



MEMORANDUM

TO: John Wagner, P.E.
Area Engineer
North Travis Area Office

DATE: September 20, 2011

FROM: Dennis Nielsen *DN*
Environmental Specialist
Austin District

SUBJECT: CSJ: 1200-03-028 & 1200-03-033
FM 973: From Harold Green Drive to Pearce Lane
Travis County

On September 16, 2011, the Federal Highway Administration issued a Finding of No Significant Impact (FONSI) for the above-referenced project. Attached is a copy of the FONSI and the environmental permits, issues, and commitments (EPIC) sheet. Also attached is a letter endorsed by the Texas Historical Commission (THC) giving conditional approval for the project to proceed to right-of-way acquisition. Once the necessary right-of-way has been obtained, an ENV staff archeologist will conduct the necessary archeological survey and complete coordination with THC. Please notify me once the necessary right-of-way has been obtained so that I can schedule the archeological survey. Also, please note that the project cannot proceed to construction until THC coordination is complete.

Receipt of this correspondence indicates that the above-referenced date may be input as the actual date ending the NEPA Environmental Clearance in P6. Once the above-referenced outstanding environmental commitment is completed, the date may be input into P6 as the actual date ending the Receive Environmental Clearance milestone.

If you have any questions, please contact me at 832-7056.

Attachment

cc (electronically): Chris Hatla
Christine Connor, P.E.
Cathy Kratz, P.E.
Nelda Eureste, P. E.
Mark Seerey, P. E.
Ben Ramirez, P. E.
Laura Nelson
Walter Barfield, P. E.

Note to Design Section: This project is consistent with the STIP/TIP/LRTP. Please fill out the EPIC checklist of ETS once you have confirmed that the EPICs have been incorporated into the PS&E.



U.S. Department
of Transportation
**Federal Highway
Administration**

Texas Division

September 16, 2011

300 E. 8th Street, Room 826
Austin, TX 78701-3255

Fax (512) 536-5990
texas.fhwa@dot.gov

In Reply Refer To:
HA-TX

CSJ: 1200-03-028
Project Number: BR() & STP 2003(67)
Highway: FM 973 from Harold Green Dr to Pearce Lane
County: Travis

Ms. Vicki Crnich
Project Delivery Management Section
Environmental Affairs Division
Texas Department of Transportation
125 E. 11th Street
Austin, Texas 78701-2483

Dear Ms. Crnich:

We have thoroughly reviewed our records on this project which include, but are not limited to, the Environmental Assessment (EA) dated August 2011, the Public Hearing Summary and Analysis prepared by the Texas Department of Transportation (TxDOT) in August 2011, and all of the previous environmental studies and findings. Based upon our own agency review and consideration of the analysis and evaluation contained in the EA for this project and after further consideration of all social, economic and environmental factors, including input from the public involvement process, we hereby approve issuance of a FONSI for the FM 973 project.

We concur in the findings of the August 2011 EA in that 1) Preferred alternative is the recommended alternative for the FM 973 Project, 2) the Preferred alternative best meets the need and purpose of the project with the least amount of impacts to the resource areas and 3) the proposed project would have no significant impacts on the quality of the human or natural environment under NEPA. In addition, based on this review, we find that an Environmental Impact Statement (EIS) is not required for this project.

Sincerely,

Justin R. Ham
Urban Engineer

**Federal Highway Administration
Finding of No Significant Impact
Farm-to-Market Road 973
From Harold Green Drive to Pearce Lane
Travis County, Texas**

Introduction

The Federal Highway Administration (FHWA) has determined, in accordance with 23 CFR § 771.119 and § 771.121, that the Farm-to-Market Road (FM) 973 project from Harold Green Drive to Pearce Lane will not have a significant impact on the human or natural environment. This Finding of No Significant Impact (FONSI) for the preferred alternative is based on the August 2011 Environmental Assessment (EA). The EA was approved by FHWA for public involvement on May 12, 2011. The Public Hearing was held on July 14, 2011. The Public Hearing Summary and Analysis and Comment and Response Report prepared by the Texas Department of Transportation (TxDOT) in July of 2011 have been incorporated into the EA.

The August 2011 EA and the Public Hearing reports have been independently evaluated by the FHWA and determined to adequately and accurately discuss the purpose, need, alternatives, environmental issues, and impacts of the proposed FM 973 project and appropriate mitigation measures. These documents provide sufficient evidence and analysis for determining that an Environmental Impact Statement (EIS) is not required. Finally, these documents are incorporated by reference into this decisional document.

Project Background

The FM 973 project is located in eastern Travis County. The existing FM 973 facility, within the limits of the proposed project, has an overall pavement width of 26 feet, which accommodates two 13-foot travel lanes with no shoulders. The existing usual right-of-way width varies from 80 to 100 feet.

The purpose of the proposed project is to improve the safety and mobility on FM 973. There is a need to provide refuge for vehicles slowing in the travel lanes, provide additional capacity, and separate directions of travel. In addition, there is a need to improve the substandard horizontal alignment of the roadway north of the Colorado River, provide an improved crossing of the Colorado River, and improve the substandard intersection with SH 71. The proposed project is included in the Capital Area Metropolitan Planning Organization (CAMPO) 2035 Regional Transportation Plan. The first phase of the proposed project (CSJ 1200-03-028) is included in the CAMPO 2011-2014 Transportation Improvement Program (TIP).

The FM 973 project was developed in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality (CEQ) Regulation for Implementing the Procedural Provisions of the NEPA (40 CFR §§ 1500-1508), FHWA Environmental Impact and Related Procedures (23 CFR § 771), and TxDOT Environmental Policy (43 TAC Chapter 2), and other related federal and state requirements.

Review of the EA

TxDOT completed the EA in August 2011. The EA considered and analyzed the potential social, economic, and environmental impacts related to the proposed construction of FM 973. During the planning process two alternatives to straighten the substandard curve north of the Colorado River were studied and two alignments were investigated to improve the FM 973/SH 71 intersection. In addition, the no-build alternative was also considered during the planning process.

The study of potential impacts included direct, indirect, and cumulative impacts of the project. Direct effects are defined by the CEQ regulations (40 CFR § 1508) as being “caused by the action and occur at the same time and place.” Indirect effects are defined as effects that are “caused by an action and occur later in time or farther removed in distance, but are still reasonably foreseeable.” Cumulative impacts are the incremental impacts that the project’s direct or indirect effects have on a resource in the context of the myriad of other past, present, and future effects on that resource from unrelated activities.

The eastern curve alignment alternative north of Colorado River would provide the straightest alignment; however, this alternative would require more additional right-of-way, additional residential displacements, would bisect a subdivision, and would effect more trees. The preferred curve alignment north of the Colorado River would improve the substandard curve, however, it would require less additional right-of-way, require no residential displacements, and would effect fewer trees than the eastern curve alignment alternative.

The southern FM 973 intersection alignment alternative would utilize the southern FM 973 intersection with SH 71 and relocate the northern FM 973 intersection. This alternative would require more residential displacements, would require a new crossing of the Colorado River, would require substantial alterations to the substandard curve north of the Colorado River, and would require more additional right-of-way. The northern FM 973 intersection alignment would utilize the northern FM 973 intersection with SH 71 and relocate the southern FM 973 intersection. This alternative would result in fewer residential displacements, acquire right-of-way equally from both sides through the residential area, and would require less additional right-of-way; therefore, this alternative was selected as the preferred FM 973/SH 71 intersection alignment.

The no-build alternative assumes the construction of other projects currently planned and programmed in the CAMPO 2035 Regional Transportation Plan. However, the No-Build Alternative would leave FM 973 in its current condition, and no funds or energy would be expended on design or construction.

The preferred alternative would consist of upgrading FM 973 from a two-lane undivided roadway to a 6 lane divided facility from Harold Green Drive to SH 71. Directions of travel would be separated by a raised median. Median breaks would be provided as dictated by design standards. The overall proposed pavement width of FM 973 for the northbound and southbound lanes would be 56 feet each. The preferred alternative would accommodate three 12-foot travel lanes, 10-foot shoulders, and 6-foot sidewalks.

The proposed usual right-of-way width would be 200 feet. The existing bridge over the Colorado River would be replaced with two new prestressed concrete beam structures. Both bridges would consist of five spans and would be approximately 532 feet long and 68 feet wide. Each bridge would accommodate three 12-foot travel lanes, 11.5-foot shoulders, and 6-foot sidewalks.

Approximately 70 acres of additional right-of-way would be required to construct the proposed project. It is currently estimated that there would be 20 residences and 8 businesses displaced. The acquisition of properties and relocation assistance for displaced residential and business property owners would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

To date no cultural resources, wetlands, prime or unique farmlands, migratory birds, existing hazardous materials sites, or air quality, have been identified as impacted under the build alternative. The proposed project would not require the acquisition of public land designated and used as a park, recreation area, wildlife refuge, historic or cultural site, or scientific area. The proposed project would encroach upon a floodplain but would not encroach upon a wetland or sole-source aquifer recharge zone. There are two U.S. Army Corps of Engineers (USACE) jurisdictional waters (Colorado River and an unnamed tributary to the Colorado River) located within the limits of the proposed project, both of which would require a USACE Nationwide Permit 14 under Section 404 of the Clean Water Act. Soil disturbance during construction activities will be mitigated through adherence to the Texas Commission on Environmental Quality (TCEQ) Texas National Pollutant Discharge Elimination System program. During construction, best management practices (BMPs), including temporary erosion, sedimentation, and total suspended solids (TSS) water pollution controls, will be implemented. There is no potential habitat for federal and/or state listed endangered or threatened species within the project limits. The proposed project would result in a noise impact at seven receivers. Noise abatement measures were determined not to be feasible and reasonable; therefore, no abatement measures are proposed for the proposed project.

The EA concluded that the build alternative is the recommended alternative for the FM 973 project. This alternative meets the purpose and need and would have no significant impacts on the quality of the human or natural environment. TxDOT recommends a FONSI for the FM 973 project.

TxDOT's recommendation for the selection of the build alternative resulted from a process that involved the public and close coordination with various federal, state, and local government agencies.

Public Involvement

Public involvement is an integral and critical component of the NEPA project development process. Project staff has met informally with city and county officials.

An Open House for this project was held on January 31, 2008, at Del Valle Junior High School. The Open House notice was published in the Austin American Statesman and

the Ahora Si. A summary of comments that were received as a result of the Open House has been incorporated into the EA.

A Public Hearing was held on July 14, 2011, at Del Valle Middle School. The Public Hearing notice was published in the Austin American Statesman and Ahora Si. A transcript of the Public Hearing has been incorporated into the Summary and Analysis of Public Hearing.

Mitigation/Commitments

A majority of the potential impacts associated with the construction of the build alternative were avoided or minimized as documented in the EA. The design and construction of the FM 973 improvements will incorporate measures to minimize harm to the environment, as described below.

The two jurisdictional waters (Colorado River and an unnamed tributary to the Colorado River) are considered "single and complete projects" according to 33 CFR § 320.2(i); therefore, two separate USACE Nationwide Permits (NWP) #14 will be utilized at each crossing. There are no wetlands present within the limits of the proposed project and permanent impacts at each crossing will be less than 0.1 of an acre; therefore, coordination with the USACE is not required.

TxDOT will comply with the TCEQ's Texas Pollutant Discharge Elimination System Construction General Permit. A Stormwater Pollution Prevention Plan will be prepared and implemented, and a construction site notice will be posted on the construction site. A Notice of Intent will be required. During construction, BMPs, including temporary erosion, sedimentation, and TSS water pollution controls will be implemented.

In the event that migratory birds are encountered on-site during project construction, every effort will be made to avoid protected birds, active nests, eggs, and/or young. Clearing of vegetation will take place outside of the breeding season (March through August) as much as practicable to avoid impacts to nesting birds.

Approximately 70 acres of additional right-of-way will be required to construct the proposed project. It is currently estimated that there would be 20 residences and 8 businesses displaced. The acquisition of properties and relocation assistance for displaced residential and business property owners would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease, and TxDOT archeological staff will be contacted to initiate post-review discovery procedures in accordance with the First Amended Programmatic Agreement for Transportation Undertakings between FHWA, the SHPO, the Advisory Council on Historic Preservation, and TxDOT and the

Memorandum of Understanding.

Monitoring or Enforcement

All commitments and conditions of approval stated in the EA will be monitored by TxDOT and other appropriate federal and state agencies to ensure compliance.

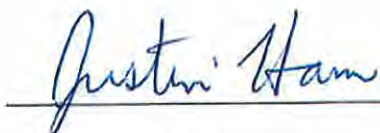
FHWA Decision

FHWA has reviewed all of the relevant documents and materials. Based upon our own independent review and analysis, we find that the August 2011 FM 973 project EA analyzed and considered all the relevant potential environmental impacts and issues. FHWA concurs with the findings made in the EA that: (1) the build alternative best meets the purpose and need of the project and (2) the build alternative will have no significant impacts on the quality of the human or natural environment under NEPA.

Based upon our own agency review and consideration of the analysis and evaluation contained in the EA for this project, and after further careful consideration of all social, economic, and environmental factors, including input from the public involvement process, FHWA hereby issues a FONSI for the FM 973 project. FHWA further approves the build alternative as the recommended alternative for selection as the proposed action for this project. The selected alternative will best fulfill the purpose and need for the project and meet the goals identified for the FM 973 project.

CAMPO has included the proposed project in the CAMPO 2035 Regional Transportation Plan. The first phase of the proposed project (CSJ 1200-03-028) is included in the CAMPO 2011-2014 TIP.

TxDOT is required to ensure that any and all state or federal permit requirements and conditions are met and otherwise complied with.



Date 9-16-11

Justin Ham, P.E.
Urban Programs Engineer
Federal Highway Administration

Date: 09/19/2011

(EPIC)

ENVIRONMENTAL PERMITS, ISSUES, AND COMMITMENTS SHEET

Environmental Tracking System

General Project Information

CSJ: 1200-03-028	Project Type: EA	Cleared by ENV:
Field: 3	Project #: STP ()	Priority: Low
District: Austin	Source: Fed/State	
County: Travis	Current Letting:	
Highway: FM 973	Final Letting:	
Limits From: Harold Green Drive		
To: 0.5 Miles South of SH 71		
Description: Upgrade to MAD6		

Archeological Studies Issues

Permit #: **Commitment Type:** Pre-Construction **Status:** active **Party Responsible:** env **Last Updated:** 08/24/2011

Impact Type:

2008-12-05 JHB: Right of entry has been denied for required archeological investigation. The Austin District ENV Project Manager shall not issue a letter of authority until confirmation of the completion of Section 106 consultation.

Comments Last 09/16/2009
Updated:

Other Issues

Permit #: **Commitment Type:** Construction **Status:** active **Party Responsible:** district **Last Updated:** 08/24/2011

Impact Type:

In the event that migratory birds are encountered on-site during project construction, every effort would be made to avoid harm of protected birds, active nests, eggs, and/or young. The contractor would remove all old migratory bird nests between September 1 and January 31 from any structure where work will be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between February 1 and August 31. All methods would be approved by the Austin District Biologist well in advance of planned use.

Comments Last 08/24/2011
Updated:

Permit #: **Commitment Type:** Construction **Status:** active **Party Responsible:** district **Last Updated:** 08/24/2011

Impact Type:

Provisions will be included in the construction plans and specifications that require the contractor to make every reasonable effort to minimize noise during construction through abatement measures such as work-hour controls and proper maintenance of muffler systems.

Comments Last 08/24/2011
Updated:

Permit #: **Commitment Type:** Construction **Status:** active **Party Responsible:** district **Last Updated:** 08/24/2011

Impact Type:

During construction efforts would be taken to avoid and minimize disturbance of vegetation and soils. Areas within the existing and proposed right-of-way, but outside the limits of construction would not be disturbed. All areas disturbed during construction, would be revegetated, according to TxDOT specifications, as soon as it becomes practicable. In accordance with Executive Order 133112 on Invasive Species, the Executive Memorandum on Beneficial Landscaping, and the 1999 FHWA Guidance on Invasive Species, only non-invasive species would be planted within the right-of-way.

Comments Last 08/24/2011
Updated:

Permit #: **Commitment Type:** Construction **Status:** active **Party Responsible:** district **Last Updated:** 08/24/2011

Impact Type:

In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures under the provisions of the PA and MOU.

Comments Last 08/24/2011
Updated:

Other Issues

Permit #: Commitment Type: Construction Status: active Party Responsible: district Last Updated: 08/24/2011

Impact Type:

Disposition of petroleum underground storage tank systems within the proposed right-of-way would be addressed during the right-of-way negotiation and acquisition process.

Should project design or right-of-way requirements change during project development, the potential for hazardous material impacts would be reassessed. Section 6.10 of the General Provisions of TxDOT's Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, which applies to all highway projects, includes guidelines addressing the contractor's responsibilities regarding the discovery of hazardous materials.

The proposed project includes the demolition of a bridge structure. The structure may contain asbestos containing materials. Asbestos inspections, notification, abatement, and disposal, as applicable, would be addressed in accordance with federal and state regulations.

Comments Last Updated: 08/24/2011

Water Quality Resources Issues

Permit #: s101 Commitment Type: Pre-Construction Status: active Party Responsible: district Last Updated: 08/14/2008

Impact Type: Temporary, Permit Required

Comments Last Updated:

Permit #: 14 Commitment Type: Pre-Construction Status: active Party Responsible: district Last Updated: 08/14/2008

Impact Type: Temporary, Permit Required

Comments Last Updated:

Permit #: nw401 Commitment Type: Pre-Construction Status: active Party Responsible: district Last Updated:

Impact type

Controls

BMPs

nw401

Erosion

Temporary Vegetation

nw401

Sediment

Silt Fence

nw401

Sediment

Rock Berm

nw401

Post Construction TSS

Grassy Swales



MEMORANDUM

TO: 850 File, FM 973 at the Colorado River: 1200-03-028, Travis County, Austin District

Re: Denial of Right of Entry

FROM: Jon Budd – Staff Archeologist.

DATE: December 5, 2008

SUBJECT: Internal review under the First Amended Programmatic Agreement Among the Federal Highway Administration, the Texas Department of Transportation, Texas State Historic Preservation Officer, the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings (PA-TU) and; and the Memorandum of Understanding (MOU) Between the Texas Historical Commission and the Texas Department of Transportation

The above referenced proposed project would use federal funds to replace the existing bridge and approaches on the FM 973 at the Colorado River located east of Austin in Travis County. The existing 450 foot long by 32 foot wide bridge would be replaced by two new structures each measuring 532 by 68 feet each. A dangerous curve located on FM 973 located north of the river would be straightened and the realignment would be on new location. In addition, the intersection of FM and SH 71 would be reconfigured to accommodate continuous roadway alignments. Installation of new nonbridge class drainage structures as well as lengthening of existing nonbridge class structures within the project limits will be required. Approximately 70 acres of new right of way (ROW) would be required.

The undertaking's area of potential effects (APE) is defined as the proposed 200 foot wide ROW beginning at Harold Green Drive and extending 2.8 miles south to 0.5 miles south of SH 71 (see attached county and topographic maps as well as plan views). This includes the existing ROW associated with FM 973 as well as with SH 71. The APE also includes the 70 acres of proposed new ROW delineated on the attached maps. Based upon typical roadway design, the depth of impacts is estimated to be no more than 20 feet below the current ground surface.


According to the Montopolis USGS topographic quadrangle (3097-213) of the Texas Archeological Sites Atlas, there are fifteen archeological sites (41TV408, 41TV412, 41TV414, 41TV415, 41TV416, 41TV417, 41TV418, 41TV422, 41TV432, 41TV433, 41TV516, 41TV902, 41TV1989, 41TV1992, and 41TV2159) previously recorded within 1 kilometer (0.621 miles) of the APE. However all of these sites are located more than 100 meters (328 feet) away from the APE and will not be impacted.

According to 1981 Austin Sheet of the Geologic Atlas of Texas, the underlying geology of the APE is mostly comprised of Pre-Holocene aged formations that have historically demonstrated minimal potential for the presence of naturally buried intact

archeological deposit. A very minor amount of Holocene aged alluvium that has historically demonstrated potential for the presence of buried intact archeological deposit is located in the APE in at the Colorado River. According to the 1974 USDA/SCS Soil Survey of Travis County, the soils within the APE are composed of multiple soil types including a very minor amount of at least one type that has historically demonstrated potential for the presence of buried intact archeological deposits.

Due the presence of previously recorded archeological sites located in or near the APE, TxDOT recommends that an archeological investigation be conducted to confirm the absence of potentially significant archeological deposits that could be adversely impacted by the undertaking.

Permission to conduct the mechanical trenching archeological investigations was denied by one of the current landowners. Thus, as provided under Stipulation IX.B.3 of the PA-TU, this undertaking may proceed with further project development, including completion of the environmental process and right of way acquisition without the concurrence of the SHPO. After obtaining access to the proposed right of way, the recommended archeological investigation shall be conducted and any additional work that may be required under the terms of the PA and MOU will be completed.

Approved by  for TxDOT December 5, 2008
Scott Pletka, Ph.D. Date
Archeological Studies Supervisor

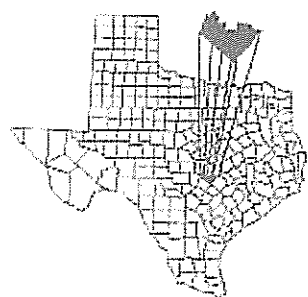
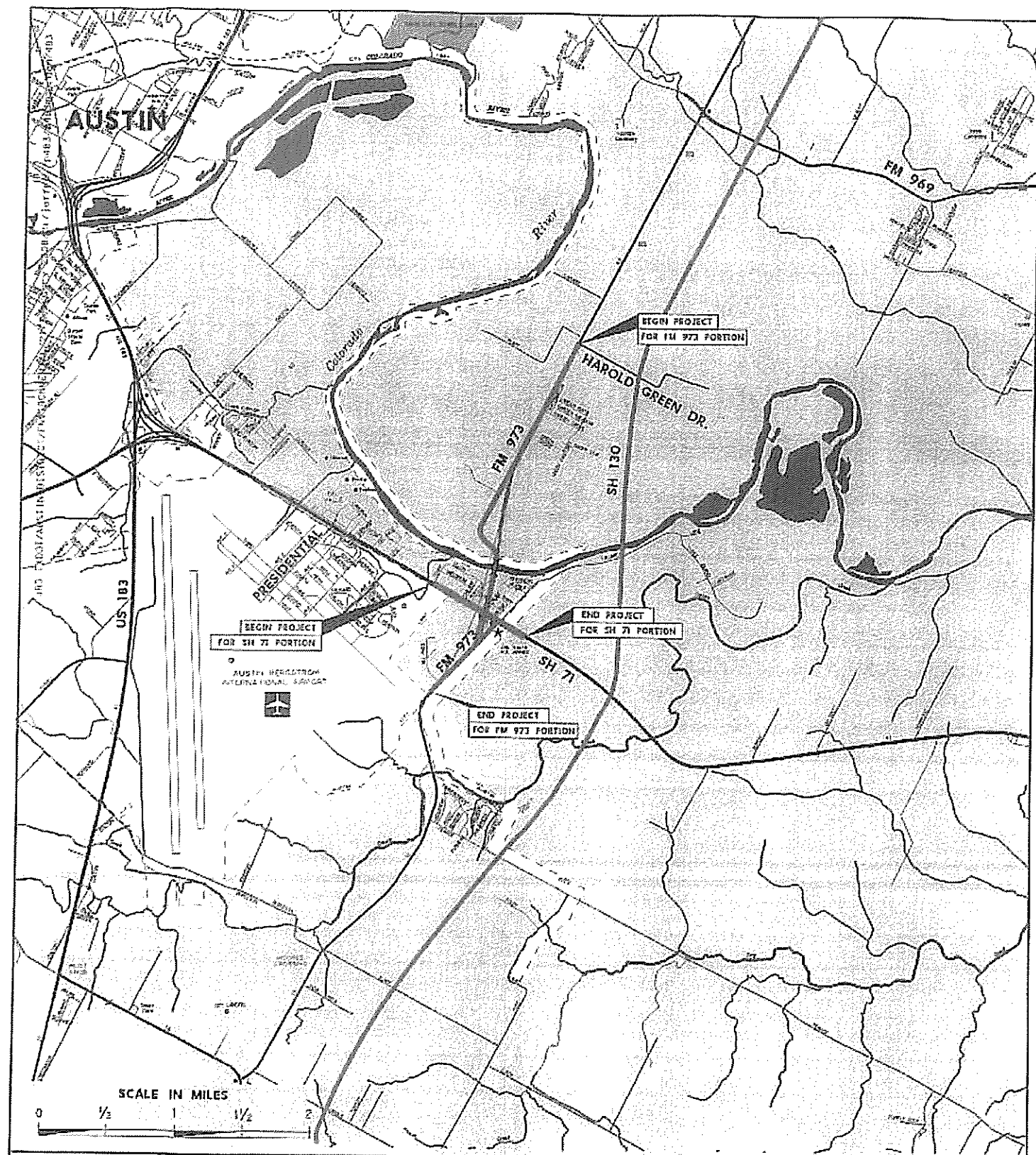
Attachments

Project depicted on Travis County Map

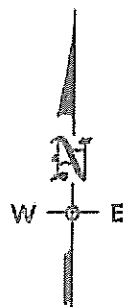
Project depicted on 7.5" USGS Topographic Map

Original for 850: Julia Ragsdale

Cc w/ attachments: ENV-JHB; M. Walker- Austin District



TRAVIS COUNTY

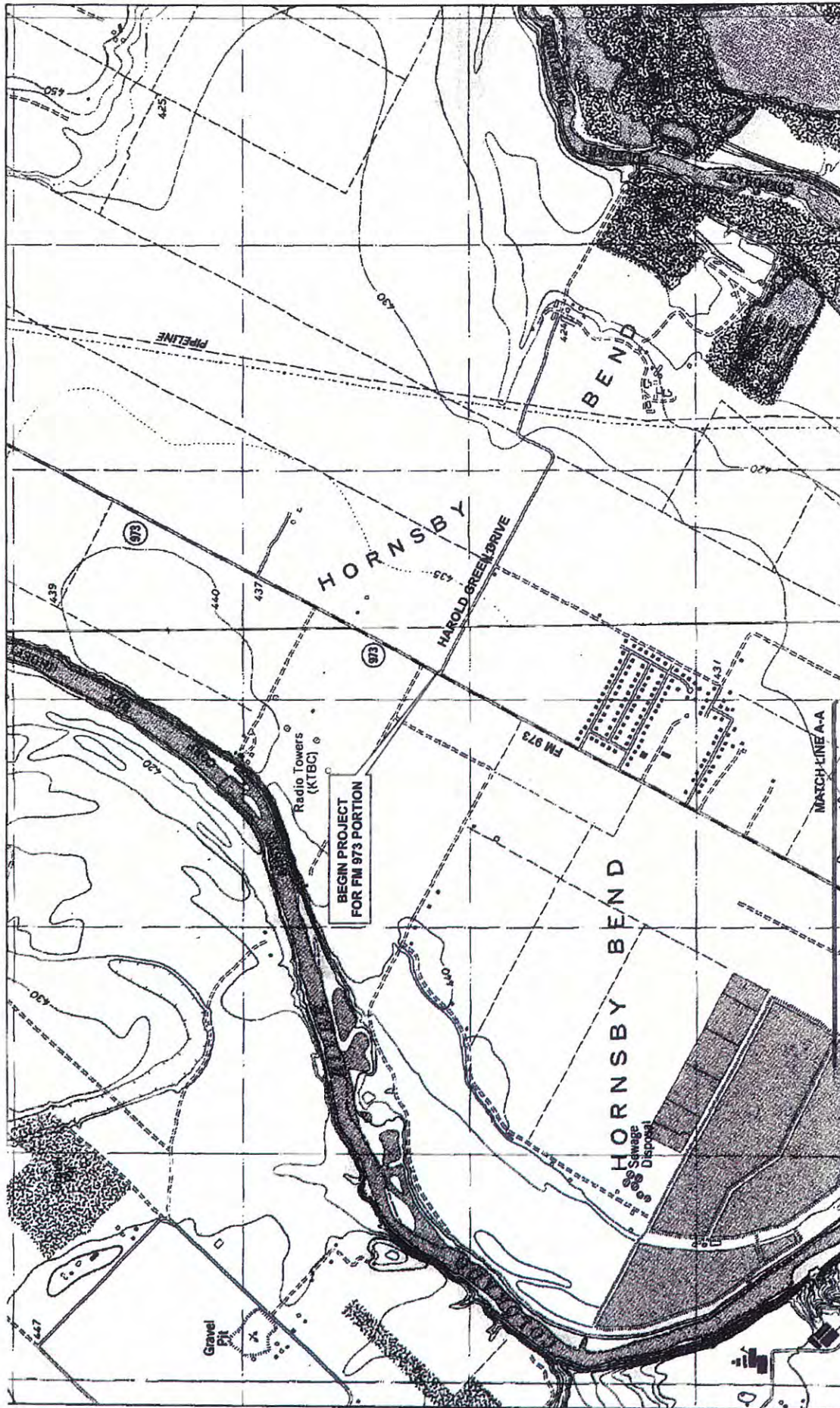


PROJECT LOCATION MAP

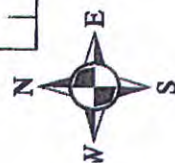
FM 973: FROM HAROLD GREEN DRIVE TO
APPROX 0.5 MILES SOUTH OF SH 71

CSJ: 1200-03-028, etc.

FIGURE 1



JRG TXDOT/AUSTIN DISTRICT/ENVIRONMENTAL/25 February 2008/d:\jrg\p\453\topo1.mxd/453



MONTGOMERY QUADRANGLE
 TEXAS
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 Scale: 1 inch = 1,320 feet
 1:15,840
 DATE = CREATED 1988

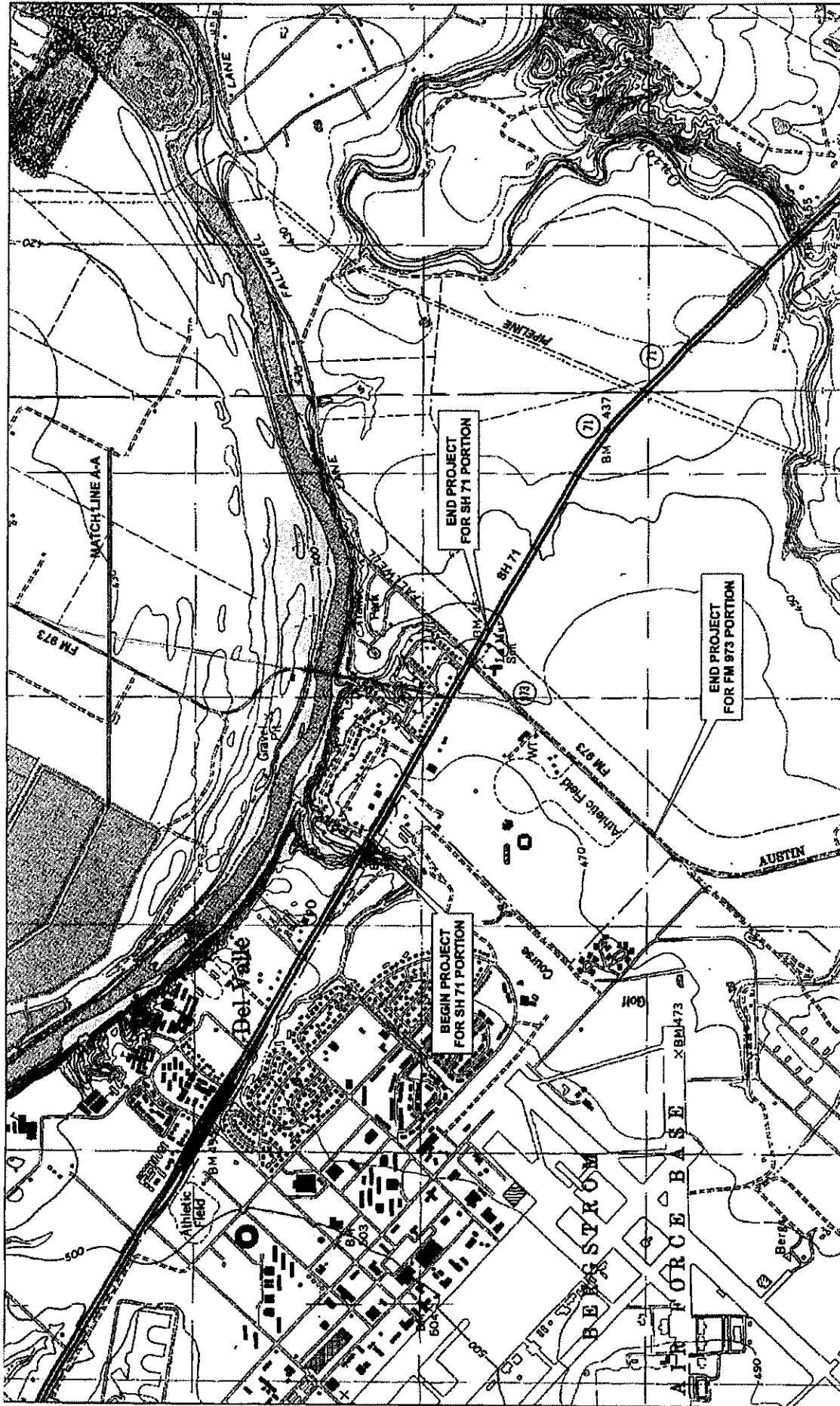
TOPOGRAPHICAL MAP
 FM 973: FROM HAROLD GREEN DRIVE TO
 APPROX 0.5 MILES SOUTH OF SH 71

CSJ: 1200-03-028, etc.

TRAVIS COUNTY

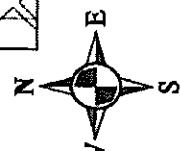
FIGURE 4

SHEET 1 OF 2



TOPOGRAPHICAL MAP
 FM 973: FROM HAROLD GREEN DRIVE TO
 APPROX 0.5 MILES SOUTH OF SH 71
 C.S.J.: 1200-03-028, etc.
 TRAVIS COUNTY
 FIGURE 4

MONTOPOLIS QUADRANGLE
 TEXAS
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 Scale: 1 inch = 1,320 feet
 1:15,840
 DATE = CREATED 1983



ENVIRONMENTAL ASSESSMENT

FOR

PROPOSED IMPROVEMENTS ON

FARM-TO-MARKET ROAD 973

FROM: HAROLD GREEN DRIVE

TO: PEARCE LANE

TRAVIS COUNTY, TEXAS

CSJ: 1200-03-028 & 1200-03-033

AUGUST 2011

PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND THE

TEXAS DEPARTMENT OF TRANSPORTATION

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	EXISTING FACILITY	2
3.0	PURPOSE AND NEED.....	3
4.0	ALTERNATIVES ANALYSIS.....	5
5.0	PROPOSED FACILITY	6
6.0	EXISTING ENVIRONMENT	9
6.1	Soils and Geology	9
6.2	Water.....	11
6.3	Vegetation	12
6.4	Wildlife	13
6.5	Threatened and Endangered Species	14
6.6	Socioeconomics	19
6.6.1	Land Use	19
6.6.2	Employment.....	21
6.6.3	Demographics	21
6.7	Hazardous Materials	26
6.8	Noise	27
6.9	Air Quality	28
6.10	Historic Properties	28
6.11	Archeology.....	30
7.0	EFFECTS OF THE PROPOSED PROJECT.....	31
7.1	Soils.....	31
7.2	Water.....	31
7.3	Vegetation	32
7.4	Migratory Birds.....	33
7.5	Threatened and Endangered Species	33
7.6	Socioeconomics	34
7.6.1	Land Use	34
7.6.2	Relocation Impacts.....	34

TABLE OF CONTENTS (continued)

7.6.3	Community Cohesion	38
7.6.4	Community Impact Assessment	39
7.6.5	Environmental Justice	42
7.6.6	Limited English Proficiency	43
7.7	Hazardous Materials	43
7.8	Traffic Noise	43
7.9	Air Analysis	44
7.10	Historic Properties	45
7.11	Archeology.....	45
8.0	INDIRECT AND CUMULATIVE EFFECTS	45
9.0	ENVIRONMENTAL PERMITS, ISSUES, AND COMMITMENTS	68
9.1	Water.....	68
9.2	Vegetation	69
9.3	Migratory Birds.....	69
9.4	Socioeconomic.....	69
9.4.1	Relocation of People	69
9.4.2	Traffic Management During Construction.....	70
9.4.3	Public Involvement	70
9.5	Hazardous Materials	72
9.6	Noise	72
9.7	Archeology.....	72
10.0	CONCLUSION.....	73

TABLE OF CONTENTS (continued)

TABLES

TABLE 1:	AVERAGE DAILY TRAFFIC VOLUME	4
TABLE 2:	SOILS	9
TABLE 3:	GEOLOGY	10
TABLE 4:	ELEMENT OF OCCURRENCES WITHIN 1.5 MILES	14
TABLE 5:	FEDERAL AND STATE ENDANGERED AND THREATENED SPECIES LISTED IN TRAVIS COUNTY	15
TABLE 6:	POPULATION	22
TABLE 7:	MINORITY POPULATION DISTRIBUTION	24
TABLE 8:	INCOME LEVELS	25
TABLE 9:	LANGUAGE SPOKEN AT HOME.....	26
TABLE 10:	HAZMAT DATABASE SEARCH	27
TABLE 11:	COMPARABLE HOUSING	35
TABLE 12:	AVAILABLE COMMERCIAL PROPERTY	36
TABLE 13:	EIGHT-STEP APPROACH TO ESTIMATE INDIRECT IMPACTS	46
TABLE 14:	NOTABLE FEATURES FOR INDIRECT IMPACT ANALYSIS	49
TABLE 15:	EIGHT-STEP APPROACH FOR CUMULATIVE IMPACTS ANALYSIS.....	59
TABLE 16:	MEDIAN HOUSEHOLD INCOMES IN INDIRECT EFFECTS STUDY AREA	62
TABLE 17:	CUMULATIVE EFFECTS ANALYSIS SCREENING	66

TABLE OF CONTENTS (continued)

FIGURES

- FIGURE 1: PROJECT LOCATION MAP
- FIGURE 2: EXISTING AND PROPOSED TYPICAL SECTIONS
- FIGURE 3: ALTERNATIVES
- FIGURE 4: PLAN VIEW
- FIGURE 5: USGS TOPOGRAPHIC MAP
- FIGURE 6: AERIAL PHOTOGRAPH
- FIGURE 7: CENSUS BLOCKS
- FIGURE 8: HAZARDOUS MATERIAL SITES
- FIGURE 9: INDIRECT EFFECTS STUDY AREA

APPENDICES

- APPENDIX A: PREVIOUS ENVIRONMENTAL CLEARANCES
- APPENDIX B: PHOTOGRAPHS
- APPENDIX C: AGENCY COORDINATION LETTERS
- APPENDIX D NOISE ANALYSIS
- APPENDIX E: MOBILE SOURCE AIR TOXICS

1.0 INTRODUCTION

The study limits of the proposed project along Farm-to-Market Road (FM) 973 are from Harold Green Drive north of State Highway (SH 71) to Pearce Lane south of SH 71. The construction limits of the proposed project along FM 973 are from Harold Green Drive to 0.5 miles south of SH 71. Under the current proposed project, FM 973 would be upgraded to a six lane major divided arterial roadway (MAD 6) from Harold Green Drive to SH 71. In addition, operational improvements at the FM 973 and SH 71 intersection would be done to accommodate the future expansion of SH 71. This proposed project is consistent with the Capital Area Metropolitan Planning Organization (CAMPO) *2035 Regional Transportation Plan*¹. The proposed project is consistent with the 2011-2014 Transportation Improvement Plan. The total length of the proposed project is approximately 2.8 miles. **Figure 1** shows the project location and the location of Travis County in relation to the rest of the state.

This current proposed project is part of an overall corridor study that is being developed to upgrade FM 973 from a two-lane undivided facility to a MAD 6. The limits of the corridor study are from U.S. Highway (US) 290 in Manor to US 183 south of Austin in Travis County.

This proposed project has been separated from the corridor study in order to expedite the replacement of the substandard bridge over the Colorado River and to coordinate the construction of the intersection at SH 71, with the SH 71/US 290 project (CSJ: 0113-08-037 and 0113-09-030) that was issued a Record of Decision (ROD) on August 22, 1988.

History

On March 29, 2002, the Texas Department of Transportation (TxDOT) Environmental Affairs Division (ENV) approved the proposed addition of a continuous left-turn lane and shoulders on FM 973 from SH 71 to Pearce Lane (CSJ: 1200-03-033) as a Programmatic Categorical Exclusion (PCE). A copy of the approval letter along with a project location map is included in **Appendix A**. Construction funds for this proposed project were never obtained and the project was never built.

¹ Capital Area Metropolitan Planning Organization (CAMPO). *2035 Regional Transportation Plan*. As amended January 10, 2011. www.campotexas.org.

On May 5, 2004, TxDOT ENV conditionally approved the proposed on-system bridge replacement project on FM 973 at the Colorado River (CSJ: 1200-03-028) as a PCE to proceed with right-of-way acquisition. A copy of the approval letter along with a project location map is included in **Appendix A**. Right-of-way for this proposed project was never acquired; therefore, construction funds were never obtained and the project was never built.

The improvements described in this environmental assessment (EA) overlap these two projects (1200-03-033 and 1200-03-028); therefore, they are no longer being pursued as originally proposed.

2.0 EXISTING FACILITY

The existing FM 973, north and south of SH 71, usually has an overall pavement width of 26 feet, which accommodates two 13-foot travel lanes with no shoulders. No sidewalks exist along this portion of FM 973. See Sheet 1 of **Figure 2**. At the intersection with SH 71 a 14-foot left turn lane exists. The usual right-of-way width on FM 973 varies from 80 feet to 100 feet. The existing speed limits along FM 973, within the limits of the proposed project, varies from 50 miles per hour (mph) to 60 mph.

Along FM 973, just north of the Colorado River bridge, there is a substandard horizontal curve with limited sight distance. See Sheet 4 of **Figure 4**. In addition, the intersection of FM 973 with SH 71 is also substandard. The north FM 973 intersection with SH 71 is approximately 600 feet to the west of the south FM 973 intersection with SH 71. See Sheet 5 of **Figure 4**.

The existing bridge on FM 973 at the Colorado River (Structure #1200-03-015), which was built in 1958, has an overall length of 450 feet and consists of fifteen 30-foot spans. The bridge has a concrete deck, concrete beams, and concrete pilings. The bridge has an overall width of 32 feet, with a clear roadway width of 26 feet, which accommodates two 13-foot travel lanes with no shoulders. Sheet 4 of **Figure 2** shows a typical section of the existing FM 973 bridge.

Along FM 973, within the limits of the proposed project, there are two single barrel 18-inch reinforced concrete pipes (RCP), a double barrel 18-inch RCP, a single barrel 48-inch RCP, and a single barrel 10-foot by 8-foot concrete box culvert that crosses under FM 973.

Existing SH 71, within the limits of the proposed project is composed of a divided facility. Direction of travel is separated by a 52-foot depressed median. Each roadway has an overall pavement width of 38 feet which accommodates three 12-foot travel lanes and 1-foot shoulders. The eastbound and westbound travel lanes are separated by a 52-foot grassy median. No sidewalks exist along this portion of SH 71. The usual right-of-way width on SH 71, within the project limits, varies from 200 to 220 feet. Sheet 5 of **Figure 2** shows a typical section of the existing SH 71.

Along SH 71, within the limits of the proposed project, there is a single barrel 24-inch RCP, a double barrel 30-inch RCP, a single barrel 42-inch RCP, a double barrel 5-foot by 3-foot box culvert, a single barrel 8-foot by 8-foot box culvert, a single barrel 4-foot by 2-foot box culvert, a single barrel 3-foot by 3-foot box culvert, two single barrel 5-foot by 3-foot box culverts, a triple barrel 3-foot by 5-foot box culvert, and a single barrel 4-foot by 4-foot box culvert that cross under SH 71.

3.0 PURPOSE AND NEED

The purpose of the proposed project is to improve the safety and mobility on FM 973. There is a need to provide refuge for vehicles slowing, provide additional travel lanes, provide shoulders, and separate the direction of travel. There is also a need to add capacity to the roadway and remove turning movements within the travel lanes. In addition, there is a need to improve the substandard horizontal alignment of the roadway north of the Colorado River, replace the Colorado River bridge, and improve the substandard intersection with SH 71 to further improve the safety and mobility on FM 973.

The needs for the proposed project are supported by the traffic statistics and accident rates on this segment of FM 973.

The following traffic statistics in **Table 1** indicate increased use of the roadway.

Table 1
Average Daily Traffic Volume

Year	ADT
1987	5,800 vpd
1997	8,500 vpd
2007	13,400 vpd
2013	20,200 vpd (projected)
2027	22,800 vpd (projected)
2033	30,700 vpd (projected)

ADT = 24-Hour Average Daily Traffic Volume
vpd = vehicles per day

From 1987 to 2007, the ADT on this segment of FM 973 increased approximately 131 percent. From 2007 to 2027, the ADT on this segment of FM 973 is expected to increase by approximately 70 percent. The approximately 131 percent increase in ADT has contributed to the poor level of service (LOS) rating.

LOS is a six-level rating scale used to describe the quality of traffic flow on a roadway. The ratings range from LOS A to LOS F. LOS A is the best quality of traffic flow. At LOS F, the traffic volumes exceed the capacity of the roadway and queues of traffic can back up behind the “bottleneck” in roadway capacity. The current peak hour LOS for this segment of FM 973 at SH 71 is LOS F. At LOS F, traffic flow rates exceed the capacity of the intersection, and long traffic back ups extend on intersection approaches. The peak hour LOS rating is expected to remain at F, except with longer intersection backups. The peak hour LOS for this segment of FM 973 is projected to be LOS C or better in 2031 with the construction of the proposed improvements at SH 71 and realignment of FM 973 to cross SH 71 at the same location.

Traffic accidents on FM 973 within the limits of the proposed project were analyzed for the years 1992 through 2001. The analysis indicates a total of 266 accidents were recorded over this ten year period of time. Of the 266 accidents, there were 139 injury accidents and 8 fatal accidents. The 266 recorded accidents on FM 973 consisted of 96 run off road/fixed object/overtake accidents, 50 right-angle accidents, 61 rear-end accidents, 23 head-on collisions, 5 sideswipe accidents, 16 left-turn accidents, and 15 classified as other accidents.

Travis County has experienced rapid growth in recent decades, like many other areas in Central Texas. From 1990 to 2000, the population of Travis County increased from 576,407 to 812,280,² an approximately 41 percent increase. This rapid growth has contributed to the approximately 131 percent increase in the ADT of this segment of FM 973. FM 973 carries local and commercial traffic between US 290 and US 183. Most of the development within the limits of the proposed project consists of residential and commercial. There are also several resource extraction sites (sand and gravel) located along FM 973 north of the Colorado River.

The existing bridge is showing advanced deterioration and is functionally obsolete which has resulted in a bridge sufficiency rating of 31.9. Since slab span bridges cannot be widened due to structural constraints, replacement of the existing bridge is proposed.

The proposed project is listed in the CAMPO 2035 *Regional Transportation Plan*. In September 2006, The Texas Transportation Commission passed Minute Order #110685. This Minute Order authorized *District Discretionary Program*. In October 2008, the Texas Transportation Commission passed Minute Order #111552 and in December 2008, the Transportation Commission passed Minute Order #111634. These Minute Orders authorized the *Unified Transportation Program*. Included in these programs are the proposed improvements to FM 973.

4.0 ALTERNATIVES ANALYSIS

If no improvements are made to the existing FM 973, the existing environment would remain relatively unchanged; however, as the number of vehicles on FM 973 continues to increase, the mobility along FM 973 would decrease and the safety of the facility would not be improved. Additionally, as mobility decreases on FM 973, vehicle emissions and noise would increase due to varying traffic speeds. Therefore, the purpose and need for the proposed improvements would not be met with a no-build alternative.

Efficient mobility and increased safety would be accomplished on FM 973 through the separation of the northbound and the southbound travel lanes with a raised median and the addition of left-turn bays with crossovers. Outside and inside shoulders would also be

² City of Austin. Accessed August 12, 2008 at www.ci.austin.tx.us.

constructed to improve safety. The existing FM 973 corridor would be utilized to minimize environmental impacts that would occur if the project was constructed on new location. However, preliminary analysis of the proposed project indicated that additional right-of-way would be required.

Two alternatives to straighten the substandard curve north of the Colorado River were studied. The first alternative, Eastern Curve Alignment Alternative as shown on **Figure 3**, would provide the straightest alignment. However, this alternative would require more right-of-way, additional residential displacements, would bisect a new subdivision (Hornsby Glen) currently under development, and the taking of more trees. The second alternative, which is the preferred alternative, as shown on **Figure 3**, would improve the substandard curve, require less right-of-way, require no residential displacements, and would take fewer trees than the first alternative.

Two alignments were investigated to improve the FM 973/SH 71 intersection. The preferred alignment, as shown on **Figure 3**, would utilize the existing northern FM 973 intersection with SH 71 and relocate the southern FM 973 intersection. This alignment would result in fewer residential displacements by utilizing the existing alignment through the residential area north of SH 71, acquiring right-of-way equally from both sides through the residential area. This alignment would require less additional right-of-way. The other alignment investigated, Southern FM 973 Intersection Alignment Alternative as shown on **Figure 3**, would utilize the southern FM 973 intersection with SH 71 and relocate the northern FM 973 intersection. This alignment would require more residential displacements by re-aligning FM 973 through the Davidson City addition and Valle Del Rio addition, both north of SH 71 and south of the Colorado River, would require a new crossing of the Colorado River, would require substantial alterations to the substandard horizontal curve just north of the Colorado River, and would require more additional right-of-way.

5.0 PROPOSED FACILITY

The proposed project would consist of upgrading FM 973 from a two-lane undivided roadway to a MAD 6 to meet current design standards. The proposed project is in accordance with the *CAMPO 2035 Regional Transportation Plan*. In order to meet these current design standards, the substandard horizontal curve on FM 973 north of the Colorado River would be

re-aligned; the bridge over the Colorado River would be replaced with two new bridges; the intersection of FM 973 and SH 71 would be re-aligned to remove the substandard intersection; and the intersection with SH 71 would be constructed to accommodate the future expansion of SH 71 as identified in the *CAMPO 2035 Regional Transportation Plan*.

The overall proposed pavement width on FM 973 for the northbound and southbound lanes each would be 56 feet. The 56-foot overall pavement width, in each direction, would accommodate three 12-foot travel lanes with 10-foot shoulders. 6-foot sidewalks would also be provided on each side of the roadway. The northbound and southbound lanes would be separated by a 16-foot wide raised median. Median breaks would be provided as dictated by design standards. The proposed location of the median breaks are shown in **Figure 4**. The proposed right-of-way width on FM 973 would be 200 feet. Sheet 2 of **Figure 2** shows a typical section of the proposed FM 973 facility. **Figure 4** shows a plan view of the proposed FM 973 facility. The proposed speed limits along FM 973, within the limits of the proposed project, would match the existing speed limits.

The substandard horizontal curve just north of the Colorado River would be re-aligned in order to meet current design standards and to improve sight distances. Sheets 3 and 4 of **Figure 4** shows the proposed re-alignment of the substandard horizontal curve.

The existing bridge over the Colorado River would be replaced with two new prestressed concrete beam structures. Both bridges would consist of five spans and would be 532 feet long and 68 feet wide. Each bridge would accommodate three 12-foot travel lanes, 11.5-foot shoulders, and 6-foot sidewalks. Sheet 4 of **Figure 2** shows a typical section of the proposed FM 973 bridges over the Colorado River.

The intersection of FM 973 and SH 71 would be improved by removing the substandard intersection. FM 973 south of SH 71 would be re-aligned to match the alignment of FM 973 north of SH 71. In addition, the intersection with SH 71 would be constructed to accommodate the future expansion of SH 71 as identified in the *CAMPO 2035 Regional Transportation Plan*. Sheet 5 of **Figure 4** shows the proposed re-alignment of the intersection.

The overall pavement width of FM 973 for the northbound and southbound lanes at the intersection of SH 71 would be 60 feet in each direction. The 60-foot overall pavement width would accommodate three 12-foot through travel lanes and two 12-foot left turn lanes in each direction. The northbound and southbound lanes at the intersection of SH 71 would be separated by a 7-foot wide raised median. Sheet 3 of **Figure 2** shows a typical section of the proposed FM 973 facility at the intersection of SH 71.

The overall pavement width for the frontage roads on SH 71 at the intersection of FM 973 would be 50 feet in each direction which would accommodate two 12-foot inside travel lanes, a 14-foot outside travel lane, and a 12-foot left turn lane. Six-foot sidewalks would also be provided on each side. Where the design would allow, a buffer between the sidewalk and the curb and gutter would be provided. This would be determined during detailed design phase of project development. The proposed right-of-way width on SH 71 at the intersection of FM 973 would vary from 440 feet to 500 feet. Sheet 5 of **Figure 2** shows a typical section of the proposed SH 71 frontage roads.

Approximately 70 acres of additional right-of-way would be required to construct the proposed project. Of the approximate 70 acres of additional right-of-way, approximately 30 acres would be acquired north of the Colorado River for the proposed re-alignment of the S-curve, approximately 10 acres for the FM 973/SH 71 intersection, and approximately 30 acres along SH 71.

The existing culverts along FM 973, within the limits of the proposed project, would be lengthened a maximum of 75 feet. Safety end treatments (SETs) would also be added to improve the safety at the culvert crossings.

The existing culverts along SH 71, within the limits of the proposed project, would be lengthened a maximum of 260 feet. SETs would also be added to improve the safety at these culvert crossings.

The proposed project would be constructed using federal, state, and local funds and is included in a State Transportation Improvement Program under the *Structure Replacement and Rehabilitation Program* and the *Preventative Maintenance and Rehabilitation Program*. As of

March 10, 2011, according to TxDOT's Design/Construction Information System (DCIS), the total cost of the proposed project is estimated to be \$43,511,069. It is anticipated that the proposed project would be constructed in phases over a number of years as funding becomes available. The anticipated letting date for the first phase of construction is estimated to be August 2012.

6.0 EXISTING ENVIRONMENT

6.1 Soils and Geology

Soils within the proposed project limit overlie nearly level to gently rolling soils of terraces and floodplains adjacent to the Colorado River. **Figure 5** is a compilation of the *Montopolis* and *Webberville* United States Geologic Service (USGS) 7.5 minute topographic quadrangle maps which cover the project area. Within the proposed project limits, there are no caves, cliffs, or bluffs. Two soil associations are located within the proposed project limits: Bergstrom-Norwood and Lewisville-Patrick. Six soil units were identified within the proposed project limits and are listed in **Table 2**.³

Table 2
Soils

Soil Series	Soil Units
Altoga: Runoff is medium and the erosion hazard is moderate.	AgC2 – Altoga silty clay, 3-6 % slopes, eroded
Bergstrom: Permeability is moderate and the available water capacity is high	BeA – Bergstrom silt loam, 0-1% slopes
	BgA – Bergstrom silt loam, 1-3% slopes
Lewisville: These soils are moderately permeable and the available water capacity is high.	LcA – Lewisville silty clay, 0-1% slopes
	LcB – Lewisville silty clay, 1-2% slopes
Lincoln: These soils are rapidly permeable. The available water capacity is low.	Ln – Lincoln loamy fine sand

Overall, the soils within the proposed project limits retain water; therefore, there is limited runoff and the water does not permeate easily into the water table. Lincoln loamy fine sand (Ln) is the only soil within the proposed project limits where water flows easily into the water table. Lincoln loamy fine sands (Ln) makes up approximately 6.9 acres within the project area and are

³ Natural Resources Conservation Service (NRCS). *Soil Survey of Travis County, Texas*. U.S. Government Printing Office, Washington D.C., June 1974.

located at the Colorado River. There are no soils rated as hydric by the Natural Resources Conservation Service (NRCS) within the limits of the proposed project.⁴

According to the NRCS, Bergstrom silt loam (BeA and BgA) and Lewisville silty clay (LcA and LcB), within the proposed project limits, are considered potential prime farmland soils.⁵ These soils cover a surface area of approximately 52.3 acres within the proposed project limits. In compliance with the Farmland Protection Policy Act, the additional 70 acres of right-of-way was been scored using Form AD 1006. The proposed right-of-way did not score high enough to require further coordination with the NRCS (Score under 60). A copy of the form is on file at the TxDOT Austin District Office.

The following generalized stratigraphic chart in **Table 3** illustrates the deposition of the formations underlying the proposed project limits in geologic time. The two formations that underlie the proposed project limits are in **bolded** text in the body of **Table 3**.

Table 3
Geology

Era	Series	Stratigraphy	
Quaternary	Recent	Alluvium	Qal
	Pleistocene	Fluvatile Terrace Deposits	Qt
			Qo
			Qhg
		Lissie Formation Undivided	Ql
		Willis Formation	Qw
			Qwl
			Qwc

The following formation descriptions and information regarding overlying soils was taken from the Geologic Atlas of Texas⁶ and from NRCS soil surveys:⁷

- Alluvium (Qal) is overlain by Altoga silty clay (AgC2) and Lincoln loamy fine sand (Ln). This formation contains clay, silt, sand, and gravel terrace deposits.

⁴ NRCS, 2005. *Soil Data Mart*. Accessed September 25, 2007 at <http://www/nrcs.usda.gov>.

⁵ Ibid.

⁶ Bureau of Economic Geology (BEG). 1974. *Geologic Atlas of Texas, Austin Sheet*. The University of Texas.

⁷ NRCS, June 1974.

-
- Fluvial Terrace Deposits (Qt) is overlain by Altoga silty clay (AgC2), Bergstrom silt loam (BeA and BgA), and Lewisville silty clay (LeA and LeB). This formation consists of three or more levels which may correspond to coastal Pleistocene units. Along the Colorado River the formation consists mostly of dolomite, limestone, chert, quartz, and various igneous and metamorphic rocks from the Llano region.

6.2 Water

A study of the surface water resources for the proposed project began with a review of USGS topographic maps and aerial photographs (**Figures 5 and 6**). According to the National Park Service,⁸ there are no wild and scenic rivers in the vicinity of the proposed project.

Within the existing and proposed right-of-way along FM 973 there are two jurisdictional waters of the U.S., the Colorado River (JW1) and an unnamed tributary to the Colorado River (JW2). These jurisdictional waters are shown on Sheets 4 and 5, respectively, of **Figure 4**.

According to the U.S. Army Corps of Engineers (USACE) Fort Worth District's March 20, 1999 list, *Navigable Waters of the United States in the Fort Worth, Albuquerque, and Tulsa Districts within the State of Texas*,⁹ the Colorado River, within the limits of the proposed project, is considered navigable for purposes of Section 10 of the *Rivers and Harbors Act* of 1899.

Within the proposed project limits there are no seeps or springs. No wetlands were identified within the existing or proposed right-of-way.

The Colorado River, within the limits of the proposed project, is Segment 1428 of the Colorado River Basin.¹⁰ The Texas Commission on Environmental Quality (TCEQ) designated uses for Segment 1428 are those that support contact recreation, exceptional quality aquatic life, and public water supply. According to the TCEQ *State of Texas 2008 Clean Water Act Section*

⁸ National Park Service (NPS). 2007. *Wild and Scenic Rivers*. Accessed June 30, 2008 at www.nps.gov.

⁹ U.S. Army Corps of Engineers (USACE). 1999. *Navigable Waters of the United States in the Fort Worth, Albuquerque, and Tulsa Districts within the State of Texas*.

¹⁰ Texas Commission on Environmental Quality (TCEQ). 2005. *Draft 2004 Water Quality Inventory and 303(d) List*. Accessed October 23, 2007 at <http://www.tceq.state.tx.us>.

303(d) List, Segment 1428, within the limits of the proposed project, is not an impaired and is not within 5 miles upstream of an impaired stream segment.¹¹

Portions of the proposed project are located within the boundaries of the TxDOT Austin District Phase I and II Municipal Separate Storm Sewer System (MS4).

One Federal Emergency Management Agency (FEMA) *Flood Insurance Rate Map* dated January 19, 2000, includes the proposed project limits, Number 48453C0130 F.¹² The Colorado River is within Zones AE and X. The tributary on SH 71 is within Zone A. Zone A has no base flood elevation determination. Zone AE has base flood elevation determinations. Zone X is outside the 100-year and the 500-year floodplains.

The major aquifer found within Travis County is the Edwards Aquifer. The proposed project is not located within the Contributing or Recharge Zones of the Edwards Aquifer.

There are no water wells located within the proposed project area. The nearest water well is located approximately 0.03 miles from the proposed right-of-way and the depth to water is approximately 25 feet from the surface.¹³ Excavation for the proposed project would not exceed 10 feet and ground water quality would be maintained through water quality measures implemented during and after construction.

6.3 Vegetation

Within the existing and proposed right-of-way and adjacent to the proposed project limits, the vegetation type is published as “Crops”.¹⁴ The vegetation in the project limits north of the Colorado River and south of SH 71 is consistent with this description. The vegetation at the Colorado River and south of the Colorado River to SH 71 would be better described as “Pecan-Elm Forest”.¹⁵ The dominant vegetation observed during field investigations include, but are not limited to cedar elm (*Ulmus crassifolia*), hackberry (*Celtis laevigata*), pecan (*Carya*

¹¹ TCEQ. March 19, 2008. 2008 Texas 303(d) List.

¹² Federal Emergency Management Agency (FEMA). 2000. *FEMA Issued Flood Maps*. Accessed October 4, 2007 at <http://store.msc.fema.gov>.

¹³ Texas Water Development Board (TWDB). 2007. *Water Information Integration & Dissemination*. Accessed September 25, 2007 at <http://wiid.twdb.state.tx.us>.

¹⁴ Texas Parks and Wildlife Department (TPWD). 1984. *The Vegetation Types of Texas*. TPWD Bulletin 7000-120.

¹⁵ Ibid.

illinoensis), black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), cottonwood (*Populus sp.*), ragweed (*Ambrosia artemisiifolia*), Bermuda grass (*Cynodon dactylon*), Johnson grass (*Sorghum halepense*), poison ivy (*Toxicodendron radicans*), and greenbrier (*Smilax rotundifolia*). Photographs depicting typical vegetation within the proposed project limits are included as **Appendix B**.

Tree canopy within the existing and proposed right-of-way is approximately 30%. Tree canopy in areas adjacent to the proposed project is approximately 60%. Trees within and adjacent to the proposed project limits have a diameter-at-breast height (dbh) ranging from 8 inches to 24 inches with an average of 12 dbh and a height ranging from 10 feet to 40 feet.

Within and adjacent to the existing and proposed right-of-way, there is no unusual vegetation growing along the fencerows and it is not unusual to have fencerows and fencerow vegetation in this area. Within and adjacent to the proposed project limits there are no bottomland hardwoods, native prairies, or snags. However, there is riparian vegetation located along the Colorado River. Within the existing and proposed right-of-way, the total riparian acreage is less than 0.5 of an acre. The dominant vegetation within the riparian area consists of pecan, black willow, green ash, and cottonwood.

6.4 Wildlife

Within the proposed project limits wildlife is expected to be typical of the area. Common wildlife species in Travis County include white-tailed deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallopavo*), fox squirrel (*Sciurus niger*), jackrabbit (*Lepus californicus*), cottontail (*Sylvilagus floridanus*), bobwhite quail (*Colinus virginianus*), and mourning dove (*Zenaida macroura*). Mammals such as coyote (*Canis latrans*), nutria (*Myocastor coypus*), opossum (*Didelphis marsupialis*), raccoon (*Procyon lotor*), ring-tailed cat (*Bassariscus astutus*), and striped skunk (*Mephitis mephitis*) may also be present in the county.

Within the project limits there are no caves, cliffs, bluffs, snags, or existing bridges with bat colonies. However, there are swallow (*Hirundo sp.*) nests on the existing Colorado River bridge.

6.5 Threatened and Endangered Species

The *Texas Natural Diversity Database* (NDD) was reviewed on July 16, 2009, using Mimic (v. 2-12-09) in order to assess the potential for threatened or endangered species to occur within the project limits. Information files were reviewed for the known locations of species on the *Montopolis* and *Webberville* USGS 7.5 minute topographical quadrangle maps (which include the project area). The following known elements of occurrence have been recorded near the proposed project (**Table 4**).

Table 4
Element Occurrences within 1.5 Miles of Project

EOID	Scientific Name	Common Name	Status
5159	<i>Micropterus treculi</i>	Guadalupe Bass	none
6167	<i>Thamnophis sirtalis annectens</i>	Texas Garter Snake	none
7074	<i>Micropterus treculi</i>	Guadalupe Bass	none

On July 17, 2009, the Texas Parks and Wildlife (TPWD) *Annotated County List of Rare Species* for Travis County was reviewed to check for endangered and threatened species with potential to occur in Travis County.¹⁶ The U.S. Fish and Wildlife Service (USFWS) *Southwest Region County-by-County List* on the Southwest Region Ecological Services web site was checked on July 17, 2009, for endangered and threatened species with potential to occur in Travis County. **Table 5** incorporates species from those lists. Qualified district environmental personnel surveyed the project area and did not find any evidence of the listed endangered or threatened species or their habitat.

¹⁶ TPWD. *Annotated County List of Rare Species, Travis County. Last revised May 4, 2009.* Texas Natural Diversity Database. Austin, Texas.

Table 5
Federal and State Endangered and Threatened Species
Listed in Travis County

Species	USFWS Southwest Region County-by-County List	TPWD Annotated County List of Rare Species		Potential Habitat Present
		Federal Status	State Status	
Austin blind salamander (<i>Eurycea waterlooensis</i>)	C	C	*	No
Barton Springs salamander (<i>Eurycea sosrum</i>)	E	LE	E	No
Jollyville Plateau salamander (<i>Eurycea tonkawae</i>)	C	C	*	No
Bone Cave harvestman (<i>Texella reyesi</i>)	E	LE	*	No
Bee Creek Cave/Reddell harvestman (<i>Texella reddelli</i>)	E	LE	*	No
Tooth Cave pseudoscorpion (<i>Tartarocreagis texana</i>)	E	LE	*	No
Tooth Cave spider (<i>Neoleptoneta myopica</i>)	E	LE	*	No
Warton's Cave meshweaver (<i>Cicurina wartoni</i>)	C	C	*	No
American Peregrine Falcon (<i>Falco peregrinus anatum</i>)	NL	DL	T	No
Arctic Peregrine Falcon (<i>Falco peregrinus tundrius</i>)	NL	DL	*	No
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	DM	DL	T	No
Black-capped Vireo (<i>Vireo atricapilla</i>)	E	LE	E	No
Golden-cheeked Warbler (<i>Dendroica chrysoparia</i>)	E	LE	E	No
Interior Least Tern (<i>Sterna antillarum athalassos</i>)	NL	LE	E	No
Whooping Crane (<i>Grus americana</i>)	E,EXPN	LE	E	No
Smalleye shiner (<i>Notropis buccula</i>)	NL	C	*	No
Kretschmarr Cave mold beetle (<i>Texamaaurops reddelli</i>)	E	LE	*	No
Tooth Cave ground beetle (<i>Rhadine persphephone</i>)	E	LE	*	No
Red wolf (<i>Canus rufus</i>)	NL	LE	E	No
Texas horned lizard (<i>Phrynosoma cornutum</i>)	NL	*	T	No

U. S. Fish and Wildlife Service (E = endangered, EXPN = experimental population, non-essential, DM = delisted monitoring, C = candidate, and NL = not listed)

Texas Parks and Wildlife Department (E = endangered, LE = listed endangered, C = candidate, DL = delisted, T = threatened, and * = no regulatory status)

There are six endangered and one candidate cave invertebrates with the potential to occur in Travis County. These are the Tooth Cave spider, Warton's Cave meshweaver, Tooth Cave pseudoscorpion, Bone Cave harvestman, Bee Creek Cave/Reddell harvestman, Kretschmarr

Cave mold beetle, and Tooth Cave ground beetle. The caves where the invertebrates occur were formed as a result of dissolution of the limestone formations making up the Edwards Aquifer. These subterranean species prefer areas with consistent humidity and temperature levels with a continual influx of nutrients from the surface. The project limits are not within the Edwards Aquifer Recharge, Contributing, or Transition Zones. There is no potential habitat for these species within the project area.

The Barton Springs salamander is known only from the outlets of Barton Springs in Travis County. Austin Blind Salamander is known only from the outlets of Sunken Gardens (Old Mill Spring), Eliza Spring, and Parthenia (Main) Spring which forms Barton Springs Pool. The springs are fed by flow from the Edwards Aquifer and they are within the Colorado River Basin. The quantity of water in the springs is dependent upon the recharge of the Edwards Aquifer. Primarily, water flows into the aquifer where the Edwards limestone outcrops. Watersheds contribute to aquifer recharge when runoff from them enters rivers and streams that flow over areas where recharge occurs. Only those watersheds upstream of the Barton Springs Segment of the Edwards Aquifer contribute to the recharge of that segment of the aquifer. The project limits are not within the Barton Springs segment of the Edwards Aquifer. There is no potential habitat for the Barton Springs salamander within the project area.

Jollyville Plateau salamander is a small, gilled, sub-aquatic salamander. Jollyville Plateau salamanders are distributed within springs, spring-runs, and water-bearing karst formations in the Jollyville Plateau area of the Edwards Aquifer in Travis and Williamson counties, Texas. The range of the Jollyville Plateau salamander is limited and its sensitivity to underground water quality and quantity qualify it as a candidate for listing as an endangered species. The quantity of water in the springs is dependent upon the recharge of the Edwards Aquifer. Primarily water flows into the aquifer where the Edwards limestone outcrops. Watersheds contribute to aquifer recharge when runoff from them enters rivers and streams that flow over areas where recharge occurs. Only those watersheds located upstream of the Edwards Aquifer contribute to the recharge of the aquifer. During the field survey of the project area, no recharge or karst features were observed. There is no potential habitat for the Jollyville Plateau salamander within the project area.

American peregrine falcon is a year-round resident and local breeder in west Texas and nests in tall cliffs. The falcon is considered a migrant across Texas from northern breeding areas in the U.S. and Canada to wintering grounds along the Texas coast and further south. During migration, the birds may rest or feed in urban areas, lake shores, coastlines and barrier islands. The American peregrine falcon was not listed on the USFWS *Southwest Region County-by-County List* on the Southwest Region Ecological Services web site as of July 17, 2009. Within the limits of the project area the only area where there is water is at the Colorado River; however, there is very little open area along the river and the falcons would most likely be flying overhead.

Arctic peregrine falcon is considered to be a potential migrant in central Texas. This sub-species nests in the Arctic island and tundra regions of Alaska, Canada, and Greenland, and winters along the Texas coast south into South America. There is the potential for the falcons to migrate through central Texas in the spring and fall en route from breeding to wintering grounds. Peregrine falcons prefer open areas and often occur near water or wherever smaller birds concentrate. The Arctic peregrine falcon was not listed on the USFWS *Southwest Region County-by-County List* on the Southwest Region Ecological Services web site as of July 17, 2009. Within the limits of the project area the only area where there is water is at the Colorado River; however, there is very little open area along the river and the falcons would most likely be flying overhead.

Bald eagles are found primarily near seacoasts, rivers, and large lakes where food resources such as fish and waterfowl are readily available. Eagles usually build their nests in 40 to 120-foot tall trees or on cliffs. The bald eagle is known to nest along the Colorado River in Bastrop County and on the Llano River in Llano County. The bald eagle is known to winter from early November to late March along major river systems of the eastern and central Edwards Plateau. The Colorado River drainage, especially Lake Buchanan in Llano and Burnet counties, is the area most likely to have wintering bald eagles in the Austin District. The regular occurrence of the bald eagle is considered extremely unlikely within the limits of the project.

Black-capped vireo is a migratory songbird present in Texas during the breeding season of late March through September. The breeding habitat normally has a distinctive patchy, two-layered aspect that includes a deciduous, broad-leaved shrub and tree layer with open, grassy spaces.

Foliage reaching to ground level is used for nesting cover and the birds return to the same territory, or one nearby, year after year. The species composition of the vegetation is less important than the presence of adequate broad-leaved shrubs, foliage to ground level, and the required structure. Upper canopy within vireo habitat is relatively open. No habitat for the black-capped vireo exists in the vicinity of the proposed project due to the lack of adequate broad-leaved shrubs, foliage to ground level.

The golden-cheeked warbler is a migratory songbird present in Texas during the breeding season of early March through early August. The songbirds prefer an oak-juniper wood that possesses a high percentage of tree canopy. In the study *The Interactions Between Avian Predators and Golden-cheeked Warblers in Travis County, Texas* by K. A. Arnold et al, 1996, it was determined that the warblers normally inhabit areas with a dense tree canopy contiguous within blocks of 56 acres or more. Ashe juniper within the oak-juniper woods normally occupied by the warbler is not predominately second growth or multi-trunked. The warbler collects the strips of bark shedding from Ashe juniper to construct their nests. No habitat for the golden-cheeked warbler exists in the vicinity of the proposed project due to the lack of oak-juniper wood that possesses a high percentage of tree canopy.

Interior least tern is a shorebird that breeds in Texas along portions of the Rio Grande River, Canadian River, and Prairie Dog Town Fork of the Red River. Nesting habitat includes large areas of bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats near large rivers and reservoirs. This species winters along the coasts of Central and South America and feeds in shallow water where there is an abundance of fish. The interior least tern was not listed on the USFWS *Southwest Region County-by-County List* on the Southwest Region Ecological Services web site as of July 17, 2009. Within the limits of the project area there are no large areas of bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats near large rivers and reservoirs. There is no potential habitat for the interior least tern within the project area.

Whooping crane breeds in Canada and winters on the Texas coast. During migration the crane typically stops to rest and feed in open bottomlands of large rivers, marshes, and in agricultural areas. Within the limits of the project there are no typical vegetation or landscapes used for

resting or feeding areas; therefore, if whooping cranes occur within the project limits they would more likely be in flight.

Smalleye shiner is a fish endemic to upper Brazos River system and its tributaries and was apparently introduced into adjacent Colorado River drainage. The fish prefers medium to large prairie streams with sandy substrate and turbid to clear warm water. The smalleye shiner was not listed on the USFWS *Southwest Region County-by-County List* on the Southwest Region Ecological Services web site as of July 17, 2009. The Colorado River and the two unnamed tributaries to the Colorado River are not medium to large prairie streams with sandy substrate. No habitat for the smalleye shiner exists in the vicinity of the proposed project.

The red wolf was formerly known throughout the eastern half of Texas in brushy and forested areas, as well as in coastal prairies along the Gulf of Mexico. The red wolf was not listed on the USFWS *Southwest Region County-by-County List* on the Southwest Region Ecological Services web site as of July 17, 2009. There is no habitat for the red wolf in the vicinity of the proposed project; therefore, the proposed project would have no effect on this species.

Texas horned lizard habitat is that of open, arid and semi-arid regions with sparse ground cover including bunchgrass and cactus growing on sandy/rocky soil types. Although the historic range of the horned lizard includes almost the entire State, over past years its presence has declined in central Texas. Harvester ants make up a significant portion of the Texas horned lizard diet and no ants or mounds were observed within or near the project area during the field survey. No habitat for the Texas Horned lizard exists in the vicinity of the proposed project.

6.6 Socioeconomics

6.6.1 Land Use

Within the limits of the proposed project, FM 973 is considered as a minor arterial north of SH 71 and a major undivided arterial south of SH 71. Within the limits of the proposed project, SH 71 is currently considered as a major divided arterial according to the CAMPO 2035 *Regional Transportation Plan*. There are five major land uses in the project area: residential, commercial, industrial, agricultural, and civic. These are further broken down below. Aerial photographs of the proposed project are shown on **Figure 6**.

Residential

- Garden Valley and Green Grove subdivisions (east of FM 973, north of the Colorado River)
- Glen Brook subdivision and Davidson City addition (both sides of FM 973, south of the Colorado River and north of SH 71)
- Hornsby Glen, Ltd. (new subdivision under development east of FM 973, north of the Colorado River)

Commercial

- Auto Salvage
- Advanced Organic Material
- Xeriscape nursery
- JPS Mercedes Repair
- Tex Golden Nugget Motel, Tolivers Nightclub
- A&J Wrecker and Transport
- Sonic
- Stadio Motors
- Mendoza Motors
- Viper Body Shop
- Del Valle Grocery/Exxon, Tacqueria, Money Box
- Car Wash
- Exxon Speedy Stop
- Austin Mobile Home Resale
- AW BFI Allied Waste Services of Austin

Industrial

- Resource Extraction (sand and gravel)

Agricultural

- Hay crops observed
- Several of those observed are transitioning to other development uses

Civic

- Del Valle Travis County correctional complex
- Austin Transitional Center (halfway house facilities)
- Del Valle ISD Opportunity Center with day care services
- Clinica de Los Ninos (low cost health care)
- Travis County Employees Wellness and Health Clinic
- Austin/Travis County Health and Human Services South Rural Community Center and Health Clinic
- Del Valle Missionary Baptist Church
- Hornsby Bend sewage disposal facility
- Inactive recreational complex (being used to store construction supplies)

There are no publicly owned lands of national, state, or local significance within the proposed project limits.

There is a protected crossing for pedestrians at the intersection with SH 71. Sidewalks do not currently exist along FM 973 or SH 71 within the project limits; however, there is evidence of

extensive pedestrian activity (worn paths, etc.). Shoulders do not currently exist along FM 973; therefore, bicycle access is limited to the travel lane. One Capital Metro cross town bus route (Bus Route 350 Airport Blvd.)¹⁷ services SH 71 (west of FM 973) and FM 973 (south of SH 71).

6.6.2 Employment

The U.S. Census Bureau and Local Employment Dynamics application, *On the Map*, version 3¹⁸ was used to determine the employment characteristics of residents living within 1 mile of the proposed project. In 2003 through 2005, few workers (<1.5%) who reside within 1 mile of the proposed project are employed within their home area. The majority of the project area residents are employed west of IH 35, with the bulk of employment in retail, health care and social assistance, educational services, accommodation and food services, and construction industries.

Alternatively, those employed in the study area tend to come from neighborhoods within approximately 3 miles of IH 35 in Austin.¹⁹ As mentioned above, the major employers in the vicinity of the project are the Del Valle Correctional Facility, Austin Bergstrom International Airport and associated businesses, and Del Valle ISD.

6.6.3 Demographics

According to the U.S. Census Bureau (USCB), the population of Travis County in the year 2000 was approximately 812,280 people and the population of the city of Austin was approximately 656,562 people.²⁰ The proposed project is located within seven Blocks of Block Group 5 of Census Tract 22.06, two Blocks of Block Group 9 of Census Tract 23.03, five Blocks of Block Group 2 of Census Tract 23.10, six Blocks of Block Group 1 of Census Tract 24.16, and three Blocks of Block Group 2 of Census Tract 24.16 (**Figure 7**). The total population within these twenty-three Blocks is approximately 3,476 people or approximately 0.4 percent of the total population of Travis County.²¹ **Table 6** gives a breakdown of the population in each census tract blocks located adjacent to the proposed project.

¹⁷ Capital Metro Transit. Accessed July 17, 2009 at <http://www.capmetro.org/>

¹⁸ U.S. Census Bureau (USCB), Center for Economic Studies. *Longitudinal Employer-Household Dynamics Program*. Accessed January 23, 2009 at <http://lehdm3.did.census.gov/themap>.

¹⁹ *Ibid.*

²⁰ USCB. *American FactFinder*. Accessed August 3, 2007 at <http://www.census.gov>.

²¹ *Ibid.*

**Table 6
Population**

	Total Population
Travis County	812,280
Census Tract 22.06	8,437
BG 5	2,490
Block 5018	358
Block 5027	22
Block 5028	14
Block 5031	0
Block 5032	0
Block 5996	0
Block 5997	0
Census Tract 23.03	2,015
BG 9	2,015
Block 9000	2,008
Block 9010	0
Census Tract 23.10	3,612
BG 2	3,019
Block 2001	771
Block 2026	68
Block 2028	39
Block 2029	21
Block 2999	0
Census Tract 24.16	9,365
BG 1	1,879
Block 1024	29
Block 1026	0
Block 1028	144
Block 1030	1
Block 1031	1
Block 1994	0
BG 2	1,297
Block 2009	0
Block 2018	0
Block 2019	0

U.S. Census Bureau, Census 2000

Executive Order 12898 entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse health or environmental effects of the programs on minority and low-income populations. A minority population is defined as a group of people and/or community experiencing common conditions of exposure or impact that consists of persons classified by the U.S. Census Bureau as Black/African-American; Hispanic; Asian or Pacific Islander; American Indian, Eskimo, or Aleut; or other non-white persons. A low-income population is defined as a household income at or below the U.S. Department of Health and Human Services (DHHS) poverty guidelines.

In Travis County, approximately 44 percent of the total population is a race other than white. Within the twenty-three Blocks adjacent to FM 973, within the proposed project limits, approximately 67 percent of the population is a race other than white with the minority population ranging from 0 percent to 100 percent in the project area's census blocks.²² **Table 7** gives the minority population distribution of the twenty-three blocks located adjacent to the proposed project. Regarding the ethnicity of Travis County, the census data indicates that approximately 28.2 percent of the total population of Travis County is Hispanic or Latino.²³ Approximately 16.1 percent of the study area is Hispanic or Latino. There are a few signs in Spanish in the vicinity of the proposed project. There are a number of businesses and community facilities that are potentially minority owned or ethnic businesses or potentially serve a racial or ethnic-minority clientele.

²² Ibid.

²³ Ibid.

Table 7
Minority Population Distribution

	Non Hispanic or Latino							Hispanic or Latino	% Minority*
	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race	Two or More Races		
Travis County	457,817	73,242	2,261	35,842	390	1,429	12,251	229,048	44%
CT 22.06, BG 5	704	678	7	44	0	9	35	1,013	72%
Block 5018	147	29	0	5	0	6	2	169	59%
Block 5027	22	0	0	0	0	0	0	0	0%
Block 5028	10	0	0	0	0	0	0	4	29%
Block 5031	0	0	0	0	0	0	0	0	0%
Block 5032	0	0	0	0	0	0	0	0	0%
Block 5996	0	0	0	0	0	0	0	0	0%
Block 5997	0	0	0	0	0	0	0	0	0%
CT 23.03, BG 9	744	792	0	3	0	0	0	476	63%
Block 9000	744	788	0	3	0	0	0	473	63%
Block 9010	0	0	0	0	0	0	0	0	0%
CT 23.10, BG 2	890	506	8	18	0	1	56	1,540	71%
Block 2001	197	110	0	4	0	0	15	445	74%
Block 2026	19	0	0	2	0	0	0	47	72%
Block 2028	1	35	0	0	0	0	1	2	97%
Block 2029	0	9	0	0	0	0	0	12	100%
Block 2999	0	0	0	0	0	0	0	0	0%
CT 24.16, BG 1	1,079	98	10	18	0	0	25	649	43%
Block 1024	5	0	0	0	0	0	0	24	83%
Block 1026	37	45	2	0	0	0	0	60	74%
Block 1028	37	45	2	0	0	0	0	60	74%
Block 1030	1	0	0	0	0	0	0	0	0%
Block 1031	1	0	0	0	0	0	0	0	0%
Block 1994	0	0	0	0	0	0	0	0	0%
CT 24.16, BG 2	598	104	3	12	0	0	18	562	54%
Block 2009	0	0	0	0	0	0	0	0	0%
Block 2018	0	0	0	0	0	0	0	0	0%
Block 2019	0	0	0	0	0	0	0	0	0%

* (Total Population - White Population) ÷ Total Population = % Minority
U.S. Census Bureau, Census 2000

Approximately 13 percent of the population of Travis County lives below the poverty level. In the five Block Groups adjacent to the proposed project, approximately 15 percent of the population has an income that ranks below the poverty level.²⁴ The 2011 poverty guideline for a family of four is \$22,350.²⁵ The median household income in the study area ranges from \$28,125 to \$49,659. **Table 8** shows the income levels of the five Block Groups.

²⁴ USCB. *American FactFinder*. Accessed October 24, 2007 at <http://www.census.gov>.

²⁵ *Federal Register*, Vol. 75, No. 148, August 3, 2010, pp. 45628 – 45629.

Table 8
Income Levels

	Median Household Income	Persons Living Below Poverty Level
Travis County	\$58,555	13%
Census Tract 22.06	\$47,885	10%
Block Group 5	\$49,018	7%
Census Tract 23.03	\$0	0%
Block Group 9	\$0	0%
Census Tract 23.10	\$28,194	19%
Block Group 2	\$28,125	19%
Census Tract 24.16	\$46,155	10%
Block Group 1	\$44,708	15%
Block Group 2	\$49,659	21%

U.S. Census Bureau, Census 2000

While the percentage of persons living below poverty is slightly higher in the project area than that in the county, median household incomes in the project area are above the 2008 poverty guideline.

Within Travis County, approximately 23 percent of the population five years and over speaks English less than “very well”. The total population of people five years and over within the adjacent Block Groups, according to the census data, is approximately 10,700 and of these only 205 people (approximately 2%) speak English less than “very well”.²⁶ **Table 9** shows the language distribution in the five Block Groups. Within the limits of the proposed project, there are a few signs in Spanish. Signs in other non-English languages were not evident during the field survey. This indicates that Limited English Proficiency (LEP) persons may exist within the limits of the proposed project. LEP persons are individuals with a primary or home language other than English who must, due to limited fluency in English, communicate in that primary or home language if the individuals are to have an equal opportunity to participate effectively in or benefit from any aid, service or benefit provided by the transportation provider or other DOT recipient.

²⁶ USCB. *American FactFinder*. Accessed August 3, 2007 at <http://www.census.gov>.

Table 9
Language Spoken at Home

	Spanish		Other Indo-European		Asian/Pacific Islander		Other Languages	
	Speak English		Speak English		Speak English		Speak English	
	“very well”	less than “very well”	“very well”	less than “very well”	“very well”	less than “very well”	“very well”	less than “very well”
Travis County	77%	23%	90%	10%	72%	28%	89%	11%
CT 22.06	76%	24%	100%	0%	100%	0%	0%	0%
BG 5	89%	11%	100%	0%	0%	0%	0%	0%
CT 23.03	0%	0%	0%	0%	0%	0%	0%	0%
BG 9	0%	0%	0%	0%	0%	0%	0%	0%
CT 23.10	72%	28%	100%	0%	40%	60%	0%	0%
BG 2	72%	28%	100%	0%	40%	60%	0%	0%
CT 24.16	89%	11%	100%	0%	17%	83%	100%	0%
BG 1	89%	11%	100%	0%	0%	0%	0%	0%
BG 2	90%	10%	0%	0%	0%	0%	0%	0%

U.S. Census Bureau, Census 2000

6.7 Hazardous Materials

An initial site assessment to identify potential hazardous material concerns was performed by TxDOT district staff. The assessment included a visual survey of the project limits and surrounding area, and a search of regulatory databases.

The south end of the proposed project is located within a developed section of Austin. Adjacent land use consists of farming and resource extraction along the northern end of the proposed project and consists mainly of residences with some commercial establishments along the southern end of the proposed project. The field survey revealed no surface evidence of contamination that would impact the project. There is an auto repair shop (JP’s Mercedes Service) located on FM 973 just to the north of the Colorado River and a waste collection center (BFI Allied Waste Service of Austin) located on FM 973 just south of SH 71. There are also two gas stations (Del Valle Grocery and Circle K #1738) located on the south side of SH 71 within the proposed project limits. Based on preliminary design information, the proposed project would require new right-of-way from all of these facilities. The location of these facilities is shown on **Figure 8**.

The review of regulatory databases included TRI, ERNS, CERCLIS, RCRIS, FINDS, ARIP, TSCATS, PST, and LPST. The database search revealed one ERNS facility (BFI Allied Waste Service of Austin), one RCRIS facility (BFI Allied Waste Service of Austin), and two PST

facilities with underground storage tanks (UST) (Del Valle Grocery and Circle K #1738) in proximity to FM 973. The two PST facilities were also listed on the LPST database. The field survey revealed no evidence of UST facilities or other encroachments within the existing right-of-way. The status of these facilities are presented in **Table 10**.

Table 10
Hazmat Database Search

Facility Name	Facility Location	Facility Type	Comment
BFI Allied Waste Services of Austin	3424 FM 973	ERNS	Unknown amount of diesel released
		RCRIS	Small quantity generator
Del Valle Grocery	3148 SH 71 E.	PST	Six UST's
		LPST #103150	Final concurrence issued, case closed.
Circle K #1738	3208 SH 71 E.	PST	Three UST's
		LPST #98570	Final concurrence issued, case closed.

BFI Allied Waste Services of Austin is a collection center for municipal solid waste. BFI is listed as a small quantity generator in the RCRIS database. According to the ERNS database search, an unknown amount of diesel fuel was released at this facility.

LPST facility #103150 did not involve groundwater impacts; however, LPST facility #98570 did involve groundwater impacts at approximately 35 feet below the surface. Since the proposed project would not involve excavations deeper than 10 feet for the proposed storm drain system, potential encounters of contamination from either LPST facility is unlikely.

Other than the various propane tanks at residences outside the existing and the proposed right-of-way, there were no other tanks, gas stations or other likely sources of ground contamination within the existing or proposed right-of-way.

6.8 Noise

The existing dominant source of noise in the vicinity of the proposed project is highway traffic. However, existing noise levels, by themselves, do not determine when noise impacts would occur. Rather, existing noise levels are only considered relative to predicted (future) noise levels. Existing and predicted noise levels are documented in **Appendix D** and **Section 7.8**.

6.9 Air Quality

The proposed project is located in Travis County, Texas which is in attainment of all National Ambient Air Quality Standards (NAAQS); therefore, the transportation conformity rule does not apply. However, due to elevated monitored ozone levels in the Austin area, Bastrop, Caldwell, Hays, Travis, and Williamson counties voluntarily entered into an Early Action Compact with TCEQ and Environmental Protection Agency (EPA). This compact resulted in the development and implementation of an emission reduction plan to assure attainment of the 8-hour ozone standard by 2007 and maintenance by 2012. The Early Action Compact successfully kept this area in attainment for the ozone standard. Since the use of the compact expired December 31, 2007, the Austin-Round Rock Metropolitan Statistical Area is developing an Ozone Flex Plan in coordination with TCEQ and EPA.

6.10 Historic Properties

A review of the National Register of Historic Places (NRHP) the list of State Archeological Landmarks (SAL), and the list of Recorded Texas Historic Landmarks (RTHL) indicated that no historically significant resources have been previously documented within the area of potential effects (APE). It has been determined through consultation with the State Historic Preservation Officer (SHPO) that the APE for the proposed project is variable. The APE is 150' where the project follows current roadway alignments and 300' where new location of FM 973 is to be built. A reconnaissance historic resources survey conducted by TxDOT historians revealed that there are 22 historic-age properties (built prior to 1965) within the project APE. The survey included all historic resources on all parcels wholly or partially included within the APE. There are no Official Texas Historical Markers. A copy of the survey report is on file at TxDOT ENV offices.

Property #7 is the Del Valle Missionary Baptist church. Built ca. 1940, the rectangular front gabled building features a gable roofed entry, front gabled replacement porch and pyramidal roofed steeple. An addition has been added to the rear and all windows are replacement vinyl. A survey conducted by archeologists of the ROW along SH 71 was negative for unmarked graves. There is no known cemetery associated with this church. The nearest cemetery is located north of the Colorado on the former Hornsby plantation. The building is currently shared by Hispanic and Baptist congregations. A 1995 photo on file at the Austin History Center shows two doors on the north elevation of the building near the rear. One has been filled in, and one has been

replaced with a window. As a religious property, the church does not derive primary significance from its architecture or artistic distinction. Secondary histories of the area including the nearby Bergstrom International airport mitigation and the Handbook of Texas online articles on Del Valle, as well as internet sources, revealed no local historical significance. Therefore the property does not meet NRHP Criteria Consideration A for religious properties.

Property #8 is the former Del Valle Opportunity Center. It has been abandoned within the past two years, as a bond was passed in 2007 to relocate the school to another new building. It was sold to a commercial owner who plans to demolish it. The 1957 International style L-plan building has lost substantial integrity of design and materials through the infill of the majority of the windows, most likely for better heating and cooling of the building. An oral interview with the public information officer of Del Valle Independent School District (ISD) confirmed that their records indicate several remodel projects at the property. The architect of the building was Arnold E. Whittmann.

TxDOT historians reviewed the Austin city directories for the years 1930-1960 and found evidence that Mr. Whittmann's offices were located in Austin at 804 E. 45th Street. He first appeared in the street listing for the address in 1935, and last appears in the 1959 directory under the classified business directory. No other information on the work of Mr. Whittmann has been found.

Phone calls to Del Valle ISD facilities personnel revealed that the building replaced the "La Mar Colored School" shown on historic maps. A 1.1 acre site was sold to the Colorado School district in 1939 and contained the La Mar school. In 1957, the Colorado school district bought an additional five acres to build the new school on the property. The Colorado School district became the Del Valle school district in 1962, and the Del Valle community became the center of a large independent school district in 1963 (Smyrl).

The 1955 Quad map denotes the larger "Popham" (named after the superintendent, I. W. Popham) school just north of the entrance to the current Austin airport as well as this property. The 1966 quad map shows an expanded Popham School, a new Del Valle High School adjacent to the Popham school (neither of which are extant), and this property. The Hornsby-Dunlap district was annexed to the Del Valle Independent School District in 1967. (Smyrl)

Because the school has been sold, it no longer demonstrates association with the Del Valle School District. It is not known to be associated with the life of a significant person. It is a common example of a mid-twentieth century International style school building that lacks integrity of materials design and workmanship due to alterations. TxDOT historians have determined this property is not eligible for NRHP listing under any criteria.

Property #22 is the FM 973 bridge at the Colorado River. In compliance with Section 110 of the National Historic Preservation Act and the Memorandum of Understanding between TxDOT and the Texas Historical Commission, TxDOT historians evaluated the bridge to establish its historical significance. In accordance with the registration evaluation criteria established by THC and TxDOT for the 1945-1965 Statewide Bridge Inventory this bridge was determined not eligible for the National Register. The bridge does not possess sufficient design or engineering significance to meet National Register eligibility under Criterion C: Engineering at the state level of significance.

Because the bridge may have local or regional significance TxDOT consulted with the county historical commission (CHC) concerning the historic significance of the bridge. Consultation with the Travis County Historical Commission revealed no local or regional historic significance with respect to the bridge. A copy of the letter, dated November 6, 2007 is included in the **Appendix C**. Therefore, this bridge is determined not eligible for listing in the National Register of Historic Places under Criteria A or B.

TxDOT historians evaluated the 19 remaining historic-age properties (consisting of residential and commercial types) and determined that the properties are common designs that lack architectural merit, are not works of a master, and have no known historic associations with important events or persons, and are therefore not eligible for NRHP listing under Criterion A, B, or C.

6.11 Archeology

The following sections detail both the results of investigations done in compliance with applicable cultural resource laws and regulations and the findings based on the investigations. The laws and regulations require the consideration of the impacts of the proposed project on

cultural resources such as archeological sites and historic structures. TxDOT operates under several formal agreements that expedite its compliance with these laws and regulations.

Not all cultural resources are afforded equal treatment in the planning process under applicable cultural resources laws. Historic properties and State Archeological Landmarks are those objects, sites, and structures which have characteristics that require those resources to be given further consideration in the project planning process. Projects should avoid and minimize impacts to historic properties and SALs when possible. They should resolve the effects of impacts, usually through some mitigation measures, when avoidance is not possible.

7.0 EFFECTS OF THE PROPOSED PROJECT

7.1 Soils

In compliance with the *Farmland Protection Policy Act*, the additional 70 acres of right-of-way has been scored using Form AD 1006. The proposed right-of-way did not score high enough to require further coordination with the NRCS (Score under 60).

7.2 Water

Roadway encroachments on floodplains have been analyzed to determine any effects caused by the proposed facility should a 100-year flood occur. Inundation of the bridge structure without causing significant damage to the roadway, stream, or other property is considered acceptable. The hydraulic design practices of this project are in accordance with current TxDOT and FHWA design policies and standards.

Travis County is a participant in the *National Flood Insurance Rate Program*. The proposed project would not increase the base flood elevation to a level which would violate applicable floodplain regulations or ordinances. Changes to the 100-year floodplain or floodways, if any, have been coordinated with Travis County.

The proposed project would replace the Colorado River bridge (JW1) with two new bridges. Permanent impacts to waters of the U.S. due to the construction of the two new bridges is estimated at less than 0.1 of an acre. There are no wetlands present within or adjacent to the Colorado River bridge. Temporary access roads or working pads may be required to place the bents for the new bridges. If required, the temporary access roads and working pads would

consist of suitable material and would be placed in a manner that would not be eroded by expected high flows. A permit from the USACE would be required at this location.

The proposed project would extend the structure within the unnamed tributary of the Colorado River (JW2) on FM 973. Permanent impacts to waters of the U.S. due to this extension are estimated to be less than 0.1 of an acre. There are no wetlands present within or adjacent to this location. No temporary access road or working pad would be required at this location. A permit from the USACE would be required at this location.

Coordination with the USACE was initiated to determine the need for a Section 10 permit. Through personal communication with the USACE, the USACE has determined that a Section 10 permit would be required for this project and that a Section 404 permit may be required.²⁷ Coordination was also initiated with the U.S. Coast Guard (USCG) for the need of a Section 9 permit under the *Rivers and Harbors Act*. The USCG has determined that a Section 9 permit would not be required for this project. Copies of the correspondence letters with the USACE and USCG and their responses are included in **Appendix C**.

Since the proposed project is located east and down-gradient of the Edwards Aquifer, the proposed project would not affect the recharge of the Edwards Aquifer.

The proposed work within these areas would include some scraping, grading, and clearing in areas that are not routinely maintained.

7.3 Vegetation

Within the proposed right-of-way, there would be approximately 65 acres of “Crop” and approximately 5 acres of “Pecan-Elm Forest” disturbed. Within these approximately 5 acres of “Pecan-Elm Forest”, less than 0.5 acres of riparian area would be removed. Trees to be removed have a dbh ranging from 8 inches to 24 inches with an average of 12 inches and range in height from 10 feet to 40 feet. Photographs depicting typical vegetation that would be removed are included as **Appendix B**.

²⁷ Personal communication with the USACE. November 16, 2007.

During design of the proposed improvements, every effort was made to avoid and minimize effects to trees; however, it was determined that some trees required removal either because they were located in the direct path of the proposed improvements or were located within the required clear zone.

The criteria for the appropriateness of compensatory mitigation as stated in the *Memorandum of Agreement* between TxDOT and TPWD was reviewed. Vegetation to be removed during completion of the proposed project would not assist in the prevention of the listing of a federal candidate species, is not a rare vegetation series, and is not a bottomland hardwood or native prairie. Additionally, there is no known local significance of the vegetation to be removed by the proposed project. Mitigation was considered for the less than 0.5 acre of riparian area that would be removed. During the field survey, vegetation observed adjacent to the proposed right-of-way that would not be disturbed is similar in composition and structure to that which would be removed. It would not be feasible to allocate funds to mitigate the less than 0.5 acre of riparian area, when an abundance of this vegetation type is located immediately adjacent to the project and within areas not planned for development.

7.4 Migratory Birds

The *Migratory Bird Treaty Act* (MBTA) of 1918 applies to the proposed project. The MBTA prohibits all negative impacts to birds, young, eggs or occupied nests in whole or in part for all birds on the migratory birds list, except as authorized by federal permit. In the event that migratory birds are encountered during project construction, every effort will be made to avoid adverse impacts to protected birds, active nests, eggs and/or young. The contractor would remove all old migratory bird nests between September 1 and January 31 from any structure where work will be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between February 1 and August 31. The Colorado River bridge with swallow nests would be replaced with twin structures; however, the nests would not be removed during the nesting season.

7.5 Threatened and Endangered Species

The proposed project would have no effect on any of the species listed in Section 6.6 above.

7.6 Socioeconomics

7.6.1 Land Use

The proposed project would not require the use of any publicly owned lands from a public park, recreation area, or wildlife and waterfowl refuge area of national, state, or local significance.

Approximately 70 acres of additional right-of-way would be required to construct the proposed improvements.

7.6.2 Relocation Impacts

Residential Relocation Impacts

It is currently estimated that there would be 20 residences that would be displaced. These residences are located in the Glen Brook subdivision, which is located in Census Block 2028, and the Davidson City addition, which is located in Census Blocks 1028, 1030, 2028, and 2029. Both of these subdivisions are located on both sides of FM 973 south of the Colorado River and north of SH 71.

Based on area Census data and public outreach efforts in the project area, the proposed residential displacements may potentially affect minority and elderly persons, many of whom are owner occupants. The tax appraisal value of potential displaced residences ranges from \$24,310 to \$79,942. These homes range in size from 336 square feet to 2,016 square feet with lot sizes ranging from 0.137 acre to 0.57 acre.

A search²⁸ of comparable available housing within the Del Valle school district revealed approximately 49 homes for sale within the range of \$84,900 to \$1,400,000 as of January 20, 2009, considerably above the tax appraisal value of the displaced residents. These homes ranged in size from 1,117 square feet to 3,452 square feet. In addition, approximately 11 homes were identified for rent within the Del Valle school district ranging in size from 1,117 square feet to 1,780 square feet. The rent for these homes ranged from \$900 per month to \$1,200 per month. The search also revealed one manufactured/mobile home for sale and no manufactured/mobile home or apartments for rent within the Del Valle school district. **Table 11** gives a breakdown of the comparable housing with the Del Valle school district.

²⁸ Austin Home Search. <http://www.austinhomesearch.com>. Accessed January 20, 2009.

Table 11
Comparable Housing

Property Type	Occupancy	Price Range		Size Range	
House	Sale	\$84,900	\$1,400,000	1,117 sq. ft.	3,452 sq. ft.
House	Rent	\$900/mo.	\$1,200/mo.	1,117 sq. ft.	1,780 sq. ft.
Manufactured/ Mobile Home	Sale	\$130,000		1,368 sq. ft.	
Manufactured/ Mobile Home	Rent	none available			
Apartment	Rent	none available			

Should the environmental document be approved, TxDOT right-of-way agents would interview displacees to determine their specific housing needs. In addition to payments to property owners for right-of-way acquisition, residential displacees (both owner-occupants and tenants) are each entitled to compensation for qualified moving expenses related to personal property. Where the existing housing inventory is insufficient, does not meet relocation standards, or is not within the financial capability of the displacees, displaced persons may be eligible for a replacement housing differential payment under an administrative procedure referred to as Last Resort Housing. Due to these factors, the right-of-way acquisition process may require additional time, but TxDOT commits to working with all displacees within the requirements and opportunities allowable by law.

The proposed right-of-way acquisition and relocation will be conducted in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act* of 1970, as amended. Relocation resources are available to all residential and business relocatees without discrimination.

Business Relocation Impacts

The *Standardized Occupational Components for Research and Analysis of Trends in Employment System (SOCRATES)*²⁹ was utilized to identify employer details in the project area. The businesses that were listed in *SOCRATES* that would potentially be displaced by the proposed project are considered small businesses with less than 20 employees. Potentially displaced businesses, and the Census Block they are located in, include:

- JPS Mercedes Repair (Census Block 5027)
- Tex Golden Nugget Motel, Tolivers Nightclub (Census Block 1028)

²⁹ Texas Workforce70 Commission. *Standardized Occupational Components for Research and Analysis of Trends in Employment System (SOCRATES)*. February 2008. <http://socrates.cdr.state.tx.us>. Accessed December 11, 2008.

- A&J Wrecker and Transport (Census Block 2001)
- Del Valle Grocery/Exxon, Tacqueria, Money Box (Census Block 9000)
- Car Wash (Census Block 9000)
- Exxon Speedy Stop (Census Block 9000)
- Mobile Home Resale (Census Block 9000)
- AW BFI Allied Waste Services of Austin (Census Block 9000)

Available commercial properties were identified using *Homesville Real Estate* internet search engine.³⁰ While it is unknown whether these properties would be available when right-of-way acquisition would occur, these provide the decision-maker with a market comparison. **Table 12** lists the vacant properties with commercial zoning within the vicinity of the proposed project.

Table 12
Available Commercial Property

Property Location	Property characteristics	Occupancy	Price	Size
4711 E. Riverside Dr.	Undeveloped	Sale	\$3,250,000	n/a
US 183 N of FM 973	Improved	Sale	\$2,250,000	15,664 sq. ft.
8001 Old Lockhart	Undeveloped	Sale	\$1,606,675	n/a
8607 US 183	Improved	Sale	\$1,500,000	6,000 sq. ft.
S US 183	Undeveloped	Sale	\$998,000	n/a
Burleson Rd	Undeveloped	Sale	\$800,000	n/a
FM 969	Undeveloped	Sale	\$750,000	n/a
2363 Bastrop Hwy	Improved	Sale	\$749,000	5,000 sq. ft.
7011 McKinney Falls Pkwy	Improved	Sale	\$595,000	5,480 sq. ft.
15935 FM 812	Improved	Sale	\$550,000	5,000 sq. ft.
10001 US 183	Improved	Sale	\$500,000	912 sq. ft.
3120 McCall Ln	Improved	Sale	\$495,000	n/a
7000 FM 1327	Improved	Sale	\$469,000	1,787 sq. ft.
5906 FM 973	Improved	Sale	\$450,000	3,550 sq. ft.
Rodriguez Rd	Undeveloped	Sale	\$450,000	n/a
11018 FM 1625	Improved	Sale	\$439,000	2,000 sq. ft.
FM 1625	Undeveloped	Sale	\$375,000	n/a
16407 Decker Creek Dr	Improved	Sale	\$287,000	2,432 sq. ft.
8838 US 183	Undeveloped	Sale	\$256,500	n/a
US 183 S.	Improved	Sale	\$195,000	873 sq. ft.
Caldwell	Undeveloped	Sale	\$189,875	n/a
San Jose Ave.	Undeveloped	Lease	\$1,110/month	n/a

Because most of the commercial properties to be displaced do not provide site-specific services, nor do many residents of the project area work in the project area,³¹ it is unlikely that these displacements would detrimentally affect the community. One business, Del Valle Grocery located at the corner of FM 973 and SH 71, appears to have a lot of pedestrian business from the

³⁰ Homesville Real Estate. <http://www.mlsfinder.com>. Accessed January 21, 2009.

³¹ U.S. Census Bureau (USCB), Center for Economic Studies. *Longitudinal Employer-Household Dynamics Program*. Accessed January 23, 2009 at <http://lehdmap3.did.census.gov/themap>.

immediate neighborhood. This convenience store was acquired by TxDOT for the future widening of SH 71/US 290 which was covered under a separate NEPA document (CSJ: 0113-08-037 and 0113-09-030) that was issued a ROD on August 22, 1988. The property is currently leased to the tenant pending future construction. There is another convenience store located less than 1 mile west and outside of the project limits on the north side of SH 71 that could accommodate the neighborhood, if the displaced convenience store could not relocate within the immediate project area. The proposed improvements would enhance pedestrian access to the remaining businesses and community facilities along SH 71 and FM 973 through the provision of sidewalks.

Displaced businesses are not relocated; however, they are eligible for searching expenses, moving and related expenses, and re-establishment expenses, or (in some circumstances) a fixed payment, in addition to the cost of right-of-way acquisition under the *Uniform Relocation Assistance and Real Property Acquisition Policies Act*.

Public Facility Relocation Impacts

Non-profits and public facilities would be eligible for the same reimbursement programs as businesses described above. This shall include personal interviews with each displacee to determine their replacement site requirements. It is anticipated that these facilities could relocate within the vicinity of the project due to the current availability of vacant land.

The old Del Valle Opportunity Center, which is currently vacant, is located within the footprint of the proposed widening of SH 71/US 290, which is covered under a separate NEPA document (CSJ: 0113-08-037 and 0113-09-030) that was issued a ROD on August 22, 1988. The acquisition of the Center, under the *Uniform Relocation Assistance and Real Property Acquisition Policies Act*, would occur under the SH 71 project. As of the date of this document, the acquisition of the Center has not occurred. As stated in **Section 5.0** above, the intersection with SH 71 would be constructed to accommodate the future expansion of SH 71 (CSJ: 0113-08-037 and 0113-09-030). The old Del Valle Opportunity Center is located within this section of SH 71 that would be reconstructed under the FM 973 project.

The Del Valle Missionary Baptist Church is a small church serving the local area. Because the church was located within the footprint of proposed widening of SH 71 [covered under a

separate NEPA document (CSJ: 0113-08-037 and 0113-09-030)], TxDOT has met with church officials several times in the past to discuss their relocation benefits and potential replacement sites. The church plans to relocate within the immediate area, because their congregation is local to this area; however, they have not identified a potential relocation site. Activities related to acquisition or relocation have been postponed at this time, due to limited availability of funds. The acquisition of the church would occur under the *Uniform Relocation Assistance and Real Property Acquisition Policies Act*. As stated in **Section 5.0** above, the intersection with SH 71 would be constructed to accommodate the future expansion of SH 71 (CSJ: 0113-08-037 and 0113-09-030). The Del Valle Missionary Baptist Church is located within this section of SH 71 that would be reconstructed under the FM 973 project.

The Austin Transitional Center is a 100 bed halfway house facility. According to the Texas Department of Criminal Justice (TDCJ) website³² this facility is operated by Southern Corrections and is the only TDCJ halfway house facility in the Austin Area. Coordination between TxDOT and the owner of the halfway house facility indicates that the facility would be relocated and reestablished at a suitable site. Appropriate zoning and local ordinances permitting this type of facility would be required at the replacement site and would be the responsibility of the facility owner. In addition, reasonable access to public transportation and shopping would be necessary for facility residents. These requirements could result in a longer timeframe needed for the relocation of this facility. Expenses associated with re-establishing the facility would be reimbursable to the extent allowable by law as indicated above in **Section 7.6.2**.

Farm Relocation Impacts

There would be minor impacts to the farms in the form of narrow strips of right-of-way acquisition along existing transportation corridors. No farms would be severed and no farm structures would be impacted by the proposed project.

7.6.3 Community Cohesion

As discussed in **Section 5**, as a part of the proposed project, cross-overs would be provided at various locations throughout the project limits. Due to the proposed median locations, it may be necessary for fire and Emergency Management Service vehicles to detour, at most, one mile in

³² Texas Department of Criminal Justice. www.tdcj.state.tx.us. Accessed January 27, 2009.

order to execute a left turn. As a part of the proposed project, driveways would be reconnected to FM 973. Safer vehicular turning movements would be afforded to the residential areas, businesses, and community services within the proposed project limits with the addition of designated turn bays at the cross-overs. Access to these areas would not be significantly altered and changes to the cohesion of the community is not anticipated. The proposed project would not disrupt orderly planned development or be inconsistent with plans or goals adopted by Travis County. The proposed project involves widening the existing roadway in the vicinity of the neighborhood (north of SH 71); therefore, the neighborhood would not be bisected and adverse impacts are minimized.

As currently designed and proposed, FM 973 would include the construction of sidewalks, improving safety for pedestrians. Cyclists would share the roadway (shoulder) with motorized vehicles, an improved safer condition than currently exists. It is anticipated that the roadway improvements to FM 973 (including 10-foot outside shoulders) would create a more attractive cycling route in Travis County. During construction, there will be continuous Capital Metro bus service. It is anticipated that one Capital Metro bus stop along FM 973 south of SH 71 would need be relocated to the new FM 973 alignment after construction is completed. The location of the bus stop, and any improvements associated with the bus stop, would be coordinated with Capital Metro during the detailed design phase of project development.

7.6.4 Community Impact Assessment

There are two communities identified within the project area: the Glen Brook subdivision/Davidson City addition south of the Colorado River and north of SH 71; and the Garden Valley/Green Grove subdivisions north of the Colorado River. Land use and demographic data for these areas are addressed in more detail in **Section 6.6**.

Impacts to the Glen Brook/Davidson City neighborhoods could be associated with the displaced residences, businesses, and community facilities described above. Some of the potential community impacts discussed above include relocation of a church within the community; displacement and potential relocation of two convenience stores and other businesses; and displacement of approximately 20 residences. As mentioned above, there is another convenience store approximately 1 mile west of FM 973 along SH 71 that could be used, if neither of the two displaced convenience stores relocate within the immediate vicinity. Re-establishment of

commercial businesses within the project area is believed to be favorable based on the abundance of available nearby commercial zoned properties and the number of large-scale developments planned for the immediate vicinity.

Due to the greater potential for community impacts associated with the approximately 20 residential displacements in the Glen Brook/Davidson City neighborhoods, these impacts are addressed further here. Those individuals potentially displaced by the proposed project would be directly affected by the project. According to CalTrans guidance on Community Impacts Assessment, “[e]ffective and established techniques for assessing the severity of social and psychological impacts from residential displacement are not available. The severity of impact is related to numerous factors; the effectiveness of mitigation efforts is largely related to the amount of compensation available and the expertise and sensitivity of approach applied to relocation situations by [State Highway Department] Right of Way personnel, but as discussed earlier, there are other situations where the social and psychological effects associated with relocating people cannot be wholly mitigated.”³³ The relocation benefits available to displacees to mitigate such impacts are discussed in more detail above in **Section 7.6.2** and later in **Section 9.4.1**. However, by distributing ROW acquisition relatively evenly from both sides of FM 973 and predominately from the south side of SH 71, impacts to the community are minimized.³⁴

There is a potential that the loss of residents could affect the remaining neighborhood, as well. The affected residential neighborhoods located on either side of FM 973 would not be diminished significantly by the proposed displacements so as to isolate individuals in the Glen Brook/Davidson City area. Similarly, it appears that no residences currently fronting on SH 71 would remain and be isolated.

Traffic noise impacts in the Glen Brook/Davidson City neighborhoods were identified at seven residential receivers. Noise abatement did not meet federally-approved TxDOT criteria for reasonable cost-effectiveness. See **Section 7.8** and **Appendix D** for further details regarding the noise analysis.

³³ CalTrans. *Community Impact Assessment; CalTrans Environmental Handbook Volume 4*. June 1997. Available on the Internet: <http://www.dot.ca.gov/ser/vol4/envhb4.pdf>.

³⁴ Proposed ROW acquisition from the north side of SH 71 is due to a minor deflection in the existing ROW line between Terry Lane and the SH 130 interchange.

Impacts to the Garden Valley/Green Grove subdivisions would be attributed primarily to noise impacts, though less so than Glen Brook/Davidson City, due to the greater distance from SH 71. Because vacant/agricultural land is situated across FM 973 from Garden Valley and Green Grove subdivisions, these neighborhoods would not experience displacements or right-of-way acquisition.

While the proposed improvements would widen FM 973 and SH 71, pedestrian movements would be enhanced by the provision of sidewalks. Bicyclists would benefit from the addition of shoulders on FM 973 and wide outside lanes that accommodate cars and bicycles on SH 71. Automobile traffic would benefit from the added capacity, provision of shoulders, separation of directions of travel, and addition of turn bays. These project attributes would benefit both communities (Glen Brook/Davidson City and Garden Valley/Green Grove). Community cohesion is addressed further above in **Section 7.6.3**.

The proposed project would not be anticipated to have substantial direct effects to either community (Glen Brook/Davidson City or Garden Valley/Green Grove) relative to economic conditions, land use, public transportation, or aesthetics; create physical barriers; alter public services; or degrade the quality of life in the neighborhoods surrounding the proposed project. It is not anticipated that employment would be substantially affected by the proposed project since less than 1.5% of workers who reside within 1 mile of the proposed improvements are employed within their home area.³⁵

Any highway construction project may have an impact on adjacent or nearby properties. The current or future highest and best use may change, thus, creating opportunities for both positive and negative value impacts. A nearby highway and the intersections with local roads may create commercial intersections and corridors that change property uses to commercial. Additionally, the proposed improvements are consistent with local and regional planning for the area.

Many of the consequences associated with selecting the no-build alternative could contribute to a reduced quality of life for area residents of both communities (Glen Brook/Davidson City and Garden Valley/Green Grove). The no-build alternative would not provide the warranted

³⁵ USCB. *Longitudinal Employer-Household Dynamics Program*

pedestrian facilities, nor would it provide the improved automobile and bicycle transportation facilities. Traffic congestion on these facilities would continue to increase. Under the no-build alternative, the existing facility would continue to degrade (despite regular maintenance) resulting in reduced aesthetic appeal and property value and increased vehicular wear. The safety improvements afforded by realigning the substandard curves and replacing the structurally deficient bridge would not be accomplished. Projected traffic volumes on FM 973 and SH 71 could increase noise levels in the no-build alternative. However, residents and businesses would not be displaced nor relocated, if the no-build alternative were selected.

7.6.5 Environmental Justice

The proposed project is an improvement to an existing facility that would enhance safety and mobility within the project area. As stated in **Section 7.6.3** above, as currently designed and proposed, FM 973 would include the construction of sidewalks, improving safety for pedestrians and cyclists would share the roadway (shoulder) with motorized vehicles, an improved safer condition than currently exists. In addition, there will be continuous Capital Metro bus service during construction. Potential impacts from the proposed project would include residential and commercial displacements and noise impacts. The proposed project would not result in the following adverse effects to minority or low income persons, as defined in the Appendix of the DOT Order on EJ, which include but are not limited to: bodily impairment, infirmity, illness or death; air or water pollution or soil contamination; destruction or disruption of man-made or natural resources; destruction or disruption of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public or private facilities or services; vibration; adverse employment effects; displacement of farms or nonprofit organizations; increased traffic congestion, isolation, exclusion, or separation of minority or low-income individuals within a given community or from the broader community; or denial of, reduction in, or significant delay in the receipt of, benefits of the DOT programs, policies, or activities.

Minority populations are present and, thus would likely be impacted throughout the project area on both sides of the proposed improvements; therefore, impacts would not be disproportionately borne by minority and low-income populations. As stated in **Section 9.4.1** below, relocation resources are available to all residential and business relocatees without discrimination.

Under the no-build alternative, the existing transportation facility would not be improved, pedestrian and bicycle facilities would not be provided, and the needed safety improvements would not correct the substandard curves and structurally deficient bridge that exist on FM 973. Traffic congestion would continue to increase. The existing facility would continue to degrade (despite regular maintenance) resulting in reduced aesthetic appeal and property value, and increased vehicular wear. Projected traffic volumes on FM 973 and SH 71 could increase noise levels under the no-build alternative. However, residents and businesses would not be displaced nor relocated, if the no-build alternative were selected. The no-action alternative would contribute to an adverse impact to the project area's minority community.

7.6.6 Limited English Proficiency

There are a few signs in the project area that are in Spanish which would indicate that LEP persons may exist within the limits of the proposed project. In order to inform these LEP persons of the proposed project, the notices for the Open House, which was held on Thursday, January 31, 2008, was published in a local Spanish newspaper. In addition, the handout available at the Open House was also available in Spanish. There were no requests for the Spanish version of the handout.

Upon approval for further processing by the FHWA, TxDOT would schedule a public hearing and would publish a notice in a Spanish newspaper. The handout for the public hearing would be available in Spanish.

7.7 Hazardous Materials

Since the proposed project would not involve excavations deeper than 10 feet for the proposed storm drain system, the potential for encountering contamination from either LPST facility during construction of the proposed improvements is unlikely.

7.8 Traffic Noise

The traffic noise analysis (**Appendix D**) indicated the proposed project would result in noise impacts. However, no noise abatement measures would be both feasible and reasonable for any of the impacted receivers; therefore, no noise abatement measures are proposed for incorporation into the project.

The noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receivers are expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected.

7.9 Air Analysis

The proposed action is consistent with the financially constrained CAMPO 2035 *Regional Transportation Plan*. The proposed project is also consistent with the 2011-2014 Transportation Improvement Plan. Traffic for the estimated time of completion year of the first phase (2014) is estimated to be 15,334 vpd. Traffic data obtained from the Transportation Planning and Programming Division for the design year (2027) is projected to be 22,800 vpd. A prior TxDOT modeling study demonstrated that it is unlikely that a carbon monoxide standard would ever be exceeded as a result of any project with an ADT below 140,000 vpd. The ADT projections for the project do not exceed 140,000 vpd; therefore, a Traffic Air Quality Analysis was not required.

In addition to the criteria air pollutants for which there are NAAQS, the EPA also regulates other air pollutants termed air toxics. The *Clean Air Act* (CAA) defines 188 air toxics. Most originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) are a subset of air toxics; specifically, those emitted from highway vehicles and non-road equipment. Some MSATs are present in fuel and are emitted when the fuel evaporates or passes through the engine unburned. Other MSATs are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal MSATs also result from engine wear or from impurities in oil or gasoline.

Because the projected ADT for the project area does not exceed 140,000 vpd, a quantitative analysis of MSAT is not required. Although a qualitative assessment cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences among MSAT emissions, if any, from various alternatives. The qualitative assessment addressed in **Appendix E** is derived from a study conducted by the FHWA entitled,

A Methodology for Evaluating Mobile Source Air Toxic Emissions among Transportation Project Alternatives (Claggett and Miller) and in accordance with the *2006 TxDOT Air Quality Guidelines*. Additional guidance was provided by FHWA in accordance with the *Interim Guidance on Air Toxic Analysis in NEPA Documents*, released February 3, 2006 (FHWA 2006).

7.10 Historic Properties

Pursuant to Stipulation VI "Undertakings with Potential to Affect Historic Resources" of the PA-TU between the FHWA, the Texas State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, and the Texas Department of Transportation (TxDOT) and the Memorandum of Understanding (MOU), TxDOT Historians have determined that no historic properties are present and that individual project coordination with SHPO is not required.

7.11 Archeology

A TxDOT archeologist will evaluate the potential for the proposed undertaking to affect archeological historic properties or SAL in the APE. Section 106 review and consultation will proceed in accordance with the First Amended PA, among FHWA, the THC, the ACHP, and TxDOT, and the MOU among TxDOT and THC. In addition, *Section 106* consultation with federally recognized Native American tribes with a demonstrated historic interest in the area shall be conducted.

8.0 INDIRECT AND CUMULATIVE EFFECTS

FM 973 is classified as a minor arterial from FM 969 to SH 71 and a major undivided arterial from SH 71 to Pearce Lane.

Travis County and the areas surrounding the project are rapidly expanding. Population estimates from the U.S. Census Bureau for Travis County grew nearly 70% from 1990 to 2006. Similarly, Census data reveals that areas along FM 973 have exhibited substantial growth in the same time period. Between 1990 and 2006, Austin's population had increased 53% to 709,893. Populations in the areas surrounding the project area had increased 23% to 23,429 from 1990 to 2000.

The following sections describe the analysis of potential indirect and cumulative impacts from the FM 973 project. Resources such as decennial census data, CAMPO projections, as well as land use, zoning, aerial imagery, and other GIS databases from the municipalities and the Capital

Area Council of Governments (CAPCOG) allowed for the use of graphic assessments to develop the findings discussed in the following sections. Given the unpredictable nature of indirect and cumulative impacts, it must be stated that the analysis primarily relied upon qualitative assumptions. Various qualitative assumptions used during the analysis included anticipated demographic trends and associated travel demands along with recognized development trends.

Indirect Effects

Indirect effects are those “which are caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to inducing changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems” (40 CFR 1508.8). The methodology used to evaluate the indirect effect of the proposed project follows TxDOT’s June 2009 *Guidance on Preparing Indirect and Cumulative Impact Analyses*.

The *National Cooperative Highway Research Program* (NCHRP) has developed procedures for estimating indirect effects of transportation projects.³⁶ This guidance utilizes an eight-step process to assess potential indirect effects of transportation projects on notable environmental resources within an area of influence. These eight steps will serve as the basis for the indirect effects analysis. The eight steps are listed in **Table 13**.

Table 13
Eight-Step Approach to Estimate Indirect Impacts

Step 1 – Scoping: The basic approach, effort required, geographical boundaries of the study are determined.
Step 2 – Identify the Study Area’s Direction and Goals: Information regarding the study area is compiled with the goal of defining the context for assessment.
Step 3 – Inventory the Study Area’s Notable Features: Additional data on environmental features are gathered and synthesized with a goal of identifying specific environmental issues by which to assess the project.
Step 4 – Identify Impact-Causing Activities of Proposed Action and Alternatives: Fully describe the component activities for each project alternative.
Step 5 – Identify Potentially Significant Indirect Effects for Analysis: Indirect effects associated with project activities and alternatives are cataloged, and potentially significant effects meriting further analysis are identified.
Step 6 – Analyze Indirect Effects: Qualitative and quantitative techniques are employed to estimate the magnitude of the potentially significant effects identified in Step 5 and describe future conditions with and without the proposed transportation improvement.
Step 7 – Evaluate Analysis Results: The uncertainty of the results of the indirect effects analysis is evaluated for its ramification on the overall assessment.
Step 8 – Assess Consequences and Develop Mitigation: The consequences of indirect effects are evaluated in the context of the full range of project effects. Strategies to avoid or lessen any effects found to be unacceptable are developed. Effects are reevaluated in the context of those mitigation strategies.

³⁶ National Cooperative Highway Research Program (NCHRP). Report 466: *Desk Referencing for Estimating the Indirect Effects of Proposed Transportation Projects*. Transportation Research Board – National Research Council (Washington, D.C.: National Academy Press) 2002.

Step 1: Scoping

The proposed project is a 2.8-mile stretch of FM 973 running generally north-south from Harold Green Drive to 0.5 miles south of SH 71. The proposed improvements would upgrade the existing two-lane minor arterial roadway by adding two lanes of capacity in each direction, shoulders, a raised median with cross-overs, and sidewalks. As indicated in Section 3, above, the existing facility is highly congested during rush hour. The proposed improvements would provide additional travel lanes and shoulders to allow traffic to bypass some congestion-causing situations (e.g., crashes, turning movements, etc.) and would improve access to adjoining cross-streets by provision of left turn bays at the various cross-overs. Pedestrian traffic would also be improved by provision of sidewalks. The roadway would continue to function as a minor arterial with traffic flow metered by signalized intersections and driveway usage.

The geographical boundaries of the indirect effects study area would include the area in which the proposed improvements to FM 973 could potentially influence local traffic patterns or land development. Study area boundaries were determined using the *CAMPO 2035 Regional Transportation Plan* maps demonstrating projected roadway congestion in 2007 under current conditions and in 2030 if all projects included in the *CAMPO 2035 Regional Transportation Plan* are built.³⁷ Areas outside the study area are better served by other roadways. The indirect effects study area would be bound by SH 130 to the east, the Colorado River and Austin Bergstrom International Airport (ABIA) on the west, FM 969 on the north and Pearce Lane on the south (See **Figure 9**).

Step 2: Identify the Study Area's Direction and Goals

Indirect effects are commonly related to changes in land use. When a transportation project is constructed, an indirect effect may occur when land in the study area develops. For example, if a bypass or a relief route is constructed around a town, development may occur in the bypass area in the form of restaurants, gas stations, and other commercial establishments. Land development, in turn, results in the transformation of primarily agricultural uses within the study area to residential and commercial land uses. Increased development can alter the landscape, increase impervious cover, modify species composition of remaining habitats, and introduce fertilizers and anthropogenic chemicals into the biotic system.

³⁷ CAMPO. *2035 Regional Transportation Plan*. Map 2.1: "Roadway Congestion in 2007" and Map 2.2: "Roadway Congestion in 2030 If No New Projects Are Built". October 2005. www.campotexas.org.

The CAMPO 2035 *Regional Transportation Plan* defines transportation systems and services in the area containing the boundaries of the study area. The CAMPO 2035 *Regional Transportation Plan* addresses regional transportation needs that are identified through forecasting current and future travel demand, developing and evaluating system alternatives and selecting those options which best meet the mobility needs of the region. The proposed facility is included in this plan.

A comparison of historic aerial photography, including 1970 imagery from the Soil Survey of Travis County, Texas,³⁸ and 1997 and 2006 aerial photography obtained from CAPCOG,³⁹ indicates that land use in the area has remained relatively unchanged. Land use within the study area in the 1970s is interpreted as agricultural north of the Colorado River, residential south of the Colorado River and north of SH 71, and commercial and agricultural south of SH 71.

The proposed project lies within the jurisdictions of the City of Austin and Travis County. The study area also includes unincorporated Del Valle. The study area is within the City of Austin's Desired Development Zone.⁴⁰ The Desired Development Zone, as defined by the City of Austin, is where the city wants to grow. Del Valle is located within convenient commuting distance to downtown Austin and the University of Texas. Moreover, the completion of SH 130 and the proximity of ABIA have all affected the location or type of development planned in this area as evidenced by the recent construction of motels and parking facilities, as well as new and planned residential, mixed use, and industrial facilities. Currently, retail/commercial, warehouse/industrial, and multi-family are proposed for development along SH 71 between FM 973 and SH 130.⁴¹ A review of tax ownership records and City of Austin data indicate that many of the large agricultural or undeveloped tracts are proposed for development or resource extraction.

³⁸ U.S. Department of Agriculture (USDA), Soil Conservation Service. *Soil Survey of Travis County, Texas*. In cooperation with the Texas Agricultural Experiment Station, June 1974.

³⁹ Capital Area Council of Governments. *Information Clearinghouse – Geospatial Data*. <http://www.capcog.org>. Accessed: October 23, 2007.

⁴⁰ City of Austin. *Smart Growth Zones* map. August 2004. <http://www.ci.austin.tx.us>. Accessed November 18, 2008.

⁴¹ City of Austin. Development Process and One-Stop Shop (OSS). <http://www.ci.austin.tx.us>. Accessed November 18, 2008.

In addition, the City of Austin owns and operates the 1200-acre Hornsby Bend Biosolid Management Plant located in the indirect effects study area. This facility process urban waste, protects 3 miles of Colorado River stream bank, and houses the Center for Environmental Research which includes biosolids and soil ecology research on an extensive onsite hay farm.

Current land use maps from the City of Austin indicate that land use in the indirect effects study area is equally divided between single-family residential land use, resource extraction, undeveloped, and open space. Commercial development is less common and generally focused along SH 71.⁴²

While the rate of development has been static over the past decade, Travis County still maintains the potential to continue to develop as long as vacant parcels are available. Consistent with CAMPO's population projections for the year 2030,⁴³ growth within the project area is expected to increase with travel-related commercial development occurring near ABIA and residential and commercial development planned closer to SH 130.

Step 3: Inventory of Study Area's Notable Features

Notable features that could be indirectly impacted within the study area mirror the list of features identified for the direct impacts in **Section 7 – Effects of the Proposed Project** of the EA. **Table 14** lists the resources evaluated in this indirect analysis.

Table 14
Notable Features for Indirect Impact Analysis

Resource Category	Resource Evaluated
Farmland	Prime Farmland
Water Resources	Waters of the U.S.
Biological Resources	Vegetation
	Aquatic and Wildlife Habitat
Socioeconomic	EJ Communities

Step 4: Identify Impact-Causing Activities of Proposed Action and Alternatives

Impact-causing activities can be related to encroachment-alteration effects – those that affect the functions of the natural environment due to project features; access-alteration effects – those that

⁴² City of Austin. Unpublished material, parcels land use. June 2003. <http://www.ci.austin.tx.us>. Accessed October 23, 2007.

⁴³ CAMPO. 2030 Population (2,750,000). October 2005. <http://www.campotexas.org/pdfs/map1-2.pdf>. Accessed December 12, 2008

result from traffic pattern or access changes attributable to the design of the project influencing the location of residential and commercial growth; and induced growth effects – those attributable to induced growth rather than project features.⁴⁴

The proposed improvements would cause improvement in the reliability of travel times through the project limits by allowing for traffic to bypass some congestion-causing situations (e.g., crashes, turning movements, etc.) and would provide safer bidirectional access to adjoining driveways and cross-streets by providing cross-overs and right turn bays at various locations along FM 973. Congestion would also be reduced due to the additional lane of capacity in each direction. Pedestrian and bicycle safety would improve as well. In addition, the proposed improvements would have an effect on air quality by reducing travel times and reducing congestion.

Constructing the proposed improvements would require the acquisition of approximately 70 acres of additional right-of-way (approximately 65 acres “Crops” and approximately 5 acres “Pecan-Elm Forest”). Approximately 0.5 acres of riparian vegetation would be removed as a result of the Colorado River bridge (JW1) replacement and the extension of the culvert at the unnamed tributary to the Colorado River (JW2).

It is currently estimated that there would be 31 displacements as a result of the proposed project. The displacements would consist of residential, commercial (a motel, a car repair shop, a waste disposal transfer facility, a fast food restaurant, and two convenience stores/gas stations), the Del Valle ISD Opportunity Center, Austin Transitional Center, and a church.

Step 5: Identify Potentially Significant Indirect Effects for Analysis

Step 5 examines the potential for significant indirect impacts to occur from the proposed FM 973 improvements. Resources for which the potential for significant indirect impacts exist are then further examined using Steps 6-8.

⁴⁴ NCHRP Report 466.

Encroachment-Alteration Effects

Ecological Effects. Due to the extent of urbanization, agriculture, and resource extraction within the study area, ecological environments are limited primarily to the Colorado River and its environs. Potential encroachment-alteration impacts to ecological resources (i.e., water, biological resources) from the build alternative could include the degradation of water quality should roadway contaminants or chemical spills impact water resources downstream of the project area. These indirect impacts could occur during the construction of the improvements or due to accidental spills during the use of the facilities. Other potential impacts could include spread of invasive species, riparian habitat fragmentation or degradation, or disruption of breeding or roosting sites.

Socioeconomic Effects. Encroachment-alteration effects can include impacts on neighborhood cohesion, neighborhood stability, travel patterns, changes in the local economy, changes in access to specific services or products, recreation patterns at public facilities, pedestrian dependency and mobility, perceived quality of the natural environment, personal safety and privacy, and aesthetic and cultural values. Many of these aspects are investigated in detail in Sections 7.6.3 and 7.6.4. The proposed project would not be expected to affect neighborhood cohesion, neighborhood stability, the local economy, the quality of the natural environment, or aesthetic or cultural values. Potential impacts to travel patterns, changes in access to specific services or products, recreation patterns at public facilities, pedestrian dependency and mobility, and personal safety and privacy will be evaluated further in subsequent steps.

Air Quality Effects. The study area is located within Travis County, which is part of the Austin-Round Rock Ozone Flex Plan area. The study area is currently in attainment for all NAAQS pollutants. No change in attainment status is anticipated within the study area as the result of emissions associated with the proposed project. Based on the results of Steps 1 through 4 that evaluated the possible project-related actions that can indirectly impact air, it was determined that the proposed project would not be anticipated to cause indirect air quality impacts in the study area. Indirect air quality impacts from MSATs are unquantifiable due to existing limitations to determine pollutant emissions, dispersion, and impacts to human health. Emissions would likely be lower than present levels in future years as a result of the EPA's national control regulations (i.e., new light-duty and heavy duty on road fuel and vehicle rules, the use of low sulfur diesel fuel). Even with an increase in VMT and possible temporary

emission increases related to construction activities, the EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on road emissions, MSATs, and the ozone precursors VOC and NOx. As the proposed project is not anticipated to result in indirect air quality impacts, further discussion in Steps 6-8 below is not necessary.

Induced Development

Historically, roadway projects (particularly large-scale projects⁴⁵ or those on new location) have been thought to indirectly spur development in surrounding areas as a result of the increased access to adjacent land that they provide. This is supported by the construction of freeways in the 1950's that were believed to be the catalyst for the expansion of suburban areas (also referred to as *urban sprawl*) that developed at the same time.⁴⁶ More recent studies of the relationship between land use and transportation projects agree that a link exists. However, the research is mixed as to whether transportation improvements spur development, or if development creates the need for transportation improvements.⁴⁷

Roadways are needed to support planned development. Moreover, proposed roadway improvements would be expected to increase the rate of development solely through provision of a necessary element for initiation of construction of planned development, namely, adequate transportation infrastructure. Development of the indirect effects study area is already foreseen and largely planned as demonstrated by the recent development of Hornsby Glen subdivision, available plan documents for the Interport development, and the location of the study area within the City of Austin's Desired Development Zone. In fact, adjacent lands in crop production are currently zoned for commercial development or have been acquired for some other land use. Proposed FM 973 improvements, along with the presence of major transportation infrastructure in the study area (SH 71, SH 130, ABIA) would contribute to making this planned development actionable. However, drawing on the experiences of land use professionals interviewed for other similarly sized projects in the urban fringe, the proposed FM 973 improvements would not be expected to induce new locations of development in the indirect effects study area, due to the

⁴⁵ Large-scale projects are defined as improvements that involve a significant increase in capacity (e.g. increasing from a two to six lane facility with grade separations).

⁴⁶ Handy, Susan. 2002. *Smart Growth and the Transportation-Land Use Connection: What Does the Research Tell Us?* Department of Environmental Science and Policy, University of California at Davis for New Urbanism and Smart Growth: A Research Symposium National Center for Smart Growth Research and Education, University of Maryland, May 2002 and June 7, 2002.

⁴⁷ *Ibid.*

proximity of the study area to the City of Austin and recent development trends in the area. It is reasonable to assume that planned development in the indirect effects study area would occur without implementation of proposed FM 973 improvements; however, they may occur at a later time when other transportation projects provide the necessary transportation capacity.

Effects Related to Induced Development

For the proposed project, farmland could be indirectly impacted by the roadway improvements if the improvements induced development of lands within the study area, with associated conversion of farmland to developed uses.

Loss of jurisdictional stream channel associated with induced development would be an example of a potential indirect impact from the proposed FM 973 improvements. Specifically, streams could be indirectly impacted by the project if the roadway improvements encouraged or influenced an increase in development involving stream channelization or lining stream channels with concrete on surrounding lands.

Other examples of potential induced development related effects on water quality could include:

- Increased local construction spurred by the proposed FM 973 improvements could affect water quality of local streams by generating soil erosion with associated sediment loading into streams, increasing non-point pollution generators such as parking lots or widespread pesticide and fertilizer application in association with increased commercial and residential landscaping.
- Increased rainfall runoff rate from induced development-related increase in impervious cover, including construction of structures that impede flow, could result in increased local flooding by raising peak flood elevations.

Induced development effects on biological resources within this indirect effects study area for this project mirror those for water quality. Induced development can alter the landscape, increase impervious cover, modify species composition of remaining habitats, and introduce fertilizers and anthropogenic chemicals into the biotic system.

Step 6: Analyze Indirect Effects

Induced development related impacts are dependent on changes in local land use, namely, conversion of undeveloped land to developed uses. While the proposed improvements may

make the study area slightly more attractive to development, it is anticipated that the influence of existing major transportation infrastructure, including SH 71, SH 130, and ABIA nearby would overshadow the effects of the proposed FM 973 improvements on local development, particularly where those other facilities provide direct access to potentially developable property. The travel time and access benefits of the FM 973 project are not, by themselves, deemed sufficient to induce substantial additional development. In fact, according to the Austin Business Journal, two Canadian companies have invested in large-scale residential properties in the Del Valle area, which they see as an emerging market due to the availability of City of Austin water and wastewater infrastructure and proximity to Austin, ABIA, and SH 130.⁴⁸

However, there are a few properties with development potential in the indirect effects study area that lack direct access to SH 71 or SH 130. These properties could be influenced by the proposed FM 973 improvements. These include:

- Hornsby Glen – an approximately 124-acre residential subdivision consisting of available cleared lots with utilities ranging from approximately \$99,000 to \$157,000; located north of the Colorado River and east of FM 973
- Interport South Business Park – an approximately 124-acre tract located south of SH 71; currently in hay production but zoned light industrial; was proposed as part of the multi-use Interport development north of SH 71; currently for sale
- Private farmland – approximately 70 acres of relatively contiguous farmland currently in hay production; held by three different landowners; surrounded by industrial land uses and quarries; located north of Harold Green and east of FM 973

Because the area is within the City of Austin’s Desired Development Zone, the amount of current and planned development, the availability of major transportation infrastructure (SH 71, SH 130, and ABIA), as well as drawing on the experience of local land use professionals interviewed for similar projects, it is anticipated that all of these properties would be developed or quarried independent of whether the proposed improvements to FM 973 are implemented. However, it is likely that the improvements could create conditions conducive to implementation of this development, resulting in an increase in the timing of that development. It is also important to note that the timing of development in the area is also dependent on other factors such as economic conditions.

⁴⁸ Austin Business Journal. 2008. “Canadian Company amasses 1,600 acres in Del Valle.” June 30, 2008. Available on the internet: <http://austin.bizjournals.com/austin/stories/2008/06/30/story2.html>. Accessed December 16, 2008.

Farmland Resources

Of the three large tracts discussed above, two are currently being farmed for hay production. The Interport South tract, however, is zoned light industrial and directly abuts a planned multi-use development supporting residential and retail. The private hay farms are surrounded by industrial land uses, including extensive quarrying. Since these private agricultural properties lay outside the city limits of Austin, no zoning has been designated.

Due to the likelihood of development of these tracts, and the general trend away from agricultural land uses toward developed land uses in the indirect effects study area, the effect of project-related induced development on farmland is expected to be minor. The potential indirect loss of approximately 194 acres of hay production would account for less than 1 percent of all acres of hay farmed in Travis County.⁴⁹ Any potential increase in the timing of this development attributed to the project would not detrimentally affect hay production in Travis County. Therefore, substantial indirect effects to farmlands resulting from induced timing of development would not be anticipated.

Water Resources

Of the three properties discussed above, only one, Hornsby Glen, is situated within a floodplain. Each of these properties is drained by sheet flow, so development of these three properties would not result in additional fill of waters of the U.S. Any potential increase in the timing of this development attributed to the project would not detrimentally affect water resources in Travis County. Moreover, local development construction effects would be mitigated by Best Management Practices (BMPs), which would serve to remove pollutants and suspended solids from soil erosion during construction in accordance with the Texas Pollution Discharge Elimination System (TPDES). Development in floodplains would be minimal and constructed in accordance with local development codes in place. Therefore, substantial indirect effects to surface water quality resulting from induced development would not be anticipated.

⁴⁹U.S. Department of Agriculture, National Agricultural Statistics Service. 2002 Census of Agriculture. Texas State and County Data. Volume 1, Geographic Area Series, Part 43A. AC-02-A-43A. Issued June 2004. Available on the Internet:

http://www.agcensus.usda.gov/Publications/2002/Volume_1_Chapter_2_County_Level/Texas/index.asp.

Accessed: December 16, 2008.

Biological Resources

Indirect impacts to biological resources from the proposed FM 973 improvements, as described in Step 5 above, could be manifested by the deterioration in water quality. Examples of water quality deterioration would be increased pollutant loading of stormwater runoff or accidental chemical/fuel spills occurring after the roadway is opened to traffic. Because these impacts are separated from the construction of the proposed improvements in distance or time, they are considered indirect impacts. Impacts from accidental spills or runoff would vary depending on the contaminants involved, the volume of chemical runoff, and the distance from the roadway. The farther away from the spill, the more diluted the runoff becomes, and the less impact the roadway has on the water and biological resources.

The proposed improvements would widen an existing crossing of the Colorado River, so the project would not result in new fragmentation of habitat. However, this widening would result in the loss of riparian habitat addressed in Section 7.3. The area is not located near any known rookeries or roosting sites, so nesting and roosting habitats for birds would not be substantially affected. Any removal of vegetation from the bank would be replaced with erosion and sedimentation control structures to protect the stability of the river bank and the bridge and to reduce sedimentation downstream.

Re-vegetation of the project area would be consistent with the Executive Order 133112 on Invasive Species, the Executive Memorandum on Beneficial Landscaping, and the 1999 FHWA guidance on invasive species, and only non-invasive species would be planted within the right-of-way. It is anticipated that volunteers from the adjacent native vegetation would contribute to regeneration of the area, so spread of invasive species is not anticipated.

Socioeconomic Resources

The addition of sidewalks would enhance pedestrian mobility to remaining businesses along the FM 973/SH 71 corridors, as well as to recreational facilities such as the ball fields on FM 973 south of SH 71. Sidewalks, crosswalks, and shoulders would also enhance pedestrian safety.

The proposed project could be perceived as affecting privacy where the proposed facility would move closer to some residences. However, few residences would immediately abut or face FM 973 or SH 71 that do not already.

The proposed improvements would affect travel patterns along FM 973 by the introduction of a raised median. Most turning movements would not appreciably differ from the existing condition. Residents of Garden Valley submitted comments at the public meeting requesting a median break across from one of the neighborhood entrances. The proposed median would begin south of Garden Gate Drive, thus travel across FM 973 would be possible. However, Glen Brook residents wishing to travel northbound on FM 973 from their neighborhood would have to drive southbound on FM 973 to turnaround under SH 71. The Glen Brook neighborhood is too close to the intersection of FM 973 and SH 71, so a median break would not be feasible at this location. This change in travel pattern is not anticipated to result in adverse effects to the community.

Step 7: Evaluate Analysis Results

The purpose of this step is to consider the inherent uncertainty in estimating indirect effects and the risk that the actual outcome will differ from that forecasted. The level of uncertainty associated with induced development-related effects on farmland resources is minimal. The level and stage of development activity in the indirect effects study area is fairly advanced, leaving little room for adjustment in timing. Additionally, the effect of the current slow economy, the presence of major transportation infrastructure within the indirect effects study area, and other factors mentioned above would likely overshadow the effects of the proposed project on local development.

Water and Biological Resources

The indirect effects analysis for water and biological resources has a level of uncertainty. It is difficult to quantify uncertain events such as accidental spills of chemicals/fuel or to determine the fate and transport of constituents associated with stormwater runoff. On the other hand, the improved safety provided by the proposed improvements is anticipated to reduce the number of crashes in the project area. Because of this level of uncertainty, the indirect effects analysis of water and biological resources is carried through to further assessment in Step 8.

Socioeconomic Resources

There is uncertainty associated with whether the displaced convenience store will relocate within the immediate project vicinity. As discussed above in Section 7.6, access to the products provided by displaced merchants (such as the convenience store at FM 973 and SH 71) would

require residents to travel up to 1 mile west of the intersection if the displaced merchants do not relocate within the immediate project area.

Step 8: Assess Consequences and Develop Mitigation

Water and Biological Resources

The potential of the proposed project to indirectly affect the water quality downstream during construction activities will be mitigated by the development and implementation of a Stormwater Pollution Prevention Plan (SW3P) and the use of BMPs such as the use of silt fence, rock berms, and/or detention/retention ponds. The construction of permanent BMPs would serve to remove pollutants and sediments from the proposed project. Because of these mitigation measures, adverse indirect impacts to water and biological resources from the proposed improvements are not anticipated.

Socioeconomic Resources

The area surrounding the project is identified as containing high concentrations of minority populations; therefore, indirect impacts could potentially include effects on the adjacent EJ community, such as slight changes in travel patterns for both pedestrians and drivers. However, the proposed improvements would enhance driver and pedestrian safety and add capacity to the existing roadway. In addition, sidewalks and crosswalks would be provided which currently do not exist and are clearly warranted (e.g., extensive worn paths) in the project area. These positive effects of the proposed project would benefit all users of the roadway.

Cumulative Impact

Cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). This analysis follows requirements and processes outlined in 23 CFR 771, the 1987 FHWA *Technical Advisory T 6640.8A*, the 1997 Council on Environmental Quality (CEQ) handbook, *Considering Cumulative Effects Under the National Environmental Policy Act*, the 2003 FHWA *Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process*, CEQ’s 2005 Memorandum, and *Guidance on the Consideration of Past Actions in Cumulative Effects*

Analysis. The methodology used to evaluate the cumulative impact of the proposed project follows TxDOT's June 2009 *Guidance on Preparing Indirect and Cumulative Impact Analyses*. This guidance utilizes an eight-step process for identifying and assessing cumulative impacts. These eight steps will serve as the basis for the cumulative effects analysis. The eight steps are listed in **Table 15**.

Table 15
Eight-Step Approach for Cumulative Impacts Analysis

Step 1 – Identify the resources to consider in the analysis
Step 2 – Define the study area for each affected resource. Cumulative impacts are considered within spatial and temporal boundaries. Each resource has its own resource study area (RSA) to best assess the impacts to that individual resource. Each RSA was defined by professionals experienced in the study and analysis of each resource.
Step 3 – Describe the current health and historical context for each resource. The examination of the current health and historical context of each resource is necessary to establish a baseline for determining the effects of the proposed action and other reasonably foreseeable actions on the resource.
Step 4 – Identify direct and indirect impacts that may contribute to a cumulative impact. The analysis of cumulative impacts must look at the impacts of the proposed action in combination with the impacts of other past, present, or reasonably foreseeable actions within the RSAs. Identification of the direct and indirect impacts of the proposed action will also assist in determining the project's contribution to the cumulative impact on the resource.
Step 5 – Identify other reasonably foreseeable action that may affect the resources.
Step 6 – Assess potential cumulative impacts to the resources.
Step 7 – Report the results.
Step 8 – Assess and discuss mitigation issues for all adverse impacts.

Steps 1-4: Identify Resources to Consider; Define Study Areas; Describe the Current Health and Historic Context; and Identify Direct and Indirect Impacts That May Contribute to Cumulative Effects

The first step in conducting a Cumulative Impacts analysis according to TxDOT's guidance are to identify impacted environmental resources and determine the stability and health of those resources. A review of the direct and indirect effects sections above were evaluated to identify resources that 1) are substantially impacted by the proposed project or 2) are impacted to some degree but are in poor or declining health or at risk. As described in the guidance, if a project will not cause direct or indirect impacts on a resource, it will not contribute to a cumulative impact on the resource.

In step 2, a resource-specific study area is defined for each resource. The geographic study area is described below for each resource considered in the analysis. The temporal study boundary is 1990, the date that Census and GIS data for the study area(s) have been assembled, and 20 years in the future, the horizon year of the regional long-range transportation plan. In step 3, the current status/viability and historical context for each resource is addressed. Step 4 summarizes

the direct and indirect effects of the proposed project. Together, these four steps act as a screening tool to identify potential resources to be evaluated in depth in a cumulative impacts analysis. These four steps are summarized, by resource, below and in **Table 16**.

The proposed project would cross two USACE jurisdictional waters of the U.S. Work at each of these crossings would meet the criteria of a nationwide permit (NWP) and, as such, is considered to have minimal (not substantial) impact (33 CFR 330). Segment 1428 of the Colorado River Basin is considered an impaired and threatened stream segment for bacteria. However, the impaired area is located upstream of the project area and would not be affected by the project. Moreover, stormwater runoff would be treated through BMPs proposed for the project. Therefore, waters of the U.S. will not be addressed further in this cumulative impacts analysis.

The proposed project would require approximately 70 acres of new right-of-way. Proposed improvements would affect approximately 70 acres of unregulated vegetation within existing and proposed right-of-way, including 5 acres of “Pecan-Elm Forest” vegetation type and 65 acres of “Crops”. “Crops” are discussed under farmland in this section. The “Pecan-Elm Forest” vegetation type within the project area most closely represents the “Pecan-Sugarberry” series described by the Texas Natural Heritage Program.⁵⁰ This vegetation series has a conservation ranking of 4-secure.

Since vegetation removal is not regulated under state or federal regulations and a narrow strip of vegetation would be removed along an existing road corridor, the removal is not considered substantial. Since the vegetation proposed for removal is not known to support any protected species, it occurs along an existing road corridor, it is not a regulated habitat, and the vegetation type is not at risk, this resource will not be addressed further in this cumulative impacts analysis.

The proposed project would require some residential, commercial, and community facility displacements in an EJ population community. Since the proposed right-of-way acquisition and relocation would be conducted in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act* of 1970, as amended, relocation resources are available to all residential relocates without discrimination. Furthermore, it is anticipated that all displaced

⁵⁰ Texas Natural Heritage Program. TPWD. 1993. Plant Communities of Texas (Series Level).

properties would be able to be accommodated by existing and planned commercial development. It is the policy of TxDOT that no residence will be displaced due to right-of-way acquisition until decent, safe, and sanitary replacement housing is available in their area of choice, this resource will not be addressed in this cumulative impacts analysis.

The geographic resource study area for the EJ community consists of the block groups that abut the project (CT 23.10 BG 2, CT 22.06 BG 5, CT 24.16 BG 1, CT 24.16 BG 2, and CT 23.03 BG 9). The temporal resource study area would be 1990 to 2030. The year 1990 is used due to the ready availability of Census data to that timeframe; 2030 is used as it coincides with the current metropolitan transportation plan. The proposed project would require some residential, commercial, and community facility displacements in an EJ community; however no community facility would be displaced that would adversely affect the local community as discussed in **Section 7.6**. Due to the availability of housing in the RSA and TxDOT's Relocation Assistance Program, residential and commercial displacees would likely be accommodated within nearby areas. The proposed project would also result in safety benefits to the driving, transit, and pedestrian communities by provision of additional capacity, a center median separating directions of travel, shoulders, and sidewalks along existing transportation corridors that lack these facilities.

A comparison of Census data indicates that the RSA experienced a 4% increase in population between 1990 and 2000. However, CT 23.03 BG 9 includes the Austin Bergstrom International Airport and the Del Valle Correctional Facility. In 1990, this site was home to the Bergstrom Air Force Base. Therefore, the loss of the residential military population skews the changes in the RSA's demographics. Thus, CT 23.03 BG 9 is removed from further demographics analysis to account for changes to the area's non-institutionalized population.

Without CT 23.03. BG 9, the study area population increased 44%. This additional population includes large increases in the numbers of Hispanics and Blacks and a decrease in the number of Asians, while the number of Caucasians and Native Americans stayed relatively the same.

The RSA has experienced an overall shift in incomes, exhibited by increases in the median household income in three of the four block groups used in this analysis, as indicated in

Table 16. Census data also indicate that fewer people fall below the poverty level in the RSA (13% decline over all age groups) and home ownership has increased approximately 61%.

Table 16
Median Household Incomes in Indirect Effects Study Area (in 1999 dollars*)

Year	BG 5, Tract 22.06	BG 2, Tract 23.10	BG 1, Tract 24.16	BG 2, Tract 24.16
1989	\$53,853	\$22,368	\$36,948	\$26,871
1999	\$47,917	\$30,639	\$41,667	\$48,864

* 1989 values inflated to 1999 dollars using the Bureau of Labor Statistics Consumer Price Index Inflation Calculator http://www.bls.gov/data/inflation_calculator.htm

Potential direct effects of the proposed project include approximately 20 residential, 8 business, and 3 community facility displacements as well as increased noise levels. Indirect effects of the proposed improvements would include slight changes in travel patterns and slight changes in pedestrian movement. However, the proposed improvements would enhance safety and add capacity to the existing roadway. In addition, sidewalks would be provided which currently do not exist in the project area. These positive effects of the proposed project would benefit all users of the roadway.

While the RSA's minority population appears to be growing, this change is accompanied by positive adjustments in standard of living qualities such as increased home ownership, higher educational attainment, and higher incomes. In addition, the only community-focused public comment received during public involvement on the project related to a crossover at a neighborhood north of the Colorado River on FM 973. The EJ community RSA occurs along existing road corridors that currently do not safely accommodate pedestrian activity and lack safety roadway features such as shoulders and medians. While there are a number of facilities in the study area that may be considered locally undesirable land uses, such as the Hornsby Bend solid waste facility, the County correctional facility and other correctional programs, and resource extraction sites, the proposed improvements to existing roadways – and their potential direct and indirect impacts described above – would not attribute to any perceived effects associated with those land uses. Cumulative effects to EJ populations will not be addressed further.

The impact of the proposed project on air quality is not substantial overall, but considering the proportion of adjacent communities living near the project area, air quality in this area should be addressed. The RSA for evaluating air quality is the three-county CAMPO planning area, comprised of Travis, Williamson, and Hays Counties. The FM 973 facility is regularly utilized by residents of all three counties; therefore, improvements to FM 973 would be reasonably expected to affect residents across the entire CAMPO planning area. Persons outside the CAMPO area would be expected to utilize FM 973 to a lesser extent; therefore, improvements to FM 973 would have comparatively less effect on these persons. The NAAQS criteria pollutants include ozone, carbon monoxide, particulate matter, nitrogen dioxide, sulfur dioxide, and lead. Unlike the other resources evaluated, air quality impacts from mobile sources are evaluated and managed on a regional basis primarily through the CAMPO, in coordination with the EPA, TCEQ, TxDOT, and FHWA. This RSA represents the regional management area for mobile source pollutants.

The EPA establishes limits on atmospheric pollutant concentrations through enactment of the NAAQS for six principal, or criteria, pollutants. Travis County is in an area that was part of an Austin-Round Rock O₃ Flex Plan area. The area is designated by EPA as an attainment area for ozone, but the area's air quality is potentially at risk.

There has been a 48 percent increase in the total population for the three-county RSA (Travis, Williamson, and Hays) from 1990 to 2000 and it is expected to continue to grow. Population growth often results in an increase in development, increase in vehicles, and an increase in VMT. Traffic congestion has become one of the greatest challenges in the Austin metropolitan area, as on-road mobile sources (such as cars and trucks) contribute to air pollution.

Direct impacts on air quality and MSATs from the project are primarily those associated with the increased capacity, accessibility and the resulting projected increases in VMT. Emission reductions as a result of EPA's new fuel and vehicle standards are anticipated to offset impacts associated with VMT increases.

Indirect impacts on air quality and MSATs are primarily related to any expected development resulting from project's increased accessibility or capacity to the area. Any increased air pollutant or MSAT emissions resulting from the potential development of the area must meet

regulatory emissions limits established by the TCEQ and EPA as well as obtain appropriate authorization from the TCEQ and therefore are not expected to result in any degradation of air quality or MSAT levels.

Although national air quality has improved over the last 20 years, many challenges remain in protecting public health and the environment. Although no MSAT standards exist, EPA has certain responsibilities regarding the health effects of MSATs. The EPA controls emissions of air pollutants through one of two major strategies: NAAQS or regulatory controls that result in specific emission reductions. Both strategies provide for increased protection of human health and the environment. For MSATs, in order to more quickly implement emission reductions, EPA has focused efforts on nationwide regulatory controls.

Under the CAA of 1990, the EPA was authorized to designate areas in “nonattainment” or failing to meet established air quality standards (known as the NAAQS). In July 1997, the EPA announced a new NAAQS for ground-level ozone. The EPA phased out and replaced the previous 1-hour standard with an 8-hour standard to protect public health against longer exposure to this air pollutant. On March 29, 2001, EPA issued a Final Rule on *Controlling Emissions of Hazardous Air Pollutants from Mobile Sources*, 66 C.F.R. § 17229. This rule was issued under the authority in § 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its Reformulated Gasoline program, its National Low Emission Vehicle standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA forecasts that even with an increase in VMT, these programs are expected to reduce on highway MSAT emissions.

The cumulative impact on air quality from the proposed project and other reasonably foreseeable transportation projects are addressed at the regional level by analyzing the air quality impacts of transportation projects in the CAMPO 2035 *Regional Transportation Plan* and the upcoming 2011-2014 TIP. The proposed project and the other reasonably foreseeable transportation projects were included in the CAMPO 2035 *Regional Transportation Plan* and the upcoming 2011-2014 TIP. When combined, planned transportation improvements, revised EPA fuel and

vehicle regulations, fleet turnover are anticipated to have a cumulatively beneficial impact on air quality.

A variety of federal, state, and local regulatory controls as well as local plans and projects have had a beneficial impact on regional air quality. The CAA, as amended, provides the framework for federal, state, tribal, and local rules and regulations to protect air quality. The CAA required the EPA to establish NAAQS for pollutants considered harmful to public health and the environment. In Texas, the TCEQ has the legal authority to implement, maintain, and enforce the NAAQS. The TCEQ establishes the level of quality to be maintained in the state's air and to control the quality of the state's air by preparing and developing a general comprehensive plan. Authorization in the *Texas Clean Air Act* (TCAA) allows the TCEQ to do the following: collect information and develop an inventory of emissions; conduct research and investigations; prescribe monitoring requirements; institute enforcement; formulate rules to control and reduce emissions; establish air quality control regions; encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and to establish and operate a system of permits for construction or modification of facilities. Local governments having some of the same powers as the TCEQ can make recommendations to the commission concerning any action of the TCEQ that may affect their territorial jurisdiction, and can execute cooperative agreements with the TCEQ or other local governments. In addition, a city or town may enact and enforce ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA or the rules or orders of the TCEQ.

The cumulative impact of reasonably foreseeable future growth and urbanization on air quality within this area would be minimized by enforcement of federal and state regulations, including the EPA and TCEQ, which are mandated to ensure that such growth and urbanization would not threaten the air quality such that the area would no longer be in compliance with federal air quality standards.

Table 17
Cumulative Effects Analysis Screening

Resource (Step 1)	Resource Study Area (Step 2)	Existing Condition (Step 3)	Proposed Project Direct and Indirect Impacts (Step 4)	Result of Initial Screening
Farmland	North of the Colorado River west of FM 973 and south of SH 71 east of FM 973	Secure; does not provide habitat for protected species; occurs along an existing road corridor; not regulated habitat	direct: 65 acres indirect: 0 acres; minimal increase in timing of development	Project impacts are not substantial; not addressed further.
	Colorado River bank from confluence of Walnut Creek to confluence of Onion Creek	Secure; does not provide habitat for protected species; occurs along an existing road corridor; not regulated habitat	direct: 5 acres indirect: 0 acres	Project impacts are not substantial; not addressed further.
Waters of the U.S.	Colorado River	Fully supporting; an impaired area (bacteria) exists upstream of the project area (Segment 1428)	direct: <0.1 acre indirect: minimal effect since stormwater would be treated	Project impacts are not substantial; not addressed further.
	Unnamed Tributary to the Colorado River		direct: <0.1 acre indirect: minimal effect since stormwater would be treated	Project impacts are not substantial; not addressed further.

Table 17 (continued)
Cumulative Effects Analysis Screening

Resource (Step 1)	Resource Study Area (Step 2)	Existing Condition (Step 3)	Proposed Project Direct and Indirect Impacts (Step 4)	Result of Initial Screening
EJ Communities	Census block groups abutting project	Occurs along an existing road corridor	direct: 20 residential displacements; 8 commercial displacements; 3 community facility displacements indirect: Enhanced safety and capacity; improved pedestrian facilities	Project impacts are not substantial; not addressed further.
Air Quality	5-County CAMPO Planning Area	Air Quality Control Region is currently in attainment for ozone	MSATs may be higher for the build alternative; however, a decrease in congestion could offset this increase. Vehicle and fuel regulations and fleet turnover will also substantially reduce MSAT levels.	Project impacts are not substantial; not addressed further.

Summary of Cumulative Effects Analysis

Due to the lack of significant impacts from the proposed improvements and the relative health and stability of the impacted environmental resources, the proposed project would not contribute to substantial cumulative impacts. In addition, appropriate implementation of applicable land use planning regulations and local development ordinances and compliance with local, state, and federal laws and regulations would offset any adverse effects of the region's projected social and economic growth. Furthermore, the no-build alternative would not fulfill the transportation needs of the project area, nor would it result in improved water quality.

9.0 ENVIRONMENTAL PERMITS, ISSUES, AND COMMITMENTS

9.1 Water

Proposed permanent impacts to waters of the U.S. would be permitted according to NWP #14, Linear Transportation Projects. Each crossing is a single and complete project as defined in 33 CFR 330.2(c)(i). The permanent fill into waters of the U.S. at each crossing would be less than 0.10 of an acre. Pre-construction notification to the USACE would not be required.

A project that requires a USACE NWP #14 must use at least one of the BMPs from each category listed on TCEQ Section 401 Water Quality Certification Conditions for NWPs. The erosion control BMP for this project would be top soil and seeding. The sediment control BMPs for this project would be silt fence and rock filter dams. The post construction total suspended solid control BMP for this project would be vegetative filter strips.

If a project would disturb 1 or more acres, it meets the criteria of the TCEQ TPDES General Permit for Construction Activities. This project would disturb over 5 acres and would require a Notice of Intent to be filed with TCEQ. In addition, an SW3P would be included in the construction plans.

At each creek or tributary crossing, where scraping and grading would occur, there would be less than 0.10 of an acre of substrate disturbed. This change to the streambed at each crossing would not modify the bodies of water in such a way that they would be impounded, diverted, channel deepened or otherwise controlled or modified for any purpose including navigation and drainage.

The proposed project would comply with the TxDOT Austin District Phase II MS4 requirements.

9.2 Vegetation

During construction efforts would be taken to avoid and minimize disturbance of vegetation and soils. Areas within the existing and proposed right-of-way, but outside the limits of construction would not be disturbed. All areas disturbed during construction, would be revegetated, according to TxDOT specifications, as soon as it becomes practicable. In accordance with Executive Order 133112 on *Invasive Species*, the Executive Memorandum on *Beneficial Landscaping*, and the 1999 FHWA *Guidance on Invasive Species*, only non-invasive species would be planted within the right-of-way.

Since the proposed project meets the coordination threshold under the TPWD MOU for removal of mature woody vegetation, this EA will need to be coordinated with TPWD.

9.3 Migratory Birds

In the event that migratory birds are encountered on-site during project construction, every effort would be made to avoid harm of protected birds, active nests, eggs, and/or young. The contractor would remove all old migratory bird nests between September 1 and January 31 from any structure where work will be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between February 1 and August 31. All methods would be approved by the Austin District Biologist well in advance of planned use.

9.4 Socioeconomic

9.4.1 Relocation of People

The proposed right-of-way acquisition and relocation would be conducted in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act* of 1970, as amended. Relocation resources are available to all residential and business relocatees without discrimination. It is the policy of TxDOT that no person will be displaced due to right-of-way acquisition until decent, safe, and sanitary replacement housing is available in their area of choice. The TxDOT relocation office will assist each relocatee in securing replacement housing.

The State's *Relocation Assistance Program* is a comprehensive program of providing financial and advisory assistance to those individuals, families, businesses and nonprofit organizations

required to be displaced as a result of highway right-of-way acquisition. In providing this assistance, the individual needs and characteristics of those being displaced are fully considered as it relates to the availability of comparable housing to meet those needs. The displacees will be provided with the financial means to purchase or rent comparable replacement housing, if they so qualify. They will also receive either an actual moving cost payment or payment of the scheduled moving cost. Other payments to which they are entitled include: the costs which are incidental to selling to the State, costs incidental to purchasing a replacement dwelling, and increased interest differential payment. The State's Relocation Assistance Program is available to all displacees regardless of race, color, religion, or national origin.

A relocation officer will contact each displacee, provide a booklet explaining the relocation program, and explain all benefits available under this program. The relocation officer will also discuss available relocation housing and, upon request, will provide a list of decent, safe, and sanitary replacement housing. No tenant or owners will be required to move until decent, safe, and sanitary replacement housing within the displacee's financial means is available. The relocation program can be administered to provide orderly, timely, and efficient services to the displacees.

9.4.2 Traffic Management During Construction

The proposed improvements would be phased to allow at least two travel lanes to remain open during construction.

9.4.3 Public Involvement

The proposed project is open to comments by any person, and all views on the scope of the improvements proposed on FM 973, alternative projects, environmental impacts, and any other matter related to the proposed project, have been and will continue to be welcome. In addition to the local community, public involvement is ongoing with governmental agencies, officials, organizations, and individuals.

On Thursday, January 31, 2008, an open house was held at Del Valle Junior High School to discuss the proposed improvements to FM 973. Notices of the open house were published in two local newspapers, one of which was a Spanish newspaper. The abutting property owners located within the vicinity of the proposed improvements were also notified of the open house.

Approximately 38 people attended the open house. Overall there were three comments received. All three of the comments were about the lack of a proposed cross-over for the Garden Valley subdivision. The need for a cross-over for the Garden Valley subdivision will be evaluated during detailed design of the proposed project. A cross-over would be installed at this location if it is determined reasonable and feasible.

As stated in the **Introduction**, this proposed project is part of an overall corridor study being developed to upgrade FM 973 to a MAD 6 from US 290 in Manor to US 183 south of Austin. On Tuesday, July 24, and Thursday, July 26, 2007, open houses were held at Del Valle Junior High School and at Manor Middle School respectively, to discuss the overall FM 973 corridor study being developed. Notices of these open houses were published in two local newspapers, one of which was a Spanish newspaper. The abutting property owners located within the vicinity of the proposed improvements were also notified of the open houses. Approximately 47 people attended the July 24, 2007 open house and approximately 32 people attended the July 26 open house. Overall there were 12 comments received. The comments received were about the need for expansion of the facility, traffic lights, drainage and flooding, ROW acquisition and relocations, soil stability, utilities, and historic cultural resources. There was also a specific mention of recorded gravesites in the vicinity on a property adjacent to Moore Road. These issues would be evaluated during project development.

Also as stated in the **Introduction**, this proposed project has been separated from the corridor study in order to coordinate the construction of the FM 973 intersection at SH 71 with the SH 71 project that is currently being developed. On Tuesday, June 24, 2008, a public meeting was held at Del Valle High School to inform the public about the preparation of a limited Supplemental Environmental Impact Statement (SEIS) addressing proposed design changes to the 1988 Final Environmental Impact Statement (FEIS) prepared for improvements to SH 71/US 290 from FM 1826 to FM 973. Notices of this public meeting were published in three local newspapers, one of which was a Spanish newspaper. The abutting property owners located within the vicinity of these proposed improvements were also notified of this public meeting and flyers in both English and Spanish were posted within the community of Del Valle. The meeting was also advertised on digital reader boards along SH 71. A total of 182 individuals registered their attendance at this public meeting. Overall there were 24 comments received. The comments received were about tolling, adding park and ride facilities, straightening FM 973, building

overpasses, adding carpool lanes, adding light rail, extending Capital Metro facilities out to Ross Road, building noise walls, and extending the limits of the SH 71 project to Ross Road. These issues would be evaluated during project development.

On Thursday, July 14, 2011, a public hearing was held at the Del Valle Middle School to discuss the proposed improvements to FM 973. Notices of the public hearing were published in two local newspapers, one of which was a Spanish paper. The abutting property owners located within the vicinity of the proposed improvements were also notified of the public hearing. Approximately 71 people attended the public hearing. No verbal comments were presented at the public hearing. No written comments were received in response to the public hearing.

9.5 Hazardous Materials

Disposition of petroleum underground storage tank systems within the proposed right-of-way would be addressed during the right-of-way negotiation and acquisition process.

Should project design or right-of-way requirements change during project development, the potential for hazardous material impacts would be reassessed. Section 6.10 of the General Provisions of TxDOT's *Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges*, which applies to all highway projects, includes guidelines addressing the contractor's responsibilities regarding the discovery of hazardous materials.

The proposed project includes the demolition of a bridge structure. The structure may contain asbestos containing materials. Asbestos inspections, notification, abatement, and disposal, as applicable, would be addressed in accordance with federal and state regulations.

9.6 Noise

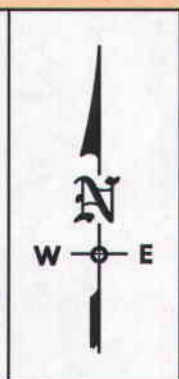
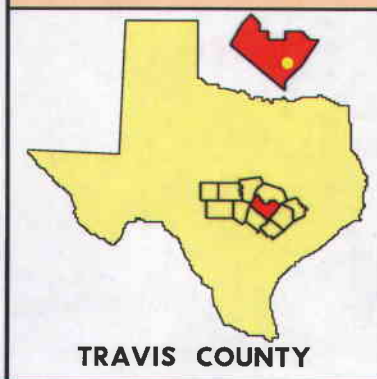
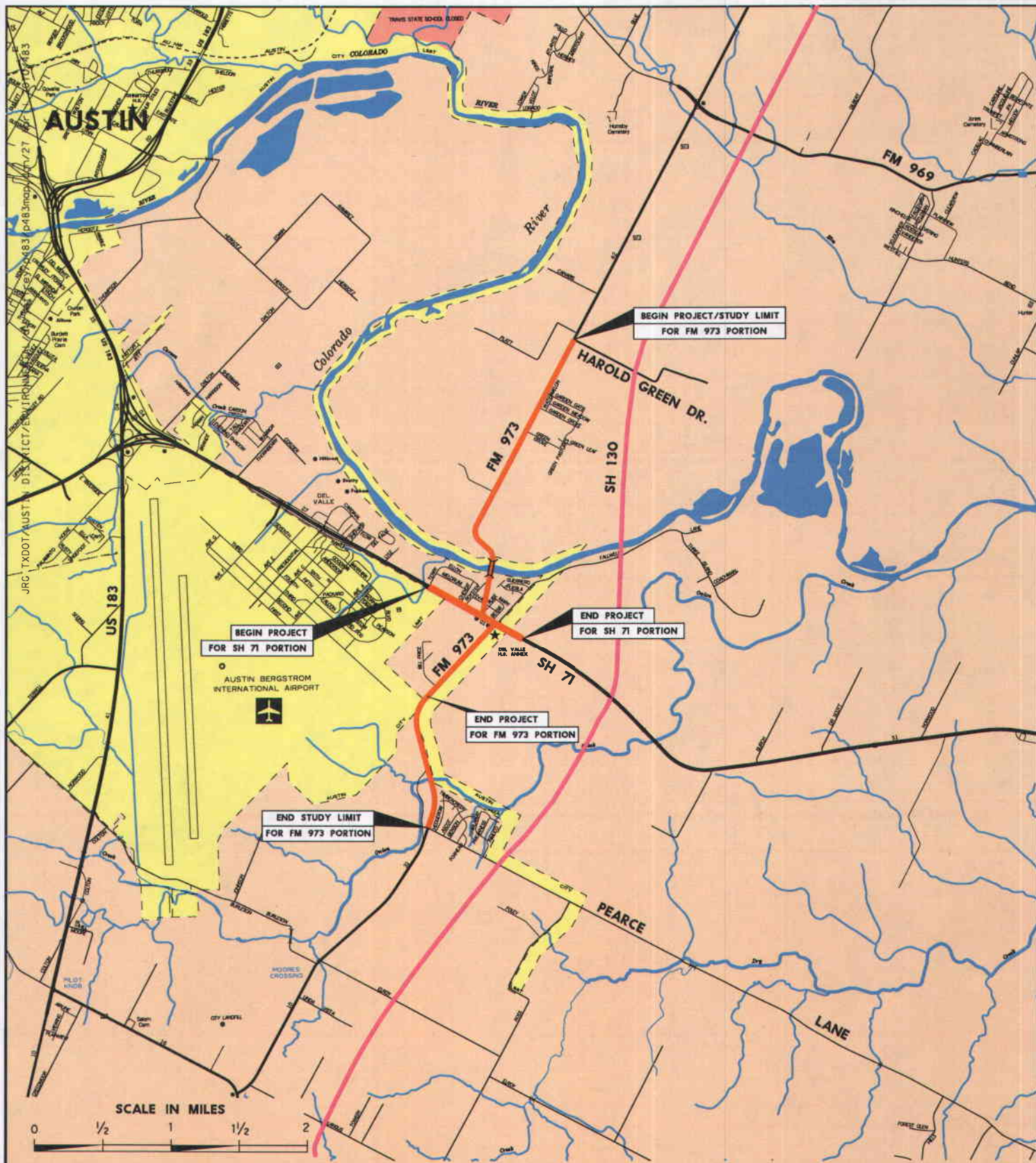
Provisions will be included in the construction plans and specifications that require the contractor to make every reasonable effort to minimize noise during construction through abatement measures such as work-hour controls and proper maintenance of muffler systems.

9.7 Archeology

In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures under the provisions of the PA and MOU.

10.0CONCLUSION

The proposed project is expected to improve mobility and increase public safety within the proposed project limits that would result in insignificant impacts to the environment. A Finding of No Significant Impact (FONSI) is anticipated.

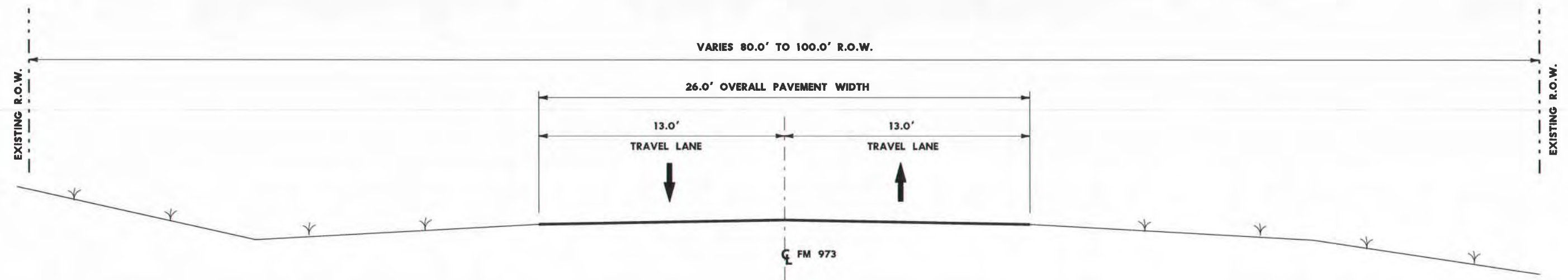


PROJECT LOCATION MAP

FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE

CSJ: 1200-03-028, etc.

FIGURE 1



EXISTING TYPICAL SECTION
 HAROLD GREEN DRIVE TO THE NORTH END OF COLORADO RIVER BRIDGE AND
 THE SOUTH END OF COLORADO RIVER BRIDGE TO SOUTH TIE-IN TO EXISTING FM 973

**FM 973 EXISTING APPROACHES
 TYPICAL SECTIONS**

FM 973: FROM HAROLD GREEN DRIVE TO
 PEARCE LANE

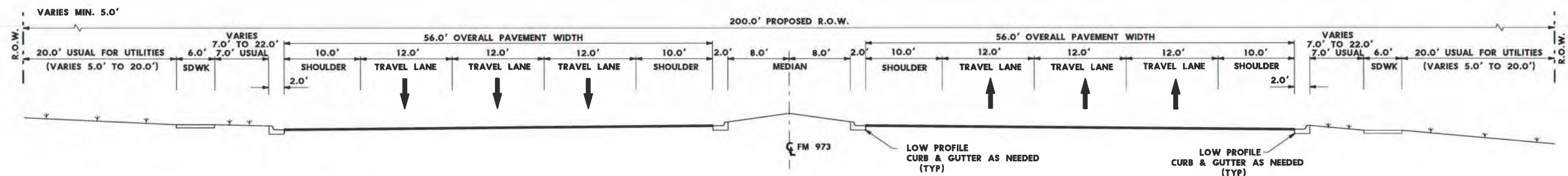
CSJ: 1200-03-028, etc.

TRAVIS COUNTY

NOT TO SCALE

FIGURE 2

SHEET 1 OF 5



PROPOSED TYPICAL SECTION

HAROLD GREEN DRIVE TO THE NORTH END OF COLORADO RIVER BRIDGE AND
SOUTH END OF COLORADO RIVER BRIDGE TO SOUTH TIE-IN TO EXISTING FM 973

PROPOSED TYPICAL SECTIONS

FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE

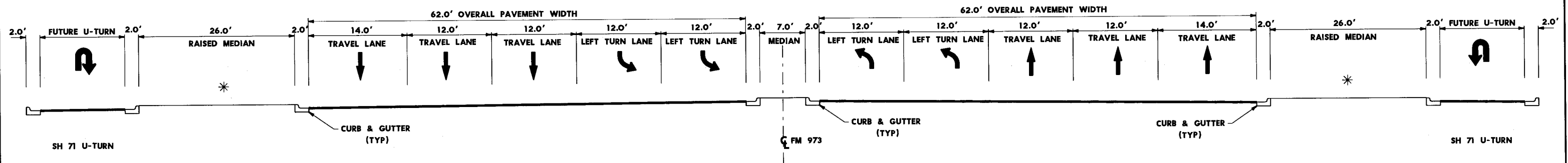
CSJ: 1200-03-028, etc.

TRAVIS COUNTY

NOT TO SCALE

FIGURE 2

SHEET 2 OF 5



**PROPOSED TYPICAL SECTION
UNDER FUTURE SH 71 OVERPASS**

* Pedestrian Access

**PROPOSED FM 973 TYP SECTION
UNDER FUTURE SH 71 OVERPASS**

FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE

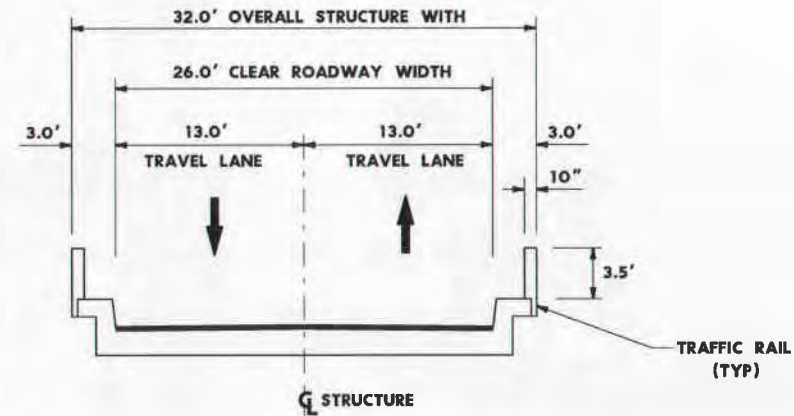
CSJ: 1200-03-028, etc.

TRAVIS COUNTY

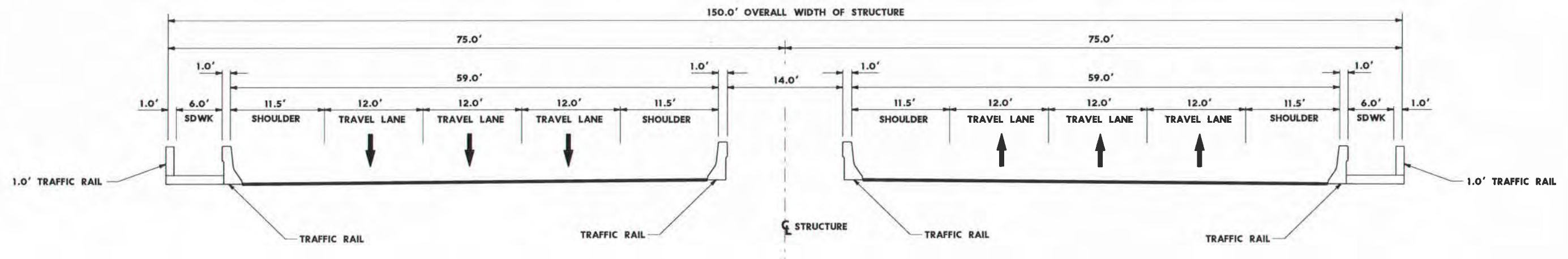
NOT TO SCALE

FIGURE 2

SHEET 3 OF 5



EXISTING BRIDGE TYPICAL SECTION
BRIDGE OVER THE COLORADO RIVER



PROPOSED BRIDGE TYPICAL SECTION
BRIDGE OVER THE COLORADO RIVER

**EXISTING AND PROPOSED
BRIDGE TYPICAL SECTIONS**

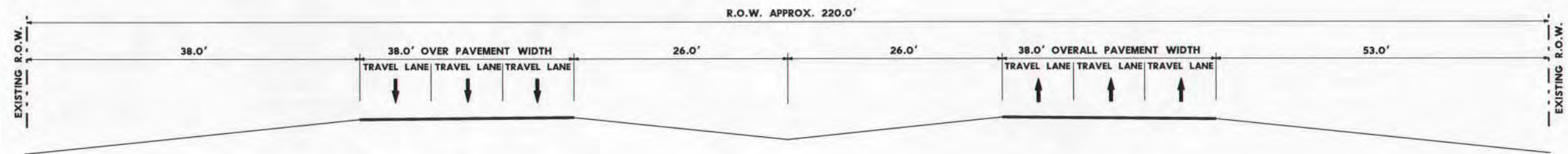
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE

CSJ: 1200-03-028, etc.

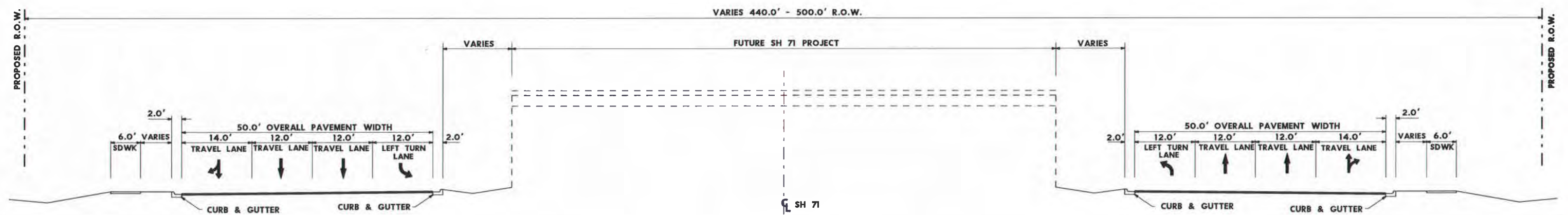
TRAVIS COUNTY

FIGURE 2

NOT TO SCALE



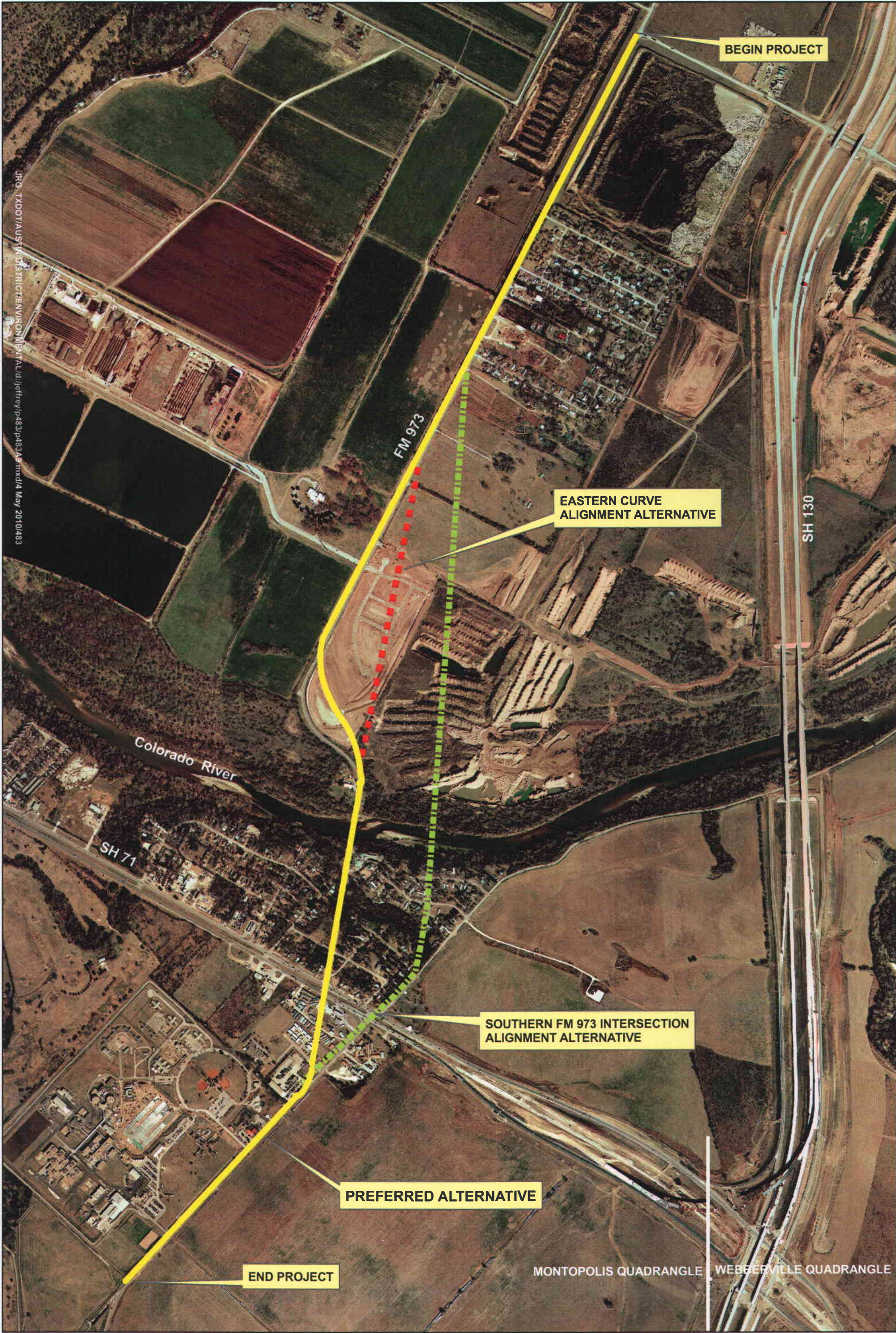
EXISTING TYPICAL SECTION SH 71



PROPOSED TYPICAL SECTION SH 71

SH 71 TYPICAL SECTIONS
 FM 973: FROM HAROLD GREEN DRIVE TO
 PEARCE LANE
 CSJ: 1200-03-028, etc.
 TRAVIS COUNTY
 FIGURE 2

NOT TO SCALE

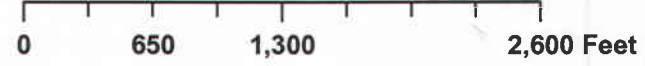


J:\PROJECTS\AUSTIN\DISTRICT\ENVIRONMENTAL\Jeffrey\p483\p483a.mxd 14 May 2010/483



QUADRANGLES (SEE ABOVE)
FLIGHT DATE: February 2008

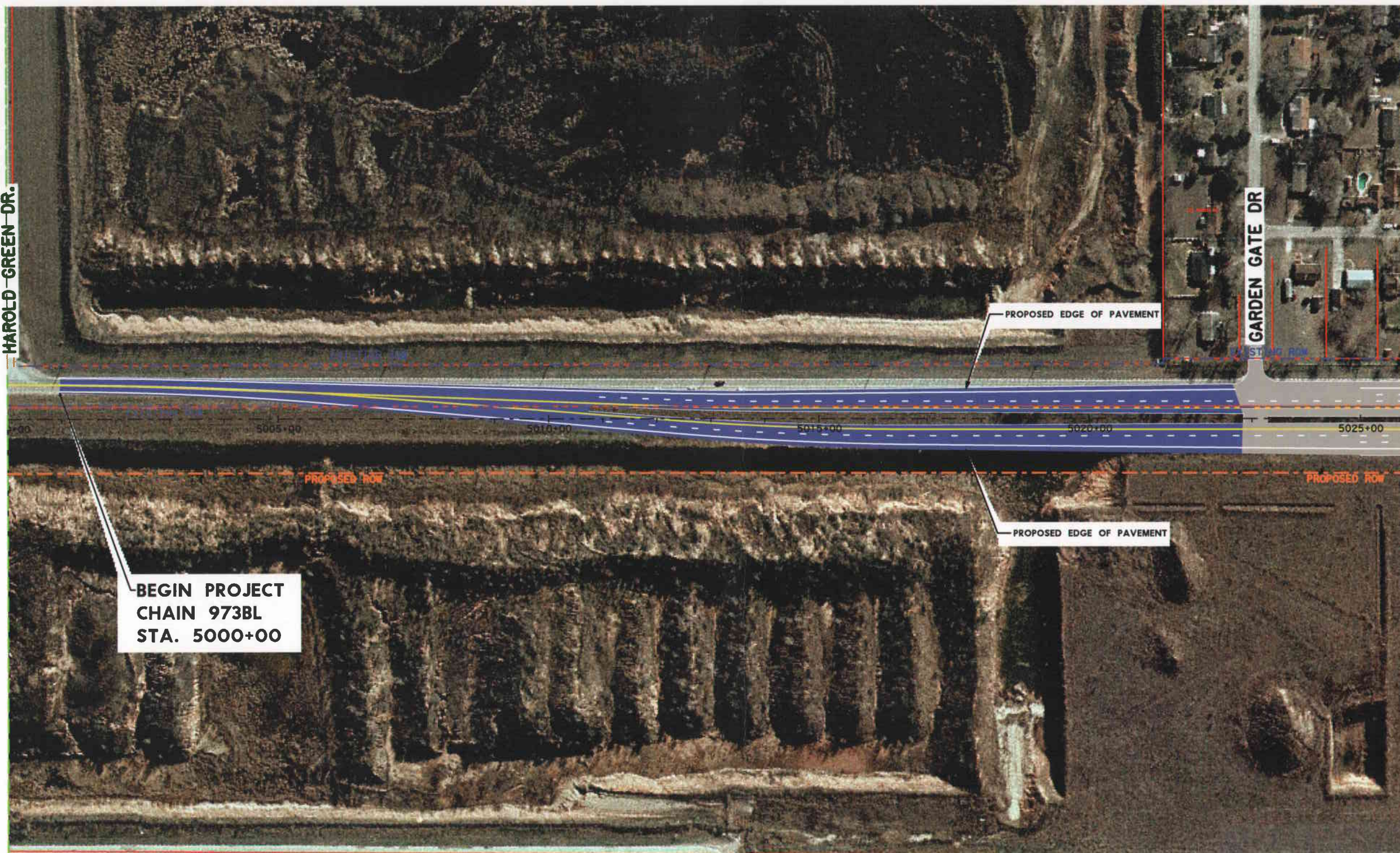
Scale: 1 inch = 967.5 feet
1:11,610



ALTERNATIVES
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 3



STA. 5000+00.00
HAROLD GREEN DR.



STA. 5026+00.00

PROPOSED PAVEMENT

FM 973	
SH 71 FRONTAGE ROADS	
TRANSITIONS	
BRIDGE CLASS STRUCTURE	
FUTURE SH 71 MAINLANES	

LEGEND

DESCRIPTION
PROPOSED ROW
EXISTING ROW
PROPERTY LINES
CONTROL OF ACCESS
LANE DIRECTIONAL INDICATOR

SYMBOLGY

SCALE: 1:200

FM 973 PLAN VIEW

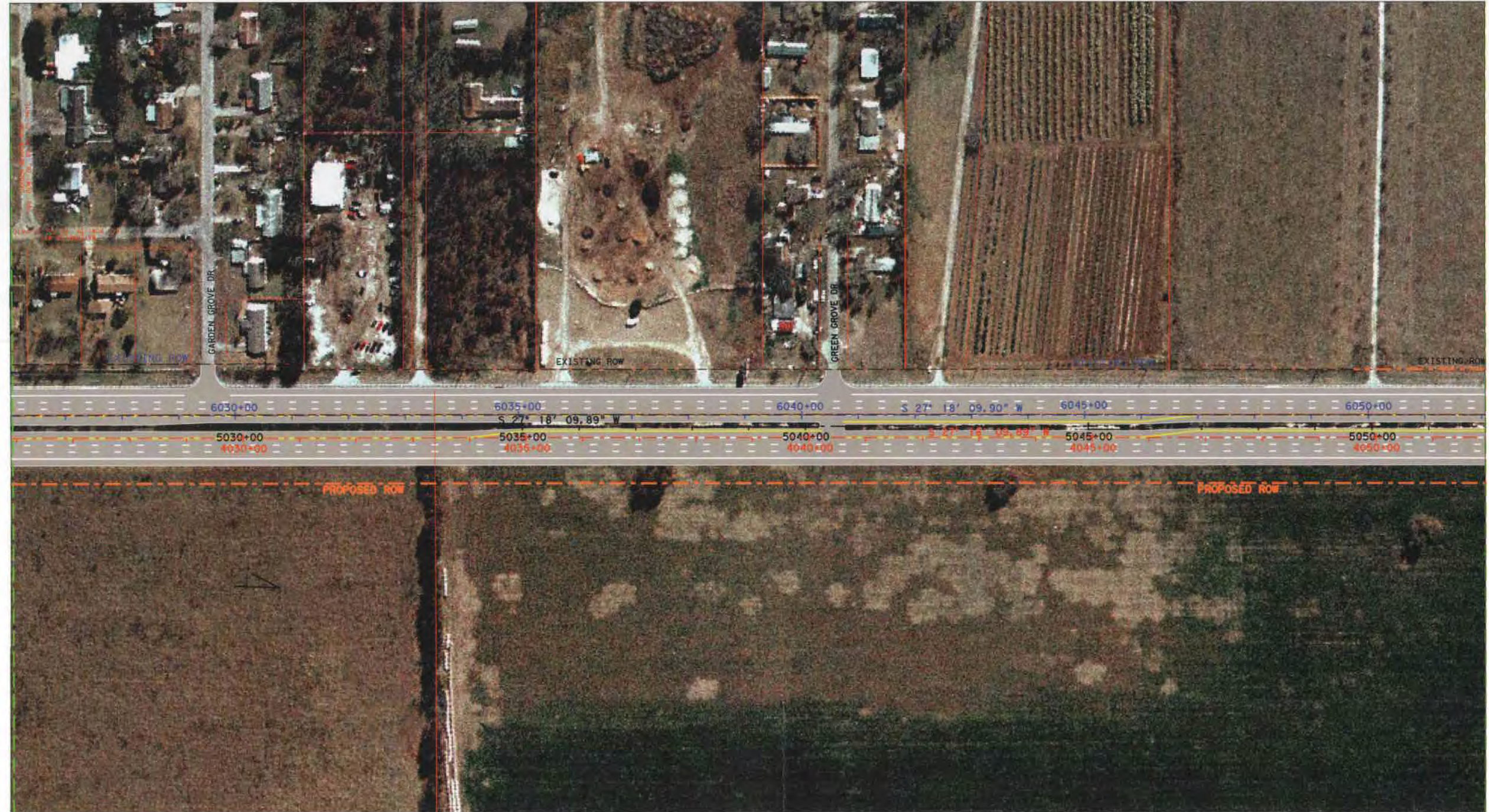
FM 973: FROM HAROLD GREEN DRIVE TO PEARCE LANE

CSJ: 1200-03-028, etc.

TRAVIS COUNTY

FIGURE 4

STA. 5026+00.00



STA. 5052+00.00

PROPOSED PAVEMENT	
FM 973	
SH 71 FRONTAGE ROADS	
TRANSITIONS	
BRIDGE CLASS STRUCTURE	
FUTURE SH 71 MAINLANES	

LEGEND	
DESCRIPTION	SYMBOL
PROPOSED ROW	
EXISTING ROW	
PROPERTY LINES	
CONTROL OF ACCESS	
LANE DIRECTIONAL INDICATOR	

SYMBOL

SCALE: 1:200

FM 973 PLAN VIEW
FM 973: FROM HAROLD GREEN DRIVE TO PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 4



PROPOSED PAVEMENT

FM 973	
SH 71 FRONTAGE ROADS	
TRANSITIONS	
BRIDGE CLASS STRUCTURE	
FUTURE SH 71 MAINLANES	

LEGEND

DESCRIPTION
PROPOSED ROW
EXISTING ROW
PROPERTY LINES
CONTROL OF ACCESS
LANE DIRECTIONAL INDICATOR

SYMBOLOLOGY

SCALE: 1:200

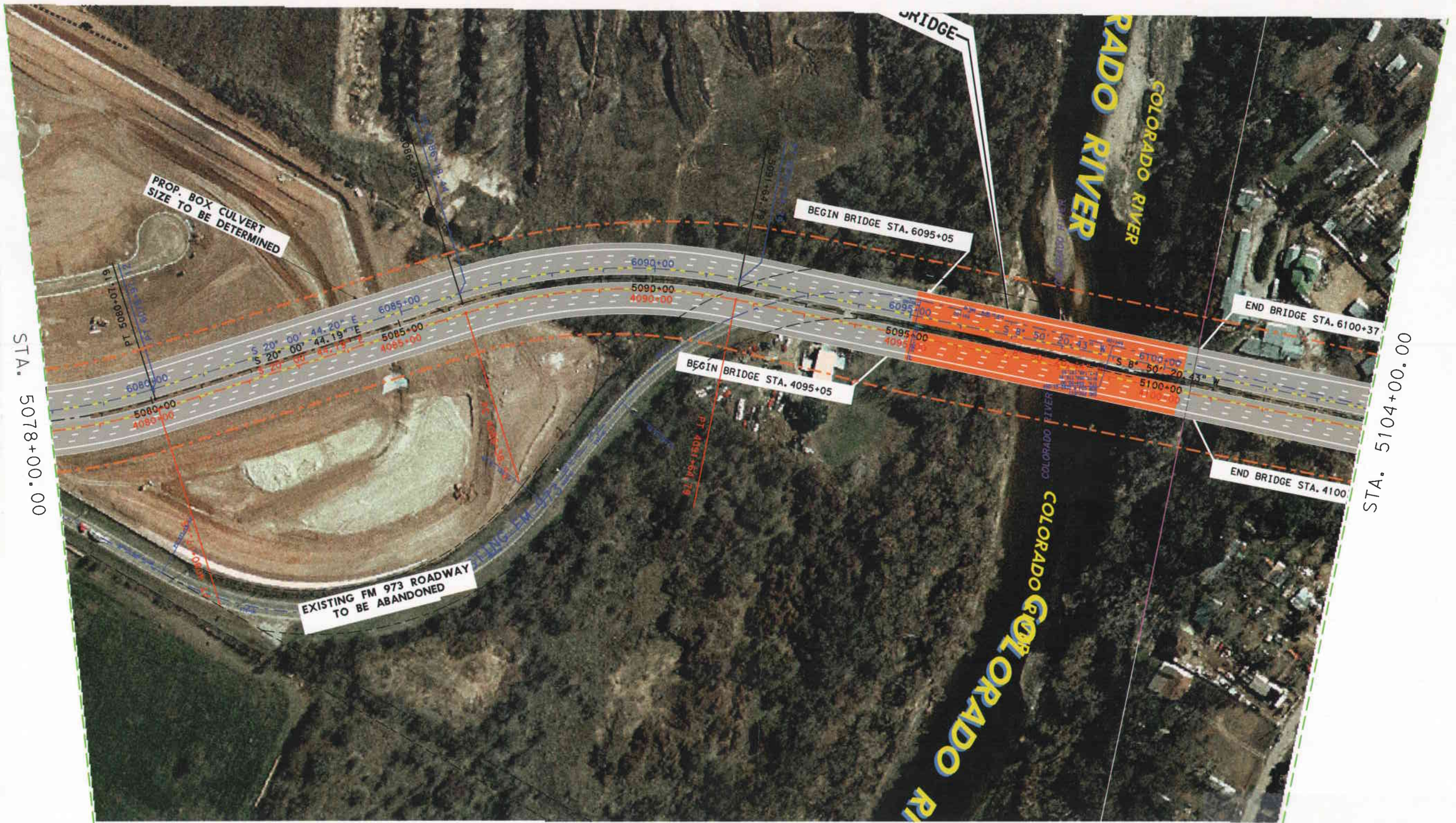
FM 973 PLAN VIEW

FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE

CSJ: 1200-03-028, etc.

TRAVIS COUNTY

FIGURE 4



PROPOSED PAVEMENT

FM 973	
SH 71 FRONTAGE ROADS	
TRANSITIONS	
BRIDGE CLASS STRUCTURE	
FUTURE SH 71 MAINLANES	

LEGEND

DESCRIPTION	SYMBOL
PROPOSED ROW	
EXISTING ROW	
PROPERTY LINES	
CONTROL OF ACCESS	
LANE DIRECTIONAL INDICATOR	

SCALE: 1:200

FM 973 PLAN VIEW

FM 973: FROM HAROLD GREEN DRIVE TO PEARCE LANE

CSJ: 1200-03-028, etc.

TRAVIS COUNTY

FIGURE 4



PROPOSED PAVEMENT	
FM 973	
SH 71 FRONTAGE ROADS	
TRANSITIONS	
BRIDGE CLASS STRUCTURE	
FUTURE SH 71 MAINLANES	

DESCRIPTION	SYMBOL
PROPOSED ROW	
EXISTING ROW	
PROPERTY LINES	
CONTROL OF ACCESS	
LANE DIRECTIONAL INDICATOR	

SCALE: 1:200

FM 973 PLAN VIEW
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 4

STA. 5130+00.00



PROPOSED PAVEMENT

FM 973	
SH 71 FRONTAGE ROADS	
TRANSITIONS	
BRIDGE CLASS STRUCTURE	
FUTURE SH 71 MAINLANES	

LEGEND

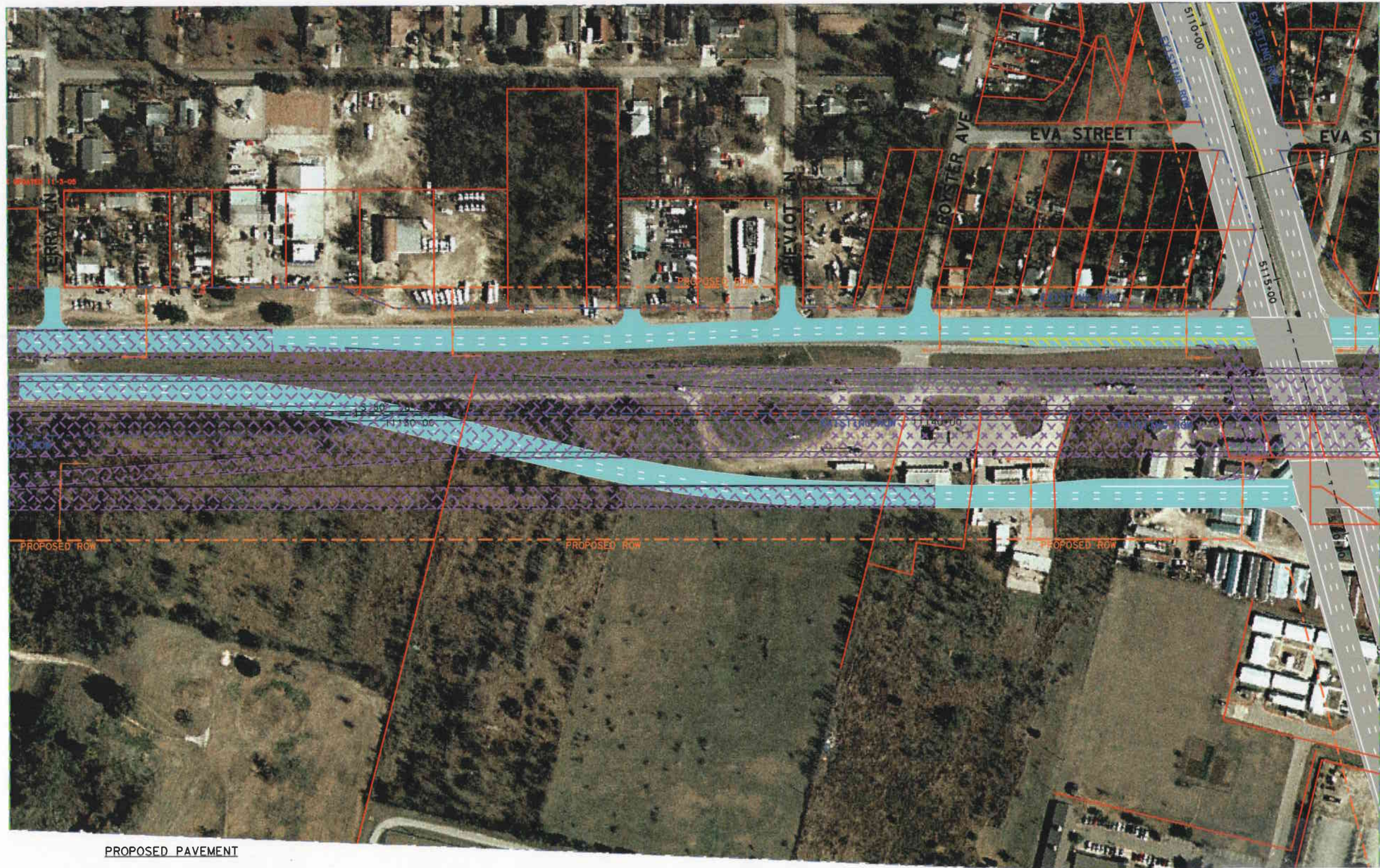
DESCRIPTION
PROPOSED ROW
EXISTING ROW
PROPERTY LINES
CONTROL OF ACCESS
LANE DIRECTIONAL INDICATOR

SYMBOL

SCALE: 1:200

FM 973 PLAN VIEW
FM 973: FROM HAROLD GREEN DRIVE TO PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 4

BEGIN SH 71 TIE-IN WORK
STA. 11122+40.00



STA. 11148+40.00

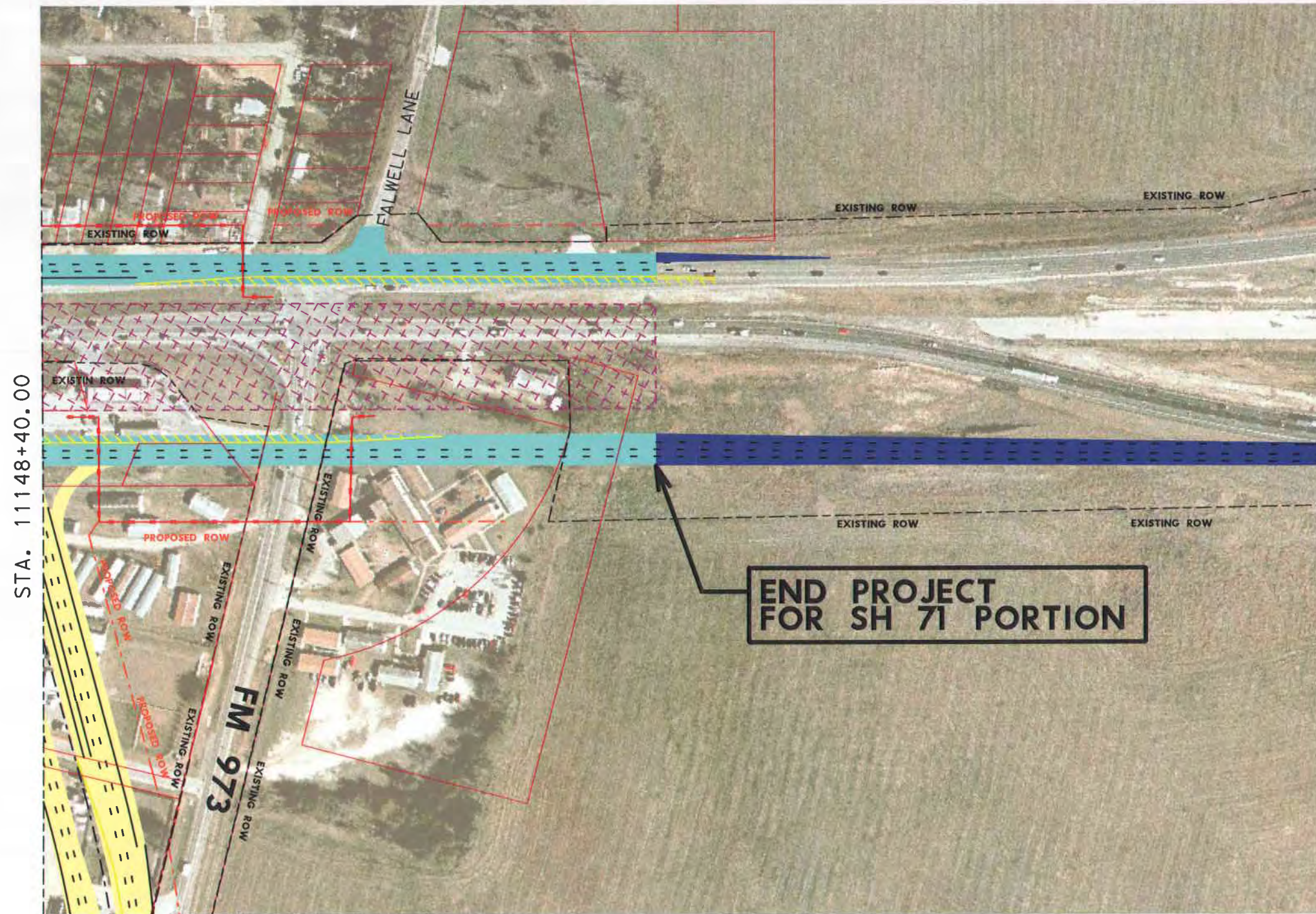
SCALE: 1:200

PROPOSED PAVEMENT	
FM 973	
SH 71 FRONTAGE ROADS	
TRANSITIONS	
BRIDGE CLASS STRUCTURE	
FUTURE SH 71 MAINLANES	

DESCRIPTION	SYMBOL
PROPOSED ROW	
EXISTING ROW	
PROPERTY LINES	
CONTROL OF ACCESS	
LANE DIRECTIONAL INDICATOR	

SH 71 PLAN VIEW
FM 973: FROM HAROLD GREEN DRIVE TO PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY

FIGURE 4



LEGEND	
DESCRIPTION	SYMBOL
PROPOSED ROW	---
EXISTING ROW	- - -
PROPERTY LINES	---
CONTROL OF ACCESS	---
LANE DIRECTIONAL INDICATOR	→

PROPOSED PAVEMENT	
FM 973	---
SH 71 FRONTAGE ROADS	---
TRANSITIONS	---
BRIDGE CLASS STRUCTURE	---
SH 130 UNDER CONSTRUCTION	---
FUTURE SH 71 MAINLANES	---

SCALE 1:200

SH 71 PLAN VIEW

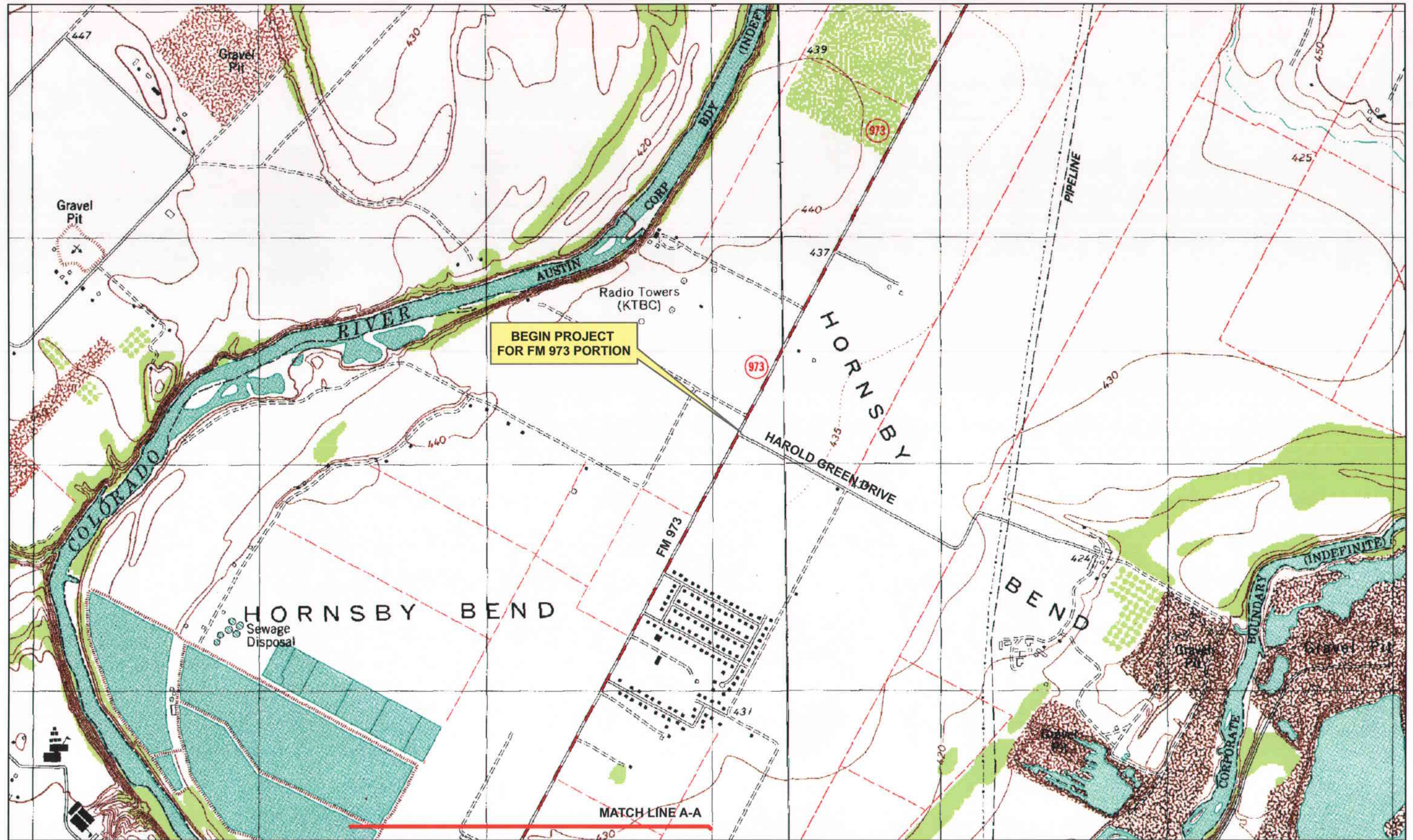
FM 973: FROM HAROLD GREEN DRIVE TO PEARCE LANE

CSJ:1200-03-028, ETC.

TRAVIS COUNTY

FIGURE 4

SHEET 8 OF 8



MONTOPOLIS QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)
Scale: 1 inch = 1,320 feet
1:15,840
DATE = CREATED 1988

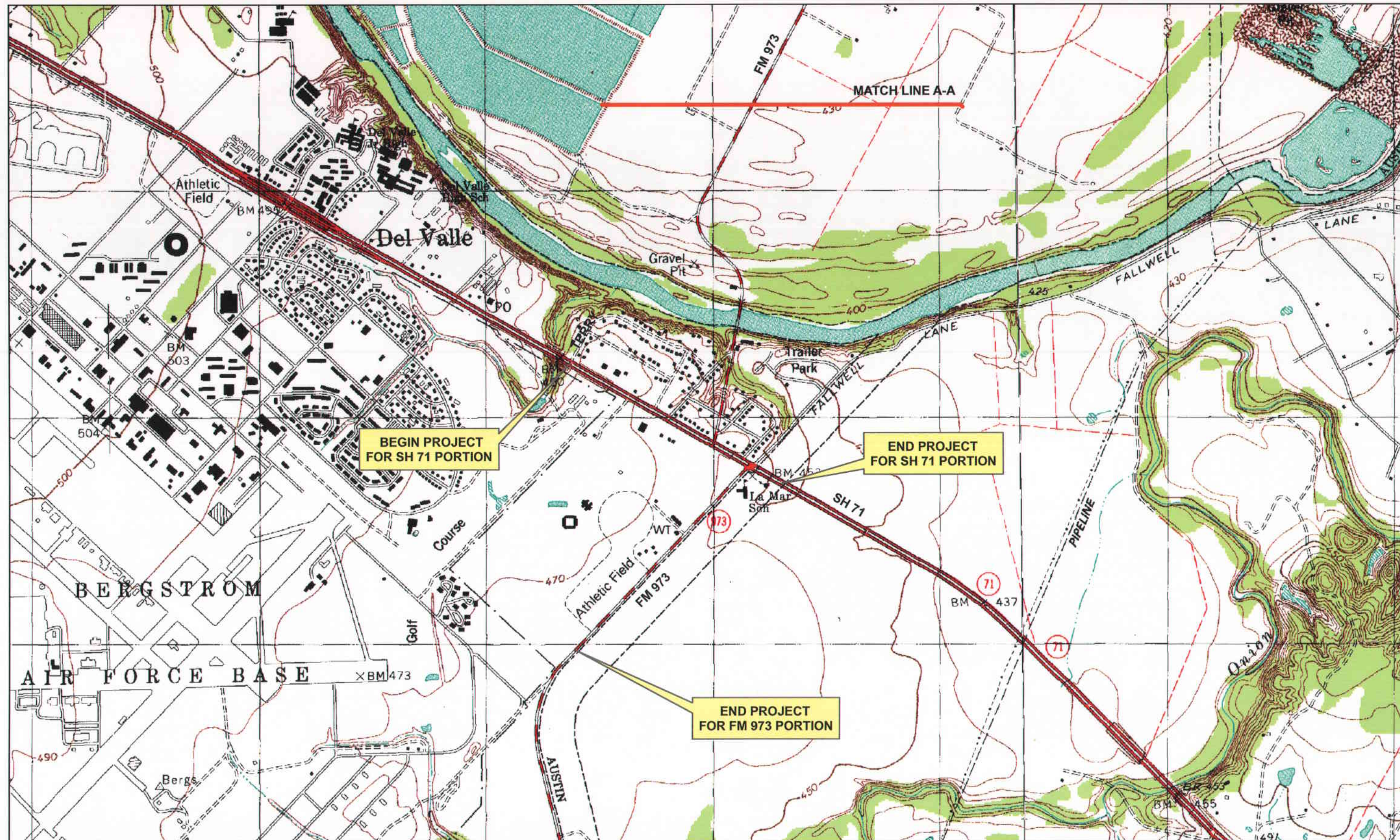
TOPOGRAPHICAL MAP
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE

CSJ: 1200-03-028, etc.

TRAVIS COUNTY

FIGURE 5

SHEET 1 OF 2



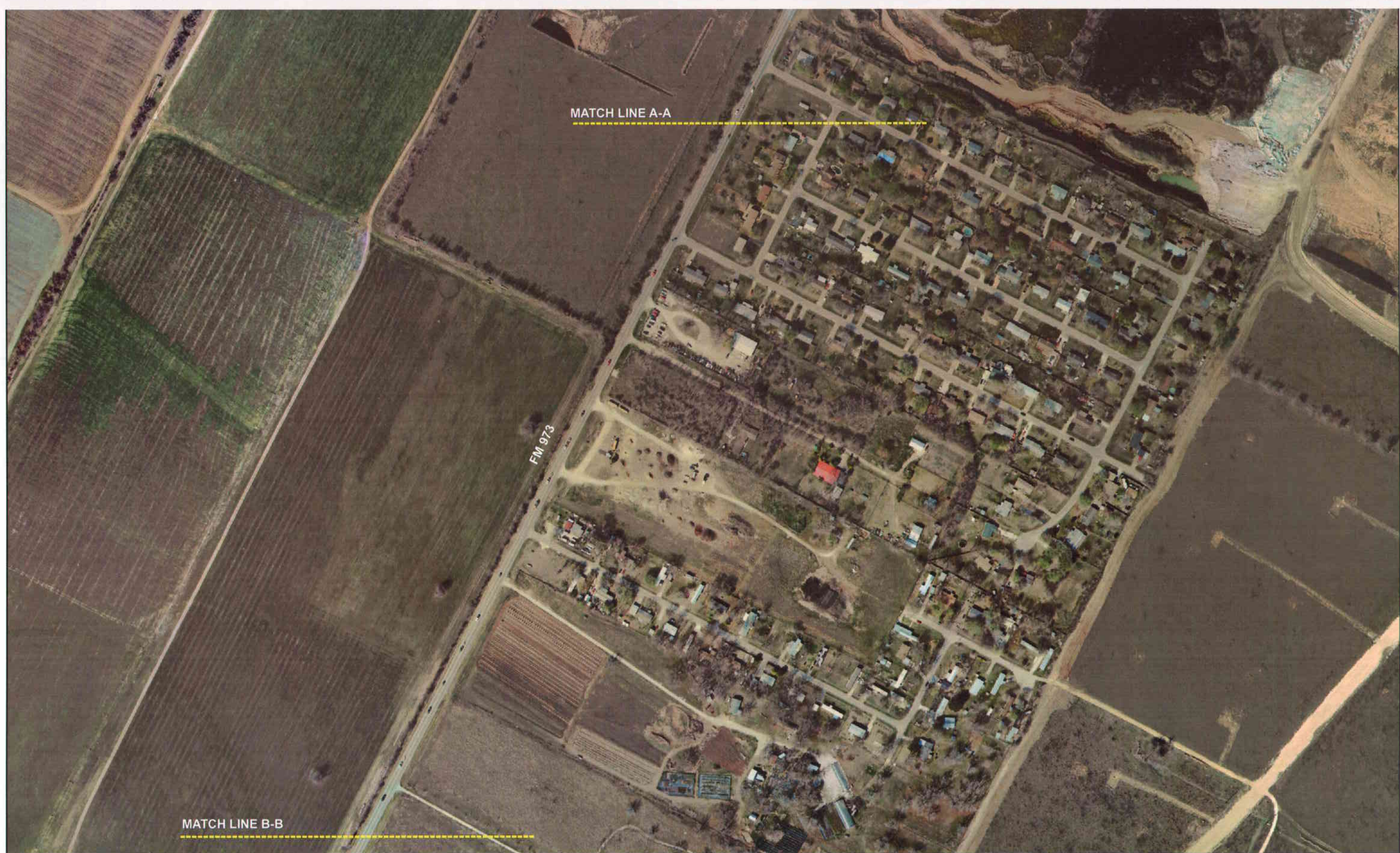
MONTOPOLIS QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)
Scale: 1 inch = 1,320 feet
1:15,840
DATE = CREATED 1988

TOPOGRAPHICAL MAP
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 5



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

AERIAL PHOTOGRAPH
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 6



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

AERIAL PHOTOGRAPH
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 6



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006



AERIAL PHOTOGRAPH
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY

FIGURE 6

SHEET 3 OF 6



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

AERIAL PHOTOGRAPH
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 6



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

AERIAL PHOTOGRAPH
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

AERIAL PHOTOGRAPH
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY

FIGURE 6

SHEET 6 OF 6



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

LEGEND

- CENSUS BLOCK BOUNDARY
- CT - CENSUS TRACK
- BG - BLOCK GROUP

BEGIN PROJECT
FOR FM 973 PORTION

HAROLD GREEN DRIVE

FM 973

CT 22.06
BG 5
BLOCK 5027

CT 22.06
BG 5
BLOCK 5018

CT 22.06
BG 5
BLOCK 5028

CT 22.06
BG 5
BLOCK 5029

MATCH LINE A-A

CENSUS BLOCKS

FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE

CSJ: 1200-03-028, etc.
TRAVIS COUNTY

FIGURE 7

SHEET 1 OF 6



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

LEGEND

- CENSUS BLOCK BOUNDARY
- CT - CENSUS TRACK
- BG - BLOCK GROUP

CENSUS BLOCKS
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY

FIGURE 7



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

LEGEND

- CENSUS BLOCK BOUNDARY
- CT - CENSUS TRACK
- BG - BLOCK GROUP



CENSUS BLOCKS
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 7



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

LEGEND

- CENSUS BLOCK BOUNDARY
- CT - CENSUS TRACT
- BG - BLOCK GROUP

CENSUS BLOCKS
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 7



MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

LEGEND
— CENSUS BLOCK BOUNDARY
CT - CENSUS TRACT
BG - BLOCK GROUP

CENSUS BLOCKS
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 7



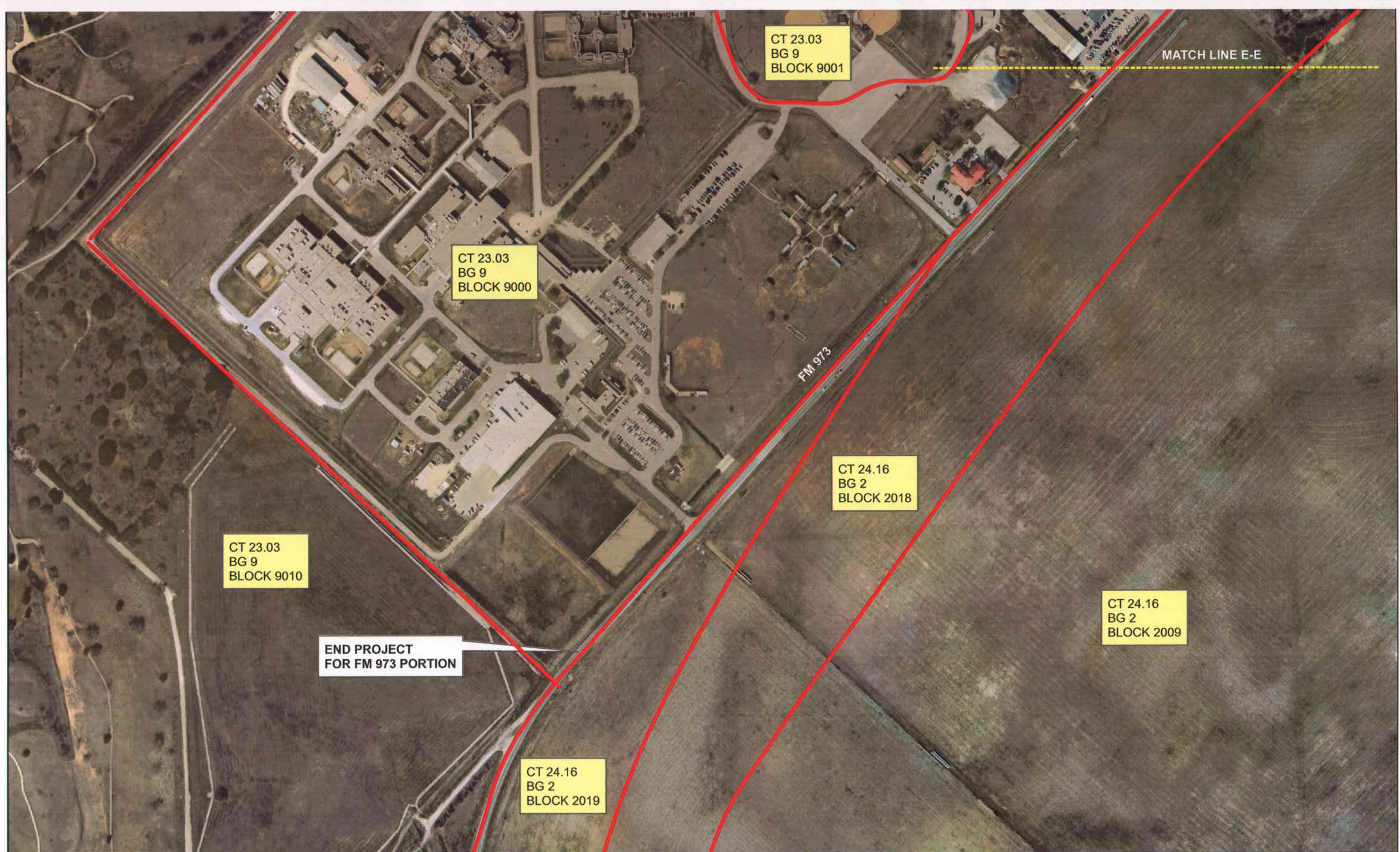
MONTOPOLIS QUADRANGLE
SCALE: 1 inch = 300 feet
1:3,600
FLIGHT DATE: 2006

LEGEND

- CENSUS BLOCK BOUNDARY
- CT - CENSUS TRACK
- BG - BLOCK GROUP

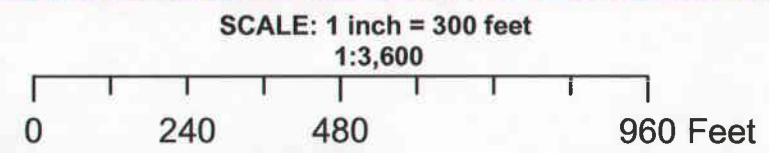
CENSUS BLOCKS
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY

FIGURE 7

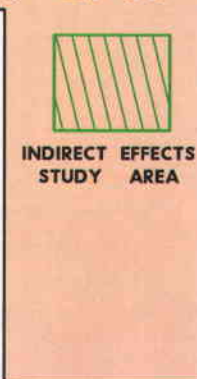
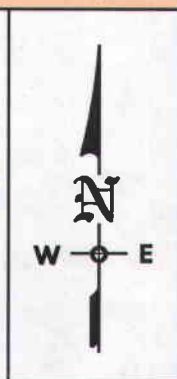
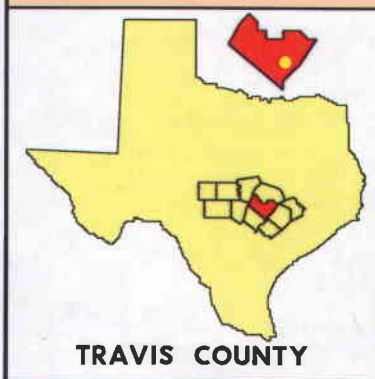
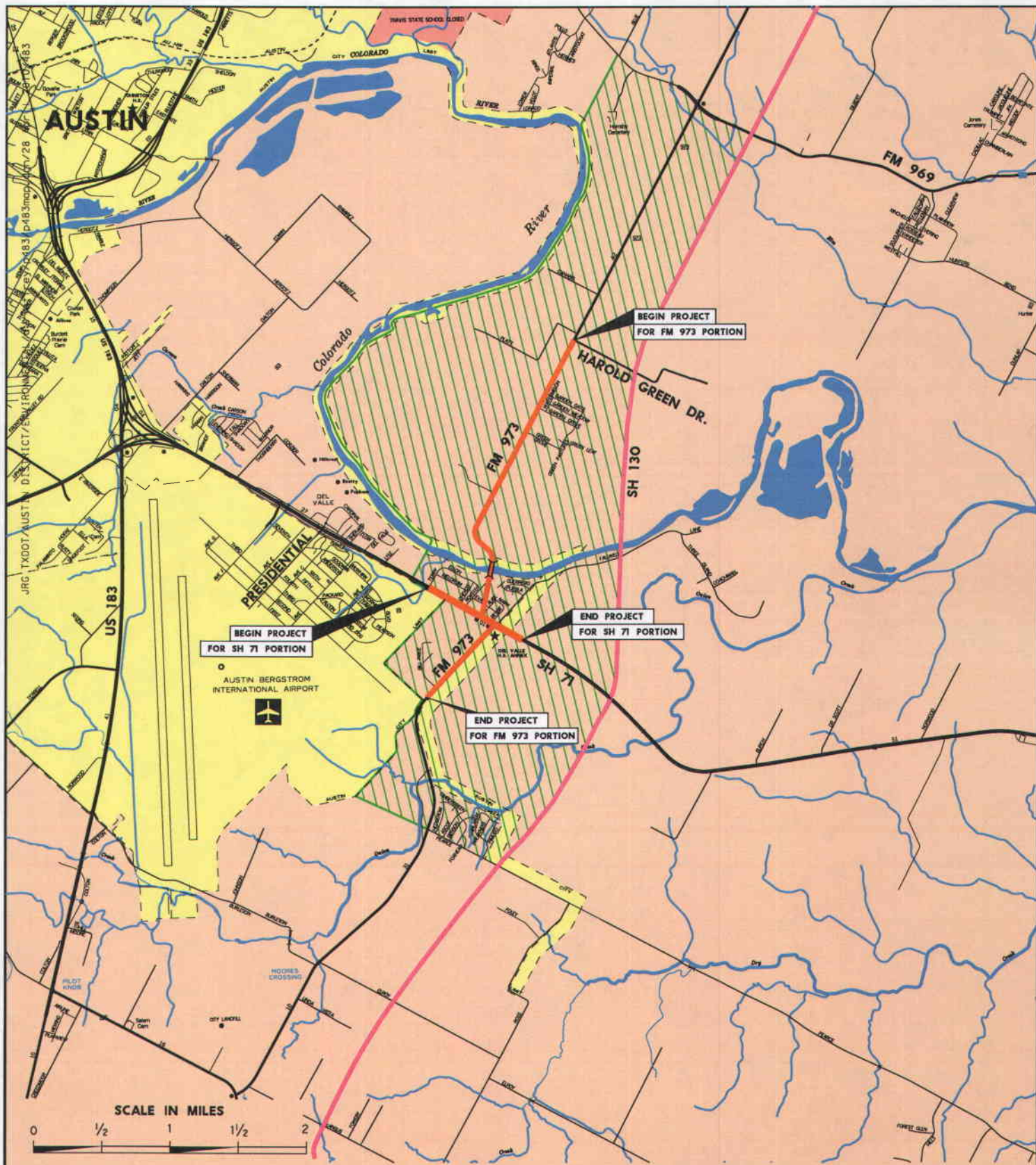




MONTOPOLIS QUADRANGLE
FLIGHT DATE: February 2008



HAZARDOUS MATERIAL SITES
FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE
CSJ: 1200-03-028, etc.
TRAVIS COUNTY
FIGURE 8



INDIRECT EFFECTS STUDY AREA

FM 973: FROM HAROLD GREEN DRIVE TO PEARCE LANE

CSJ: 1200-03-028, etc.

FIGURE 9

APPENDIX A: PREVIOUS ENVIRONMENTAL CLEARANCES



Shirley
File

MEMORANDUM

TO: Mike Walker
Environmental Coordinator
Austin District

FROM: Thomas C. Bruechert
Project Management Section
Environmental Affairs Division

SUBJECT: STP ()R
Programmatic Categorical Exclusion
Travis County
CSJ 1200-03-033

DATE: March 29, 2002

Thomas C Bruechert

T.X.D.O.T.
Received

APR 05 2002

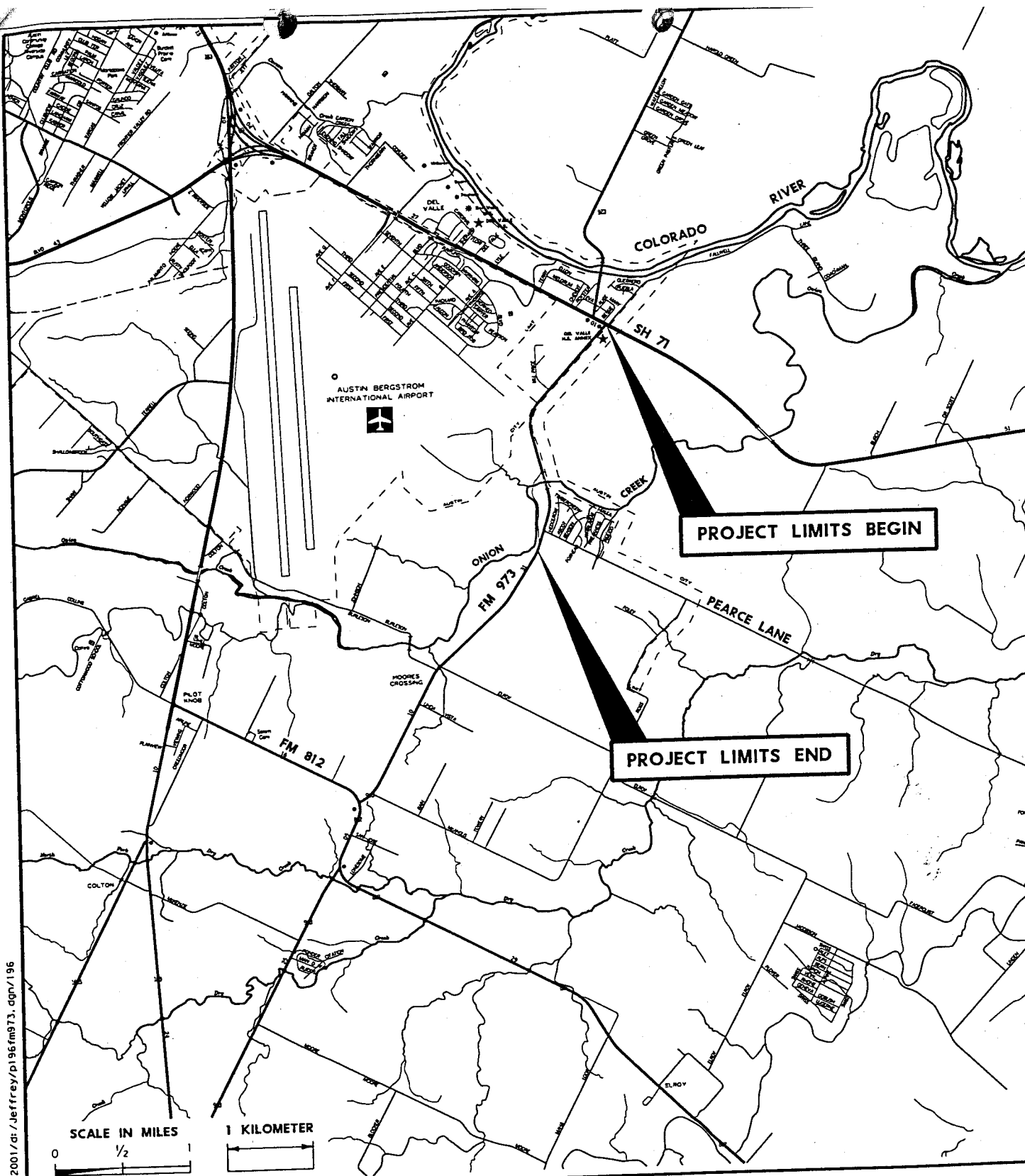
District 14
APD

FM 973: From south of SH 71 to 0.15 miles south of Pearce Lane

We have reviewed the environmental documentation submitted by your memorandum dated November 28, 2002 and concur that the subject project is classified as a Programmatic Categorical Exclusion. This project was placed on the historic structures monthly list and the archeological monthly list; the State Historic Preservation Office (SHPO) approved these lists on January 8, 2002 and March 7, 2002 respectively.

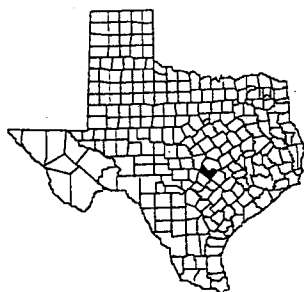
No further resource agency coordination is required. You may now proceed with the next stage of project development.

JRG TXDOT/AUSTIN DISTRICT/APD/24 OCTOBER 2001/d:/Jeffrey/p196fm973.dgn/196



SCALE IN MILES
0 1/2

1 KILOMETER



TRAVIS COUNTY



PROJECT LOCATION MAP

FM 973: FROM SOUTH OF SH 71 TO
0.15 MILES SOUTH OF PEARCE LANE

CSJ: 1200-03-033

TRAVIS COUNTY

FIGURE 1



MEMORANDUM

*Mark
Lammis
file*

TO: Mr. Mike Walker
Environmental Coordinator
Austin District

DATE: May 5, 2004

FROM: Julie Perales *Julie Perales*
Project Management Section
Environmental Affairs Division

SUBJECT: BR ()
Programmatic Categorical Exclusion – **Conditional Clearance**
Travis County
CSJ 1200-03-028

F.M. 973: At the Colorado River

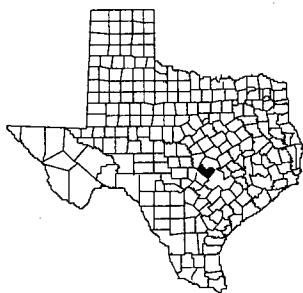
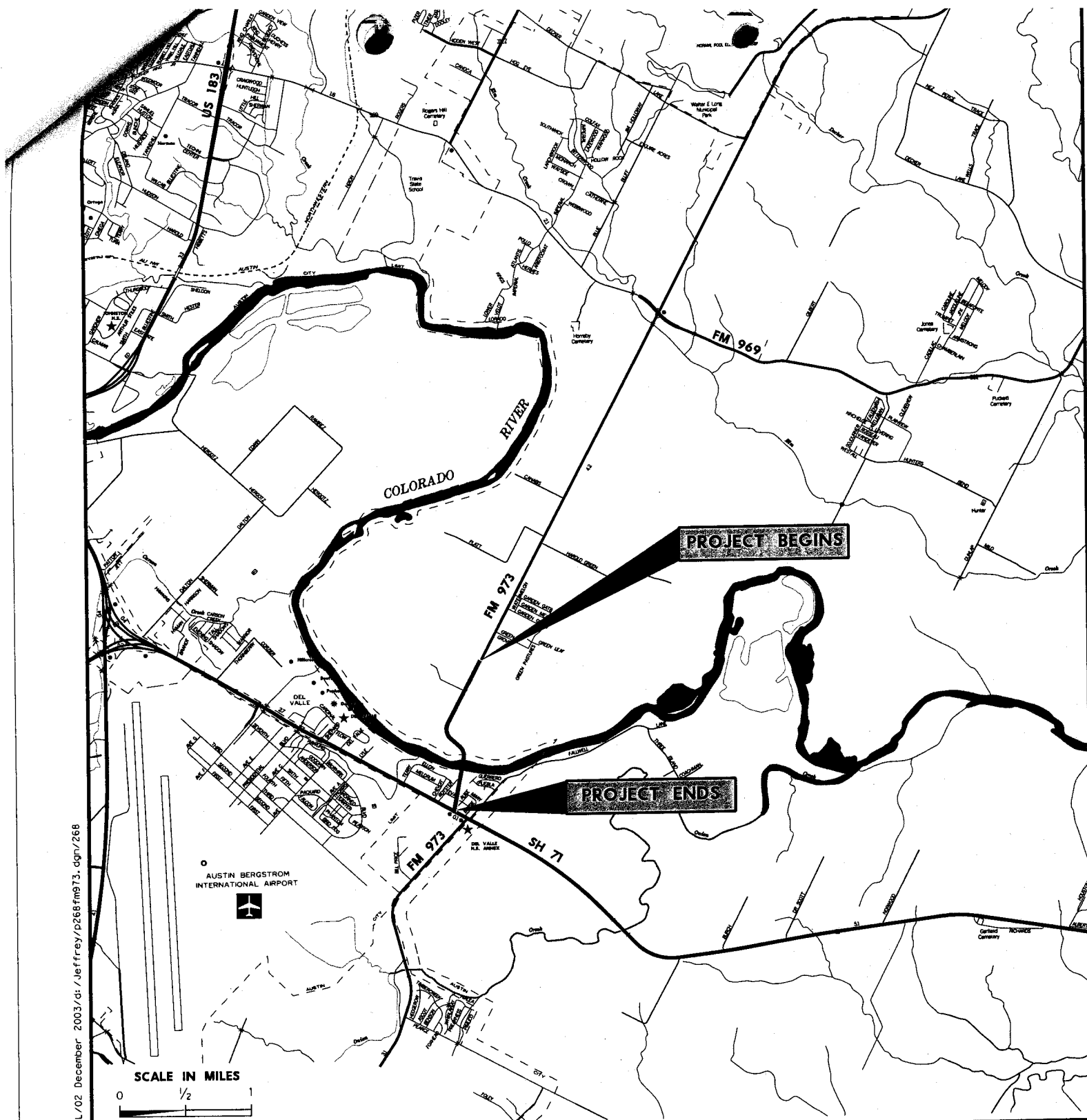
We have reviewed the revised environmental documentation submitted by your memorandum dated February 3, 2004, and concur that the subject project is classified as a Programmatic Categorical Exclusion.

Attached is one copy of our letter, dated January 22, 2004, on which the office of the State Historic Preservation Officer (SHPO) has concurred that there are no properties 50 years of age or older within the area of potential effect for this project. Also attached is a copy of our letter, dated March 15, 2004 on which the office of the SHPO has concurred with our plans to proceed to right of way acquisition, conduct the necessary archeological survey, and complete coordination with the Texas Historical Commission before construction begins for this project. In addition, coordination will be necessary with the Native American Tribes once the results of the archeological survey are known.

Coordination with the Wildlife Habitat Assessment Branch (only) of the Texas Parks and Wildlife Department (TPWD) was initiated, however, we have not received a response from the TPWD as of this date. If TPWD does respond, we will forward a copy of their response to your office. We concur that a Nationwide #14 Permit may be assumed for this project since less than 1/10 of an acre will be impacted by the proposed work. You may now proceed with the next stage of project development.

Attachments

cc: Right of Way Division



TRAVIS COUNTY



PROJECT LOCATION MAP

FM 973: FROM 2.94 MILES SOUTH OF
FM 969 TO SH 71

CSJ: 1200-03-028

TRAVIS COUNTY

FIGURE 1

APPENDIX B: PHOTOGRAPHS



Looking south along FM 973 from Harold Green Drive (Begin Project).



Looking south along FM 973 at Golden Gate Drive.



Looking north along FM 973 at Golden Gate Drive.



Looking south along FM 973 at Hornsby Bend Treatment Plant.



Looking north along FM 973 at Hornsby Bend Treatment Plant.



Looking south along FM 973 at the Colorado River.



Looking northwest along FM 973 at the Colorado River.



Looking south at the Colorado River bridge.



Looking north at the Colorado River bridge.



Looking south along FM 973 toward the SH 71 intersection.



Looking north along FM 973 south of the SH 71 intersection.



Looking south at the SH 71 intersection.



Looking east along SH 71 (eastbound lanes) at FM 973 south intersection.



Looking east along SH 71 (westbound lanes) at FM 973 north intersection.



Looking west along SH 71 (eastbound lanes) toward FM 973 north intersection).



Looking west along SH 71 (westbound lanes) at FM 973 north intersection.

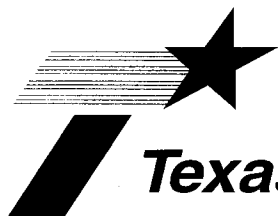


Looking south along FM 973 from the SH 71 intersection.



Looking north along FM 973 from end of project

APPENDIX C: AGENCY COORDINATION LETTERS



Texas Department of Transportation

P.O. DRAWER 15426 • AUSTIN, TEXAS 78761-5426 • (512) 832-7000

November 6, 2007

CSJ: 1200-03-028 & 1200-03-033
Farm-to-Market Road 973
From Harold Green Drive
To 0.5 Miles South of State Highway 71
Travis County

Barry Hutcheson
Travis County Historical Commission
5803 Burrough Dr
Austin, Texas 78745

Dear Mr. Hutcheson,

The Texas Department of Transportation (TxDOT) is proposing to replace the bridge on FM 973 at the Colorado River in Travis County. A project location map is attached.

This bridge was included in the State Historic Bridge Inventory, a statewide study of historic bridges that TxDOT conducted in cooperation with the Texas Historical Commission. Because the bridge did not meet our criteria for statewide significance, it has been determined not eligible for listing in the National Register of Historic Places.

The bridge is not listed on the National Register of Historic Places, nor does it have any known State significance. However, TxDOT recognizes that it may have other local/regional associations. If you feel that the bridge is significant at a local or regional level, then please provide written information concerning the history of the bridge and its role in your community's history. It would be appreciated if this information could be submitted within 30 days from the date of this letter.

If you feel that the bridge does not have any local/regional significance, then please endorse this letter and return it to our office in the self-addressed stamped envelope by December 6, 2007. This endorsement will signify your concurrence that the bridge is not historically significant. If no response is received by December 6, 2007, it will be assumed that you concur that the bridge is not historically significant.

Mr. Hutcheson

2

November 6, 2007

If you have any questions regarding this matter, please contact Mr. Dennis Nielsen at 512-832-7056.

Sincerely,



Michael R. Walker
Environmental Coordinator
Austin District

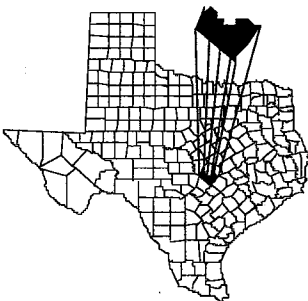
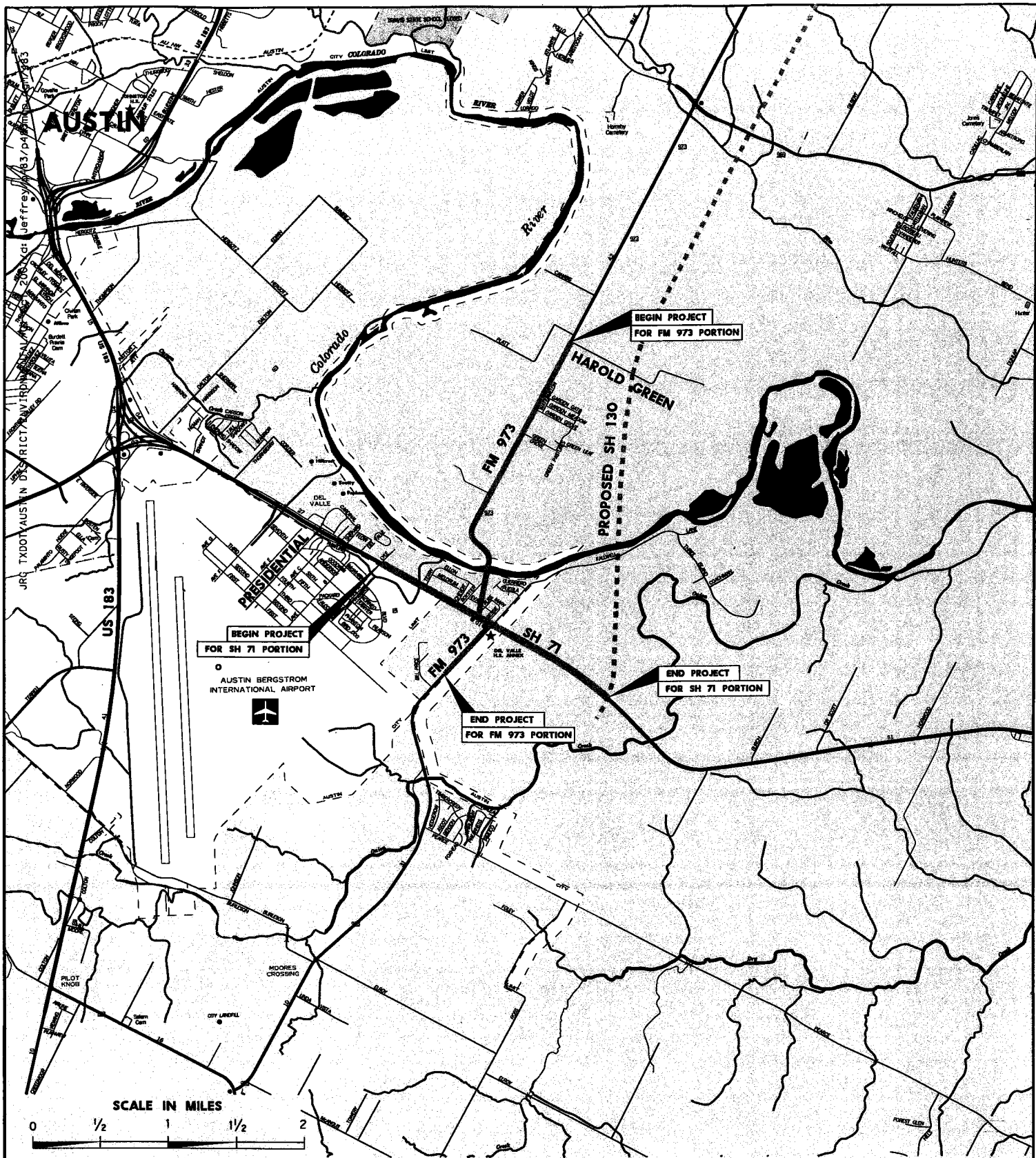
Endorsement of the County Historical Chairperson

Name

Date

Attachments

cc: Ron Davis, Travis County Commissioner, Precinct 1
Margaret Gomez, Travis County Commissioner, Precinct 4
Terry McCoy, P.E., North Austin Area Engineer



TRAVIS COUNTY



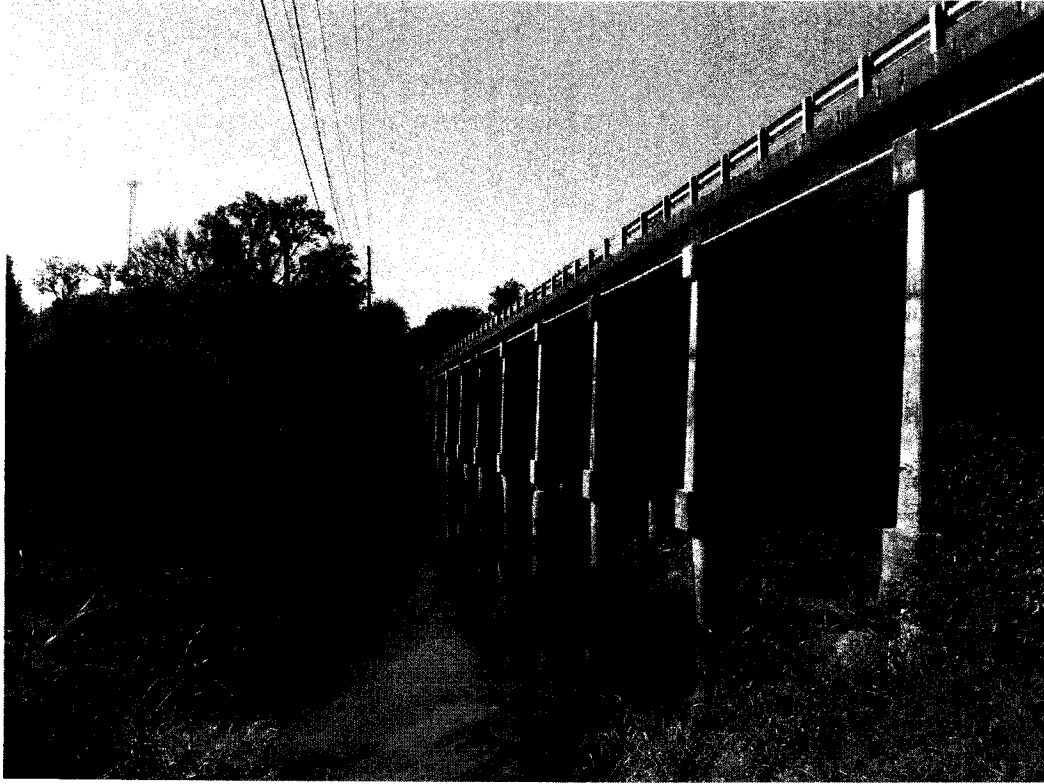
PROJECT LOCATION MAP

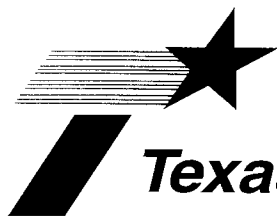
FM 973: FROM HAROLD GREEN TO APPROX
0.5 MILES SOUTH OF SH 71; SH 71 FROM
EAST OF PRESIDENTIAL TO SH 130

CSJ: 1200-03-028, etc.

FIGURE 1

CSJ: 1200-03-028 & 1200-03-033
Bridge at Colorado River





Texas Department of Transportation

P.O. DRAWER 15426 • AUSTIN, TEXAS 78761-5426 • (512) 832-7000

November 6, 2007

Commander (obc)
Eighth Coast Guard District
Hale Boggs Federal Building
501 Magazine Street
New Orleans, LA 70130-3396

Re: CSJ: 1200-03-028 & 1200-03-033
Farm-to-Market Road 973
From Harold Green Drive
To 0.5 Miles South of State Highway 71
Travis County

Dear Sir:

The Texas Department of Transportation (TxDOT) is currently in the planning stages to upgrade Farm-to-Market Road (FM) 973 in Travis County, Texas. As part of the project, the existing bridge over the Colorado River would be replaced with two new bridges. Attached for your information are a location map and photographs of the existing bridge.

For purposes of Section 10 of the Rivers and Harbors Act of 1899, the Colorado River at FM 973 is within the segment of the Colorado River considered as navigable on the U.S. Army Corps of Engineers (USACE) Fort Worth District March 20, 1999, *Navigable Waters of the United States in the Fort Worth, Albuquerque, and Tulsa Districts Within the State of Texas* list. The proposed project is located approximately 170 miles above the mouth of the Colorado River. The proposed vertical clearance between the Colorado River and proposed bridge would be approximately six feet higher than the existing vertical clearance. TxDOT requests your determination on the need for a Section 9 Permit under the Rivers and Harbors Act for this proposed project. Our office is currently coordinating with the USACE Fort Worth District on the need for a Section 10 Permit under the Rivers and Harbors Act.

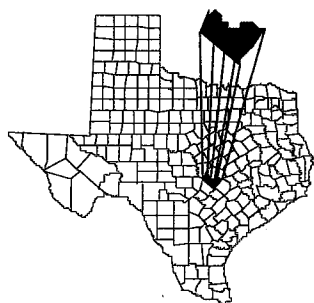
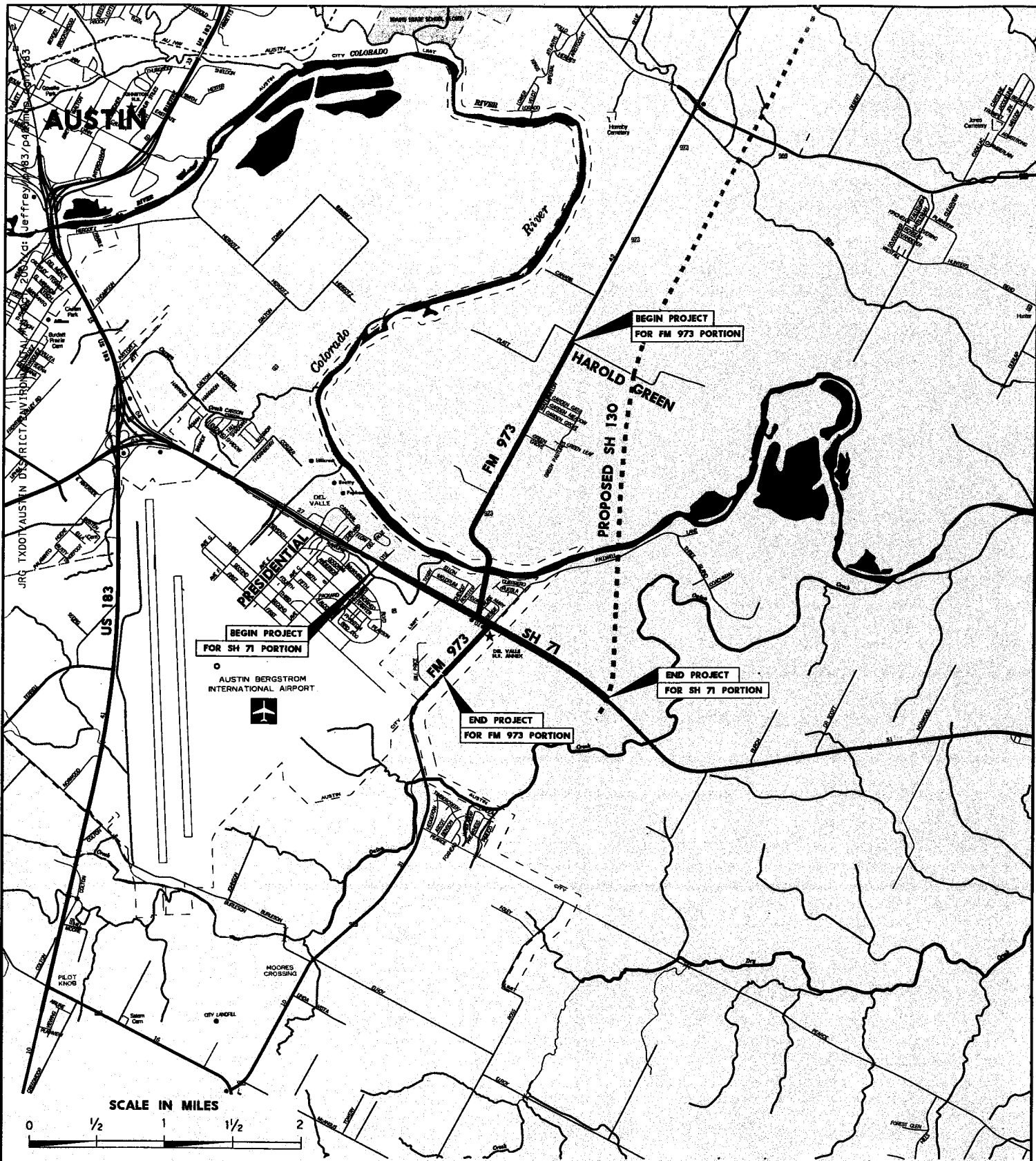
If you have any questions regarding this proposed project, please contact Mr. Dennis Nielsen at (512) 832-7056.

Sincerely,

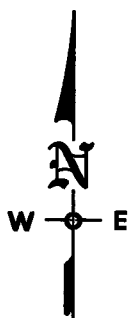
Michael R. Walker
Environmental Coordinator
Austin District

Attachments

cc: Terry McCoy, P.E., TxDOT, North Travis Area Office



TRAVIS COUNTY

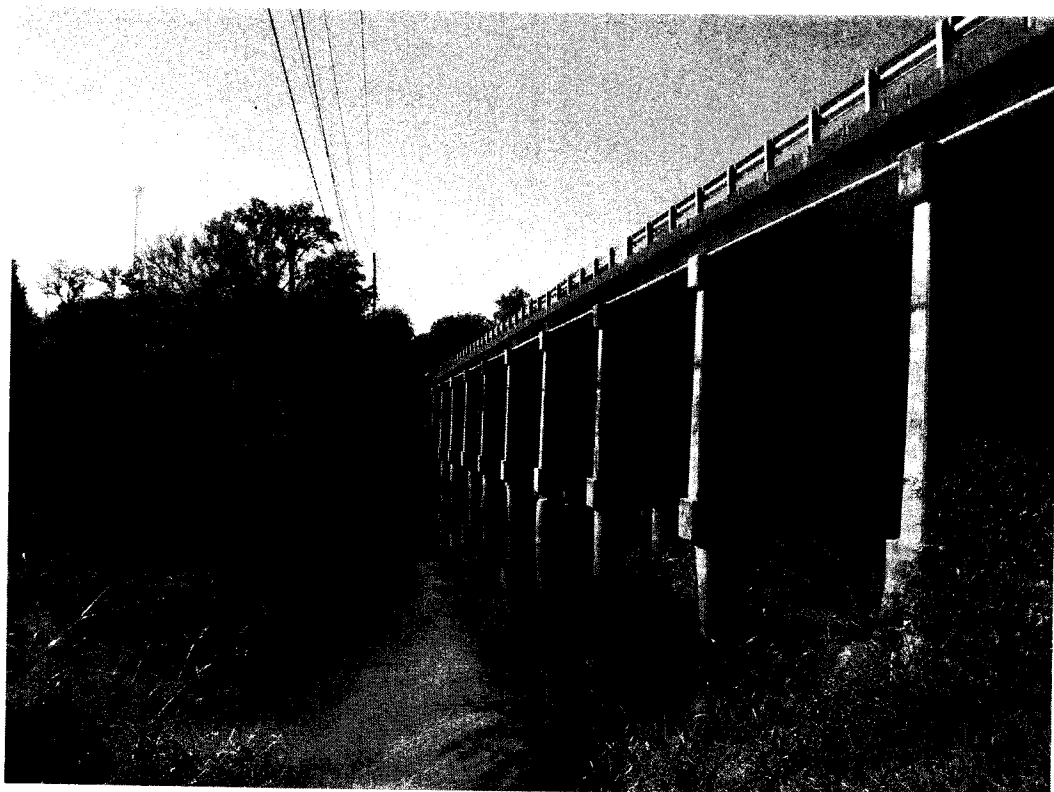


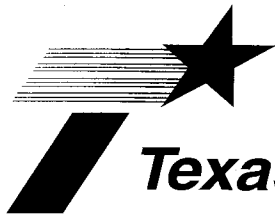
PROJECT LOCATION MAP

**FM 973: FROM HAROLD GREEN TO APPROX
0.5 MILES SOUTH OF SH 71; SH 71 FROM
EAST OF PRESIDENTIAL TO SH 130**

CSJ: 1200-03-028, etc.

FIGURE 1





Texas Department of Transportation

P.O. DRAWER 15426 • AUSTIN, TEXAS 78761-5426 • (512) 832-7000

November 6, 2007

Mr. Wayne Lea
United States Army Corps of Engineers
Fort Worth District Regulatory Branch
Attn: CESWF-OD-R
P.O. Box 17300
Fort Worth, Texas 76102-0300

Re: CSJ: 1200-03-028 & 1200-03-033
Farm-to-Market Road 973
From Harold Green Drive
To 0.5 Miles South of State Highway 71
Travis County

Dear Mr. Lea:

The Texas Department of Transportation (TxDOT) is currently in the planning stages to upgrade Farm-to-Market Road (FM) 973 in Travis County, Texas. As part of the project, the existing bridge over the Colorado River would need to be replaced with two new bridges. Attached for your information are a location map and photographs of the existing bridge.

The Colorado River at FM 973 is within the segment of the Colorado River considered as navigable on the March 20, 1999, *Navigable Waters of the United States in the Fort Worth, Albuquerque, and Tulsa Districts within the State of Texas* list. Our office is currently coordinating with the U.S. Coast Guard on the need for a Section 9 Permit under the Rivers and Harbors Act of 1899.

TxDOT requests your determination on the need for a Section 10 Permit under the Rivers and Harbors Act for this proposed project.

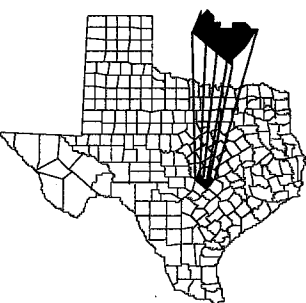
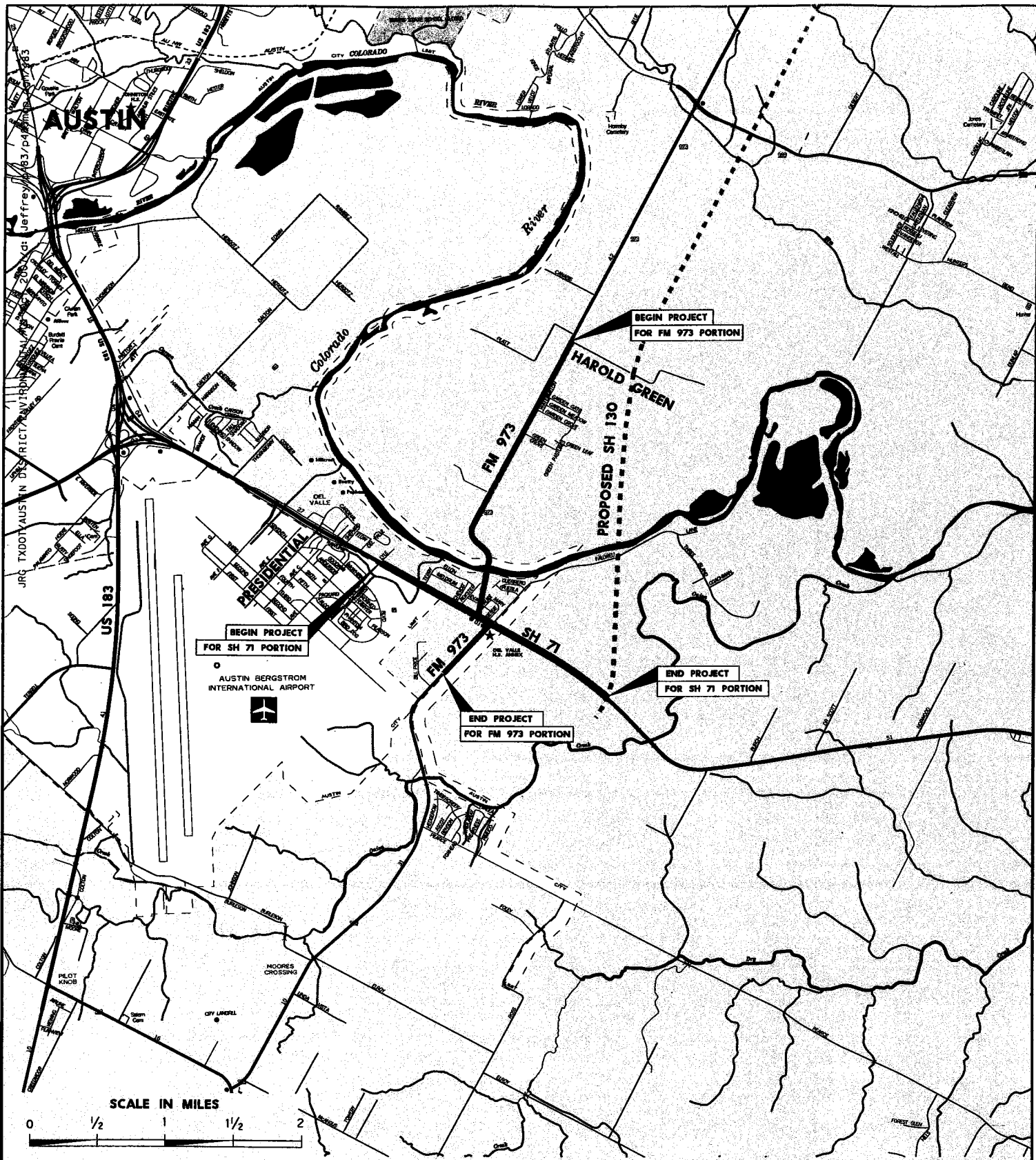
If you have any questions regarding this proposed project, please contact Mr. Dennis Nielsen at (512) 832-7056.

Sincerely,

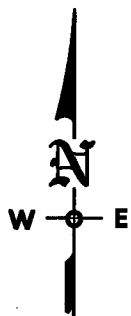
Michael R. Walker
Environmental Coordinator
Austin District

Attachments

cc: Terry McCoy, P.E., TxDOT, North Travis Area Office



TRAVIS COUNTY



PROJECT LOCATION MAP

FM 973: FROM HAROLD GREEN TO APPROX
0.5 MILES SOUTH OF SH 71; SH 71 FROM
EAST OF PRESIDENTIAL TO SH 130

CSJ: 1200-03-028, etc.

FIGURE 1





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

REPLY TO
ATTENTION OF:

November 9, 2007

T.X.D.O.T
Received

NOV 13 2007

AUS - Environmental
District 14
Austin, Texas

Planning, Environmental, and Regulatory Division
Regulatory Branch

SUBJECT: Project Number SWF-2007-00517, FM 973 Bridge over the Colorado River

Mr. Dennis Nielsen
Texas Department of Transportation
P.O. Drawer 15426
Austin, Texas 78761-5426

Dear Mr. Nielsen:

Thank you for your letter dated November 6, 2007. Your request has been assigned Project Number SWF-2007-00517.

Mr. Elliott Carman has been assigned as the regulatory project manager for your request and will be evaluating it as expeditiously as possible. However, because of our permit workload it will take a while for us to respond.

You may be contacted for additional information about your request. For your information, please reference the Fort Worth District Regulatory Branch homepage at <http://www.swf.usace.army.mil/regulatory/> and particularly guidance on submittals at <http://www.swf.usace.army.mil/pubdata/enviro/regulatory/introduction/submittal.pdf>, and mitigation at <http://www.swf.usace.army.mil/pubdata/enviro/regulatory/permitting/mitigation/fwmitguid.pdf> that may help you supplement your current request or prepare future requests.

If you have any questions about the evaluation of your submittal or would like to request a copy of one of the documents referenced above, please contact Mr. Carman at the address above or telephone (817)886-1662 and refer to your assigned project number. Please note that it is unlawful to start work without a Department of the Army permit if one is required.

Wayne A. Lea
Chief, Regulatory Branch

U.S. Department of
Homeland Security

United States
Coast Guard



Commander
Eighth Coast Guard District
Hale Boggs Federal Building

500 Poydras Street
New Orleans, LA 70130-3310
Staff Symbol: dpb
Phone: 504-671-2128
Fax: 504-671-2133

*MAKES
DENNIS
FILE*

16591D
November 19, 2007

TEXAS DEPARTMENT OF TRANSPORTATION
ATTN MR MICHAEL WALKER
P O DRAWER 15426
AUSTIN TEXAS 78761-5426

**T.X.D.O.T
Received**

NOV 27 2007

Dear Mr. Walker:

We are referencing your letter dated November 6, 2007 regarding the proposed replacement of the existing bridge on Farm-to-Market Road (FM) 973 crossing the Colorado River in Travis County, Texas.

**AUS - Environmental
District 12
Austin, Texas**

At the proposed bridge replacement site, the Colorado River has been determined to be a non-navigable waterway and not subject to Coast Guard jurisdiction. As a result, a Coast Guard bridge permit will not be required for any proposed replacement project for this structure on FM 973 and no further Coast Guard action will be taken.

However, we do suggest that plans for any proposed replacement bridge should provide for navigational clearances to accommodate any recreational boating that may exist at high water. Specifically, the bridge should be constructed to provide clearances equal to or greater than the existing bridge. Also, plans for the proposed bridge must have no significant impact on the environment. Prior to construction of the bridge, you should contact the Federal Emergency Management Agency, as well as your local Floodplain Administrator to ensure that the bridge is at an appropriate elevation to pass floodwaters.

Maintenance of the bridge is the responsibility of the owner. If the bridge falls into disrepair or is no longer used for its intended purpose, it must be removed by and at the expense of the owner in its entirety. Furthermore, the bridge must be maintained free and clear of debris at all times. This determination does not relieve you of your responsibility to obtain appropriate permits from any other federal or state and local agencies having jurisdiction in this matter.

If you need additional assistance, please contact us.

Sincerely,

DAVID M. FRANK
Chief, Bridge Administration Branch
U.S. Coast Guard
By direction

APPENDIX D: NOISE ANALYSIS

This analysis was accomplished in accordance with TxDOT's (FHWA approved) Guidelines for Analysis and Abatement of Highway Traffic Noise.

Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It is commonly measured in decibels and is expressed as "dB."

Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)."

Also, because traffic sound levels are never constant due to the changing number, type and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "Leq."

The traffic noise analysis typically includes the following elements:

- Identification of land use activity areas that might be impacted by traffic noise.
- Determination of existing noise levels.
- Prediction of future noise levels.
- Identification of possible noise impacts.
- Consideration and evaluation of measures to reduce noise impacts.

The FHWA has established the following Noise Abatement Criteria (NAC) for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur.

TableD1
Noise Abatement Criteria

Activity Category	FHWA dB(A) Leq	TxDOT dB(A) Leq	Description of Land Use Activity Areas
A	57 (exterior)	56 (exterior)	Lands on which serenity and quiet are of extra-ordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	66 (exterior)	Residential
C	67 (exterior)	66 (exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools , television studios, trails, and trail crossings
D	52 (interior)	51 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E	72 (exterior)	71 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	--	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	Undeveloped lands that are not permitted.

NOTE: primary consideration is given to exterior areas (Category A, B, C, or E) where frequent human activity occurs. However, interior areas (Category D) are used if exterior areas are physically shielded from the roadway, or if there is little or no human activity in exterior areas adjacent to the roadway.

A noise impact would occur when either the absolute or relative criterion is met:

Absolute criterion: the predicted noise level at a receiver approaches, equals or exceeds the NAC. "Approach" is defined as one dB(A) below the NAC. For example: a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dB(A) or above.

Relative criterion: the predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the NAC. "Substantially exceeds" is defined as more than 10 dB(A). For example: a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area.

The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type and speed of vehicles; highway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise.

Existing and predicted traffic noise levels were modeled at receivers (**Table D2** and **Figure D1**) that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

Table D2
FM 973 Traffic Noise Levels (dBA L_{eq})

Receiver	NAC Category	NAC Level	Existing	Predicted 2027	Change (+/-)	Noise Impact
R1 (Residence)	B	67	64	65	+1	No
R2 (Residence)	B	67	62	63	+1	No
R3 (Residence)	B	67	62	63	+1	No
R4 (Residence)	B	67	62	63	+1	No
R5 (Residence)	B	67	66	66	0	Yes
R6 (Business)	C	72	66	66	0	No
R7 (Residence)	B	67	56	69	+13	Yes
R8 (Residence)	B	67	59	72	+13	Yes
R9 (Residence)	B	67	65	76	+11	Yes
R10 (Residence)	B	67	72	73	+1	Yes
R11 (Residence)	B	67	69	71	+2	Yes
R12 (Residence)	B	67	74	75	+1	Yes

As indicated in **Tables D2**, the proposed project would result in a traffic noise impact and the following noise abatement measures were considered: traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone and the construction of noise walls.

Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. In order to be "feasible," the abatement measure must be able to reduce the noise level at greater than 50% of impacted, first row receivers by at least five

dB(A); and to be "reasonable," it must not exceed the cost-effectiveness criterion of \$25,000 for each receiver that would benefit by a reduction of at least five dB(A) and the abatement measure must be able to reduce the noise level at least one impacted, first row receiver by at least seven dB(A).

Traffic management: control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dB(A) per five mph reduction in speed does not outweigh the associated increase in congestion and air pollution. Other measures such as time or use restrictions for certain vehicles are prohibited on state highways.

Alteration of horizontal and/or vertical alignments: any further alteration of the existing alignments would displace existing businesses and residences, require more right of way than originally proposed and would not be cost effective/reasonable.

Buffer zone: the acquisition of undeveloped property to act as a buffer zone is designed to avoid rather than abate traffic noise impacts and, therefore, is not feasible.

Noise walls: this is the most commonly used noise abatement measure. Noise walls were evaluated for each impacted receiver locations with the following results:

R5: this receiver is a separate, individual residence. Noise walls that would achieve the minimum feasible reduction of 5 dB(A) at this receiver would exceed the reasonable, cost-effectiveness of \$25,000.

R7-R12: these receivers represent the residences in the vicinity of the intersection of FM 973 and SH 71. Noise walls that would achieve the minimum feasible reduction of 5 dB(A) at each of these receivers would exceed the reasonable, cost-effectiveness criterion of \$25,000.

None of the above abatement measures would be both feasible and reasonable; therefore, no noise abatement measures are proposed for this project.

Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns.

However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receivers is expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

A copy of this traffic noise analysis will be made available to local officials to ensure, to the maximum extent possible, future developments are planned, designed and programmed in a manner that would avoid traffic noise impacts. On the date of approval of this document (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

STA. 5000+00.00



STA. 5026+00.00

STA. 5026+00.00



STA. 5052+00.00

LEGEND

DESCRIPTION

SYMBOLOLOGY

PROPOSED EDGE OF PAVEMENT
EXISTING EDGE OF PAVEMENT
DRAINAGE STRUCTURE
STRIPING
PROPOSED ROW
EXISTING ROW
PROPERTY LINES
LANE DIRECTIONAL INDICATOR

—
- - -
- - -
- - -
- - -
- - -
- - -
→

PROPOSED PAVEMENT

FM 973 MAIN LANES
SH 71 FRONTAGE ROADS
BRIDGE CLASS STRUCTURE

—
—
—

SH 71 MAIN LANES
SH 71 RAMPS
TRANSITIONS TO EXISTING

—
—
—

Noise Receiver = ○

NOISE RECEIVERS

FM 973: FROM HAROLD GREEN DRIVE TO PEARCE LANE

CSJ: 1200-03-028, etc.

TRAVIS COUNTY

FIGURE DI



LEGEND

DESCRIPTION	SYMBOLLOGY
PROPOSED EDGE OF PAVEMENT	
EXISTING EDGE OF PAVEMENT	
DRAINAGE STRUCTURE	
STRIPING	
PROPOSED ROW	
EXISTING ROW	
PROPERTY LINES	
LANE DIRECTIONAL INDICATOR	

PROPOSED PAVEMENT

FM 973 MAIN LANES		SH 71 MAIN LANES	
SH 71 FRONTAGE ROADS		SH 71 RAMPS	
BRIDGE CLASS STRUCTURE		TRANSITIONS TO EXISTING	

Noise Receiver = ○

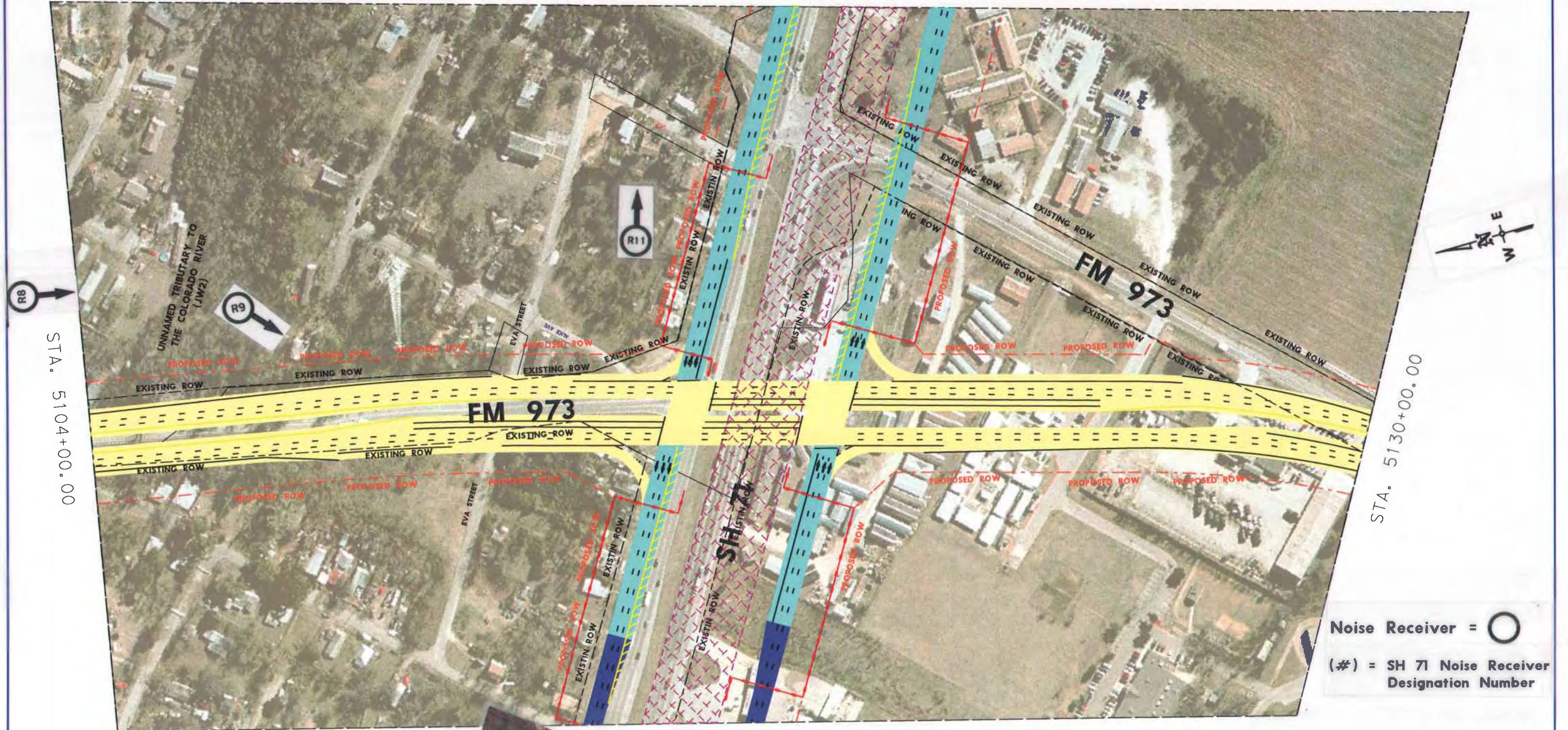
NOISE RECEIVERS

PM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE

CSJ: 1200-03-028, etc.

TRAVIS COUNTY

FIGURE DI



LEGEND

DESCRIPTION	SYMBOL
PROPOSED ROW	---
EXISTING ROW	---
PROPERTY LINES	---
CONTROL OF ACCESS	---
LANE DIRECTIONAL INDICATOR	→

PROPOSED PAVEMENT

FM 973	---
SH 71 FRONTAGE ROADS	---
TRANSITIONS	---
BRIDGE CLASS STRUCTURE	---
SH 130 UNDER CONSTRUCTION	---
FUTURE SH 71 MAINLANES	---

NOISE RECEIVERS

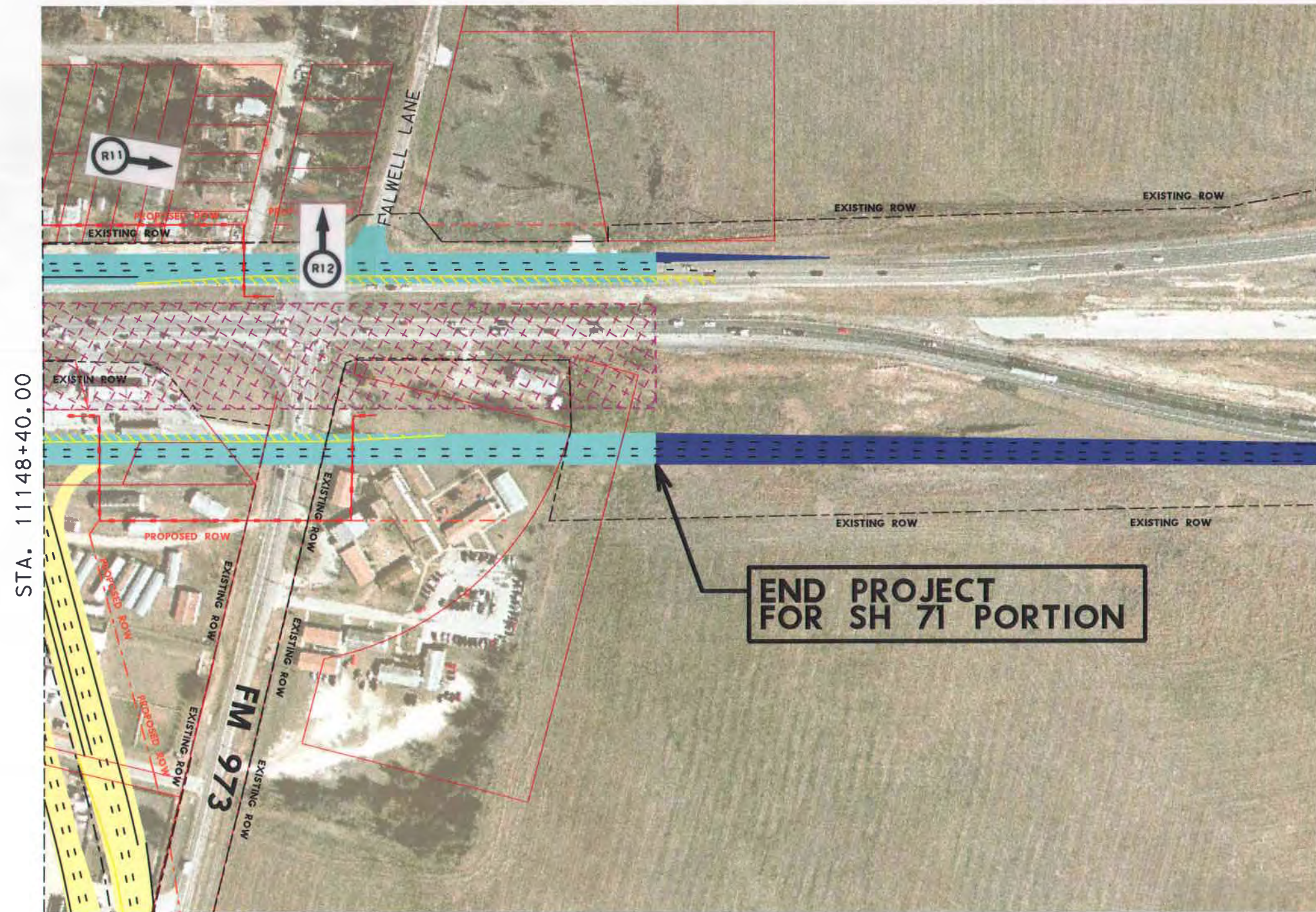
FM 973: FROM HAROLD GREEN DRIVE TO PEARCE LANE

CSJ: 1200-03-028, etc.

TRAVIS COUNTY

FIGURE DI

SHEET 4 OF 5



SCALE 1:200

LEGEND

DESCRIPTION

PROPOSED ROW
EXISTING ROW
PROPERTY LINES
CONTROL OF ACCESS
LANE DIRECTIONAL INDICATOR

SYMBOLGY

Noise Receiver =

(#) = SH 71 Noise Receiver
Designation Number

PROPOSED PAVEMENT

FM 973

SH 71 FRONTAGE ROADS

TRANSITIONS

BRIDGE CLASS STRUCTURE

SH 130 UNDER CONSTRUCTION

FUTURE SH 71 MAINLANES

NOISE RECEIVERS

FM 973: FROM HAROLD GREEN DRIVE TO
PEARCE LANE

CSJ: 1200-03-028, etc.

TRAVIS COUNTY

FIGURE DI

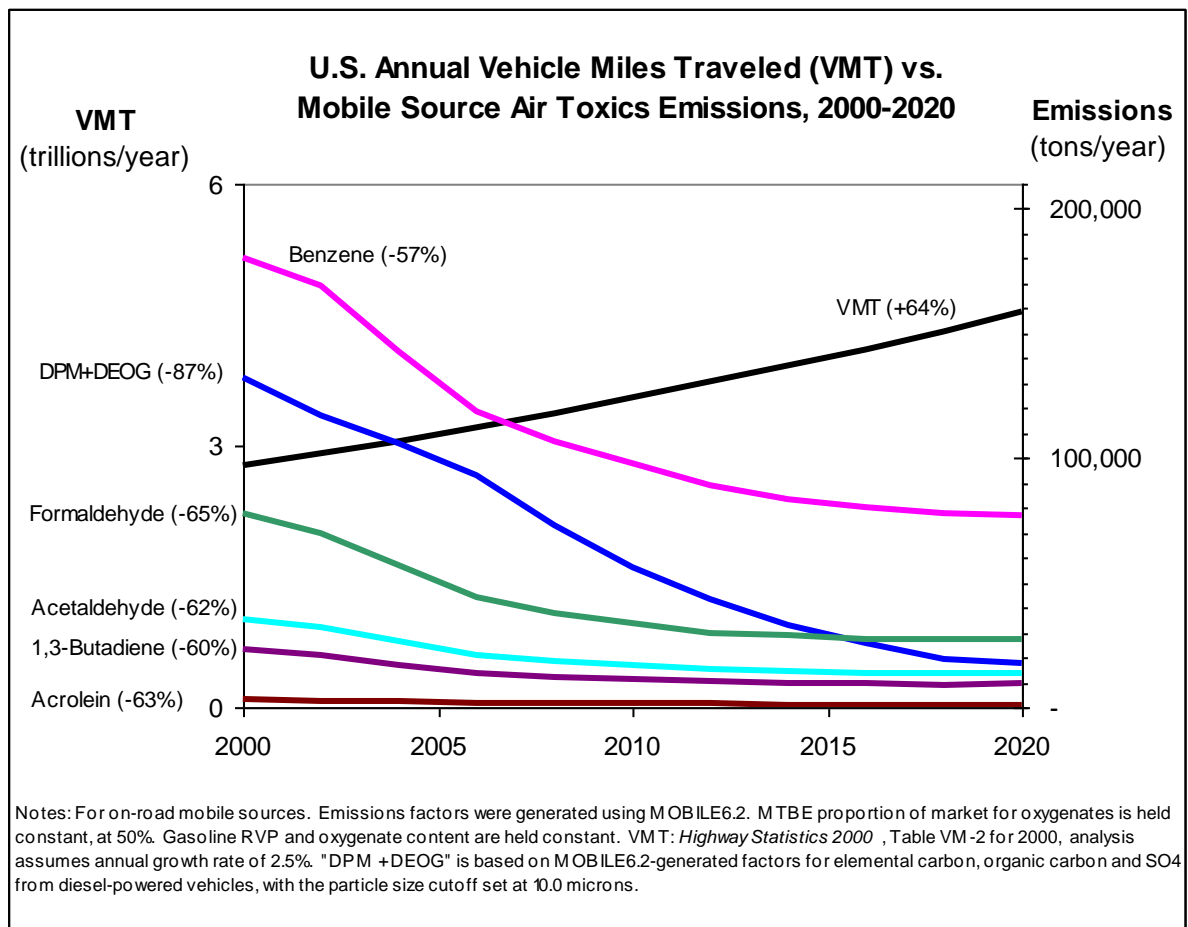
SHEET 5 OF 5

APPENDIX E: MOBILE SOURCE AIR TOXICS

In addition to the criteria for air pollutants for which there are National Ambient Air Quality Standards (NAAQS), EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act (CAA). The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead Federal Agency for administering the CAA and has certain responsibilities regarding the health effects of MSATs. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources. 66 FR 17229 (March 29, 2001). This rule was issued under the authority in Section 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent, as shown in the following graph:



In an ongoing review of MSATs, the EPA finalized additional rules under authority of CAA Section 202(l) to further reduce MSAT emissions that are not reflected in the above graph. The EPA issued Final Rules on *Control of Hazardous Air Pollutants from Mobile Sources* (72 FR 8427, February 26, 2007) under Title 40 Code of Federal Regulations Parts 59, 80, 85 and 86. The rule changes were effective April 27, 2007. As a result of this review, EPA adopted the following new requirements to significantly lower emissions of benzene and the other MSATs by: (1) lowering the benzene content in gasoline; (2) reducing non-methane hydrocarbon (NMHC) exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees Fahrenheit); and (3) reducing evaporative emissions that escape from portable fuel containers.

Beginning in 2011, petroleum refiners must meet an annual average gasoline benzene content standard of 0.62 percent by volume, for both reformulated and conventional gasolines, nationwide. The national benzene content of gasoline in 2007 is about 1.0 percent by volume. EPA standards to reduce NMHC exhaust emissions from new gasoline-fueled

vehicles will become effective in phases. Standards for light-duty vehicles and trucks (less than or equal to 6000 pounds [lbs]) become effective during the period of 2010 to 2013, and standards for heavy light-duty trucks (6,000 to 8,000 lbs) and medium-duty passenger vehicles (up to 10,000 lbs) become effective during the period of 2012 to 2015. Evaporative requirements for portable gas containers become effective with containers manufactured in 2009. Evaporative emissions must be limited to 0.3 grams of hydrocarbons per gallon per day.

EPA has also adopted more stringent evaporative emission standards (equivalent to current California standards) for new passenger vehicles. The new standards become effective in 2009 for light vehicles and in 2010 for heavy vehicles. In addition to the reductions from the 2001 rule, the new rules will significantly reduce annual national MSAT emissions. For example, EPA estimates that emissions in the year 2030, when compared to emissions in the base year prior to the rule, will show a reduction of 330,000 tons of MSATs (including 61,000 tons of benzene), reductions of more than 1,000,000 tons of volatile organic compounds, and reductions of more than 19,000 tons of PM_{2.5}.

Project Specific MSAT Information

Numerous technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project (see “**Unavailable Information for Project Specific MSAT Impact Analysis**” at the end of this section for more information). In Chapter 3 of its Regulatory Impact Analysis (RIA) for the 2007 MSAT rules, EPA states that there are a number of additional significant uncertainties associated with the air quality, exposure and risk modeling. The modeling also has certain key limitations such as the results are most accurate for large geographical areas, exposure modeling does not fully reflect variations among individuals, non-inhalation exposure pathways and indoor sources are not taken into account. Chapter 3 of the RIA is found at: www.epa.gov/otaq/regs/toxics/fr-ria-sections.htm.

However, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative assessment cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented

below is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at: www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm.

For each alternative in this EA, the amount of MSATs emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the Build Alternative is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the action alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOBILE6 emissions model, emissions of all of the priority MSATs except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models.

Because the estimated VMT under each of the Alternatives are nearly the same it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, schools and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSATs could be higher under certain Build Alternatives than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built. However, as discussed above, the magnitude

and the duration of these potential increases compared to the No-build alternative cannot be accurately quantified due to the inherent deficiencies of current models. In sum, when a highway is widened and, as a result, moves closer to receptors, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSATs will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Sensitive Receptor Assessment

There may be localized areas where ambient concentrations of MSATs are slightly higher in any build scenario than in the no build scenario. Dispersion studies have shown that roadway air toxics start to drop off at about 100 meters. By 500 meters, most studies have found it very difficult to distinguish the roadway from background toxic concentrations in any given area. An assessment of some potential sensitive receptors within 100 and 500 meters should be conducted. Sensitive receptors include those facilities most likely to contain large concentrations of the more sensitive population (hospitals, schools, licensed day cares, and elder care facilities). **Table E1** shows sensitive receptors by distance. **Table E2** shows the sensitive receptors in the study area. **Figure E1** shows the location of the sensitive receptors.

Table E1
Sensitive Receptors by Distance

Number of Sensitive Receptors within:	
100 meters (328 feet)	500 meters (1640 feet)
2	0

Table E2
Sensitive Receptors in the Study Area

Map ID	Name	Address	City	Zip Code
SR 1	Del Valle Wee Cardinal Child Development Center	3311 FM 973 S	Del Valle	78617
SR 1	Del Valle Opportunity Center (Del Valle ISD)	3311 FM 973 S	Del Valle	78617

Unavailable Information for Project Specific MSAT Impact Analysis

This EA includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable us to predict the project-specific health

impacts of the emission changes associated with the alternatives in this EA. Due to these limitations, the following discussion is included in accordance with CEQ regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information:

Information that is Unavailable or Incomplete. Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

1. Emissions: The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model--emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific

roadside locations. However, MOBILE6.2 is currently the only available tool for use by FHWA/TxDOT and; therefore, is used for comparison of alternatives in larger scale projects.

2. Dispersion. The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

3. Exposure Levels and Health Effects. Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs. Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or State level.

The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at <http://www.epa.gov/iris>. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization* summaries. This information is taken verbatim from EPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- **Benzene** is characterized as a known human carcinogen.
- The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- **Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- **1,3-butadiene** is characterized as carcinogenic to humans by inhalation.
- **Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- **Diesel exhaust** (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.

-
- **Diesel exhaust** also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

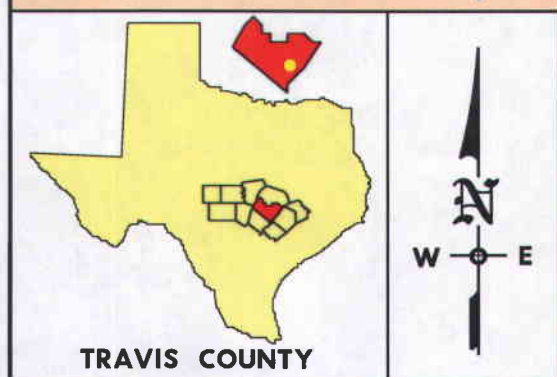
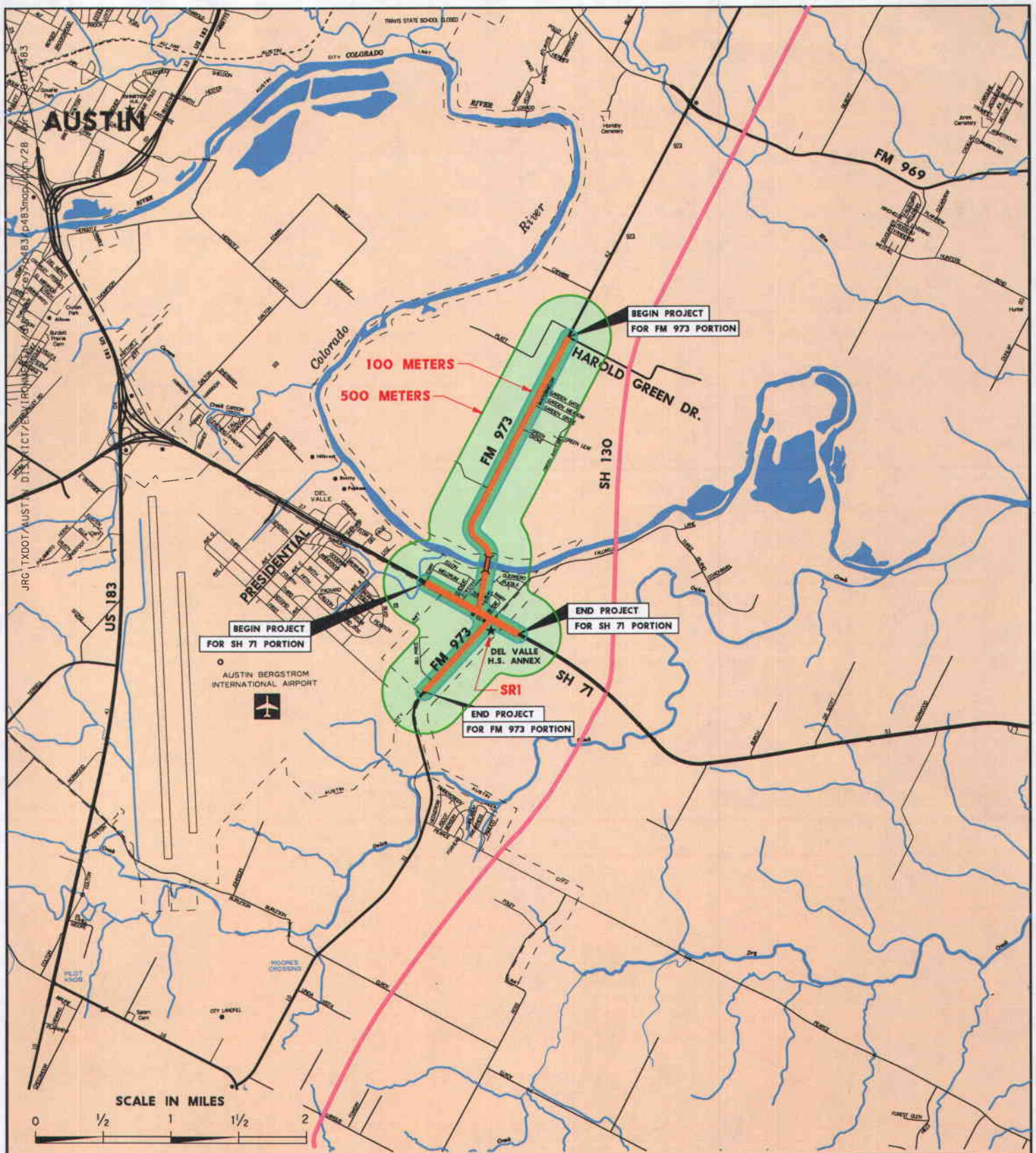
There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes -- particularly respiratory problems. Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more comprehensive evaluation of the health impacts specific to this project. In the preamble to the 2007 MSAT rule, EPA summarized recent studies with the following statement: "Significant scientific uncertainties remain in our understanding of the relationship between adverse health effects and near-road exposure, including the exposures of greatest concern, the importance of chronic versus acute exposures, the role of fuel type (e.g., diesel or gasoline) and composition (e.g., %aromatics), relevant traffic patterns, the role of co-stressors including noise and socioeconomic status, and the role of differential susceptibility within the "exposed" populations." (Volume 73, Federal Register Page 8441 (February 26, 2007) Control of Hazardous Air Pollutants from Mobile Sources).

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of impacts based upon theoretical approaches or research methods generally accepted in the scientific community. Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project

alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment."

In this document, FHWA has provided a qualitative analysis of MSAT emissions relative to the various alternatives, and has acknowledged that the project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.



SENSITIVE RECEPTORS

FM 973: FROM HAROLD GREEN DRIVE TO PEARCE LANE

CSJ: 1200-03-028, etc.

FIGURE E1