



**BROADBAND TECHNOLOGY OPPORTUNITIES PROGRAM (BTOP)  
FINAL ENVIRONMENTAL ASSESSMENT FOR THE  
TEXAS A&M UNIVERSITY - TEXAS PIPES FIBER OPTIC NETWORK  
GRANTEE #7487**

May 2011

Prepared for:

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# Table of Contents

Acronyms list and Glossary .....	v
Executive Summary .....	ix
1.0 Chapter 1: Purpose and Need .....	1
1.1 Introduction .....	1
1.2 Project Purpose .....	4
1.3 Project Need .....	5
2.0 Chapter 2: Description of Proposed Action and Alternatives .....	7
2.1 Proposed Action .....	7
2.2 Underground Alternative .....	17
2.3 Aerial Alternative .....	17
2.4 Wireless Alternative .....	18
2.5 No Action Alternative .....	18
2.6 Alternatives Considered but Eliminated from Further Discussion .....	19
2.7 Selection of the preferred Alternative .....	19
3.0 Chapter 3: Description of the Affected Environment .....	21
3.1 Noise .....	21
3.2 Air Quality .....	21
3.3 Geology and Soils .....	24
3.4 Water Resources .....	27
3.5 Biological Resources .....	33
3.6 Historic and Cultural Resources .....	56
3.8 Land Use .....	62
3.9 Infrastructure .....	63
3.10 Socioeconomic Resources .....	66
3.11 Human Health and Safety .....	67
4.0 Chapter 4: Environmental Impacts .....	70
4.1 Noise .....	70
4.2 Air Quality .....	71
4.3 Geology and Soils .....	72
4.4 Water Resources .....	74
4.5 Biological Resources .....	77
4.6 Historical and Cultural Resources .....	91
4.7 Aesthetic and Visual Resources .....	94
4.8 Land Use .....	95
4.9 Infrastructure .....	95
4.10 Socioeconomics .....	96
4.11 Human Health and Safety .....	98
4.12 Indirect and Cumulative Impacts .....	99
5.0 Chapter 5: Applicable Environmental Permits and Regulatory Requirements .....	102
5.1 USFWS Section 7 Consultation .....	102
5.2 Texas Historical Commission (State Historic Preservation Office) .....	102
5.3 Tribal Organizations .....	102
5.4 CLEAN WATER ACT 404 .....	103
5.5 NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM .....	104

5.6 TXDOT PERMITS.....	108
5.7 GLO STATE WATERS PERMIT.....	108
5.8 SECTION 10 RIVERS AND HARBORS.....	109
6.0 CHAPTER 6: AGENCIES, PERSONS CONSULTED.....	110
7.0 Chapter 7: List of Preparers.....	111
8.0 Chapter 8: References.....	112

## List of Tables

Table 1.1: TAMU Texas Pipes Projects.....	1
Table 3.1 Example Construction Equipment Noise Emission Levels.....	21
Table 3.2. Project Area River Basins.....	29
Table 3.3. Project Area Aquifers.....	31
Table 3.4 TAMU project alignments and their associated vegetation types and Level III Ecological Regions.....	34
Table 3.5 TAMU alignments and their associated biotic provinces.....	35
Table 3.6 Federally-listed candidate, threatened, and endangered species within the proposed TAMU fiber routes project area counties.....	40
Table 3.7: Archaeological sites located within the TAMU project APE.....	58
Table 3.8: Cemeteries located within the TAMU project APE.....	60
Table 3.9: National Register Properties located within the TAMU project APE.....	60
Table 3.10: Parks, natural features, and private businesses located adjacent to or within one mile of the TAMU project APE.....	62
Table 3.11: Current broadband availability at each TAMU location. Classifications correspond with numbered items (above) in Section 3.9.1 Communications.....	64
Table 3.12: List of utility providers near each TAMU location. The term “contract” denotes a private, third party provider.....	65
Table 3.13: Transportation routes/roads intersected by or running parallel to the proposed TAMU fiber routes.....	66
Table 3.14: Minority Population Distribution within the Project Area.....	68
Table 3.15: USEPA Brownfield Sites within 100 feet of the Project.....	69
Table 4.1: Archeological sites to avoid in ROW.....	92

## List of Illustrations

Illustration 2.1 An example of the possible construction equipment used in the placement of fiber optic cable
Illustration 2.2 Biotic Provinces of Texas (Blair 1950)
Illustration 2.3 Karst Zones and Karst Faunal Areas of Northwest Bexar County, Texas

# List of Appendices

## Appendix A: Figures

### **Chapter 1**

Figure 1.1 Project Overview Map

### **Chapter 2**

Figure 2.1-2.19 Detailed Site Location Maps

### **Chapter 3**

Figure 3.1 General Site Geology

Figure 3.2 General Soil Associations

Figure 3.3 River Basins and Groundwater

Figure 3.4-3.14 Texas Natural Diversity Database Federally-listed Species Occurrences

## Appendix B: Anchor Institutions

## Appendix C: Agency Correspondence

## Appendix D: Bald Eagle Management Plan

## Appendix E: Safety Manual

## Appendix F: Soils Contamination

## Appendix G: CO<sub>2</sub> Emissions Calculations

# ACRONYMS LIST AND GLOSSARY

## Acronyms

ACRES	Assessment, Cleanup, and Redevelopment Exchange System (Brownfields)
APE	Area of Potential Effect
ARRA	American Recovery and Reinvestment Act
BCVI	Black-capped Vireo
BTOP	Broadband Technology Opportunities Program
CCI	Comprehensive Community Infrastructure
CEC	Commission for Environmental Cooperation
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGP	Construction General Permit
CO	Central Office
CO2	Carbon Dioxide
CWA	Clean Water Act
DPS	Department of Public Safety
DWDM	Dense Wave Division Multiplexing
EA	Environmental Assessment
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESC	Educational Service Center
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FM	Farm to Market Road
FPPA	Farmland Policy Protection Act
FR	Federal Register
GCWA	Golden-cheeked Warbler
GHG	Green House Gas
GIS	Geographic Information System
GLO	General Land Office
H2S	Hydrogen Sulfide
ISD	Independent School District
IPCC	Intergovernmental Panel on Climatic Change
LLC	Limited Liability Company
LEARN	Lonestar Education and Research Network
MBTA	Migratory Bird Treaty Act
MRLC	Multi-Resolution Land Characteristics Consortium
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NG911	Next Generation 911
NHPA	National Historic Preservation Act
NOC	Network Operations Center
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System

NPL	National Priorities List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTIA	National Telecommunications Information Administration
NWSR	National Wild and Scenic Rivers
OSHA	Occupation Health and Safety Administration
POP	Post Office Protocol
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
ROW	Right of Way
SAC	Special Award Conditions
SAL	State Archeological Landmark
SH	State of Texas Highway
SHPO	State Historic Preservation Office
SONET	Synchronous Optical Network
SIP	State Implementation Plan
SSA	Sole Source Aquifer
SSTS	Section Seven Tracking System (Pesticides)
SW3P	Storm Water Pollution Prevention Plan
TAMU	Texas A&M University
TCEQ	Texas Commission on Environmental Quality
TCNS	Tower Construction Notification System
T-DEX	Texas Data Exchange
TES	Tejas Ecological Services
TGLO	Texas General Land Office
THC	Texas Historical Commission
TLETS	Texas Law Enforcement Telecommunications System
TLSN	Texas Lonestar Network
TNDD	Texas Natural Diversity Database
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
UG	Underground
U.S.	United States
USACE	United States Army Core of Engineers
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UT	University of Texas
WMA	Wildlife Management Area

## **Glossary**

### **Anchor Institutions**

Government buildings, schools, library, and other institutions that would be the primary locations to which broadband services would be provided

### **Boring**

A sub-surface horizontal drilled hole to place fiber optic cables for telecommunication purposes

### **Broadband**

High-speed telecommunication connection to the Internet as defined by the FCC

### **Cabinet**

3'x5'x5' metal enclosure housing telecommunications equipment

### **Dial-up**

Access to the Internet using a standard telephone connection and a modem

### **Drop**

A telecommunication cable (fiber optic or copper) placed between a hand hole and an anchor institution

### **Hand Hole**

Typically an 8'x8' metal vault placed entirely underground to store fiber optic cables

### **High-Speed**

Access to the Internet other than dial-up

### **Hut**

Small, typically 10'x10'x10' prefabricated composite building housing telecommunications equipment

### **Lashing**

Binding fiber optic cables onto a metal strand placed in the air between utility poles

### **Last Mile**

Connection from the telecommunication service providers middle mile to the telecommunications subscriber

### **Middle Mile**

Locations defined as between primary telecommunications points of service

### **Plowing**

A machine sliced hole typically 36 to 42 inches deep and about 3 to 4 inches wide for placement of fiber optic cables

### **Served**

The subscriber (institution, business, home) to which telecommunications service is being provided

**Trenching**

An open-cut hole 12" to 18" wide to connect fiber optic cables placed by boring or plowing

**Underserved**

Areas classified by the FCC receiving a service that is less than the standard broadband service

**Unserved**

Areas, businesses, homes to which no telecommunication service is provided

# EXECUTIVE SUMMARY

Texas A&M University (TAMU) is proposing construction of the Texas Pipes fiber optic network in order to provide access to service areas that are either unserved or underserved in terms of broadband connectivity to campus constituents at twelve (12) locations across Texas. In previous drafts of this Environmental Assessment and in various agency correspondences (in Appendix C), the twelve locations may have been discussed as thirteen due to the separating of one project, Tarleton State University, into two projects. However, the two components of the Tarleton State University Project (TAMU Stephenville to Desdemona and TAMU Comanche to Priddy) are subsegments of one project and are presented as such for the remainder of this Final EA.

While the TAMU System Universities would serve as the primary anchor institutions, also included are municipalities, other educational entities such as Texarkana College and Atlanta ISD, local telephone companies, secondary educational facilities, and public safety offices including the State of Texas Department of Public Safety (DPS). This project would also make available advanced public safety services such as Next Generation 911 (NG911) and Interoperable radio services.

The sites that are included are:

1. West Texas A&M University (TAMU Canyon) – This includes 22.4 miles of new buried fiber optic cable connecting the WTAMU campus to WinTel’s fiber optic network. This will then connect to Lubbock Texas to attach to the existing LEARN network.
2. Texas A&M University Texarkana (TAMU Texarkana to Atlanta) – This is 38.03 miles of combined aerial and buried fiber optic cable connecting the Texarkana campus to a Level3 regeneration site in Atlanta Texas. At that point we will connect to an existing DWDM node that connects the Arkansas network from Little Rock Arkansas to Dallas Texas.
3. Tarleton State University – This is 40.5 miles of combined buried and aerial fiber optic cable connecting Stephenville Texas to Goldwaith Texas. Once it gets to Goldwaith, it will connect to the Texas Lone Star Network (TLSN) where it will go on to connect to the existing Lone Star Education and Research Network (LEARN). This fiber route utilizes some existing

Totalcom Fiber which separates two subsections of the alignment:

- a. TAMU Stephenville to Desdemona
  - b. TAMU Comanche to Priddy
4. Waco, Texas (TAMU Waco) – This includes 2 miles of buried and aerial fiber optic cable that connects the TLSN POP in Waco to the LEARN POP in Waco.
  5. Central Texas A&M University (TAMU Killeen) – This includes 7.12 miles of combined aerial and buried fiber connecting the new campus to existing fiber at Central Texas College
  6. Texas A&M University in College Station (TAMU Riverside) – This is 5.13 miles of buried fiber connecting the TAMUS Health Science Center fiber to the TAMU Riverside campus.
  7. Prairie View A&M University (TAMU Prairie View) – This includes 4.93 miles of new buried fiber optic cable connected to an existing DWDM node in Waller Texas
  8. Texas A&M University Galveston (TAMU Galveston) – This includes 1.74 miles of combined buried and aerial fiber optic cable that connects the Galveston campus to new fiber that is being constructed between Galveston and League City. There is then existing fiber that connects to Houston Texas and the LEARN network.
  9. Texas A&M University San Antonio (TAMU San Antonio) – This is one mile of buried fiber connecting the new San Antonio campus to Valley Telephone fiber.
  10. Corpus Christi A&M and the City of Corpus Christi (TAMU Corpus Christi)– This includes 3.47 miles of combined aerial and buried fiber connecting 8 sites to existing fiber optic networks.
  11. Texas A&M University Kingsville (TAMU Kingsville) – This is 0.87 mile of buried fiber connecting the Kingsville campus to Valley Telephone’s network.
  12. Texas A&M International University (TAMU Laredo) – This is 0.74 mile of buried fiber connecting the campus to Valley Telephone fiber.

The Texas Pipes project is a combination of Dense Wave Division Multiplexing (DWDM)

and Ethernet (Gigabit and 10 Gigabit) over fiber optic cable. The DWDM component involves converting existing carrier Synchronous Optical Network (SONET) systems to DWDM with the carrier making optical wavelengths capable of supporting very high speed (10 and 40 gig) Ethernet to the anchor universities. The portions of the project that are not carried over DWDM networks would run at 1 gigabit and 10 gigabit Ethernet speeds. This project takes the unique approach of merging existing public and new private networks in a collaborative manner that provides access to constituents that would otherwise be cost-prohibitive.

This project addresses six Comprehensive Community Infrastructure (CCI) priorities and all five of the statutory purposes outlined by the Recovery Act for the Broadband Technology Opportunities Program (BTOP). These include the following: providing service to unserved and underserved areas; building the infrastructure needed for community anchor institutions like schools, libraries, healthcare providers, and community support organizations; deploying broadband to benefit vulnerable populations or economic development zones; enhancing public safety through improved telecommunication facilities; and, stimulating economic growth and job creation and development. These are all priorities of the Texas Pipes project.

The service area is currently underserved by high-speed internet and requires a high-speed internet backbone of substantial bandwidth to education facilities with opportunity for current high-bandwidth support services. In addition to serving TAMU System universities, it is estimated from US Census Bureau statistics that 28,793 individuals and 6,549 households would be passed by the network. The plan also calls for the inclusion of 72 business and other anchor institutions including 12 additional schools, colleges, and community centers. It is the intention of the project to leave a fiber loop at each of these sites to allow them to be future beneficiaries of this network (TAMU System 2010).

This environmental assessment evaluates five alternatives for the proposed project based on projected impacts to various facets of the region's natural, cultural, and socioeconomic environment. These areas of analysis include noise, air quality, geology and soils, water resources, biological resources, historic and cultural resources, aesthetic and visual resources, land use, infrastructure, socioeconomic resources, and

human health and safety. The build alternatives would all follow the same route, one of several that are possible. Routes that would have significant negative impacts on one or more resource areas were removed from consideration.

Alternatives:

- 1) The Proposed Action would rely on buried and aerial fiber optic paths within existing public roadway ROWs. In locations where the line crosses waterways, the line would be either directionally bored or attached to existing utility poles spanning the waterway. The proposed action alternative includes approximately 171.7 miles buried, 15 miles aerial, two miles directionally bored, and 4.2 miles within existing duct.
- 2) The Underground Alternative would, like the Proposed Action, involve the burying of fiber optic lines within existing ROWs. However, unlike the Proposed Action, the Underground Alternative would require boring under all waterways rather than utilizing existing utility poles above the surface.
- 3) The Aerial Alternative would require attaching cable to either new or preexisting utility poles.
- 4) The Wireless Alternative would comprise the construction of microwave or cell towers to send the broadband signal wirelessly across the region. No fiber optic cable would be installed.
- 5) If the No Action Alternative is chosen, the network would not be constructed.

While each of the build alternatives may fulfill part of all of the purpose and need of the project and would be constructed in existing ROWs, the alternative chosen as preferred would cause minimal negative environmental impacts to the study area because existing structures would be utilized where possible and would require minimal ground disturbance along the network route. The Proposed Action's projects project minor short-term and negligible long-term negative effects to noise, air quality, aesthetic and visual resources, and human health and safety limited to the construction phase. Sensitive water, biological, and historic and cultural resources would not be negatively affected because the routes would be designed to either avoid those resources or, in the case of historic and cultural resources, if necessary, bore under those resources as needed. Land use would not be negatively impacted, since the proposed routes all fall within

existing public ROWs. Socioeconomic resources and human health and safety would be positively affected by the Proposed Action because of the increased access to broadband services by schools, public safety entities, businesses, municipal facilities, and residents. In addition, the Proposed Action would represent the most efficient use of resources of the build alternatives.

Consultations with the USFWS and SHPO have been completed for the project. All correspondence is included in Appendix C: Agency Correspondence. Appendix C additionally contains all correspondence received from Tribes.