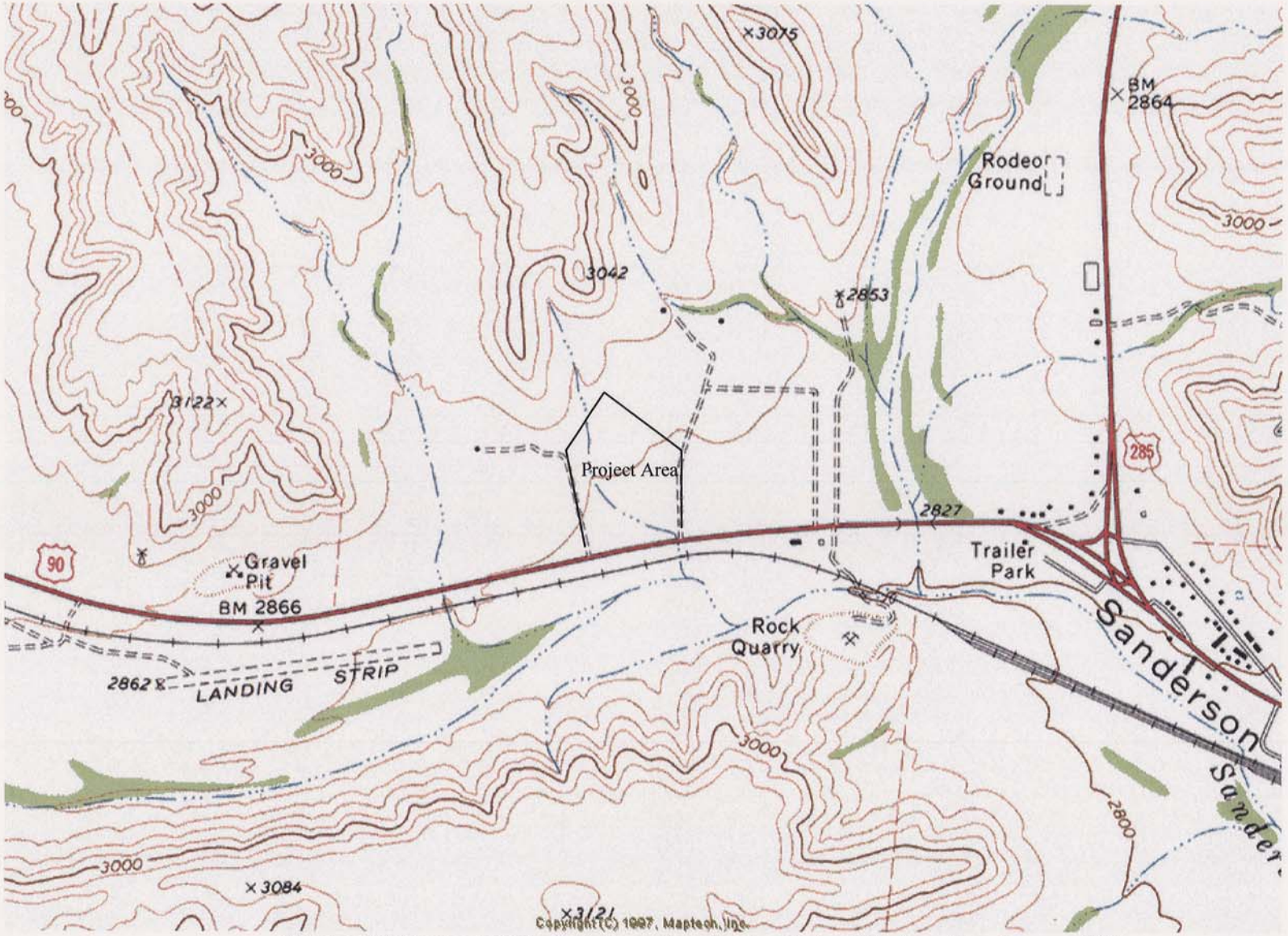

Figure 1.2 Proposed Project Area for Border Patrol Station, Sanderson, TX

1.4 Need for the Proposed Action

The need for the proposed action is a result of the documented increase of aliens being apprehended in this region within the last 3 years. Information provided the USBP, Marfa Sector, indicate that the total number of aliens apprehended in this area in Fiscal Year (FY) 1997 was 484. Likewise, apprehensions increased in FY 1998 and FY 1999 to 850 and 953 respectively. The border 17 miles south of Sanderson is the Rio Grande, which, in this area, is shallow and easily crossed, thus making it an attractive point of entry for aliens.

1.4.1 Border Security

As an agent of the INS, the USBP is responsible for maintaining control of the borders of the United States by preventing illegal crossings of aliens between ports of entry, the interdiction of narcotics, and other law enforcement activities. Sanderson is located within the Marfa Sector between the Ports of Entry (POE) of Del Rio and Presidio and is approximately 17 miles north of the border. The security along the border in this area is of concern due to the large distance between these two ports. By constructing this new facility, the BP will increase their ability to provide border security to that border region.

1.5 Regulatory Compliance

This EA was prepared for the INS by the U.S. Army Corps of Engineers (USACE), Fort Worth District pursuant to the National Environmental Policy Act (NEPA) of 1969 (Public Law [P.L.} 90-190, 42 United States Code [U.S.C.] 4321 et seq.), as amended in 1975 by P.L. 94-52 and P.L. 94.83. Additional guidance is provided by the INS Procedures Relating to the Implementation of NEPA which implement Section 102 (2) of NEPA and the regulations established by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500-1508). Numerous other federal and state laws regulate activities which may affect the environment. Table 1-1 lists pertinent environmental regulations that were considered during the preparation of this EA.

Table 1-1
Applicable Environmental Statues and Regulations

Federal Statutes
Archeological and Historic Preservation Act
Clean Air Act, as amended
Clean Water Act, as amended
Comprehensive Environmental Response, Compensation, and Liability Act
Endangered Species Act, as amended
Hazardous and Solid Waste Amendment
Migratory Bird Treaty Act
National Historic Preservation Act, as amended
National Environmental Policy Act, as amended
Native American Graves Protection and Repatriation Act
Noise Control Act

Executive Orders, Memorandums, and INS Regulations
Flood Plain Management (Executive Order 11988)
Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898)
INS Procedures Relating to the Implementation of NEPA

State Statutes, Regulations, or Applicable Permits
Antiquities Code of Texas
Texas Oil Spill Prevention and Response Act/Texas Natural Resource Code
Texas Parks and Wildlife Code
Texas Water Quality Standards/Texas Consolidated Permit Rules

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 Description of the Project Study Area

The prefered alternative is located west of the current BP station on U.S. Highway 90 in Sanderson, TX. The project area is an approximately 33-acre tract of land on the north side of U.S. Highway 90 and has been privately owned by the current landowner for the last 27 years. This land is bordered on the east by Highland Plaza Ave., on the north by a dirt road, which separates the property from a housing sub-division, and on the west by a privately owned ranch. The property is currently vegetated with moderate to heavy areas of Chihuahuan desert flora.

2.2 Project Selection Criteria

The proposed project area has been selected using a 23-point system of criteria (Figure 2.1). These criteria allowed for a selection based on property qualities such as terrain, drainage, acreage, conflicts with wave transmissions, willingness of owner to sell, availability of water, sewer, power and gas, availability of communications, traffic patterns, and conditions of existing roads. The proposed project area demonstrated a score superior to the alternative sites indicating it should be selected as the project site.

2.3 Description of the Regulatory Environment

The regulatory environment of Sanderson can be characterized as having intermittent streams prone to flash flooding. These narrow intermittent streams possess a narrow ordinary high water mark. Sanderson also contains small jurisdictional areas under Section 404 of the Clean Water Act, which are constricted to channels. There are no standing or running bodies of water located in or around the project area.

2.4 Alternatives Examined

This EA examined four alternatives to the proposed action: no action, expanding the existing facility and purchasing the preferred site and purchasing optional sites. If the no action were selected, the USBP station at Sanderson, Texas would continue to be housed at the present facility. The proposed increase in administrative and operational support, which is necessary to the USBP mission, would be hampered by the inability to house additional agents and staff in the existing facility. The existing facility lacks space for additional agents, ancillary facilities (dog kennels, detention area, above ground fuel tanks, etc), and adequate parking for additional agents.

The expansion option was eliminated from further analysis due to the insufficient space available on the current property. Two optional sites were considered for the location of the proposed facility. Site 1 is west of the existing station on the north side of U.S. Highway 90. This site was determined to have poor terrain and drainage with some areas deemed unusable. Site 2 is also

TABLE 2-1
Sample Evaluation Sheet

Site Evaluation Criteria
USBP - Sector Headquarters

Sector -Marfa
Site Number -
Date of evaluation -
Site Location -
Agency conducting evaluation -
Person conducting evaluation –

	Importance Factor	Rating	Numerical Value	Remarks
1 Site Size				
2 Conflicts with microwave transmissions				
3 Conflicts with microwave tower height				
4 Willingness of owner to sell				
5 Environmental clean up				
6 Compatibility with neighborhood				
7 Conflicts with Air Ops traffic				
8 Site terrain and drainage				
9 Shape of property				
10 Vehicular traffic and circulation patterns				
11 Soil conditions				
12 Availability of water				
13 Availability of sewer				
14 Availability of power				
15 Availability of gas				
16 Availability of communications				
17 Threatened or Endangered Species				
18 Conditions of existing access roads				
19 Demolition costs (existing site improvements)				
20 Land cost				
21 Location with respect to the border				
22 Location w/ respect to other USPB facilities				
23 Ability to purchase additional acreage				
Score for this Site				
Additional Remarks:				

west of the existing station on the south side of U.S. Highway 90. This site also was determined to have poor terrain and drainage and would not have additional land for future additions. The preferred alternative, a 33-acre site, is also located on the north side of U.S. Highway 90.

2.5 Description of the Preferred Alternative

The INS proposes to purchase an approximately 33-ac tract of land from a private landowner in order to construct a station at the north of U.S. Highway 90 and west of Highland Plaza Ave. in Sanderson, Terrell County, Texas (see Figure 1-2). The USBP agents stationed at the current Sanderson Station would be relocated to the new facility when construction is complete. Fifty USBP agents could be stationed in Sanderson once the facility is complete. The proposed action meets the USBP's operational and administrative needs and directives.

The proposed facility would be secured with a perimeter fence and gate, and would consist of the following structures or components:

- A 14,000-square foot (sf) single-story station building;
- A 2,105 sf processing area
- A 39,858 sf drive/parking area;
- A dog kennel;
- A radio tower; and
- One gasoline aboveground fuel tank with a pump station.

3.0 AFFECTED ENVIRONMENT/BASELINE CONDITIONS

The affected environment is the baseline against which potential impacts caused by the Proposed Action and alternatives are assessed. This chapter focuses on those resources specific to the proposed project area that have the potential to be affected by activities brought on by the construction of a new BP station. Resources that would most likely be affected (e.g., air, soil, cultural resources, biological resources, and noise) by the Proposed Action or alternatives are described in more detail than those not likely affected (e.g. wetlands, water, environmental health, aesthetics).

3.1 Land Use

The proposed project area is an undeveloped tract within the city limits of Sanderson. The land immediately surrounding the site consists of U.S. Highway 90 to the south, Highland Plaza Ave and undeveloped land to the east, a small housing subdivision to the north, and a privately owned ranch to the west. The prefered alternative site is approximately .2 miles from a railroad line south of U.S. Highway 90. The nearest residents are approximately .1 mile from the site.

3.1.1 Zoning

There is no official zoning in the Town of Sanderson or Terrell County.

3.1.2 Land Acquisition

The Government proposes to acquire the fee title to an irregularly shaped 33.52-acre tract of vacant land in Section 13, Block 152, E.L. & R.R. Ry. Co. Survey. It is designated as a "Future Development Area" in the Lomita Terrace Sub-Division, Town of Sanderson and is located at the corner of U.S. Highway 90 and Highland Plaza Avenue. The site will be used for construction of an INS Border Patrol Station with capacity for 50 agents plus support staff and holding areas. The property is currently owned by a private landowner and resident of Sanderson, TX.

3.1.3 Farmland

Land use in Terrell County is predominantly native rangeland. There are limited areas with sufficient water for irrigation and deeper soils that are used for production of hay crops such as sudan and alfalpha. The property west of the proposed project area is a privately owned sheep ranch. These properties are separated by a ranch access road. The ranch is of a higher elevation than the proposed project property. Therefore, the ranch would not experience any drainage onto the ranch property as a result of any construction or post-construction activities. The animals are located on the north end of the ranch property, which is the portion furthest from the project site.

3.2 Biological Resources

Biological Resources include native plants and animals in the region around the preferred alternative site. The proposed project area supports a plant community defined as desert grassland, which supports a short to mid-grass mixed vegetation (Texas A&M University 2000). This habitat is found in the Stockton Plateau of west-central Texas.

3.2.1 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 (P.L. 93-205) and the amendments of 1988 (P.L. 100-578) were enacted to provide a program of preservation for endangered and threatened species and to provide protection for ecosystems upon which these species depend for their survival. The ESA requires all federal agencies to implement protection programs for designated species and to use their authorities to further the purposes of the Act. Responsibility for the listing of an endangered or threatened species and for the development of recovery plans lies with the Secretary of Interior and Secretary of Commerce. The U.S. Fish and Wildlife Service (USFWS) is responsible for implementing the ESA within the continental United States.

A total of three federally listed endangered or threatened species occur or potentially occur within Terrell County. Two species are listed as endangered and one as threatened. There is also one federal candidate species and two additional state endangered/threatened species. Table 3-1 lists the threatened and endangered species having a potential to exist in Terrell County.

The potential for critical habitat for these species was examined during the July 2000 site visits. Critical habitat is defined in Section 3 of the ESA as: (1) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such area are essential for the conservation of the species. No designated critical habitat was defined within the preferred alternative site.

3.2.2 Vegetation

Surveys to determine the existing vegetation types located on the preferred alternative site were conducted in July 2000. This site is moderately to heavily vegetated indicating it has been unused in recent years. The vegetative community is characterized as a Mesquite Shrub vegetative type. The vegetation of this area is typical of the Chihuahuan Desert region in this area west of the Sanderson Plateau (Figure 3.1). Vegetation was predominately prickly pear and creosote brush, with a ground cover varying from approximately 40 percent on the north central area to 85 percent throughout the remainder of the property. Scattered shrubs and grass included prickly pear (*Opuntia humifusa*), cresosote bush (*Larrea tridentate*), mesquite (*Prosopis*

glandulosa), sotol (*Dasylirion graminifolium*), horse crippler (*Echinocactus texensis*), ocotillo (*Fouquieria splendens*), Spanish dagger (*Yucca gloriosa*), Texas persimmon (*Diospyros texana*), claret cup cactus (*Echinocereus triglochidiatus*), fish-hook cactus (*Mammillaria microcarpa*), lechuguilla (*Agave lechuguilla*), catclaws cactus (*Ancistrocactus uncinatus*), crested wheat grass (*Agropyron cristatum*), hooded windmill grass (*Chloris cucullata*) and green-flowered hedgehog (*Echinocereus viridiflorus*)

3.2.3 Wildlife

Surveys to determine the existing faunal species utilizing the preferred alternative site were conducted in July 2000. Wildlife observed included barn swallow (*Hirundo rustica*), scott's oriole (*Icterus parisorum*), mockingbird (*Mimus polyglottos*), turkey vulture (*Cathartes aura*), whitetail deer (*Odocoileus virginianus*) and little striped lizard (*Cnemidophorus inornatus*). Site visits were made during morning, afternoon and evening hours. The little striped lizard was the most abundant species observed on the property during late morning and afternoon site visits. Barn swallows were primary active during the daylight a.m. hours. Turkey vultures were active during the mid-afternoon hours. Deer scat was observed throughout the property suggesting the property is utilized by the species on a regular basis, but deer were only sighted during the mid-afternoon.

3.2.4 Wetlands

Site visits conducted July 2000 revealed that no Waters of the United States exist on or adjacent to the preferred alternative site. Wetlands within Terrell County are confined to channels as part of the regulatory environment. No such channels occur on the proposed project area. Two arroyos cross the site but are not wetland areas as they do not hold water or possess vegetation typical of wetlands. Therefore, Waters of the United States would not be impacted as a result of the proposed action. The National Wetlands Inventory also indicates that there are no wetlands in the project area (Appendix B).

3.3 Geology and Soils

3.3.1 Geology

The land that is Sanderson is of Edwards Limestone of the Late Cretaceous. Geographically, the Cretaceous in Texas occurs in five areas: central Texas, the Edwards Plateau, the Llano Estacado, Trans-Pecos Texas, and Gulf Coastal Plain (U. of Texas Bulletin 1966). Sanderson lies within the Trans-Pecos region. In Trans-Pecos Texas, the Cretaceous, much affected by tectonic movements and by bolson fill, now outcrops in several scattered areas. The greatly thickened Upper Cretaceous formations in the lower Rio Grande valley indicate synclinal deposition. Besides the thickening of the beds, the most notable stratigraphic feature of the general region is the appearance of near-shore and fresh water facies, including coal beds, in the Upper Cretaceous in this embayment.

3.3.2 Soils

The soil of Sanderson and the preferred alternative site is characterized as deep, nearly level to gently sloping gravelly loams that are several feet thick. These soils formed in gravelly outwash materials from limestone hills. The surface layer is light brownish-gray gravelly loam about 2 inches thick. The next layer is very friable, light brownish-gray gravelly loam about 7 inches thick. The next lower layer, about 19 inches thick, is very friable, light brownish-gray gravelly loam that contains about 1 percent of calcium carbonate films and threads. Below this is very friable, very pale brown gravelly loam that extends to a depth of 60 inches (U.S. Dep. of Agriculture 1974).

3.4 Water Resources

3.4.1 Groundwater and Aquifer Recharge Areas

Sanderson Texas is located within the Edwards-Trinity Aquifer (T. Lowrance 2000). Most of the municipalities on the Plateau depend on this aquifer for their water supply. The water from this aquifer ranges in quality from fresh to slightly saline and is hard (Texas Almanac 1993). Ground water in the project area is located at an approximate depth of 500 feet below the surface (T. Lawrence 2000).

3.4.2 Surface Water

Primary surface water resources (i.e. ponds, streams) were not present within or adjacent to the preferred alternative site. Secondary surface water resources in the form of two arroyos exist on the property in the west and central sections running north to south. These are dry and most likely receive water only during flash floods. As previously mentioned these arroyos are not considered wetlands as confirmed by the National Wetlands Inventory.

3.4.3 Frequently Flooded Areas

Sanderson, Texas has a history of flash flooding as evident by levees, which exist in various areas of the town. These levees were constructed by the Corps of Engineers to protect local property from floods. One such levee is located due east of the preferred alternative site. This levee serves to retain water in the event of a flash flood. The drainage of the preferred alternative site runs northwest to southeast. The U.S. Army Corps of Engineers, Albuquerque District was contacted in regards to a Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Terrell County, Texas. The Albuquerque District stated that there is not FEMA map for Terrell County. This was further verified through an environmental risk management study performed by Environmental Data Resources, Inc.

3.4.4 Water Quality

As result of the Terrell County 1999 Drinking Water Quality Report, the Texas Natural Resource Conservation Commission (TNRCC) has determined that the water of Terrell County is of good quality and safe for drinking purposes (Terrell County Drinking Water Quality Report 1999). The construction of the proposed BP station will not adversely impact the quality of water in Sanderson, TX. The water quality data for Terrell County is included in the appendices.

TABLE 3.1

Endangered and Species List for Terrell County

	Common Name	Federal Status	State Status
BIRD			
FALCO PEREGRINUS ANATUM	AMERICAN PEREGRINE FALCON	LE	E
FALCO PEREGRINUS TUNDRIUS	ARCTIC PEREGRINE FALCON	E/SA	T
VIREO ATRICAPILLUS	BLACK-CAPPED VIREO	LE	E
FISHES			
CYCLEPTUS ELONGATUS	BLUE SUCKER		T
CYPRINELLA PROSERPINA	PROSERFINE SHINER		T
CYPRINODON PECOSENSIS	PECOS PUPFISH	PE	T
ETHEOSTOMA GRAHAMI	RIO GRANDE DARTER		T
MAMMALS			
URSUS AMERICANUS	BLACK BEAR	T/SA	T
REPTILES			
PHRYNOSOMA CORNUTUM	TEXAS HORNED LIZARD		T
VASCUAR PLANTS			
CORYPHANTHA RAMILLOSA	BUNCHED CORY CACTUS	LT	T

LE/ LT - Federally Listed Endangered/Threatened
E/SA - Federally Listed Endangered by Similarity of Appearance
T/SA - Federally Listed Threatened by Similarity of Appearance
PE, PT - Federally Proposed Endangered/Threatened
E, T - State Endangered/Threatened

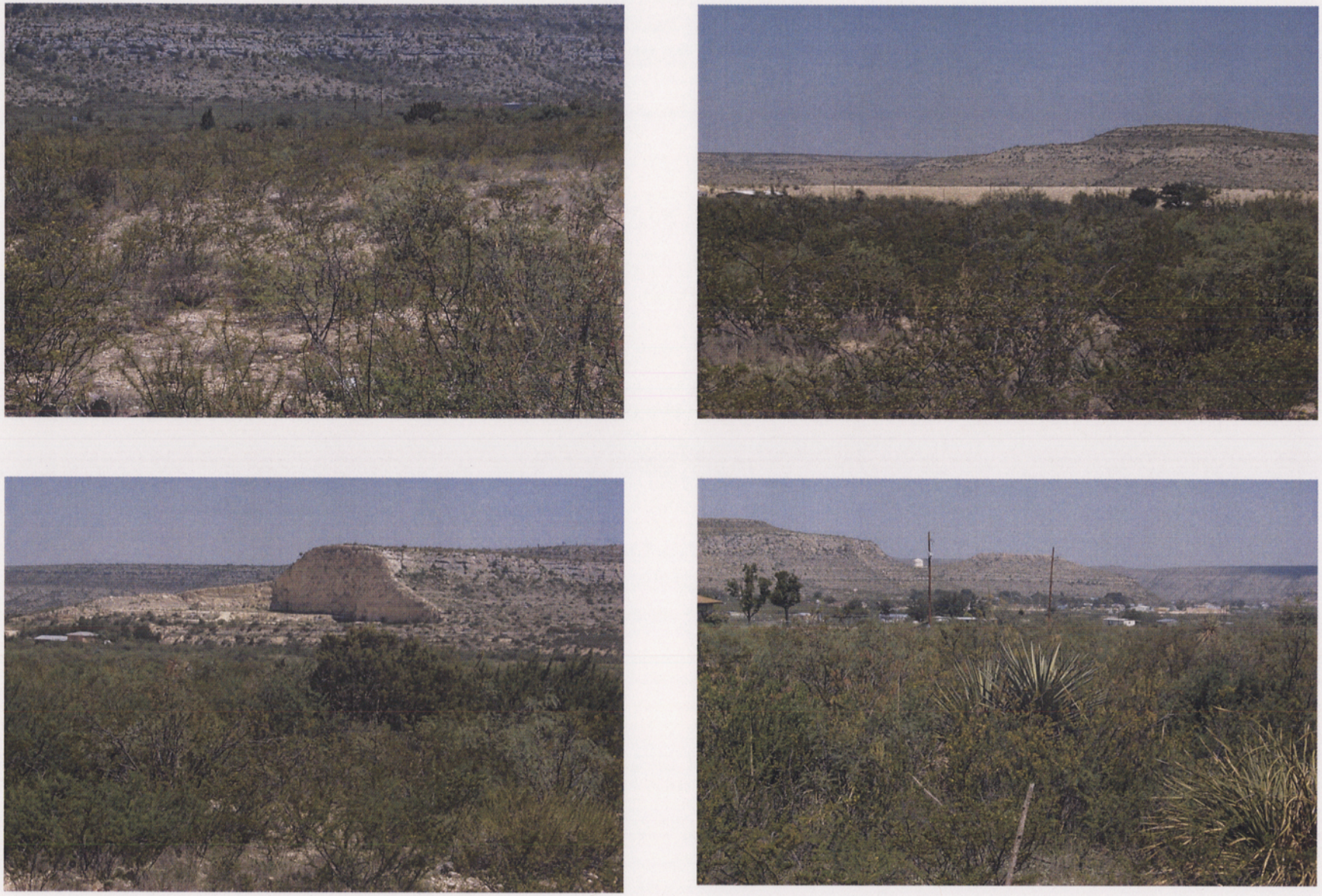

Figure 3.1 Project Area

3.5 Air Quality

The proposed project airshed encompasses largely rural and undeveloped areas; thus, air quality is generally good, except for occasional windblown dust. Since Sanderson, Texas is a community of small size, major urban areas are not present in the project area. Thus, no substantial urban/industrial air pollution would be expected as in the larger border cities such as El Paso.

Two major factors control the dispersion of pollutants, topography and climate. Topography in the project area is relatively level to gently sloping plateaus surrounded by areas of higher elevation. These higher elevations area intermittent, thus, the terrain will not trap pollutants and will allow for speedy dispersion of pollutants. The project area is predominantly rangeland with minimal commercial and residential development (e.g., City of Sanderson).

Climate in the project area is classified as subtropical with hot summers and mild winters; the mean maximum January temperature is 59.2 degrees Fahrenheit (F), and the mean maximum July temperature is 91.9 F. Skies are generally clear throughout most of the year. Average annual rainfall is 13.5 inches.

The responsibility to monitor the attainment of air quality standards and the authority to regulate air emission sources is performed by the TNRCC. The TNRCC is responsible for monitoring ambient air quality in the counties and comparing monitoring data with applicable state standards and the NAAQS. The TNRCC does not have an ambient air monitoring station in Terrell County. Therefore, it can be concluded that concentrations of the criteria pollutants within the project area consistently fall below the applicable NAAQS limits established for the protection of public health as TNRCC does not measure ambient air quality in Terrell County.

3.6 Noise

Noise is defined as "unwanted sound" and in the context of protecting public health and welfare implies potential effects on people and, in general, on the environment. Under certain conditions, noise may cause hearing loss, interfere with human activities at home and work, and in various ways may affect people's health and well-being. Noise may also annoy, anger, awaken, and frustrate people. Therefore, different noise sources may combine to detract from the quality of life and/or have other effects on the environment (EPA 1978).

The Noise Control Act of 1972 (P.L. 92-574) directed the EPA to publish scientific information about the kind and extent of all identifiable effects of different qualities and quantities of noise. Congress also directed the EPA to define acceptable noise levels under various conditions, which would protect public health and welfare with an adequate margin of safety. EPA and TNRCC personnel were contacted regarding noise data. No documented noise data was available for Terrell County. Therefore, it can be concluded that noise levels consistently fall within the day-night levels acceptable for public safety.

3.7 Cultural Resources

3.7.1 Historical Setting

The project area in Sanderson, Texas, lies within an archaeological region known as the Stockton Plateau (Prewitt 1983) and is noted to have a settlement/subsistence system similar to that recognized in the Amistad Reservoir area or Trans-Pecos region (Bandy 1980). Four stages of cultural development are generally noted for the Sanderson area, as well as the larger regions: The Paleo-Indian (ca. 12,000-10,000 years B.P.), Archaic (ca. 10,000-800 B.P.), Late Prehistoric (ca. 800-250 B.P.) and Historic (ca. 250 B.P. – present).

The Paleo-Indian stage is the earliest and is characterized in the Trans-Pecos, as well as in other areas of North America, by distinctive tool types, which in some areas have been found in association with now extinct species of Pleistocene fauna such as mammoth, mastodon, bison, and other forms. The people of this period are generally considered to have been nomadic hunters probably living in extended family groups. Although their typical projectile points (e.g., Clovis, Folsom Plainview, and Angostura) have been found associated with large game animals, these people also utilized available plants and small game (Bandy 1980).

By the end of the Pleistocene, early Native American groups had shifted their subsistence patterns from hunting megafauna to a more intensive gathering and collecting economy, supplemented by the hunting of smaller game. The Archaic stage is generally considered as representing that major adaptive shift in subsistence. The tool types reflected the necessity for a more varied tool kit, indicating the shift to a different subsistence strategy. The Archaic tool kit is known to have included a variety of items made from several raw materials. Lithic implements included projectile points, drills, scrapers, knives, hand axes, notched pebbles, bedrock mortars, milling stones, abraders, manos, and pestles. Tools of other materials included bone awls, needles, gouges and scrapers, antler flaking tools, wooden atlatls, darts, throwing sticks, pointed sticks, fireboards, fire drills of yucca and lechuguilla, and fiber fishhooks and snares. These tools and the actual remains of various plants and animals at many rock shelter sites, clearly indicate that procurement activities included hunting of many animals (with emphasis on deer, rabbits, and rodents), gathering of various plants (including grasses), and fishing (at those sites along the Rio Grande). The settlement system was keyed to specific territories in which small bands exploited seasonally available food resources. It has been noted that "home ranges" of Archaic groups in the Trans-Pecos were probably anchored around one or more crucial resource locales such as water holes or a canyon system in which there was an adequate supply of needed plants and animals (Bandy 1980).

The Late Prehistoric stage in the Trans-Pecos is marked by the appearance of small projectile points, which indicate the use of the bow and arrow. The absence of agriculture in the Sanderson area is most likely due to the unfavorable environmental conditions. The exception is for those areas immediately adjacent to the Rio Grande River and the Pecos River. It is most likely that the subsistence patterns in the Sanderson area were not much different from earlier Archaic times and patterns.

The Historic stage began in the Trans-Pecos in 1535 when Cabeza de Vaca crossed the area to the west. This first recorded European contact was with a tribe of Indians identified as the Jumanos [Newcomb 1973-255]. The Coahuiltecans, who are known mainly from south of the Rio Grande in Coahuila, Mexico, also may have inhabited the area at times [Shafer 1971:3]. The Concho-speaking Chisos groups [Bousman and Rohrt 1974:25] are known to have occupied both sides of the Rio Grande in the Big Bend area [Griffin 1969; Campbell 1970], and Shafer [1971] suspects that they may have ranged eastward into the Sanderson area (Bandy 1980).

By 1750, the Apaches had spread into southern Texas as a result of pressure upon them by the Comanches and Utes [Newcomb 1973: 104-107]. Coronado first encountered the Apaches, a group of Athabascan origin, in 1541 on the Llano Estacado of eastern New Mexico and northwestern Texas. By 1700 the Comanches, who were located in eastern Colorado and western Kansas, drove the Apaches southward where they allied with the Jumanos [Newcomb 1973:233]. Among the Apache bands ranging into Texas were Jicarilla, Cuartelejo, Lipan, Kiowa, Paloma, Carlana, and Faraones (later the Mescaleros). By the end of the 1700s, the Comanches had displaced all the Apaches from the Southern Plains. The Apache groups that moved into the Trans-Pecos were the Lipan in the Lower Pecos area, and the Mescaleros upstream near the present New Mexico line and westward into the Basin and Range area [Newcomb 1973:160] (Bandy 1980).

During the 1800s, the Apaches appear to have filled the niche vacated by indigenous groups in the Trans-Pecos and northern Coahuila region, who had been almost eliminated by Spanish colonization [Griffin 1969]. The Lipan Apache were probably descended from the Querecho Apache, who were encountered by Coronado in 1541 on the Llano Estacado of eastern New Mexico and the Texas Panhandle [Newcomb 1973:105]. Here they subsisted by hunting bison in the winter and by horticulture in summer. However, upon moving into the Trans-Pecos, these subsistence patterns would have probably changed. Numerous ethnohistorical accounts report that the Apache in arid regions were heavily utilizing desert plants, specifically agave and sotol [Newcomb 1973:116]. Apaches who moved into other areas also shifted their subsistence patterns, demonstrating a marked capacity for adaptation, specifically by adopting customs of the people already residing in an area. Thus, it is likely that the heavy use of desert plants, particularly using large ovens (ring middens), was an established pattern before the Apache adopted it (Bandy 1980). The only other group of historic Indians reported in the eastern Trans-Pecos are the Comanche, who occupied the area only while passing through on raiding forays into northern Mexico [Griffin 1969]. The last serious attempt by the Spanish to control the area came in 1808 when Captain Francisco Amanqual tried to establish a direct road between San Antonio and Santa Fe [Daniel 1968:495] (Bandy 1980).

It was not until after 1846 that there was substantial Anglo-American settlement of the Trans-Pecos. At that time, the United States took over the border and frontier defenses of the newly acquired State of Texas. A string of forts was built as a defense against the Comanches with the establishment of Fort Duncan at Eagle Pass, Fort Bliss at El Paso, and Fort Leaton at Presidio. These were followed between 1851 and 1854 by the construction of Fort Stockton and Fort Davis at important springs and trail crossings [Webb 1952:624-632; Pool 1975:99-103] (Bandy 1980).

In 1860 Lieutenant William H. Echols came through the Sanderson Canyon area with a contingent of camels that Jefferson Davis tried unsuccessfully to introduce to the Southwest [Foley 1978]. However, it was not until the building of the Southern Pacific Railroad that the area was really opened to settlement. Starting with surveys and the establishment of base camps in 1880, the railroad converged from both east and west, and was joined on January 12, 1883 near Langtry, Texas. Small towns and villages grew along the railroad at the base camps that were situated near springs or water sources needed for the engines. On May 22, 1882, the eastbound construction crew arrived at a point designated as a "division" in the area now occupied by the town of Sanderson. This base camp station was first known as Strobridge, named for James Harvey Strobridge, who was the railroad's Superintendent of Construction. The name of the station and village was often misspelled "Strawbridge" The name of the station was finally changed to Sanderson, the name of the resident engineer, Thomas P. Sanderson [Downie 1978:40-43]. In 1905, Terrell County was subdivided from Pecos County, and Sanderson became the county seat (Bandy 1980).

3.7.2 Background Investigations

The Sanderson vicinity has been the subject of previous archaeological investigations, which began in 1970 when the Texas Archeological Salvage Project (TASP) conducted a survey of 11 proposed dam sites in the Sanderson Canyon Watershed [Shafer 1971] (Prewitt 1983). A search of the Texas Archaeological Research Laboratory (TARL) records indicate that the areas surrounding the project area have been archaeologically surveyed and found to contain various types of sites (rockshelters, open campsites, and ring middens) within immediate vicinity of water sources such as Threemile Draw to the east and Sanderson Creek to the west of the project area. The project area was never included in the areas surveyed.

3.7.3 Existing Conditions

A pedestrian survey of the project area was conducted in July 2000. The survey was conducted by walking 30-meter segments going back and forth from east to west until all of the area had been covered by visually searching for artifacts, lithic debitage, or cultural features such as hearths or middens. The visibility was excellent, however, several shovel tests were undertaken to verify the lack of buried cultural materials.

The survey produced no archaeological sites and only two isolated artifacts within the project area. An isolated projectile point fragment (distal) of mottled white/light tan, fine-grained chert and a biface fragment (medium-grained, tan chert) were located. Tested cobbles and weathered fragments of chert in various colors were also noted, but they were scattered over the area. The area also contained present day trash.

A separate letter report has been submitted to the Texas Historical Commission and will serve to document the field effort and results.

3.8 Visual Quality and Aesthetics

Visual quality and aesthetics of a property consist of the natural and manmade landscape features that appear indigenous to the area and give a particular environment its visual characteristics. The current visual characteristics of the proposed project area are typical vegetation of the Chihuahuan Desert region, adjacent to ranch development, a small housing sub-division and U.S. Highway 90. The residential sub-division is located to the north of the project area. Existing power and light poles are located adjacent to the proposed area. The addition of any further poles or wires should not interfere or decrease the aesthetic views in the general project area.

4.0 ENVIRONMENTAL IMPACTS AND MITIGATION

The same private landowner has owned the land proposed for the project for the last 27 years. This land has remained undeveloped throughout that time period.

4.1 Preferred Alternative

4.1.1 Land Use

The preferred alternative would develop portions of a currently undeveloped 33-ac area. However, the proposed action will not have a significant impact on the surrounding ecosystem as the habitat within the property to be developed is very common in Sanderson and Terrell County.

4.1.2 Biological Resources

The primary direct effect of the proposed action is the loss of vegetation and wildlife habitat. Portions of 33 ac of Mesquite Shrub vegetative type would be removed from the preferred alternative site as a result of the proposed action. This is not a significant amount of vegetative and habitat loss considering the large amount still remaining in Sanderson and Terrell County.

The greatest impact to wildlife communities would be the loss of habitat from the proposed action. Mobile animals (i.e. little striped whiptail, whitetail deer, scott's oriole) will relocate to nearby areas of similar habitat. Species, which are less tolerant to disturbances, are more likely to be lost during construction. This displacement and/or reduction in the number of animals is not expected to severely impact animal communities or the viability of any particular species due to the area affected by the proposed action. Due to the absence of critical habitat and threatened and endangered species on the preferred alternative sitet site, the threatened and endangered species listed for Terrell County should not be affected by the proposed action.

4.1.3 Geology And Soils

Construction of permanent facilities (i.e. station building with a detention area, kennel, parking lot, radio tower) would result in the disturbance of approximately 33 ac of soil. Exposure of the subsurface soils during construction activities would potentially increase soil erosion and siltation off-site. Removal of vegetation may decrease soil stability and increase the potential for soil erosion. Impacts to soils from paving and landscaping would also affect wildlife since both cover and food would be eliminated by the loss of this wildlife habitat.

A National Pollutant Discharge Elimination System (NPDES) and a Storm Water Pollution Prevention Plan (SWPPP) would be prepared and implemented for the proposed action. The SWPPP would contain specific construction and mitigation measures (i.e. silt fences, drainage swales, check dams, pipe slope drains) to reduce or eliminate runoff impacts during proposed construction activities and to reduce the potential for soil erosion after construction. Based on these preventive measures, soils in the project area would not be significantly affected by the proposed action.

4.1.4 Water Resources

Primary surface water resources (i.e. ponds, streams) were not present within or adjacent to the preferred alternative site. Secondary surface water resources in the form of two arroyos exist on the property in the west and central sections running north to south. Indirect impacts resulting from the proposed action could include increased erosion and subsequent sedimentation in downslope drainages. However, a Storm Water Pollution Prevention Plan (SWPPP) would be prepared and implemented to prevent erosion and subsequent siltation of downslope drainages. Construction techniques would be implemented to prevent water from crossing disturbed areas and to remove sediment from runoff before it leaves the proposed project site. Wash waters and waste from construction activities would be processed, filtered, ponded or similarly treated prior to release. These construction and mitigation measures would prevent and/or alleviate any potential negative effects from erosion and subsequent sedimentation. By employing these techniques, the preferred alternative would result in no significant impacts to water resources. Post-construction drainage from the facility and the parking area/drive would be designed to flow into the existing drainage for the surrounding roads.

4.1.5 Noise

Noise levels within and adjacent to the project area would increase during the proposed construction activities. Construction activities (e.g., vehicular movements of construction equipment [dump trucks, graders, rollers, dozers], the use of hand construction equipment [hammers, saws, etc.], and utilization of equipment [generators], vehicles, etc.) would potentially result in short-term temporary noise impacts during the construction period in the project area.

Construction-related activities would involve short-term temporary noise level changes. The baseline noise level in the project area is expected to be approximately 40-60 dBA (i.e., rural to old urban residential ambient classification). Noise levels during construction activities are expected to range from approximately 62 to 96 dBA at 50 feet due to equipment motor noise, safety back-up bells, warning horns, and construction vehicles. This is a significant increase in the noise levels over most of the project area. However, upon project completion, noise levels are expected to decrease to the 55-70 dBA range.

Noise effects in the project area from the proposed action would not significantly affect humans over the long-term due to the discontinuous and temporary nature of the noise associated with the construction activities and the very low population density in the project area. Construction personnel would be exposed to noise levels of 90 dBA during the work day and would be required to wear ear protection in order to prevent hearing loss. Hearing loss can be either temporary threshold shift (TTS) or permanent threshold shift (PTS), both indicated by a shifting to a higher sound level of the ear's acuity to perceive sound. The EPA has set a noise level of 75 dBA for an 8-hour exposure and 70 dBA for a 24-hour exposure as the average noise level standard requisite to protect 96 percent of the population from greater than 5 dBA PTS.

With the improved capability of adding 43 agents with accompanying border patrol vehicles with sirens for the operational-related activities, permanent noise levels would range from 55-70 dBA. This noise level would be in the acceptable range for the new facility and the surrounding community. Therefore, the proposed alternative will not have a significant impact as it relates to noise.

4.1.6 Cultural Resources

Since no known or new archaeological sites were encountered, there will be no impact to cultural resources. However, should any cultural resources be encountered during construction, construction activities in that area will cease and a professional archaeologist will evaluate the material and the SHPO will be notified.

4.1.7 Visual Quality And Aesthetics

The preferred alternative would have minimal impact on the visual quality and aesthetics of the area. While there would be a loss of natural and manmade landscape features that appear indigenous to the area, this loss will be lessened due to the abundance of like natural landscape and vegetative features found in Sanderson.

4.1.8 Socioeconomics

Construction activities associated with the proposed action would have no direct, indirect, or induced impacts on population. The direct and indirect impacts from construction are insufficient to affect population and would have no impact on in- or out- migration in the area. A change in operations at the facility could increase employment by a maximum of 43 persons. Given the size of Terrell County, 13,218 persons, (Texas State Data Center 1998), the direct expenditures of the proposed construction activities would have short-term direct, indirect and induced beneficial impacts on employment, income, and sales within Terrell County. Long-term, direct socioeconomic impacts for Sanderson would be beneficial as the potential for new agents (and their families) would increase sales and revenue for local businesses.

4.2 Optional Sites

4.2.1 Land Use

The optional areas considered have been analyzed using a 23-point system of criteria (see Table). These criteria allowed for a determination of land suitability for this project based on such qualities such as terrain, drainage, acreage, conflicts with wave transmissions, willingness of owner to sell, availability of water, sewer, power and gas, availability of communications, traffic patterns, and conditions of existing roads. These sites were not chosen as the preferred site due their lower analysis rating. These optional sites considered would have had similar impacts to land resources as the preferred alternative.

4.2.2 Biological Resources

The primary direct effect of the developing the optional sites is the loss of vegetation and wildlife habitat. The optional sites considered were of similar size and contained the same Mesquite Shrub vegetative type as the preferred alternative. Development of these sites would also result in an insignificant loss in vegetative and habitat considering the large amount still remaining in Sanderson and Terrell County.

4.2.3 Geology And Soils

The optional sites would have similar impacts to soils as the preferred alternative. These properties are of similar size and soil and vegetative type. If selected, a NPDES and a SWPPP would also have been prepared and implemented to reduce or eliminate runoff impacts.

4.2.4 Water Resources

The optional sites for this project also have no primary surface resources and have similar drainage patterns. The same construction and mitigation measures would be taken to prevent and/or alleviate any potential negative effects from erosion and subsequent sedimentation. By employing these techniques, the optional sites would result in no significant impacts to water resources.

4.2.5 Noise

The optional sites for this project have similar expectations related to noise. Similar temporary increased dBA levels would be anticipated during construction with a slightly higher post-construction dBA range also being expected. Therefore, the alternative sites would also not have significant impacts as it relates to noise.

4.2.6 Cultural Resources

Impacts at the optional sites could not be discussed as cultural resource surveys were only conducted at the preferred site.

4.2.7 Visual Quality And Aesthetics

Impacts at the optional sites would also have minimal on the visual quality and aesthetics of the area. While there will be a loss of natural and manmade landscape features that appear indigenous to the area, this loss will be lessened due to the abundance of like natural landscape and vegetative features found in Sanderson.

4.3 No Action Alternative

Under the no action alternative, the proposed station would not be built, and there would be no changes to land use, biological resources, geology and soils, water resources, noise, cultural resources or aesthetics. The agents currently staffed at Sanderson would remain at the existing

Sanderson Station and the employment of new agents could not be fulfilled. Benefits from the proposed BP station such as maintaining control of the border area south of Sanderson by preventing illegal crossings by aliens and the interdiction of narcotics would not be furthered under the no action alternative.

4.4 Environmental Justice

Executive Order 12898 of 11 February 1994 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," provides that each U.S. Federal shall identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations in the United States. The preferred alternative site is located near a small rural area with similar characteristics of the broader region of influence (Figure 1.2). The project only involves construction on one 33-ac tract of land. Therefore, no disproportionately high and adverse impacts on minority and low-income populations are expected. Under the definition of Executive Order 12898, there would be no adverse environmental justice impacts.

4.5 Cumulative Impacts

The assessment of cumulative impacts is addressed in NEPA by its reference to interrelationships of all components of the natural environment. The Council of Environmental Quality defined cumulative impact as the incremental impact of multiple present and future actions with individually minor but collectively significant effects. Cumulative impact can be concisely defined as the total effect of multiple land uses and developments, including their interrelationships, on the environment (Bain et al. 1986).

An analysis of each component of the affected environment was completed from the existing EA in order to identify which component would have cumulative impacts as a result of the past and proposed operations. This analysis revealed that land use, air quality, threatened and endangered species, cultural resources, and socioeconomic resources of past and proposed actions within the project area would not be subjected to cumulative impacts due to the temporary nature of construction activities. Water and biological resources (i.e., vegetation and wildlife habitat) would be slightly to moderately affected cumulatively from proposed actions.

The primary cumulative effect of the past and proposed actions is the permanent loss of vegetation and associated wildlife habitat of moderate-to-good quality. Construction of the complex would increase the loss of vegetation due to all past and proposed INS operations. This habitat loss would be insignificant due to the relatively small amount of development and the vast amount of remaining habitat within Sanderson County. Cumulative impacts to wildlife habitat would be insignificant.

If implemented, following a finding of no significant impact, the proposed action alter 33 ac of vegetation. To date, a total of approximately .5 ac of vegetation, mostly semi-desert grassland and desert scrub communities, have been removed by INS activities in Sanderson. The .5 ac represent a loss of less than 0.001 percent (.5 ac / 570,112 ac < 0.001 percent) of the total land area in Sanderson County. Soil losses have been minimized through limiting the amount of

area disturbed during the proposed action and using standard construction practices. Although the amount of soils saved is not quantifiable, USBP operations have reduced extant erosion problems in numerous locations. Vehicles and heavy equipment have produced air emissions; however, these emissions have not resulted in significant cumulative impacts due to the short duration of the activities, the dispersion capabilities of the region, and the remote locations of most of the operations. New vehicles, as a result of increased BP staff size, should not significantly impact air quality. Noise levels would increase temporarily during construction and would increase over the long-term with additional vehicles in operation. The USBP construction activities have had cumulative positive impacts on socioeconomic resources within the border area and the nation through reductions in illegal drug smuggling activities and, secondarily, through reductions in illegal immigration. Future impacts are anticipated to occur at a level consistent with past activities and would not result in significant adverse effects.

4.6 Irreversible and Irretrievable Commitments of Resources

As a result of the proposed action, the following commitments would be considered irretrievable: approximately 33 ac would be developed; an undetermined amount of construction materials (steel, sand, asphalt, and concrete), although there is a small potential to recycle these materials at a later date; an undetermined amount of fossil fuels and electrical energy used during construction and operation of the facility.

5.0 ENVIRONMENTAL DESIGN MEASURES

Should the proposed action be implemented, the following environmental design measures would be utilized.

- The construction contractor would prepare a SWPPP and file a Notice of Intent prior to the start of construction activities in order to comply with the requirements of the NPDES program.

- During construction, potential erosion from soil disturbance would be reduced by implementation of standard engineering practices such as silt fences and hay bales around the site perimeter.

- During construction, exposed soil would be frequently watered to minimize potential fugitive dust emissions. Stockpiled soil would be covered (with tarps, etc.) to prevent fugitive dust emissions.

- Unpaved areas would be landscaped where possible, using low water use landscaping techniques (i.e. xeriscape), in order to control soil erosion.

- All construction debris would be disposed of at an approved landfill site.

- Construction equipment would be inspected and maintained on a regular basis to prevent potential hazardous materials spills (e.g., fuels and oil). Spill kits would be provided for each construction vehicle, and a spill response plan would be developed and then implemented when necessary.

- Noise impacts to the community would be minimized by limiting "idle times" for construction vehicles and by routine vehicle maintenance. Construction activities would occur only during daylight hours.

- The aboveground fuel tank would be built, permitted (by the construction contractor), and operated in accordance with all local, state, and federal regulations.

- All hazardous materials used in construction (i.e., solvents and cleaners) and operation (petroleum products) of the station would be handled and disposed of in accordance with all applicable local, state, and federal regulations.

6.0 PUBLIC INVOLVEMENT

6.1 Agency Coordination

This chapter discusses consultation and coordination that occurred during preparation of this document. This includes contacts made during development of the proposed action, elimination of alternatives, and writing of the EA. Copies of agency coordination letters are presented in Appendix A. Formal and informal coordination has been conducted with the following agencies:

- U.S. Army Corps of Engineers (USACE, Fort Worth District),
- Immigration and Naturalization Service and U.S. Border Patrol (INS and USBP),
- State Historic Preservation Office (SBPO),
- U.S. Fish and Wildlife Service (USFWS),
- Texas Parks and Wildlife Department (TPWD), and
- Texas Natural Resource Conservation Commission (TNRCC), Monitoring Operations Division.

6.2 Public Information and Review

The draft version of this document is available for public review in the Terrell County Public Library. In accordance with NEPA, a 30-day review period of the draft EA is provided via a Notice of Availability in the Terrell County and El Paso Times newspaper. Public comments and responses to comments will be presented in Appendix C of the final document.

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8.0 LIST OF PREPARERS

The following people were primarily responsible for preparing this EA.

NAME	DISCIPLINE/ EXPERTISE	EXPERIENCE	ROLE IN PREPARING EA
Mr. Glenn Bixler U.S. Army Corps of Engineers, Fort Worth District	Biology	20 months NEPA-EA studies	Technical Manager; Wrote EA and coordinated with appropriate government agencies
Ms. Patience Patterson U.S. Army Corps of Engineers, Fort Worth	Archaeology	28 years Cultural Resources Management	Cultural resources field work and coordination with SHPO; Chapter 3 & 4
Mr. Ramon Garcia	INS		EA Review
Mr. Randy Roberts	Real Estate	18 years Real Estate Division	Chapter 3: Zoning and Land Acquisition
Mr. Eric Verwers U.S. Immigration and Naturalization Service, Fort Worth	Biology	13 years environmental impact assessment for federal projects and 5 years wildlife restoration, Fort Worth District	EA review and coordination, and envirorunental design measures

9.0 ACRONYMS AND ABBREVIATIONS

ac	=	acres
CEQ	=	Council on Environmental Quality
CFR	=	Code of Federal Regulations
db	=	decibels
dBA	=	A-weighted sound levels expressed in decibels
E	=	Endangered
EA	=	Environmental Assessment
e.g.	=	exempli gratia (for example)
EPA	=	Environmental Protection Agency
FEMA	=	Federal Emergency Management Agency
ESA	=	Endangered Species Act
et al.	=	et alii (and others)
etc.	=	et cetera (and other unspecified things)
F	=	Fahrenheit
FY	=	Fiscal Year
i.e.	=	id est (that is)
INS	=	Immigration and Naturalization Service
NAAQS	=	National Ambient Air Quality Standards
NEPA	=	National Environmental Policy Act
NPDES	=	National Pollutant Discharge Elimination System
PTS	=	permanent threshold shift
sf	=	square foot
SHPO	=	State Historic Preservation Office
SWPPP	=	Storm Water Pollution Prevention Plan
T	=	Threatened
TASP	=	Texas Archaeological Salvage Project
TARL	=	Texas Archaeological Research Laboratory
TNRCC	=	Texas Natural Resource Conservation Commission-
TPWD	=	Texas Parks and Wildlife Department
TTS	=	temporary threshold shift
USACE	=	U.S. Army Corps of Engineers
USBP	=	U.S. Border Patrol
U.S.C.	=	United States Code
USFWS	=	U.S. Fish and Wildlife Service

APPENDICES

APPENDIX A

CORRESPONDENCE

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF:

July 31, 2000

Environmental Division

Subject: Federal List of Endangered, Threatened, Proposed, Candidate Species, and Species of Special Concern for Proposed Construction of U.S. Border Patrol Facility in Sanderson, Texas.

Mr. Robert Spain
Resource Protection Division
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744

Dear Mr. Spain:

The U.S. Immigration and Naturalization Service (INS) has contracted the U.S. Army Corps of Engineers, Fort Worth District to conduct an Environmental Assessment for a proposed project in Sanderson, Texas. This project involves the construction of buildings and parking areas as a U.S. Border Patrol Station on a 30-acre site in Sanderson (see attached map). At this time, we would like to request a current list of federal endangered, threatened, proposed, candidate species, and species of special concern for Terrell County, Texas. A copy of the draft Environmental Assessment will be forwarded to your office for review upon completion.

You may contact Mr. Glenn Bixler, of my staff, at (817) 978-3815 if you have any questions regarding this proposed action.

Sincerely,

William Fickel, Jr.
Chief, Environmental Division

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF:

July 31, 2000

Environmental Division

Subject: Federal List of Endangered, Threatened, Proposed, Candidate Species, and Species of Special Concern for Proposed Construction of U.S. Border Patrol Facility in Sanderson, Texas.

US Fish & Wildlife Service
Attn: Mr. Nathan Allan
10711 Burnet Road, Suite 200
Austin, TX 78758

Dear Mr. Allan:

The U.S. Immigration and Naturalization Service (INS) has contracted the U.S. Army Corps of Engineers, Fort Worth District to conduct an Environmental Assessment for a proposed project in Sanderson, Texas. This project involves the construction of buildings and parking areas as a U.S. Border Patrol Station on a 30-acre site in Sanderson (see attached map). At this time, we would like to request a current list of federal endangered, threatened, proposed, candidate species, and species of special concern for Terrell County, Texas. A copy of the draft Environmental Assessment will be forwarded to your office for review upon completion.

You may contact Mr. Glenn Bixler, of my staff, at (817) 978-3815 if you have any questions regarding this proposed action.

Sincerely,

William Fickel, Jr.
Chief, Environmental Division

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF:

August 31, 2000

Environmental Division

Subject: Notification of an Environmental Assessment for the proposed project for US Border Patrol Station construction at Sanderson, Texas

Texas Historical Commission
Archaeology Division
ATTN: Ms. Debra Beene
Capitol Station
P.O. Box 12276
Austin, TX 78711-2276

Dear Ms. Beene:

The U.S. Army Corps of Engineers - Ft. Worth District, acting on behalf of the INS, is preparing an environmental assessment for the proposed action of constructing a new facility to serve as the Sanderson US Border Patrol Station. The new facility is necessary to accommodate an increased number of agents. The current Sanderson Station can accommodate up to 5 agents with an inadequate amount of acreage available at the present site for expansion. A new station would allow for a comfortable expansion in staff and more efficient and effective operations in a modern facility that can best support the USBP mission.

The proposed action would involve construction activities within the proposed project area (Figures 1 and 2). According to the National Environmental Policy Act and the National Historic Preservation Act and 36 CFR Part 800, the USBP must assess the potential environmental impacts of the proposed action and alternatives. The U.S. Army Corps of Engineers is preparing an environmental assessment to analyze any potential impacts from these actions.

Ms. Patience E. Patterson conducted a field survey July 19, 2000. A pedestrian survey was performed along transects spaced approximately 30 meters apart along the

entire project site and intermittent shovel tests were made where visibility was less than 50%. The report on the results of the survey is forthcoming and you will receive a copy shortly.

If you have any questions regarding this project, please contact Ms. Patience Patterson at (817) 978-6390.

Sincerely,

William Fickel, Jr.
Chief, Environmental Division

Enclosure

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services Field Office
10711 Burnet Road, Suite 200
Austin, Texas 78758

SEP 15 2000

Consultation #2-15-00-I-1039

William Fickel, Jr.
Department of the Army
Fort Worth District, Corps of Engineers
P.O. Box 17300
Fort Worth, Texas 76102-0300

Dear Mr. Fickel:

This letter is a response to your letter dated July 31, 2000 requesting that the U.S. Fish and Wildlife Service (Service) provide you with a list of federally listed and proposed endangered and threatened species, candidate species, and species of special concern for Terrell County, Texas.

We understand that the U.S. Immigration and Naturalization Service (INS) has contracted with the U.S. Army Corps of Engineers, Fort Worth District to conduct an Environmental Assessment (EA) for the construction of a proposed U.S. Border Patrol Station and associated parking facilities on a 30-acre site in Sanderson. We are providing this information to assist you and the INS in assessing and avoiding impacts to federally listed and proposed threatened and endangered species and their habitats.

Threatened and Endangered Species

We have attached the most current list of federally listed and proposed endangered and threatened species, candidate species, and species of special concern for Terrell County, Texas to assist you in the preparation of your EA. Terrell County presently contains no federally designated Critical Habitat for any species. Threatened and endangered species of possible occurrence in Terrell County include the endangered black-capped vireo and threatened bunched cory cactus.

A review of aerial photographs of the project site to determine the presence of potential black-capped vireo habitat on the project site was inconclusive. It appears that the rugged brushy north-facing hillsides surrounding the project site would be more likely to support habitat for this species than the project site itself. The bunched cory cactus is known to occur in the general area on the south side of U.S. Highway 90 near Sanderson, though we have no information

This is your future. Don't leave it blank. - *Support the 2000 Census.*

concerning its presence on the proposed project site. Please assess the potential for the presence of either of these species on the project site. We have included information on both species to help you make your assessment.

We thank you for your concern for endangered and threatened species and other wildlife resources, and we appreciate the opportunity to comment on the proposed construction project. If we can be of further assistance or if you have questions about these comments, please contact Ray Brown at (512) 490-0057, extension 243. Please refer to the Service Consultation number listed above in any future correspondence with this office regarding this project.

Sincerely,

William Seawell
for

David C. Frederick
Supervisor

Enclosures

Federally Listed as Threatened and Endangered Species of Texas
March 28, 2000

This list represents species that may be found in counties throughout the state. It is recommended that the field station responsible for a project area be contacted if additional information is needed.

DISCLAIMER

This County by County list is based on information available to the U.S. Fish and Wildlife Service at the time of preparation, date on page 1. This list is subject to change, without notice, as new biological information is gathered and should not be used as the sole source for identifying species that may be impacted by a project.

Migratory Species Common to many or all Counties: Species listed specifically in a county have confirmed sightings. If a species is not listed they may occur as migrants in those counties.

Least tern	(E ~)	*Sterna antillarum*
Whooping crane	(E w/CH)	*Grus americana*
Bald eagle	(T)	*Haliaeetus leucocephalus*
Piping plover	(T)	*Charadrius melodus*
Loggerhead shrike	(SOC)	*Lanius ludovicianus*
White-faced ibis	(SOC)	*Plegadis chihi*

Terrell County

Black-capped vireo	(E)	*Vireo atricapillus*
Bunched cory cactus	(T)	*Coryphantha ramillosa*
Mexican hooded oriole	(SOC)	*Icterus cucullatus cucullatus*
Western burrowing owl	(SOC)	*Athene cunicularia hypugea*
Davis Mountain cottontail rabbit	(SOC)	*Sylvilagus floridanus robustus*
Texas horned lizard	(SOC)	*Phrynosoma cornutum*
Blotched gambusia	(SOC)	*Gambusia senilis*
Blue sucker	(SOC)	*Cycleptus elongatus*
Chihuahua shiner	(SOC)	*Notropis chihuahua*
Conchos pupfish	(SOC)	*Cyprinodon eximius*
Mexican stoneroller	(SOC)	*Campostoma ornatum*
Proserpine shiner	(SOC)	*Cyprinella proserpina*
Rio Grande darter	(SOC)	*Etheostoma grahami*
Rio Grande shiner	(SOC)	*Notropis jemezanus*
Phantom Lake cave snail	(SOC)	*Cochliopa texana*
Desert night-blooming cereus	(SOC)	*Cereus greggii* var. *greggii*
Heather leaf-flower	(SOC)	*Phyllanthus ericoides*

Hester's cory cactus	(SOC)	*Coryphantha hesteri*
Maravillas milkwort	(SOC)	*Polygala maravillasensis*
Texas purple spike	(SOC)	*Hexalectris warnockii*

INDEX

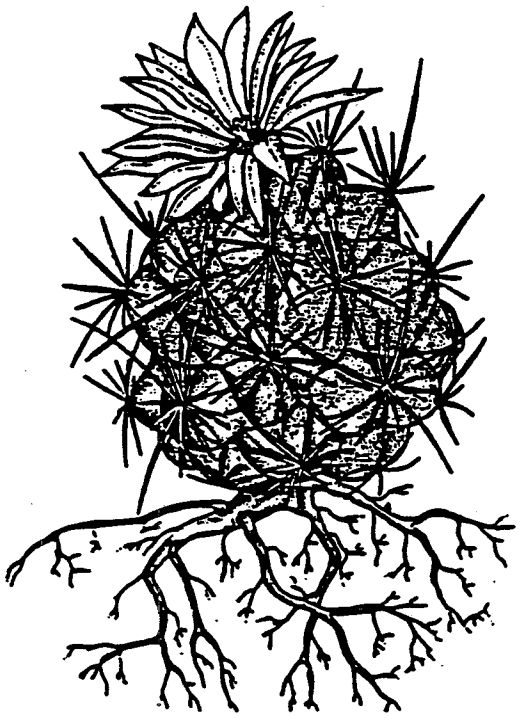
Statewide or areawide migrants are not included by county, except where they breed or occur in concentrations. The whooping crane is an exception; an attempt is made to include all confirmed sightings on this list.

E	=	Species in danger of extinction throughout all or a significant portion of its range.
T	=	Species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
C	=	Species for which the Service has on file enough substantial information to warrant listing as threatened or endangered.
CH	=	Critical Habitat (in Texas unless annotated ‡)
P/	=	Proposed ...
P/E	=	Species proposed to be listed as endangered.
P/T	=	Species proposed to be listed as threatened.
TSA	=	Threatened due to similarity of appearance.
SOC	=	Species for which there is some information showing evidence of vulnerability, but not enough data to support listing at this time. These species are afforded no legal protection under the ESA.
□	=	with special rule
‡	=	CH designated (or proposed) outside Texas
~	=	protection restricted to populations found in the "interior" of the United States. In Texas, the least tern receives full protection, except within 50 miles (80 km) of the Gulf Coast.

STATUS: Threatened (44 FR 64247-November 6, 1979) without critical habitat.

DESCRIPTION: Stems are dark grayish green, usually single, and rounded, up to about 3.5 inches tall and 3.75 inches in diameter, with slightly protruding (.3 inches), cone shape tubercles. There are numerous needle-like spines, that do not completely hide the stem. There are 9-20 outer (radial) spines that are .5-.75 inch long, and dull white. Inner (central) spines are usually 4 or 5, arranged with one long (1-1.5 inches long) dark brown lower spine projecting outward from the stem, and upper spines pointing upward, shorter (.75- 1 inch), and white with some brown. Flowers are funnel shaped, 1-1.5 inches long and up to 2 inches wide, and pale pink to a deep rose purple. Outer petals are greenish purple, narrow (.25 inch wide) and lance-shaped. Inner petals are also lance-shaped, but broader above than below and with white bases. Anthers are yellow and the stigma is white. Fruits are egg-shaped, and up to 1 inch long with small (.06 inch), brown, kidney-shaped seeds.

HABITAT: This member of the Chihuahuan Desert Scrubland community occurs on limestone rock on ledges, slopes, flats, and outcrops generally at elevations between 2,500 and 3,500 feet. It is confined to rocky, well-drained, and full sunlit sites. It occurs with lechugilla, beargrass, yucca, ocotillo, and other cacti. Mean annual rainfall is 12 inches and mean annual temperature is 65°F.



DISTRIBUTION:

Present: In Texas, southern and southeastern Brewster and southwestern Terrell Counties. Extends to northwestern Coahuila, Mexico.

Historic: Same as present.

THREATS AND REASONS FOR DECLINE: Habitat degradation and trampling on overgrazed lands, overcollecting, limited range and small numbers.

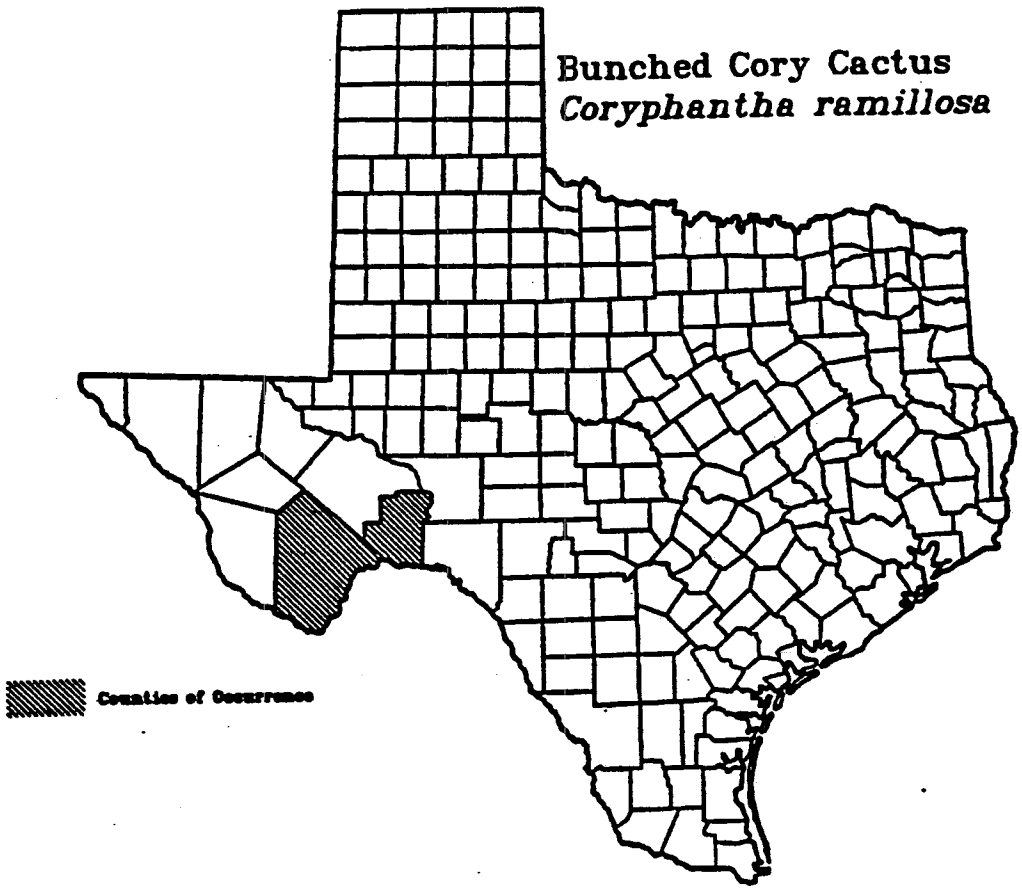
OTHER INFORMATION: Begins blooming at an age of 5 years. It blooms from April to June; fruit matures in the summer, with 75 seeds per fruit on average. Major pollinator is a green sweat bee (Halictidae). Seedlings thrive best in shade of rocks or deep cracks where they are protected against desiccation and predation. Recovery Plan finalized in 1989.

REFERENCES:

Poole, J.M., and D.H. Riskind. 1987. Endangered, Threatened, or Protected Native Plants of Texas. Texas Parks and Wildlife Department, Austin, Texas.

Saustrup, A and M.C. Johnston. 1977. Report on the status of *Coryphantha ramillosa*. Rare Plant Study Center, University of Texas, Austin.

U.S. Fish and Wildlife Service. 1989. Bunched Cory Cactus Recovery Plan. Endangered Species Office, Albuquerque, NM.

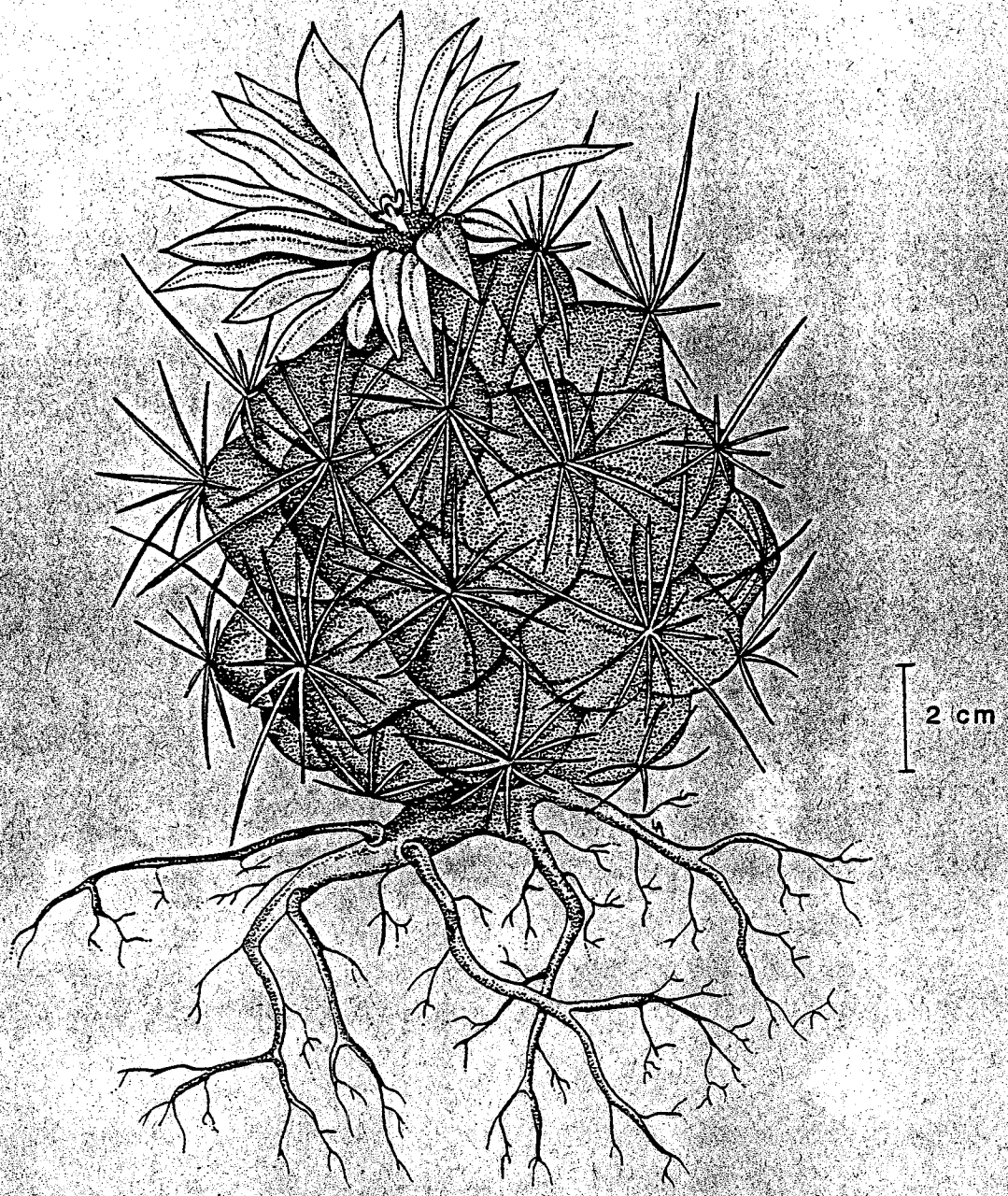


Map only shows Texas range

BUNCHED CORY CACTUS

(*Coryphantha ramillosa*)

RECOVERY PLAN



U.S. Fish and Wildlife Service

Albuquerque, New Mexico

1989

Cover illustration by Linda Ashling.

BUNCHED CORY CACTUS

(*Coryphantha ramillosa*)

RECOVERY PLAN

1989

Prepared by:

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Math-Science Department
San Juan College
Farmington, New Mexico 87401

Steven Brack
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for

U.S. Fish and Wildlife Service, Region 2
Albuquerque, New Mexico

Reviewed and edited by:
Charles B. McDonald

Approved: _____
Regional Director, Region 2

Date: 4/18/90

DISCLAIMER

This is the completed Bunched Cory Cactus Recovery Plan. It has been approved by the U.S. Fish and Wildlife Service. It does not necessarily represent official positions or approvals of cooperating agencies and does not necessarily represent the views of all individuals who played a role in preparing this plan. This plan is subject to modification as dictated by new findings, changes in species status, and completion of tasks described in the plan. Goals and objectives will be attained and funds expended contingent upon appropriations, priorities, and other constraints.

Literature Citations should read as follows:

U.S. Fish and Wildlife Service. 1989. Bunched Cory Cactus (Coryphantha ramillosa) Recovery Plan. U.S. Fish and Wildlife Service, Albuquerque, New Mexico, 49 pp.

Additional copies may be purchased from:

Fish and Wildlife Reference Service
5430 Grosvenor Lane, Suite 110
Bethesda, Maryland 20814
301/492-6403/6404
or
1-800-582-3421

ACKNOWLEDGEMENTS

Information and assistance in preparation of this plan were provided by Texas Plant Recovery Team members: Mr. Harold Beaty, Dr. William Mahler, Mr. David Riskind, Mr. Gerard Hoddenbach, Dr. Richard Worthington, Ms. Jackie Poole, Dr. Allan Zimmerman, and Dr. Elray Nixon.

In addition, we would like to acknowledge the technical assistance and comments of Mr. Harold Beaty (Temple, Texas), Ms. Jackie Poole (Texas Natural Heritage Program), Dr. Francis Thibodeau (The Center for Plant Conservation, Jamaica Plain, Massachusetts), Mr. Gary Valentine (USDA-Soil Conservation Service), and Dr. Allan Zimmerman (Chihuahuan Desert Research Institute).

SUMMARY

Goal: To remove the bunched cory cactus from the Federal list of endangered and threatened species by managing the species in a way that will ensure the continued existence of natural self-sustaining populations.

Recovery Criteria: The criteria for delisting the bunched cory cactus will be to identify at least three sites where the species can be protected and then carry out protective management measures. One site should be on private land in northeastern Brewster or southwestern Tyrrell County, one site should be in Big Bend National Park, and one site should be in Mexico. Each site should initially contain at least 500 plants and should have enough available habitat to permit population expansion and growth. The species can be delisted when monitoring and habitat surveys indicate that a total of a least 10,000 plants is being sustained at the protected and managed sites.

Actions Needed: The major steps needed to meet the recovery criteria include: protecting populations on Federal and State lands through law enforcement and protective management, protecting populations on private land through landowner cooperation and protective management, protecting populations in Mexico through cooperation with the Mexican goverment or Mexican conservation groups, monitoring populations to determine population and habitat changes, gathering biological information that can be used in management, searching for new populations, and developing public support for preservation of the bunched cory cactus.

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PART I

INTRODUCTION

Brief Overview

The bunched cory cactus, Coryphantha ramillosa Cutak, was designated a threatened species under the Endangered Species Act on November 6, 1979 (USFWS, 1979). It is also listed as threatened by the State of Texas. This species is known from southern and southeastern Brewster County and southwestern Terrell County in the Big Bend Region of Texas, and from the adjacent State of Coahuila in Mexico. Three other members of this genus are recognized as threatened or endangered: C. minima and C. sneedii var. sneedii are listed as endangered and C. sneedii var. leei is listed as threatened. Seven other species from this genus are under review for possible threatened or endangered designation (USFWS, 1985).

The bunched cory cactus has a limited range and has never been known to be abundant. Grazing and collecting are the greatest threats to this species.

The objective of this plan is to outline steps to recover the bunched cory cactus by removing threats to the species and its habitat. This should make it possible to achieve and

document long-term population stability. Attainment of these goals will lead to the ultimate objective of removal of the bunched cory cactus from the Federal list of endangered and threatened species.

This plan begins with background information on the bunched cory cactus that includes taxonomy, morphology, distribution, habitat, population biology and phenology, associated species, land ownership, threats, and conservation efforts. This information is followed by a step-down outline and narrative that provide information on recovery measures. The final section of this plan contains an implementation schedule that lists the recovery measures, priorities for their accomplishment, agencies involved, and estimated costs.

Taxonomy

Coryphantha ramillosa was discovered in 1936 by A.R. Davis and was described by Ladislaus Cutak in 1942. The holotype (A.R. Davis s.n.) is housed at the Missouri Botanical Garden (MO #1242260). In Cacti of the Southwest, Del Weniger (1970) recognized this species under the new combination Mammillaria ramillosa, but this name is invalid because Weniger did not follow the rules of botanical nomenclature in the publication of this nomenclatural combination.

Morphology

The stems of Coryphantha ramillosa are dark grayish green, solitary or rarely with a few branches, 6-9 cm (2.4-3.6 in.) long, and 6-9.5 cm (2.4-3.7 in.) in diameter. There are 3-6 central spines per areole: 1 inner, and 2-5 but usually 3 outer. The inner central spine is 25-40 mm (1-1.6 in.) long, and the outer central spines, 17-38.5 mm (.7-1.5 in.) long. The dull white to pale gray radial spines are 12-30 mm (.5-1.2 in.) long. The flowers are 38-65 mm (1.5-2.6 in.) long and 30-50 mm (1.2-2 in.) in diameter. The fruits are 1-2.5 cm (.4-1 in.) long. The seeds are finely raised-reticulate, reniform, reddish-brown, and 1.4-1.5 mm (.06 in.) long.

Distribution

The bunched cory cactus is known only from Brewster and Terrell Counties, Texas and central Coahuila, Mexico (Fig. 1). It is found primarily as widely scattered populations or individuals occurring in canyons along the Rio Grande River from Mariscal Canyon in Brewster County, downriver to Sanderson Canyon in Terrell County (USFWS, 1986). The species occurs mostly on private land but there is one known population in Big Bend National Park (Heil et al., 1985) and a locality reported for

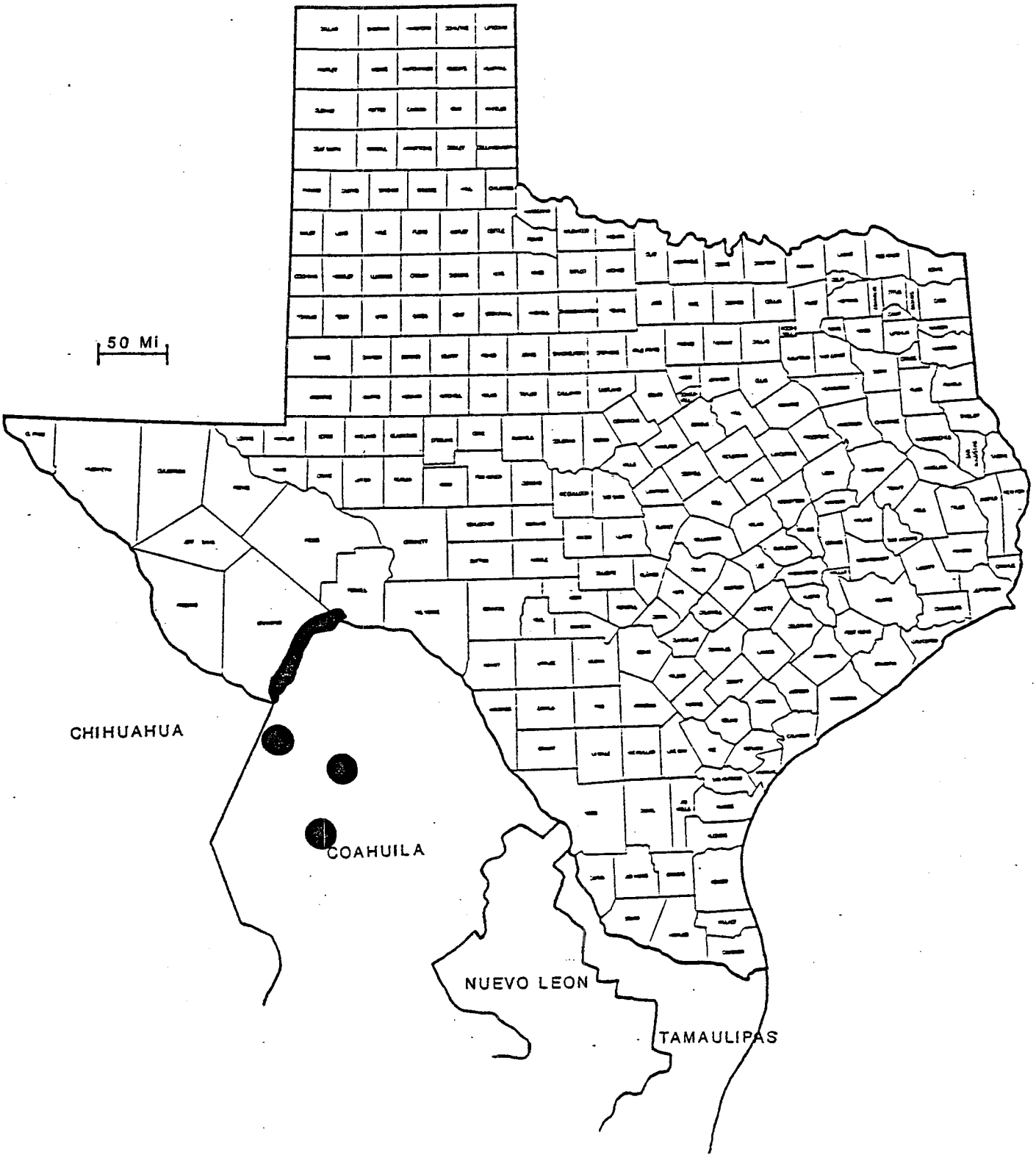

Figure 1. General location of Corynhantha ramillosa.

Maravillas Canyon (Weniger, 1979) in the Black Gap Wildlife Management Area owned by the State of Texas.

Presumably the present and historic ranges of the bunched cory cactus are similar. Although it was first discovered nearly 50 years ago, there is very little information about the plant and its habitat. It occurs mostly in an inaccessible and infrequently studied area.

Habitat

The bunched cory cactus grows in the Chihuahuan Desert Scrubland (Brown and Lowe, 1980). In the northern part of its range, the species is mostly confined to rocky, well-drained, and full sunlit sites on steep canyon sides and hill summits along the canyons of the Rio Grande. However, one U.S. population is known from hills well-removed from the Rio Grande. In north-central Coahuila, Mexico, the cactus occurs along hill slopes and summits. The elevation range for bunched cory cactus is between 750 and 1,050 meters (2,500-3,500 ft). The mean annual precipitation is about 30 cm (12 in.) and the mean annual temperature is about 64 to 66 degrees F (USFWS, 1986).

Population Biology and Phenology

Accurate counts for the bunched cory cactus have not been made, but it is speculated that the total number of plants over the species' entire range is approximately 5,000-10,000. The population in Big Bend National Park covers approximately 25 m x 1 km (82 feet x .6 mile) and numbers approximately 800-900 plants (M. Fleming, Big Bend National Park, pers. comm., 1986).

In the National Park population the number of plants per unit area varies widely. One 10 meter square area may contain 5 individuals while a similar area nearby will not support a single plant. The plants have a very uneven distribution, mostly growing on the tops of small hills or on the rocky flats below the hills. Seedlings were observed throughout the population (Heil, et al., 1985).

The bunched cory cactus begins blooming at an age of 5 years. Buds form from June to July (Heil, et al., 1985). Reports of flowering time vary: Weniger (1979) states April to May, Warnock (1970) states June, and Heil et al. (1985) state July to August. Flowers open in mid-afternoon during the warmest part of the day and last 3-4 days. The major pollinator is thought to be a green sweat bee in the family Halictidae. Fruits form from October through December (Heil et al., 1985). In its natural habitat and in cultivation virtually 100 percent of the flowers produce

fruits. However, such high fruit set is only likely when plant densities are such that cross pollination is assured (A. Zimmerman, Chihuahuan Desert Research Institute, pers. comm., 1986). The fruits ripen in December and the seeds are distributed by rodents and ants. There are about 75 seeds per fruit. The best place for seedling survival is under rocks or deep in the cracks of rocks where the seeds are protected from dessication and predation.

Associated Species

Vegetation associated with the bunched cory cactus consists of low shrubs, some rosette-forming perennials, many other cacti, and both annual and perennial herbs. Some of the species are: Acacia constricta, Bouteloua breviseta, Agave lecheguilla, Larrea tridentata, Leucophyllum candidum, Euphorbia antisyphilitica, Jatropha dioica, Selaginella sp., Krameria glandulosa, Fouquieria splendens; associated cacti include: Opuntia leptocaulis, O. imbricata, O. phaeacantha var. discata, Echinocereus stramineus, E. pectinatus, Ferocactus hamatacanthus, Echinocactus horizonthalonius, Echinomastus warnockii, Coryphantha echinus, C. duncanii, Ariocarpus fissuratus, and Mammillaria lasiacantha. (Heil et al., 1985).

Land Ownership

The bunched cory cactus is found on Federal land administered by the National Park Service, Texas State land administered by the Texas Parks and Wildlife Department, and private land owned mostly by ranchers. Probably 90 percent of all plants occur on private land either in the United States or Mexico.

Impacts and Threats

When listed in 1979, over-collecting was believed the primary threat to Coryphantha ramillosa, with the effect being intensified by the species' low population numbers and limited range. Collecting from private lands remains a threat because roads in the region often lack gates and easy access is also available to some sites by boat from the Rio Grande River. Collecting is illegal in Big Bend National Park and the Black Gap Wildlife Management Area, but the large size of these areas makes enforcement difficult. No monitoring data are yet available to determine collecting impacts on populations of the bunched cory cactus, but a study has been initiated in Big Bend National Park by a group from Earlham College, Richmond, Indiana (M. Fleming, pers. comm., 1986). Monitoring will help determine the degree of collecting as well as population changes owing to natural cycles.

Habitat damage from off-road vehicles may be a minor threat but the only use of off-road vehicles is by private landowners or by those who can gain access. Even then, this cactus grows in a very rocky habitat that is generally not favored for off-road vehicle use.

Grazing is a threat mainly through the effects of livestock trampling. The ranch land around Reagan Canyon appears to have been heavily grazed. It is not known how much livestock is being grazed on other ranches where the bunched cory cactus grows. Grazing is no longer allowed in Big Bend National Park.

Management

Collecting and Trade

On July 29, 1983, Coryphantha ramillosa was placed on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which requires permits from both the importing and exporting countries before shipment of field-collected plants may occur. Only scientific trade benefiting the species' survival is allowed.

The Endangered Species Act of 1973, as amended in 1982, prohibits the removal (from Federal lands) and reduction to possession of plants listed under the provisions of the Act. It

also prohibits interstate or foreign commerce in any listed plant species. Under certain circumstances permits can be obtained to carry out otherwise prohibited activities.

The Lacey Act, as amended in 1981, also provides some protection for the bunched cory cactus. Under this Act, it is prohibited to import, export, sell, receive, acquire, purchase, or engage in the interstate or foreign commerce of any plant taken, possessed, or sold in violation of any law, treaty, or regulation of the United States, any Indian Tribal Law, or any law or regulation of any State.

Coryphantha ramillosa is on the Texas State protected plant list. Under Texas law, a scientific collecting permit is required for plant collection on State land; permits are only issued for scientific or educational activities that will not harm populations. Collection from private land for commercial purposes requires written permission from the landowner and a State commercial collecting permit. Texas law requires that each endangered or threatened plant in commerce be tagged and that the tag remain attached until the plant reaches its ultimate destination.

Federal Activities

Section 7 of the Endangered Species Act requires all Federal agencies to consult with the Fish and Wildlife Service if any activities they authorize, permit, or fund might affect a threatened or endangered species. If the activities are found to jeopardize the continued existence of a species, the activities cannot proceed unless modifications are made that will remove the jeopardy situation. This provision of the Endangered Species Act most often applies to activities on lands under Federal management, but it also applies to activities on private lands if Federal agencies are involved.

Off-Road Vehicles

Within Big Bend National Park, all vehicles must stay on existing roads, and violators are subject to fine. Most of the private land where bunched cory cactus grows is posted. There appears to be little ORV use on these private lands.

Grazing

Grazing on private ranch lands appears to be moderate to heavy. In the Reagan Canyon region much of the land is over-grazed. Bunched cory cactus occurs in a rocky open habitat and

is susceptible to trampling by livestock. Livestock grazing is not pemitted on Big Bend National Park.

Research

Monitoring

A monitoring study has been initiated on Big Bend National Park by a group from Earlham College, Richmond, Indiana. They have mapped the location of every bunched cory cactus in the Park's only population and plan to return annually to determine changes. If this is continued for several years, it should provide valuable information about both collecting and natural changes. The population in the Park is well known and fairly easy to reach; as such, it is a likely target for illegal collecting.

Propagation

Mesa Garden of Belen, New Mexico maintains parent plants for the commercial sale of seeds of bunched cory cactus. The Center for Plant Conservation through its participating botanical gardens is developing cultivated stocks of many endangered species. The Desert Botanical Garden of Phoenix, Arizona is the participating institution responsible for western Texas. They will, as funding

and priorities permit, be adding bunched cory cactus to their portion of the Center's national living collection.

Other Research

Dr. Allan Zimmerman of the Chihuahuan Desert Research Institute has been studying Coryphantha for many years and has contributed much to our knowledge of the genus. A National Park Service contracted study of sensitive and rare cacti in Big Bend National Park (Heil et al., 1985) failed to find any new populations of bunched cory cactus.

PART II

RECOVERY

Primary Objective

The primary objective of this plan is to remove threats to the bunched cory cactus so that healthy natural populations can be sustained. The most important actions for meeting this objective are:

1. Develop and implement management measures that will ensure the continued protection of at least three sites where populations occur. The three sites should represent the full geographic range of the species, which means one site should be on private land in northeastern Brewster or southwestern Tyrrell County, one site should be in Big Bend National Park, and one site should be in Mexico. Each site should initially contain at least 500 plants, and should have adequate suitable habitat to allow for population expansion and growth.

2. Develop and implement cooperative law enforcement strategies to provide protection against illegal collecting both on public and on private lands.

3. Search potential habitat and accurately determine population locations, area occupied, and number of plants.

4. Establish permanent monitoring plots to determine population changes. The plots should be censused at least annually.

Actions necessary for delisting include:

1. Identifying at least three sites (using the criteria on the previous page) where the species will be protected.

2. Carrying out management measures that are determined to be necessary for continued protection of the three sites and for protection of the species and its habitat in general.

3. Demonstrating long-term stability or increase in population levels and habitat through monitoring and habitat surveys. A total of 10,000 plants at protected and managed sites must be sustained.

These criteria will be evaluated for adequacy upon attainment and prior to delisting.

Step-Down Outline

1. Remove threats to the bunched cory cactus by enforcement of existing regulations and management for protection.
    11. Protect populations on Federal and State lands.
        111. Enforce existing Federal and State laws.
        112. Conduct consultations under Section 7 of the Endangered Species Act.
        113. Develop and implement management measures.
        114. Identify areas for protection.
        115. Seek cooperation of the National Park Service and the State of Texas.
        116. Monitor the populations and habitat.
    12. Protect populations on private lands.
        121. Enforce existing trade laws.
        122. Conduct consultations under Section 7 of the Endangered Species Act.
        123. Develop cooperation with private landowners.
        124. Prepare and implement management plans.
        125. Monitor populations and habitat.
    13. Protect populations in Mexico.

2. Gather information for use in management.
    21. Search for new populations.

22. Study the population biology and ecology of the bunched cory cactus.
    221. Study soil needs.
    222. Study water needs.
    223. Determine the role of animals in seed dispersal.
    224. Determine what microhabitat factors are involved in seedling establishment.
    225. Determine pollinators.
    226. Monitor population numbers to determine which trends result from natural cycles and which result from human impacts.
23. Apply the results of studies done under task 22.
    231. Determine environmental parameters defining and restricting the species' habitat.
    232. Update management measures.

3. Develop a comprehensive trade management plan for all cacti.

4. Refine propagation techniques to provide nursery stocks and seeds to reduce collecting pressure.
    41. Investigate various methods of propagation.
    42. Publish propagation techniques in cactus journals.

5. Establish populations at the botanical gardens of research institutions.

6. Develop public awareness, appreciation, and support for preservation of the bunched cory cactus.

61. Use pamphlets, talks, and slide shows to increase the public's knowledge of the bunched cory cactus.

62. Enlist the support of public interest groups for protection and preservation of the bunched cory cactus.

Narrative

1. Remove threats to the bunched cory cactus by enforcement of existing regulations and mangement for protection. Because of the rarity of the bunched cory cactus the populations must be protected by the enforcement of existing Federal, and State regulations and by management to remove threats to the species.

11. Protect populations on Federal and State lands. Federal and State agencies will need to develop management programs to ensure the continued existence of the species on their lands.

111. Enforce existing Federal and State laws. Regulations under the ESA, CITES, Lacey Act, or State native plants laws should be enforced to the maximum extent possible.

112. Conduct required consultations under Section 7 of the Endangered Species Act.

The National Park Service must conduct biological assessments and then formally consult with the Fish and Wildlife Service on any Big Bend National Park project that may affect the bunched cory cactus. Other Federal agencies must consult with the Fish and Wildlife Service if it is determined that actions authorized, permitted, or funded by Federal agencies on state lands may affect the bunched cory cactus.

113. Develop and implement management measures.

Specific management measures should be included in appropriate agency planning documents. The planning documents should contain procedures for preventing loss of plants and habitat due to such actions as trail building, road building or improvement, or habitat improvement for other species. The plans should indicate measures for protecting populations from collecting and other visitor activities. Implementation of management measures is a required step for delisting the bunched cory cactus.

114. Identify areas for protection.

The National Park Service and the Texas Parks and Wildlife Department should identify portions of Big Bend National Park and Black Gap Wildlife Management Area where bunched cory cactus will be protected. Protected areas do not need to be restricted to use solely as endangered species "sanctuaries", but activities that could jeopardize populations must be avoided.

115. Seek cooperation of the National Park Service and the State of Texas.

In order to facilitate the management and protection of the bunched cory cactus, it may be desirable for U.S. Fish and Wildlife Service to develop memoranda of understanding or cooperative agreements with the National Park Service or the Texas Parks and Wildlife Department. These agreements should outline long-term objectives and the general management activities that will be carried out by each agency.

116. Monitor the populations and habitat.

Monitoring plots should be established in Big Bend National Park and Black Gap Wildlife Management Area and these plots should be inventoried

at least annually. Monitoring is needed to determine long-term population and habitat stability and is a requirement for delisting.

12. Protect populations on private lands.

Perhaps 90 percent of all bunched cory cacti are found on private lands in the United States and Mexico. An attempt should be made to protect at least some of the United States plants.

121. Enforce existing trade laws.

Federal and State laws do not specifically prohibit collecting on private lands, however, the laws do regulate commercial trade and these provisions can still be enforced. Under Texas law, a permit is required for commercial collecting on private land.

122. Conduct required consultations under Section 7 of the Endangered Species Act.

Federal agencies that authorize, permit, or fund actions on private lands must formally consult with the Fish and Wildlife Service if it is found that the actions may affect the bunched cory cactus.

123. Develop cooperation with private landowners.
In order to maintain the species on private lands it will be necessary to obtain the cooperation and goodwill of private landowners. Written agreements should be developed with landowners that describe specific measures that can be accomplished through landowner and Fish and Wildlife Service cooperation.

124. Prepare and implement management plans.
Once cooperation with private landowners has been established, the Fish and Wildlife Service should develop management plans for populations on private lands. Implementation of management plans is an essential step in delisting the bunched cory cactus.

125. Monitor populations and habitat.
Monitoring plots should be established on private land and these plots should be inventoried at least annually. Monitoring is needed to determine long-term population and habitat stability and is a requirement for delisting.

13. Protect populations in Mexico.

Cooperation should be sought with the Mexican government or with private Mexican conservation groups to protect and manage populations in Coahuila.

2. Gather information for use in management.

A thorough understanding of the population biology and ecology of the bunched cory cactus is needed to help manage healthy natural populations.

21. Search for new populations.

Inventories are needed to map the exact range of the bunched bunched cory cactus. Geologic formations similar to those known to support the cactus should be checked to see if populations have been overlooked. Most of the potential habitat for the bunched cory cactus is in Coahuila, Mexico, or on private lands. Local involvement will be needed to gain access to private ranches. These inventories should be accomplished prior to establishing protected sites on private land.

22. Study the population biology and ecology of the bunched cory cactus.

Generalized studies will provide information about the habitat of the bunched cory cactus. Growth requirements and limiting factors should be studied in detail.

221. Study soil needs.

Soil factors such as chemical composition, texture, structure, aeration, temperature, and relation to parent material need to be assessed.

222. Study water needs.

The hydrologic characteristics of the soil on which the bunched cory cactus occurs need to be determined. The timing, amount, and duration of rains needs to be studied. The importance of rainfall run-off in seed dispersal should also be studied.

223. Determine the role of animals in seed dispersal.

Study is needed to determine what role, if any, insects and/or rodents play in seed dispersal of the bunched cory cactus.

224. Determine what microhabitat factors are involved in seedling establishment.

Most bunched cory cactus seeds germinate in cracks of limestone or under rocks where the seeds are well protected. A thorough study of the edaphic factors in relation to seedling ecology is needed.

225. Determine pollinators.

The major pollinator of the bunched cory cactus is thought to be a green sweat bee in the family Halictidae. Although no other pollinators have been observed, investigations should be conducted to determine if other insects or other organisms are involved in the pollination of this cactus.

226. Monitor population numbers to determine which trends result from natural cycles and which result from human impacts.

Natural population numbers are often cyclic. Overlying this natural variation there may be effects from human environmental perturbations. Long-term monitoring is needed to determine the causes of overall population trends.

23. Apply the results of studies done under task 22.

Studies of population biology and ecology can provide information essential to understanding the species' distribution and to successful management.

231. Determine environmental parameters defining and restricting the species' habitat.

Information is needed to explain why the bunched cory cactus does not occur on all of the apparently

suitable habitat in the area. Once these parameters are understood, the potential habitat for the species can be identified.

232. Update management measures.

As more data are obtained on the population biology and ecology of the bunched cory cactus, management measures should be revised to incorporate this new information.

3. Develop a comprehensive trade management plan for all cacti.

Studies are needed to determine which species are in trade, the overall trend of trade in listed cacti, and the feasibility of reducing collecting pressure on wild populations by promoting a commercial artificial propagation program. Strategies for effective law enforcement under ESA, CITES, Lacey Act, and State laws need to be developed. The trade study should be national in scope and address all cacti. The results will be used to develop policy and a comprehensive trade management plan for all cacti.

4. Refine propagation techniques to provide nursery stocks and seeds to reduce collecting pressure.

The collecting pressure on natural populations could possibly be reduced by refining commercial propagation techniques. This task will be undertaken if findings of the trade management plan indicate that increased commercial propagation is an advisable means of reducing collecting pressure on natural populations.

41. Investigate various methods of propagation.

Methods of mass production of nursery-grown plants and seeds should be developed to meet field collecting demands for the bunched cory cactus.

42. Publish propagation techniques in cactus journals.

Successful propagation techniques should be compiled and published in appropriate journals.

5. Establish populations at the botanical gardens of research institutions.

Even though plants in botanical gardens can not substitute for healthy populations in natural habitats, a living collection could still contribute significantly to the overall recovery effort. Much information on ecological requirements and reproductive potential could be obtained most easily from a living collection. In addition, a permanent well documented

and accessible living collection, together with appropriate seed banking, could provide an important source of material for non-destructive research, maintenance of wild populations, and public awareness. An adequate living collection would remove the necessity of repeatedly returning to wild populations to collect plants for various recovery projects.

6. Develop public awareness, appreciation, and support for preservation of the bunched cory cactus.
Public education is a vital part of the recovery process. The cooperation of the public is essential for the ultimate success of many recovery measures.

61. Use pamphlets, talks, and slide shows to increase the public's knowledge of the bunched cory cactus.
An appreciation of the bunched cory cactus and of its role in the environment needs to be developed. This can be started with educational pamphlets, talks, and slide shows.

62. Enlist the support of public interest groups for protection and preservation of the bunched cory cactus.
Public interest groups, especially local ones such as native plant societies, Lion's Clubs, or Rotary Clubs need to be involved in recovery efforts.

Literature Cited

Brown, D.E. and C.H. Lowe. 1980. Map, biotic communities of the Southwest. Rocky Mountain Forest and Range Experiment Sta., USDA, Forest Service, Ft. Collins, Colorado.

Cutak, L. 1942. *Coryphantha ramillosa*, a new species from the Big Bend Region of Texas. Cactus and Succulent Journal (U.S.) 14:164.

Heil, K.D., S. Brack, and J.M. Porter. 1985. The rare and sensitive cacti of Big Bend National Park. National Park Service, Santa Fe, New Mexico.

U.S. Fish and Wildlife Service. 1979. Determination that *Corythantha ramillosa* and *Neolloydia mariposensis* are threatened species. *Federal Register* 44:64247-64250.

U.S. Fish and Wildlife Service. 1985. Review of plant taxa for listing as endangered or threatened species. *Federal Register* 50:39526-39527.

U.S. Fish and Wildlife Service. 1986. Endangered Species Information System, *Coryphantha ramillosa*. Office of Endangered Species, Washington, D.C.

Warnock, B.H. 1970. Wildflowers of the Big Bend Country, Texas. Sul Ross State University, Alpine, Texas.

Weniger, D. 1970. Cacti of the Southwest. University of Texas Press, Austin, Texas.

Weniger, D. 1979. Status report on Coryphantha ramillosa. U.S. Fish and Wildlife Service, Office of Endangered Species, Albuquerque, New Mexico.

PART III

IMPLEMENTATION SCHEDULE

The following Implementation Schedule outlines actions and costs for the bunched cory cactus recovery program. It is a guide to meeting the objectives elaborated in Part II of this plan. The schedule indicates the general category for implementation, recovery plan tasks, corresponding outline numbers, task priorities, duration of tasks ("on-going denotes a task that once begun should continue on an annual basis), which agencies are responsible to perform these tasks, and lastly, estimated costs for Fish and Wildlife Service tasks. These actions, when accomplished, should bring about the recovery of the bunched cory cactus and protect its habitat. It should be noted that monetary needs for agencies other than Fish and Wildlife Service are not identified and therefore, Part III may not reflect the total financial requirements for the recovery of this cactus.

General Categories for Implementation Schedule

Information Gathering - I or R (research)

1. Population status
2. Habitat status
3. Habitat requirements
4. Management techniques
5. Taxonomic studies
6. Demographic studies
7. Propagation
8. Migration
9. Predation
10. Competition
11. Disease
12. Environmental contamination
13. Reintroduction
14. Other information

Management - M

1. Propagation
2. Reintroduction
3. Habitat maintenance and manipulation
4. Predator and competitor control
5. Depredation control
6. Disease control
7. Other management

Acquisition - A

1. Lease
2. Easement
3. Management agreement
4. Exchange
5. Withdrawal
6. Fee title
7. Other

Other - O

1. Information and education
2. Law enforcement
3. Regulations
4. Administration

Recovery Action Priorities

1 = an action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.

2 = an action that must be taken to prevent a significant decline in species population/habitat quality, or some other significant negative impact short of extinction.

3 = all other actions necessary to provide for full recovery of the species.

Abbreviations Used

FWS - USDI Fish and Wildlife Service
SE - Office of Endangered Species
LE - Law Enforcement
RE - Realty
ES - Ecological Services
NPS - USDI National Park Service
TPWD - Texas Parks and Wildlife Department

PART III - IMPLEMENTATION SCHEDULE

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY #	TASK DURATION	RESPONSIBLE AGENCY FWS REGION	FWS PROGRAM	OTHER	FISCAL YEAR COSTS (EST)* FY1	FY2	FY3	COMMEI
02	Enforce laws for plants on public lands	111	2	ongoing	2	SE LE	NPS TPWD	1,000	1,000	1,000	
03	Conduct Section 7 consultations	112	2	ongoing	2	ES		1,000	1,000	1,000	
M3	Develop and implement management measures for plants on public lands	113	2	2 years	2	SE	NPS TPWD	2,000	2,000		
M7	Identify protected areas on public land	114	2	2 years	2	SE	NPS TPWD	300	300		
04	Seek cooperation of land managing agencies	115	2	1 year	2	SE	NPS TPWD	250			
I6	Monitor populations on public lands	116	2	ongoing	2	SE	NPS TPWD	1,000	1,000	1,000	

PART III - IMPLEMENTATION SCHEDULE

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY #	TASK DURATION	RESPONSIBLE AGENCY FWS REGION	RESPONSIBLE AGENCY FWS PROGRAM	RESPONSIBLE AGENCY OTHER	FISCAL YEAR COSTS (EST)* FY1	FY2	FY3	COMM
02	Enforce laws for plants on private lands	121	2	ongoing	2	SE LE	TPWD	1,000	1,000	1,000	
03	Conduct Section 7 consultations	122	2	ongoing	2	ES		1,000	1,000	1,000	
A3	Develop cooperation with private landowners	123	2	3 years	2	SE RE		2,500	2,500	2,500	
M3	Develop and implement management plans for plants on private lands	124	2	2 years	2	SE		1,500	1,500		
I6	Monitor populations on private lands	125	2	ongoing	2	SE		5,000	5,000	5,000	
04	Protect plants in Mexico	13	2	3 years	2	SE		10,000	10,000	10,000	
I14	Search for new populations	21	2	3 years	2	SE		6,000	6,000	6,000	

PART III - IMPLEMENTATION SCHEDULE

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY #	TASK DURATION	RESPONSIBLE AGENCY FWS REGION	FWS PROGRAM	OTHER	FISCAL YEAR COSTS (EST)* FY1	FY2	FY3	COMMEN
R3	Study soil needs	221	3	3 years	2	SE		2,000	2,000	2,000	
R3	Study water needs	222	3	3 years	2	SE		6,000	6,000	6,000	
R8	Study seed dispersal	223	3	3 years	2	SE		5,000	5,000	5,000	
R7	Study seedling establishment	224	3	3 years	2	SE		3,000	3,000	3,000	
R14	Determine pollinators	225	3	3 years	2	SE		1,500	1,500	1,500	
R14	Determine reasons for population changes	226	2	ongoing	2	SE	NPS TPWD	5,000	5,000	5,000	
R3	Determine habitat parameters	231	2	3 years	2	SE		5,000	5,000	5,000	
04	Update management plans	232	2	ongoing	2	SE	NPS TPWD	500	500	500	

PART III - IMPLEMENTATION SCHEDULE

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY #	TASK DURATION	RESPONSIBLE AGENCY FWS REGION	RESPONSIBLE AGENCY FWS PROGRAM	RESPONSIBLE AGENCY OTHER	FISCAL YEAR COSTS (EST)* FY1	FY2	FY3	COMMENT
R14	Develop a trade management plan	3	2	1 year	2	SE		20,000			
R7	Investigate propagation methods	41	3	3 years	2	SE		4,000	4,000	4,000	
01	Publish techniques	42	3	1 year	2	SE		250			
M7	Establish populations at botanical gardens	5	2	2 years	2	SE		7,500	7,500		
01	Increase public awareness	61	2	ongoing	2	SE	NPS TPWD	3,000	3,000	3,000	
01	Seek support of public interest groups	62	2	ongoing	2	SE	NPS TPWD	500	500	500	

*Costs refer to USFWS expenditures only.

APPENDIX

List of Reviewers

An agency review draft of this plan was sent to the following on November 21, 1986.

Desert Botanical Garden, Phoenix, Arizona

Executive Director, Texas Parks and Wildlife Department, Austin, Texas

Director, Texas Natural Heritage Program, Austin, Texas

Regional Director, National Park Service, Santa Fe, New Mexico

Regional Supervisor, Realty, USFWS, Region 2

Special Agent in Charge, Law Enforcement, USFWS, Region 2

Field Supervisor, Ecological Services, Fort Worth Field Office, USFWS, Region 2

Director (AFA/OES), Office of Endangered Species, USFWS, Washington, D.C.

Comments Received

Comment letters are reproduced in this section followed by the Service's response to each comment. Some reviewers submitted comments marked directly on the draft plan or submitted comments by phone. These comments have not been reproduced.

The public notice of review for Coryphantha ramillosa was published in the Alpine Avalanche on April 27, 1989 in accordance with the 1988 Amendments to the Endangered Species Act. This notified the public of the 30 day comment period and the availability of the draft recovery plan for public review. No comments were received.

The Federal Register Notice of Review for Coryphantha ramillosa was published on August 10, 1989 in accordance with the 1988 Amendments to the Endangered Species Act. No comments were received.

United States Department of the Interior
NATIONAL PARK SERVICE
Big Bend National Park
Rio Grande Wild and Scenic River
Big Bend National Park, Texas 79834

IN REPLY REFER TO:

N1617

December 23, 1986

Memorandum

To: Regional Director, Southwest Region
Attention: Office of Natural Resources

From: Superintendent, Big Bend National Park

Subject: Comments on Draft Recovery Plans for Neolloydia mariposensis and Coryphantha ramillosa

Our comments are as follow:

1. Draft Recovery Plan for Neolloydia mariposensis:

   A. Page 14, #2: Add "on private land." To set up an area to specifically manage for a single species in the park could prove detrimental to the species and would tend to further complicate in-park policies. We are currently working with two threatened plants, two endangered animals and at least three soon to be listed as threatened.

   B. Page 15, #112: This step implies a specific management plan to be developed for this species within the park. It would appear that a single overall plan would be more efficient and that private lands should receive higher priority than public lands.

   C. Page 17-21: 11 and 12 should be combined.

   D. Page 18, #113: It may not be desirable to delineate specific areas within a national park to be managed for a specific species.

   E. Page 19, #114: No memorandum of understanding or cooperative agreement is needed on a species by species basis.

   F. Page 24, #23: This should probably be placed earlier in the hierarchy than 21 or 22.

   G. Page 26, #5: Where and who has current living specimens. This should be ascertained prior to collecting more specimens from the field.

H. Part III, Implementation Schedule: Most of the estimated costs appear quite low.

2. Draft Recovery Plan for Coryphantha ramillosa:

A. Page 14, #2: Add "on private land" (see comment A on preceeding page). A-1

B. Page 14-15: Combine 11 and 12 (see comment B on preceeding page). A-2

C. Page 16-20: Combine 11 and 12.

D. Page 17-18: There is no #113. A-3

E. Page 17, #112: Not necessarily desirable to delineate areas of specific management for individual species. A-4

F. Page 18, #114: See comment E on preceeding page. A-5

G. Page 23, #23: See comment F on preceeding page. A-6

H. Page 25, #5: See comment G on preceeding page. A-7

I. Part III, Implementation Schedule: See comment H on preceeding page. A-8

We appreciate the opportunity to comment on the Draft Recovery Plan.

James W. Carrico

TEXAS NATURAL HERITAGE PROGRAM
GENERAL LAND OFFICE
STEPHEN F. AUSTIN BUILDING
1700 NORTH CONGRESS AVENUE
ROOM 619
AUSTIN, TEXAS 78701
(512) 463-5299
1-800-252-RARE

January 6, 1987

Dr. Charlie McDonald
U.S. Fish and Wildlife Service
Endangered Species Office
P.O. Box 1306
Albuquerque, New Mexico 87103

Dear Charlie,

Thank you for allowing me the opportunity to comment on the recovery plan for Bunched Cory Cactus (Coryphantha ramillosa).

The morphology section should be modified as follows to conform with Dr. Allan Zimmerman's description of the species, as he is the authority on the genus. The stems are dark grayish green, solitary or rarely with a few branches, 6-9 cm (2.4-3.6 in.) long, and 6-9.5 cm (2.4-3.7 in.) in diameter. There are 3-6 central spines: 1 inner, and 2-5 outer, usually 3. The inner central spine is 25-40 mm (1-1.6 in.) long, and the outer central spines, 17-38.5 mm (.7-1.5 in) long. The dull white to pale gray radial spines are 12-30 mm (.5-1.2 in.) long. The flowers are 38-65 mm (1.5-2.6 in.) long and 30-50 mm (1.2-2 in.) in diameter. The fruits are 1-2.5 ~~mm~~ cm (.4-1 in.) long. The seeds are finely raised-reticulate, reniform, reddish-brown, and 1.4-1.5 mm (.06 in.) long. B-1

In the section on impacts and threats, it is stated that "most collectors would have to trespass... getting through gates and across posted property." While the trespassing aspect is true, one of the major sites is along a former country road without gates. Also many sites could be accessed from the Rio Grande, where there are no gates nor posted signs. B-2

The State law will help, to some extent, protect the bunched cory cactus from collecting on private land, although this is not stated in the narrative. The State law requires collection permits for commercial collecting from private land. B-3

Sincerely,

Jackie

Jackie M. Poole
Botanist, Texas Natural Heritage Program

JMP:mt

TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 Smith School Road Austin, Texas 78744

COMMISSIONERS
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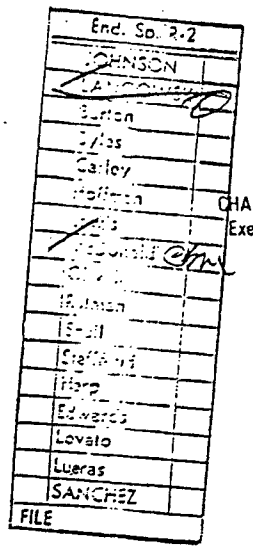
CHARLES D. TRAVIS
Executive Director



February 5, 1987

Dr. Charles McDonald
U.S. Fish & Wildlife Service
Endangered Species Office
P.O. Box 1306
Albuquerque, New Mexico 87103

RE: Region 2: SE
Draft Recovery Plan for Bunched Cory Cactus

Dear Dr. McDonald:

The U.S. Fish & Wildlife Service draft recovery plan for bunched cory cactus (Coryphantha ramillosa) has been reviewed by Texas Parks & Wildlife Department staff. Department staff concurs with and supports the comments submitted by Jackie M. Poole of the Texas Natural Heritage Program.

In the Impacts and Threats section, "trespass on private land" is mentioned as the major means of access to populations of the plant. One of the major sites for the bunched cory cactus is located along a former country road which is not gated. Other sites could be accessed without restriction from the Rio Grande River. C-1

The fourth paragraph of the Collecting and Trade subsection should distinguish between scientific and commercial collecting permits. The second sentence should read, "Under Texas law, a scientific collecting permit . . ." The third sentence should end with ". . . and a commercial collecting permit." Texas law requires a commercial collecting permit in order to collect for commercial purposes from private land. This permit is required in addition to the plant tags already mentioned in the plan. The tags may not be removed until the plant has been transplanted to its ultimate site for landscaping or other purposes. Only the ultimate owner or a department employee may remove the tag. The end of the last sentence should be modified to read ". . . its ultimate destination." Page 19, number 121 should also reflect the commercial collecting permit required by Texas law. C-2

FWS REG 2
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Thank you for the opportunity to comment on this draft recovery plan.

Sincerely,

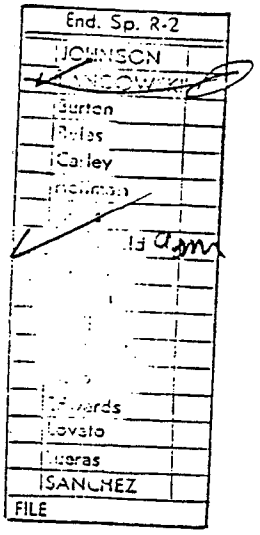
Charles D. Travis
Executive Director

CDT/DLR/dr

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE



In Reply Refer To:
FWS/OES

MAY - 8 1987

Memorandum

To: Regional Director, Region 2

From: Assistant Director - Fish and Wildlife Enhancement

Subject: Review of Six Texas Draft Plant Recovery Plans

We have reviewed the technical/agency drafts of the Texas snowbells, slender rush-pea, ashy dogweed, Johnston's frankenia, Lloyd's Mariposa cactus, and bunched cory cactus recovery plans. Editorial comments for each of the plans are provided as marginalia on the attached plans. In addition, the following comments are provided:

1. Some of these plans give detailed site locations, e.g., ashy dogweed and slender rush-pea. On page 10 of the ashy dogweed, it states that "...publication of its one location could lead to vandalism or imprudent taking." However, on page 8 of the same plan, it gives details on land ownership plus additional information that a gas pipeline crosses the site. With this degree of detail, it would be relatively easy to locate the subject plants. Please consider if you wish to be this specific. D-1

2. The Implementation Schedule of some of the plans have tasks which are assigned Priorities of 1. A Priority 1 task is an action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future (emphasis added). Some of the Priority 1 tasks are questionable. For example, Lloyd's Mariposa cactus is a threatened species found on National Park Service land and on private land. Much of the private land is owned by the Lafitas Museum and Desert Garden. It seems inappropriate to have task 122, "Establish safe sites on private lands" and task 123, "Develop and implement species management plans" as Priority 1 tasks. Also, note that tasks 111-115 are missing from the Implementation Schedule for this plan. D-2

   Similar concerns exist for the Priority 1 tasks listed for the threatened bunched cory cactus. This cactus is also found on National Park land, State land, and private land. It seems inappropriate to have tasks 112 and 113 dealing with protection on private lands assigned a level 1 priority.

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3. The recovery objectives for the threatened bunched cory cactus and Lloyd's Mariposa cactus have interim goals of 10,000 individuals and 20,000 individuals, respectively. Why is the interim goal for the Lloyd's cactus double that of the bunched cory cactus? D-3

4. All maps and drawings should include a scale to better depict size and distance. D-4

5. Most of the plans do not quantify the primary objective. This should be done if at all possible. D-5

I hope these comments are useful as you prepare the final draft of these recovery plans for the Regional Director's approval. Upon his approval, notify the Office of Endangered Species, 500 Broyhill Building, and provide them with 30 copies of the printed plan when it is available.

Ronald E. Lambertson

Attachments

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

U.S. FISH & WILDLIFE SERVICE
Region 2, Albuquerque, New Mexico 87103

TO : Assistant Regional Director, Region 2 (AFF)

DATE: January 15, 1987
LA-Texas

FROM : Acting Regional Supervisor, Division of Realty

SUBJECT: Agency Review Draft on Two Recovery Plans

As requested in your November 18, 1986, memorandum, we have reviewed the agency review draft recovery plans for the Lloyd's mariposa cactus and the bunched cory cactus.

Both plans discuss the establishment of safe sites on private lands as one of the recovery objectives. Realty suggests that the sentence:

> Protective action by the Service would require full NEPA compliance and documentation.

be changed to read:

> Protective actions by the Service may involve easement or fee-acquisition of lands and would require full NEPA compliance and documentation. E-1

Thank you for the opportunity to review these plans, and please contact Bruce Halstead if you have any questions or require additional information.

Larry A. Dunkeson

Larry A. Dunkeson

Charles,
I discussed this with Larry & explained that we cannot make the change as he requested.
Dave

End. Sp. R-2
JOHNSON
LANGOWSKI
Burton
Byles
Carley
Hoffman
Lewis
McDonald
Orwell
Rutman
Shell
Stanford
Harp
Edwards
Loyalo
Lueras
SANCHEZ
FILE

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Response to Comments

A-1 The second (it has been moved to the first position in the final plan) required action for delisting the bunched cory cactus has been modified to read, "Identify at least three sites where the species will be protected." This type of identification should not restrict park activities or complicate in-park policies to any greater extent than is necessary to protect the species.

A-2 The tasks, 11 "Protect populations on public lands," and 12, "Protect populations on private lands," have not been combined because, although the overall goals for both tasks are the same, the needed steps and responsible agencies are slightly different. The task to develop specific management plans for the species has been modified and now reads, "Specific management measures should be included in appropriate agency planning documents." It is felt that having each land managing agency develop their own management measures is preferable to having a single all-encompasing management plan.

A-3 This error has been corrected.

A-4 See response A-1. Also, the task, "Establish safe sites," has been changed to read, "Identify areas for protection." Areas identified for protection do not have to be designated as areas managed specifically for the bunched cory cactus, but any land use conflicts must be resolved in ways that assure the species' continued existence.

A-5 Memoranda of understanding and cooperative agreements are standard documents for formalizing interagency cooperation. Although the National Park Service may not feel that species by species agreements are presently needed, the task is being retained because circumstances could make such agreements useful in the future.

A-6 The numerical sequence of the recovery tasks does not necessarily represent the order in which the tasks will be accomplished. Never-the-less, it does seem sensible to have searches for additional populations come earlier in the outline than biological and ecological studies, so this change in outline order has been made.

A-7 When botanical garden populations are established, care will be taken to insure that previous efforts are not being duplicated.

A-8 Costs in the implementation schedule have been reviewed and some costs have been revised upward.

B-1 This morphological description has been included in the plan.

B-2 The Impacts and Threats section has been revised to incorporate these comments.

B-3 This information has been added to the Narrative section of the plan.

C-1 The Impacts and Threats section has been revised to incorporate these comments.

C-2 These changes have been made.

D-1 The distribution information has been reviewed and it appears to be sufficiently general that it will not cause any additional risk to the species.

D-2 Priorities have been reviewed and several tasks formerly given Priority 1 have been reassigned to Priority 2.

D-3 The different figures reflect different estimates of present plant abundance. In addition, Lloyd's Mariposa cactus occurs in areas more vulnerable to collecting than does bunched cory cactus and it, therefore, may need a larger number of plants to insure its safety.

D-4 A scale has been added to the distribution map.

D-5 This plan has a quantified primary objective.

E-1 This task has been revised with a new goal of developing cooperation with private landowners. The extent that this cooperation is formalized through written agreements and the level of involvement by Fish and Wildlife, Realty Division cannot be specified at this time.

Black-capped Vireo

Scientific Name: *Vireo atricapillus*

Federal Status: Endangered, 10/6/87 • State Status: Endangered

Description

The Black-capped Vireo is a 4.5 inch insect-eating songbird. Mature males are olive green above and white below with faint greenish-yellow flanks. The crown and upper half of the head is black with a partial white eye-ring. The iris is brownish-red and the bill black. The plumage of the female is duller than the male. Females have a dark slate gray head.

Male Black-capped Vireo
© TPWD

Female Black-capped Vireo
© USFWS A. Shull

Distribution and Habitat

Historical records from 1852-1956 show that the Black-capped Vireo once occurred from central Kansas, Oklahoma, Texas and into Mexico. These records show that vireos bred in Kansas, Oklahoma, Texas, and central Coahuila, Mexico. Today, Black-capped Vireos breed locally in central Texas, a few counties in central Oklahoma, and central Coahuila, Mexico, although little is known of their status in Mexico. Black-capped Vireos winter along the western coast of Mexico.

In Texas, vireo habitat is found on rocky limestone soils of the Edwards Plateau, Cross Timbers and Prairies, eastern Trans-Pecos and, to a limited extent, on igneous soils in the Chisos Mountains. Although Black-capped Vireo habitat throughout Texas is highly variable with regard to plant species, soils, temperature, and rainfall, all habitat types are similar in vegetation structure; i.e. the "overall look" is somewhat similar although the plant species vary. Vireos require shrub vegetation reaching to ground level for nesting cover. They typically nest in shrublands and open woodlands with a distinctive patchy structure. Typical habitat is characterized by shrub vegetation extending from the ground to about 6 feet and covering about 30 to 60 percent or greater of the total area. In the eastern portion of the vireo's range, the shrub layer is often combined with an open, sparse to moderate tree canopy. Open grassland separates the clumps of shrubs and trees.

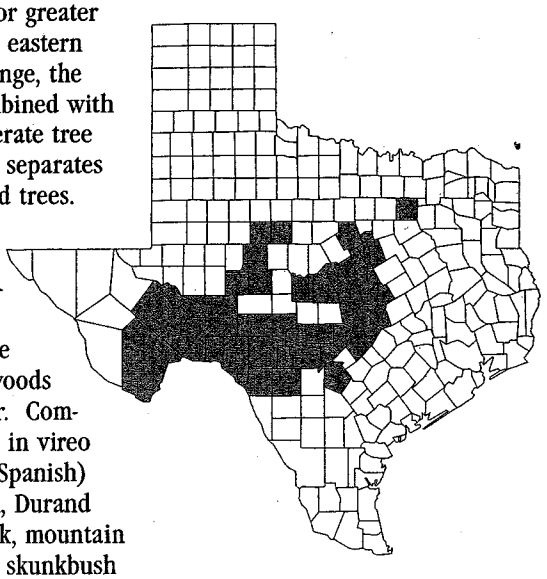
In the Edwards Plateau and Cross Timbers Regions, vireo habitat occurs where soils, topography, and land use produce scattered hardwoods with abundant low cover. Common broad-leaved plants in vireo habitat include: Texas (Spanish) oak, Lacey oak, shin oak, Durand (scaleybark) oak, live oak, mountain laurel, evergreen sumac, skunkbush sumac, flameleaf sumac, redbud, Texas persimmon, mesquite, and agarita. Although Ashe juniper is often part of the plant composition in vireo habitat, preferred areas usually have a low density and cover of juniper.

In the western Edwards Plateau and Trans-Pecos Regions, on the western edge of the vireo's range, the birds are often found in canyon bottoms and slopes where sufficient moisture is available to support diverse shrub vegetation. Dominant woody plants in this habitat type include sandpaper oak, vasey shin oak, Texas kidneywood, Mexican walnut, and fragrant ash, mountain laurel, and guajillo.

For all habitat types, the plant composition appears to be less important than the presence of adequate broad-leaved shrubs, foliage to ground level, and mixture of open grassland and woody cover. Deciduous and broad-leaved shrubs and trees throughout the vireo's range are also important in providing habitat for insects on which the vireo feeds.

Life History

Black-capped Vireos arrive in Texas from mid-March to mid-April. Adult males often arrive before females and first-year males to select their territories. Vireos' territories are



often clustered in patches of suitable habitat. Although territories range in size from 1 to 16 acres, most territories are 2 to 4 acres. Males sing to attract mates and defend territories. Many males can be heard singing throughout the breeding season, but singing begins to decline by July. The

vireo's song is described as hurried and harsh, composed of various phrases and syllables with a restless quality.

Nesting begins after the females arrive in late March to early April. Both the male and female select the nest site, and the female completes the nest. Nest building usually requires 2 to 3 days. The cup-shaped nest is suspended from its rim in a fork of a branch about 1 to 6 feet above the ground. However, most Black-capped Vireos nest at about "doorknob" height. Nests have been found in shin oak, scalybark oak, Texas oak, sumac, Texas persimmon, juniper, and Texas mountain laurel.

The vireo may nest more than once in the same year. A new nest is constructed each time. Three to four eggs are usually laid in the first nesting attempt, but later clutches may contain only 2 to 3 eggs. The first egg is usually laid one day after completion of the nest, with one egg being laid each subsequent day. Incubation takes 14 to 17 days, and is shared by the male and female.

Vireo chicks are fed by both adults. The young fledge (leave the nest) 10 to 12 days after hatching. Fledglings are cared for by the female alone, the male alone, or by both adults. Sometimes the parents split the brood and each care for several young. Occasionally, males or females will leave the care of the young to their mate, and attempt another nesting effort.

Vireos may live for more than five years, and usually return year after year to the same territory, or one nearby. The birds migrate to their wintering grounds on Mexico's western coast beginning in July, and are gone from Texas by mid-September.

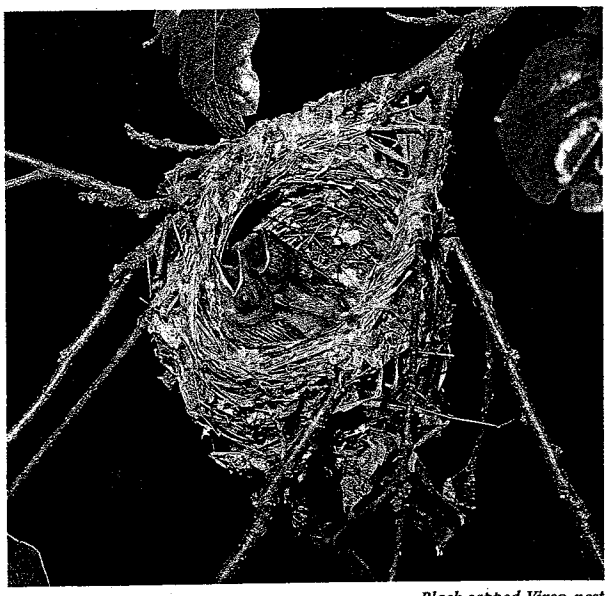
Threats and Reasons for Decline

The Black-capped Vireo is vulnerable to changes in the relative abundance of its habitat. For any given site, good vireo habitat may become unsuitable because of natural plant succession or because of human activities. Active, well-planned land management is often required to maintain good vireo habitat, especially in the eastern portion of its range. Factors that can adversely affect vireo habitat include broad-scale or improper brush clearing, fire suppression, overbrowsing by deer and livestock, and urbanization. Loss of tropical wintering habitat is also a concern.

Poorly planned brush management practices on rangeland may remove too much low growing woody cover, especially when large acreages are treated at one time. This eliminates or reduces habitat value for vireos and for other wildlife, such as White-tailed deer, quail, small mammals, and various songbirds. Overbrowsing of broad-leaved shrubs by goats, deer, and exotic animals reduces the vegetation in the 2 to 4 foot zone, making it unsuitable for vireo nesting. Continued overuse of these preferred browse plants over many years may eventually eliminate them from the plant community, thus permanently altering the habitat.

The role of fire in maintaining, improving, or creating vireo habitat is also an important consideration. The rangelands of central Texas, and the various plant communities these lands support, evolved under the influence of periodic fires. Historically, these natural and man-made fires maintained an open grassland with scattered clumps of trees and shrubs. Fire stimulated shrubs to sprout at the base, thus providing areas of dense foliage at the 2 to 4 foot level, required by vireos. In the past, fire was responsible for maintaining or periodically returning some areas to vireo habitat. Today, prescribed burning, a valuable range and wildlife management tool, occurs on many ranches throughout Texas. However, the combination of overgrazing and lack of fire in the recent past has reduced vireo habitat in many other areas.

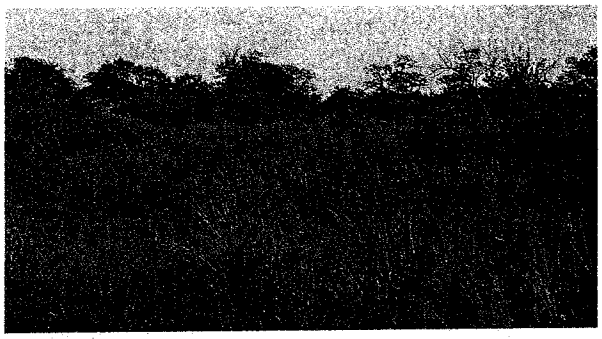
Human activities have provided favorable habitat for the Brown-headed Cowbird, which parasitizes vireo nests. The cowbird is usually associated with livestock, farms, and grain fields, where it benefits from waste grain and insects. They may also be attracted to backyard bird feeders, trash dumps, or other urban areas where food and water are available. Cowbirds lay their eggs in other birds' nests, leaving the host bird to raise their young. A cowbird chick can expel or outcompete the host birds' eggs and young, leaving only the cowbird chick to be fed by the host. While some birds remove cowbird eggs from their nest, the vireo does not. When nest parasitism occurs, vireos tend to abandon their nest, and thus parasitized nests usually fail to produce vireos. When their nest is parasitized, vireos often attempt to renest. The amount of nest parasitism varies greatly from one population to another throughout the



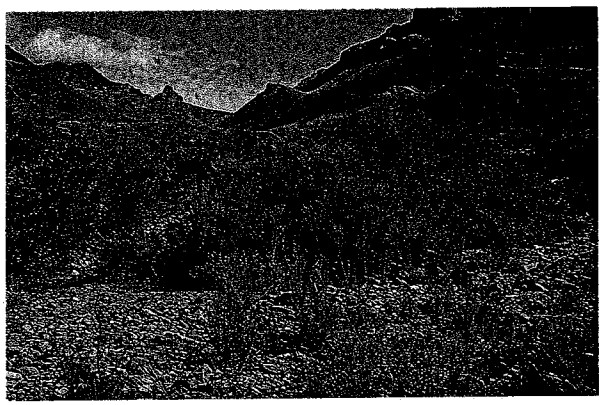
Black-capped Vireo nest
© TPWD Glen Mills

Nesting vireo
© Greg W. Lasley

Habitat at Kickapoo Caverns State Park
© Matt Wagner



Habitat with low-growing shrubs
© Matt Wagner



Habitat in Big Bend National Park
© USFWS A. Shull

state, ranging from 10 to 90 percent of the nests.

Direct habitat loss and fragmentation due to urban and suburban development is a major threat in expanding urban areas of Travis, McLennan, Dallas, Bexar, and Kerr counties. Problems associated with suburban expansion, such as increases in predation by dogs, cats, raccoons, skunks, and jays, have also impacted the vireo.

In summary, protection and proper management of known vireo nesting areas, management for large patches of quality habitat, and reduction of the problem of parasitism are essential to the protection of this species and other plant and animal species associated with the Black-capped Vireo in Texas.

Recovery Efforts

Research is underway to better understand the life history, habitat requirements, and land management practices affecting the Black-capped Vireo. Research is also in progress regarding the impact of cowbirds on vireo populations in Texas. Research efforts in Mexico are planned to gather information concerning life history and habitat requirements on the wintering range.

Habitat conservation planning is underway in counties such as Travis and Bexar to direct urban expansion and development away from endangered species habitat. Finally, efforts to provide information, technical assistance, and incentives for private landowners to incorporate management for Black-capped Vireos into their livestock and wildlife operations are an essential part of the recovery process.

Where To See the Black-capped Vireo

A number of state lands offer opportunities to see and learn more about the Black-capped Vireo. These include Black Gap Wildlife Management Area (WMA), Colorado Bend State Park (SP), Devils River State Natural Area (SNA), Dinosaur Valley SP, Kerr WMA, Kickapoo Caverns SP, Lost Maples SNA, South Llano River SP, and Buck WMA. Also, once open to the public, the Balcones Canyonlands National Wildlife Refuge near Austin and Government Canyon State Park near San Antonio will offer additional opportunities to see Black-capped Vireos.

Because the Black-capped Vireo is an endangered species, birders and other observers should carefully follow certain viewing ethics. Observers should be careful not to flush birds from the nest or disturb nests or young. Black-capped Vireos should be viewed only from a distance with binoculars. Do not use recorded calls of the Black-capped Vireo or the Screech Owl to attract birds, and be careful that your presence does not unduly disturb or stress the birds.

How You Can Help

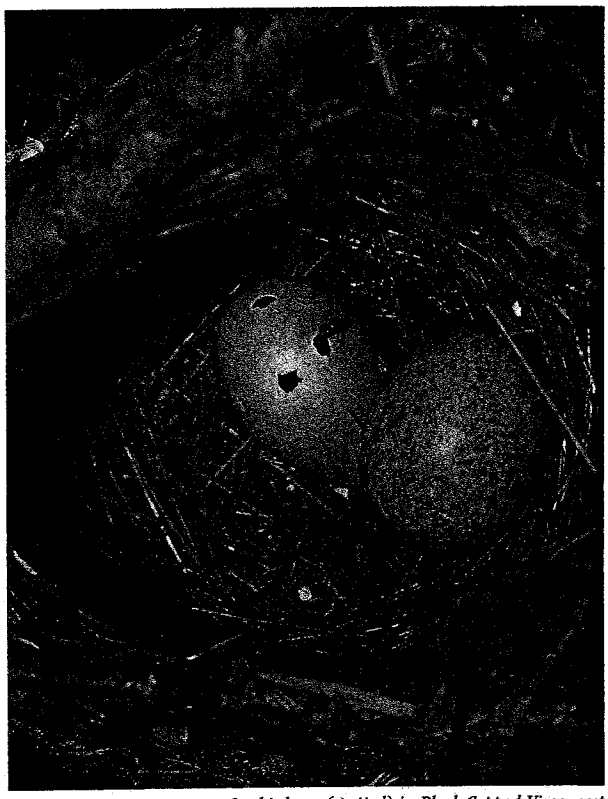
Landowners can help by learning more about the habitat requirements of the Black-capped Vireo and incorporating management practices which create or maintain habitat for these birds. You can also encourage and support private landowners who are managing their land to protect and provide habitat for endangered species.

You can be involved with the conservation of Texas' nongame wildlife resources by supporting the Special Nongame and Endangered Species Conservation Fund. Special nongame stamps and decals are available at Texas Parks and Wildlife Department (TPWD) field offices, most state parks, and the License Branch of TPWD headquarters in Austin. Part of the proceeds from the sale of these items are used to conserve habitat and provide information to the public concerning endangered species. Conservation Passports, available from TPWD, are valid for one year and allow unlimited access to most State Parks, State Natural Areas, and Wildlife Management Areas throughout Texas. Conservation organizations in Texas also welcome your participation and support.

For More Information Contact

Texas Parks and Wildlife Department
Endangered Resources Branch
4200 Smith School Road
Austin, Texas 78744
(512) 912-7011 or (800) 792-1112
or
U.S. Fish and Wildlife Service
Ecological Services Field Office
10711 Burnet Road, Suite 200
Austin, Texas 78758
(512) 490-0057

Management guidelines are available from the Texas Parks and Wildlife Department and U.S. Fish and Wildlife Service for landowners and managers wishing to know more about rangeland management practices which improve habitat for the Black-capped Vireo.



Cowbird egg (spotted) in Black-Capped Vireo nest
© Glen Mills

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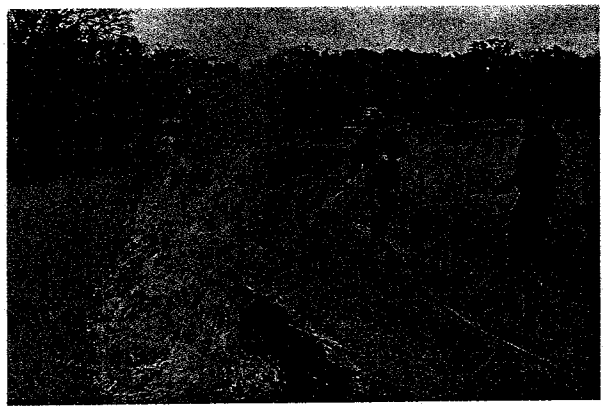
Management Guidelines for Black-capped Vireo

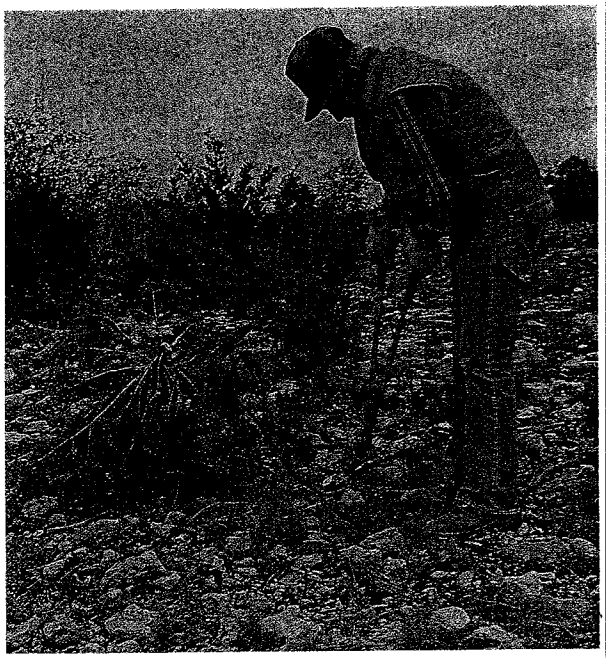
The following guidelines address land management practices that can be used to maintain, enhance, or create Black-capped Vireo habitat. They are intended primarily to serve as general guidance for rural landowners and others managing land for livestock and/or wildlife in Texas. The guidelines are based on our current understanding of the biology of this species.

Prescribed Burning

Prescribed burning is an excellent tool used to maintain the desired vegetation structure for vireo nesting; i.e. a mosaic of shrubs and open grassland with abundant woody foliage below 6 feet. Cool season burns, conducted prior to March 15, are often recommended to control small juniper, thus maintaining the relatively open shrublands preferred by vireos. Prescribed burns conducted during late spring and early fall, under hotter conditions, can be used to set back plant succession in order to create vireo habitat; however, warm season burns should be done only in areas that do not currently support Black-capped Vireos. On grazed rangeland, prescribed burns should be coordinated with livestock rotation to allow for needed deferments. It is best to avoid burning relatively small areas within large pastures to prevent heavy grazing pressure by livestock and/or deer on burned areas.



Prescribed burning
© Matt Wagner



Selective handcutting of juniper
© TPWD Glen Mills

Desirable burn intervals for cool season burns vary throughout the state, depending on rainfall and vegetation type. Field experience shows that, for much of the Hill Country, a burning interval of 4 to 7 years is considered desirable to keep Ashe juniper (cedar) invasion in check and to allow regrowth of broad-leaved shrubs. Maintaining open grassland areas between clumps of shrubs is important for good vireo habitat. Research is needed to better understand the use of prescribed burning to maintain and create vireo habitat, and to develop guidelines on desirable burn intervals throughout the vireo's range in Texas.

Assistance from people experienced with the use of prescribed burning is highly recommended. Landowners are encouraged to have a complete written prescribed burn plan addressing the objectives of the burn, required weather conditions, grazing deferments, fireguard preparations, personnel and equipment needed, a detailed map showing how the burn will be conducted, and notification and safety procedures.

Fire is a natural component of Texas rangelands, and prescribed burning has many range and wildlife management benefits. These include improved forage quality and availability for livestock and deer, and maintenance of desirable plant composition and structure. Landowners are advised to contact local representatives of the Texas Parks and Wildlife Department, U.S. Natural Resources Conservation Service (formerly Soil Conservation Service), or Texas Agricultural Extension Service for help in developing and implementing a prescribed burning program designed specifically for your property and management objectives.

Selective Brush Management

Increases in juniper (cedar) and other woody species can easily cause the vegetation to grow (succeed) out of the patchy, low shrub cover that provides suitable habitat. In the eastern portion of the vireo's range, good nesting habitat generally has between 30 and 60 percent shrub canopy. Selective brush removal with herbicides or mechanical means can be used to keep the habitat favorable for vireo nesting. For example, the selective removal of juniper, mesquite, or pricklypear (less desirable to the vireo and to the rancher) serves to maintain a relatively open shrub canopy and encourages growth of associated broad-leaved shrubs. Selective brush removal should strive to maintain the low shrubby structure. Also, radical changes in shrub canopy from one year to the next over large areas should be avoided. Western Edwards Plateau rangelands comprised primarily of mesquite, often referred to as mesquite flats, are not considered Black-capped Vireo habitat; therefore, mesquite control in these areas will not affect vireos.

When using herbicides, careful attention to the kinds, amounts, timing, and application technique

will achieve the best control of target species at minimum cost. Precise application also reduces the risk of environmental contamination and off-site effects. It is best to choose highly selective individual plant treatment methods, whenever practical, to avoid damage to desirable shrubs such as live oak, shin oak, Texas oak, hackberry, Texas persimmon, sumac, redbud, and elm. Herbicides should always be used in strict accordance with label directions, including those for proper storage and disposal of containers and rinse water. Herbicide applications should not occur during the breeding season, except for basal applications or individual plant treatment of prickly pear pads.

Handcutting or carefully planned mechanical methods of brush management such as chaining, roller chopping, or shredding can be used to stimulate basal sprouting of key woody species in order to maintain, enhance, or create vireo habitat. Mechanical methods should only be used during the non-breeding season (October-February). Remember that good grazing management and moderate stocking rates can reduce woody plant invasion and therefore the need for expensive brush control practices.

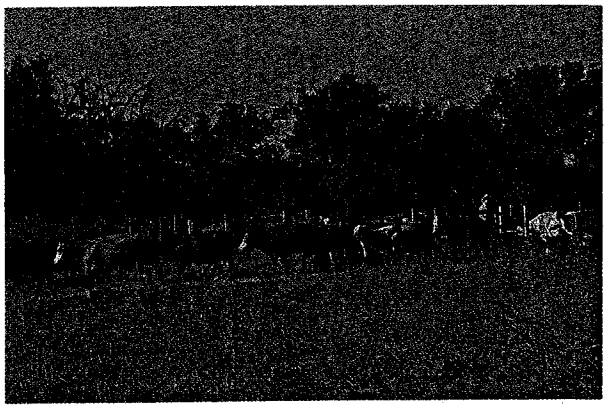
Finally, although brush management practices can be used to change the structure and composition of vegetation so that vireos may occupy the habitat, landowners should seek technical assistance when planning brush management practices in habitat that is known to be occupied by Black-capped Vireos. Since brush management activities can affect habitat for the Golden-cheeked Warbler as well as the Black-capped Vireo, landowners are encouraged to learn about the habitat requirements of both endangered songbirds (see leaflet on the Golden-cheeked Warbler).

Grazing and Browsing Management

Excessive browsing by goats, exotic animals, and White-tailed deer destroys the thick woody growth needed for nest concealment. Livestock and deer management, which allows woody plants such as live oak, shin oak, sumac, Texas persimmon, elbowbush, redbud, and hackberry to make dense growth from 0 to 6 feet, is needed. On ranches throughout Texas, moderate stocking, rotation of livestock, controlling deer numbers, and proper use of desirable browse plants will benefit deer and livestock as well as Black-capped Vireos.

To provide adequate nesting cover for vireos, woody plants should receive only limited browsing during the spring and summer. If animals (livestock, deer, and exotics) are well-managed and kept within recommended stocking rates, this can be achieved. Experience has shown that, in general, ranges stocked with cattle and deer tend to maintain better vireo nesting cover than ranges stocked with goats and exotic animals. Browsing surveys should pay more attention to stem growth than leaf growth, since leaf production in many shrubs varies widely, depending on season and weather conditions. Also, the amount of leaf production depends in part on the amount of stem and bud growth available on the plant. Research is lacking concerning how various levels of browsing pressure affect habitat structure and nesting use. However, based on field experience, a conservative approach would be to limit browsing pressure, especially during the growing season, to no more than 50% of the total annual growth (young, tender twigs) within reach of animals on any given plant. This will maintain plants that are already vigorous and allow for improvement of those with less than ideal structure. As a rule of thumb, if you can "see through" a browse plant, then too much stem and leaf growth has been removed.

Careful management of woody plants will not only provide for the habitat needs of Black-capped Vireos, but will also create high quality habitat for deer and other wildlife as well as livestock. Technical assistance in determining proper use of browse plants is available from the Texas Parks and Wildlife Department and U.S. Natural Resources Conservation Service.



Cattle rotation
© TPWD

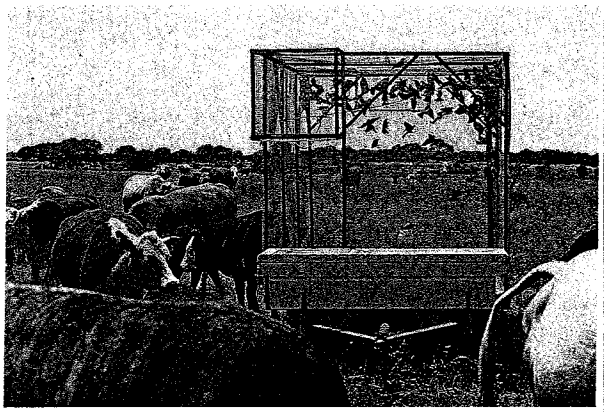
Overgrazed range with low-growing cover removed
© TPWD

Reducing Impacts From Cowbirds

Brood parasitism by Brown-headed Cowbirds poses a serious threat to successful reproduction in some populations of Black-capped Vireos. Research is currently underway to better understand the impacts of cowbirds on vireos. Because cattle attract cowbirds, management to reduce cowbird impacts is important on grazed land.

Because cowbirds are attracted to easily available sources of food, avoid spilling or scattering grain. Supplemental feeding areas should be moved frequently and kept free from accumulations of waste grain. This would help to prevent sparsely vegetated areas of compacted soils, which also tend to attract cowbirds.

Grazing management can be used to remove cattle from areas where vireos nest. For example, cattle can be rotated away from prime nesting habitat during the breeding season. Another option is to graze stocker cattle during the fall and winter, resting pastures during the spring/summer nesting season. Resting pastures periodi-



Cowbird trap
© TPWD

cally improves range condition and may also help reduce nest parasitism.

Finally, trapping and/or shooting cowbirds can be effective in reducing vireo brood parasitism. Mounted mobile traps, placed near watering sites as livestock are rotated through pastures, have been used successfully to reduce cowbird numbers. Shooting cowbirds at places where they congregate is another option, although this method is often not selective for the cowbirds responsible for the parasitism. Contact Texas Parks and Wildlife Department or the U.S. Fish and Wildlife Service for assistance with implementing a cowbird control program for your property.

Habitat Restoration

For landowners wishing to restore or create habitat for the Black-capped Vireo in areas currently unoccupied by vireos, the following suggestions are offered.

One type of restorable habitat is an open shrubland capable of growing a diversity of woody plants, where much of the low-growing cover has been removed through overbrowsing by livestock or deer. Controlling browsing pressure by reducing animal numbers and providing pasture rest will allow the natural reestablishment of low-growing shrub cover needed by vireos.

Habitat restoration may also be possible in areas where the shrub layer has become too tall or dense to provide good vireo habitat. In these areas, well-planned use of controlled fire can reduce overall shrub height, stimulate basal sprouting of shrubs, and reduce shrub density to produce more favorable habitat for vireos.

Also, in areas where the brush has become too dense, selective thinning could be done to produce a more open habitat. Carefully planned brush management could be used to encourage regeneration and lateral branching of desirable shrubs by allowing sunlight to reach the ground. In each of these examples, the idea is to restore areas that may once have provided habitat to the relatively open, low-growing shrub/grassland vegetation preferred by vireos.

Summary

Periodic prescribed burning, selective brush management, control of deer and exotic wildlife numbers, and good grazing management practices, including proper stocking and rotational grazing, are management options that can be used to create and maintain Black-capped Vireo habitat. These same management tools will also maintain diverse and productive rangelands. In addition to providing food, fiber, and support for rural landowners, well-managed rangelands provide habitat for a wide variety of wildlife, and benefits such as clean water, natural diversity, and recreational opportunities for all Texans.

Technical assistance in range and wildlife management, including grazing management, determination of proper stocking rates, prescribed burning, brush management, and management for endangered species, is available to landowners and managers by contacting the Texas Parks and Wildlife Department or U.S. Natural Resources Conservation Service. Information is also available from the Texas Agricultural Extension Service. Further guidance and specific questions concerning Black-capped Vireo research, endangered species management and recovery, and landowner responsibilities under the Endangered Species Act, should be directed to the U.S. Fish and Wildlife Service or Texas Parks and Wildlife Department. If, after reading this leaflet, you are still unsure whether or not your management plans will adversely affect the Vireo or its habitat, please contact the U.S. Fish and Wildlife Service for assistance.

Funds for the production of this leaflet were provided by the U.S. Fish and Wildlife Service, under Section 6 of the Endangered Species Act.

TEXAS PARKS & WILDLIFE

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To manage and conserve the natural and cultural resources of Texas for the use and enjoyment of present and future generations.

August 29, 2000

William Fickel, Jr.
Environmental Division, Department of the Army
Fort Worth District, Corps of Engineers
P.O. Box 17300
Fort Worth, TX 76102-0300

RE: Proposed U.S. Border Patrol Facility, Terrell County

Dear Mr. Fickel:

This letter is in response to your request for a current list of federal endangered, threatened, proposed, candidate species, and species of concern for Terrell County, Texas.

Although this list should prove useful to you as background material, it is not intended as a substitute for comprehensive on-site evaluations by competent biologists. Determination of the actual presence of a species in a given area depends on a number of variables such as daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). Absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all of the variable factors contributing to the lack of observability.

Measures should be taken to ensure that none of the species described on the attached list are present at the site and subject to adverse impacts.

Please contact me at (512) 389-4579 if we may be of further assistance.

Sincerely,

Danny Allen
Wildlife Habitat Assessment Program
Wildlife Division

Attachment

DLA:pmo.8056

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512-389-4800
www.tpwd.state.tx.us

COUNTY LISTS OF TEXAS' SPECIAL SPECIES

Includes: * Vertebrates, Invertebrates, and Vascular Plants on Texas Biological and Conservation Data System's (TXBCD) special species lists--e.g., species/subspecies/variety has federal listed, proposed, or candidate status, state listed status, or species/subspecies/variety carries global rarity rank placing it on special species lists
* Colonial Waterbird Nesting Areas and Migratory Songbird Fallout Areas--only for coastal counties

Excludes: * Natural Plant Communities--e.g., Little Bluestem-Indiangrass Series (native prairie remnant), Water Oak-Willow Oak Series (bottomland hardwood community), Saltgrass-Cordgrass Series (salt or brackish marsh), Sphagnum-Beakrush Series (seepage bog)
* Other Significant Features--e.g., non-coastal bird rookeries and migratory bird information, bat roosts, bat caves, invertebrate caves, prairie dog towns

Revised Dates: Each county's revised date reflects the last date any changes or revisions were made for that county, to reflect current listing statuses and taxonomy.

Parameters: Species appearing on these lists do not all share the same probability of occurrence within a county. Some species are migrants or wintering residents only. Additionally, a few species may be historic or considered extirpated within a county. Species considered extirpated within the state are so flagged on each list, and include: Margay, Gray Wolf, Red Wolf, Ivory-billed Woodpecker, Bachman's Warbler, San Marcos Gambusia, Blotched Gambusia, Rio Grande Silvery Minnow, Bluntnose Shiner, and auriculate false foxglove.

Background and Utility: * The TXBCD, established in 1983, is the state's most comprehensive source of information on rare, threatened, and endangered plants and animals, exemplary natural communities, and other significant features. The TXBCD is constantly updated, providing current information on the statewide status and locations of these unique "elements" of natural diversity, which are special species, natural communities, and other significant features.

* The TXBCD gathers biological information from museum and herbarium collection records, publications, experts in the scientific community, organizations, individuals, and on-site field surveys conducted by staff on public lands or on private lands with written permission. Staff botanists, zoologists, and ecologists perform field surveys to locate and verify specific occurrences of biological elements of the highest priority and collect accurate information on their condition, quality, and management needs.

Revised: 98-04-13

----- continued -----

* The TXBCD can be used to help evaluate the environmental impact of routing and siting options for development projects. It also assists in impact assessment, environmental review, and permit review. Approximately 300 project reviews of these types are performed each month.

To Request Project Review: * A site-specific review can provide information on special species, natural communities, and other significant features occurring or potentially occurring in the general vicinity of a project. Species information, such as known habitats and breeding/flowering periods, are generally noted in responses.

* For site-specific project review contact the TXBCD's Environmental Review Coordinator at 512/912-7058 (fax), shannon.breslin@tpwd.state.tx.us (email), 3000 South IH-35, Suite 100, Austin, Texas 78704 (mail), or 512/912-7021 (phone) and provide the following:
  >> description of project and its scope,
  >> physical description of natural features of site,
  >> current condition and/or past site use, and
  >> a map depicting the project's precise geographic location (please include copy from USGS 7.5' topographic quadrangle with project boundaries clearly noted, plus quad and county name; in lieu of topo, a county or other precise map will suffice if detailed directions allow us to locate the site on our topos).

* Please allow 4-8 weeks for review, longer for large projects.

Disclaimer: The TXBCD information is based on the best data currently available to the State regarding threatened, endangered, or otherwise sensitive species. However, the TXBCD cannot provide a definite statement as to the presence, absence, or condition of special species, natural communities, or other significant features in any area, nor can it substitute for on-site evaluation by qualified biologists. It is intended to assist the user in avoiding harm to species that may occur.

Citation: Please use the following citation to credit the TXBCD as the source for this county level information.

> Texas Biological and Conservation Data System. Texas Parks and Wildlife Department, Endangered Resources Branch. County Lists of Texas' Special Species. (county name(s) and revised date(s)).

TEXAS PARKS AND WILDLIFE DEPARTMENT
ENDANGERED RESOURCES BRANCH
SPECIAL SPECIES LIST
TERRELL COUNTY

Revised:
98-04-24

Scientific Name	Common Name	Federal Status	State Status
*** BIRDS			
FALCO PEREGRINUS ANATUM	AMERICAN PEREGRINE FALCON	LE	E
FALCO PEREGRINUS TUNDRIUS	ARCTIC PEREGRINE FALCON	E/SA	T
ICTERUS CUCULLATUS CUCULLATUS	MEXICAN HOODED ORIOLE		
VIREO ATRICAPILLUS	BLACK-CAPPED VIREO	LE	E
*** FISHES			
CYCLEPTUS ELONGATUS	BLUE SUCKER		T
CYPRINELLA PROSERPINA	PROSERPINE SHINER		T
CYPRINODON PECOSENSIS	PECOS PUPFISH	PE	T
ETHEOSTOMA GRAHAMI	RIO GRANDE DARTER		T
NOTROPIS JEMEZANUS	RIO GRANDE SHINER		
*** MAMMALS			
CYNOMYS LUDOVICIANUS ARIZONENSIS	ARIZONA BLACK-TAILED PRAIRIE DOG		
MYOTIS VELIFER	CAVE MYOTIS BAT		
SYLVILAGUS FLORIDANUS ROBUSTUS	DAVIS MOUNTAINS COTTONTAIL		
URSUS AMERICANUS	BLACK BEAR	T/SA	T
*** REPTILES			
PHRYNOSOMA CORNUTUM	TEXAS HORNED LIZARD		T
TRACHEMYS GAIGEAE	BIG BEND SLIDER		
*** VASCULAR PLANTS			
ACLEISANTHES WRIGHTII	WRIGHT'S TRUMPETS		
CEREUS GREGGII VAR GREGGII	DESERT NIGHT-BLOOMING CEREUS		
CHAMAESYCE JEJUNA	DWARF BROOMSPURGE		
CORYPHANTHA HESTERI	HESTER'S CORY CACTUS		
CORYPHANTHA RAMILLOSA	BUNCHED CORY CACTUS	LT	T
HEXALECTRIS WARNOCKII	WARNOCK'S CORAL-ROOT		
PERITYLE CINEREA	GRAYLEAF ROCK-DAISY		
PHYLLANTHUS ERICOIDES	HEATHER LEAF-FLOWER		
POLYGALA MARAVILLASENSIS	MARAVILLAS MILKWORT		
RORIPPA RAMOSA	DURANGO YELLOW-CRESS		
SENNA ORCUTTII	ORCUTT'S SENNA		

Codes:
LE,LT - Federally Listed Endangered/Threatened
PE,PT - Federally Proposed Endangered/Threatened
E/SA,T/SA - Federally Endangered/Threatened by Similarity of Appearance
C1 - Federal Candidate, Category 1; information supports proposing to list as endangered/threatened
DL,PDL - Federally Delisted/Proposed Delisted
E,T - State Endangered/Threatened

----- continued next page -----

Species appearing on these lists do not all share the same probability of occurrence within a county. Some species are migrants or wintering residents only. Additionally, a few species may be historic or considered extirpated within a county. Species considered extirpated within the state are so flagge on each list. Each county's revised date reflects the last date any changes c revisions were made for that county, to reflect current listing statuses and taxonomy.

APPENDIX B

ENVIRONMENTAL BASELINE SURVEY

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1.0 PURPOSE OF THE ENVIRONMENTAL BASELINE SURVEY

The purpose of this Environmental Baseline Survey (EBS) was to determine the potential presence of environmental contamination on the property to be purchased by The U. S. Immigration and Naturalization Service (INS) at Sanderson, Texas. This EBS documents the nature, magnitude, and extent of any environmental contamination encountered on or near the subject property. The EBS was conducted in accordance with Air Force Instruction (AFI) 32-7066, *Environmental Baseline Surveys in Real Estate Transactions.* Additional guidance was obtained from the American Society for Testing and Materials (ASTM) E: 1529-94, *Standard Practice for Environmental Site Assessments.- Phase I Environmental Site Assessment Process.* This EBS also provides notice in accordance with Section 120(h)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCIA) (42 U.S. Code [U.S.C.] 9620[h][1]). In addition, this EBS documents the potential for Recognized Environmental Conditions (RECs), as defined in ASTM E: 1529-94, to have been caused or created as a direct result of INS actions taken while the BP station construction was conducted.

2.0 SURVEY METHODOLOGY

2.1 APPROACH AND RATIONALE

The scope of the survey was to identify all areas associated with the project area and surrounding properties that could pose a threat to human health or the environment. Site visits were conducted in July 2000. Pertinent existing land deed documents on file at the Terrell County Court House were reviewed at the time of the site investigation. Personnel from the Sanderson Border Patrol, the City of Sanderson, Texas, Terrell County, Texas were interviewed to augment information regarding known Recognized Environmental Conditions (REC) in the area.

2.1.1 Description of Documents Reviewed

A review of site maps, land deed information, and existing environmental documents was conducted as a part of this EBS. A comprehensive listing of documents reviewed for this study is included in Appendix E.

2.1.2 Property Inspections

Personnel from the U.S. Army Corps of Engineers (USACE), Fort Worth District conducted on-site inspections on the project property and adjacent lands. The project site and adjacent lands were each visually inspected to identify potential RECs resulting from previous land uses. Procedures included inspecting the properties for signs of improperly stored drums containing identified or unidentified materials, above ground storage tanks (ASTs), underground storage tanks (USTs), indication of solid waste disposal, pits, ponds, stained soils or pavement, stressed vegetation, petroleum products, or other hazardous or extremely hazardous substances.

2.1.3 Sampling/Data Collection

USACE staff conducted soil sampling at depths of 0-1 ft. These tests yield no indication of past presence of storage tanks, solid waste disposal, petroleum products or other hazardous wastes. There was no evidence of stressed vegetation of the property or adjacent lands. Environmental Resources, Inc collected environmental risk management data. Data collected included hazardous materials, waste, landfills and spills and reported no hazardous activities within a half-mile radius of the property.

3.0 FINDINGS FOR SUBJECT PROPERTIES

3.1 HISTORY AND CURRENT USE

The lands included in this EBS are located within the city limit of Sanderson, Texas. The proposed project area, as well as the lands adjacent on the east and the north have been owned by a Sanderson resident developer since 1963. The developer has sold various pieces of the land north of the project area at various times for residential development. The project area, as well as, the land to the east has been undeveloped since 1963. The area to the west of the project area is a private ranch owned by the current landowner since. The area south of the project area has been disturbed since the construction of U.S. Highway 90. USACE staff walked the area between U.S. Highway 90 and the project area and found no evidence of petroleum products on project lands.

3.2 ENVIRONMENTAL SETTING

The proposed project area is located on the Lomita Terrace of the Stockton Plateau. The geology of the area is of Edwards Limestone of the Late Cretaceous. The soil of the area is characterized as deep, nearly level to gently sloping gravelly loams that are several feet thick. The site is moderately to heavily vegetated indicating it has been used in recent years. The vegtative community is characterized as a Mesquite-Juniper Shrub vegetative type. No sources of permanent surface water are present. Drainage patterns generally run from northwest to southeast.

3.3 HAZARDOUS SUBSTANCES

3.3.1 Hazardous Materials and Petroleum Products

A site investigation revealed no hazardous materials or petroleum products were present or released in or around the project area. There also was no evidence of stained soils or pavement in or around the project area. Environmental Resources, Inc collected environmental risk management data for the project site and surrounding areas. Data collected included ASTs, USTs, hazardous materials, waste, landfills and spills and reported no hazardous activities within a half-mile radius of the property. As a result of the site investigation, hazardous materials and petroleum products are not considered an issue at the subject property.

3.4 STORAGE TANKS

3.4.1 Aboveground Storage Tanks

No ASTs were associated with the property at the time of the site inspection. A data analysis performed by Environmental Resources, Inc reported no ASTs were located within a half-mile radius of the property. As a result of the site investigation, hazardous materials and petroleum products are not considered an issue at the subject property.

3.4.2 Underground Storage Tanks

No USTs were associated with the property at the time of the site inspection. A data analysis performed by Environmental Resources, Inc reported no USTs were located within a half-mile radius of the property. As a result of the site investigation, hazardous materials and petroleum products are not considered an issue at the subject property.

3.4.3 Pipelines, Hydrant Fueling, and Transfer Systems

There was no evidence or records of pipelines, hydrant fueling, or transfer systems on the subject property at the time of the on-site inspections; therefore, they are not considered an issue at the subject property.

3.5 PESTICIDES

There was no evidence of pesticide use at the property inspected for the EBS at the time of site inspection. No information regarding the use of pesticides was available for inclusion in this EBS. As a result of the site investigation, pesticides are not considered an issue at the subject property.

3.6 SOLID WASTES

There was no evidence or records of solid waste disposal sites at the subject property, and solid waste disposal sites are not considered an issue.

3.7 GROUNDWATER

Data collected by TNRCC indicates that the groundwater of Sanderson is of good quality. Only one groundwater well was present in areas immediately surrounding the proposed project property. State database well information indicates there are 8 wells within a mile radius of the subject property, with the nearest occurring less than $1/8^{th}$ mile south of the property. There was no physical evidence that INS activities associated with the construction of a new BP station would directly contribute to groundwater contamination during construction. As a result, this is not considered an issue.

4.0 FINDINGS FOR ADJACENT PROPERTIES

4.1 LAND USES

Lands surrounding the subject property include U.S. Highway 90, undisturbed tract owned by same landowner as subject property, housing sub-division and ranch. Properties in this area of Sanderson are of private ranch, undeveloped or residential in nature.

4.2 SURVEYED PROPERTIES

The purpose of this portion of the report is to describe those RECs located adjacent to the subject property. In accordance with AFI 32-7066 and ASTM E: 1529-94, this includes properties located contiguous to the boundaries of the subject property and relatively nearby that could pose a significant environmental impact or concern on the subject property. The adjacent properties investigation was completed through a visual inspection as described in Section 2.0 of this report, including a review of relevant local documents and review of state and federal environmental databases.

In order to present the results of this investigation in an organized and coherent manner, relevant information is presented in a format similar to Section 3.0. Only topics where information was available are included in this section.

4.2.1 Hazardous Materials and Petroleum Products

Based on site visits, there was no evidence of current hazardous materials or petroleum products being stored on property near the subject properties. These results were supported by a database search including a .5-mile buffer around the subject property (Appendix F). Therefore, hazardous and petroleum wastes are not considered an issue at the adjacent properties.

4.1.2 Aboveground Storage Tanks

No ASTs were associated with adjacent properties at the time of the site inspections. Data collected by Environmental Resources, Inc reported no ASTs were located within the adjacent properties. As a result of the site investigation, aboveground storage tanks are not considered an issue at the adjacent properties.

4.1.3 Underground Storage Tanks

No USTs were associated with adjacent properties at the time of the site inspections. Data collected by Environmental Resources, Inc reported no USTs were located within the adjacent properties. As a result of the site investigation, aboveground storage tanks are not considered an issue at the adjacent properties.

4.1.4 Pipelines, Hydrant Fueling, and Transfer Systems

There was no evidence or records of pipelines, hydrant fueling, or transfer systems on any adjacent properties at the time of the on-site inspections; therefore, they are not considered an issue at the subject property.

4.2 PESTICIDES

There was no evidence of pesticide use at any adjacent properties inspected for the EBS at the time of site inspections. No information regarding the use of pesticides was available for inclusion in this EBS. As a result of the site investigation, pesticides are not considered an issue at the subject property.

4.3 SOLID WASTES

There was no evidence or records of solid waste disposal sites at any adjacent properties, and solid waste disposal sites are not considered an issue.

4.4 GROUNDWATER

Data collected by TNRCC indicates that the groundwater of Sanderson is of good quality. As previously stated state database well information indicates there exists a groundwater well within $1/8^{th}$ mile of the southern property boundary. The adjacent property to the south consist of U.S. Highway 90 and a rail line with a small vegetative buffer area between the two. From maps provided by EDR, this appears to be the location of the well. There was no physical evidence that INS activities associated with the construction of a new BP station would directly contribute to groundwater contamination of this well during construction. As a result, this is not considered an issue.

5.0 CONCLUSIONS

Contamination, of any kind, does not appear to be of concern for the property to be purchased for the construction of a new BP station in Sanderson, Texas. No RECs or environmental issues were identified that would cause concern in the purchase and development of this property.

APPENDIX C

PUBLIC COMMENTS

APPENDIX D

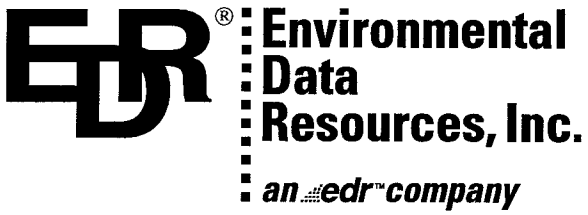
REVIEW OF DATA RECORDS BY EDR, INC.

The EDR-Radius Map
with GeoCheck®

Sanderson Border Patrol Standard
US Hwy 90 + Highland Plaza Ave
Sanderson, TX 79848

Inquiry Number: 529759.1s

August 17, 2000



***The* Source For Environmental Risk Management Data**

3530 Post Road
Southport, Connecticut 06490

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer and Other Information

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The report meets the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. Search distances are per ASTM standard or custom distances requested by the user.

TARGET PROPERTY INFORMATION

ADDRESS

US HWY 90 + HIGHLAND PLAZA AVE
SANDERSON, TX 79848

COORDINATES

Latitude (North):	30.148780 - 30° 8' 55.6"
Longitude (West):	102.421770 - 102° 25' 18.4"
Universal Tranverse Mercator:	Zone 13
UTM X (Meters):	748339.4
UTM Y (Meters):	3337898.5

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	2430102-B4 SANDERSON, TX
Source:	USGS 7.5 min quad index

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the ASTM E 1527-00 search radius around the target property for the following databases:

FEDERAL ASTM STANDARD

NPL	National Priority List
Delisted NPL	NPL Deletions
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP	Comprehensive Environmental Response, Compensation, and Liability Information System
CORRACTS	Corrective Action Report
RCRIS-TSD	Resource Conservation and Recovery Information System
RCRIS-LQG	Resource Conservation and Recovery Information System
RCRIS-SQG	Resource Conservation and Recovery Information System
ERNS	Emergency Response Notification System

STATE ASTM STANDARD

SHWS	State Haz. Waste
SWF/LF	Permitted Solid Waste Facilities
CLI	MSW Closed and Abandoned Landfills

LUST ..... Leaking Petroleum Storage Tank Database
UST ..... Petroleum Storage Tank Database

FEDERAL ASTM SUPPLEMENTAL

CONSENT ..... CONSENT
ROD ..... ROD
FINDS ..... Facility Index System/Facility Identification Initiative Program Summary Report
HMIRS ..... Hazardous Materials Information Reporting System
MLTS ..... Material Licensing Tracking System
MINES ..... Mines Master Index File
NPL Lien ..... NPL Liens
PADS ..... PCB Activity Database System
RAATS ..... RCRA Administrative Action Tracking System
TRIS ..... Toxic Chemical Release Inventory System
TSCA ..... Toxic Substances Control Act

STATE OR LOCAL ASTM SUPPLEMENTAL

AST ..... Petroleum Storage Tank Database
TX Spills ..... TX Spills
TX VCP ..... Texas Natural Resource Conservation Commission
TX MM ..... Multi Media Enforcement Cases
TX IHW ..... Industrial & Hazardous Waster Database
WasteMgt ..... WasteMgt
AIRS ..... Aerometric Information Retrieval System Facility Subsystem

EDR PROPRIETARY DATABASES

Coal Gas ..... Former Manufactured gas (Coal Gas) Sites.

SURROUNDING SITES: SEARCH RESULTS

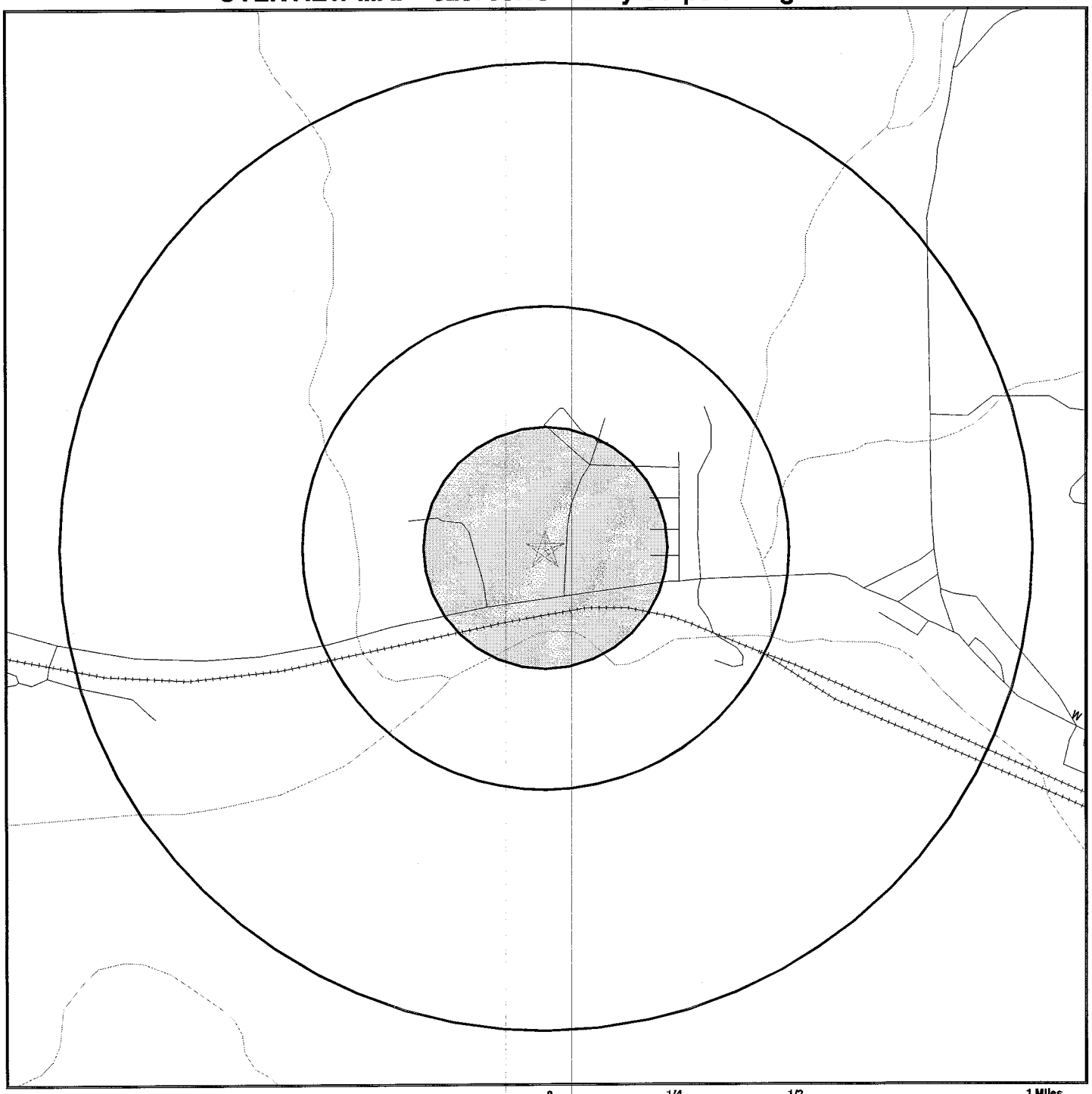
Surrounding sites were identified.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
2M E OF SANDERSON CITY LIMITS ON US 90	SWF/LF
TXDOT MAINTENANCE FACILITY	UST,LUST
S.P.T. CO. SANDERSON FACILITY	UST,LUST,AST
SHAMROCK TRUCK CENTER	UST,LUST,AST
TXDOT MAINTENANCE FACILITY	UST,LUST,AST
TX DEPT OF TRANSPORTATION	UST,LUST,AST
PIONEER OIL CO #256	UST
DRYDEN GENERAL STORE	AST
JOE'S 66	AST
SANDERSON WOOL COMMISSION	AST
RIO GRANDE DISTRIBUTORS INC	AST
SANDERSON TIRE CENTER	AST
SANDERSON YARD	ERNS
CANYON REEF CARRIERS INC.	TX IHW
CANYON REEF CARRIERS, INC. - --TERRELL	TX IHW
CHEMICAL WASTE MANAGEMENT INC	TX IHW
SANDERSON YARD	TX IHW

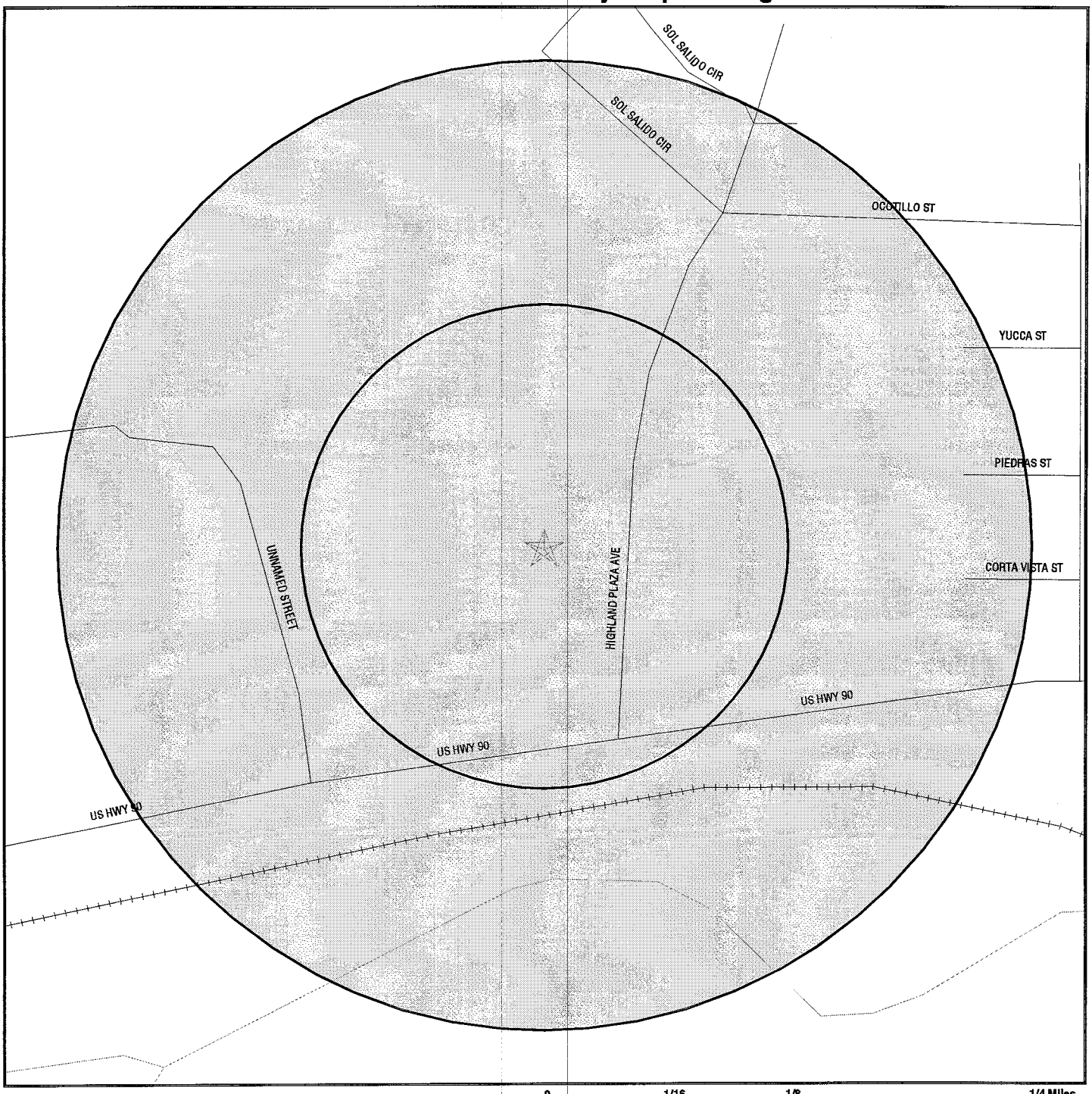
OVERVIEW MAP - 529759.1s - Army Corps of Engineers



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites (if requested)
- National Priority List Sites
- Landfill Sites
- Power transmission lines
- Oil & Gas pipelines

TARGET PROPERTY:	Sanderson Border Patrol Standard	CUSTOMER:	Army Corps of Engineers
ADDRESS:	US Hwy 90 + Highland Plaza Ave	CONTACT:	Glenn Bixler
CITY/STATE/ZIP:	Sanderson TX 79848	INQUIRY #:	529759.1s
LAT/LONG:	30.1488 / 102.4218	DATE:	August 17, 2000 1:57 pm

DETAIL MAP - 529759.1s - Army Corps of Engineers



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites (if requested)
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites

- Power transmission lines
- Oil & Gas pipelines

TARGET PROPERTY:	Sanderson Border Patrol Standard	CUSTOMER:	Army Corps of Engineers
ADDRESS:	US Hwy 90 + Highland Plaza Ave	CONTACT:	Glenn Bixler
CITY/STATE/ZIP:	Sanderson TX 79848	INQUIRY #:	529759.1s
LAT/LONG:	30.1488 / 102.4218	DATE:	August 17, 2000 1:57 pm

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL ASTM STANDARD								
NPL		0.500	0	0	0	NR	NR	0
Delisted NPL		0.500	0	0	0	NR	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.500	0	0	0	NR	NR	0
CORRACTS		0.500	0	0	0	NR	NR	0
RCRIS-TSD		0.500	0	0	0	NR	NR	0
RCRIS Lg. Quan. Gen.		0.500	0	0	0	NR	NR	0
RCRIS Sm. Quan. Gen.		0.500	0	0	0	NR	NR	0
ERNS		0.500	0	0	0	NR	NR	0
STATE ASTM STANDARD								
State Haz. Waste		0.500	0	0	0	NR	NR	0
State Landfill		0.500	0	0	0	NR	NR	0
CLI		0.500	0	0	0	NR	NR	0
LUST		0.500	0	0	0	NR	NR	0
UST		0.500	0	0	0	NR	NR	0
FEDERAL ASTM SUPPLEMENTAL								
CONSENT		0.500	0	0	0	NR	NR	0
ROD		0.500	0	0	0	NR	NR	0
FINDS		0.500	0	0	0	NR	NR	0
HMIRS		0.500	0	0	0	NR	NR	0
MLTS		0.500	0	0	0	NR	NR	0
MINES		0.500	0	0	0	NR	NR	0
NPL Liens		0.500	0	0	0	NR	NR	0
PADS		0.500	0	0	0	NR	NR	0
RAATS		0.500	0	0	0	NR	NR	0
TRIS		0.500	0	0	0	NR	NR	0
TSCA		0.500	0	0	0	NR	NR	0
STATE OR LOCAL ASTM SUPPLEMENTAL								
AST		0.500	0	0	0	NR	NR	0
TX Spills		0.500	0	0	0	NR	NR	0
TX VCP		0.500	0	0	0	NR	NR	0
Tx Multimedia		0.500	0	0	0	NR	NR	0
Tx Ind Haz Waste		0.500	0	0	0	NR	NR	0
WasteMgt		0.500	0	0	0	NR	NR	0
AIRS		0.500	0	0	0	NR	NR	0
EDR PROPRIETARY DATABASES								
Coal Gas		0.500	0	0	0	NR	NR	0

AQUIFLOW - see EDR Physical Setting Source Addendum

TP = Target Property

NR = Not Requested at this Search Distance

* Sites may be listed in more than one database

Coal Gas Site Search: No site was found in a search of Real Property Scan's ENVIROHAZ database.

NO SITES FOUND

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)	Facility ID
DRYDEN	S102753951	CANYON REEF CARRIERS INC.	HIGHWAY 349	78851	TX IHW	TXD000778712
DRYDEN	S102742864	CANYON REEF CARRIERS, INC. - --TERRELL	HIGHWAY 349	78851	TX IHW	TXD000778712
DRYDEN	S103605218	CHEMICAL WASTE MANAGEMENT INC	HIGHWAY 90 APPROX. 5 MILES WEST OF DRYDEN	78851	TX IHW	TXD988058715
DRYDEN	A100120503	DRYDEN GENERAL STORE	HWY 90	78851	AST	0066398
DRYDEN	A100120502	JOE'S 66	W HWY 90	78851	AST	0050938
DRYDEN	U001252823	TXDOT MAINTENANCE FACILITY	3 MI W OF DRYDEN ON US	78851	UST, LUST	0017812
SANDERSON	U001262590	PIONEER OIL CO #256	605 HWY 90 E	79848	UST	0028980
SANDERSON	U003421228	S.P.T. CO. SANDERSON FACILITY	201 DOWNIE ST	79848	UST, LUST, AST	0007956
SANDERSON	S103608159	SANDERSON YARD	201 DOWNIE	79848	TX IHW	TXD000750729
SANDERSON	A100120509	SANDERSON WOOL COMMISSION	600 E HWY 285	79848	AST	0063684
SANDERSON	U003421231	SHAMROCK TRUCK CENTER	E HWY 90	79848	UST, LUST, AST	0050674
SANDERSON	A100120508	RIO GRANDE DISTRIBUTORS INC	W HWY 90	79848	AST	0051723
SANDERSON	A100120510	SANDERSON TIRE CENTER	305 W OAK	79848	AST	0069375
SANDERSON	S104415329		2M E OF SANDERSON CITY LIMITS ON US 90.	79848	SWF/LF	673
SANDERSON	94403859	SANDERSON YARD	SANDERSON YARD		ERNS	
SANDERSON	U003421229	TXDOT MAINTENANCE FACILITY	N US 285	79848	UST, LUST, AST	0017811
STANTON	U003421177	TX DEPT OF TRANSPORTATION	HWY 137 5 MI N OF I-20	79848	UST, LUST, AST	0017813

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM STANDARD RECORDS

NPL: National Priority List
Source: EPA
Telephone: N/A
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC).

Date of Government Version: 06/13/00
Date Made Active at EDR: 07/06/00
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 06/27/00
Elapsed ASTM days: 9
Date of Last EDR Contact: 08/07/00

DELISTED NPL: NPL Deletions
Source: EPA
Telephone: N/A
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 06/13/00
Date Made Active at EDR: 07/06/00
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 06/27/00
Elapsed ASTM days: 9
Date of Last EDR Contact: 05/09/00

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA
Telephone: 703-413-0223
CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/14/00
Date Made Active at EDR: 03/15/00
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 03/02/00
Elapsed ASTM days: 13
Date of Last EDR Contact: 05/31/00

CERCLIS-NFRAP: No Further Remedial Action Planned
Source: EPA
Telephone: 703-413-0223
As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 02/14/00
Date Made Active at EDR: 03/15/00
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 03/02/00
Elapsed ASTM days: 13
Date of Last EDR Contact: 05/31/00

CORRACTS: Corrective Action Report
Source: EPA
Telephone: 800-424-9346
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 04/20/00
Date Made Active at EDR: 08/01/00
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 06/12/00
Elapsed ASTM days: 50
Date of Last EDR Contact: 06/12/00

RCRIS: Resource Conservation and Recovery Information System
Source: EPA/NTIS
Telephone: 800-424-9346
Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Date of Government Version: 05/18/00
Date Made Active at EDR: 08/01/00
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 06/01/00
Elapsed ASTM days: 61
Date of Last EDR Contact: 06/19/00

ERNS: Emergency Response Notification System
Source: EPA/NTIS
Telephone: 202-260-2342
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 05/30/00
Date Made Active at EDR: 07/06/00
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 06/02/00
Elapsed ASTM days: 34
Date of Last EDR Contact: 08/02/00

FEDERAL ASTM SUPPLEMENTAL RECORDS

BRS: Biennial Reporting System
Source: EPA/NTIS
Telephone: 800-424-9346
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/97
Database Release Frequency: Biennially

Date of Last EDR Contact: 06/19/00
Date of Next Scheduled EDR Contact: 09/18/00

CONSENT: Superfund (CERCLA) Consent Decrees
Source: EPA Regional Offices
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: N/A
Database Release Frequency: Varies

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

ROD: Records Of Decision
Source: NTIS
Telephone: 703-416-0223
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/31/99
Database Release Frequency: Annually

Date of Last EDR Contact: 07/12/00
Date of Next Scheduled EDR Contact: 10/09/00

FINDS: Facility Index System/Facility Identification Initiative Program Summary Report
Source: EPA
Telephone: N/A
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/13/99
Database Release Frequency: Quarterly
Date of Last EDR Contact: 07/13/00
Date of Next Scheduled EDR Contact: 10/09/00

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4526
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/30/99
Database Release Frequency: Annually
Date of Last EDR Contact: 07/25/00
Date of Next Scheduled EDR Contact: 10/23/00

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/23/00
Database Release Frequency: Quarterly
Date of Last EDR Contact: 07/10/00
Date of Next Scheduled EDR Contact: 10/09/00

MINES: Mines Master Index File
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959

Date of Government Version: 08/01/98
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 07/06/00
Date of Next Scheduled EDR Contact: 10/02/00

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 205-564-4267
Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 05/22/00
Date of Next Scheduled EDR Contact: 08/21/00

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-260-3936
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/01/00
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 05/15/00
Date of Next Scheduled EDR Contact: 08/14/00

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 06/12/00
Date of Next Scheduled EDR Contact: 09/11/00

TRIS: Toxic Chemical Release Inventory System
Source: EPA
Telephone: 202-260-1531
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/97
Database Release Frequency: Annually

Date of Last EDR Contact: 07/21/00
Date of Next Scheduled EDR Contact: 09/25/00

TSCA: Toxic Substances Control Act
Source: EPA
Telephone: 202-260-1444
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/98
Database Release Frequency: Every 4 Years

Date of Last EDR Contact: 07/25/00
Date of Next Scheduled EDR Contact: 10/23/00

STATE OF TEXAS ASTM STANDARD RECORDS

SHWS: State Superfund Registry
Source: Texas Natural Resource Conservation Commission
Telephone: 512-239-5680
State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 03/28/00
Date Made Active at EDR: 05/26/00
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 04/18/00
Elapsed ASTM days: 38
Date of Last EDR Contact: 07/20/00

LF: Permitted Solid Waste Facilities
Source: Texas Natural Resource Conservation Commission
Telephone: 512-239-6786
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/01/00
Date Made Active at EDR: 06/23/00
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 06/05/00
Elapsed ASTM days: 18
Date of Last EDR Contact: 05/30/00

CLI: Closed Landfill Inventory
Source: Texas Natural Resource Conservation Commission
Telephone: 512-239-6016
Closed and abandoned landfills (permitted as well as unauthorized) across the state of Texas.

Date of Government Version: 10/01/97
Date Made Active at EDR: 12/09/98
Database Release Frequency: Varies

Date of Data Arrival at EDR: 10/09/98
Elapsed ASTM days: 61
Date of Last EDR Contact: 08/10/00

LUST: Leaking Petroleum Storage Tank Database
Source: Texas Natural Resource Conservation Commission
Telephone: 512-239-2200
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 04/03/00
Date Made Active at EDR: 06/23/00
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 05/08/00
Elapsed ASTM days: 46
Date of Last EDR Contact: 07/31/00

UST: Petroleum Storage Tank Database
Source: Texas Natural Resource Conservation Commission
Telephone: 512-239-2160
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 04/03/00
Date Made Active at EDR: 05/30/00
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 05/08/00
Elapsed ASTM days: 22
Date of Last EDR Contact: 07/31/00

STATE OF TEXAS ASTM SUPPLEMENTAL RECORDS

AST: Petroleum Storage Tank Database
Source: Texas Natural Resource Conservation Commission
Telephone: 512-239-2160
Registered Aboveground Storage Tanks.

Date of Government Version: 04/03/00
Database Release Frequency: Quarterly
Date of Last EDR Contact: 07/31/00
Date of Next Scheduled EDR Contact: 10/30/00

SPILLS: Spills Database
Source: Texas Natural Resource Conservation Commission
Telephone: 512-239-0983

Date of Government Version: 07/08/00
Database Release Frequency: Quarterly
Date of Last EDR Contact: 06/26/00
Date of Next Scheduled EDR Contact: 09/25/00

VCP: Texas Natural Resource Conservation Commission
Source: Voluntary Cleanup Program Sites
Telephone: 512-239-0911
The Texas Voluntary Cleanup Program was established to provide administrative, technical, and legal incentives to encourage the cleanup of contaminated sites in Texas.

Date of Government Version: 03/31/00
Database Release Frequency: Quarterly
Date of Last EDR Contact: 08/07/00
Date of Next Scheduled EDR Contact: 11/06/00

MM: Multi Media Enforcement Cases
Source: Texas Natural Resource Conservation Commission
Telephone: 512-239-6012
Any enforcement case with more than one media (water, waste, etc.) violation.

Date of Government Version: 03/13/00
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 06/12/00
Date of Next Scheduled EDR Contact: 09/11/00

IHW: Industrial & Hazardous Waste Database
Source: Texas Natural Resource Conservation Commission
Telephone: 512-239-0985
Summary reports reported by waste handlers, generators and shippers in Texas.

Date of Government Version: 12/31/99
Database Release Frequency: Annually
Date of Last EDR Contact: 08/08/00
Date of Next Scheduled EDR Contact: 11/06/00

WASTEMGT: Commercial Hazardous & Solid Waste Management Facilities
Source: Texas Natural Resource Consevation Commission
Telephone: 512-239-2920
This list contains commercial recycling facilities and facilities permitted or authorized (interim status) by the Texas Natural Resource Conservation Commission.

Date of Government Version: 06/01/98
Database Release Frequency: Annually
Date of Last EDR Contact: 05/08/00
Date of Next Scheduled EDR Contact: 08/07/00

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

AIRS: Current Emission Inventory Data
Source: Texas Natural Resource Conservation Commission
Telephone: N/A
The database lists by company, along with their actual emissions, the TNRCC air accounts that emit EPA criteria pollutants.

Date of Government Version: 10/07/99
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 07/19/00
Date of Next Scheduled EDR Contact: 10/16/00

EDR PROPRIETARY DATABASES

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

Disclaimer Provided by Real Property Scan, Inc.

The information contained in this report has predominantly been obtained from publicly available sources produced by entities other than Real Property Scan. While reasonable steps have been taken to insure the accuracy of this report, Real Property Scan does not guarantee the accuracy of this report. Any liability on the part of Real Property Scan is strictly limited to a refund of the amount paid. No claim is made for the actual existence of toxins at any site. This report does not constitute a legal opinion.

HISTORICAL AND OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines/Electrical Transmission Lines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines and electrical transmission lines.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 1999 from the U.S. Fish and Wildlife Service.

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

SANDERSON BORDER PATROL STANDARD
US HWY 90 + HIGHLAND PLAZA AVE
SANDERSON, TX 79848

TARGET PROPERTY COORDINATES

Latitude (North):	30.148781 - 30° 8' 55.6"
Longitude (West):	102.421768 - 102° 25' 18.4"
Universal Tranverse Mercator:	Zone 13
UTM X (Meters):	748339.4
UTM Y (Meters):	3337898.5

EDR's GeoCheck Physical Setting Source Addendum has been developed to assist the environmental professional with the collection of physical setting source information in accordance with ASTM 1527-00, Section 7.2.3. Section 7.2.3 requires that a current USGS 7.5 Minute Topographic Map (or equivalent, such as the USGS Digital Elevation Model) be reviewed. It also requires that one or more additional physical setting sources be sought when (1) conditions have been identified in which hazardous substances or petroleum products are likely to migrate to or from the property, and (2) more information than is provided in the current USGS 7.5 Minute Topographic Map (or equivalent) is generally obtained, pursuant to local good commercial or customary practice, to assess the impact of migration of recognized environmental conditions in connection with the property. Such additional physical setting sources generally include information about the topographic, hydrologic, hydrogeologic, and geologic characteristics of a site, and wells in the area.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata. EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

USGS TOPOGRAPHIC MAP ASSOCIATED WITH THIS SITE

Target Property: 2430102-B4 SANDERSON, TX
Source: USGS 7.5 min quad index

GENERAL TOPOGRAPHIC GRADIENT AT TARGET PROPERTY

Target Property: General ESE

Source: General Topographic Gradient has been determined from the USGS 1 Degree Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Q3 Flood Data Electronic Coverage
TERRELL, TX	NO

Flood Plain Panel at Target Property: Not Reported
Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Coverage
SANDERSON	NO

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Site-Specific Hydrogeological Data*:

Search Radius: 2.0 miles
Status: Not found

AQUIFLOW®

Search Radius: 2.000 Miles.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Geologic Code: IK2
Era: Mesozoic
System: Cretaceous
Series: Fredericksburg Group

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

* ©1996 Site-specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Component Name: REAGAN

Soil Surface Texture: silty clay loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min: > 60 inches

Depth to Bedrock Max: > 60 inches

Soil Layer Information

	Boundary			Classification		
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**	**Permeability Rate (in/hr)**
1	0 inches	8 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 2.00 Min: 0.60
2	8 inches	17 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 2.00 Min: 0.60
3	17 inches	75 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 2.00 Min: 0.60

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: gravelly - loam
very gravelly - loam
unweathered bedrock

Surficial Soil Types: gravelly - loam
very gravelly - loam
unweathered bedrock

Shallow Soil Types: No Other Soil Types

Deeper Soil Types: very gravelly - loam

gravelly - loam
silty clay loam
unweathered bedrock
clay loam

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

According to ASTM E 1527-00, Section 7.2.2, "one or more additional state or local sources of environmental records may be checked, in the discretion of the environmental professional, to enhance and supplement federal and state sources... Factors to consider in determining which local or additional state records, if any, should be checked include (1) whether they are reasonably ascertainable, (2) whether they are sufficiently useful, accurate, and complete in light of the objective of the records review (see 7.1.1), and (3) whether they are obtained, pursuant to local, good commercial or customary practice." One of the record sources listed in Section 7.2.2 is water well information. Water well information can be used to assist the environmental professional in assessing sources that may impact groundwater flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

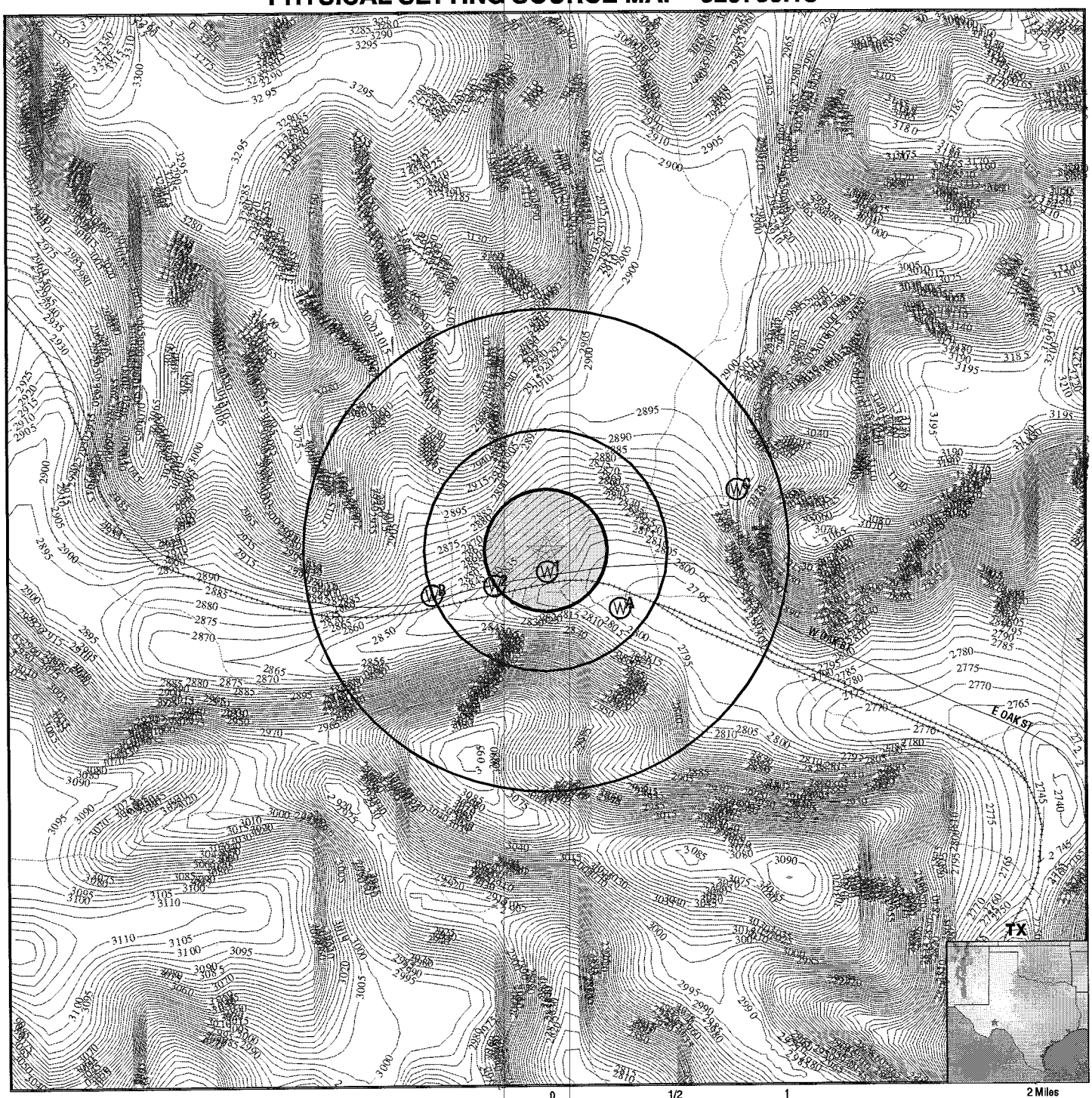
MAP ID	WELL ID	LOCATION FROM TP
1	B5353803	0 - 1/8 Mile South
2	B5353804	1/4 - 1/2 Mile SW
A3	B5353807	1/4 - 1/2 Mile SE
A4	B5353907	1/4 - 1/2 Mile SE
B5	B5353805	1/4 - 1/2 Mile WSW
B6	B5353806	1/2 - 1 Mile WSW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
C7	B5353902	1/2 - 1 Mile ENE
C8	B5353901	1/2 - 1 Mile ENE

PHYSICAL SETTING SOURCE MAP - 529759.1s



- Major Roads
- Contour Lines
- Water Wells
- Public Water Supply Wells
- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Cluster of Multiple Icons
- Earthquake epicenter, Richter 5 or greater
- Closest Hydrogeological Data
- Oil or gas wells (in certain Texas counties)

TARGET PROPERTY:	Sanderson Border Patrol Standard	CUSTOMER:	Army Corps of Engineers
ADDRESS:	US Hwy 90 + Highland Plaza Ave	CONTACT:	Glenn Bixler
CITY/STATE/ZIP:	Sanderson TX 79848	INQUIRY #:	529759.1s
LAT/LONG:	30.1488 / 102.4218	DATE:	August 17, 2000 1:57 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
1 **South** **0 - 1/8 Mile** **Lower**	**TX WELLS**	**B5353803**

Well Number:	5353803		
Owner:	Terrell County WCID #1		
Driller:	Not Reported		
Basin:	Rio Grande		
Accuracy of Coordinates:	Accurate to +/- 1 second		
Latitude:	1022518	Longitude:	300851
Info Source:	Texas Water Development Board	Previous Well Number:	Not Reported
FIPS County Code:	443	County:	Terrell
Zone:	2	Region Number:	2
Aquifer Code:	218EDDT	Users Code Economics:	766800
Ground Elevation AMSL:	2850	Elevation Method:	Interpolated from topographic maps
Date Drilled:	Not Reported	Well Type:	Withdrawal of Water
Well Depth (ft):	540	Source of Depth Data:	Not Reported
Type of Lift:	Submersible Pump	Type of Power:	Not Reported
Horsepower:	5.00	Tertiary Water Use:	Not Reported
Primary Water Use:	Public Supply	Secondary Water Use:	Not Reported
Well Schedule in file:	Yes	Construction Method:	Not Reported
Method of Finish:	Not Reported	Lithological Log Type:	Not Reported
Casing Material:	Not Reported	Screen Material:	Not Reported
Lithological Interpreter:	Not Reported	Interpretation Date:	Not Reported
Qlty Analysis Available:	Yes	Level Data Available:	No water-level available
Data Collection Date:	Not Reported	Reporting Agency:	Not Reported
Water Logs Available:	Not Reported		
Other Data Available:	Not Reported		
Aquifer:	EDWARDS AND ASSOCIATED LIMESTONES,AND TRINITY GROUP		

Infrequent Constituent Information::

Sample Number:	1	Storet Number:	00010
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	24.0	Confidence (+ or -):	Not Reported
Storet Code Description:	TEMPERATURE, WATER (CELCIUS)		
Constituent Name:	WATER	Unit of Measurement:	C
Sample Number:	1	Storet Number:	00090
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	115.3	Confidence (+ or -):	Not Reported
Storet Code Description:	OXIDATION REDUCTION POTENTIAL (ORP), MILLIVOLTS		
Constituent Name:	REDOX	Unit of Measurement:	MV
Sample Number:	1	Storet Number:	00608
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	0.02	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROGEN, AMMONIA, DISSOLVED (MG/L AS N)		
Constituent Name:	NH3-N	Unit of Measurement:	MG/L
Sample Number:	1	Storet Number:	00613
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	0.01	Confidence (+ or -):	Not Reported
Storet Code Description:	NITRITE NITROGEN, DISSOLVED (MG/L AS N)		
Constituent Name:	NO2-N	Unit of Measurement:	MG/L
Sample Number:	1	Storet Number:	00618
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	0.82	Confidence (+ or -):	Not Reported
Storet Code Description:	NITRATE NITROGEN, DISSOLVED (MG/L AS N)		
Constituent Name:	NO3-N	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	00623
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	0.1	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROGEN, KJELDAHL, DISSOLVED (MG/L AS N)		
Constituent Name:	KJELDL	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	39086
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	208	Confidence (+ or -):	Not Reported
Storet Code Description:	ALKALINITY, FIELD, DISSOLVED AS CACO3		
Constituent Name:	ALKLNITY	Unit of Measurement:	MG/L

Remarks:

Owner's well No.10. Pump installed 1978. Pumped 25 gal/min.

2
SW
1/4 - 1/2 Mile
Higher

TX WELLS **B5353804**

Well Number:	5353804		
Owner:	Terrell County WCID #1		
Driller:	Magill Well Service		
Basin:	Rio Grande		
Accuracy of Coordinates:	Accurate to +/- 5 second		
Latitude:	1022531	Longitude:	300848
Info Source:	Texas Water Development Board	Previous Well Number:	Not Reported
FIPS County Code:	443	County:	Terrell
Zone:	2	Region Number:	2
Aquifer Code:	218EDDT	Users Code Economics:	766800
Ground Elevation AMSL:	2850	Elevation Method:	Interpolated from topographic maps
Date Drilled:	1977	Well Type:	Withdrawal of Water
Well Depth (ft):	550	Source of Depth Data:	Not Reported
Type of Lift:	Submersible Pump	Type of Power:	Not Reported
Horsepower:	Not Reported	Tertiary Water Use:	Not Reported
Primary Water Use:	Public Supply	Secondary Water Use:	Not Reported
Well Schedule in file:	Yes	Construction Method:	Not Reported
Method of Finish:	Not Reported	Lithological Log Type:	Not Reported
Casing Material:	Not Reported	Screen Material:	Not Reported
Lithological Interpreter:	Not Reported	Interpretation Date:	Not Reported
Qlty Analysis Available:	No	Level Data Available:	No water-level available
Data Collection Date:	Not Reported	Reporting Agency:	Not Reported
Water Logs Available:	Not Reported		
Other Data Available:	Not Reported		
Aquifer:	EDWARDS AND ASSOCIATED LIMESTONES,AND TRINITY GROUP		

Remarks:

Owner's well No.11. Pump installed 1978. Pumped 20 gal/min. Pump set at 510 feet. Slotted from 398 to 498 feet.

A3
SE
1/4 - 1/2 Mile
Lower

TX WELLS **B5353807**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Well Number:	5353807		
Owner:	Terrell County WCID #1		
Driller:	Not Reported		
Basin:	Rio Grande		
Accuracy of Coordinates:	Accurate to +/- 1 second		
Latitude:	1022501	Longitude:	300842
Info Source:	Texas Water Development Board	Previous Well Number:	4R
FIPS County Code:	443	County:	Terrell
Zone:	2	Region Number:	2
Aquifer Code:	218EDDT	Users Code Economics:	766800
Ground Elevation AMSL:	2860	Elevation Method:	Interpolated from topographic maps
Date Drilled:	Not Reported	Well Type:	Withdrawal of Water
Well Depth (ft):	840	Source of Depth Data:	Person other than owner,driller or other agency
Type of Lift:	Submersible Pump	Type of Power:	Not Reported
Horsepower:	Not Reported	Tertiary Water Use:	Not Reported
Primary Water Use:	Public Supply	Secondary Water Use:	Not Reported
Well Schedule in file:	Yes	Construction Method:	Not Reported
Method of Finish:	Not Reported	Lithological Log Type:	Not Reported
Casing Material:	Steel	Screen Material:	Not Reported
Lithological Interpreter:	Not Reported	Interpretation Date:	Not Reported
Qlty Analysis Available:	Yes	Level Data Available:	No water-level available
Data Collection Date:	05241994	Reporting Agency:	Texas Water Development Board
Water Logs Available:	Not Reported		
Other Data Available:	Not Reported		
Aquifer:	EDWARDS AND ASSOCIATED LIMESTONES,AND TRINITY GROUP		

Water Quality Information::

Sample Number:	Not Reported	Sample Date:	5/24/1994 0920
Temperature (C):	24	Sampled Aquifer Code:	Not Reported
Top of sampled interval:	Not Reported	Bottom of sampled interval:	Not Reported
Balanced/unbal Analysis:	Balanced	Collection Agency:	TWDB and Predecessor Agencies
Silica Flag:	Not Reported	Silica MGL:	14.0
Calcium Flag:	Not Reported	Calcium MGL:	64.0
Magnesium Flag:	2	Magnesium MGL:	Not Reported
Sodium Flag:	Not Reported	Sodium MGL:	13.0
Potassium Flag:	Not Reported	Potassium MGL:	2.0
Strontium Flag:	Not Reported	Strontium MGL:	0.6
Carbonate MGL:	0.0	Bicarbonate MGL:	275.8
Sulfate Flag:	Not Reported	Sulfate MGL:	28.0
Chloride Flag:	Not Reported	Chloride MGL:	16.0
Fluoride Flag:	Not Reported	Fluoride MGL:	0.59
Nitrate Flag:	Not Reported	Nitrate Flag:	3.63
pH Flag:	Not Reported	pH:	7.3
Total Dissolved Fluids:	Not Reported	Total Hardness:	246
Phenol Alkalinity:	0.0	Total Alkalinity:	226.0
SAR:	0.36	RSC:	0.0
Specific Conductance:	475	Spec. Conductance Flag:	Not Reported
Percent Sodium:	10		
Collection Remark:	Not Reported		
Reliability Remark:	Sample in accordance with the TWDB's (A Field Manual for Ground-Water Sampling, 1990). Samples are collected when temperature, conductivity, and pH have stabilized. The sample was filtered and field tested for alkalinity. Samples are preserved as applicable, kept chilled, and delivered to the lab. Holding times are honored. Organic sub-samples are not filtered.		
Lab Name:	Texas Department of Health		

Infrequent Constituent Information::

Sample Number:	1	Storet Number:	00010
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	24.0	Confidence (+ or -):	Not Reported
Storet Code Description:	TEMPERATURE, WATER (CELCIUS)		
Constituent Name:	WATER	Unit of Measurement:	C

Sample Number:	1	Storet Number:	00090
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	115.3	Confidence (+ or -):	Not Reported
Storet Code Description:	OXIDATION REDUCTION POTENTIAL (ORP), MILLIVOLTS		
Constituent Name:	REDOX	Unit of Measurement:	MV

Sample Number:	1	Storet Number:	00608
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	0.02	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROGEN, AMMONIA, DISSOLVED (MG/L AS N)		
Constituent Name:	NH3-N	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	00613
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	0.01	Confidence (+ or -):	Not Reported
Storet Code Description:	NITRITE NITROGEN, DISSOLVED (MG/L AS N)		
Constituent Name:	NO2-N	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	00618
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	0.82	Confidence (+ or -):	Not Reported
Storet Code Description:	NITRATE NITROGEN, DISSOLVED (MG/L AS N)		
Constituent Name:	NO3-N	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	00623
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	0.1	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROGEN, KJELDAHL, DISSOLVED (MG/L AS N)		
Constituent Name:	KJELDL	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	01000
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	2.0	Confidence (+ or -):	Not Reported
Storet Code Description:	ARSENIC, DISSOLVED (UG/L AS AS)		
Constituent Name:	ARSENIC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01005
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	101.	Confidence (+ or -):	Not Reported
Storet Code Description:	BARIUM, DISSOLVED (UG/L AS BA)		
Constituent Name:	BARIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01020
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	90.	Confidence (+ or -):	Not Reported
Storet Code Description:	BORON, DISSOLVED (UG/L AS B)		
Constituent Name:	BORON	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01025
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	.5	Confidence (+ or -):	Not Reported
Storet Code Description:	CADMIUM, DISSOLVED (UG/L AS CD)		
Constituent Name:	CADMIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01030
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	10.0	Confidence (+ or -):	Not Reported
Storet Code Description:	CHROMIUM, DISSOLVED (UG/L AS CR)		
Constituent Name:	CHROMIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01040
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	5.8	Confidence (+ or -):	Not Reported
Storet Code Description:	COPPER, DISSOLVED (UG/L AS CU)		
Constituent Name:	COPPER	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01046
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	10.0	Confidence (+ or -):	Not Reported
Storet Code Description:	IRON, DISSOLVED (UG/L AS FE)		
Constituent Name:	IRON	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01049
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.0	Confidence (+ or -):	Not Reported
Storet Code Description:	LEAD, DISSOLVED (UG/L AS PB)		
Constituent Name:	LEAD	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01056
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	5.1	Confidence (+ or -):	Not Reported
Storet Code Description:	MANGANESE, DISSOLVED (UG/L AS MN)		
Constituent Name:	MANGNESE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01060
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	20.0	Confidence (+ or -):	Not Reported
Storet Code Description:	MOLYBDENUM, DISSOLVED, UG/L		
Constituent Name:	MOLY	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01075
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	10.0	Confidence (+ or -):	Not Reported
Storet Code Description:	SILVER, DISSOLVED (UG/L AS AG)		
Constituent Name:	SILVER	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01085
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	20.0	Confidence (+ or -):	Not Reported
Storet Code Description:	VANADIUM, DISSOLVED (UG/L AS V)		
Constituent Name:	VANADIUM	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01090
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	65.4	Confidence (+ or -):	Not Reported
Storet Code Description:	ZINC, DISSOLVED (UG/L AS ZN)		
Constituent Name:	ZINC	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01106
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	64.	Confidence (+ or -):	Not Reported
Storet Code Description:	ALUMINUM, DISSOLVED (UG/L AS AL)		
Constituent Name:	ALUMINUM	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01145
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	4.0	Confidence (+ or -):	Not Reported
Storet Code Description:	SELENIUM, DISSOLVED (UG/L AS SE)		
Constituent Name:	SELENIUM	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01503
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	9.5	Confidence (+ or -):	3.2
Storet Code Description:	ALPHA, DISSOLVED, PC/L		
Constituent Name:	ALPHA	Unit of Measurement:	PC/L
Sample Number:	1	Storet Number:	03503
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	8.4	Confidence (+ or -):	3.3
Storet Code Description:	BETA, DISSOLVED, PC/L		
Constituent Name:	BETA	Unit of Measurement:	PC/L

Sample Number:	1	Storet Number:	34200
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ACENAPHTHYLENE, TOTAL, UG/L		
Constituent Name:	ACENAPH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34205
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ACENAPHTHENE, TOTAL, UG/L		
Constituent Name:	ACENAPH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34220
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ANTHRACENE, TOTAL, UG/L		
Constituent Name:	ANTHRACE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34230
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(B)FLUORANTHENE, TOTAL, UG/L		
Constituent Name:	BENZOBFL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34242
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(K)FLUORANTHENE, TOTAL, UG/L		
Constituent Name:	BENZOKFL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34247
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO-(A)-PYRENE, TOTAL, UG/L		
Constituent Name:	BENZO A	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34253
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	A-BHC-ALPHA, TOTAL, UG/L		
Constituent Name:	ALPHABHC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34255
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	B-BHC-BETA, TOTAL, UG/L		
Constituent Name:	BHC-BETA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34273
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS (2-CHLOROETHYL) ETHER, TOTAL, UG/L		
Constituent Name:	BIS 2CLR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34278
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS (2-CHLOROETHOXY) METHANE, TOTAL, UG/L		
Constituent Name:	BIS2CLOR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34283
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS (2-CHLOROISOPROPYL) ETHER, TOTAL, UG/L		
Constituent Name:	BIS2CLRI	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34320
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	CHRYSENE, TOTAL, UG/L		
Constituent Name:	CHRYSENE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34336
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIETHYL PTHALATE, TOTAL, UG/L		
Constituent Name:	DIETHYL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34341
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIMETHYL PTHALATE, TOTAL, UG/L		
Constituent Name:	DIMETHYL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34346
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2-DIPHENYLHYDRAZINE, TOTAL, UG/L		
Constituent Name:	12DIPHEN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34351
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDOSULFAN SULFATE, TOTAL, UG/L		
Constituent Name:	ENDSULSF	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34356
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDOSULFAN - BETA, TOTAL, UG/L		
Constituent Name:	ENDOSULF	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34361
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDOSULFAN - ALPHA, TOTAL, UG/L		
Constituent Name:	ENDOSULF	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34366
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDRIN ALDEHYDE, TOTAL, UG/L		
Constituent Name:	ENDRIN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34376
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	FLUORANTHENE, TOTAL, UG/L		
Constituent Name:	FLUORAN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34381
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	FLUORENE, TOTAL, UG/L		
Constituent Name:	FLUORENE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34386
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROCYCLOPENTADIENE, TOTAL, UG/L		
Constituent Name:	HEXCLORC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34396
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROETHANE, TOTAL, UG/L		
Constituent Name:	HEXCHLOR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34403
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	INDENO (1,2,3-CD) PYRENE		
Constituent Name:	INDENO-	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34408
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ISOPHORONE, TOTAL, UG/L		
Constituent Name:	ISOPHOR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34428
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSO-DI-N-PROPYLAMINE, TOTAL, UG/L		
Constituent Name:	NITRODIN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34433
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIPHENYLAMINE, TOTAL, UG/L		
Constituent Name:	N-NITRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34438
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIMETHLAMINE, TOTAL, UG/L		
Constituent Name:	N-NITRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34447
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROBENZENE, TOTAL, UG/L		
Constituent Name:	NITROBEN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34461
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	PHENANTHRENE, TOTAL, UG/L		
Constituent Name:	PHENANTH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34469
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	PYRENE, TOTAL, UG/L		
Constituent Name:	PYRENE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34521
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(GHI)PERYLENE, TOTAL, UG/L		
Constituent Name:	BENZO-GH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34527
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(A) ANTHRACENE, TOTAL, UG/L		
Constituent Name:	BENZO A	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34536
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2-DICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	12DICLRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34551
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2,4-TRICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	124TRICL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34566
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,3-DICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	13DICHLO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34571
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,4-DICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	14DICHLO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34581
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2-CHLORONAPHTHALENE, TOTAL, UG/L		
Constituent Name:	2CLORONA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34591
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2-NITROPHENOL, TOTAL, UG/L		
Constituent Name:	2-NITRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34596
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DI-N-OCTYL PHTHALATE, TOTAL, UG/L		
Constituent Name:	DINOCTYL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34601
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DICHLOROPHENOL, TOTAL, UG/L		
Constituent Name:	24DICLOR	Unit of Measurement:	UGI

Sample Number:	1	Storet Number:	34606
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DIMETHYLPHENOL, TOTAL, UG/L		
Constituent Name:	24DIMETH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34611
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DINITROTOLUENE, TOTAL, UG/L		
Constituent Name:	24DINITR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34616
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DINITROPHENOL, TOTAL, UG/L		
Constituent Name:	24DINITR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34621
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4,6-TRICHLOROPHENOL, TOTAL, UG/L		
Constituent Name:	246TRICL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34626
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2,6-DINITROTOLUENE, TOTAL, UG/L		
Constituent Name:	26DINITR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34631
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	3,3'-DICHLOROBENZIDINE, TOTAL, UG/L		
Constituent Name:	33DICLOR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34636
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	4-BROMOPHENYL PHENYL ETHER, TOTAL, UG/L		
Constituent Name:	4BROMPHN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34641
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	4-CHLOROPHENYL PHENYL ETHER, TOTAL, UG/L		
Constituent Name:	4CHLPHEN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34646
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	4-NITROPHENOL, TOTAL, UG/L		
Constituent Name:	4-NITRO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34694
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	PHENOL, TOTAL, UG/L		
Constituent Name:	PHENOL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34696
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	NAPHTHALENE, TOTAL, UG/L		
Constituent Name:	NAPHTHAL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39032
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	PENTACHLOROPHENOL (PCP), TOTAL, UG/L		
Constituent Name:	PCP	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39086
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	208.0	Confidence (+ or -):	Not Reported
Storet Code Description:	ALKALINITY, FIELD, DISSOLVED AS CACO3		
Constituent Name:	ALKLNITY	Unit of Measurement:	MG/L
Sample Number:	1	Storet Number:	39100
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS(2-ETHYLHEXYL) PHTHALATE, TOTAL, UG/L		
Constituent Name:	BIS2ETHL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39110
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DI-N-BUTYL PHTHALATE, TOTAL, UG/L		
Constituent Name:	DINBUTYL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39120
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZIDINE, TOTAL, UG/L		
Constituent Name:	BENZIDIN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39300
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	P,P' DDT IN WHOLE WATER SAMPLE (UG/L)		
Constituent Name:	P,P'DDT	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39310
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	P,P' DDD IN WHOLE WATER SAMPLE (UG/L)		
Constituent Name:	P,P'DDD	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39320
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	P,P' DDE IN WHOLE WATER SAMPLE (UG/L)		
Constituent Name:	P,P'DDE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39330
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	ALDRIN, TOTAL, UG/L		
Constituent Name:	ALDRIN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39340
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	GAMMA-BHC (LINDANE), TOTAL, UG/L		
Constituent Name:	GAMMABHC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39380
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	DIELDRIN, TOTAL, UG/L		
Constituent Name:	DIELDRIN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39390
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDRIN, TOTAL, UG/L		
Constituent Name:	ENDRIN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39410
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	HEPTACHLOR, TOTAL, UG/L		
Constituent Name:	HEPTCHLR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39420
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	HEPTACHLOR EPOXIDE, TOTAL, UG/L		
Constituent Name:	HPCHLREP	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39700
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROBENZENE (HCB), TOTAL, UG/L		
Constituent Name:	HCB	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39702
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROBUTADIENE, TOTAL, UG/L		
Constituent Name:	HEXCLORO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	46323
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	DELTA-BHC, TOTAL, UG/L		
Constituent Name:	D - BHC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51002
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,6-DINITRO-2-CRESOL, TOTAL, UG/L		
Constituent Name:	26DINITR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51003
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BUTYLBENZYL PHTHALATE, TOTAL, UG/L		
Constituent Name:	BUTYLBEN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51004
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIBENZO (A,H) ANTHRACENE, TOTAL, UG/L		
Constituent Name:	DIBENZO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51008
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	4,6-DINITRO-2-CRESOL IN WHOLE WATER, (UG/L)		
Constituent Name:	4,6DNTRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	60036
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	3-METHYL-4-CHLOROPHENOL IN WHOLE WATER, UG/L		
Constituent Name:	3METHYL4	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	60037
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	4-CHLOROANILINE IN WHOLE WATER, UG/L		
Constituent Name:	4-CHLORO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	60038
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	TOTAL NITROANALINES IN WHOLE WATER, UG/L		
Constituent Name:	TTL NTRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	71870
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	0.08	Confidence (+ or -):	Not Reported
Storet Code Description:	BROMIDE, DISSOLVED, (MG/L AS BR)		
Constituent Name:	BROMIDE	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	71890
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	0.13	Confidence (+ or -):	Not Reported
Storet Code Description:	MERCURY, DISSOLVED (UG/L AS HG)		
Constituent Name:	MERCURY	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	77045
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	PYRIDINE, TOTAL, UG/L		
Constituent Name:	PYRIDINE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	77089
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ANILINE IN WHOLE WATER, UG/L		
Constituent Name:	ANILINE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	77147
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZYL ALCOHOL IN WHOLE WATER, UG/L		
Constituent Name:	BNZYLALC	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	77152
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	O-CRESOL IN WHOLE WATER, UG/L		
Constituent Name:	O-CRESOL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	77247
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZOIC ACID IN WHOLE WATER, UG/L		
Constituent Name:	BNZOICA	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	77416
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2-METHYLNAPHTHALENE IN WHOLE WATER, UG/L		
Constituent Name:	2MNAPTHA	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	77687
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4,5-TRICHLOROPHENOL IN WHOLE WATER, UG/L		
Constituent Name:	245TCLPH	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	77734
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2,4,5-TETRACHLOROBENZENE IN WHOLE WATER, UG/L		
Constituent Name:	1245TCLB	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	77903
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS(2-ETHYLHEXYL) ADIPATE IN WHOLE WATER, UG/L		
Constituent Name:	B(2EH)AD	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	77966
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	CHLOROPHENOL, TOTAL, UG/L		
Constituent Name:	CHLORO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	78200
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIETHYLAMINE IN WHOLE WATER, UG/L		
Constituent Name:	NDEA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	78207
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIBUTYLAMINE IN WHOLE WATER, UG/L		
Constituent Name:	NDBA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	79778
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	CRESOL, M- & P-, TOTAL (UG/L)		
Constituent Name:	CRESOL-	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	81302
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIBENZOFURAN IN WHOLE WATER, UG/L		
Constituent Name:	DIBENZO	Unit of Measurement:	UG/L

Remarks:

Owners well 14.

A4
SE
1/4 - 1/2 Mile
Lower

TX WELLS **B5353907**

Well Number:	5353907		
Owner:	Terrell County WCID #1		
Driller:	Not Reported		
Basin:	Rio Grande		
Accuracy of Coordinates:	Accurate to +/- 1 second		
Latitude:	1022459	Longitude:	300844
Info Source:	Texas Water Development Board	Previous Well Number:	5R
FIPS County Code:	443	County:	Terrell
Zone:	2	Region Number:	2
Aquifer Code:	218EDDT	Users Code Economics:	766800
Ground Elevation AMSL:	2860	Elevation Method:	Interpolated from topographic maps
Date Drilled:	Not Reported	Well Type:	Withdrawal of Water
Well Depth (ft):	835	Source of Depth Data:	Person other than owner,driller or other agency
Type of Lift:	Submersible Pump	Type of Power:	Not Reported
Horsepower:	Not Reported	Tertiary Water Use:	Not Reported
Primary Water Use:	Public Supply	Secondary Water Use:	Not Reported
Well Schedule in file:	Yes	Construction Method:	Not Reported
Method of Finish:	Not Reported	Lithological Log Type:	Not Reported
Casing Material:	Steel	Screen Material:	Not Reported
Lithological Interpreter:	Not Reported	Interpretation Date:	Not Reported
Qlty Analysis Available:	No	Level Data Available:	No water-level available
Data Collection Date:	10061994	Reporting Agency:	Texas Water Development Board
Water Logs Available:	Not Reported		
Other Data Available:	Not Reported		
Aquifer:	EDWARDS AND ASSOCIATED LIMESTONES,AND TRINITY GROUP		

Remarks:

Owners well 15.

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
B5 **WSW** **1/4 - 1/2 Mile** **Higher**	**TX WELLS**	**B5353805**

Well Number:	5353805		
Owner:	Terrell County WCID #1		
Driller:	Magill Well Service		
Basin:	Rio Grande		
Accuracy of Coordinates:	Accurate to +/- 1 second		
Latitude:	1022542	Longitude:	300847
Info Source:	Texas Water Development Board	Previous Well Number:	Not Reported
FIPS County Code:	443	County:	Terrell
Zone:	2	Region Number:	2
Aquifer Code:	218EDDT	Users Code Economics:	766800
Ground Elevation AMSL:	2850	Elevation Method:	Interpolated from topographic maps
Date Drilled:	1977	Well Type:	Withdrawal of Water
Well Depth (ft):	530	Source of Depth Data:	Not Reported
Type of Lift:	Submersible Pump	Type of Power:	Not Reported
Horsepower:	5.00	Tertiary Water Use:	Not Reported
Primary Water Use:	Public Supply	Secondary Water Use:	Not Reported
Well Schedule in file:	Yes	Construction Method:	Not Reported
Method of Finish:	Not Reported	Lithological Log Type:	Not Reported
Casing Material:	Not Reported	Screen Material:	Not Reported
Lithological Interpreter:	Not Reported	Interpretation Date:	Not Reported
Qlty Analysis Available:	No	Level Data Available:	No water-level available
Data Collection Date:	Not Reported	Reporting Agency:	Not Reported
Water Logs Available:	Not Reported		
Other Data Available:	Not Reported		
Aquifer:	EDWARDS AND ASSOCIATED LIMESTONES,AND TRINITY GROUP		

Remarks:

Owner's well No.12. Pump installed 1978. Slotted 430 to 530 feet.
PUmp set at 510 feet. Pumped 20 gal/min.

	Database	EDR ID Number
B6 **WSW** **1/2 - 1 Mile** **Higher**	**TX WELLS**	**B5353806**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Well Number:	5353806		
Owner:	Terrell County WCID #1		
Driller:	Not Reported		
Basin:	Rio Grande		
Accuracy of Coordinates:	Accurate to +/- 1 second		
Latitude:	1022551	Longitude:	300845
Info Source:	Texas Water Development Board	Previous Well Number:	Not Reported
FIPS County Code:	443	County:	Terrell
Zone:	2	Region Number:	2
Aquifer Code:	218EDDT	Users Code Economics:	766800
Ground Elevation AMSL:	2880	Elevation Method:	Interpolated from topographic maps
Date Drilled:	Not Reported	Well Type:	Withdrawal of Water
Well Depth (ft):	540	Source of Depth Data:	Person other than owner,driller or other agency
Type of Lift:	Submersible Pump	Type of Power:	Not Reported
Horsepower:	Not Reported	Tertiary Water Use:	Not Reported
Primary Water Use:	Public Supply	Secondary Water Use:	Not Reported
Well Schedule in file:	Yes	Construction Method:	Not Reported
Method of Finish:	Not Reported	Lithological Log Type:	Not Reported
Casing Material:	Steel	Screen Material:	Not Reported
Lithological Interpreter:	Not Reported	Interpretation Date:	Not Reported
Qlty Analysis Available:	Yes	Level Data Available:	No water-level available
Data Collection Date:	05241994	Reporting Agency:	Texas Water Development Board
Water Logs Available:	Not Reported		
Other Data Available:	Not Reported		
Aquifer:	EDWARDS AND ASSOCIATED LIMESTONES,AND TRINITY GROUP		

Water Quality Information::

Sample Number:	Not Reported	Sample Date:	5/24/1994 1130
Temperature (C):	26	Sampled Aquifer Code:	Not Reported
Top of sampled interval:	Not Reported	Bottom of sampled interval:	Not Reported
Balanced/unbal Analysis:	Balanced	Collection Agency:	TWDB and Predecessor Agencies
Silica Flag:	Not Reported	Silica MGL:	16.0
Calcium Flag:	Not Reported	Calcium MGL:	57.0
Magnesium Flag:	1	Magnesium MGL:	Not Reported
Sodium Flag:	Not Reported	Sodium MGL:	11.0
Potassium Flag:	Not Reported	Potassium MGL:	1.6
Strontium Flag:	Not Reported	Strontium MGL:	0.54
Carbonate MGL:	0.0	Bicarbonate MGL:	228.2
Sulfate Flag:	Not Reported	Sulfate MGL:	18.0
Chloride Flag:	Not Reported	Chloride MGL:	15.0
Fluoride Flag:	Not Reported	Fluoride MGL:	0.68
Nitrate Flag:	Not Reported	Nitrate Flag:	9.34
pH Flag:	Not Reported	pH:	7.16
Total Dissolved Fluids:	Not Reported	Total Hardness:	216
Phenol Alkalinity:	0.0	Total Alkalinity:	187.0
SAR:	0.33	RSC:	0.0
Specific Conductance:	434	Spec. Conductance Flag:	Not Reported
Percent Sodium:	9		
Collection Remark:	Not Reported		
Reliability Remark:	Sample in accordance with the TWDB's (A Field Manual for Ground-Water Sampling, 1990). Samples are collected when temperature, conductivity, and pH have stabilized. The sample was filtered and field tested for alkalinity. Samples are preserved as applicable, kept chilled, and delivered to the lab. Holding times are honored. Organic sub-samples are not filtered.		
Lab Name:	Texas Department of Health		

Infrequent Constituent Information::

Sample Number:	1	Storet Number:	00010
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	26.5	Confidence (+ or -):	Not Reported
Storet Code Description:	TEMPERATURE, WATER (CELCIUS)		
Constituent Name:	WATER	Unit of Measurement:	C

Sample Number:	1	Storet Number:	00090
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	170.7	Confidence (+ or -):	Not Reported
Storet Code Description:	OXIDATION REDUCTION POTENTIAL (ORP), MILLIVOLTS		
Constituent Name:	REDOX	Unit of Measurement:	MV

Sample Number:	1	Storet Number:	00608
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	0.02	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROGEN, AMMONIA, DISSOLVED (MG/L AS N)		
Constituent Name:	NH3-N	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	00613
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	0.01	Confidence (+ or -):	Not Reported
Storet Code Description:	NITRITE NITROGEN, DISSOLVED (MG/L AS N)		
Constituent Name:	NO2-N	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	00618
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	2.11	Confidence (+ or -):	Not Reported
Storet Code Description:	NITRATE NITROGEN, DISSOLVED (MG/L AS N)		
Constituent Name:	NO3-N	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	00623
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	0.1	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROGEN, KJELDAHL, DISSOLVED (MG/L AS N)		
Constituent Name:	KJELDL	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	01000
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	4.	Confidence (+ or -):	Not Reported
Storet Code Description:	ARSENIC, DISSOLVED (UG/L AS AS)		
Constituent Name:	ARSENIC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01005
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	84.9	Confidence (+ or -):	Not Reported
Storet Code Description:	BARIUM, DISSOLVED (UG/L AS BA)		
Constituent Name:	BARIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01020
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	110.	Confidence (+ or -):	Not Reported
Storet Code Description:	BORON, DISSOLVED (UG/L AS B)		
Constituent Name:	BORON	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01025
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	.5	Confidence (+ or -):	Not Reported
Storet Code Description:	CADMIUM, DISSOLVED (UG/L AS CD)		
Constituent Name:	CADMIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01030
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	10.0	Confidence (+ or -):	Not Reported
Storet Code Description:	CHROMIUM, DISSOLVED (UG/L AS CR)		
Constituent Name:	CHROMIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01040
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	4.	Confidence (+ or -):	Not Reported
Storet Code Description:	COPPER, DISSOLVED (UG/L AS CU)		
Constituent Name:	COPPER	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01046
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	10.0	Confidence (+ or -):	Not Reported
Storet Code Description:	IRON, DISSOLVED (UG/L AS FE)		
Constituent Name:	IRON	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01049
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.0	Confidence (+ or -):	Not Reported
Storet Code Description:	LEAD, DISSOLVED (UG/L AS PB)		
Constituent Name:	LEAD	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01056
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	1.	Confidence (+ or -):	Not Reported
Storet Code Description:	MANGANESE, DISSOLVED (UG/L AS MN)		
Constituent Name:	MANGNESE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01060
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	20.0	Confidence (+ or -):	Not Reported
Storet Code Description:	MOLYBDENUM, DISSOLVED, UG/L		
Constituent Name:	MOLY	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01075
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	10.0	Confidence (+ or -):	Not Reported
Storet Code Description:	SILVER, DISSOLVED (UG/L AS AG)		
Constituent Name:	SILVER	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01085
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	20.0	Confidence (+ or -):	Not Reported
Storet Code Description:	VANADIUM, DISSOLVED (UG/L AS V)		
Constituent Name:	VANADIUM	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01090
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	20.0	Confidence (+ or -):	Not Reported
Storet Code Description:	ZINC, DISSOLVED (UG/L AS ZN)		
Constituent Name:	ZINC	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01106
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	30.	Confidence (+ or -):	Not Reported
Storet Code Description:	ALUMINUM, DISSOLVED (UG/L AS AL)		
Constituent Name:	ALUMINUM	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01145
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	4.0	Confidence (+ or -):	Not Reported
Storet Code Description:	SELENIUM, DISSOLVED (UG/L AS SE)		
Constituent Name:	SELENIUM	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	01503
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	4.4	Confidence (+ or -):	2.2
Storet Code Description:	ALPHA, DISSOLVED, PC/L		
Constituent Name:	ALPHA	Unit of Measurement:	PC/L
Sample Number:	1	Storet Number:	03503
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	6.	Confidence (+ or -):	1.3
Storet Code Description:	BETA, DISSOLVED, PC/L		
Constituent Name:	BETA	Unit of Measurement:	PC/L

Sample Number:	1	Storet Number:	34200
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ACENAPHTHYLENE, TOTAL, UG/L		
Constituent Name:	ACENAPH	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34205
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ACENAPHTHENE, TOTAL, UG/L		
Constituent Name:	ACENAPH	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34220
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ANTHRACENE, TOTAL, UG/L		
Constituent Name:	ANTHRACE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34230
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(B)FLUORANTHENE, TOTAL, UG/L		
Constituent Name:	BENZOBFL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34242
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(K)FLUORANTHENE, TOTAL, UG/L		
Constituent Name:	BENZOKFL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34247
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO-(A)-PYRENE, TOTAL, UG/L		
Constituent Name:	BENZO A	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34253
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	A-BHC-ALPHA, TOTAL, UG/L		
Constituent Name:	ALPHABHC	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34255
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	B-BHC-BETA, TOTAL, UG/L		
Constituent Name:	BHC-BETA	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34273
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS (2-CHLOROETHYL) ETHER, TOTAL, UG/L		
Constituent Name:	BIS 2CLR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34278
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS (2-CHLOROETHOXY) METHANE, TOTAL, UG/L		
Constituent Name:	BIS2CLOR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34283
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS (2-CHLOROISOPROPYL) ETHER, TOTAL, UG/L		
Constituent Name:	BIS2CLRI	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34320
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	CHRYSENE, TOTAL, UG/L		
Constituent Name:	CHRYSENE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34336
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIETHYL PTHALATE, TOTAL, UG/L		
Constituent Name:	DIETHYL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34341
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIMETHYL PTHALATE, TOTAL, UG/L		
Constituent Name:	DIMETHYL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34346
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2-DIPHENYLHYDRAZINE, TOTAL, UG/L		
Constituent Name:	12DIPHEN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34351
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDOSULFAN SULFATE, TOTAL, UG/L		
Constituent Name:	ENDSULSF	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34356
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDOSULFAN - BETA, TOTAL, UG/L		
Constituent Name:	ENDOSULF	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34361
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDOSULFAN - ALPHA, TOTAL, UG/L		
Constituent Name:	ENDOSULF	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34366
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDRIN ALDEHYDE, TOTAL, UG/L		
Constituent Name:	ENDRIN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34376
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	FLUORANTHENE, TOTAL, UG/L		
Constituent Name:	FLUORAN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34381
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	FLUORENE, TOTAL, UG/L		
Constituent Name:	FLUORENE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34386
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROCYCLOPENTADIENE, TOTAL, UG/L		
Constituent Name:	HEXCLORC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34396
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROETHANE, TOTAL, UG/L		
Constituent Name:	HEXCHLOR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34403
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	INDENO (1,2,3-CD) PYRENE		
Constituent Name:	INDENO-	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34408
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ISOPHORONE, TOTAL, UG/L		
Constituent Name:	ISOPHOR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34428
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSO-DI-N-PROPYLAMINE, TOTAL, UG/L		
Constituent Name:	NITRODIN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34433
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIPHENYLAMINE, TOTAL, UG/L		
Constituent Name:	N-NITRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34438
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIMETHLAMINE, TOTAL, UG/L		
Constituent Name:	N-NITRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34447
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROBENZENE, TOTAL, UG/L		
Constituent Name:	NITROBEN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34461
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	PHENANTHRENE, TOTAL, UG/L		
Constituent Name:	PHENANTH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34469
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	PYRENE, TOTAL, UG/L		
Constituent Name:	PYRENE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34521
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(GHI)PERYLENE, TOTAL, UG/L		
Constituent Name:	BENZO-GH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34527
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(A) ANTHRACENE, TOTAL, UG/L		
Constituent Name:	BENZO A	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34536
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2-DICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	12DICLRO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34551
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2,4-TRICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	124TRICL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34566
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,3-DICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	13DICHLO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34571
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,4-DICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	14DICHLO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34581
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2-CHLORONAPHTHALENE, TOTAL, UG/L		
Constituent Name:	2CLORONA	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34591
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2-NITROPHENOL, TOTAL, UG/L		
Constituent Name:	2-NITRO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34596
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DI-N-OCTYL PHTHALATE, TOTAL, UG/L		
Constituent Name:	DINOCTYL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34601
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DICHLOROPHENOL, TOTAL, UG/L		
Constituent Name:	24DICLOR	Unit of Measurement:	UGl
Sample Number:	1	Storet Number:	34606
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DIMETHYLPHENOL, TOTAL, UG/L		
Constituent Name:	24DIMETH	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34611
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DINITROTOLUENE, TOTAL, UG/L		
Constituent Name:	24DINITR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34616
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DINITROPHENOL, TOTAL, UG/L		
Constituent Name:	24DINITR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34621
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4,6-TRICHLOROPHENOL, TOTAL, UG/L		
Constituent Name:	246TRICL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34626
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2,6-DINITROTOLUENE, TOTAL, UG/L		
Constituent Name:	26DINITR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34631
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	3,3'-DICHLOROBENZIDINE, TOTAL, UG/L		
Constituent Name:	33DICLOR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34636
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	4-BROMOPHENYL PHENYL ETHER, TOTAL, UG/L		
Constituent Name:	4BROMPHN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34641
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	4-CHLOROPHENYL PHENYL ETHER, TOTAL, UG/L		
Constituent Name:	4CHLPHEN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34646
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	4-NITROPHENOL, TOTAL, UG/L		
Constituent Name:	4-NITRO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34694
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	PHENOL, TOTAL, UG/L		
Constituent Name:	PHENOL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34696
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	NAPHTHALENE, TOTAL, UG/L		
Constituent Name:	NAPHTHAL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39032
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	PENTACHLOROPHENOL (PCP), TOTAL, UG/L		
Constituent Name:	PCP	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39086
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	190.0	Confidence (+ or -):	Not Reported
Storet Code Description:	ALKALINITY, FIELD, DISSOLVED AS CACO3		
Constituent Name:	ALKLNITY	Unit of Measurement:	MG/L
Sample Number:	1	Storet Number:	39100
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS(2-ETHYLHEXYL) PHTHALATE, TOTAL, UG/L		
Constituent Name:	BIS2ETHL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39110
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DI-N-BUTYL PHTHALATE, TOTAL, UG/L		
Constituent Name:	DINBUTYL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39120
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZIDINE, TOTAL, UG/L		
Constituent Name:	BENZIDIN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39300
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	P,P' DDT IN WHOLE WATER SAMPLE (UG/L)		
Constituent Name:	P,P'DDT	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39310
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	P,P' DDD IN WHOLE WATER SAMPLE (UG/L)		
Constituent Name:	P,P'DDD	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39320
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	P,P' DDE IN WHOLE WATER SAMPLE (UG/L)		
Constituent Name:	P,P'DDE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39330
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	ALDRIN, TOTAL, UG/L		
Constituent Name:	ALDRIN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39340
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	GAMMA-BHC (LINDANE), TOTAL, UG/L		
Constituent Name:	GAMMABHC	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39380
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	DIELDRIN, TOTAL, UG/L		
Constituent Name:	DIELDRIN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39390
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDRIN, TOTAL, UG/L		
Constituent Name:	ENDRIN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39410
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	HEPTACHLOR, TOTAL, UG/L		
Constituent Name:	HEPTCHLR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39420
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	HEPTACHLOR EPOXIDE, TOTAL, UG/L		
Constituent Name:	HPCHLREP	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39700
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROBENZENE (HCB), TOTAL, UG/L		
Constituent Name:	HCB	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39702
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROBUTADIENE, TOTAL, UG/L		
Constituent Name:	HEXCLORO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	46323
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	DELTA-BHC, TOTAL, UG/L		
Constituent Name:	D - BHC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51002
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,6-DINITRO-2-CRESOL, TOTAL, UG/L		
Constituent Name:	26DINITR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51003
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BUTYLBENZYL PHTHALATE, TOTAL, UG/L		
Constituent Name:	BUTYLBEN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51004
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIBENZO (A,H) ANTHRACENE, TOTAL, UG/L		
Constituent Name:	DIBENZO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51008
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	4,6-DINITRO-2-CRESOL IN WHOLE WATER, (UG/L)		
Constituent Name:	4,6DNTRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	60036
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	3-METHYL-4-CHLOROPHENOL IN WHOLE WATER, UG/L		
Constituent Name:	3METHYL4	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	60037
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	4-CHLOROANILINE IN WHOLE WATER, UG/L		
Constituent Name:	4-CHLORO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	60038
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	TOTAL NITROANALINES IN WHOLE WATER, UG/L		
Constituent Name:	TTL NTRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	71870
Sample Flag:	Not Reported	Sample Date:	5/24/1994
Constituent Value:	0.08	Confidence (+ or -):	Not Reported
Storet Code Description:	BROMIDE, DISSOLVED, (MG/L AS BR)		
Constituent Name:	BROMIDE	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	71890
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	0.13	Confidence (+ or -):	Not Reported
Storet Code Description:	MERCURY, DISSOLVED (UG/L AS HG)		
Constituent Name:	MERCURY	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77045
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	PYRIDINE, TOTAL, UG/L		
Constituent Name:	PYRIDINE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77089
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ANILINE IN WHOLE WATER, UG/L		
Constituent Name:	ANILINE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77147
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZYL ALCOHOL IN WHOLE WATER, UG/L		
Constituent Name:	BNZYLALC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77152
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	O-CRESOL IN WHOLE WATER, UG/L		
Constituent Name:	O-CRESOL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77247
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZOIC ACID IN WHOLE WATER, UG/L		
Constituent Name:	BNZOICA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77416
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2-METHYLNAPHTHALENE IN WHOLE WATER, UG/L		
Constituent Name:	2MNAPTHA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77687
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4,5-TRICHLOROPHENOL IN WHOLE WATER, UG/L		
Constituent Name:	245TCLPH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77734
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2,4,5-TETRACHLOROBENZENE IN WHOLE WATER, UG/L		
Constituent Name:	1245TCLB	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77903
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS(2-ETHYLHEXYL) ADIPATE IN WHOLE WATER, UG/L		
Constituent Name:	B(2EH)AD	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77966
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	CHLOROPHENOL, TOTAL, UG/L		
Constituent Name:	CHLORO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	78200
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIETHYLAMINE IN WHOLE WATER, UG/L		
Constituent Name:	NDEA	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	78207
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIBUTYLAMINE IN WHOLE WATER, UG/L		
Constituent Name:	NDBA	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	79778
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	CRESOL, M- & P-, TOTAL (UG/L)		
Constituent Name:	CRESOL-	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	81302
Sample Flag:	<	Sample Date:	5/24/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIBENZOFURAN IN WHOLE WATER, UG/L		
Constituent Name:	DIBENZO	Unit of Measurement:	UG/L

Remarks:

Owners well 13.

C7
ENE
1/2 - 1 Mile
Higher

TX WELLS **B5353902**

Well Number:	5353902		
Owner:	Terrell County WCID #1		
Driller:	Not Reported		
Basin:	Rio Grande		
Accuracy of Coordinates:	Accurate to +/- 1 second		
Latitude:	1022431	Longitude:	300906
Info Source:	Texas Water Development Board	Previous Well Number:	Not Reported
FIPS County Code:	443	County:	Terrell
Zone:	2	Region Number:	2
Aquifer Code:	218EDDT	Users Code Economics:	766800
Ground Elevation AMSL:	2857	Elevation Method:	Interpolated from topographic maps
Date Drilled:	Not Reported	Well Type:	Withdrawal of Water
Well Depth (ft):	Not Reported	Source of Depth Data:	Not Reported
Type of Lift:	Submersible Pump	Type of Power:	Not Reported
Horsepower:	7.50	Tertiary Water Use:	Not Reported
Primary Water Use:	Public Supply	Secondary Water Use:	Not Reported
Well Schedule in file:	Yes	Construction Method:	Not Reported
Method of Finish:	Not Reported	Lithological Log Type:	Not Reported
Casing Material:	Not Reported	Screen Material:	Not Reported
Lithological Interpreter:	Not Reported	Interpretation Date:	Not Reported
Qlty Analysis Available:	Yes	Level Data Available:	No water-level available
Data Collection Date:	05171994	Reporting Agency:	Texas Water Development Board
Water Logs Available:	Not Reported		
Other Data Available:	Not Reported		
Aquifer:	EDWARDS AND ASSOCIATED LIMESTONES,AND TRINITY GROUP		

Water Quality Information::

Sample Number:	Not Reported	Sample Date:	5/17/1994 1205
Temperature (C):	25	Sampled Aquifer Code:	Not Reported
Top of sampled interval:	Not Reported	Bottom of sampled interval:	Not Reported
Balanced/unbal Analysis:	Balanced	Collection Agency:	TWDB and Predecessor Agencies
Silica Flag:	Not Reported	Silica MGL:	20.0
Calcium Flag:	Not Reported	Calcium MGL:	65.0
Magnesium Flag:	1	Magnesium MGL:	Not Reported
Sodium Flag:	Not Reported	Sodium MGL:	10.0
Potassium Flag:	Not Reported	Potassium MGL:	1.6
Strontium Flag:	Not Reported	Strontium MGL:	0.41
Carbonate MGL:	0.0	Bicarbonate MGL:	252.61
Sulfate Flag:	Not Reported	Sulfate MGL:	15.0
Chloride Flag:	Not Reported	Chloride MGL:	14.0
Fluoride Flag:	Not Reported	Fluoride MGL:	0.47
Nitrate Flag:	Not Reported	Nitrate Flag:	22.71
pH Flag:	Not Reported	pH:	7.04
Total Dissolved Fluids:	Not Reported	Total Hardness:	224
Phenol Alkalinity:	0.0	Total Alkalinity:	207.0
SAR:	0.29	RSC:	0.0
Specific Conductance:	458	Spec. Conductance Flag:	Not Reported
Percent Sodium:	8		
Collection Remark:	Not Reported		
Reliability Remark:	Sample in accordance with the TWDB's (A Field Manual for Ground-Water Sampling, 1990). Samples are collected when temperature, conductivity, and pH have stabilized. The sample was filtered and field tested for alkalinity. Samples are preserved as applicable, kept chilled, and delivered to the lab. Holding times are honored. Organic sub-samples are not filtered.		
Lab Name:	Texas Department of Health		

Infrequent Constituent Information::

Sample Number:	1	Storet Number:	00010
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	25.4	Confidence (+ or -):	Not Reported
Storet Code Description:	TEMPERATURE, WATER (CELCIUS)		
Constituent Name:	WATER	Unit of Measurement:	C
Sample Number:	1	Storet Number:	00090
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	137.6	Confidence (+ or -):	Not Reported
Storet Code Description:	OXIDATION REDUCTION POTENTIAL (ORP), MILLIVOLTS		
Constituent Name:	REDOX	Unit of Measurement:	MV
Sample Number:	1	Storet Number:	00608
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	0.01	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROGEN, AMMONIA, DISSOLVED (MG/L AS N)		
Constituent Name:	NH3-N	Unit of Measurement:	MG/L
Sample Number:	1	Storet Number:	00613
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	0.01	Confidence (+ or -):	Not Reported
Storet Code Description:	NITRITE NITROGEN, DISSOLVED (MG/L AS N)		
Constituent Name:	NO2-N	Unit of Measurement:	MG/L
Sample Number:	1	Storet Number:	00618
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	5.13	Confidence (+ or -):	Not Reported
Storet Code Description:	NITRATE NITROGEN, DISSOLVED (MG/L AS N)		
Constituent Name:	NO3-N	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	00623
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	0.1	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROGEN, KJELDAHL, DISSOLVED (MG/L AS N)		
Constituent Name:	KJELDL	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	01000
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	1.1	Confidence (+ or -):	Not Reported
Storet Code Description:	ARSENIC, DISSOLVED (UG/L AS AS)		
Constituent Name:	ARSENIC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01005
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	95.0	Confidence (+ or -):	Not Reported
Storet Code Description:	BARIUM, DISSOLVED (UG/L AS BA)		
Constituent Name:	BARIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01020
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	230.	Confidence (+ or -):	Not Reported
Storet Code Description:	BORON, DISSOLVED (UG/L AS B)		
Constituent Name:	BORON	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01025
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	2.0	Confidence (+ or -):	Not Reported
Storet Code Description:	CADMIUM, DISSOLVED (UG/L AS CD)		
Constituent Name:	CADMIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01030
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	10.0	Confidence (+ or -):	Not Reported
Storet Code Description:	CHROMIUM, DISSOLVED (UG/L AS CR)		
Constituent Name:	CHROMIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01040
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	4.	Confidence (+ or -):	Not Reported
Storet Code Description:	COPPER, DISSOLVED (UG/L AS CU)		
Constituent Name:	COPPER	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01046
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	10.0	Confidence (+ or -):	Not Reported
Storet Code Description:	IRON, DISSOLVED (UG/L AS FE)		
Constituent Name:	IRON	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01049
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.0	Confidence (+ or -):	Not Reported
Storet Code Description:	LEAD, DISSOLVED (UG/L AS PB)		
Constituent Name:	LEAD	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01056
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	2.0	Confidence (+ or -):	Not Reported
Storet Code Description:	MANGANESE, DISSOLVED (UG/L AS MN)		
Constituent Name:	MANGNESE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01060
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	50.	Confidence (+ or -):	Not Reported
Storet Code Description:	MOLYBDENUM, DISSOLVED, UG/L		
Constituent Name:	MOLY	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01075
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	10.0	Confidence (+ or -):	Not Reported
Storet Code Description:	SILVER, DISSOLVED (UG/L AS AG)		
Constituent Name:	SILVER	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01085
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	20.0	Confidence (+ or -):	Not Reported
Storet Code Description:	VANADIUM, DISSOLVED (UG/L AS V)		
Constituent Name:	VANADIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01090
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	25.4	Confidence (+ or -):	Not Reported
Storet Code Description:	ZINC, DISSOLVED (UG/L AS ZN)		
Constituent Name:	ZINC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01106
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	20.0	Confidence (+ or -):	Not Reported
Storet Code Description:	ALUMINUM, DISSOLVED (UG/L AS AL)		
Constituent Name:	ALUMINUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01145
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	4.0	Confidence (+ or -):	Not Reported
Storet Code Description:	SELENIUM, DISSOLVED (UG/L AS SE)		
Constituent Name:	SELENIUM	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01503
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	6.0	Confidence (+ or -):	2.6
Storet Code Description:	ALPHA, DISSOLVED, PC/L		
Constituent Name:	ALPHA	Unit of Measurement:	PC/L

Sample Number:	1	Storet Number:	03503
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	5.2	Confidence (+ or -):	2.0
Storet Code Description:	BETA, DISSOLVED, PC/L		
Constituent Name:	BETA	Unit of Measurement:	PC/L

Sample Number:	1	Storet Number:	34200
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ACENAPHTHYLENE, TOTAL, UG/L		
Constituent Name:	ACENAPH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34205
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ACENAPHTHENE, TOTAL, UG/L		
Constituent Name:	ACENAPH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34220
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ANTHRACENE, TOTAL, UG/L		
Constituent Name:	ANTHRACE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34230
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(B)FLUORANTHENE, TOTAL, UG/L		
Constituent Name:	BENZOBFL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34242
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(K)FLUORANTHENE, TOTAL, UG/L		
Constituent Name:	BENZOKFL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34247
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO-(A)-PYRENE, TOTAL, UG/L		
Constituent Name:	BENZO A	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34253
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	A-BHC-ALPHA, TOTAL, UG/L		
Constituent Name:	ALPHABHC	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34255
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	B-BHC-BETA, TOTAL, UG/L		
Constituent Name:	BHC-BETA	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34273
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS (2-CHLOROETHYL) ETHER, TOTAL, UG/L		
Constituent Name:	BIS 2CLR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34278
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS (2-CHLOROETHOXY) METHANE, TOTAL, UG/L		
Constituent Name:	BIS2CLOR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34283
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS (2-CHLOROISOPROPYL) ETHER, TOTAL, UG/L		
Constituent Name:	BIS2CLRI	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34320
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	CHRYSENE, TOTAL, UG/L		
Constituent Name:	CHRYSENE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34336
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIETHYL PTHALATE, TOTAL, UG/L		
Constituent Name:	DIETHYL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34341
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIMETHYL PTHALATE, TOTAL, UG/L		
Constituent Name:	DIMETHYL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34346
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2-DIPHENYLHYDRAZINE, TOTAL, UG/L		
Constituent Name:	12DIPHEN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34351
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDOSULFAN SULFATE, TOTAL, UG/L		
Constituent Name:	ENDSULSF	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34356
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDOSULFAN - BETA, TOTAL, UG/L		
Constituent Name:	ENDOSULF	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34361
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDOSULFAN - ALPHA, TOTAL, UG/L		
Constituent Name:	ENDOSULF	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34366
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDRIN ALDEHYDE, TOTAL, UG/L		
Constituent Name:	ENDRIN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34376
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	FLUORANTHENE, TOTAL, UG/L		
Constituent Name:	FLUORAN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34381
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	FLUORENE, TOTAL, UG/L		
Constituent Name:	FLUORENE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34386
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROCYCLOPENTADIENE, TOTAL, UG/L		
Constituent Name:	HEXCLORC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34396
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROETHANE, TOTAL, UG/L		
Constituent Name:	HEXCHLOR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34403
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	INDENO (1,2,3-CD) PYRENE		
Constituent Name:	INDENO-	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34408
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ISOPHORONE, TOTAL, UG/L		
Constituent Name:	ISOPHOR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34428
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSO-DI-N-PROPYLAMINE, TOTAL, UG/L		
Constituent Name:	NITRODIN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34433
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIPHENYLAMINE, TOTAL, UG/L		
Constituent Name:	N-NITRO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34438
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIMETHLAMINE, TOTAL, UG/L		
Constituent Name:	N-NITRO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34447
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	NITROBENZENE, TOTAL, UG/L		
Constituent Name:	NITROBEN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34461
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	PHENANTHRENE, TOTAL, UG/L		
Constituent Name:	PHENANTH	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34469
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	PYRENE, TOTAL, UG/L		
Constituent Name:	PYRENE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34521
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(GHI)PERYLENE, TOTAL, UG/L		
Constituent Name:	BENZO-GH	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34527
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZO(A) ANTHRACENE, TOTAL, UG/L		
Constituent Name:	BENZO A	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34536
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2-DICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	12DICLRO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34551
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2,4-TRICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	124TRICL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34566
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,3-DICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	13DICHLO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34571
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,4-DICHLOROBENZENE, TOTAL, UG/L		
Constituent Name:	14DICHLO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34581
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2-CHLORONAPHTHALENE, TOTAL, UG/L		
Constituent Name:	2CLORONA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34591
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2-NITROPHENOL, TOTAL, UG/L		
Constituent Name:	2-NITRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34596
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DI-N-OCTYL PHTHALATE, TOTAL, UG/L		
Constituent Name:	DINOCTYL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34601
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DICHLOROPHENOL, TOTAL, UG/L		
Constituent Name:	24DICLOR	Unit of Measurement:	UGl

Sample Number:	1	Storet Number:	34606
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DIMETHYLPHENOL, TOTAL, UG/L		
Constituent Name:	24DIMETH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34611
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DINITROTOLUENE, TOTAL, UG/L		
Constituent Name:	24DINITR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34616
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4-DINITROPHENOL, TOTAL, UG/L		
Constituent Name:	24DINITR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34621
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4,6-TRICHLOROPHENOL, TOTAL, UG/L		
Constituent Name:	246TRICL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34626
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2,6-DINITROTOLUENE, TOTAL, UG/L		
Constituent Name:	26DINITR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34631
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	3,3'-DICHLOROBENZIDINE, TOTAL, UG/L		
Constituent Name:	33DICLOR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34636
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	4-BROMOPHENYL PHENYL ETHER, TOTAL, UG/L		
Constituent Name:	4BROMPHN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	34641
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	4-CHLOROPHENYL PHENYL ETHER, TOTAL, UG/L		
Constituent Name:	4CHLPHEN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34646
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	4-NITROPHENOL, TOTAL, UG/L		
Constituent Name:	4-NITRO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34694
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	PHENOL, TOTAL, UG/L		
Constituent Name:	PHENOL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	34696
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	NAPHTHALENE, TOTAL, UG/L		
Constituent Name:	NAPHTHAL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39032
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	PENTACHLOROPHENOL (PCP), TOTAL, UG/L		
Constituent Name:	PCP	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39086
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	210	Confidence (+ or -):	Not Reported
Storet Code Description:	ALKALINITY, FIELD, DISSOLVED AS CACO3		
Constituent Name:	ALKLNITY	Unit of Measurement:	MG/L
Sample Number:	1	Storet Number:	39100
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS(2-ETHYLHEXYL) PHTHALATE, TOTAL, UG/L		
Constituent Name:	BIS2ETHL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39110
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DI-N-BUTYL PHTHALATE, TOTAL, UG/L		
Constituent Name:	DINBUTYL	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39120
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZIDINE, TOTAL, UG/L		
Constituent Name:	BENZIDIN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39300
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	P,P' DDT IN WHOLE WATER SAMPLE (UG/L)		
Constituent Name:	P,P'DDT	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39310
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	P,P' DDD IN WHOLE WATER SAMPLE (UG/L)		
Constituent Name:	P,P'DDD	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	39320
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	P,P' DDE IN WHOLE WATER SAMPLE (UG/L)		
Constituent Name:	P,P'DDE	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39330
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	ALDRIN, TOTAL, UG/L		
Constituent Name:	ALDRIN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39340
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	GAMMA-BHC (LINDANE), TOTAL, UG/L		
Constituent Name:	GAMMABHC	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39380
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	DIELDRIN, TOTAL, UG/L		
Constituent Name:	DIELDRIN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39390
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	ENDRIN, TOTAL, UG/L		
Constituent Name:	ENDRIN	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39410
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	HEPTACHLOR, TOTAL, UG/L		
Constituent Name:	HEPTCHLR	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39420
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	HEPTACHLOR EPOXIDE, TOTAL, UG/L		
Constituent Name:	HPCHLREP	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39700
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROBENZENE (HCB), TOTAL, UG/L		
Constituent Name:	HCB	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	39702
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	HEXACHLOROBUTADIENE, TOTAL, UG/L		
Constituent Name:	HEXCLORO	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	46323
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	DELTA-BHC, TOTAL, UG/L		
Constituent Name:	D - BHC	Unit of Measurement:	UG/L
Sample Number:	1	Storet Number:	51002
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,6-DINITRO-2-CRESOL, TOTAL, UG/L		
Constituent Name:	26DINITR	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51003
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BUTYLBENZYL PHTHALATE, TOTAL, UG/L		
Constituent Name:	BUTYLBEN	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51004
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIBENZO (A,H) ANTHRACENE, TOTAL, UG/L		
Constituent Name:	DIBENZO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	51008
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	22.	Confidence (+ or -):	Not Reported
Storet Code Description:	4,6-DINITRO-2-CRESOL IN WHOLE WATER, (UG/L)		
Constituent Name:	4,6DNTRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	60036
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	3-METHYL-4-CHLOROPHENOL IN WHOLE WATER, UG/L		
Constituent Name:	3METHYL4	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	60037
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	4-CHLOROANILINE IN WHOLE WATER, UG/L		
Constituent Name:	4-CHLORO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	60038
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	TOTAL NITROANALINES IN WHOLE WATER, UG/L		
Constituent Name:	TTL NTRO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	71870
Sample Flag:	Not Reported	Sample Date:	5/17/1994
Constituent Value:	0.10	Confidence (+ or -):	Not Reported
Storet Code Description:	BROMIDE, DISSOLVED, (MG/L AS BR)		
Constituent Name:	BROMIDE	Unit of Measurement:	MG/L

Sample Number:	1	Storet Number:	71890
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	0.13	Confidence (+ or -):	Not Reported
Storet Code Description:	MERCURY, DISSOLVED (UG/L AS HG)		
Constituent Name:	MERCURY	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77045
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	PYRIDINE, TOTAL, UG/L		
Constituent Name:	PYRIDINE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77089
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	ANILINE IN WHOLE WATER, UG/L		
Constituent Name:	ANILINE	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77147
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZYL ALCOHOL IN WHOLE WATER, UG/L		
Constituent Name:	BNZYLALC	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77152
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	O-CRESOL IN WHOLE WATER, UG/L		
Constituent Name:	O-CRESOL	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77247
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BENZOIC ACID IN WHOLE WATER, UG/L		
Constituent Name:	BNZOICA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77416
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	2-METHYLNAPHTHALENE IN WHOLE WATER, UG/L		
Constituent Name:	2MNAPTHA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77687
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	2,4,5-TRICHLOROPHENOL IN WHOLE WATER, UG/L		
Constituent Name:	245TCLPH	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77734
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	1,2,4,5-TETRACHLOROBENZENE IN WHOLE WATER, UG/L		
Constituent Name:	1245TCLB	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77903
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	BIS(2-ETHYLHEXYL) ADIPATE IN WHOLE WATER, UG/L		
Constituent Name:	B(2EH)AD	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	77966
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	11.	Confidence (+ or -):	Not Reported
Storet Code Description:	CHLOROPHENOL, TOTAL, UG/L		
Constituent Name:	CHLORO	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	78200
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIETHYLAMINE IN WHOLE WATER, UG/L		
Constituent Name:	NDEA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	78207
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	N-NITROSODIBUTYLAMINE IN WHOLE WATER, UG/L		
Constituent Name:	NDBA	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	79778
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	CRESOL, M- & P-, TOTAL (UG/L)		
Constituent Name:	CRESOL-	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	81302
Sample Flag:	<	Sample Date:	5/17/1994
Constituent Value:	5.5	Confidence (+ or -):	Not Reported
Storet Code Description:	DIBENZOFURAN IN WHOLE WATER, UG/L		
Constituent Name:	DIBENZO	Unit of Measurement:	UG/L

Remarks:

Owner's well No.7. Pump installed 1973.

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
C8		
ENE	**TX WELLS**	**B5353901**
1/2 - 1 Mile		
Higher		

Well Number:	5353901		
Owner:	Terrell County WCID #1		
Driller:	Not Reported		
Basin:	Rio Grande		
Accuracy of Coordinates:	Accurate to +/- 1 second		
Latitude:	1022431	Longitude:	300911
Info Source:	Texas Water Development Board	Previous Well Number:	Not Reported
FIPS County Code:	443	County:	Terrell
Zone:	2	Region Number:	2
Aquifer Code:	218EDDT	Users Code Economics:	766800
Ground Elevation AMSL:	2848	Elevation Method:	Interpolated from topographic maps
Date Drilled:	Not Reported	Well Type:	Withdrawal of Water
Well Depth (ft):	840	Source of Depth Data:	Not Reported
Type of Lift:	Piston	Type of Power:	Not Reported
Horsepower:	Not Reported	Tertiary Water Use:	Not Reported
Primary Water Use:	Public Supply	Secondary Water Use:	Not Reported
Well Schedule in file:	Yes	Construction Method:	Not Reported
Method of Finish:	Not Reported	Lithological Log Type:	Not Reported
Casing Material:	Not Reported	Screen Material:	Not Reported
Lithological Interpreter:	Not Reported	Interpretation Date:	Not Reported
Qlty Analysis Available:	Yes	Level Data Available:	Miscellaneous water-level measurements
Data Collection Date:	Not Reported	Reporting Agency:	Not Reported
Water Logs Available:	Not Reported		
Other Data Available:	Not Reported		
Aquifer:	EDWARDS AND ASSOCIATED LIMESTONES,AND TRINITY GROUP		

Water Quality Information::

Sample Number:	Not Reported	Sample Date:	5/6/1955
Temperature (C):	Not Reported	Sampled Aquifer Code:	Not Reported
Top of sampled interval:	Not Reported	Bottom of sampled interval:	Not Reported
Balanced/unbal Analysis:	Balanced	Collection Agency:	Texas Department of Health
Silica Flag:	Not Reported	Silica MGL:	Not Reported
Calcium Flag:	Not Reported	Calcium MGL:	64.0
Magnesium Flag:	1	Magnesium MGL:	Not Reported
Sodium Flag:	Not Reported	Sodium MGL:	15.0
Potassium Flag:	Not Reported	Potassium MGL:	Not Reported
Strontium Flag:	Not Reported	Strontium MGL:	Not Reported
Carbonate MGL:	0.0	Bicarbonate MGL:	244.0
Sulfate Flag:	Not Reported	Sulfate MGL:	18.0
Chloride Flag:	Not Reported	Chloride MGL:	18.0
Fluoride Flag:	Not Reported	Fluoride MGL:	0.3
Nitrate Flag:	Not Reported	Nitrate Flag:	13.0
pH Flag:	Not Reported	pH:	7.0
Total Dissolved Fluids:	Not Reported	Total Hardness:	222
Phenol Alkalinity:	0.0	Total Alkalinity:	200.0
SAR:	0.44	RSC:	0.0
Specific Conductance:	Not Reported	Spec. Conductance Flag:	Not Reported
Percent Sodium:	12		
Collection Remark:	FROM TDH FILES		
Reliability Remark:	RELIABILITY UNKNOWN, NOT AVAILABLE, OR NOT YET ENTERED INTO DATABASE		
Lab Name:	Texas Department of Health		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Number:	Not Reported	Sample Date:	5/15/1973
Temperature (C):	23	Sampled Aquifer Code:	Not Reported
Top of sampled interval:	Not Reported	Bottom of sampled interval:	Not Reported
Balanced/unbal Analysis:	Balanced	Collection Agency:	Not Reported
Silica Flag:	Not Reported	Silica MGL:	19.0
Calcium Flag:	Not Reported	Calcium MGL:	64.0
Magnesium Flag:	1	Magnesium MGL:	Not Reported
Sodium Flag:	Not Reported	Sodium MGL:	10.0
Potassium Flag:	Not Reported	Potassium MGL:	Not Reported
Strontium Flag:	Not Reported	Strontium MGL:	Not Reported
Carbonate MGL:	0.0	Bicarbonate MGL:	250.0
Sulfate Flag:	Not Reported	Sulfate MGL:	12.0
Chloride Flag:	Not Reported	Chloride MGL:	11.0
Fluoride Flag:	Not Reported	Fluoride MGL:	0.5
Nitrate Flag:	Not Reported	Nitrate Flag:	13.0
pH Flag:	Not Reported	pH:	7.6
Total Dissolved Fluids:	Not Reported	Total Hardness:	225
Phenol Alkalinity:	0.0	Total Alkalinity:	205.0
SAR:	0.29	RSC:	0.0
Specific Conductance:	447	Spec. Conductance Flag:	Not Reported
Percent Sodium:	8		
Collection Remark:	Not Reported		
Reliability Remark:	RELIABILITY UNKNOWN, NOT AVAILABLE, OR NOT YET ENTERED INTO DATABASE		
Lab Name:	Not Reported		

Sample Number:	Not Reported	Sample Date:	7/10/1979
Temperature (C):	24	Sampled Aquifer Code:	Not Reported
Top of sampled interval:	Not Reported	Bottom of sampled interval:	Not Reported
Balanced/unbal Analysis:	Balanced	Collection Agency:	Not Reported
Silica Flag:	Not Reported	Silica MGL:	21.0
Calcium Flag:	Not Reported	Calcium MGL:	65.0
Magnesium Flag:	1	Magnesium MGL:	Not Reported
Sodium Flag:	Not Reported	Sodium MGL:	10.0
Potassium Flag:	Not Reported	Potassium MGL:	Not Reported
Strontium Flag:	Not Reported	Strontium MGL:	Not Reported
Carbonate MGL:	0.0	Bicarbonate MGL:	253.0
Sulfate Flag:	Not Reported	Sulfate MGL:	16.0
Chloride Flag:	Not Reported	Chloride MGL:	13.0
Fluoride Flag:	Not Reported	Fluoride MGL:	0.5
Nitrate Flag:	Not Reported	Nitrate Flag:	13.6
pH Flag:	Not Reported	pH:	7.8
Total Dissolved Fluids:	Not Reported	Total Hardness:	228
Phenol Alkalinity:	0.0	Total Alkalinity:	207.0
SAR:	0.29	RSC:	0.0
Specific Conductance:	445	Spec. Conductance Flag:	Not Reported
Percent Sodium:	8		
Collection Remark:	Not Reported		
Reliability Remark:	RELIABILITY UNKNOWN, NOT AVAILABLE, OR NOT YET ENTERED INTO DATABASE		
Lab Name:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Number:	Not Reported	Sample Date:	5/1/1985
Temperature (C):	24	Sampled Aquifer Code:	Not Reported
Top of sampled interval:	Not Reported	Bottom of sampled interval:	Not Reported
Balanced/unbal Analysis:	Balanced	Collection Agency:	Not Reported
Silica Flag:	Not Reported	Silica MGL:	21.0
Calcium Flag:	Not Reported	Calcium MGL:	69.0
Magnesium Flag:	1	Magnesium MGL:	Not Reported
Sodium Flag:	Not Reported	Sodium MGL:	11.0
Potassium Flag:	Not Reported	Potassium MGL:	0.1
Strontium Flag:	Not Reported	Strontium MGL:	Not Reported
Carbonate MGL:	0.0	Bicarbonate MGL:	250.0
Sulfate Flag:	Not Reported	Sulfate MGL:	15.0
Chloride Flag:	Not Reported	Chloride MGL:	13.0
Fluoride Flag:	Not Reported	Fluoride MGL:	0.5
Nitrate Flag:	Not Reported	Nitrate Flag:	15.77
pH Flag:	Not Reported	pH:	7.7
Total Dissolved Fluids:	Not Reported	Total Hardness:	223
Phenol Alkalinity:	0.0	Total Alkalinity:	205.0
SAR:	0.32	RSC:	0.0
Specific Conductance:	500	Spec. Conductance Flag:	Not Reported
Percent Sodium:	9		
Collection Remark:	Not Reported		
Reliability Remark:	RELIABILITY UNKNOWN, NOT AVAILABLE, OR NOT YET ENTERED INTO DATABASE		
Lab Name:	Not Reported		

Water Level Information::

Measurement Number:	01		
Depth from land surface:	-400.0	Measurement Date:	1//1940
Visit Mark:	Publishable - water-level is indicative of aquifer's piezometric surface		
Measurement Method:	Not Reported	Measuring Agency:	Not Reported
Remark:	MEASUREMENT GOOD. NO UNUSUAL CONDITIONS NOTED AT OR NEAR WELL SITE		

Measurement Number:	01		
Depth from land surface:	-356.4	Measurement Date:	5/15/1973
Visit Mark:	Publishable - water-level is indicative of aquifer's piezometric surface		
Measurement Method:	Not Reported	Measuring Agency:	Not Reported
Remark:	MEASUREMENT GOOD. NO UNUSUAL CONDITIONS NOTED AT OR NEAR WELL SITE		

Infrequent Constituent Information::

Sample Number:	1	Storet Number:	01045
Sample Flag:	Not Reported	Sample Date:	5/6/1955
Constituent Value:	80.	Confidence (+ or -):	Not Reported
Storet Code Description:	IRON, TOTAL (UG/L AS FE)		
Constituent Name:	IRON	Unit of Measurement:	UG/L

Sample Number:	1	Storet Number:	01055
Sample Flag:	<	Sample Date:	5/6/1955
Constituent Value:	50.	Confidence (+ or -):	Not Reported
Storet Code Description:	MANGANESE, TOTAL (UG/L AS MN)		
Constituent Name:	MANGNESE	Unit of Measurement:	UG/L

Remarks:

Pump set at 480 ft. Temp. 73 degree F. on May 15,1973.Owners well 6.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for TERRELL County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Not Reported

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 1999 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the national Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-260-2805
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-260-2805
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: In November 1971 the United States Geological Survey (USGS) implemented a national water resource information tracking system. This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on more than 900,000 wells, springs, and other sources of groundwater.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STATE RECORDS

Texas Groundwater Database
Source: Texas Water Development Board
Telephone: 512-936-0837

Texas Oil and Gas Wells: Inventory of oil and gas wells in select Texas counties
Source: Texas Railroad Commission

Texas Public Water Supply Database on Ground and Surface Water
Source: Texas Natural Resource Conservation Commission

Texas Harris-Galveston Coastal Subsidence District Water Well Database
Source: Harris-Galveston Coastal Subsidence District

Texas Water Development Board Groundwater Database
Source: Texas Water Development Board
Telephone: 512-936-0833

RADON

Area Radon Information: The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones: Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration