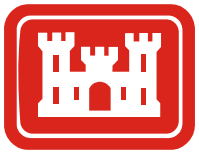
DRAFT
ENVIRONMENTAL ASSESSMENT
KEMPNER WATER SUPPLY CORPORATION EASEMENT
STILLHOUSE HOLLOW RESERVOIR, BELL COUNTY, TEXAS



U.S. Army Corps of Engineers
Fort Worth District

January 2006

DRAFT
FINDING OF NO SIGNIFICANT IMPACT
ENVIRONMENTAL ASSESSMENT FOR KEMPNER WATER SUPPLY CORPORATION EASEMENT
STILLHOUSE HOLLOW RESERVOIR, BELL COUNTY, TEXAS

Description of Action. The United States Army Corps of Engineers (USACE) has assessed potential impacts to the environment that may result from the out granting of USACE property at Stillhouse Hollow Reservoir for the proposed construction of a raw water intake structure and transmission lines needed to serve the Kempner Water Supply Corporation (KWSC). This Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) apply only to the out granting of USACE property in association with KWSC activities. The KWSC's preferred alternative would consist of construction of a raw water intake structure and 8,300 linear feet of 30-inch raw water transmission line. The total area for the proposed 25-foot easement is 4.72 acres. Additionally, the proposed intake structure would occupy 1.00 acres.

Anticipated Environmental Effects. Six alternatives were considered in the EA including the preferred alternative, the development of the Brazos River Authority as a regional provider of wholesale water, receive water supply from Lake Belton through Existing City of Copperas Cove Pipeline or through new transmission mains from the Water Control and Improvement District, purchase additional water from Central Texas Water Supply Corporation, and the no action alternative.

Implementation of the preferred alternative would result in the disturbance of approximately 7.4 acres of USACE property. Construction of the intake structure would impact Waters of the U.S. along the shoreline and bottom of Stillhouse Hollow Reservoir. Other potential disturbances on USACE property would include short-term discharge of dredged or fill material, potential for increased erosion during construction, and potential inputs of small amounts of oil and grease from construction related equipment. Following construction, soils would be protected from erosion and re-vegetated with native grass species. The preferred alternative would not have any significant negative impacts to the existing geology, soils, groundwater, wetlands, flood storage, socioeconomic amenities, or parklands within USACE property. The preferred alternative is not likely to adversely affect plant or animal species that are proposed or listed as threatened or endangered within USACE property. Existing cultural resources sites on USACE property would be avoided. Construction related activities would be closely monitored to ensure protection of unknown cultural resources and karst features. Adverse impacts to Waters of the U.S. located off of USACE property will be addressed by the Regulatory Branch of the USACE under Section 404 of the Clean Water Act.

Based on review of information contained in this EA, it is concluded that the out granting of government lands for the construction of KWSC raw water diversion facilities is not a major Federal action, which would significantly affect the quality of the human environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969, as amended. Therefore, the preparation of an Environmental Impact Statement is not required.

_____ _____

John R. Minahan Date
Colonel, Corps of Engineers
District Engineer

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LIST OF ACRONYMS

ac-ft – acre feet
BRA – Brazos River Authority
CEQ – Council on Environmental Quality
CFR – Code of Federal Regulations
CTWSC – Central Texas Water Supply Corporation
CVES – Cedar Valley Environmental Services
CWA – Clean Water Act
EID – Environmental Information Document
EPA – Environmental Protection Agency
ER – Engineering Regulation
KWSC – Kempner Water Supply Corporation
LUE – living unit equivalent
MG – million gallon
MGD – million gallons per day
mg/l – milligrams per liter
mi. - miles
MSL – mean sea level
NEPA – National Environmental Policy Act
NPDES – National Pollution Discharge Elimination System
NRCS – Natural Resource Conservation Service
NRHP – National Register of Historic Places
NWP – Nationwide Permit
OHWM – Ordinary High Water Mark
SCS – Soil Conservation Service
sq. mi. – square miles
TARL – Texas Archeological Research Laboratory
TCEQ – Texas Commission on Environmental Quality
TDS – total dissolved solids
THC – Texas Historical Commission
TNRIS – Texas Natural Resources Information System
TPWD – Texas Parks and Wildlife Department
USACE – United States Army Corps of Engineers
USDARD – United States Department of Agriculture Rural Development
USEPA – United States Environmental Protection Agency
USFWS – United States Fish and Wildlife Service
USGS – United States Geological Survey
WCID – Water Control and Improvement District

1.0 INTRODUCTION

This Document was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) parts 1500-1508), and Engineering Regulation (ER) 200-2-2. This document evaluates the proposed impacts associated with the Government granting an easement for the proposed construction of a raw water intake on Stillhouse Hollow Reservoir and the associated infrastructure needed to ultimately serve treated water to the customers of Kempner Water Supply Corporation (KWSC) and the City of Lampasas. The potential impacts to the biological, physical, and human environments on United States Army Corps of Engineers property is addressed in this report.

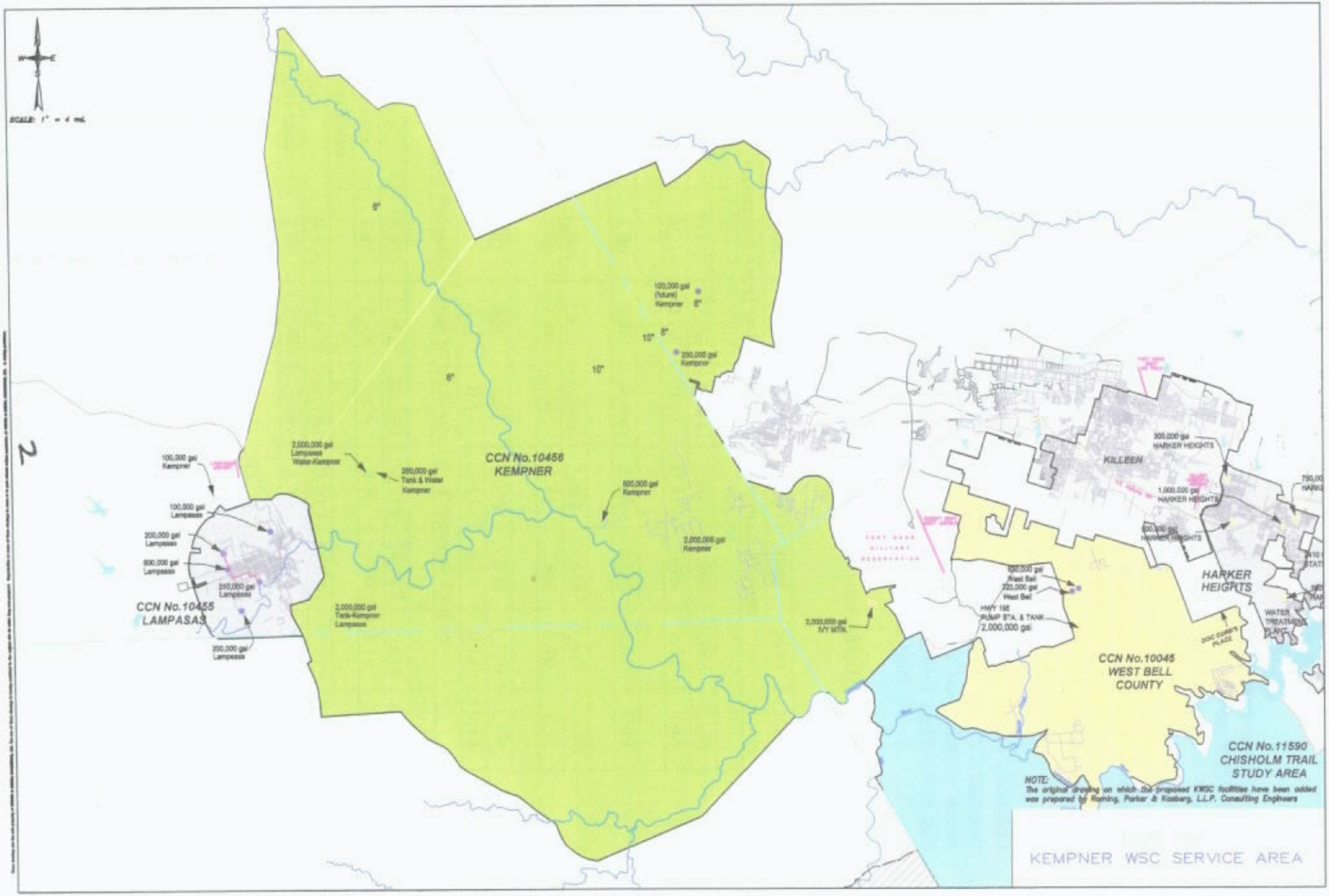
1.1 PURPOSE AND NEED

KWSC has requested an easement on USACE property at Stillhouse Hollow Reservoir for construction of the proposed raw water intake and pipeline. Since all of the property surrounding Stillhouse Hollow Reservoir is in USACE ownership, the intake facility and some portion of the raw water line from the intake to a treatment plant site would be located on USACE property. The portion of the pipeline on the western end of the property is necessary as it saves the construction of approximately three miles of additional pipeline.

The water service area of KWSC covers approximately 198,621 ac. (310 sq. mi.), covering sections of Lampasas, Bell, Coryell, and Burnet Counties. In addition, KWSC also serves the City of Lampasas, whose water service area covers approximately 9,275 acres (14.5 sq. mi.). KWSC currently serves approximately 4,200 residential connections of their own as well as supplying all potable water to the City of Lampasas. Figure 1.1-1 shows the service areas of the entities participating in the proposed project. In 1978, KWSC embarked on a plan to receive all of its water from Central Texas Water Supply Corporation (CTWSC), a wholesale water supply corporation located on the shore of Stillhouse Hollow Reservoir. The City of Lampasas participates in this project as well by contracting with KWSC for additional capacity from CTWSC. Both KWSC and Lampasas entered into contracts with the Brazos River Authority (BRA) to purchase raw water supplies adequate to meet their needs for years to come. In late 1987, the construction of production, storage, and transmission facilities capable of providing KWSC/Lampasas with 6.0 million gallons per day of treated water was completed by CTWSC, and these areas began receiving treated surface water from CTWSC.

CTWSC has had difficulty meeting the contract conditions for providing KWSC and Lampasas with treated surface water. Furthermore, the water supply needs of KWSC and Lampasas have continued to increase to the point where additional treatment capacity is required. Table 1.1-1 summarizes projected growth in population and water demand through the year 2060 for the cities of Kempner, Lometa, and Lampasas. Population growth and water demand projections are also included for Belton and Copperas Cove, as these cities could also be potentially served by the proposed intake structure[1].

[1] 2006 Regional Water Plan. Updated November 2003. Texas Water Development Board. Austin, Texas.


SCALE: 1" = 4 mi.
CCN No.10456
KEMPNER
CCN No.10455
LAMPASAS
CCN No.10045
WEST BELL
COUNTY
CCN No.11590
CHISHOLM TRAIL
STUDY AREA
KILLEEN
HARKER
HEIGHTS
IVY MTN.
NOTE:
The original drawing on which the proposed KMSC facilities have been added was prepared by Reining, Porter & Kosberg, L.L.P. Consulting Engineers
KEMPNER WSC SERVICE AREA

KWSC currently has a direct contract with the BRA for 7,150 acre-feet of raw water per year. Based on an average annual water demand per living unit equivalent (LUE) of 114,540 gallons, including water loss, the supply of raw water under the current BRA contract would supply 20,342 equivalent single-family residential connections. KWSC would continue to receive treated water per its current contract with CTWSC for at least the next 21 years. CTWSC's treatment capacity currently dedicated to KWSC is 2.84 MGD which is adequate to serve 3,287 LUEs. As presented in Table 1.1-1, KWSC requires an additional treated water supply to meet water supply needs in 2010. An initial 4.0 MGD treatment unit would meet this need and provide slightly over 1.0 MGD of excess capacity.

Negotiations between KWSC and CTWSC have been unsuccessful in determining the conditions under which CTWSC would provide the additional capacity needed by KWSC. Therefore, KWSC is forced to seek alternative solutions to their treated water supply needs. As presented in Table 1.1-1, KWSC anticipates that population growth in their service area would require additional treated water capacity to be secured by the end of year 2006.

Table 1.1-1 Population and Average Annual Water Demand (MGD) Projections for Entities Served by the Proposed Intake Structure

Year	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Expected Areas to be Served by Proposed Project							
Kempner							
Population	1,004	1,286	1,584	1,800	1,960	2,065	2,131
Water Demand	0.21	0.27	0.33	0.37	0.40	0.42	0.43
Kempner WSC							
Water Demand	3.00	3.96	4.94	5.85	6.50	7.04	7.49
Lampasas							
Population	6,786	7,010	7,246	7,417	7,544	7,627	7,680
Water Demand	1.09	1.40	1.41	1.41	1.40	1.40	1.38
Lometa							
Population	782	869	961	1,028	1,078	1,110	1,130
Water Demand	0.11	0.12	0.13	0.13	0.14	0.14	0.14
Other Potential Areas to be Served by Proposed Project							
Belton							
Population	14,623	17,633	20,399	22,914	24,617	25,815	26,116
Water Demand	1.96	2.29	2.59	2.86	3.00	3.12	3.16
Copperas Cove							
Population	29,592	34,975	41,186	47,217	51,486	55,212	58,205
Water Demand	2.60	2.90	3.29	3.63	3.86	4.09	4.31

USACE constructed Stillhouse Hollow Reservoir in 1968. The purposes of this reservoir include flood control, recreation, and water supply. The BRA holds water rights to Stillhouse Hollow Reservoir, and sells water from Stillhouse Hollow Reservoir to CTWSC, as well as other entities. The water supply aspects of Stillhouse Hollow Reservoir are discussed in the USACE Final Environmental Impact Statement (FEIS) for the Operations and Maintenance Program at

Stillhouse Hollow Reservoir. This FEIS was published in April 1976 and disclosed the environmental impacts associated with operation of the reservoir for water and supply purposes.[2]

1.2 LOCATION OF THE PROPOSED PROJECT

The location for the proposed KWSC intake and associated facilities on USACE property is on the South bank of Stillhouse Hollow Reservoir near Union Grove Park located in Bell County, Texas. The proposed KWSC raw water pipeline would extend from USACE property to State Hwy. 2484. A water treatment plant would be constructed by KWSC on a yet to be purchased site on private lands adjacent to State Hwy. 2484 within several miles of the proposed intake facility on USACE property. The transmission pipeline from the KWSC water treatment plant would also cross USACE property as it crosses the Lampasas River along a route that parallels Gravel Crossing Road towards Live Oak Cemetery Road. The water needs of Kempner WSC customers and the City of Lampasas beyond that being supplied by CTWSC would be served by the completion of this project. Figure 1.2 shows the project area.

[2] US Army Corps of Engineers, 1976, Final Environmental Statement for the Operations and Maintenance Programs of Whitney Lake, Waco Lake, Proctor Lake, Stillhouse Hollow Dam and Lake, and Somerville Lake Brazos River Basin, Texas. US Army Corps of Engineers, Fort Worth District. Fort Worth, Texas.

Figure 1.2 Project Area

2.0 DESCRIPTION OF ALTERNATIVES

The proposed capital improvement project for KWSC involves the construction of an intake facility on the shores of Stillhouse Hollow Reservoir, a raw water pipeline from the lake to a treatment plant site, a 4.0 MGD initial water treatment plant, a pump station with a 2.0 MG storage tank approximately at the midpoint of the proposed treated water transmission main, and approximately 20.5 miles of 30" transmission main. KWSC has considered various alternatives to meet its near future and future water supply needs. The considered alternatives are described in the following section.

2.1 ALTERNATIVE 1: This alternative would supply KWSC with Water from Stillhouse Hollow Reservoir through the Construction of a Surface Water Intake Structure with Transmission and Treatment Facilities. This alternative would use USACE property to develop sufficient diversion capacity to meet the water supply needs of KWSC, as well as other entities holding water rights to Stillhouse Hollow Reservoir water.

Alternative 1 is the preferred alternative of KWSC. Following the completion of a preliminary engineering feasibility report, KWSC has decided that the most logical approach for acquiring additional treatment capacity is for KWSC to construct and operate their own water treatment facility with adequate pumping, storage and transmission facilities to deliver all future treated water to their customers, including the City of Lampasas.

In the preferred alternative, KWSC is proposing to construct an intake facility on the shores of Stillhouse Hollow Reservoir, a raw water pipeline from the lake to a treatment plant site, a 4.0 MGD initial water treatment plant, a pump station with a 2.0 MG storage tank approximately at the midpoint of the proposed treated water transmission main and approximately 20.5 miles of 30" transmission main that would be connected to the existing distribution system.

The preferred location for the proposed KWSC intake and associated facilities on USACE property is on the South bank of Stillhouse Hollow Reservoir near Union Grove Park. The proposed KWSC raw water pipeline would extend from USACE property to State Hwy. 2484. A water treatment plant Would be constructed by KWSC on a yet to be purchased site on private lands adjacent to State Hwy. 2484 within several miles of the proposed intake facility on USACE property. The transmission pipeline from the KWSC water treatment plant would also cross USACE property as it crosses the Lampasas River along a route that parallels Gravel Crossing Road towards Live Oak Cemetery Road. The water needs of Kempner WSC customers and the City of Lampasas beyond that being supplied by CTWSC would be served by the completion of this project.

Figure 2.1 shows the preferred location of the proposed intake structure and pipeline route on the south shore of Stillhouse Hollow Reservoir. Figure 2.2 shows the preferred route of the proposed pipeline as it crosses USACE property. The proposed pipeline route extends from USACE property to FM 2484, travels west to a power line easement near Gravel Crossing Road where it runs parallel to the easement across the Lampasas River, where it crosses USACE

property for a second time. After exiting USACE property, the proposed pipeline runs along Live Oak Cemetery Road to FM 2484, where it extends to the KWSC service area. The exact route of the proposed pipeline and water treatment plant off USACE property is unknown at the time this environmental information document is submitted.

The majority of the 20 miles of 30" transmission main would be installed in easements on private properties. The preferred pipeline route is adjacent to existing roadways or existing pipeline easements. Therefore, the land surfaces in these areas have already been disturbed and should not pose any unusual or permanent environmental consequences. The water treatment plant site and pump station site are planned for areas which are currently used as pasture.

2.2 ALTERNATIVE 2: This alternative would supply KWSC with water from Lake Belton through the existing City of Copperas Cove Pipeline. This alternative would not use USACE property to develop sufficient diversion capacity to meet the water supply needs of KWSC.

The City of Copperas Cove water service area and KWSC service area adjoin along portions of the eastern side of the KWSC service area. There are transmission mains within the Copperas Cove water transmission system which currently have excess capacity not required by Copperas Cove. Copperas Cove receives its treated water via a water treatment facility located on Lake Belton. This treatment facility is owned and operated by Bell County Water Control & Improvement District (WCID). KWSC has contacted the Brazos River Authority (BRA) and they are willing to allow surface water owned by KWSC in Stillhouse Hollow Reservoir to be withdrawn by WCID from Lake Belton, treated and transmitted to KWSC.

This alternative would have no additional environmental consequences, as the facilities for this alternative are already in place.

The current Copperas Cove excess transmission capacity could be made available for a short time only and would be needed by Copperas Cove within the next several years. Obtaining short-term water capacity from Copperas Cove is not a solution to the long-term problem, as it would only temporarily defer the need for an additional water supply for KWSC and its customers.

2.3 ALTERNATIVE 3: This alternative would supply KWSC with water from Lake Belton through new transmission mains from the Bell County WCID Facility to an adequate receiving point on the KWSC System (Figure 2.3). This alternative would use USACE property to develop sufficient diversion capacity to meet the water supply needs of KWSC.

Similarly to Alternative 2, Alternative 3 is based on allowing surface water owned by KWSC in Stillhouse Hollow Reservoir to be withdrawn by the Bell County WCID from Lake Belton, treated and transmitted to KWSC. However, in this alternative, a new transmission main is constructed from the Bell County WCID intake structure at Lake Belton to an adequate receiving point on the KWSC system. The pipeline size would be 30" and the permanent easement width is 25 feet with an adjacent 20 foot wide temporary construction easement. This alternative is not feasible because the cost to KWSC of constructing new transmission mains from the WCID facility to an adequate receiving point on the KWSC system is deemed to be cost prohibitive.

2.4 ALTERNATIVE 4: This alternative would develop the BRA as a regional provider of wholesale water. This alternative would use USACE property on Stillhouse Hollow to develop sufficient diversion capacity to meet the water supply needs of KWSC.

KWSC has met with the BRA several times to determine the interest of BRA in possibly constructing a treatment and transmission system at Stillhouse Hollow Reservoir such that they become a regional provider of wholesale treated water. The BRA has not responded positively to this request.

This alternative would pose the same environmental consequences as the proposed project, as it would consist of BRA constructing essentially the same facilities as the proposed project in Alternative 1.

2.5 ALTERNATIVE 5: This alternative would be for KWSC to contract with CTWSC to purchase additional water from CTWSC. This alternative would not use USACE property to develop sufficient diversion capacity to meet the water supply needs of KWSC.

KWSC currently receives all of its treated water from CTWSC. In May 2000, KWSC and CTWSC negotiated a new contract to replace the original 1985 contract. KWSC received an additional 1.68 MGD of treatment capacity which would have served the needs of KWSC until the year 2006. The May 2000 contract also required CTWSC to proceed with an expansion program to provide additional treatment plant capacity to KWSC by the summer of 2004.

The CTWSC alternative would require only additional facilities at an existing water treatment plant site and upgrades of pumping equipment at existing pump stations and therefore, would have little or no environmental consequences.

CTWSC and its lender, USDA Rural Development (USDARD) have now placed additional conditions on KWSC which they maintain must be met by KWSC prior to the construction of any new capacity by CTWSC for KWSC. USDARD has also indicated they would not permit KWSC to secure additional water from any entity except CTWSC. KWSC has determined that the new conditions are not economically feasible and could constrain future options for KWSC's current and future customers, including the City of Lampasas.

2.6 ALTERNATIVE 6: No Action. This alternative would not use USACE property to develop sufficient diversion capacity to meet the water supply needs of KWSC.

Under the "No Action" alternative, KWSC would continue to receive all of its water supply from CTWSC according to the terms of the May 2000 contract. The proposed raw water intake structure at Stillhouse Hollow Reservoir, transmission mains, and water treatment facilities would not be constructed. The potential water supply source for KWSC from Stillhouse Hollow Reservoir would not be developed. The main advantage of this alternative would be that no environmental impacts would occur on USACE property at Stillhouse Hollow Reservoir. However, the main disadvantage of the alternative is it would not address the future water supply shortages for KWSC and the City of Lampasas. In particular, the No Action alternative would

not address KWSC's need to develop diversion and raw water transmission capability to meet its needs beyond 2006.

Figure 2.1 : Preferred Location of the Proposed KWSC Intake Structure

Figure 2.2 Preferred Location of the Proposed KWSC Pipeline Route Across USACE Property

SCALE: 1" = 15,000'

FORT HOOD MILITARY RESERVATION

FORT HOOD ARMY AIR FIELD

ROBERT GRAY ARMY AIRFIELD

KILLEEN

KILLEEN MUNICIPAL AIRPORT

U.S. Highway 190

HARKER HEIGHTS

LAKE BELTON

MORGANS POINT RESORT CITY

3,000,000 gal
WCID #1

300,000 gal
HARKER HEIGHTS

1,000,000 gal
HARKER HEIGHTS

750,000 gal
HARKER HEIGHTS

500,000 gal
HARKER HEIGHTS

PROPOSED 30" WATER LINE ALTERNATE 3

1,000,000 gal
C.T.W.S.C.
2 TANKS
100,000 gal
200,000 gal
DOG RIDGE

CCN No.10048
DOG RIDGE

CCN No.11133
BELTON

2410 PUMP STATION

300,000 gal
HARKER HEIGHTS

PROPOSED
1070 B.F.S.
& 1,000,000 gal
STANDPIPE

500,000 gal
Belton

B.R.A WATER
TREATMENT
PLANT

WATER
TREATMENT
PLANT

KWSC
RAW WATER
INTAKE

RAW WATER
INTAKE
STRUC.

30" RAW
WATER LINE

PROP. CTWSC
WATER
TREATMENT
PLANT NO. 3

FUTURE 24" LINE

FUTURE 30" LINE

630,000 gal
West Bell
220,000 gal
West Bell

HWY 195
PUMP STA. & TANK
2,000,000 gal

2,000,000 gal
IVY MTN.

KWSC PUMP
STATION
w/2 MG TANK

30" TREATED
WATER LINE

30" TW LINE

KWSC WATER
TREATMENT
PLANT

DOC CURB'S
PLACE

CCN No.10045
WEST BELL
COUNTY

CCN No.11590
CHISHOLM TRAIL
STUDY AREA

100,000 gal
SALADO

200,000 gal
SALADO

CCN No.11379

NOTE:
The original drawing on which the proposed WSDP facilities have been added was prepared by Deming, Parker & Kasberg, L.L.P. Consulting Engineers

Steger & Bizzell Engineering, Inc.
Consulting Engineers — Surveyors
1978 South Austin Avenue
Georgetown, Texas 78626
Telephone: (512)930-9412 Facsimile (512)930-9416

KEMPNER WATER SUPPLY CORPORATION
Lake Belton to Ivy Mountain Tank Pipeline Route
ALTERNATE 3

Project Number 20323
SCALE 1"=15,000'
Project Path: L:\Land projects 3
Project Name: Kempner Improvements
Drawing Path: L:\...\Kempner Improv. \Option Improvements.dwg
Xref DWG FILE:
Sheet Number 1 of 1 sheets

Figure 2.3 Alternative 1 and 3

3.0 AFFECTED ENVIRONMENT

3.1 REGIONAL SETTING

The World Wildlife Fund defines ecoregions as "relatively large units of land or water containing a distinct assemblage of natural communities and species." Ecoregions are typically characterized by similar geology, soils, vegetation, climate, and plant and animal life. Figure 3.1-1[3] shows a map of the ecoregions in Texas, with Bell County as the focus of this environmental information document. The western half of Bell County is in the Edwards Plateau Ecoregion, while the eastern half of Bell County is in the Blackland Prairie Ecoregion. Stillhouse Hollow Reservoir is located at the interface of these two ecoregions. The Edwards Plateau and Blackland Prairie Ecoregions coincide closely with the Balconian and Texan biotic provinces, respectively, which are characterized by faunal assemblages (shown in Figure 3.1-2[4]). These ecoregions also coincide with the Cross Timbers and Blackland Prairie vegetational areas, characterized by their suites of dominant plant species. USEPA[5] describes the Edwards Plateau Ecoregion as a dissected plateau originally covered by juniper-oak savanna and mesquite-oak savanna trees which serves the primary purpose of grazing livestock. The Blackland Prairie ecoregion is distinguished by its fine textured clay soils and predominantly prairie potential natural vegetation. While this area was once used for cropland, much of the area has now been converted for urban and industrial use.

Although Bell County has a diverse economy, agribusiness is important in eastern portions of Bell County. Agricultural revenue from livestock includes cattle, sheep, turkey, and goats. Agricultural revenue from crops consists of cotton, wheat, corn, oats, and sorghum. Minerals of economic importance include limestone, oil, gas, sand, gravel, and dolomite.[6] Along the IH 35 corridor, urban growth in Bell County is rapidly increasing.

3.1.1 Climate

The climate in Bell County is humid and subtropical, characterized by hot summers. In the winter, frequent surges of Polar Canadian air cause sudden drops in temperature for short durations and add variety to the daily weather. Precipitation is fairly evenly distributed throughout the year, with an average annual rainfall of 33.87 inches. The driest months are July and August, and the wettest months are April and May. Winds are typically from the south, with the strongest prevailing winds occurring in March and April. The growing season averages 260 days a year, with a frost-free period running from March 9 to November 24.[7]

[3] Texas Parks and Wildlife Dept. 1995
[4] Blair, W.F. 1950.
[5] USEPA. 2002. Primary Distinguishing Characteristics of Level III Ecoregions in the Continental United States
[6] Texas State Historical Association. 2002. The Handbook of Texas.
[7] Soil Conservation Service (SCS), U.S. Department of Agriculture. 1977. Soil Survey of Bell County, Texas. In cooperation with the Texas Agricultural Experiment Station. Washington, D.C.

Ecoregions of Texas

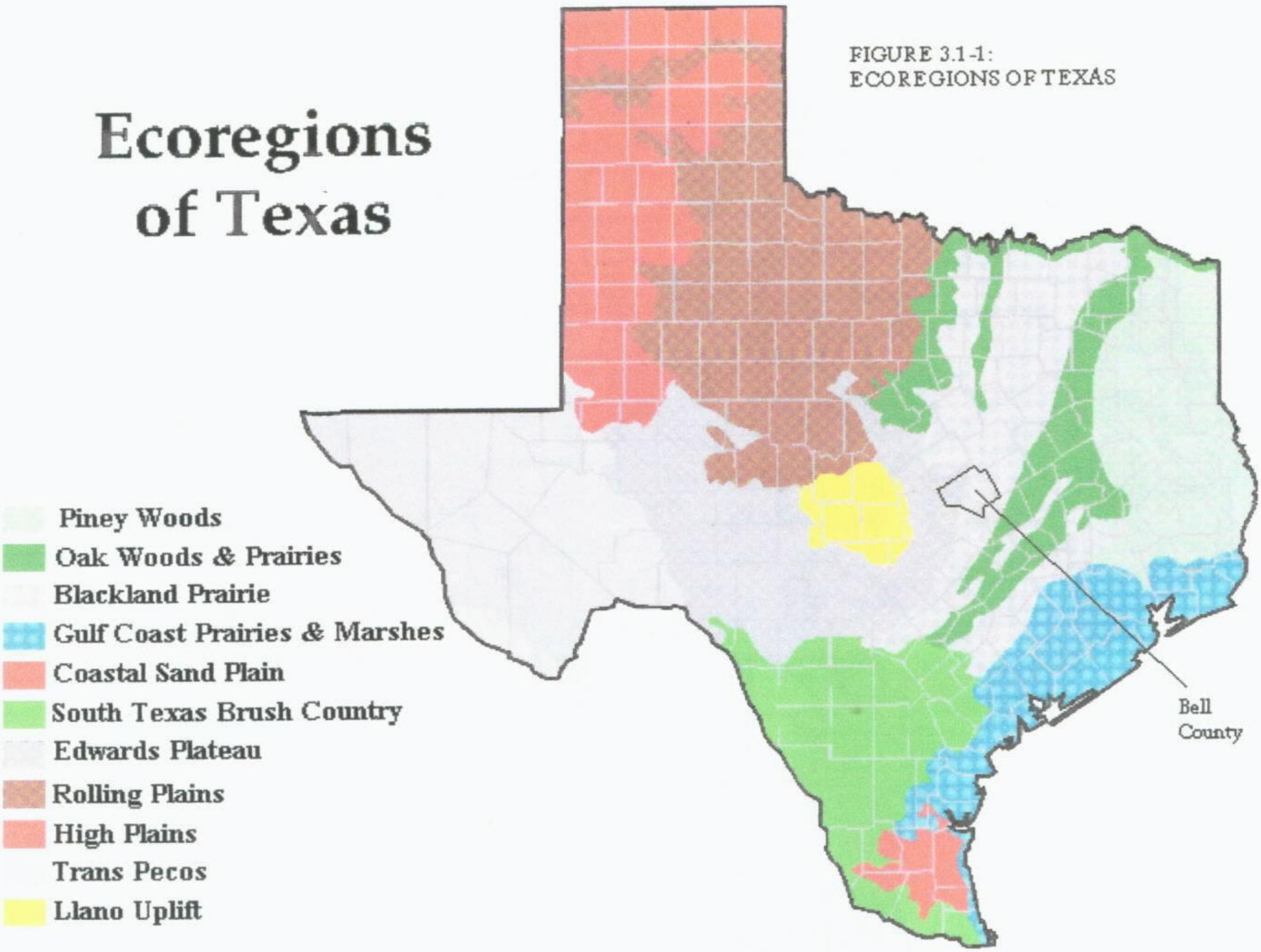
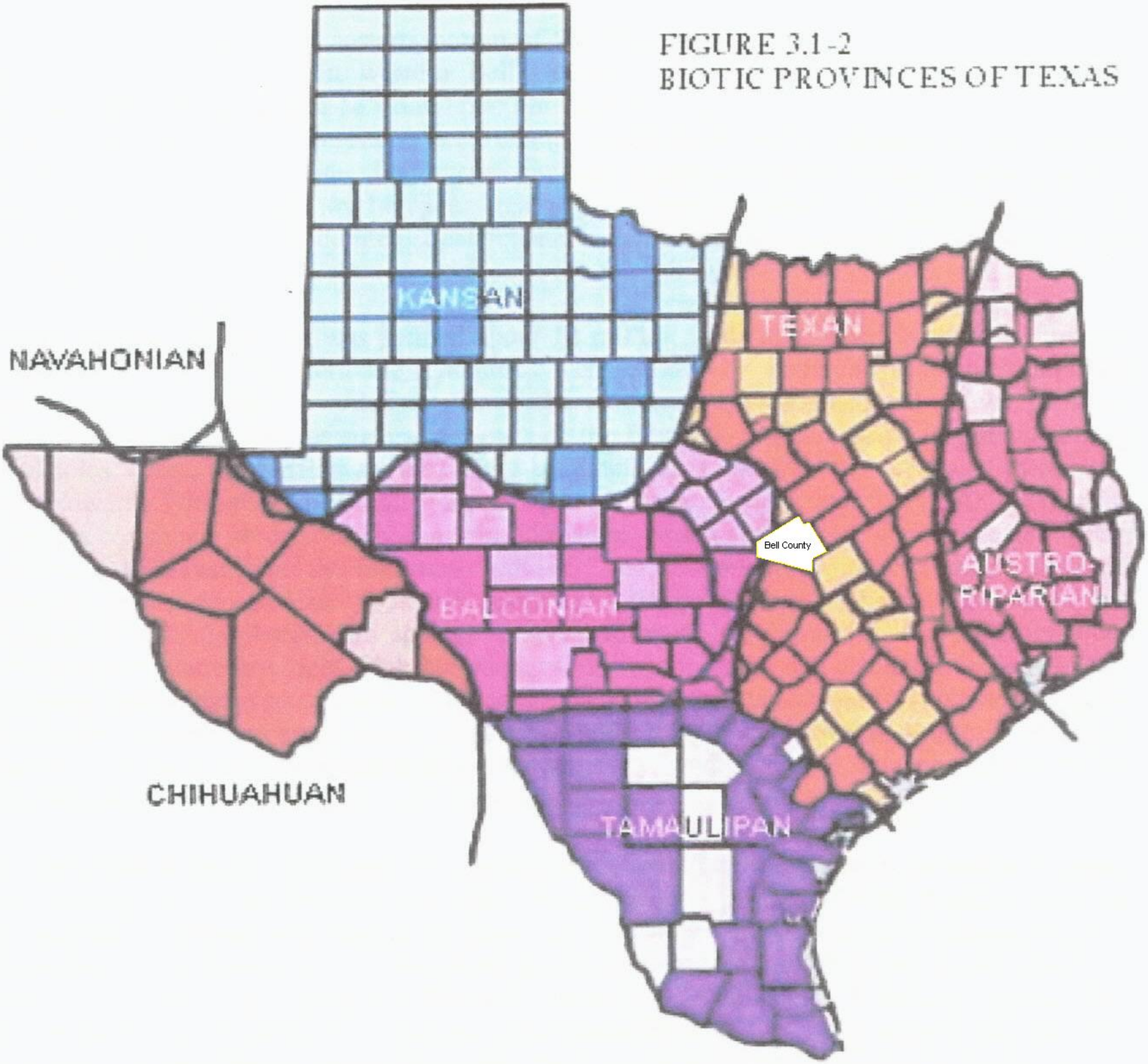


FIGURE 3.1-1:
ECOREGIONS OF TEXAS

FIGURE 3.1-2
BIOTIC PROVINCES OF TEXAS



Biotic provinces of Texas (Blair, 1950)

3.1.2 Physiography

The more diverse physiography of Bell County is due to its location at the interface of the Edwards Plateau and Blackland Prairie ecoregions.[8] Elevations surrounding Stillhouse Hollow Reservoir range from 600 feet MSL to the east of the reservoir to as high as 900 feet MSL at the base of the Balcones Escarpment in western Bell County.

The escarpment lies at the eastern margin of the Edwards Plateau at elevations of 1,100 ft to peaks of 1,230 ft MSL in western Bell County. The Edwards Plateau is underlain by horizontally bedded, hard to soft dolomitic limestone and marl from shallow, marine Cretaceous sediments. The Edwards limestone is cavernous, which results in the formation of dolomite and chert honeycombed limestone. Landscapes typically consist of a plateau bordered by scarps with subsurface caverns located in the upper area of the Edwards Aquifer. The plateau uplands are flat to rolling, with poorly defined stream channels that are found in the regions displaying karst geology.

East of the Edwards Plateau along the IH-35 corridor, the Blackland Prairie soils are moderately deep to very shallow, calcareous, clayey, cobbly, and stony soils formed over fractured limestone. This gently rolling to nearly level, well-dissected area has rapid surface drainage. Elevations for the region as a whole are 400 to 900 ft. above sea level. Uniform, dark-colored calcareous clays, which are interspersed with gray acid sandy loams, constitute the fertile Blackland Prairie soils. Most of the region is under cultivation, although there are some native hay meadows and a few ranches remaining.[9]

3.1.3 Soils

The following section is a brief description of the soil associations described and mapped by the National Resources Conservation Service (NRCS), in the Soil Survey for Bell County.[10] There are six major soil associations in Bell County. However, the study area is mostly located in the Speck-Tarrant-Purves and Trinity-Frio-Bosque associations.

The Speck-Tarrant-Purves association is defined as gently sloping to sloping and undulating to rolling, very shallow to shallow, gravelly, loamy and clayey soils over limestone; on uplands. This association makes up about 25 percent of the county. Speck soils make up 29 percent of the association, Tarrant soils 24 percent, and Purves soils 18 percent. The remaining 29 percent is less extensive areas of Brackett and Real soils. Lake Belton and Stillhouse Hollow Reservoir are also in this association. Speck soils are gently sloping and undulating. They have a surface layer of very dark grayish-brown gravelly clay loam about 8 inches thick. The next layer, about 8 inches thick, is reddish-brown clay. Below this is dark reddish-brown clay that extends to a depth of 19 inches and rests on indurated limestone bedrock. Tarrant soils are undulating to rolling. They have a surface layer of dark grayish-brown silty clay about 16 inches thick that rests on hard limestone bedrock. Stones and boulders are on the surface and in the soil. Purves

[8] Omernik, James M. 1986.
[9] Thomas, G.W. 1975. Texas plants – an ecological summary. In: F.W. Gould. 1975. Texas Plants – a checklist and ecological summary. Texas Agricultural Experiment Station, MP-585/Rev., College Station, Texas.
[10] Ibid

soils are gently sloping to sloping and undulating. They have a dark-brown, calcareous silty clay surface layer about 14 inches thick that rests on hard limestone bedrock. Brackett soils are on narrow, hard limestone escarpments. Real soils are on the upper part of steeper slopes on hillsides. This association is used mostly as range. It is well suited to use as range and wildlife habitat because many kinds of desirable forage are available for livestock and deer. Some small areas of deeper loamy soils at the base of the hills are cultivated.

3.2 WATER RESOURCES

Bell County lies within the watershed of the Brazos River Basin. Major water resources for this county include Stillhouse Hollow Reservoir (an impoundment of the Lampasas River), Lake Belton, the Edwards Aquifer, and the Trinity Aquifer. Stillhouse Hollow Reservoir and Lake Belton are the major sources of drinking water for the county, as well as surrounding areas. Surface water and groundwater in the Central Texas area have interdependent relationships, and the quality and quantity of water in one subsystem is often closely related to other subsystems.

3.2.1 Surface Water

Stillhouse Hollow Reservoir and Lake Belton are the major sources of surface water for Bell County. Other sources of surface water in the county include the Little River, which is formed on the eastern portion of the county by the Lampasas River and Salado Creek from the west. These bodies of water have diverse uses, including recreation and support of aquatic life. The records of the Texas Commission on Environmental Quality (TCEQ) and the U.S. Geological Survey (USGS) were reviewed in order to locate continuous recording stream flow gauges or water quality monitoring stations for the water bodies within and in the vicinity of the study area. Existing surface water features and 100-year floodplains are illustrated on Figures 3.2.1-1 and 3.2.1-2.

Figure 3.2.1-1: 100-Year Floodplain at the Proposed KWSC Intake Structure

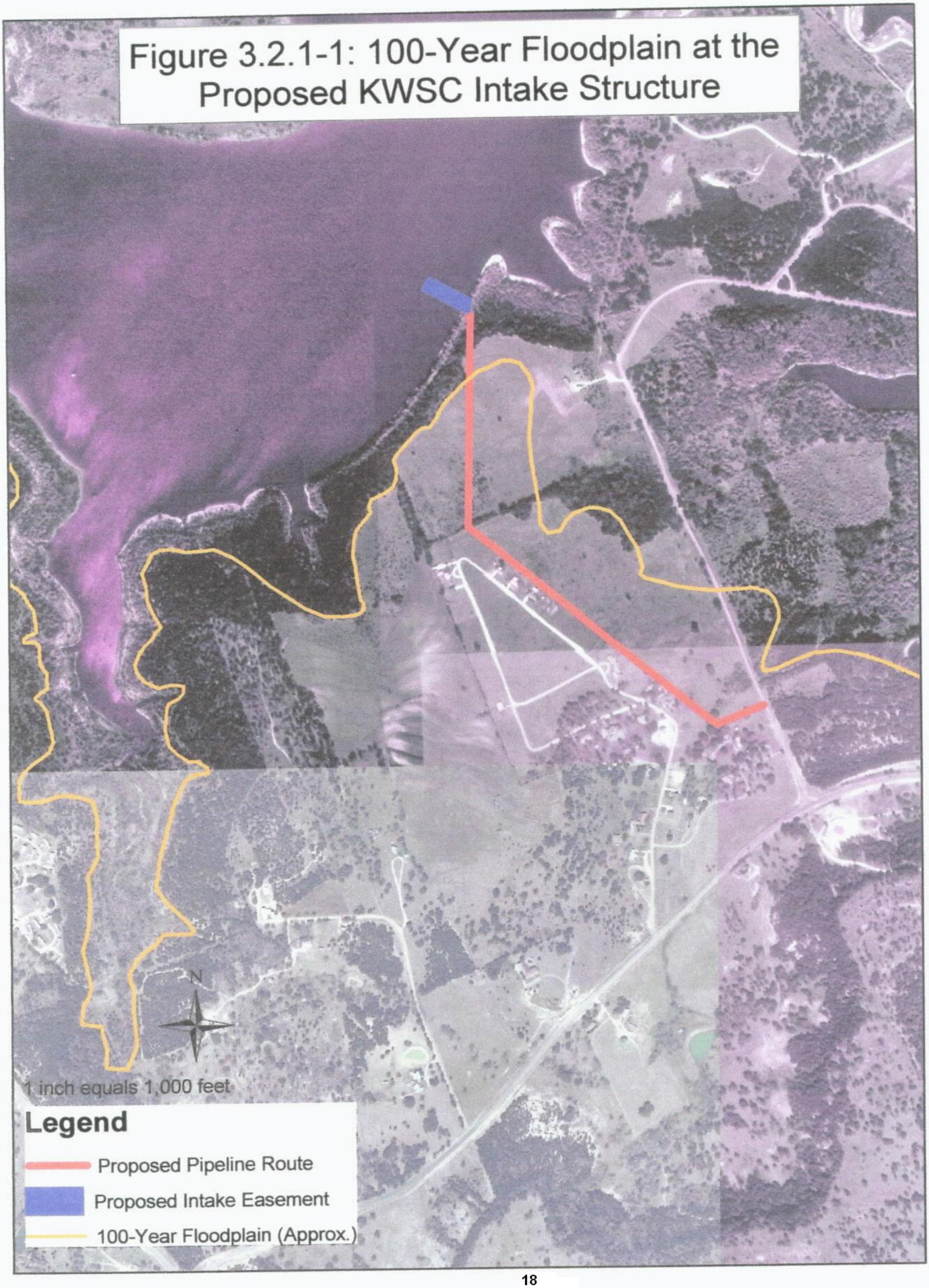
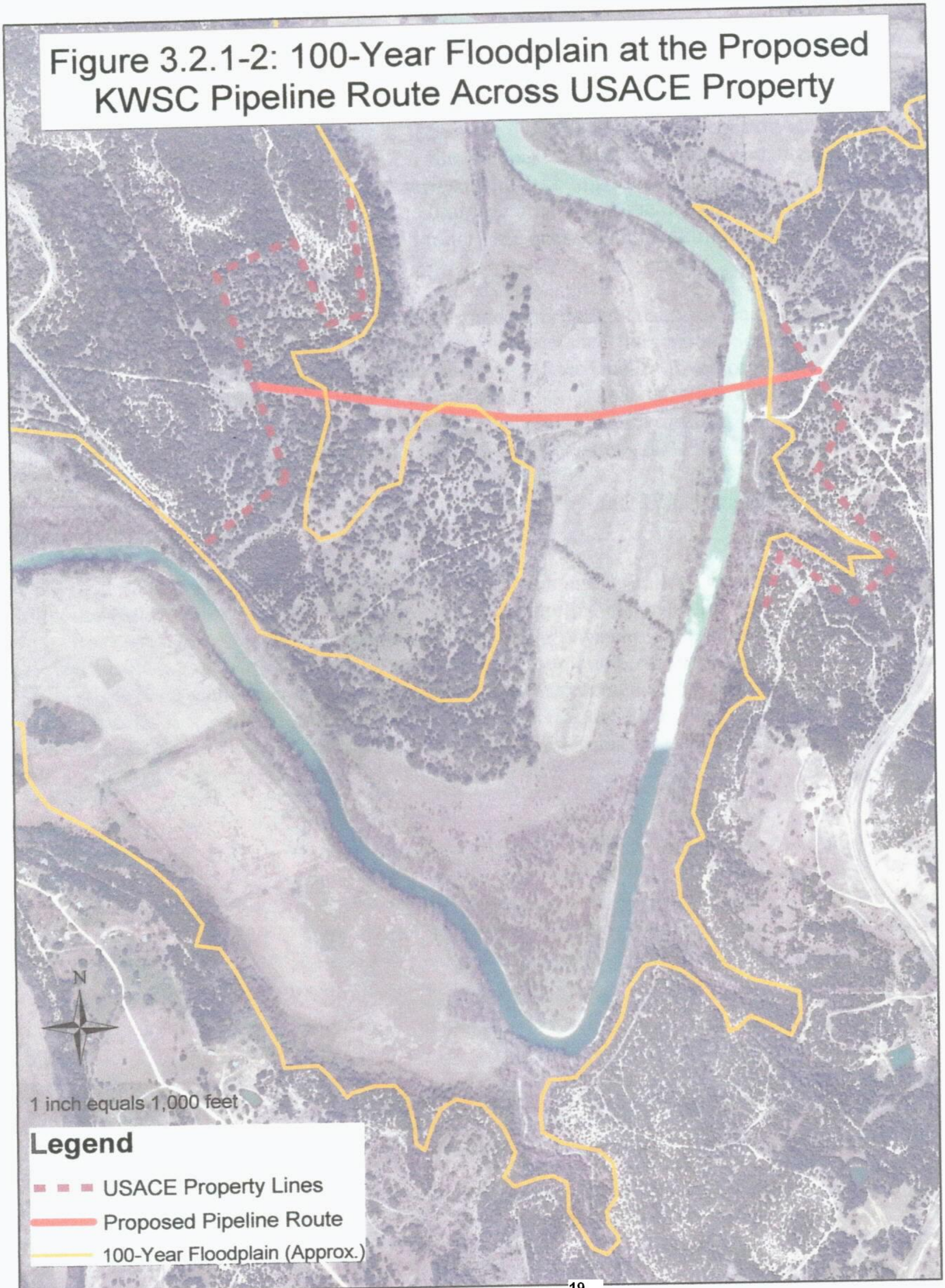


Figure 3.2.1-2: 100-Year Floodplain at the Proposed KWSC Pipeline Route Across USACE Property



3.2.1.1 Stillhouse Hollow Reservoir

Formed by a 15,624 foot long, rolled earth fill dam, Stillhouse Hollow Reservoir was constructed by the USACE in 1966 and completed in 1968 with the purpose of flood control, recreation, and water supply. The reservoir is located on the Lampasas River, a tributary of the Little River downstream of the reservoir. The 6,430 surface acre lake impounds 226,063 ac-ft of water at a conservation elevation of 622 ft MSL. The drainage area above the dam is approximately 1,313 square miles; it has a shoreline length of 58 miles, and average and maximum water depths of 37 ft and 107 ft, respectively.[11,12]

The TCEQ identifies water quality standards and appropriate uses for each classified river segment in Texas. The Stillhouse Hollow Reservoir watershed falls within Segment 1216 of the Brazos River Basin. According to the State of Texas Water Quality Inventory[13], this segment is classified as "Water Quality Limited" and the listed designated uses are aquatic life, contact recreation, general, fish consumption, and public water supply. As of 2002, all of these uses are fully supported except for fish consumption, which was not assessed[14].

No chemical or biochemical data has been collected by the USGS on Stillhouse Hollow Reservoir[15].

A physical habitat survey performed by the Texas Parks and Wildlife Department (TPWD) for Stillhouse Hollow Reservoir in 1998 recorded linear shoreline distances for each physical habitat type. Rock and gravel is the most commonly occurring physical habitat, while the other noted physical habitats include boulder, dead trees/stumps, rock bluff, rip rap, and featureless. Table 3.2.1.1-1 gives the shoreline distance covered and the percentage of the total shoreline covered by each habitat type. Hydrilla is present in Stillhouse Hollow Reservoir, although the hydrilla coverage has been slowly decreasing since peaking at 34 acres in 1998. In 2001, the hydrilla coverage was measured at 25 acres.[16]

[11] Texas Parks and Wildlife. 2002. Stillhouse Hollow Reservoir. Statewide Freshwater Fisheries Monitoring and Management Program. 2001 Survey Report for Stillhouse Hollow Reservoir.
[12] United States Geological Survey (USGS). 2002. Water Resources Data, Texas, Water Year 2001. Water-Data Report TX-01-3, Volume 3.
[13] Texas Commission on Environmental Quality. 2002. Draft Summary of the 2002 Water Quality Inventory.
[14] Texas Natural Resources and Conservation Commission. Unpublished. Draft 2002 Texas Water Quality Monitoring and Assessment Report.
[15] Ibid
[16] Ibid

Table 3.2.1.1-1 Physical Habitat Survey for Stillhouse Hollow Reservoir

Habitat	Shoreline Distance (mi.)	Percent of Total
Boulder	6.2	11.0
Rock or Gravel	35.0	60.0
Dead Trees/Stumps	7.0	12.0
Rock Bluff	2.5	4.0
Rip Rap	0.8	1.0
Featureless	6.5	12.0

3.2.1.2 Belton Lake

Formed by a 5,524 foot long, rolled earth fill dam, Belton Lake was constructed by the United States Army Corps of Engineers in 1954. Belton Lake is located on the Leon River, a tributary of the Little River, 16.7 miles upstream of the confluence of the Leon River and the Little River. The 12,300 surface acre lake impounds 434,500 ac-ft of water at a conservation elevation of 594 ft MSL. The drainage area above the dam is approximately 3,560 square miles; it has a shoreline length of 136 miles, and average and maximum water depths of 37 feet and 124 feet, respectively.[17,18]

The TCEQ identifies water quality standards and appropriate uses for each classified river segment in Texas. The Belton Lake watershed falls within Segment 1220 of the Brazos River Basin. According to the State of Texas Water Quality Inventory[19], this segment is classified as "Water Quality Limited" and the listed designated uses are aquatic life, contact recreation, general, fish consumption, and public water supply use. As of 2002, all of these uses are fully supported except for fish consumption, which was not assessed.[20]

No chemical or biochemical data has been collected by the USGS on Belton Lake.[21]

A physical habitat survey performed by the TPWD in 1996 for Belton Lake recorded linear shortage distances for each physical habitat type. Rock or gravel is the most commonly occurring physical habitat on the shores of Belton Lake. Other recorded physical habitats include cut bank, overhanging brush, dead trees/stumps, rock bluff, rip rap, and featureless. Table 3.2.1.2-1 shows the shoreline distance covered and the percentage of the total shoreline covered by each habitat type.[22]

[17] Texas Parks and Wildlife. 2003. Belton Reservoir. Statewide Freshwater Fisheries Monitoring and Management Program. 2002 Survey Report for Belton Reservoir.
[18] Ibid
[19] Ibid
[20] Ibid
[21] Ibid
[22] Ibid.

Table 3.2.1.1-2 Physical Habitat Survey for Belton Lake

Habitat	Shoreline Distance (mi.)	Percent of Total
Cut Bank	1.0	0.7
Overhanging Brush	5.0	3.7
Dead Trees/Stumps	9.0	6.6
Rock Bluff	5.0	3.7
Rock or Gravel	110	80.9
Rip Rap	1.0	0.7
Featureless	5.0	3.7

3.2.2 Groundwater

Bell County includes portions of the Edwards (Cretaceous limestone) and Hill Country Trinity (Cretaceous limestone, sandstone, and conglomerate) aquifers. The Edwards Aquifer and the Trinity Aquifer are the major aquifers in supplying ground water to western and central Bell County. Both aquifers developed within rock formations that were formed during the Cretaceous Age.

3.2.2.1 Edwards Aquifer

The Edwards Aquifer lies at the eastern and southern edges of the Edwards Plateau Ecoregion, along the Balcones Fault Zone. Rocks composed of Edwards limestone and associated limestone that make up the aquifer were formed from carbonate deposits that accumulated in shallow seas during the early Cretaceous age (63-138 million years ago). Consequently, the seas subsided and the Edwards Plateau was uplifted, forming the Balcones Fault Line. The Edwards Aquifer formed when the limestone was exposed to additional weathering and dissolution occurred.[23] The aquifer is extensively faulted and fractured, and varies in porosity. Water enters the Edwards Aquifer in its recharge zone through stream seepage and filtration of precipitation through karst limestone.[24] In addition to the pumping of groundwater for municipal, industrial, and irrigational water use, water is released from the aquifer through hundreds of springs.[25] Many of the caves, springs, and associated streams of the Edwards Aquifer are home to plants and animals unique to the Edwards Plateau.[26] Factors such as increased groundwater pumping, urban development, agricultural practices, recreational activities, wastewater discharge, and pollution are all threats to the Edwards Aquifer as a water supply and environment for its unique biota.[27]

[23] Longley, Glenn. 1996. Southwest Texas State University. Edwards Aquifer. TOES News and Notes.
[24] Ibid.
[25] Brune, Gunnar. 1981. *The Springs of Texas*, v. 1: Fort Worth, Texas, Branch-Smith Inc., 566 p.
[26] Bowles, D.E., and T.L. Arsuffi. 1993.
[27] De La Garza, Laura, and Charles W. Sexton. 1985. Environmental concerns regarding the northern Edwards Aquifer. in Woodruff, C.M., Jr., Fred Snyder, Laura De La Garza, and Raymond M. Slade, Jr., Coordinators. 1985. *Edwards Aquifer – Northern Segment, Travis, Williamson, and Bell Counties, Texas.* Austin Geological Society, Guidebook 8, p. 64-70.

The Edwards Aquifer can be divided into three regions based on hydrogeologic differences and groundwater-flow divides. The northern segment stretches from the Colorado River north through Williamson County and ends in Bell County.[28] The deep downcutting action of the Colorado River has separated groundwater in the northern Edwards Aquifer from groundwater south of the river. The northern segment of the aquifer has numerous springs.[29] These springs support several rare species of salamanders and other aquatic life. Karst features within the Edwards Limestone and associated limestone provide habitat to endangered karst invertebrates. This northern section of the aquifer has been utilized as a water source for domestic, municipal, and industrial demands.

The relative importance of specific recharge mechanisms in the northern segment of the Edwards Aquifer is different than the mechanisms within the aquifer south of the Colorado River.[30, 31]

3.2.2.2 Trinity Aquifer

The Trinity Aquifer occurs in a band from the Red River through the Hill Country of south central Texas. The aquifer consists of early Cretaceous age rocks of the Trinity Group formation, mostly sand, clay, and limestone deposits. The three major formation groups of the Trinity Aquifer are the Twin-Mountains-Travis Peak, the Glen Rose, and the Paluxy. Wells completed in the Paluxy and Glen Rose formations have historically yielded small to moderate amounts of water. Water quality naturally deteriorates in the down-dip direction of all the Trinity formations. Over-drawing of the aquifer has contributed to up-dip movement of waters high in total suspended solids toward existing wells. During the 1980's and early 1990's over-drawing of Trinity Aquifer groundwater for municipal water use in Williamson and Coryell Counties contributed to water quality problems in the aquifer.[32] As a result, entities in Bell County and surrounding areas have become more dependent on surface water supplies to meet continued water demand.

3.2.3 Waters of the United States

The proposed pipeline route is located entirely in upland settings except for the crossing of one small stream and the Lampasas River. Wetlands, as defined by the USACE regulatory program, if present, are located within the limits of the Ordinary High Water Mark (OHWM) of these two waterways and further delineation of those features is not required. There are additionally no wetlands adjacent to these Waters of the United States affected by construction and operation of the proposed pipeline.

Mapped soil units possibly containing hydric soils in this area are located only along the Lampasas River where the proposed pipeline crosses Bosque clay loam soils. Pedestrian surveys within 300 feet of the proposed pipeline route did not locate depressions indicating hydric soil

[28] Menard, Julie A. 1995. *Bibliography of Edwards Aquifer, Texas, Through 1993*. U. S. Geological Survey, Open-file Report 95-336, Austin, Texas, p. 74.
[29] Ibid.
[30] Ibid.
[31] Slade, Raymond M., Jr., 1985
[32] Texas Department for Water Resources. 1984. Water for Texas, Technical Appendix, Vol. 2, Austin, Texas.

inclusions. Wetlands were noted to occur along drainages crossing the access road to Union Grove Park. These herbaceous wetlands possibly result from obstruction of natural drainage patterns created by the road. These wetlands are well removed from the proposed pipeline route and would not be affected by construction of the proposed project.

The two waterways that are jurisdictional under the Clean Water Act are riffles and pool habitats, types of special aquatic sites. The temporary disturbance of these features during pipeline construction would be authorized under Nationwide Permit 12 (Utility Line Activities). These two crossings are projected to affect only small areas and the effects are below the threshold for notification specified under the Nationwide Permit Program (Condition 13). Construction activities must also comply with other terms and conditions of this program.[33]

3.3 BIOLOGICAL RESOURCES

3.3.1 Vegetation

The proposed pipeline crosses a variety of environmental settings, much of which consist of abandoned agricultural lands located within or adjacent to the flood pool of Stillhouse Hollow Reservoir. Only portions of the pipeline route occur in plant communities that would be considered natural associations. These consist of Oak Juniper Woodlands occupying upland areas with thin and non-native, agricultural species. Common agricultural grasses noted include King Ranch Bluestem, Klein grass, and Bermuda grass. Native species consist of a variety of three-awn grasses, silver bluestem, and Buffalo grass. Those species of grasses associated with mid-grass prairies such as Little Bluestem and Switchgrass were not noted to occur along the proposed pipeline route, although they were noted occasionally in the area. The following range categories are identified according to underlying soils.[34]

3.3.1.1 Adobe and Shallow Range Sites

These are areas of thin soils and typically support Juniper – Oak Woodlands. These sites are located at the proposed intake structure and the western end of the proposed pipeline route in elevated areas above the Lampasas River. This woodland type is important as it forms habitats associated with Golden-cheeked Warblers; a federally listed endangered species. These woodlands typically support an understory of woody shrubs including Yaupon, Agarita and Elbowbush. Herbaceous groundcover is typically sparse and soils are either exposed or rocky or covered with organic matter derived from leaves.[35]

3.3.1.2 Clay Loam Range Site

These also occur in uplands and were historically used as pasturelands or hayfields. They have recovered little of their natural character since they were released from agricultural use about 40 years ago. These currently consist of grasslands occasionally invaded by Juniper shrubs. Predominant species are imported agricultural grass species mixed with native grasses such as

[33] Mase, Rusty, 2005. Wetlands and Biological Resources Survey Report.
[34] Ibid.
[35] Ibid.

Texas Wintergrass, three-awn grasses and Buffalo grass. These grasslands are located mostly from the proposed intake structure to FM 2484.[36]

3.3.1.3 Loamy Bottomland Range Sites

These are found on relatively flat areas near the Lampasas River where soils are very productive and can support native grasslands and Pecan trees in their native state. These sites like the previous site, have recovered very little native character since release from agricultural use. They are located only in the western portion of the proposed route of the waterline near the river crossing. One of these areas, east of the Lampasas River, has been invaded by dense stands of Chinaberry trees. West of the River, grasslands are more prevalent and consist of Texas Wintergrass, King Ranch Bluestem and Johnson grass. Mesquite and Texas Sugarberry trees are also commonly occurring trees and shrubs.[37]

3.3.2 Wildlife

Wildlife occurring in this area is closely associated with the various plant communities and physical habitats resulting from natural and man-made factors. This area is located west of the Balcones Fault and is within the Edwards Plateau region, commonly called the Texas Hill Country. This area is characterized by rolling uplands frequently dissected by valleys. The diversity of landforms creates a wide variety of habitats for plants and animals. Woodlands consisting largely of hardwoods are interspersed with grasslands in upland settings and grade into Oak-Juniper woodlands in the lower walls of valleys found adjacent to Stillhouse Hollow Reservoir. These woodlands and grasslands support a wide variety of resident and migratory birds as well as mammals that are also broadly distributed throughout the state. The character of an areas wildlife resource, however, is expressed by those species of animals that are adapted specifically to habitats uniquely occurring within a region. Deer and other mammals occur as abundantly here as they do throughout other regions of the state. Those wildlife species that have restricted distribution, such as several songbirds like Golden-cheeked Warblers and Mexican Jays, are therefore more important descriptors of an area's wildlife resources.[38]

3.3.2.1 Terrestrial Wildlife

The most distinctive terrestrial wildlife resources occurring within the Stillhouse Hollow Reservoir area consist of resident and migratory songbirds. The Balcones Escarpment forms the boundary of a major division between those species associated with woodlands of the eastern United States and the more xeric shrublands found into the west. Wildlife of economic important consists of several types of game birds including doves and quail, and mammals such as deer. These provide local sources of food, recreation, and leasing income for local landowners.[39]

[36] Ibid.
[37] Ibid.
[38] Ibid.
[39] Ibid.

3.3.2.2 Aquatic Wildlife

Aquatic animals would be located in Stillhouse Hollow Reservoir and upstream in the Lampasas River. These would consist of several species of fish as well as numerous reptiles and amphibians. Habitats fringing the reservoir near the proposed intake structure are rocky and not well developed for amphibian habitat. The upper headwaters of the reservoir in the western segment of the alignment were observed to be used for bank fishing. Fishing in this area appeared to largely be for catfish of which several species likely occur. Other fish likely caught include Largemouth Bass and possibly smaller sunfish and perch.[40]

3.3.3 Threatened and Endangered Species

The U.S. Fish and Wildlife Service publish a list of Threatened and Endangered species that are known to occur in each county. The list for Bell County includes four species (Table 3.3.3-1). Additionally, two species are considered candidates for possible future listing as federal Endangered Species, one of which is the Smalleye shiner possibly occurring in the upper portions of Stillhouse Hollow Reservoir. The second is a salamander that is restricted in occurrence to Salado Creek east of Stillhouse Hollow Reservoir. All of these species are discussed in detail later in this section.

Table 3.3.3-1 Federally Listed Threatened and Endangered Species

Bald Eagle	*Haliaeetus leucocephalus*	Threatened
Black-capped Vireo	*Vireo atricapilla*	Endangered
Golden-cheeked warbler	*Dendroica chrysoparia*	Endangered
Whooping crane	*Grus Americana*	Endangered

The Texas Parks and Wildlife Department Wildlife Diversity Branch also keeps and maintains the list of endangered and threatened species known to occur in Texas. Table 3.3.3-2 provides information on all twenty of endangered and threatened species known to occur in Bell County as listed by the state of Texas.

Of the 20 listed endangered or threatened species, four of these species are currently listed as Endangered by the United States Fish and Wildlife Service (USFWS) under the Endangered Species Act. Two of these are broadly ranging migratory species, the Whooping Crane and Interior Least Tern, for which no specific habit exists in the vicinity of the proposed pipeline. The remaining two species, the Golden-cheeked Warbler and Black-capped Vireo, will be discussed in greater detail. The Bald Eagle, currently listed as Threatened under the Endangered Species Act, is under consideration for delisting. This species is known to occur in Bell County, typically west of Stillhouse Hollow Reservoir. All of these species are listed as protected as Non-Game Threatened of Endangered.

One species, the Texas Horned Lizard, is listed as Threatened Texas Non-Game and is possibly a resident within the area affected by the proposed pipeline route. There are six species listed on the Texas State list as rare but have no regulatory status. Of these species, at least four are

[40] Ibid.

possible residents of this area; the Guadalupe Bass, the Plains Spotted Skunk, the Texas Garter Snake, and the Texabama Croton.

A review of the records maintained by the Texas Parks and Wildlife's Habitat Diversity Program was conducted on February 16, 2005, and no specific occurrences of rare resources are noted in the vicinity of Stillhouse Hollow Reservoir. Bald Eagles are recorded ten miles or more west of this reservoir. The lack of recorded evidence for these resources is not sufficient to exclude their presence in the area. Consequently, proposed pipeline construction activities would need to avoid impacts to these species during construction. Two species of migratory songbirds, Golden-cheeked Warblers and Black-capped Vireos are recorded occurring north of Stillhouse Hollow Reservoir within the Fort Hood area. Of these two species, potential habitat for Black-capped Vireos was not observed along the proposed pipeline route. Several areas were noted during field surveys that could provide potential habitat for Golden-cheeked Warblers. This type of habitat consists of woodlands with varying composition but is dominated in part by mature Ashe Junipers (cedars), deciduous hardwoods including Texas Oaks, and Live Oaks[41]. Areas of these woodland types were noted in the area of the proposed intake facility and within portions of the route west of the reservoir near the Lampasas River. Woodlands at the site of the proposed intake structure are located along the fringe of a bluff above the reservoir and form a narrow band about 200 feet wide. Vegetation below the crest of the bluff was either previously cleared or is affected by long-term inundation during flood events. This band, however, connects with larger stands of woodlands in adjacent valleys and could support individual Golden-cheeked Warblers. Breeding season surveys could exclude this possibility. Similarly, woodland habitats are located immediately east of the Lampasas River in the western portion of the proposed pipeline route and further removed from the river to the west. Woodlands in that area would only be considered marginal habitat. They are included in more broadly distributed wooded areas and the occurrence of Golden-checked Warblers in those areas is conceivable.

Site visits were done between USACE and USFWS on areas to be impacted by the proposed project. No Golden-cheeked Warbler habitat was identified in the proposed areas. Marginal habitat was identified for Black-capped vireos. It was determined that the proposed project is not likely to affect the Golden-cheek Warbler and the Black-capped vireo or their habitats. Construction stipulations would be implemented to avoid construction activities between March 1st and September 15th in these areas.

[41] Campbell, Linda, *Endangered and Threatened Animals of Texas*, Texas Parks and Wildlife Department, Endanger Resources Branch. Austin, Texas, 1995.

Table 3.3.3-2 Species of Concern Known to Occur in Bell County[42]

Common Name	Scientific Name	Summary of Habitat Preference	Listing Agency		Potential Occurrence in County
			USFWS	TPWD	
FISHES					
Guadalupe Bass	*Micropterus treculi*	Streams of the Edwards Plateau			Resident
Smalleye Shiner	*Notropis buccula*	Upper Brazos River System	C1		Resident
AMPHIBIANS					
Salado Springs Salamander	*Eurycea chisholmensis*	Endemic; springs and waters of Salado Springs system	C1		Resident
REPTILES					
Texas Garter Snake	*Thamnophis sirtalis annectens*	Wet or moist microhabitats			Resident
Texas Horned Lizard	*Phrynosoma cornutum*	Varied; sparsely vegetated arid and semi-arid regions		T	Resident
BIRDS					
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	Open country; cliffs	DL	T	Migrant
Bald Eagle	*Haliaeetus leucocephalus*	Large bodies of water or on cliffs near water	LT-PDL	T	Nesting/ Migrant
Black-capped Vireo	*Vireo atricapillus*	Oak-juniper woodlands	LE	E	Resident
Golden-cheeked Warbler	*Dendroica chrysoparia*	Oak-juniper woodlands	LE	E	Resident
Henslow's Sparrow	*Ammodramus henslowii*	Weedy fields and cut-over areas; bare ground for running and walking			Migrant
Interior Least Tern	*Sterna antillarum athalossos*	Sand and gravel bars within streams and rivers; man-made structures	LE	E	Resident
Migrant Loggerhead Shrike	*Lanius ludovicianus migrans*	Grassy areas with scattered trees and brush			Migrant
Mountain Plover	*Charadrius montanus*	Shortgrass plains and bare dirt fields			Winter Resident
Western Burrowing Owl	*Athene cunicularia hypugaea*	Open grasslands, such as prairie, plains, and savanna			Resident
Whooping Crane	*Grus americana*	Potential migrant	LE	E	Migrant
MAMMALS					
Cave Myotis Bat	*Myotis velifer*	Colonial and cave dwelling; limestone caves of Edwards Plateau			Resident
Plains Spotted Skunk	*Spilogale putorius interrupta*	Catholic; wooded, brushy areas and tallgrass prairie			Resident
VASCULAR PLANTS					
Texabama Croton	*Croton alabamensis var. texensis*	Deciduous and evergreen woodlands in duff-covered loamy clay soils			Resident

C1 - Federal candidate for listing, Category 1; information supports proposing to list as Endangered/Threatened
DL/PDL - Federally delisted / Proposed for delisting
LT/LE - Federally listed threatened / endangered
T/E - State listed threatened / endangered

[42] Texas Biological and Conservation Data System. Texas Parks and Wildlife, Wildlife Diversity Branch. County Lists of Texas' Special Species. [Bell County, Revised: 1/15/04].

3.4 AESTHETIC RESOURCES

Areas and resources of aesthetic and potential public value were defined through the use of recent aerial photography from the Texas Natural Resources Information System (TNRIS) and field reconnaissance. The areas available to the public or designated by a public agency include those areas that are potentially valued by community residents.

USACE operates five parks on the shores of Stillhouse Hollow Reservoir: Stillhouse Park, Dana Peak Park, Cedar Gap Park, Union Grove Park, and Bluff Park. These parks provide restrooms, live bait, courtesy docks, boat gas, picnic areas and campgrounds. However, each park does not provide all of the amenities listed.

Aesthetic features in the vicinity of the project area include Union Grove Park and scenic viewscapes of Stillhouse Hollow Reservoir, which include vegetation diversity and landscape variety (e.g. rocky outcroppings, bluffs and ridgelines).[43]

3.5 CULTURAL RESOURCES

3.5.1 Research Design and Methodology

On February 20th, March 4th, and March 20th, 2005, a cultural resources survey of two sections of the proposed Kempner Water Transmission line, located in Bell County, Texas, was conducted by the Cultural Resources Staff of Cedar Valley Environmental Services (CVES), Austin, Texas. The surveyed sections are on USACE lands at Stillhouse Hollow Reservoir. One surveyed section is approximately 4,230 feet of proposed pipeline at Union Grove Park extending from the water intake at the reservoir to the edge of USACE property. At the second section, the proposed pipeline extends approximately 3,990 feet within USACE property at a crossing of the upper reservoir known as Gravel Crossing Road. The easement width of the proposed pipeline is 25 feet.

The investigations were performed in compliance with the Procedures of the Advisory Council on Historic Preservation (36CFR800) for implementing the National Historic Preservation Act of 1966 (PL 89-665), as amended. The survey also follows the Texas Historical Commission's (THC) "Archeological Survey Standards for Texas".

The investigations included a review of relevant archeological records and literature at the Texas Archeological Research Laboratory (TARL), the THC's online "Texas Archeological Sites Atlas", CVES's Library, and a pedestrian survey augmented by shovel testing. The approximately 1.6 miles of proposed water transmission line, with a 25-foot wide easement, was surveyed by two persons walking abreast. A total of 26 shovel tests were excavated to an average depth of approximately 35 cm in areas with suitable sediments and 10 cm in eroded or shallow residual soils. Test matrix was screened through ¼-inch hardware cloth. Documentary photographs of the project area and survey processes were taken as a matter of record. The purpose of the study was to locate and identify archeological sites that are potentially eligible for the National Register of Historic Places (NRHP). Historic research included interviews with

[43] Ibid.

relatives of former residents who were relocated as a result of reservoir construction. Newly recorded sites were recorded using the "State of Texas Archeological Site Form".[44]

3.5.2 Previous Investigations

During 1960 and 1961, the Texas Archeological Salvage Project surveyed the area to be affected by the construction of Stillhouse Hollow Reservoir. During the course of the survey, 11 archeological sites were recorded.[45] Additional testing and excavations took place in 1964 and 1966 at 41BL85, the Landslide site, and 41BL104, the Evoe Terrace site.[46]

According to the Texas Archeological Sites Atlas and the TARL site files there are two known archeological sites in the project vicinity, one prehistoric site (41BL984) and one historic site (41BL1220). They are described in more detail in the following sections.[47]

3.5.2.1 Site 41BL984

Site 41BL94 is recorded as a prehistoric open campsite. It is located on a high bluff overlooking the Lampasas River at Gravel Crossing Road. The site was recorded by Robert (Skipper) Scott of the USACE, after being reported by an anonymous high school teacher whose student was involved in vandalizing the site. The site included several burned rock features, a slab-lined human burial, and associated artifacts. The burial and artifacts were removed from the site. The site was estimated to be 40 percent destroyed. It was revisited by archeologists with the Texas Archeological Research Laboratory in 1995. Although the burial had been removed, National Register eligibility tested was recommended to adequately assess the burial's context.[48,49]

3.5.2.2 Site 41BL1220

Site 41BL1220 is a historic site recorded by Hicks and Company archeologists during an electric transmission line survey for Brazos Electric Cooperative in 2004. The site was recorded as a "small rural domestic complex" with a number of larger live oaks dotting along the periphery as well as three non-native ornamental trees. According to the archeologists, "the site is composed of a series of small, domestic fences marking the northern, eastern and western edges of the site boundaries". The main architectural element on the site is a rectangular pile of limestone rock and brick. Six shovel tests were implemented at the site, and glass fragments were found in the upper 4 to 8 inches. Based on the several bottles and bricks, the survey crew estimated the date

[44] Voellinger, Melissa, 2005.
[45] Johnson, Leroy Jr., Survey and Appraisal of the Archeological Resources of Stillhouse Hollow Reservoir on the Lampasas River, Bell County, Texas. Texas Archeological Salvage Project, Austin, Texas. 1962.
[46] Sorrow, William M., Harry J. Shafer, and Richard E. Ross. Excavations at Stillhouse Hollow Reservoir. Papers of the TEXAS ARCHEOLOGICAL SALVAGE PROJECT, No. 11, August 1967, Austin, Texas.
[47] Ibid.
[48] Turpin, Jeff and Douglas Drake. A Relocation Survey of Selected Sites in the Flood Pool Stillhouse Hollow Reservoir, Belton (sic) County, Texas. Technical Series 43. Texas Archeological Research Laboratory, The University of Texas at Austin. 1995.
[49] Ibid.

of occupation to the mid-20th century, and recommended the site as ineligible for the National Register of Historic Places.[50,51]

3.5.3 Survey Results

The archeological survey resulted in the identification of one newly-recorded historic site. One previously recorded historic site was revisited. The newly-recorded site is the Cosper Ranch site. The residents of the previously recorded site have not been identified. Both sites represent homes of former residents who were relocated in 1964 by USACE for reservoir construction. The previously recorded site (41BL1220) is described above. The site identified during the current survey (referred to as Site 41BLxxxx) is described in the following section.[52]

3.5.3.1 Site 41BLxxxx Description

This historic site appears to have been the location of the Cosper Ranch. It is located west of the Lampasas River, southwest of the former locations of the Cosper and Gatlin-Gibbs Family Cemeteries, and west of site 41BL1220. The site is on a broad flat terrace along a point bar above the river. The soil is a clay loam of the Purvis Series.[53] It is immediately to the south of the proposed pipeline right-of-way. The sites of the two former cemeteries are located to the north of the right-of-way directly north of the Cosper Ranch and Site 41BL1220, and would not be affected by the planned pipeline construction.

The most prominent feature of Site 41BLxxxx is a standing chimney made of cut limestone lined with "Corsicana" brick. Immediately south of the chimney are numerous limestone blocks that appear to have been piers for a pier-and-beam house. A cement barn foundation and covered septic tank are located southeast of the chimney. Two cut stone water troughs are located along the fence line, northwest and southwest of the chimney, respectively. The water trough northwest of the chimney was inscribed with "Made by Bill Copeland for W.E. Berry & Son August 11, 1952". A barbed wire-enclosed corral with a cattle loading chute is located approximately 100 feet southwest of the chimney. Two east-west running barbed wire fences, 62 feet apart, are located to the north and south sides of the house area. A north-south running barbed wire fence is situated approximately 45 feet west of the chimney. An elevated cistern was approximately 50 feet north of the house, represented by four vertical rough-hewn support beams. There is a ¾ inch galvanized pipe running from the cistern to the west side of the house. A stone alignment 2 feet high and 4 feet long is about 20 feet south of the north fence line, north of the chimney, adjacent to a 24-inch double live oak tree. A depression, possibly representing an in-ground silo, which is currently filled with trash, is located 20 feet north of the north fence in line with the central, north-south running fence line. An abandoned gas stove, porcelain tin cabinet and evaporative air cooler are lined up south of the house, adjacent to a 3 foot diameter live oak. Four large Live Oak trees are situated around the house. Eight shovel tests were placed in the vicinity of the house and barn. The three nearest to the chimney were all positive, containing wire nails, a square cut nail, clear bottle glass, window glass, a porcelain ceramic

[50] Hicks & Company, 2004 Cedar Valley Archeological Survey. Austin, Texas.
[51] Ibid.
[52] Ibid.
[53] Ibid.

sherd, and a stoneware sherd. Judging from the artifacts, plumbing, poured concrete foundations for outbuildings, and the Corsicana brick-lined chimney, this site would appear to have been occupied during the early-to mid 20th Century; however, the historical research reveals a much earlier date of occupation as described in the next section.[54]

3.5.3.2 Site 41BLxxxx History

Site 41BLxxxx was the former home site of the Cospers. The Cosper Family arrived in Bell County, Texas in early February 1870 from their home in Randolph County, Alabama. The treck was organized by three Cosper brothers, the Reverend Joel Henry, James Glen, and the Reverend William M., who headed the wagon train. In the group were 42 adults, 64 children, 2 former slaves, 23 hound dogs, one team of mules and several horses.

Reverend Joel Henry Cosper was born March 30, 1809, in Edgefield District, South Carolina. He married his first wife Millie Eliza Bagby, born October 22, 1809, prior to 1829. Their first child was born in 1829, in Georgia. The last of their 14 children was born in 1853 in Randolph County, Alabama; nine of these children moved to Bell County. Rev. Cosper was a Methodist minister, farmer, and a large land and slave owner in Alabama, prior to moving his family to Texas. He died October 11, 1887, in Bell County, Texas, near Youngsport, and was buried in the Cosper Family Cemetery, 4 miles east of Youngsport on his old homestead, but was later moved to the Live Oak Cemetery 3 miles north of Youngsport, Texas. In 1964, the US Government relocated the Cospers for the over-flow of Stillhouse Hollow Reservoir formed by Stillhouse Hollow Dam.[55] Outbuildings were razed and the house was relocated across the river by cutting it in half and floating both halves.[56] The house was reassembled on the east side of the Lampasas River, along Gravel Crossing Road, and was lived in by Jack Cosper. The house is currently in ruins, suffering from severe weathering and neglect. A total of seven graves were purportedly moved by the USACE from the Cosper Family Cemetery and re-interred in the Live Oak Cemetery ca 1964.[57] Table 3.5.3.2-1 below summarizes this information.

Table 3.5.3.2-1 Graves Moved from Cosper Family Cemetery to Live Oak Cemetery

Grave No.	Name of Deceased	Date of Birth	Date of Death
500	Joel H. Cosper	March 30, 1809	October 11, 1887
501	Millie E. Cosper	October 22, 1807	October 11, 1876
502	Carol Cosper	June 21, 1900	July 18, 1900
503	Lela Cosper	1802	1910
504	Thomas Jacob Cosper	December 21, 1848	November 10, 1923
505	John Henry Cosper	June 3, 1884	November 6, 1885
506	Saphronia Saxon Cosper	April 3, 1851	March 15, 1880

Thomas Jacob Cosper was the son of Joel and Millie Cosper. Saphronia Saxon Cosper was the first wife of Thomas Jacob Cosper. They had five children. Thomas's second wife was Lela Covington, married January 1, 1881. They had 10 children. It is possible that the Lela Cosper in

[54] Ibid.
[55] Hunt, Willie Zell Ray. Cospers of the South and Southwest. Nortex Press, Burnet, Texas. 1980.
[56] Turnbo, Charles. Interviewed by Melissa W. Voellinger, March 9, 2005. Salado, Texas.
[57] Ibid.

Grave 503 is the same Lela and the date is inaccurate. Two of the burials, 502 and 505, appear to have been infants.[58]

4.0 IMPACTS OF THE PROPOSED ACTION AND ALTERNATIVES

The Stillhouse Hollow Reservoir intake easements were surveyed and studied in the field by interdisciplinary teams. The proposed pipeline routes across USACE property are designed alongside transmission line and roadway easements in order to minimize land disturbances.

The impacts potentially resulting from implementation of the alternatives discussed in this document would result primarily from construction activities, including the movement of heavy equipment for trenching and transport of pipeline, trenching activities including storage of the excavated materials, movement of personnel, intake structure construction, and electrical service construction.

4.1 IMPACTS OF THE PROJECT ON WATERS OF THE UNITED STATES

Two areas considered Waters of the United States may be affected by the proposed project. The first is a small headwater stream located about 600 feet west southwest of Union Grove Park Road in the eastern segment of the proposed pipeline. The width of the stream based on the OHWMs is approximately 3 to 4 feet. Affected area based on a 25' wide construction easement is about 0.001 acres. There are no wetlands adjacent to the stream outside of the OHWMs. This crossing can by authorized by Nation Wide Permit #12 under section 404 of the Clean Water Act for Utility Line Activities and the affected area is less than the threshold for Notification required by General Condition 13.

The second crossing is the Lampasas River in the western segment. The width of the river based on the OHWMs is approximately 125 feet. The total area of Waters of the United States possibly affected by the proposed pipeline crossing based on a 25 foot easement is approximately 0.07 acres, which is less than the affected area threshold of 0.1 acres required for Notification. Specific construction plans for completing this crossing would need to be completed to determine if this proposed crossing requires Notification under this program.[59]

4.2 ALTERNATIVES

4.2.1 ALTERNATIVE 1: Supply KWSC with Water from Stillhouse Hollow Reservoir through the Construction of a Surface Water Intake Structure with Transmission and Treatment Facilities.

Impacts of the proposed action are calculated based on field surveys and a review of aerial photographs from the TNRIS. These aerial images were found to accurately represent current conditions as there have been no recent developments within areas owned by the Corps of Engineers.

[58] Ibid
[59] Ibid.

The proposed action consists of two segments of pipeline; an approximately 4,300 linear foot eastern segment near the proposed intake structure (see Figure 1.2-1) and a 4,000 linear foot western segment crossing the Lampasas River in the upper headwaters of Stillhouse Hollow Reservoir (see Figure 1.2-2). The total area of the proposed 25-foot wide permanent easement is 4.72 acres. Additionally, the proposed intake structure would occupy 1.00 acres.

The eastern segment consists of over 4,100 feet located in open fields, some of which contain small Ashe Junipers that have recently re-grown in the area. About 200 feet of this segment falls in an Oak-Juniper woodland, occupying slightly more than 0.1 acres. This is located within the boundaries of the proposed intake structure and the total impacted wooded area would be about 1 acre. Additionally, several small trees, Sugarberries typically, would be affected along a small stream near the southern end of this segment.

The western segment totals about 4,000 feet, or 2.29 acres. The majority of this route, about 3,000 feet (1.7 acres), occurs in open fields with scattered trees. Approximately 1,000 feet (0.6 acres) of the proposed route occurs in Oak-Juniper woodlands. Additionally, a smaller wooded area fringes the eastern bank of the Lampasas River. This woodland, less than 0.1 acre, consists predominantly of Chinaberry Trees with scattered Pecan and Green Ash trees. The total acreage of woodland affected is about 0.6 acres. However, the woodlands cleared as a result of pipeline construction and maintenance in this segment are located adjacent to an easement previously cleared for an overhead electric power line and additional clearing would widen the currently cleared area. Therefore, additional fragmentation of woodland habitats would not occur as a result of the proposed action.

When the easement for construction is established, an inventory of trees in the construction easement would be made. Any mature trees greater than 6 inches in diameter removed during construction activities should be replaced by trees of equal or greater value for wildlife species on a 3:1 (replacement:removed) basis. Replaced trees should be native species that produce hard and soft mast and provide shelter for wildlife. Native trees and shrubs such as pecan (*Carya illinoinensis*), red oak (*Quercus falcata*), black walnut (*Juglans nigra*), mexican plum (*Prunus mexicana*), sumac (*Rhus* spp.)**,** hawthorn (*Crataegus* spp), and coralberry (*Symphoricarpos orbiculatus*) should be planted in the existing portion of the riparian woodland to improve canopy cover and food base. Approximately 70% of the stems planted should be trees and 30% shrubs. No more than 25% of the trees should be soft mast producers. The planting should be done in a random pattern leaving a few areas with open space for wildlife movement. In addition, standing snags should remain or be created in the existing forested areas to provide habitat for cavity-nesters. The easement corridor would be re-vegetated with native grasses following completion of pipeline construction to eliminate exotic species and encourage native vegetation.[60]

Impacts to wildlife resources include temporary habitat disruption due to construction noise and loss of vegetative cover. Permanent effects would include the conversion of about 1.6 acres of Oak-Juniper woodlands to grasslands. The area located at the proposed intake structure, consisting of one acre, is near the edge of an existing park facility developed for use as a model airplane field. Additional woodland losses of about 0.6 acres occur in the western segment, but

[60] Ibid.

consist entirely of widening an existing cleared easement. Impacts of the proposed action on wildlife resources would be minimal considering the total amount of these habitats available for wildlife use in the vicinity of Stillhouse Hollow Reservoir.

The impacts to threatened and endangered species may consist of affecting habitats used by several species of concern listed by Texas Parks and Wildlife Department. Typically, these are Non-Game Protected Species such as the Texas Horned Lizard and Texas Garter Snake. The only federally listed endangered species that has a potential for being affected is determined to be the Golden-cheeked Warbler. This seasonal occurrence of this species in these and adjacent Oak-Juniper woodlands cannot be excluded. These impacts are likely to be either non-existent or minor due to the nature of these woodlands as well as the level of projected disruption due to construction and maintenance of the proposed waterline. Therefore, the proposed project is not likely to affect the Golden-cheeked Warbler.

Construction of the intake structure and pipeline would follow the requirements of the Environmental Protection Agency's (EPA) National Pollution Discharge Elimination System (NPDES) regulations and requirements for construction stormwater discharge. The construction contractors would be required, as part of their contracts, to obtain the construction permits and comply with all permit requirements. During construction, silt fences and berms would filter the stormwater runoff from all disturbed areas. These temporary erosion control measures would remain in place until the disturbed areas are permanently stabilized. All construction activity and related traffic would be confined to easements.

No surface karst or recharge features are present in the proposed construction easement, but surface features downgradient from ground disturbing activities could be exposed to siltation or the entry of hazardous or toxic materials from the construction site. Although no surface features are present, subterranean voids could be encountered during construction.

The archeological survey of approximately 1.6 miles of proposed pipeline identified no sites on or eligible for the National Register of Historic Places. Two historic archeological properties were identified: Site 41BL1220, a previously-recorded site that was considered ineligible for National Register Listing by previous investigators, and Site 41BLxxxx, the former Cosper Ranch site.[61] Site 41BLxxxx appears to have been occupied during the late 19th and early 20th centuries. The house, outbuildings and associated cemetery were razed or relocated during construction of Stillhouse Hollow Reservoir in the early 1960s. They represent the Texas farming industry during their period of occupation. However, there are numerous other period farm sites that are in much better condition, with a higher degree of integrity. Therefore, Site 41BLxxxx is not recommended as eligible for listing in the National Register of Historic Places. A prehistoric site, 41BL984, which contained human remains, and may be eligible for National Register listing, is located south of the proposed pipeline and would not be adversely affected.[62]

The KWSC intake, raw water pipeline, and electric service facilities are proposed for immediate construction at the south shore location shown on Figures 1.2-1 and 1.2-2. On non-USACE property, construction impacts would occur along the pipeline easement and at the proposed

[61] Ibid
[62] Ibid

water treatment plant site. Construction on USACE property would include an intake structure, raw water pipeline (1.6 miles of 30" pipeline), and electrical facilities. The total construction easements on USACE property would total 5.72 acres.

The impacts associated with the intake structure on recreation and aesthetics of Stillhouse Hollow Reservoir would be minimal. The intake structure would consist of pumps mounted on rails, and would not have as much of an impact aesthetically as other existing intake structures on the lake. Recreational impacts should be minimal as no public park land is being disturbed and aquatic life would not be impacted in a significant way as well.

4.2.2 ALTERNATIVE 2: Supply KWSC with Water from Lake Belton through Existing City of Copperas Cove Pipeline.

This alternative would have no additional environmental consequences, as the facilities for this alternative are already in place. It is based on allowing water owned by KWSC in Stillhouse Hollow Reservoir to be withdrawn by the Bell County WCID from Lake Belton, treated, and transmitted to KWSC.

The current Copperas Cove excess transmission capacity could be made available for a short time only and would be needed by Copperas Cove within the next several years. Obtaining short-term water capacity from Copperas Cove is not a solution to the long-term problem, as it would only temporarily defer the need for an additional water supply.

4.2.3 ALTERNATIVE 3: Supply KWSC with Water from Lake Belton through New Transmission Mains from the WCID Facility to an Adequate Receiving Point on the KWSC System.

This alternative would use USACE property to develop sufficient diversion capacity to meet the water supply needs of KWSC.

Similarly to Alternative 2, Alternative 3 is based on allowing surface water owned by KWSC in Stillhouse Hollow Reservoir to be withdrawn by the Bell County WCID from Lake Belton, treated and transmitted to KWSC. However, in this alternative, a new transmission main is constructed from the WCID intake structure at Lake Belton to an adequate receiving point on the KWSC system. The environmental impact of Alternative 3 would be similar to Alternative 1, although it does not involve the construction of any intake facilities. In addition, the pipeline route of Alternative 3 does not encounter a river crossing, as Alternative 1 requires.

This alternative is not feasible because the cost to KWSC of constructing new transmission mains from the WCID facility to an adequate receiving point on the KWSC system is deemed to be prohibitive.

4.2.4 ALTERNATIVE 4: Develop the BRA as a regional provider of wholesale water.

This alternative would use USACE property to develop sufficient diversion capacity to meet the water supply needs of KWSC.

KWSC has met with the BRA several times to determine the interest of BRA in possibly constructing a treatment and transmission system at Stillhouse Hollow Reservoir such that they become a regional provider of wholesale treated water. The BRA has not responded positively to this request.

This alternative would pose the same environmental consequences as Alternative 1, as it consists of the BRA constructing essentially the same facilities as the proposed project. Alternative 4 would also involve construction of an intake structure, pipeline, and a river crossing of the pipeline. As a result, Alternative 4 is no more environmentally favorable than Alternative 1.

4.2.5 ALTERNATIVE 5: Contract to purchase additional water from CTWSC.

This alternative would not use USACE property to develop sufficient diversion capacity to meet the water supply needs of KWSC.

KWSC currently receives all of its treated water from CTWSC. The CTWSC alternative would require only additional facilities at an existing water treatment plant site and upgrades of pumping equipment at existing pump stations and therefore, would have little or no environmental consequences. This alternative would not use USACE property for any additional facilities, and as a result, Alternative 5 would have no impact on USACE property. However, as stated in Section 2.5 of this report, Alternative 5 is not a viable long-term option for supplying KWSC with their water supply needs.

4.2.6 ALTERNATIVE 6: No Action

Under this alternative, the potential water supply sources and associated water diversion structures, pipelines, and water treatment facilities on and off Stillhouse Hollow Reservoir would not be constructed. Without implementation of construction activities, there would be no adverse impacts to environmental, physiological, water, biological, aesthetic, or cultural resources within the proposed project areas. However, this alternative would not address the existing and future water supply needs for the KWSC system. KWSC's immediate need to develop diversion and transmission capability would not be achieved under this alternative.

5.0 CUMULATIVE IMPACTS OF PROPOSED ACTIONS

The following section addresses potential cumulative impacts of the preferred alternative. This section describes any potential impacts on the environment resulting from the incremental impact of the proposed actions when added to other past, present, and future actions regardless of what entity undertakes such actions.

5.1 PAST CUMULATIVE IMPACTS

The most significant past action in the area of the proposed action is the construction of the lake dam and other associated facilities on Stillhouse Hollow Reservoir. The reservoir was constructed in 1968 for the purposes of flood control, recreation, and water supply. Stillhouse Hollow Reservoir currently has two existing raw water intake structures and five parks along the shoreline of the reservoir. Union Grove Park is the park closest to the proposed easements. No significant impacts are expected to occur to this park as all disturbed ground would be returned to its existing grade and re-vegetated. In addition, there would be no aesthetic impacts to the proposed project that would be visible from the grounds of Union Grove Park.

Other past improvements to the area are several roads and overhead electric lines. The roads nearby the proposed intake structure and pipeline shown in Figure 1.2-1 include FM 2484, Union Grove Park Road, South Shore Road, South Bend Road, South Shore Spur, and W. View Road. The roads nearby the proposed pipeline easement shown in Figure 1.2-2 include FM 2484, Gravel Crossing Road, and Live Oak Cemetery Road.

5.2 PRESENT CUMULATIVE IMPACTS

The present impacts include the proposed intake structure and water line construction by Kempner WSC. The impacts of the proposed project are discussed more in depth in section four of this report. The only other project in the area of Stillhouse Hollow Reservoir presently planned is the construction of power lines by Brazos Electric Cooperative. The construction of these power lines is not expected to create any cumulative environmental impacts in addition to the proposed project.

5.3 FUTURE CUMULATIVE IMPACTS

Future improvements at the site include the expansion of the proposed raw water intake structure to increase pumping capacity. The expansion of the raw water intake would only involve adding additional pumps. The expansion of the intake structure is expected to have no cumulative environmental impact, as there are no direct or indirect impacts to groundwater, wetlands, and threatened or endangered species associated with this project.

6.0 MITIGATION MEASURES FOR PROJECT ACTIONS

6.1 STREAM CROSSINGS

Forested stream systems are among the most valuable riparian systems. Streamside forests are typically complex ecosystems that remove or ameliorate the effects of pollutants in runoff, add organic matter to the food base, store nutrients, and provide organic energy to downstream reaches. The proposed pipeline route includes one crossing of the Lampasas River and one small stream crossing. The two waterways that are jurisdictional under section 404 of the Clean Water Act would be authorized under NWP 12 (Utility Line Activities). These two crossings are projected to affect only small areas and the affected area is below the threshold for Notification specified under the Nationwide Permit Program (Condition 13).

The two crossings of Waters of the United States would be completed after minimizing potential adverse effects. Activities would be in compliance with all terms and conditions of NWP #12 as defined in 33 CFR 330.

6.2 VISUAL MITIGATION

All project features constructed on USACE property would conform to guidelines for facing structural features to blend with the park reserve nature of the location. The shoreline intake structure would be low-lying and unobtrusive, and while visible from the main basin of Stillhouse Hollow Reservoir, it would not be visible from Union Grove Park, or other recreational facilities on the lake.

6.3 CULTURAL RESOURCES

Since no archeological or historical sites on or eligible for the National Register of Historic Places would be adversely affected by the proposed project, no mitigation measures are necessary. However, if archeological properties are discovered during construction the State Historic Preservation Officer and the USACE archeologist would be contacted to determine appropriate mitigation measures. It is the intent of the constructors to avoid significant cultural properties whenever possible, and they would work with the responsible agencies to assure impacts to significant properties are minimized.[63]

6.4 BIOLOGICAL RESOURCES

Re-establishing groundcover vegetation would be completed in a timely manner using plant propagative materials for those native plant species that are adapted to the area. Compliance with Executive Order 13112 – Invasive Plants requires that re-vegetation efforts avoid use of those species considered either invasive or noxious. Additionally, the Texas Agriculture Department maintains a list of plant species that cannot be used in re-vegetation efforts in the State of Texas.

When the easement for construction is established, an inventory of trees in the construction easement would be made. Any mature trees greater than 6 inches in diameter removed during

[63] Ibid.

construction activities should be replaced by trees of equal or greater value for wildlife species on a 3:1 (replacement:removed) basis. Replaced trees should be native species that produce hard and soft mast and provide shelter for wildlife. Native trees and shrubs such as pecan (*Carya illinoinensis*), red oak (*Quercus falcata*), black walnut (*Juglans nigra*), mexican plum (*Prunus mexicana*), sumac (*Rhus* spp.)**,** hawthorn (*Crataegus* spp), and coralberry (*Symphoricarpos orbiculatus*) should be planted in the existing portion of the riparian woodland to improve canopy cover and food base. Approximately 70% of the stems planted should be trees and 30% shrubs. No more than 25% of the trees should be soft mast producers. The planting should be done in a random pattern leaving a few areas with open space for wildlife movement. In addition, standing snags should remain or be created in the existing forested areas to provide habitat for cavity-nesters. The easement corridor would be re-vegetated with native grasses following completion of pipeline construction to eliminate exotic species and encourage native vegetation.

Site visits were done between USACE and USFWS on areas to be impacted by the proposed project. No Golden-cheeked Warbler habitat was identified in the proposed areas. Marginal habitat was identified for Black-capped vireos. It was determined that the proposed project is not likely to affect the Golden-cheek Warbler and the Black-capped vireo or their habitats. Construction stipulations would be implemented to avoid construction activities between March 1st and September 15th in these areas.

All open trenches shall be inspected for trapped individuals of those species of reptiles listed as Protected Non-Game Species by Texas Parks and Wildlife Department including specifically Texas Garter Snakes and Texas Horned Lizards. Individuals of these species would be removed and safely transported to appropriate habitats away from construction areas.[64]

[64] Ibid.

APPENDIX A

APPENDIX B

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