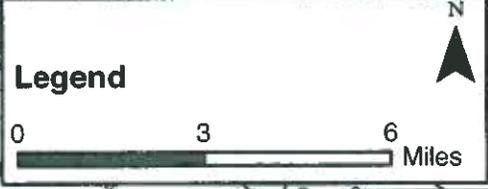
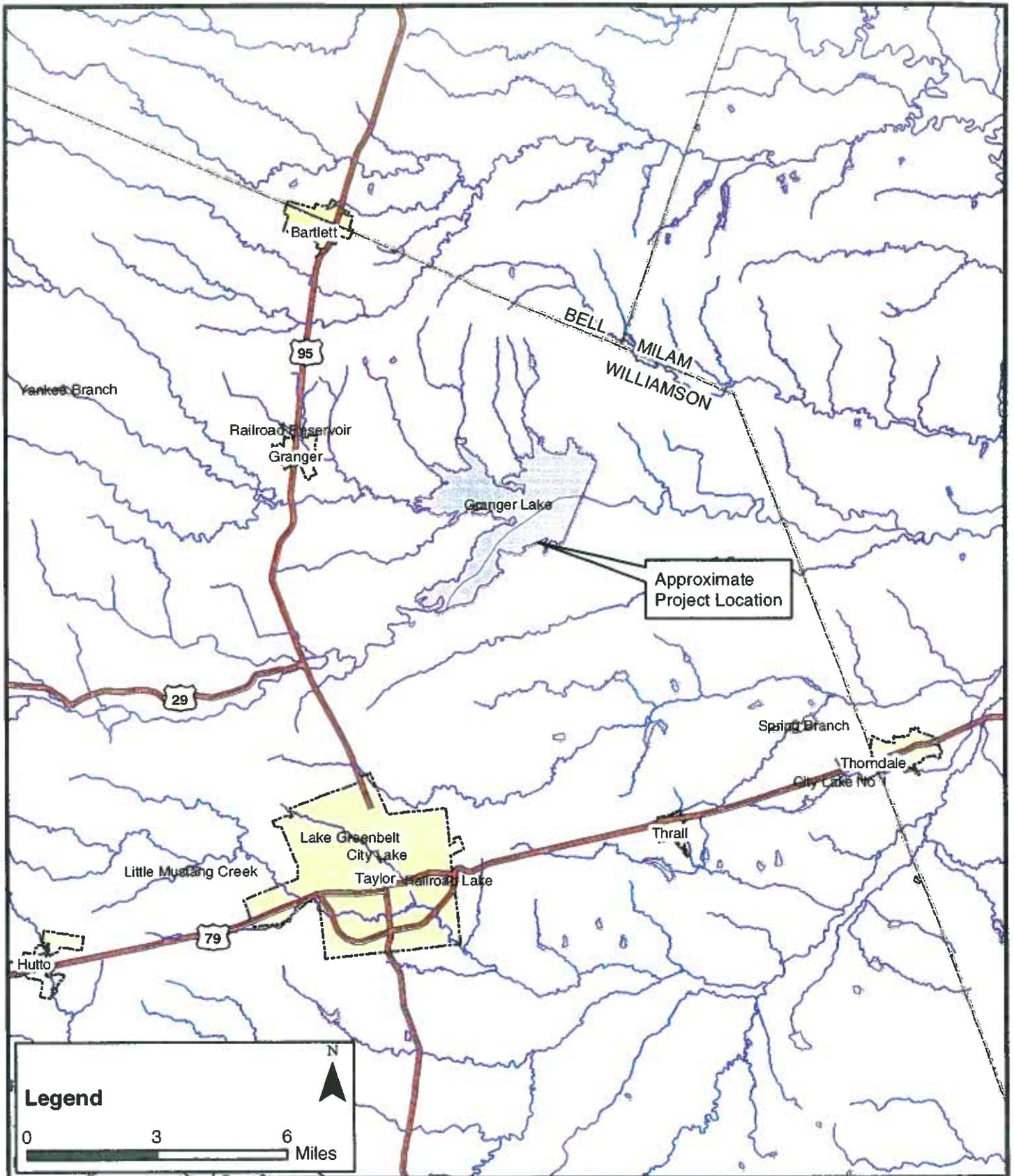
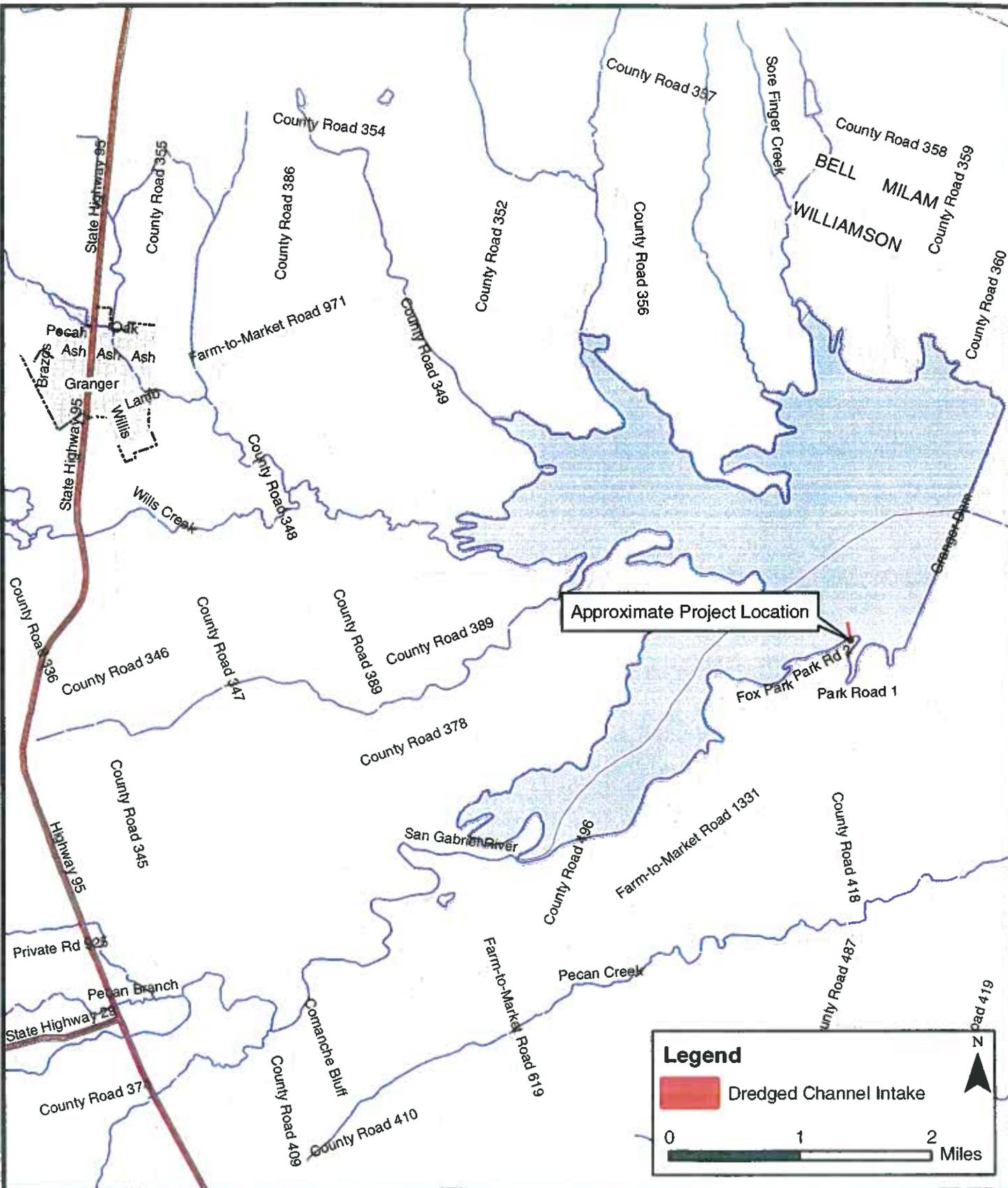


Appendix A
Exhibits



Carter-Burgess	Vicinity Map Brazos River Authority Intake Structure Granger Lake Williamson County, Texas C&B Project No. 050676.010	Source: Texas State Data Center (2000)	Exhibit 1
-----------------------	--	--	----------------------------



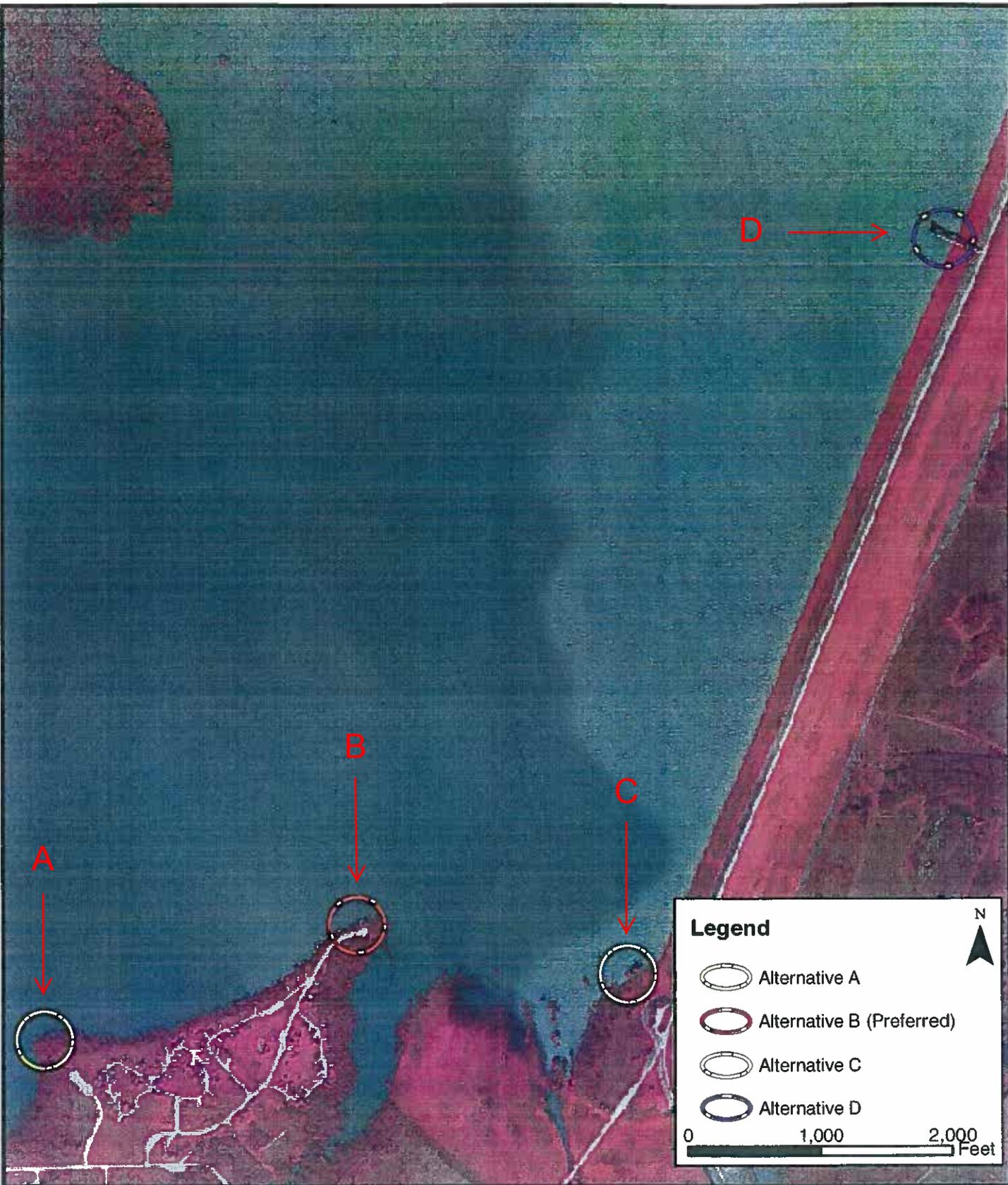
Carter=Burgess

Local Area Map
Brazos River Authority Intake Structure
Granger Lake
Williamson County, Texas
C&B Project No. 050676.010

Source: Texas State Data Center (2000)

Exhibit

2



Carter **Burgess**

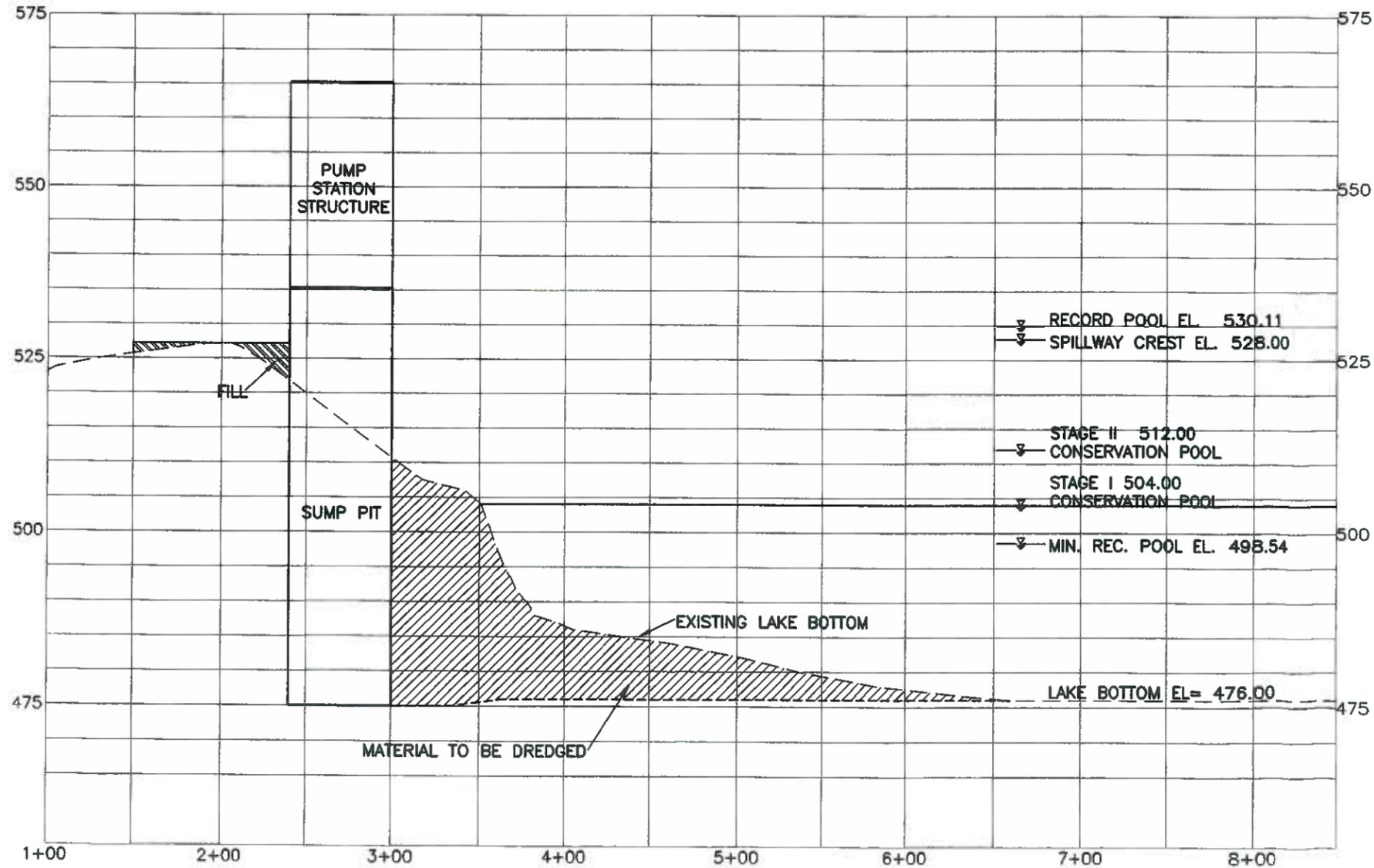
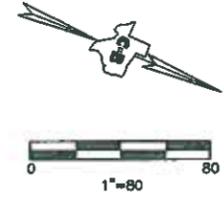
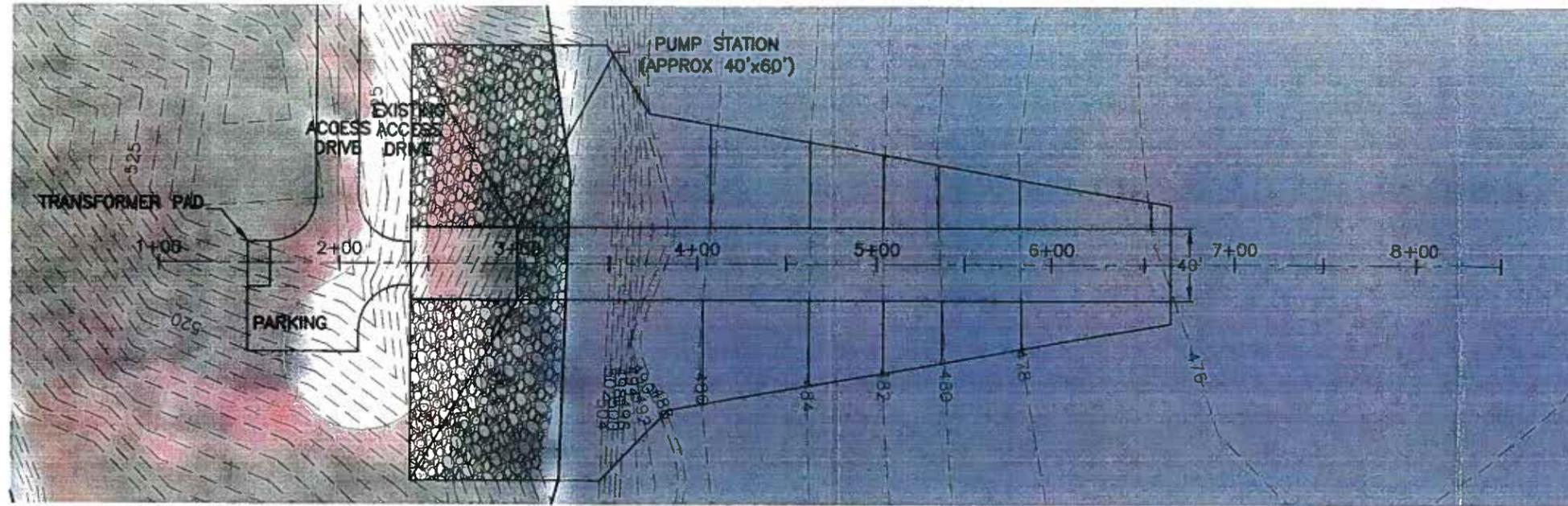
Pump Station Location Alternatives

Brazos River Authority Intake Structure
Granger Lake
Williamson County, Texas
C&B Project No. 050676.010

Source: Texas Natural Resources
Information System (2004)

Exhibit

7



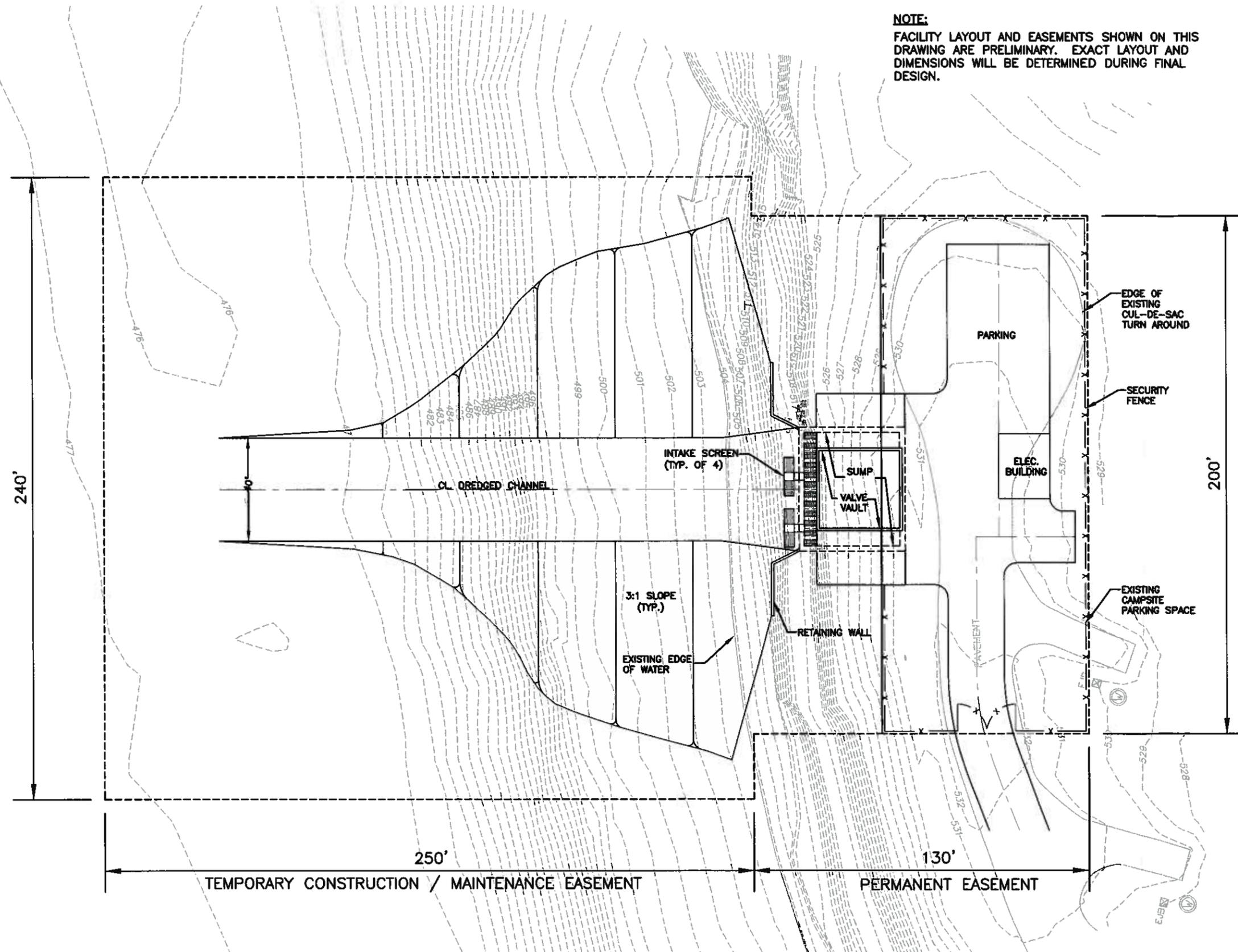
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1" = 10' HORIZ.

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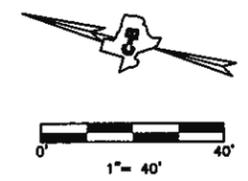
Carter Burgess
 Consultants in Engineering, Architecture,
 Construction Management and Related Services
 Carter and Burgess, Inc.
 2700 Rockledge Blvd., Suite 900
 Austin, Texas 78710
 (512) 334-3900 • Fax: (512) 334-3438
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SITE 'B' DREDGED CHANNEL INTAKE

**EAST WILLIAMSON COUNTY
 REGIONAL WATER SYSTEM (EWCRRWS)
 INTAKE PUMP STATION AND PIPELINE**



NOTE:
 FACILITY LAYOUT AND EASEMENTS SHOWN ON THIS
 DRAWING ARE PRELIMINARY. EXACT LAYOUT AND
 DIMENSIONS WILL BE DETERMINED DURING FINAL
 DESIGN.



PLAN

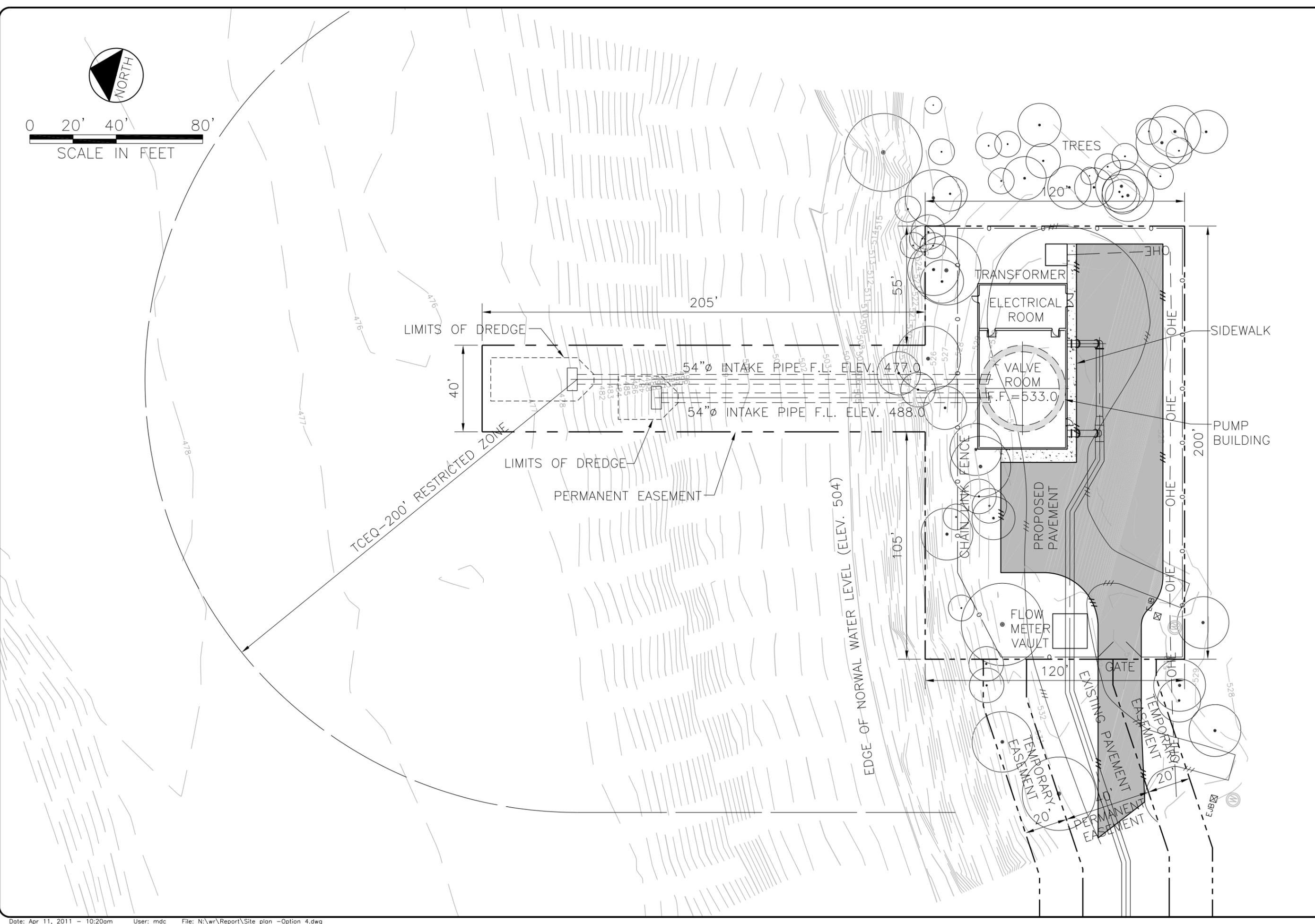
Carter-Burgess
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 Carter and Burgess, Inc.
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 Austin, Texas 78748
 (512) 835-9000 • Fax: (512) 242-0048
 C:\Projects\1000\1000.dwg

**PROPOSED EASEMENTS FOR
 INTAKE AND PUMP STATION**

**EAST WILLIAMSON COUNTY
 REGIONAL WATER SYSTEM (EWCRRWS)
 RAW WATER INTAKE, PUMP STATION & PIPELINE**

**EXHIBIT
 3-A**

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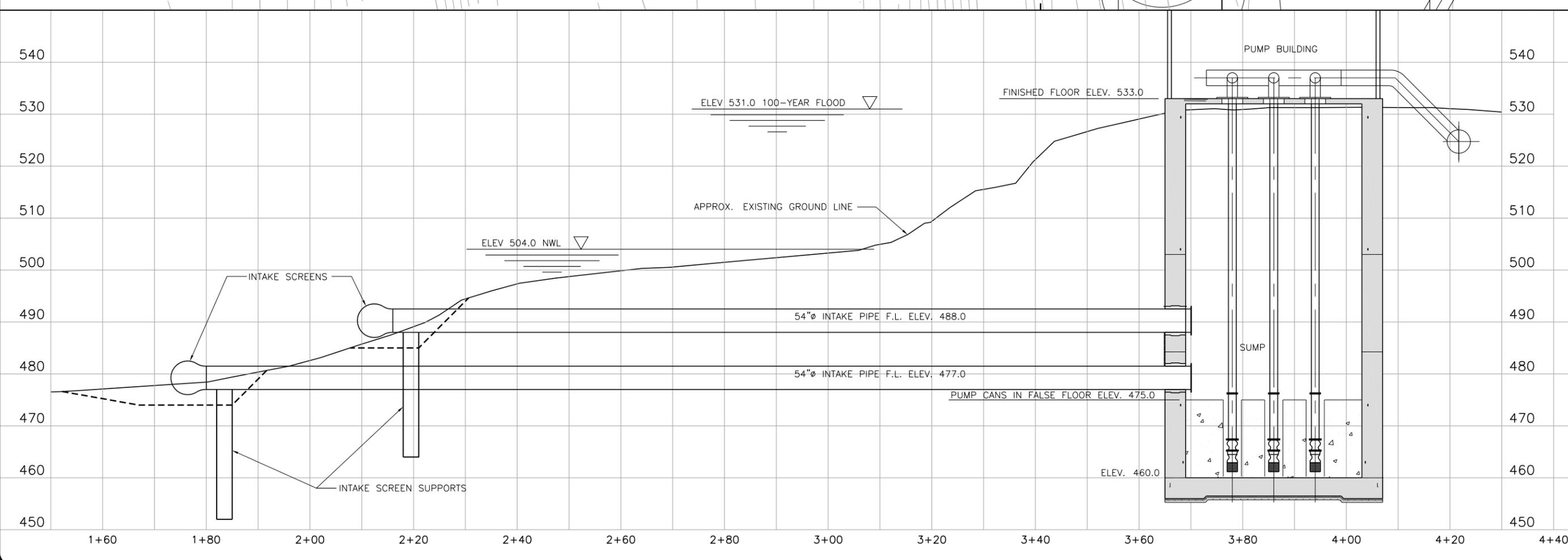
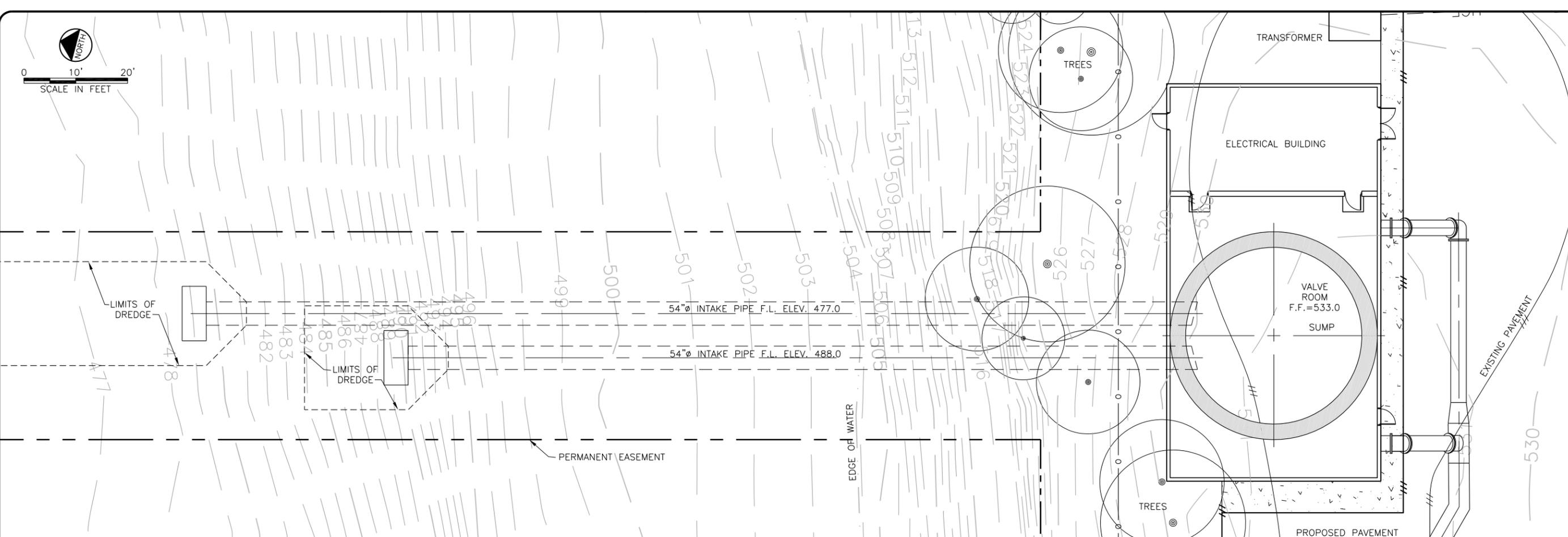


F&N JOB NO.	BRA09103
DATE	MARCH 2010
SCALE	AS SHOWN
DESIGNED	ACH
DRAFTED	JO

BRAZOS RIVER AUTHORITY
 EAST WILLIAMSON COUNTY REGIONAL WATER SYSTEM
 NEW INTAKE PUMP STATION AND TRANSMISSION PIPELINE
 CIVIL
 OPTION 4
 ATTACHED PUMP STATION AND ELECTRICAL ROOM SITE PLAN
 FILE Site_plan -Option 4.dwg



ACAD: Rel 18.0s (LMS Tech) [BRA09103] [FWCAD1.FREESE.COM] N:\wr\Report\FIGURE 3-C-54.dwg_LAYOUT: Layout1
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F&N JOB NO.	BRA09103
DATE	MARCH 2010
SCALE	AS SHOWN
DESIGNED	ACH
DRAFTED	JO

BRAZOS RIVER AUTHORITY
 EAST WILLIAMSON COUNTY REGIONAL WATER SYSTEM
 NEW INTAKE PUMP STATION AND TRANSMISSION PIPELINE
 CIVIL
 PLAN AND SECTION
 INTAKE PUMP STATION (2 INTAKES)

Freese and Nichols
 4055 International Plaza, Suite 200
 Fort Worth, Texas 76109-4895
 Phone - (817) 735-7300
 Fax - (817) 735-7491

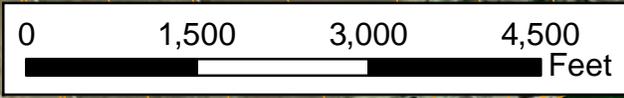
EXHIBIT
 3-C

FILE: FIGURE 3-C-54.dwg



Legend

- Alternative Route A
- Parcel Boundaries



Freese and Nichols
 4055 International Plaza, Suite 200
 Fort Worth, TX 76109 - 4895
 Phone - (817) 735 - 7300



**BRAZOS RIVER AUTHORITY
 EAST WILLIAMSON COUNTY REGIONAL WATER SYSTEM
 NEW INTAKE PUMP STATION AND TRANSMISSION PIPELINE**

ALTERNATIVE PIPELINE ROUTES

FN JOB NO	BRA09103
FILE	Exhibit7A.mxd
DATE	May 2009
SCALE	1:20,000
DESIGNED	BME
DRAFTED	BME

7A

EXHIBIT




Freese and Nichols
 4055 International Plaza, Suite 200
 Fort Worth, TX 76109 - 4895
 Phone - (817) 735 - 7300



**BRAZOS RIVER AUTHORITY
 EAST WILLIAMSON COUNTY REGIONAL WATER SYSTEM
 NEW INTAKE PUMP STATION AND TRANSMISSION PIPELINE**

ALTERNATIVE PIPELINE ROUTES

FN JOB NO	BRA09103
FILE	Exhibit7B.mxd
DATE	May 2009
SCALE	1:20,000
DESIGNED	BME
DRAFTED	BME

7B

EXHIBIT



Freese and Nichols
 4055 International Plaza, Suite 200
 Fort Worth, TX 76109 - 4895
 Phone - (817) 735 - 7300



**BRAZOS RIVER AUTHORITY
 EAST WILLIAMSON COUNTY REGIONAL WATER SYSTEM
 NEW INTAKE PUMP STATION AND TRANSMISSION PIPELINE**

ALTERNATIVE PIPELINE ROUTES

FN JOB NO	BRA09103
FILE	Exhibit7C.mxd
DATE	May 2009
SCALE	1:20,000
DESIGNED	BME
DRAFTED	BME

7C

EXHIBIT




Freese and Nichols
 4055 International Plaza, Suite 200
 Fort Worth, TX 76109 - 4895
 Phone - (817) 735 - 7300



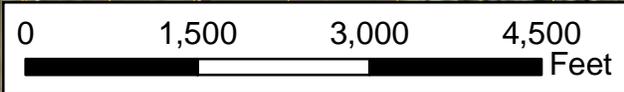
**BRAZOS RIVER AUTHORITY
 EAST WILLIAMSON COUNTY REGIONAL WATER SYSTEM
 NEW INTAKE PUMP STATION AND TRANSMISSION PIPELINE**

ALTERNATIVE PIPELINE ROUTES

FN JOB NO	BRA09103
FILE	Exhibit7D.mxd
DATE	May 2009
SCALE	1:20,000
DESIGNED	BME
DRAFTED	BME

7D

EXHIBIT



Legend

- Alternative Route E
- Parcel Boundaries

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 Fort Worth, TX 76109 - 4895
 Phone - (817) 735 - 7300



**BRAZOS RIVER AUTHORITY
 EAST WILLIAMSON COUNTY REGIONAL WATER SYSTEM
 NEW INTAKE PUMP STATION AND TRANSMISSION PIPELINE**

ALTERNATIVE PIPELINE ROUTES

FN JOB NO	BRA09103
FILE	Exhibit7E.mxd
DATE	May 2009
SCALE	1:20,000
DESIGNED	BME
DRAFTED	BME

7E

EXHIBIT



Freese and Nichols
 4055 International Plaza, Suite 200
 Fort Worth, TX 76109 - 4895
 Phone - (817) 735 - 7300



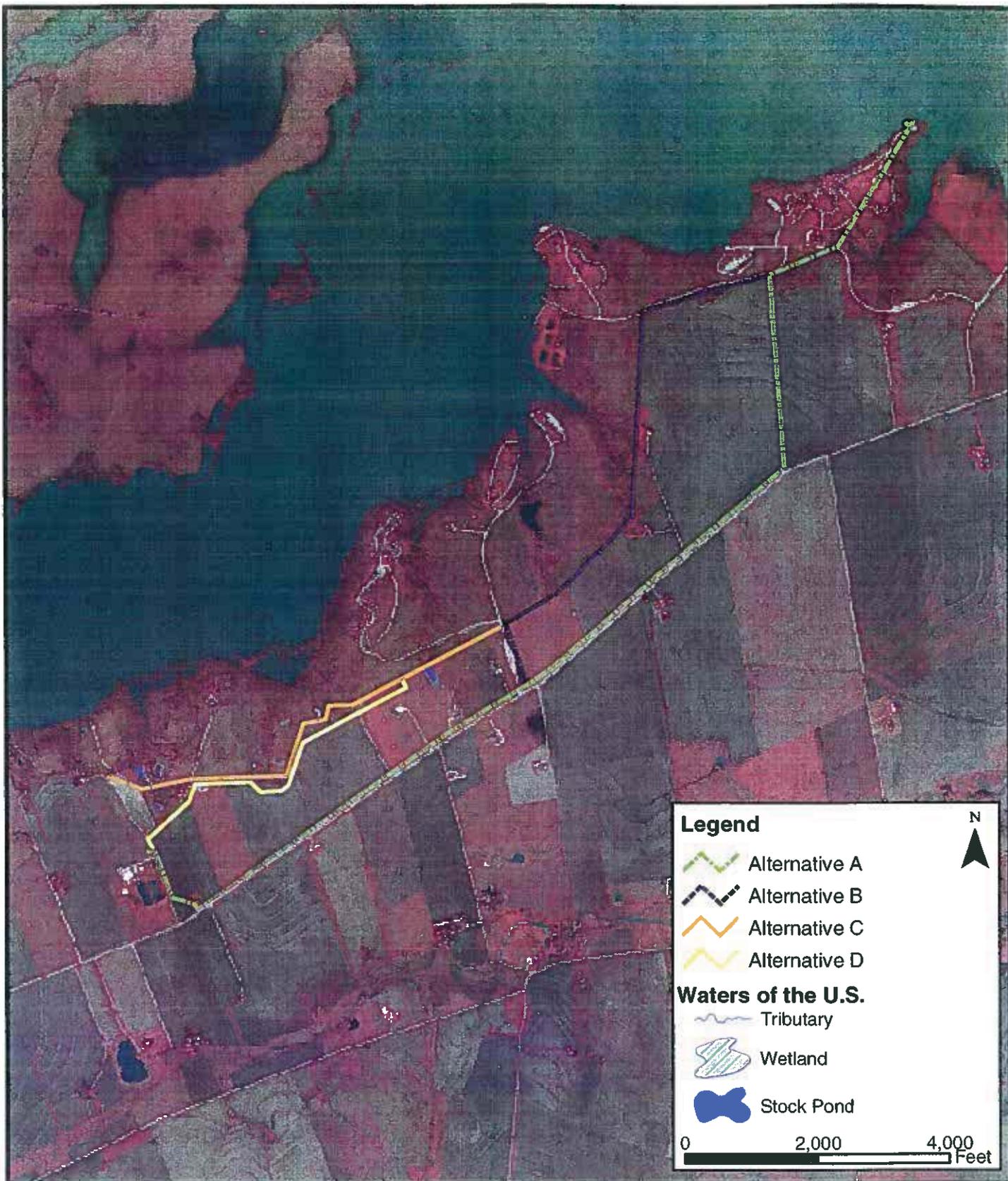
**BRAZOS RIVER AUTHORITY
 EAST WILLIAMSON COUNTY REGIONAL WATER SYSTEM
 NEW INTAKE PUMP STATION AND TRANSMISSION PIPELINE**

ALTERNATIVE PIPELINE ROUTES

FN JOB NO	BRA09103
FILE	Exhibit7F.mxd
DATE	May 2009
SCALE	1:20,000
DESIGNED	BME
DRAFTED	BME

7F

EXHIBIT

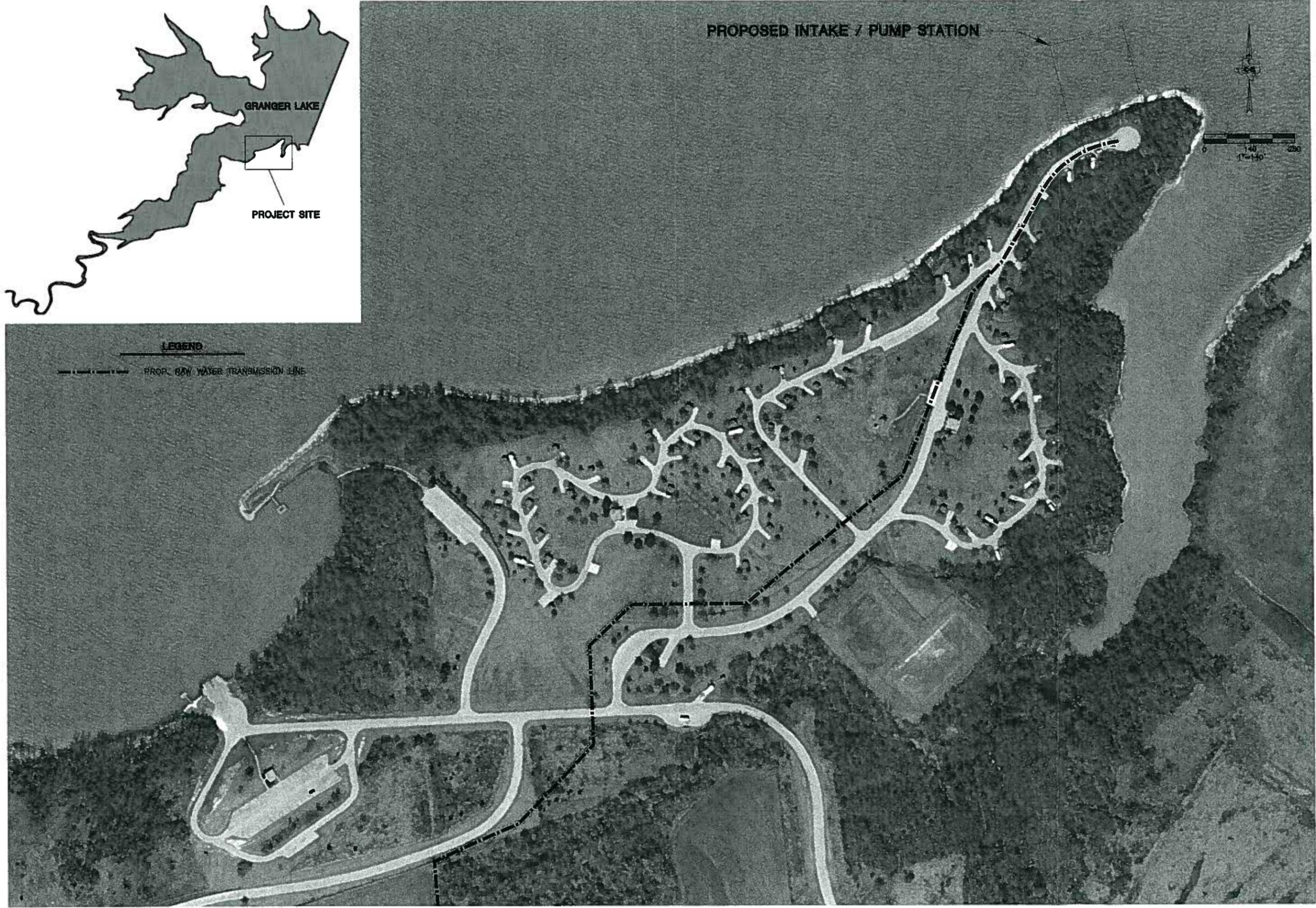


CarterBurgess

Waters of the U.S.
Brazos River Authority Intake Structure
Granger Lake
Williamson County, Texas
C&B Project No. 050676.010

Source: Texas Natural Resources
Information System (2004)

Exhibit
8



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 Consultants in Engineering, Architecture,
 Construction Management and Related Services
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 Raleigh, NC 27604
 919.286.3700 Fax 919.286.3708
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WILSON FOX PARK ALIGNMENT

GRANGER LAKE INTAKE

EXHIBIT
9-B

GRANGER LAKE INTAKE

Appendix B
Granger Lake Water Quality Study
(Conclusions and Recommendations)

5.0 Conclusions and Recommendations

1. The oxycline depth ranged from 15 to 35 feet and depending on site averaged between 22 to 26 feet. The oxycline depth was shallower at the mid-lake site (12095), which averaged 22 feet and deeper near dam, which averaged 26 feet. DO concentrations greater than 2.0 mg/L were consistently observed for depths shallower than 25 feet. Below 25 feet, DO concentrations decreased markedly especially during the summer months with the hypolimnion being almost completely anoxic.
2. The lower extent of photic zone ranged from 1.7 to 9.8 feet. The average depth of the photic zone ranged from 4.6 to 5.6 feet (depending on site).
3. USGS data indicated that 8 taxonomic groups of algae that are commonly associated with taste and odor problems were present in Lake Granger from 1981 through 1989. One or more groups were identified in samples collected each year. Oscillatoria (associated with MIB and Geosmin production) were present six of the nine years monitored. Under the right conditions of nutrients, light and temperature, there is the potential for taste and odor problems from algal blooms.
4. Elevated concentration of iron and manganese can cause rusty or metallic taste and staining. These compounds exhibited increased concentration with depth particularly during the summer months. At depths greater than 40 feet, iron concentrations exceeded the secondary drinking water standard of 300 µg/L on four sampling dates. At depths greater than 30 feet, manganese exhibited concentrations above the secondary drinking water standard of 50 µg/L on 10 sampling dates.
5. Conductivity values ranged from 292 - 488 µmhos/cm and exhibited some variation with depth. Conductivity data was used to evaluate changes in total dissolved solids (TDS) concentrations with depth. A site-specific conversion factor was developed based on linear regression analysis. Estimated TDS values were within acceptable ranges at all depths (below TSWQS of 400 mg/L).
6. Examination of nutrient concentrations confirmed that nitrogen is elevated. 77% of the NO₂+NO₃ measurements exceeded the TCEQ screening level of 0.32 mg/L. Only 1 out of 80 PO₄ measurements exceeded the TCEQ screening level of 0.05 mg/L
7. TN:TP ratios within the reservoir were much greater than 10; therefore, algal growth is strongly limited by available phosphorus. Pulses of phosphorus (through hypolimnetic release and mixing or inflow event) could stimulate algal blooms. It is important to control phosphorus to limit algal growth. A highly significant (P<0.01) statistical difference between top and bottom phosphorus concentrations was observed. This suggests regeneration of dissolved phosphorus through recycling of organic phosphorus and/or release from bottom sediments. Hypolimnetic phosphorus concentration averaged three times greater than at the surface. There is a high potential for algal blooms following mixing events, which may occur in the fall due to destratification or in response to wind or inflow events.
8. Based on this analysis, the optimal water quality within Lake Granger occurs below the photic zone and above the hypolimnion. This region occurs between a depth of 10 feet and 25 feet from the surface. Assuming a water surface elevation at the conservation pool elevation of 504 feet, the optimal intake elevation will be between 479 and 494 feet above msl.

Appendix C
U.S. Army Corps of Engineers Policy Letter



REPLY TO
ATTENTION OF

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

January 4, 2010

Operations Division

Mr. David Collinsworth
Regional Business Development Manager
Brazos River Authority
4600 Cobbs Drive
Waco, Texas 76714-7555

Dear Mr. Collinsworth:

The U.S. Army Corps of Engineers (Corps) and the Brazos River Authority (BRA) have been working closely together in assessing the potential environmental impacts related to the proposed raw water intake project and associated pipeline in Wilson H. Fox Park at Granger Lake. As part of the National Environmental Policy Act (NEPA) process, an environmental assessment (EA) is being drafted with a detailed analysis of alternative alignments and associated environmental impacts. To date, a total of six pipeline routes have been identified; one route was deemed infeasible and eliminated from further analysis. Of the remaining five routes, two are located primarily on Corps land and three routes are located primarily on private land. According to the draft EA, the two alignments located on private land have been identified as the most feasible, based on the low probability of non-environmental and environmental constraints, future maintenance, and cost. The two proposed alignments located on Federal lands would be counter to national Corps policy which states that non-recreational outgrants (such as public utility easements) should be authorized on Corps land only if there is no viable alternative to the activity or structure being located on Corps lands or waters, or there is a direct benefit to the Government.

We are sensitive to the utility related problems in areas experiencing rapid urbanization and we have allowed easements across Corps land in areas where no practical alternative route exists. Due to the issues stated above and the fact that there appears to be other viable, practical, alternative alignments on private land, the alignments located primarily on Corps land must be withdrawn from further consideration and will be described in the EA as being infeasible due to national Corps policy and the high probability of negative impacts to natural resources and public recreational opportunities afforded by Corps lands.

We appreciate your cooperation in this matter. If you have any questions or comments, please contact Mr. Brandon Mobley, Natural Resource Management Specialist, at (817)886-1565.

Sincerely,


Charles L. Burger
Chief, Operations Division

Appendix D
Texas Parks and Wildlife Coordination Letter



February 24, 2010

RECEIVED
2010 MAR - 3 A 10: 41
TWDB
RECORDS MANAGEMENT

Life's better outside.®

Ms. Kathy Calnan
Project Engineering and Review, CA
Texas Water Development Board
P.O. Box 13231
Austin, TX 78711-3231

Commissioners

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Chairman
San Antonio

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Vice-Chairman
Houston

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Amarillo

Ralph H. Duggins
Fort Worth

Antonio Falcon, M.D.
Rio Grande City

Karen J. Hixon
San Antonio

Dan Allen Hughes, Jr.
Beeville

Margaret Martin
Boerne

S. Reed Morian
Houston

Lee M. Bass
Chairman-Emeritus
Fort Worth

Carter P. Smith
Executive Director

RE: Project No. 21637: Texas Water Development Fund – Water Infrastructure Fund Brazos River Authority, E. Williamson County Regional Water System Lake Granger Regional Intake Project, Williamson County

Dear Ms. Calnan:

Texas Parks and Wildlife Department (TPWD) reviewed the project description for construction of the water system regional intake project at Lake Granger and would like to offer the following comments, information and recommendations. The coordination letter states that the Review Request only addresses the portion of the project, approximately 3.1 miles of pipeline, which are not on federal lands. However, this TPWD project review applies to the entire project, since it constitutes a single and complete action under the National Environmental Policy Act. Based on the project description, TPWD does not anticipate additional or significant adverse impacts to protected species or other important biological resources that have not already been evaluated in the project description, with the following exceptions, discussed below.

Please be aware that a written response to a TPWD recommendation or information comment received by a state governmental agency on or after September 1, 2009 may be required by state law. For further guidance, please see the attached *Texas Parks & Wildlife Code, Section 12.0011*. For tracking purposes, please refer to TPWD project number 14407 in any return correspondence.

Project Description

The project would include construction of a new deepwater intake structure, pump station, and approximately 0.7 mile (3,000 feet) of pipeline on federal property and approximately 3.1 miles (16,500 feet) of new 48- to 54- inch water transmission lines along existing road right-of-way (ROW) or across cultivated fields. The pipeline would run from the Lake Granger property line to the Authority's Williamson County Regional Water Treatment Plant. The pipeline route would cross cultivated fields and follow the existing road ROW for

State Highway 1331 and Country Road 496. The pipeline trench would be excavated to depths between 1.2 to 3.4 meters (4 to 11 feet) depending on the final pipe diameter selected. Results of a pedestrian surveys conducted in January 2009 indicated that no habitat for endangered or threatened species is present. Approximately half the land along the proposed pipeline route is cultivated in row crops and the other half is improved pasture.

TPWD Review Methods

Use of the TXNDD records in conjunction with the State and Federal Endangered Species lists for the counties are the most relevant steps to reliably identify and address those fish and wildlife resources that could be adversely impacted by the project. As part of the review, TPWD conducted a Texas Natural Diversity Database (TXNDD) search of known records for species and rare resources within 5 miles of the project. TXNDD Element Occurrence (EOID) records found within a 5 mile radius provide an estimate of the species and other rare resources that have potential to occur on the project. **A lack of site-specific records should not be interpreted as presence/absence data, but instead that little information is available to date.** Please review the *TEXAS NATURAL DIVERSITY DATABASE Data System, Source Types, Utility, and Limitations* (attached) on appropriate use of TXNDD data. The *TPWD Annotated County List of Rare Species for Williamson County* (attached) was reviewed to determine if habitat or species might be present in the proposed action area. Landscape, waterbody and vegetation features were examined using Geographic Information System-based aerial imagery, in-house natural resources data files and publicly available natural resource information on the internet.

Rare and Protected Species

The TXNDD check located records for Mountain Plover (*Charadrius montanus*) within 2.5 miles and 3.2 miles of the proposed project area and a Colonial Waterbird Rookery-(Snowy Egret (*Egretta thula*)), Little Blue Heron (*Egretta caerulea*) and Cattle Egret (*Bubulcus ibis*)-within 5 miles of the proposed project. A copy of these records is attached. Mountain Plovers were observed roosting and foraging in plowed fields of stubble during fall, winter and early spring. The agricultural fields on the project are potential habitat for the Mountain Plover. The close proximity of the TXNDD records indicates that Mountain Plover may be present within the proposed project footprint and potentially impacted by construction. The Mountain Plover is not listed as threatened or endangered. However, it is protected by the Migratory Bird Treaty Act of 1918 (MBTA, discussed below) and considered to be a species of conservation concern to the state. As such, TPWD actively promotes its conservation in order to help prevent it from becoming listed.

Recommendation: If not done to date, TPWD recommends on-ground surveys by qualified biologists be performed to determine if Mountain Plovers are present within the project area. If so, then steps should be taken to avoid harm in accordance with the MBTA.

Migratory Birds

Federal/state listed and rare migratory birds are included on the *TPWD Annotated List of Rare Species for Williamson County*. Vegetation and structures in the vicinity of the project area may provide habitat for migratory birds. Williamson County is located within the Central Flyway for migratory birds, including the Whooping Crane. Fall and spring migrants use the region for temporary stops during travel between the northern and southern hemispheres. Williamson County is located within the known breeding ranges of the endangered Golden-cheeked Warbler (*Dendroica chrysoparia*) and Black-capped Vireo (*Vireo atricapilla*).

The MBTA prohibits taking, attempting to take, capturing, killing, selling/purchasing, possessing, transporting, and importing of migratory birds, their eggs, parts and nests, except when specifically authorized by the Department of the Interior. This would include prohibiting harassment of nesting birds and young during the breeding season. In addition, the Endangered Species Act and state law protect migratory birds that are listed as endangered or threatened.

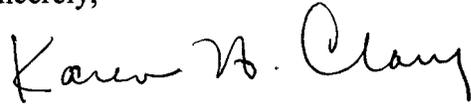
Recommendation: TPWD recommends the bird species that use the area be identified and best management practices for avoiding harassment and harm to migratory birds be implemented. In accordance with the MBTA, TPWD recommends that vegetation removal and ground disturbing activities be phased to occur outside of the nesting season (March 15 to September 15) and impacts to spring and fall migrants be avoided. Construction noise that could harass nesting birds should be phased to occur outside of the nesting season as well. If federally-listed bird species protected by the MBTA are to be affected by the project, then coordination with the U.S. Fish and Wildlife Service (USFWS) would be required. Additional information regarding the MBTA may be obtained through the USFWS Region 2 Migratory Bird Permit Office at (505) 248-7882.

I appreciate the opportunity to review and comment on this project. TPWD strives to respond to requests for project reviews within the review period. Response may be delayed due to workload and lack of staff. Failure to meet the review time frame does not constitute concurrence from TPWD that the proposed project will not adversely impact fish and wildlife resources. Please contact me at

Ms. Kathy Calnan
Page Four
February 24, 2010

(512) 389-8054 or by email at karen.clary@tpwd.state.tx.us if I may be of further assistance.

Sincerely,

A handwritten signature in black ink that reads "Karen H. Clary". The signature is written in a cursive style with a large, looped initial "K".

Karen H. Clary, Ph.D.
Wildlife Habitat Assessment Program
Wildlife Division

KHC:gg.14407

Attachments

Appendix E
Cultural Resource Letter Report

August 10, 2005

TO: Glenn Bridges, PE
Carter & Burgess-Austin

RE: Archaeological site 41WM321
Granger Lake, Williamson County

After reviewing records about archaeological site 41WM321, I inspected the site yesterday morning and it is my opinion that the use of the proposed Locality B at Granger Lake for the Brazos River Authority Pump Station will not significantly impact the site.

Site 41WM321 was recorded in 1978 by Duane Peter when he was working for North Texas State University (now the University of North Texas). At that time, the prehistoric site was described as a scatter of burned rock and lithic debris situated on an upland peninsula that juts into the San Gabriel River valley. The scatter was relatively thin and extended for 400 meters along the surface of the peninsula and was approximately 100 meters in width. Most of the site area had been disturbed by farming and pond construction but the northern third was tree-covered and had not been farmed. The shallow depth of the site deposit was based on the presence of chert gravels being present near the surface. No subsurface testing was done at that time.

In conjunction with development of the William H. Fox Park at Granger Lake, the Corps of Engineers built an asphalt road and turn-around on the crest of the narrow peninsula and essentially covered over the southern two thirds of the site deposit. It appears to me that they brought in rock to underlie the asphalt and thus raised the grade and effectively sealed over the site deposit although it is likely that some grading was done before the rock and asphalt were applied. This must have been done with the concurrence of Corps cultural resource managers, although I have been unable to document this in my records.

After walking over the edges of the peninsula yesterday, I concur with Duane Peter's description of the site with regard to size, depth and location. There is a thin layer of dark brown or black [it was too moist to be sure how the color would be classified using a Munsell soil chart] clay loam resting on a yellowish clay subsoil that contained chert gravel. Lithic artifacts are no doubt present in this roughly 25 cm thick topsoil zone. This all rests on bedrock which extends to the base of the eroded bluff. Based on Peter's description, the site extends to the northeast into the forested end of the peninsula and as elsewhere I only found artifacts around the edge of the upland where erosion has exposed the subsoil onto which a few pieces of lithic debris and other artifacts have been deflated.

Based on the site inspection, it is my opinion that construction of the pump facility will essentially destroy the southern two thirds of the site deposit that remains under the paved road. However, I found no evidence that a significant cultural deposit remains at the site. Farming and its associated erosional deflation of the disturbed topsoil had probably destroyed the vertical and horizontal integrity of the southern two thirds of the site deposit before Peter recorded the site in 1978. The subsequent road may have been graded before it was paved but I did not find that this is likely to have done further significant damage. The site appears to be typical of numerous prehistoric sites situated on the edge of the San Gabriel River valley in the Granger Lake area but it does not appear to be worthy of further investigation in the Locality B area.

My recommendations would be to proceed with plans for locating the pump station at Locality B. As presently designed, I would not recommend that further cultural resource investigations are warranted since all construction is planned for the formerly farmed part of the site and peninsula. If brush clearing and land modification are to be considered in the northern third of the site which is presently tree covered, then I would recommend limited testing in this area before it is to be cleared. This is the only part of the site that may contain undisturbed archaeological deposits. Furthermore, I found no reason that dredging in the lake should require archaeological investigations.

Submitted by _____
S. Alan Skinner, PhD, RPA

Appendix F
Noise Study

July 5, 2005

DRAFT



Mr. Glenn A. Bridges, P.E.
Senior Project Manager
Carter & Burgess
2705 Bee Cave Road, Suite 300
Austin, Texas 78746

RE: Brazos River Authority Proposed Pump Station
Granger Lake, Texas
Environmental Noise Survey
Wilson H. Fox Park
C&B Project #050676.001

Dear Glenn:

An initial ambient noise survey at Granger Lake was conducted and three sites visits to three pump stations were made. The following is a report of this effort.

INTRODUCTION

An environment noise survey was conducted in the late afternoon of June 28, 2005 and in the early morning of June 29, 2005 at four camp sites at Wilson H. Fox Park at Granger Lake. The Corps of Engineers (COE) had selected camp sites 21, 24, and 32. PMK suggested adding site 20, which is closest to the proposed Brazos River Authority (BRA) Pump Station, for ambient noise measurements. The distances for each of these were determined with a measuring wheel by COE personnel and were located with a GPS handheld device. These are as follows:

- Site 20 – 125 ft. (Photo 1)
- Site 21 – 550 ft. (Photo 2)
- Site 24 – 1,040 ft. (Photo 3)
- Site 32 – 1,413 ft. (Photo 4)

A copy of a park Granger Lake brochure showing layout is attached with notes indicating the distances and site locations.

At various times during the survey, it was not always possible to obtain data at each exact site due to campers occupying some of these locations. Thus, alternate site locations were selected either adjacent to or across the road to obtain the ambient noise levels. These required changes will not affect the ambient levels to any great degree.

On June 29th, in addition to the ambient early morning noise survey, site visits were made with representatives of BRA, COE, and Carter & Burgess to three pump stations as follows:



- LCRA Pump Station off of Highway 190 northwest of Lameta, Texas – drawing water from the Colorado River using two submersible pumps (Photo 5).
- City of Georgetown, Texas Pump Station – drawing water from Georgetown Lake using three submersible pumps (Photo 6).
- City of Austin, Texas – pump station drawing water from Lake Austin with six vertical turbine pumps in an air-conditioned building (Photo 7).

This report will summarize the ambient noise survey, along with comments and observations for the three pump station site visits.

ENVIRONMENTAL NOISE SURVEY SUMMARY

Summary of the environmental noise survey is shown in the attached tabulation. This includes the site locations, distances, dates, time of day for measurements, temperature, relative humidity, wind conditions, and dBA levels for an L99 value. The L99 value is the sound level that exists 99% of the time. This is the lowest levels occurring during the measurement session. Thus, we were able to determine the low sound levels during any given measurement time period.

A CEL 593 Real Time Spectrum Analyzer set for the environmental mode was used to conduct the measurements. The sound level meter was placed on a tripod approximately 5 ft. above grade and calibrated for the measurements. The CEL meter was programmed to measure values for Leq, L1, L10, L90, and L99. This provides statistical analysis of the noise levels during the measurement time period in order to obtain the Average Energy Level (Leq) or Highest Average Levels (L1), and the Lowest Average Levels (L99). Five-minute intervals were chosen to conduct the measurements. Based on our past experience with this type of environmental noise assessment, two to three 5-minute intervals provide sufficient information to characterize the ambient noise levels based on a relatively steady background. During these measurements, major transients were not observed that would lead us to believe that this set of data is not representative of the low ambient noise levels in the area.

On the afternoon of June 28, 2005, the Cicadas and other insects in the area set the ambient sound level in the range of 45 to 54 dBA. Taking out the effects of the insects, we estimate that the noise levels will be reduced 5 to 10 dBA since they occur in the higher frequencies. These measurements were made from 1630 hours to 1725 hours giving fairly consistent results, depending on where the instrument was located.



On the morning of June 29, 2005, from 0615 to 0700 hours, measurements were also made at the site locations with levels ranging from 36 to 37 dBA. In order to understand the audio spectrum shapes of these sound levels, the attached graph shows the frequency range from 63 Hz to 8,000 Hz. Please note the elevated levels at Site 20A⁽¹⁾ from 2,000 and 8,000 Hz are the affects of the insects that set the ambient level.

At Site 20B, which is the morning of the 29th, there are birds that tend to set the levels slightly at 2,000 and 4,000 Hz. The remainder of the spectrum from 63 to 1,000 Hz are essentially the same and do not have any unusual characteristics. Thus, we would anticipate that the ambient levels could be slightly lower than 36 dBA taking out the effects of the birds. We would estimate the lower ambient levels in the range of 33 to 35dBA could be anticipated in the early morning hours before sunrise when the birds are quiescent. If pump station noise is measured, additional data can be obtained at these camp sites and under different conditions.

The attached tabulation indicates this data, along with comments relative to instrument placement due to conditions and normal activity in the park at various camp sites. For example, at Site 24, a family was camping with two small children and a radio was playing. The instrument was moved cross the road to minimize this effect (see Photo 3). In addition, in the early morning hours at Site 21, an air-conditioning unit was operating on the trailer occupying Site 22. The instrument was moved across the road to minimize this effect. Other items such as cars on the main highway, dogs barking in the distance, and small aircraft flyover are transient and do not affect the average long-term level but should be noted as part of the sound landscape of the area.

With a potential ambient level of 33 to 35 dBA, the pump station should be designed so that it does not increase the noise level at Site 20. The effects of any pure tones from pumps and motors common to this type of equipment can be minimized in the overall design.

PUMP STATION SITE VISIT

LCRA Pump Station Highway 90 Northwest of Lameta, Texas off County Road 1935

This pump station has two submersible pumps that operate from 600 to 900 RPM and have variable frequency drives. Since they are submersible, the only noise level associated with this is water flow and some pump noise that radiate from the above ground piping (see Photo 5). Walking away from the pump at a distance of 125 ft. (camp site location #20), it is difficult to hear the water flow from the piping.

⁽¹⁾ The description of A & B for each camp site was used for afternoon of the 28th and early morning of the 29th respectively.

City of Georgetown, Texas Pump Station

This pump station is located on Georgetown Lake and has three submersible vertical turbine pumps (see Photo 6). Flow and pipe noise can be heard radiating out of the pipe, but as one walks away to about the 125 ft. distance, the flow noise diminishes significantly. These pumps are 10 MGD, 400 HP and operate at 1200 RPM.



City of Austin, Texas – Lake Austin Pump Station

This pump station is within a large two-story masonry building. It contains six vertical turbine pumps, two 500 HP, 20 MGD, two 700 HP, 30 MGD and two 1,000 HP, 40 MGD (see Photo 7). Within the building, the noise levels are moderate from the motor and pump noise. There is Proudfoot Soundblox lining the room to provide interior sound absorption. Outside of the building at 125 ft., there is some residual noise that comes through an air louver and rollup metal doors.

SUMMARY

The ambient noise level at the park for an early morning condition was measured at 36 to 37 dBA and is anticipated to be as low as 33 to 35 dBA. This can be because the design criteria for noise control for the Brazos River Authority Pump Station to be located within 125 ft. of Camp Site No. 20. This is a worst-case condition at this time.

If submersible pumps are used, the only consideration would be controlling the noise from any above ground piping. If there is a building at the site that is made to look like the buildings in the area, minimal noise control treatment will be required. However, this will need to be determined after the type of pump system is selected and another site visit made to a pump station to acquire more definitive data for final noise control design. Also, another set of measurements can be made at Lake Granger to have additional ambient noise data.

From our measurements and observations, it appears that it will minimal noise control will be required for the submersible pumps, but more in depth noise control design will be required if the large vertical pumps are used located within a masonry building. This will require consideration of either/or air-conditioning and ventilation noise, as well as doors and any windows that may be in the design.

Should you have any questions regarding this report and summary, please do not hesitate to contact me.

Sincerely,

PELTON MARSH KINSELLA



Howard K. Pelton, P.E.
Principal Consultant

HKP:vh

Attachments

J:\Jobs\05Austin\050676.001\bridges 07-05-05.doc

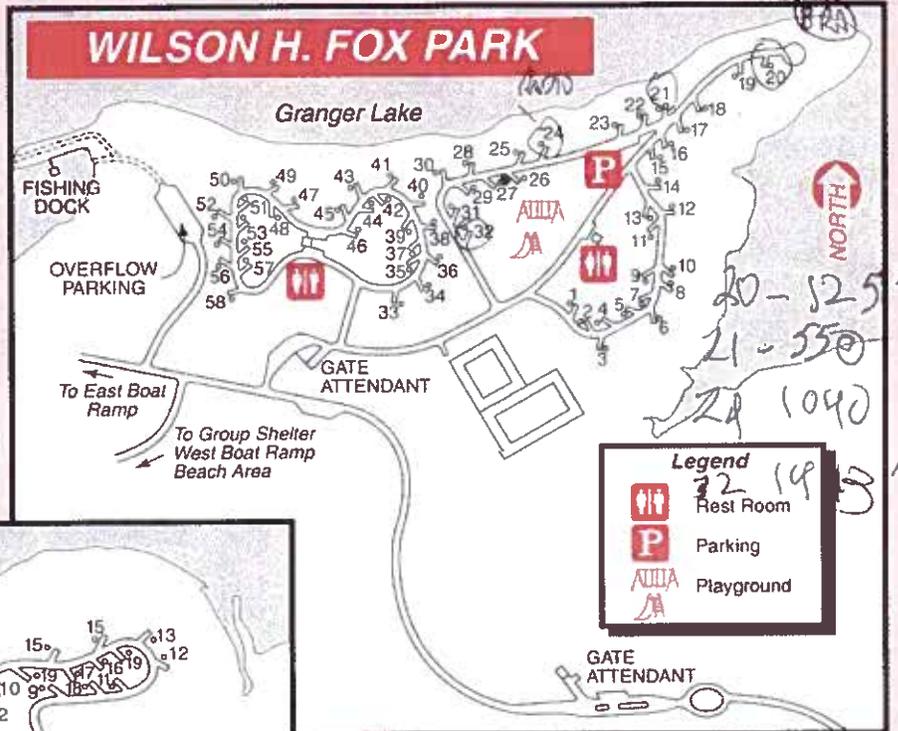


CAMPGROUND AND PARK USE REGULATIONS

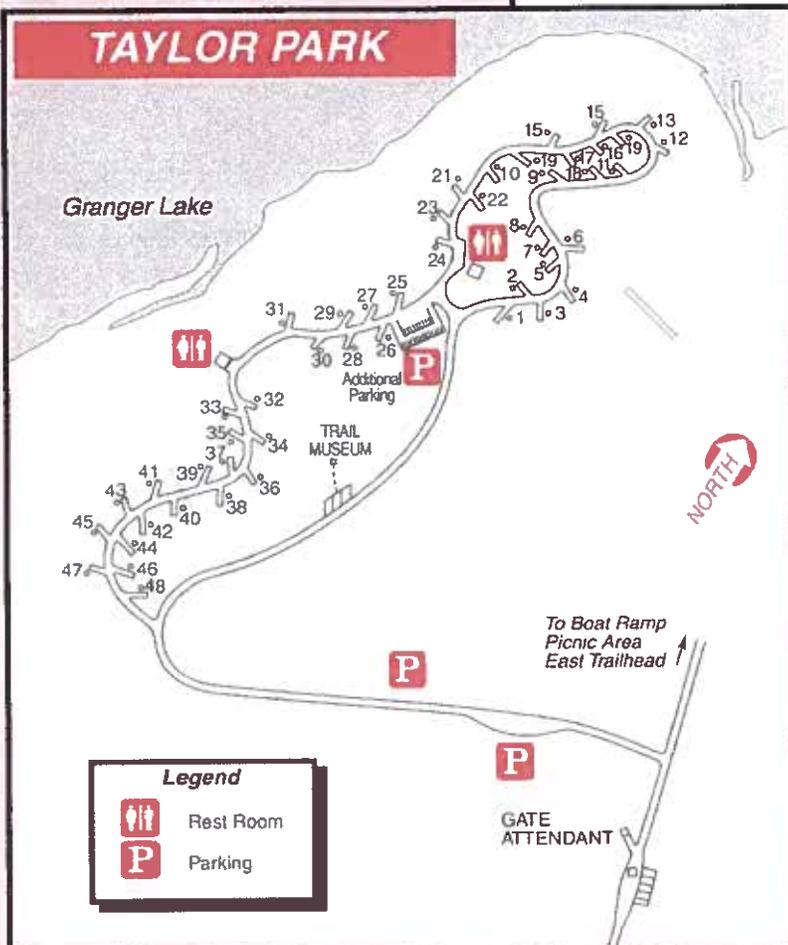
1. Please read and become familiar with the RULES AND REGULATIONS contained in the Title 36 brochure.
2. Camping is permitted only in designated campsites.
3. Motor vehicles are to be parked only on camping pads or parking areas. Drive only on prepared surfaces. **Please do NOT park on grass.**
4. The improper disposal of sewage, trash or other waste is prohibited.
5. Fires are permitted in fire rings only.
6. Damage, destruction or removal of vegetative growth is prohibited. Gathering dead wood on the ground for firewood is permitted.
7. Gas lanterns should not be hung from trees. Please use the lantern hangers provided.
8. Please remove all wire ropes from trees and lantern posts before leaving.
9. **Quiet hours are from 10:00 PM to 6:00 AM.** Excessive noise during this time is prohibited.
10. Dogs, cats and other pets are prohibited in the beach area. They must be penned, caged or on a leash at all times within any portion of the park.
11. Please do not leave hoses attached to water hydrant if unattended.
12. In case of emergency, contact a ranger or notify the gatehouse attendant.
13. Granger Lake is susceptible to sudden high winds and waves. Always be aware of sudden weather changes when on the water.
14. Fraudulent use of Golden Age/Golden Access Passes is prohibited.

WILSON H. FOX PARK

OPEN YEAR ROUND (58 Sites)
 Camp Area 6 AM-10 PM, \$14 (Single Sites);
 \$26 (Double Sites)
 Screened Shelters: \$22 with sink;
 \$34 with RV
 50 Amp Electrical Sites: (8): \$18
 Picnic Area: 6 AM-Dark (30 Sites)
 Group Shelter: \$40/day by reservation only;
 day use only
 East Boat Ramp: 6 AM-10 PM
 West Boat Ramp: 6 AM-Dark
 Courtesy Dock for Boat Ramp
 Fishing Dock
 Swim Beach



TAYLOR PARK



TAYLOR PARK

Open March 1-September 30 (48 Sites)
 Camp Area 6 AM-10 PM, \$10 (Single Sites);
 \$14 (Double Sites) 12
 Picnic Area: 6 AM-Dark (50 Sites)
 Hiking Trail: 6 AM-Dark
 West Trail Head: 6 AM-Dark
 Primitive Campground: Register By
 calling 512-859-2668 (24 Hours)
 Boat Ramp: Enter 6 AM-10 PM. Exit 24 Hours
 Courtesy Dock For Boat Ramp
 No Beach Area



Site 20
Looking at BRA Site
Photo 1



Site 21
Facing Lake
Photo 2



Across Road from Site 24 at Site 26
Photo 3



Site 32
Photo 4



**LCRA Pump Station
Three Submersible Motors & Pumps
Photo 5**

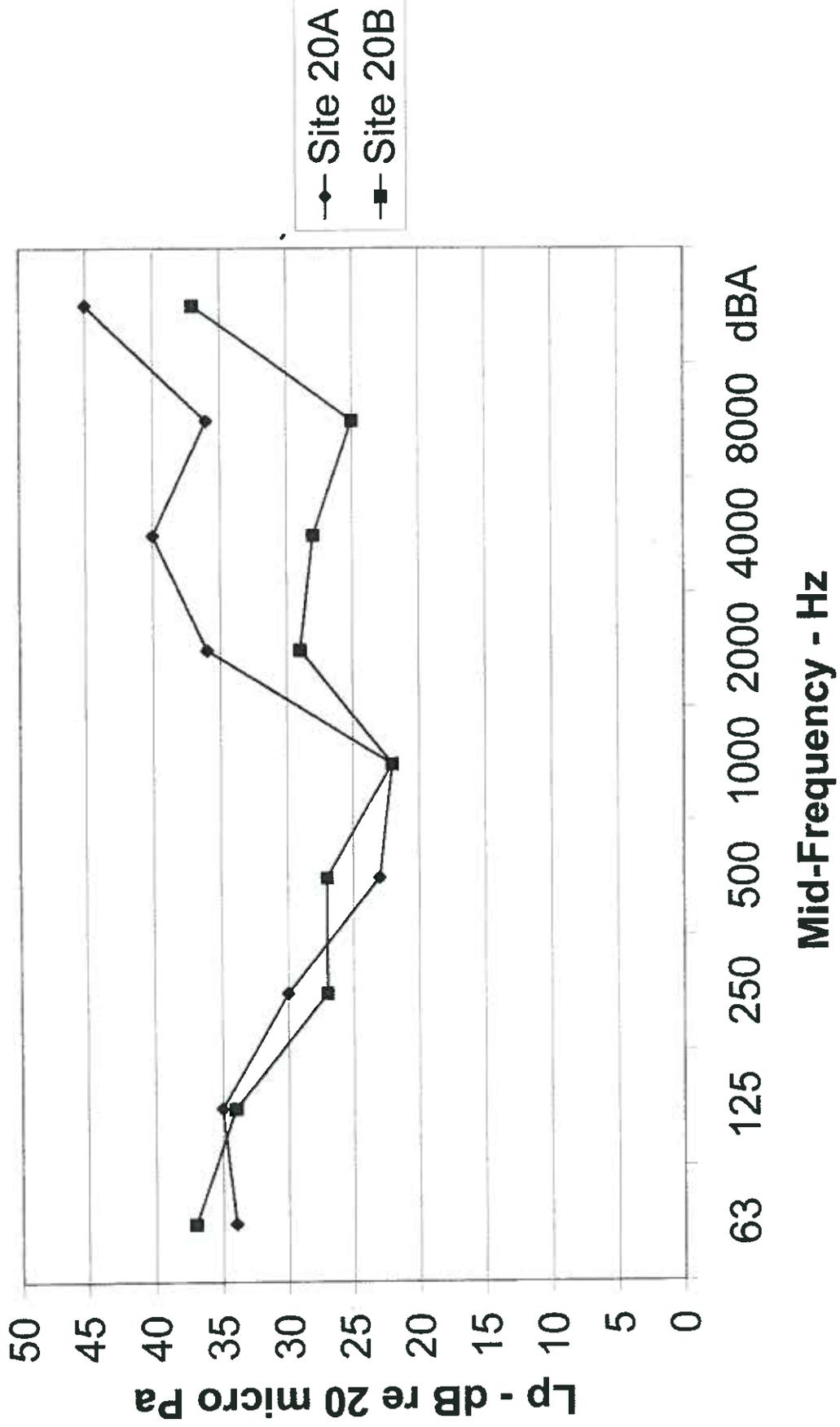


**City of Georgetown, TX
Pump Station
Submersible About 125' from Station
Photo 6**



**City of Austin
Pump Station – Vertical Turbine Pumps
Photo 7**

Lake Granger - BRA Station



ENVIRONMENTAL NOISE SURVEY

Corp of Engineer's - Lake Granger

Wilson H. Fox Park

Williamson County, Texas

June 28 and 29, 2005

Locations at or near Camp Sites 20, 21, 24, & 32

Location	Distance From BRA	Date	Time	Temp	R.H.	Wind	dBA L99	Comments
20A	125ft	6/28/2005	1630	94F	35%	calm	45	Insects set level Birds 51, 53 dBA Small Plane 51 dBA Insects set level Site 24 occupied location moved across road between #26&27 to minimize radio playing Insects set level & radio at #24 Insects set level Note: w/o insects level will be about 5-10 dBA lower
21A	550ft	6/28/2005	1650	97F	34%	3-4mph	48	
24A	1040ft	6/28/2005	1710	95F	33%	1-2mph	54	
32A	1413ft	6/28/2005	1725	96F	34%	2-4mph	52	
20B	125ft	6/29/2005	0615	76F	76%	calm	37	Site 20 occupied moved to #19
21B	550ft	6/29/2005	0625	76F	76%	calm	37	Birds 53-57 dBA, crickets and cars on FM road Moved across road from #21 due to A/C on trailer. Some birds and cars on main road 39dBA
24B	1040ft	6/29/2005	0645	76F	76%	calm	36	Crickets, Cars on main road 37 dBA, boat on lake 49 dBA.
32B	1413ft	6/29/2005	0700	75F	64%	calm	37	Sun just coming up, A/C units on trailer 38-40 dBA, dog in distance 40 dBA

Note: Camp site 20 is closest to BRA proposed pump station

Appendix G
Recreation Mitigation Plan

RECREATION MITIGATION PLAN

Brazos River Authority East Williamson County Raw Water Intake

Wilson H. Fox Park, Granger Lake

March 2011

A. Project Description. The Brazos River Authority (BRA) is proposing to construct a raw water intake structure, three-story pump station and one 48" water pipeline to serve the East Williamson County Regional Water System water treatment plant on the south side of Granger Lake. The intake is needed to furnish a dependable supply of water, as the existing intake cannot divert water at lower lake water levels and requires frequent repair and sediment removal that result in down time and non-availability of water for the system. This facility will be located on U.S. Army Corps of Engineers, Fort Worth District (USACE) land at Granger Lake inside of Wilson H. Fox Park (see Attachment A). The pipeline route on USACE property will extend from the south park boundary northeast through the centerline of the park to the intake. The preferred location is the most cost-effective to construct, operate and maintain for the BRA and will result in considerable savings to the BRA and its customers.

B. Background. Granger Dam and Lake, formerly known as Laneport Dam and Lake, was authorized by act of the 83rd Congress, 2nd Session, approved September 3, 1954 as Public Law 780. Public Law 874 (87th Congress, 2nd Session) authorized construction of Laneport Lake and designated recreation as an authorized project purpose. The BRA, a water conservation agency of the State of Texas, was authorized as a cost-share partner in the project, as the increased water conservation storage derived as a result of the project is a benefit to the waters of the State of Texas. The agreement between the BRA and the USACE is contained in Contract No. DACW63-79-C-0083. The BRA has a contractual right to utilize 100 percent of the storage space in Granger Lake between 440.00' m.s.l. and 504.00' m.s.l. The contract authorizes BRA to construct intake works, pipelines and other appurtenances for diversion/withdrawal of water subject to approval by USACE regarding design and location. In accordance with the contract USACE may not charge BRA for the leases/easements; however, the USACE may require the BRA to mitigate for loss of natural resources, cultural resources and recreation facilities and opportunities as a result of construction of water diversion/withdrawal facilities (prevention of landscape defacement and damage).

C. Specific Adverse Effects of the Project to Public Recreation Opportunities. Incidental to construction of the project, recreation in Wilson H. Fox Park will adversely be impacted in the following ways:

1. **Loss of Facilities.** Nine campsites, 15-23, will be adversely affected by the intake project. These sites have historically been more popular with campers due to the seclusion and the view of the lake that they offer. No other sites in Wilson H. Fox Park or any other park on Granger Lake offer the highly desired experience that these sites provide. As a result these sites have a much higher visitation and value because of their location and resulting popularity that contributes to a higher level of revenue generating capacity. Three of them, Campsites 18-20, will be within 360 feet of the intake – well within viewing and hearing distance – and clearly less desirable for public recreation due to visibility of the intake and increased traffic and noise, however small these increases may be. All nine campsites are adversely affected by decreased

ease of access, as the intake will occupy the existing cul-de-sac, and there will be no way for RV's to turn around.

2. Interruption of Traffic Flow. The road system inside the park will no longer function as originally designed due to loss of a 835' section of roadway and cul-de-sac for access to the intake. The intake facility will occupy what is now the turnaround for park road access to Campsites 15-23, eliminating smooth traffic flow. While single vehicles could negotiate turning around through point maneuvers, motor homes and vehicles towing trailers will not be able to turn around. There is no suitable area to relocate the turnaround without removing some of the existing 9 sites.

3. Loss of Recreational Land Area. The establishment of a non-recreational outgrant within the park will take away the prime recreation land in the most popular camping area at Granger Lake and permanently change the character of the park. The available lands used for parks at Granger Lake will be reduced directly by approximately 0.8 acre, and effectively by approximately 6 acres, as the land area between the camp area proper and the intake will be used primarily as visual and noise buffer once the intake is constructed. The visitor experience in the area of sites 15-23 cannot be replaced. The attraction of this area is derived from its unique topographical setting. While at least one other area of parkland exists to relocate the 9 sites, there is no area of comparable quality with regard to scenic vistas, native woodland and access to deep, open water. This area of the park not only offers scenic views to campers on these nine sites, but also to campers in other areas of the park who enjoy walking through to take in scenic views of Granger Lake.

4. Loss of Recreational Water Area. Approximately 5 acres of recreational water surface will be permanently lost due to Texas Commission on Environmental Quality regulations to enforce a restricted zone within 200 feet of each intake. The restricted zone will interrupt the most popular ski run (deep water protected from prevailing southerly breezes) on Granger Lake, and restrict access to one of the most popular fishing areas on Granger Lake. With increased capacity for water diversion afforded by the new infrastructure, operation of the intake will result in more frequent and more severe draw downs. Since recreation at the lake is based on water-oriented activities, such as swimming, fishing, boating, skiing and waterfowl hunting, these draw downs will render boat ramps and beaches useless at times and further diminish the attractiveness and occupancy of campsites. In addition less shoreline and water surface will be available for hunting and fishing activities.

5. Loss of Recreational Opportunity. The BRA is committed to a construction plan and schedule that will minimize the period of time that the park is unavailable to the public. The BRA's plan calls for the park area to be closed during the construction of the pipeline and performance of recreation mitigation requirements planned for Aug 2011 – May 2012, as well as a 30-day period during winter 2012-2013 for park road reconstruction . During this time sites will not be available to public users. In addition, construction of the intake will require up to 18 months. While the park area may be available much of this time, the desirability of the sites during the ongoing construction will be diminished. Furthermore, unanticipated delays and adverse circumstances and conditions could force prolonged park closure that would result in extended loss of public recreation opportunities and associated revenues.

6. Aesthetics. The intake facility will be located on the most prominent topographic feature at Granger Lake. It will be visible from much of the lake surface, as well as the dam access road, particularly at night when security lighting is on. In addition, the three-story intake building will be visible from certain camp sites in Wilson H. Fox Park, including Campsites 15-23. The structure

will replace natural topography and vegetation where it is located. The presence of non-recreational traffic in the park, however minimal, will detract from the natural surroundings.

7. Noise. The intake facility will produce some noise during operation, as well as during maintenance activities. While the noise will be near ambient noise levels, it will be an additional distraction from a completely natural recreating environment.

8. Loss of Landscape Vegetation. According to construction plans furnished by the BRA approximately 20 recreational landscape trees will be removed.

D. Purpose of Mitigation. The recreation mission of the USACE is to provide outdoor recreation opportunities that are complementary to the natural resources afforded by the lake and surrounding public lands. As a federal agency, the USACE must comply with the National Environmental Policy Act (NEPA) and its implementing regulations found in 40 CFR Parts 1500-1508 and ER 200-2-2. An Environmental Assessment (EA) is being conducted for the project. As stated in the USACE Non-Recreational Outgrant Development Policy (2009), applicants for non-recreational projects on USACE lands are required to mitigate for adverse impacts to ensure that public resources suffer no net loss of value. The definition of the mitigation is “all measures necessary to make the program whole” and may include actions such as “replacing trees ...and providing new, relocated or replacement facilities”. This includes the ability to operate and maintain the park effectively and efficiently, as well as to provide outdoor recreational opportunities that are equal to or better than existed prior to construction of the intake. Simply replacing or relocating structures does not necessarily satisfy these requirements. Replacement of facilities is not limited to the exact types of facilities lost due to the project, and includes any USACE-authorized facilities that will compensate for lost desirability and functionality. It is anticipated that visitors to Wilson H. Fox Park will be impacted from the proposed project in the immediate and distant future. The Corps must balance the need for our water partners to utilize their allocated water rights while providing and maintaining a quality recreational experience for the visiting public.

In the analysis of alternative locations and designs, which are publicly disclosed in the EA, it was jointly agreed by the BRA and USACE that the monetary costs of initial construction and long term operation and maintenance of BRA's water intake and pipeline overwhelmingly favored the northeastern peninsula in Wilson H. Fox Park and would, therefore, be presented in the EA as the preferred alternative. It was further agreed that this location would result in a loss of highly desirable and popular recreation facilities and uses. The BRA and USACE believe that these losses, although serious, can be mitigated.

E. Recreation Mitigation Considerations and Alternatives.

The purpose of the Recreation Mitigation Plan is to set forth those steps necessary to restore outdoor recreational usage at Granger Lake to the level of demand/desirability that now exists prior to the USACE granting the lease/easement to the BRA for the project. The recreation mitigation plan addresses the adverse impacts of the proposed intake project to the existing recreating environment as described above in Paragraph C. While mitigation of adverse impacts to aesthetics, noise, traffic flow and landscape vegetation is relatively straightforward, the mitigation of adverse effects on recreation facilities and the lost recreation opportunities due to decreased recreation land and water area is more complex.

1. Loss of Facilities.

a. Decommission Nine Campsites. As stated in Paragraph C.1., the desirability of Sites 15-23 will be degraded by a variety of factors. Clearly they will not be as desirable to the public once the intake is operational. To maintain or increase their desirability it would be necessary to relocate them. This has some advantages both to the public and to the BRA. The decision to decommission the nine sites will solve several issues with regard to locating the intake inside the park area. The space will serve as a visual and noise buffer to campers. Likewise, it will provide a buffer to deter the public from the intake facility, clearly separating the recreation area from the intake area.

Leaving the decommissioned site structures in place but discontinuing authorized public use and services is not a viable consideration. The USACE Real Estate policy is to dispose of structures that are taken out of service to decrease on-going maintenance costs and to restore the landscape to its natural appearance. The facilities themselves would encourage unauthorized use and the associated liability, particularly if the structures are not maintained.

b. Relocate Nine Campsites. As stated in Paragraph D above, simply relocating facilities or replacing structures does not necessarily mitigate for all adverse impacts. The mitigation must create a recreating environment post construction that is equal to or better than the recreating environment that existed prior to the project. The mitigation should be equally desirable to the public as expressed by demand. The mitigation should not significantly increase the footprint, and it should be effective and efficient to operate and maintain.

For purposes of locating camp sites, the existing camp area in Wilson H. Fox Park is built out. The land in this area of the park that is available for roads and other infrastructure, campsites, support facilities and buffers has been used. The USACE Capital Regional Office design standard for mean distance between campsites is 100 feet. There is no space available in the existing one-way camping loops. The USACE has considerable experience in the design, construction and operation of campgrounds. Constructing sites does not guarantee that the public will use them. While the nine sites could physically be fitted along some of the existing two-way access road, these campsites would not be desirable to the public because they would not be near the resources that visitors are seeking (water, views and natural vegetation), they would offer no privacy, and they would be situated along a main road with increased traffic and significant drainage channels. Supporting infrastructure would have to be retrofitted to reach the sites, and access to the sites could not be easily controlled. None of these conditions meet or exceed the recreating environment that now exists.

Since the sites cannot be relocated within the existing campground, the next best alternative would be to relocate the sites to a suitable location somewhere else inside the park. One such location exists on a ridge of land that is similarly situated as the ridge on which the sites are presently located. This area does not have any supporting infrastructure such as road access, electricity, water, wastewater, parking or play facilities, so these would need to be constructed. It is reasonable that the new facilities are constructed to modern design standards and to a degree of quality that makes them highly desirable to the public user and durable for long term service with low maintenance requirements. This includes, but is not limited to a modern electrical system design capable of furnishing 20-30-50 amp electrical service and compliance with the Americans with Disabilities Act. The alternate location for relocating the 9 campsites and required support facilities are shown in Attachment A.

c. Work in Lieu of Relocating Nine Campsites. While cost to the proponent is not the primary consideration when developing mitigation measures, it can be used to establish value when alternative measures are being considered. Since mitigation is not limited to replacement

of the exact facilities/opportunities that are adversely affected, there are several reasons that the USACE would prefer to do other work of equivalent value.

The alternate location that the campsites and associated infrastructure could be relocated to is over one-half mile from the existing camp area. It is near the existing day use area, and it would require operation as a stand-alone area. Constructing the new loop would result in a larger footprint for infrastructure, and operation and maintenance of the park would not be as effective or efficient. In spite of the facilities being new and built to modern standards with desirable amenities, there is still some doubt that the sites would be as desirable to the public to produce an acceptable benefit/cost. The USACE would prefer to improve the remaining facilities and to enhance the overall recreation experience rather than having to develop, operate and maintain a separate area. The work items to be performed in lieu of relocating the nine sites are expanding the asphalt pullouts at 49 of the remaining sites, upgrading the electrical service from 20-30 amp to 20-30-50 amp on 37 of the remaining sites (Sites 1-14, 24-46). The BRA and USACE consider these items to be of equivalent value to relocating the nine campsites.

2. Interruption of Traffic Flow – Realign Road and Overflow Parking. Decommissioning the nine sites near the intake will simplify traffic flow within the park area once the intake project is operational, as the roadway connecting the two existing loops can be realigned to a 90-degree intersection, and recreational traffic can be restricted from the intake area access road. It should be noted that this is in an area in which the roadway will be damaged/destroyed during construction of the pipeline.

3. Loss of Recreational Land Area. In accordance with Contract No. DACW63-79-C-0083 the USACE may not charge the BRA for easements and leases necessary for water diversion facilities. However, the loss of land available for recreational use must be compensated for.

4. Loss of Recreational Water Area. The loss of recreational water area at Granger due to the project cannot be replaced, as there is no equivalent combination of topography and water elsewhere on the project.

5. Loss of Recreational Opportunity. The loss of public recreational opportunity may be expressed as net loss of revenue generated by charging recreation user fees. It would be a relatively simple matter to compare user fee collections in Wilson H. Fox Park during the construction period to a typical year, and require compensation of equal value.

6. Aesthetics. Decommissioning and removing the existing recreation facilities will establish a visual buffer between the intake and the campground proper, as well as help deter visitors from entering the intake area. The buffer will allow the BRA to construct an above-ground intake building, rather than a completely underground structure. While the building is large relative to nearby structures and vegetation, as well as located on a prominent topographical feature, architectural design and materials used for the building can enhance its visual appeal. Furthermore, lighting can be designed, installed and operated to minimize degradation of the camping experience.

7. Noise. Decommissioning the nine campsites between the camp area proper and the intake area will provide a buffer (780 feet from the nearest campsite) from noise associated with operating and maintaining the intake.

8. Loss of landscape vegetation. The area of the project along the pipeline route is at or just below the maximum design water surface of the lake, 550.30 feet above mean sea level. At this elevation relative to the flood pool, the area is capable of supporting very high quality vegetation, so a 6:1 mitigation ratio is appropriate. The BRA can limit the number of trees actually removed by controlling construction activities.

F. Required Compensatory Mitigation For Recreation Facilities. In accordance with the USACE Non-Recreational Outgrant Development Policy (2009), the following plan is considered reasonable mitigation for adverse impacts described. To mitigate for loss of recreational facilities and recreational area as described in Paragraphs above, the Brazos River Authority will be required to perform the following:

1. Facilities Improvements in Lieu of Relocating Nine Campsites.

a. Remove existing infrastructure at 9 recreational sites (shelters, slabs, water hydrants, security lights, electrical pedestals) within the intake lease area and cap or valve water supply line into the intake lease area. If it is more cost effective to do so, the BRA will be allowed to keep the existing security lights within the lease area and re-route electrical conductors to tie into their electrical service.

b. Enlarge Campsite Parking/RV Pads – 49 sites. Enlarge parking/RV pads at the remaining 49 sites in Wilson H. Fox Park to the current USACE standard of at least 12 feet X 70 feet (7 sites can only be lengthened by 10 feet) as outlined in Engineering Manual EM 1110-1-400. The pads will be lengthened and widened with flex base and asphalt design to match existing, then covered with a 1" overlay to create a uniform surface. Poured reinforced concrete slab with a cross-sectional area of 8 inches wide by 4 inches thick will be used to delineate the entire perimeter of the pads to prevent asphalt edge degradation. The width after construction will not include the width added by the concrete edging/delineation. Pertinent sections of EM 1110-1-400 have been furnished.

c. Increase Electrical Service – 37 sites (Sites 1-14, 24-46). Increase thirty-seven (37) campsites from 20-30-amp electrical service to 20-30-50-amp electrical service. This will require new electrical pedestals, possible replacement of the underground conductor and possible replacement of the service panels. The BRA will be required to verify existing infrastructure and develop a design for the increased electrical service at the campsites. The new pedestals will be relocated on sites with upgraded parking/RV pads to position them to be in compliance with USACE standards as outlined in EM 1110-1-400, which places the electrical pedestals 5 to 15 feet from the back of the pad and 5 feet from the side of the pad. On sites that require relocation of electrical pedestals, water faucets will also be relocated to be in compliance with EM 1110-1-400 standards. Pertinent sections of EM 1110-1-400 have been furnished.

2. Realign Roads and Overflow Parking near the entrance to the intake lease area as described in Paragraph E.2. above.

3. Offset Loss of Recreational Land Area through Recreation Facilities Improvements. The USACE considers that the Recreation Mitigation Plan will enhance other aspects of recreation at the project and considers the work items in the plan to be adequate mitigation for loss of recreational land area.

4. Offset Loss of Recreational Water Area through Recreation Facilities Improvements. The USACE considers that the Recreation Mitigation Plan will enhance other aspects of recreation

at the project and considers the work items in the plan to be adequate mitigation for loss of recreational water area.

5. Minimize Loss of Recreational Opportunity through Project Scheduling and Execution. The BRA will lessen the non-availability of facilities and recreation area by planning to perform construction that would require closure of the park (i.e., pipeline construction and road reconstruction) during the off season September – May and by sizing the pipeline to build-out capacity so the park would not have to be closed for future construction. Furthermore, accomplishment of the items in the Recreation Mitigation Plan will be performed during the same period. The BRA will minimize disruption of park operations by providing safe traffic flow and controlling environment nuisances such as dust, mud and noise, to allow public use while the intake is being constructed. The USACE considers that the Recreation Mitigation Plan would enhance aspects of recreation at the project to the degree that loss of public recreational opportunity would be offset by the improvements, assuming that the construction reasonably follows the planned construction schedule. Additional mitigation may be required by the BRA if schedule delays, extensions or other circumstances unreasonably prolong non-availability of recreational opportunity.

6. Minimize Adverse Impacts to Aesthetics. New electrical lines will be placed underground to comply with low sag requirements relative to the Granger Lake flood pool, so they will not adversely impact the landscape. The intake building will use buff-colored split-face block and architectural bronze metal to blend with the chopped limestone architectural bronze metal theme previously established for the lake structures. Exterior lighting for the intake facility shall be designed to minimize glare into the campground that would detract from the recreation experience.

7. Minimize Noise From the Intake Facility. As noise levels generated by the operational intake facility are expected to be at or near the ambient noise level of the area, and a 780' buffer between the intake and nearest campsite will help reduce noise from the intake, no additional noise attenuation is anticipated. Additional noise attenuation may be required if equipment installed produces noise that adversely impacts campers.

8. Replace Park Landscape Trees to Be Removed Within the Proposed Pipeline Route. As the path of the project parallels that of the main park access road and the trees are adjacent to the road and recreation facilities, all trees within the project area are classified as recreational landscape trees for purposes of mitigation. There are approximately 20 trees within the path of the pipeline, intake and electrical service that are planned to be removed for construction of the project, 6 of which are between the government property line and the planned entrance for the intake facility, and 14 of which (8 hackberry, 3 ash, 3 cedar elm) are between the planned entrance for the facility and the intake structure. All other trees within the project areas are planned to be protected.

a. Mitigation rate. For the loss of 20 trees, the Brazos River Authority will be required to plant 120 trees. If the actual number of trees removed is more or less than 20 trees, the 6:1 ratio will be used, except for eight trees or less (50:8, 45:7, 40:6, 34:5, 28:4, 24:3, 19:2, 10:1). No woody species classified as native rangeland trees/shrubs are included in the project area.

b. Nursery stock. Trees to be planted shall be container-grown nursery stock with a minimum stem diameter of 2 inches at a point 6 inches above ground. The following tree species and percentages of composition will be used in the replanting: red oak 30%, bur oak 30%, live oak 10%, chinquapin oak 10%, Mexican plum 10%, Texas red bud 5% and Texas

mountain laurel 5%. The Granger Lake Manager will approve the final planting list. **Tree containers/root balls and soil used for back filling will be free of Johnson grass, Bermuda grass, yellow nut sedge and other noxious weeds and weedy grasses.** If these species are found within the tree ball or area immediately surrounding the tree ball, the BRA will be responsible for excavation of the contaminated soil and replacement with clean, weed free soil.

c. Planting location. The planting locations are open areas within Wilson H. Fox Park as shown on the attached map.

d. Planting season. Trees shall be planted concurrent with construction activities during the earliest possible planting season (November through February).

e. Survival and replacement. Survival rate of planted trees must be 100% at installation and 80% at the end of each growing season for the three growing seasons following planting. This survival rate is required regardless of the reason for tree mortality. Additional plantings will be required at the end of each growing season during the three-year period in order to bring the survival rate to 80%. Each replacement tree will receive three growing seasons of maintenance.

f. Installation will include tree trunk protection on each tree to protect from damage by deer to meet the satisfaction of the Granger Lake Manager, as well as a uniquely numbered tag that is cross-referenced to a tree list showing species and planting location to be used as a reference throughout the maintenance period. Trees will be staked if necessary, as determined by the Granger Lake Manager.

g. Irrigation. Irrigation and mulching of all planted trees is required for the three-year period. When planted, a water retention levee approximately three feet in diameter shall be constructed around each tree. The area within the levee will be maintained with a minimum of 4" mulch at all times. The size of the mulch will be equal to commercially available garden mulch as sold by nurseries Wal-Mart, Home Depot, Lowes, etc. and as approved by the Granger Lake Manager. Coarse chippings from wood chippers or hydro-axes will not be accepted and will be replaced at the BRA's expense. A permanently installed drip irrigation system is required. The irrigation system may be connected to an existing pressurized 3" water line owned by the government.

h. Weed control. Johnson grass and other grasses and weeds around the root ball and irrigation levee shall be kept controlled with herbicide at all times during the 3-year maintenance period. If weed control does not meet the satisfaction of the Granger Lake Manager, the Lake Manager may contract for or otherwise perform weed control and charge the BRA for the cost to perform the control.

i. It is recommended that installation, maintenance/weeding and replacement are separate payment items on the contract between the BRA and the contractor.

j. Monitoring Reports. The BRA shall appoint a quality assurance representative to monitor performance of the landscape contractor responsible for installing and maintaining trees. The BRA will furnish the name of the quality assurance representative to the Granger Lake Manager. The BRA shall provide a monitoring/survival report at the end of each growing season for the three-year period. The report shall be furnished to the Granger Lake Manager no later than October 15 of each year.

9. This is a concept plan intended to provide general descriptions for mitigation tasks. More refined specifications and references will be provided to the BRA as appropriate. All plans for recreation mitigation developed by the BRA will be subject to review and approval by the USACE.

References

Brazos River Authority.

2009a *Environmental Information Document. Raw Water Intake, Pump Station and Pipeline For East Williamson County Regional Water System*. Jacobs Engineering Group, Inc./Freese and Nichols, Inc.

2009b *Proposed Raw Water Pipeline, Alignment and Borings*. Freese and Nichols, Inc.

2009c *East Williamson County Regional Water System New Raws Water Intake Pump Station and Transmission Pipeline – Granger Lake presentation for USACE Review Meeting November 20, 2009*. Freese and Nichols/Baker-Aicklen & Associates, Inc.,

Council on Environmental Quality

1970 *Regulations for Implementing NEPA*. Title 40, Code of Federal Regulations, Part 1500.

U.S. Army Corps of Engineers.

2009 *Non-Recreational Outgrant Policy*. Memorandum from CECW-CE/CEMP-CR.

1999 *Programmatic Environmental Assessment Lewisville Lake*. Carter and Burgess, Inc.

1996 *Letter Real Estate Planning Report, Restoration of Project Operations – U.S. Highway 58 Widening and Bypass Construction, John H. Kerr Dam and Reservoir Project*, VA. Memorandum from CESAS-RE-AP.

1988 *Engineering Regulation 200-2-2. Procedures for Implementing NEPA*.

1980 *Contract between the United States of America and The Brazos River Authority of Texas For Water Storage Space in Granger Lake, Texas. Contract No. DACW63-79-C-0083*.

1974 Laneport Lake Master Plan. Design Memorandum No. 18.

Granger Lake

East Williamson County Regional Water System Intake Project Recreation Mitigation 1:4,750



Footprint of recreation facility relocation used for valuation

A-D Enlarge campsites
B-D Improve electrical service to 20-30-50 amp
E Road realignment and removal of nine sites
F Intake
t Tree planting area

Total footprint of intake and pipeline project. Includes repair, replacement of damaged trees and infrastructure.

Wilson H. Fox Park



Appendix H
Public/Agency Correspondence



REPLY TO
ATTENTION OF

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

May 6, 2011

NOTICE OF AVAILABILITY

DRAFT ENVIRONMENTAL ASSESSMENT FOR THE CONSTRUCTION OF A RAW WATER INTAKE, PUMP STATION, AND PIPELINE EASEMENT AND ELECTRICAL LINE EASEMENT GRANGER LAKE, WILLIAMSON COUNTY, TEXAS

The public is hereby notified of the availability of the Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the proposed construction of a raw water intake, pump station and pipeline as well as an associated electrical line easement at Granger Lake, Williamson County, Texas.

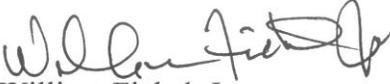
This EA addresses the potential impacts from the construction, maintenance, and operation of a raw water intake, pump station and pipeline at Wilson H. Fox Park at Granger Lake. The purpose of the project is to allow the Brazos River Authority, which is a water partner with the U.S. Army Corps of Engineers, to improve water withdrawal capacity to more effectively meet future projected demands. Nine camping sites would be decommissioned as a result of the proposed project. Recreational losses would be mitigated by improving existing facilities, including enlarging forty-nine campsite/RV pads, increasing the electrical service on thirty-seven sites, realigning roads and overflow parking. Twenty trees would be removed as a result of the proposed project and would be mitigated by planting 120 trees onsite, as appropriate.

The Draft EA will be available for review at the following location:

Granger Lake Office
3100 Granger Dam Road
Granger, Texas 76530

The Draft EA can also be viewed via the Internet on the Fort Worth District website at the following address: www.swf.usace.army.mil/

The 30-day public comment period begins with publication of this Notice of Availability. Please address any comments to Mr. Brandon Mobley, Natural Resource Management Specialist, CESWF-OD-TN, Post Office Box 17300, 4A03, Fort Worth, Texas 76102-0300.


William Fickel, Jr.
Chief, Planning, Environmental,
And Regulatory Division