PUBLIC NOTICE

US Army Corps of Engineers®
New England District

696 Virginia Road
Concord, MA 01742-2751

Date: September 23, 2008
Comment Period Ends: October 23, 2008
File Number: NAE-2007-3029
In Reply Refer To: John C. Sargent
Or by e-mail: john.c.sargent@usace.army.mil

The District Engineer has received a permit application from the applicant below to **conduct work in waters of the United States** as described below. The Corps is soliciting comments on both the project itself and the range of issues to be addressed in the environmental documentation.

APPLICANT
Tennessee Gas Pipeline Company
Attn: Harold McCracken
1001 Louisiana Street
Houston, Texas 77002

ACTIVITY
The work includes the discharge of fill material in approximately 7.48 aces of herbaceous, shrub and forested wetlands for replacing approximately 5.15 miles of 6-inch diameter natural gas pipeline with a 12-inch diameter natural gas pipeline to meet increasing demand. The pipeline replacement would occur within an existing 20-foot wide easement with up to 55 additional feet of temporary workspace for construction staging activities. All wetland impacts associated with construction will be temporary in nature and restored on-site. Detailed plans of the activity, and draft mitigation plan are attached.

WATERWAY AND LOCATION OF THE PROPOSED WORK
This work is proposed in tributary streams and adjacent wetlands in the Nashua River drainage system off Lancaster Street, Lunenburg, Massachusetts and terminates off Pleasant Street in Lunenburg, Massachusetts. The proposed location on the USGS Shirley and Fitchburg quadrangles at 42.53 Latitude, -71.70 Longitude, to 42.58 Latitude, -71.77 Longitude.

AUTHORITY
Permits are required pursuant to:
_____Section 10 of the Rivers and Harbors Act of 1899
__X__ Section 404 of the Clean Water Act
_____Section 103 of the Marine Protection, Research and Sanctuaries Act).

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, land

use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Where the activity involves the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of disposing it in ocean waters, the evaluation of the impact of the activity in the public interest will also include application of the guidelines promulgated by the Administrator, U.S Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act.

SECTION 106 COORDINATION
Based on his initial review, the District Engineer has determined that the proposed work may impact properties listed in, or eligible for listing in, the National Register of Historic Places. Additional review and consultation to fulfil requirements under Section 106 of the National Historic Preservation Act of 1966, as amended, will be ongoing as part of the permit review process.

ENDANGERED SPECIES CONSULTATION
The New England District, Army Corps of Engineers has reviewed the list of species protected under the Endangered Species Act of 1973, as amended, which might occur at the proposed project site during the construction and subsequent operation/use period sought by the applicant. We have undertaken a Biological Assessment (BA) of the potential for interactions and adverse impacts to those listed species. It is our determination that the proposed activity for which authorization is being sought is designed, situated or will be operated/used in such a manner that it is not likely to adversely affect any Federally listed endangered or threatened species or their designated critical habitat. By this Public Notice, we are requesting that the appropriate Federal Agency concur with our BA determination.

The following authorizations have been applied for, or have been, or will be obtained:

(X) Permit, License or Assent from State.
(X) Permit from Local Wetland Agency or Conservation Commission.
(X) Water Quality Certification in accordance with Section 401 of the Clean Water Act.

In order to properly evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. **Comments should be submitted in writing by the above date.** If you have any questions, please contact John Sargent at (978) 318-8026, (800) 343-4789 or (800) 362-4367, if calling from within Massachusetts.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The Corps holds public hearings for the purpose of obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse segment of the public.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.

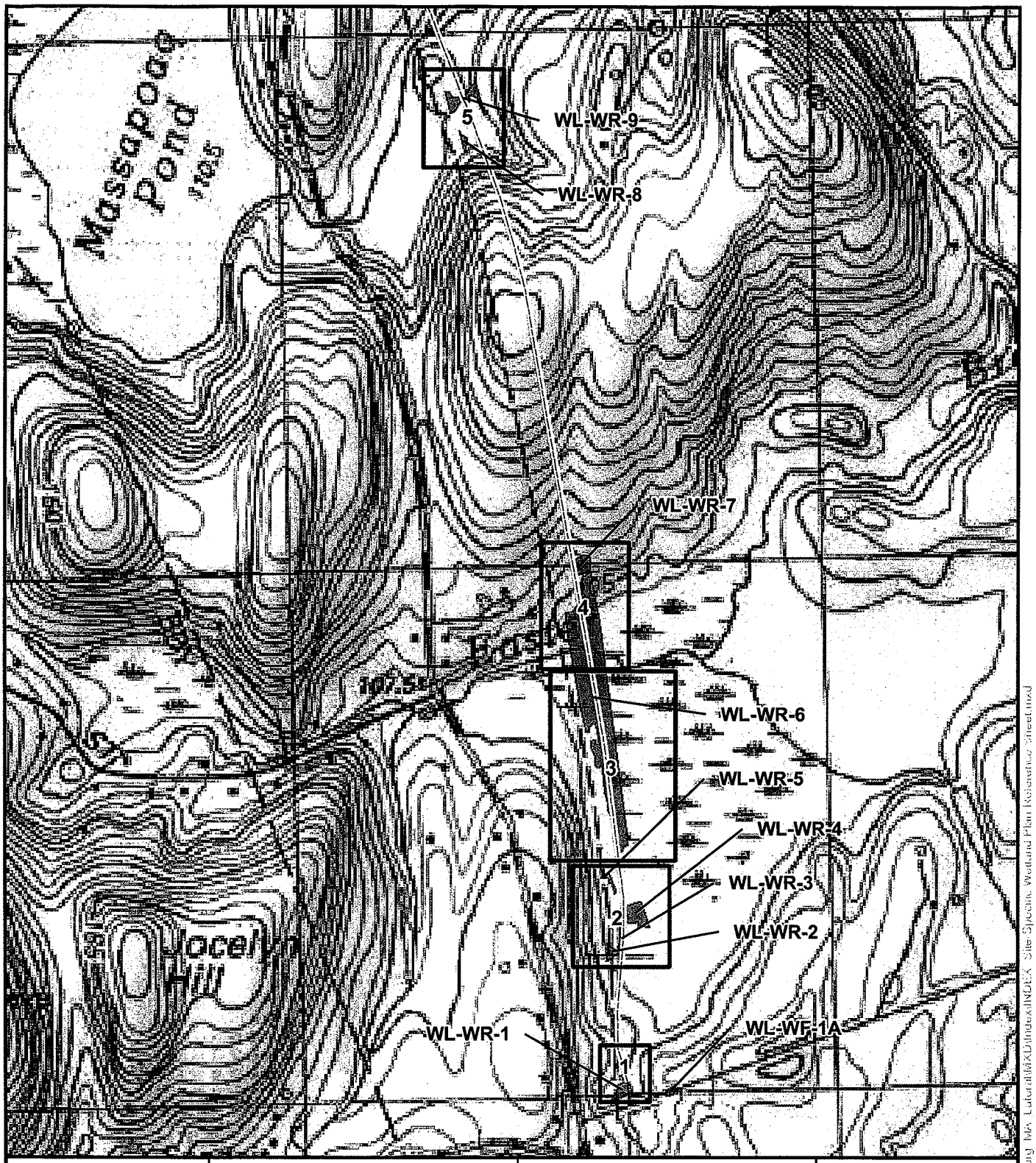
For more information on the New England District Corps of Engineers programs, visit our website at http://www.nae.usace.army.mil.

THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK.

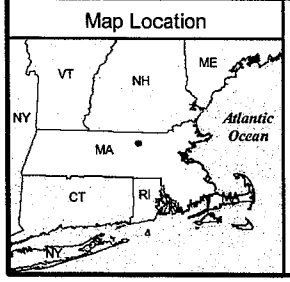
Karen Kirk Adams
Chief, Permits and Enforcement Branch
Regulatory Division

If you would prefer not to continue receiving Public Notices, please contact Ms. Tina Chaisson at (978) 318-8058 or e-mail her at bettina.m.chaisson@usace.army.mil. You may also check here ( ) and return this portion of the Public Notice to: Bettina Chaisson, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

NAME: _____
ADDRESS: _____



Map Location



Legend

- Site-Specific Wetland Plan Reference Sheet
- Proposed 12" Diameter Replacement Pipeline
- Surveyed Wetlands

Scale: 1:10,000

0 250 500 1,000 1,500 Feet

Fitchburg Expansion Project
Site-Specific Wetland Plan
Index Map

Lunenburg, MA

Image Source: Aerial 2004
Map Projection: St Plane MA Mainland, NAD 83, Feet.

Tennessee Gas Pipeline
an El Paso company

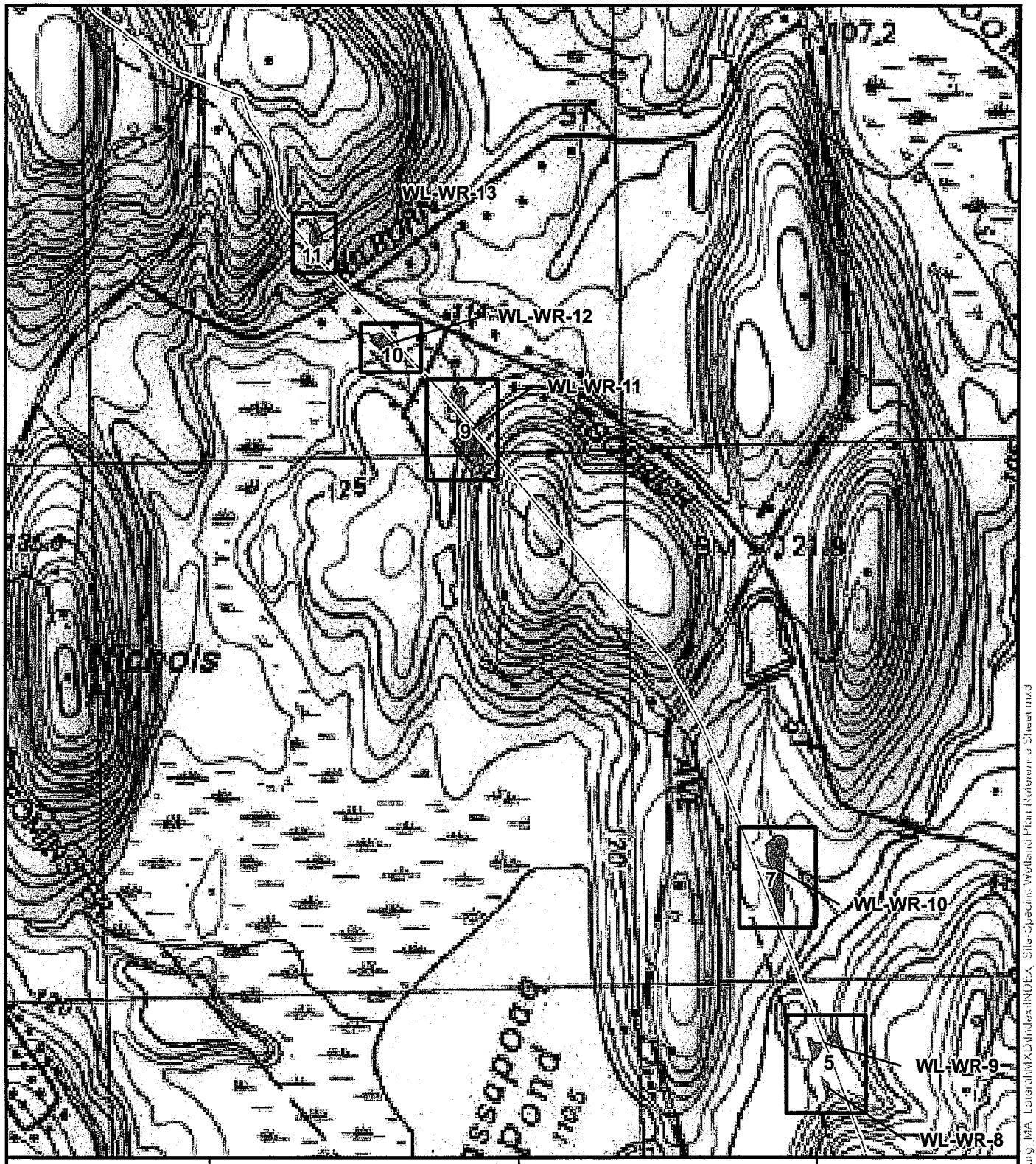
ENSR | AECOM

Sheet 1 of 4

March 2008

Project #: 02521-070

Y:\Projects\Tennessee Gas\Fitchburg MA Lateral\ADIndex\INDEX Site Specific Wetland Plan Reference Sheet.mxd



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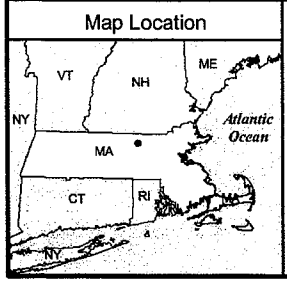

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Tennessee Gas Pipeline
an El Paso company

ENSR | AECOM

Sheet 2 of 4

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Project #: 02521-070

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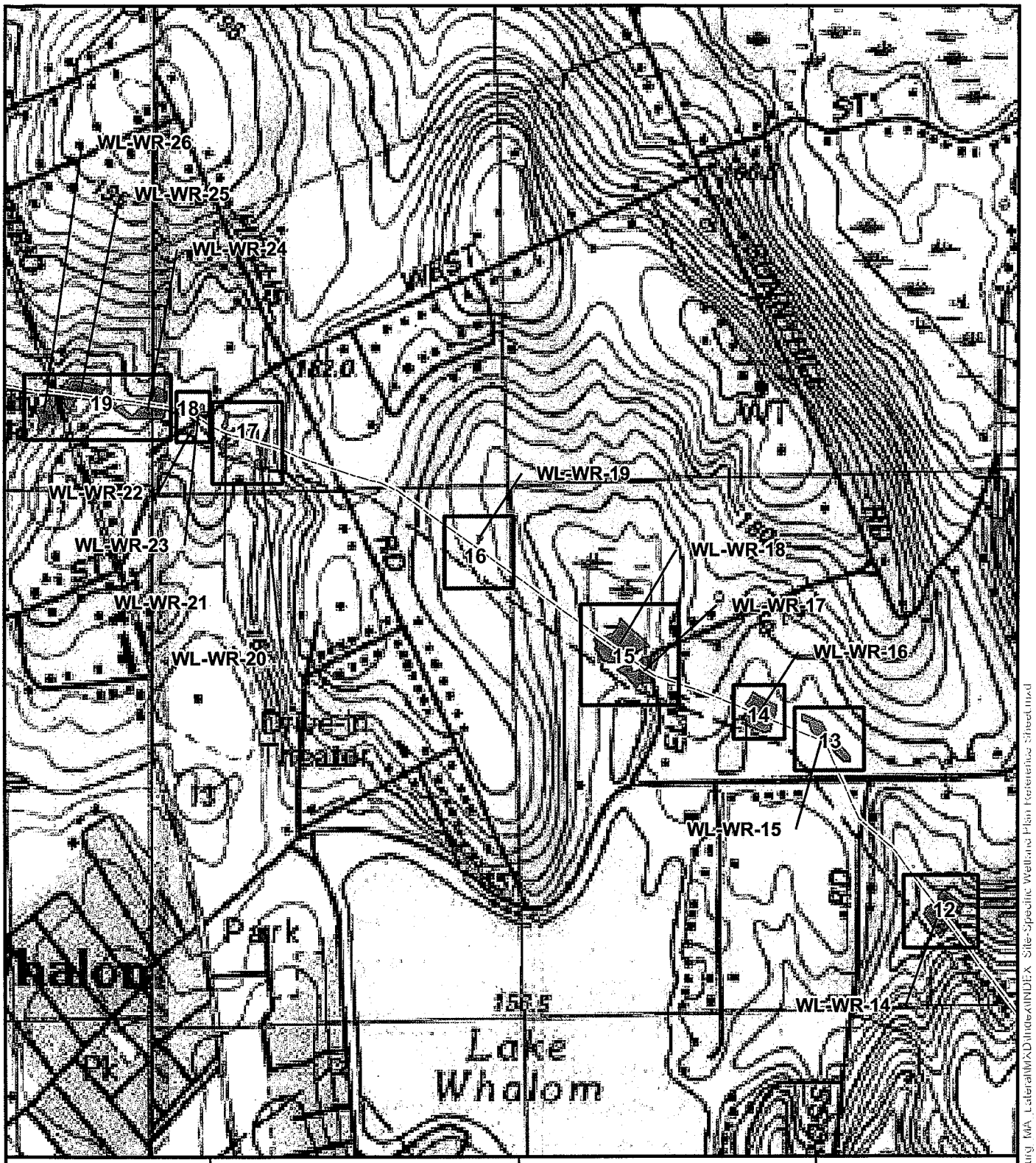

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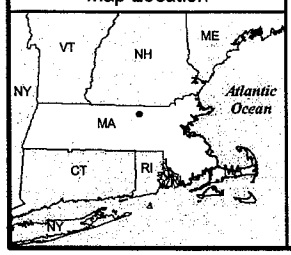

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Fitchburg Expansion Project
Site-Specific Wetland Plan
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Tennessee Gas Pipeline
an El Paso company

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Sheet 3 of 4

March 2008

Project #: 02521-070

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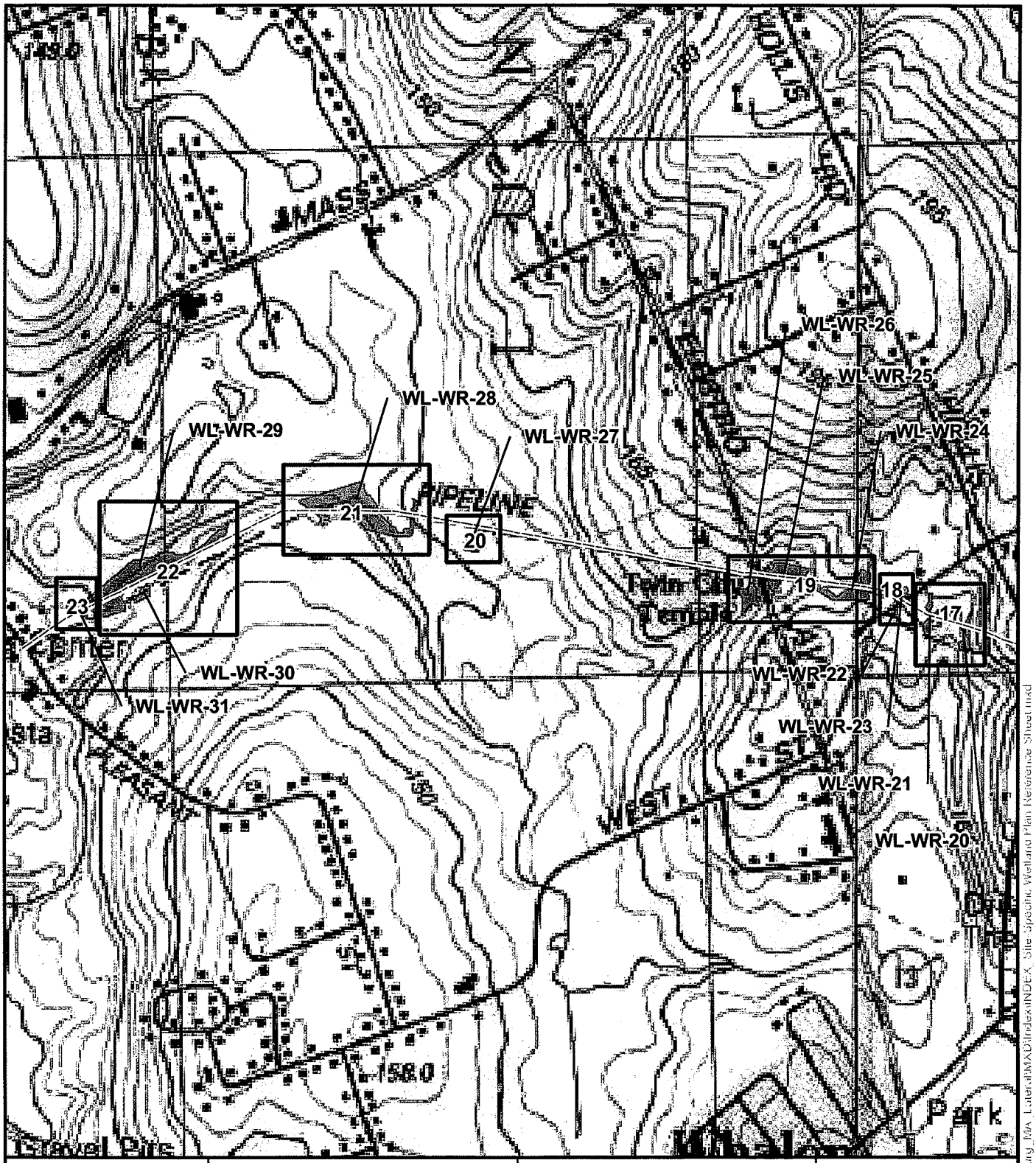

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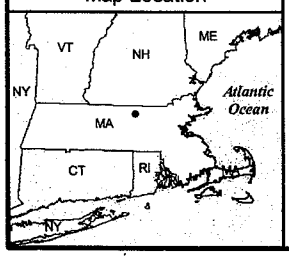

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Fitchburg Expansion Project Site-Specific Wetland Plan Index Map

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Tennessee Gas Pipeline an El Paso company

ENSR | AECOM

Sheet 4 of 4

March 2008

Project #: 02521-070

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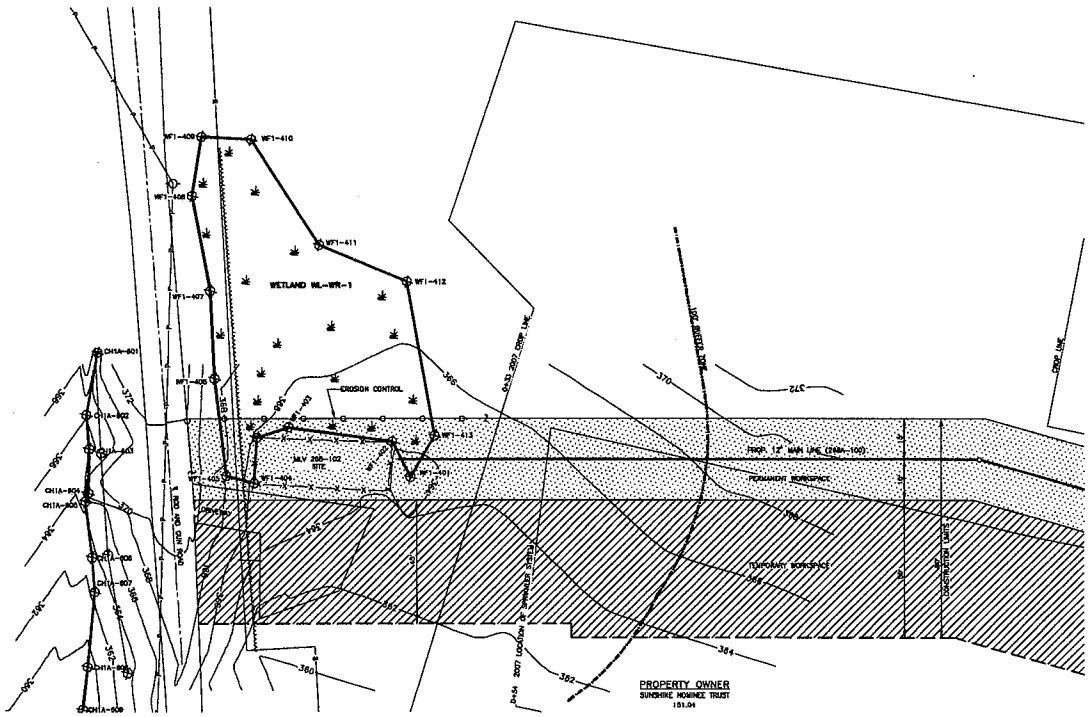
WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



GENERAL CONSTRUCTION NOTES:

1. Avoid the removal of mature trees and landscaping along the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Contractor's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

6. In the event that excavation or other ground disturbance is required across or on landowner driveways or other private access ways, provide steel plating or other effective means to allow continued access for the landowner.

7. Ensure that construction activities do not unduly obstruct or reduce traffic flow on publicly used roads. For any public or private gravel surfaced roads or paved roads that may be crossed using an open cut trenching technique, expedite construction time frames for crossing by utilizing steel plates over the trench to keep at least one lane open at all times, and/or provide signs and coordination to detour traffic in an organized manner during construction.

8. Back fill the trench as soon as practicable after pipeline installation, through measures that include (but are not limited to) managing the progress of various construction crews so that each phase of construction follows closely to the previous phase (i.e., back filling follows closely to lowering-in, lowering-in follows closely to welding, etc.).

9. Noise from construction activities and equipment will be minimized by limiting active construction activity in residential areas to daylight hours.

10. Fugitive dust from construction activities will be minimized by watering dry soils or as needed throughout the period of active construction.

11. Landowners will be notified of construction activities through the employment of one or more full-time land agents who will be in contact with landowners before and throughout the construction period to resolve, address, and resolve any complaints that may arise from construction activities. Land agent(s) would serve as a point of contact between the landowner and the construction contractor.

WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-1	N/A	0.03 AC.	0.31 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

REMARKS	DRAWING NO.	TITLE	DRAWING NO.	TITLE
	TE-E12-268A-100-21	ALIGNMENT SHEET		

REFERENCE DRAWINGS

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
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- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-1

WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: MT	Date: 11/07	Project ID: 118063	
Chk'd:	Date:	Scale: 1" = 20'	
Approved:	Date:	Filename: TE-E12-268A-100-21B	
TE-E12-268A-100-21B		Sheet: 1 of 1 Type: ACAD	B

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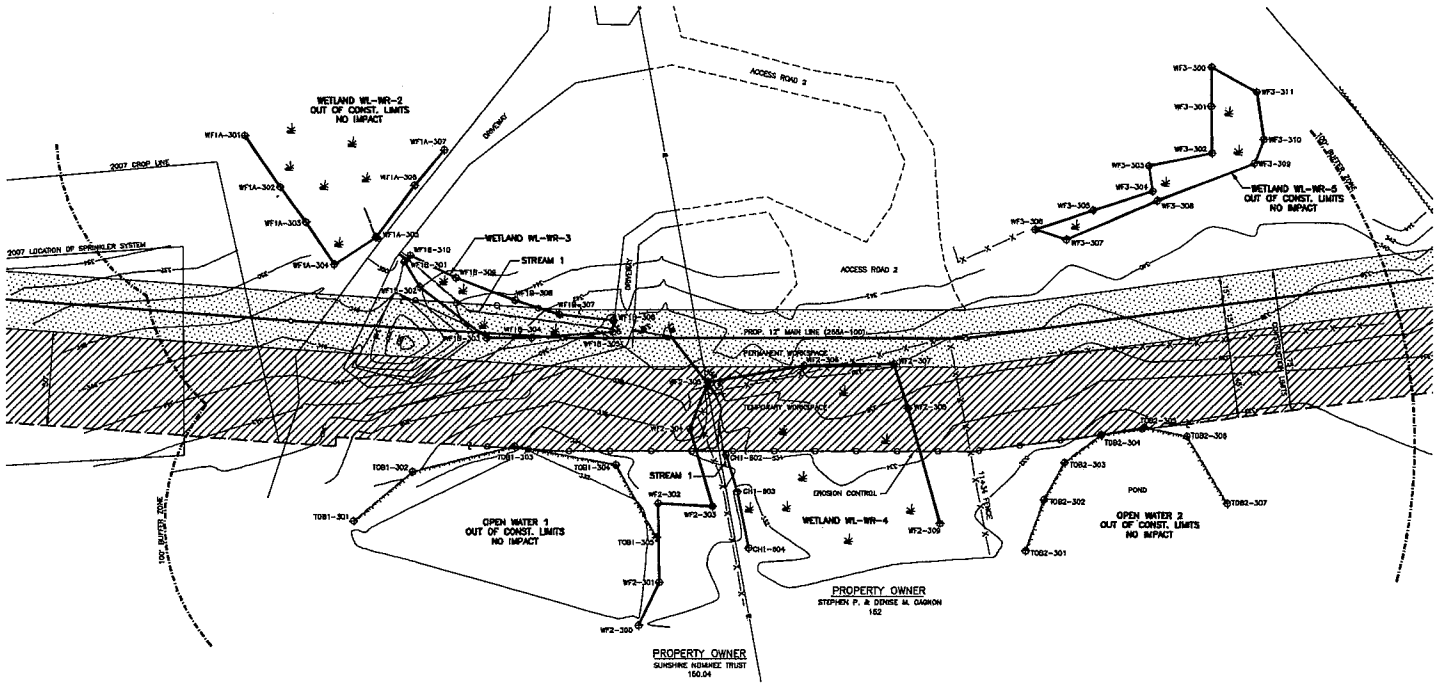
WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



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- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
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- Wetland
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- Storm Sewer Manhole
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GENERAL CONSTRUCTION NOTES:

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WATERBODIES IMPACT

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WL-WR-3	N/A	0.02 AC.	1.13 AC.	N/A
WL-WR-4	0.11 AC.	0.001 AC.		N/A

SCALE

30 0 30 60

SCALE IN FEET

REMARKS	REFERENCE DRAWINGS			
	TE-E12-268A-100-21	AUGMENT SHEET		
	DRAWING NO.	TITLE	DRAWING NO.	TITLE

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-3 & WL-WR-4
STREAM 1
WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: HT	Date: 11/07	Project #: 118063	
Chk'd:	Date:	Scale: 1" = 30'	
Approved:	Date:	Filename: TE-E12-268A-100-21B1	
		Sheet: 1 of 1	
TE-E12-268A-100-21B1		Type: ACAD	B

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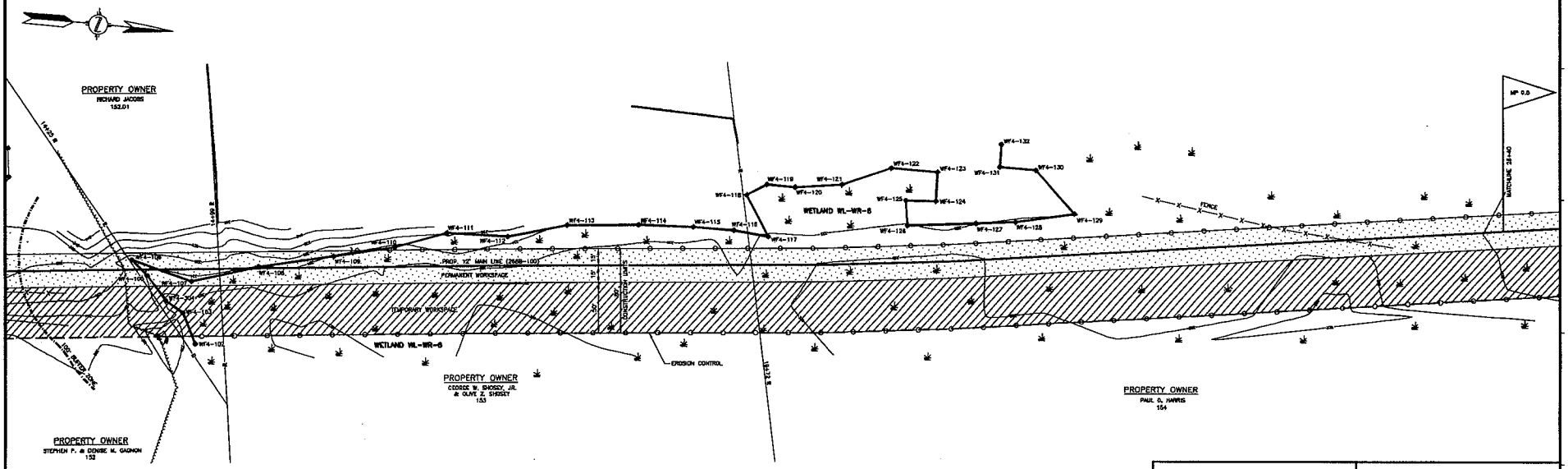
WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



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WL-WR-6	1.70 AC.	1.03 AC.	SEE TE-E12-268A-100-21C	N/A

SCALE

40 0 40 80

SCALE IN FEET

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NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.

REVISIONS

Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-6

WORCESTER COUNTY, MASSACHUSETTS

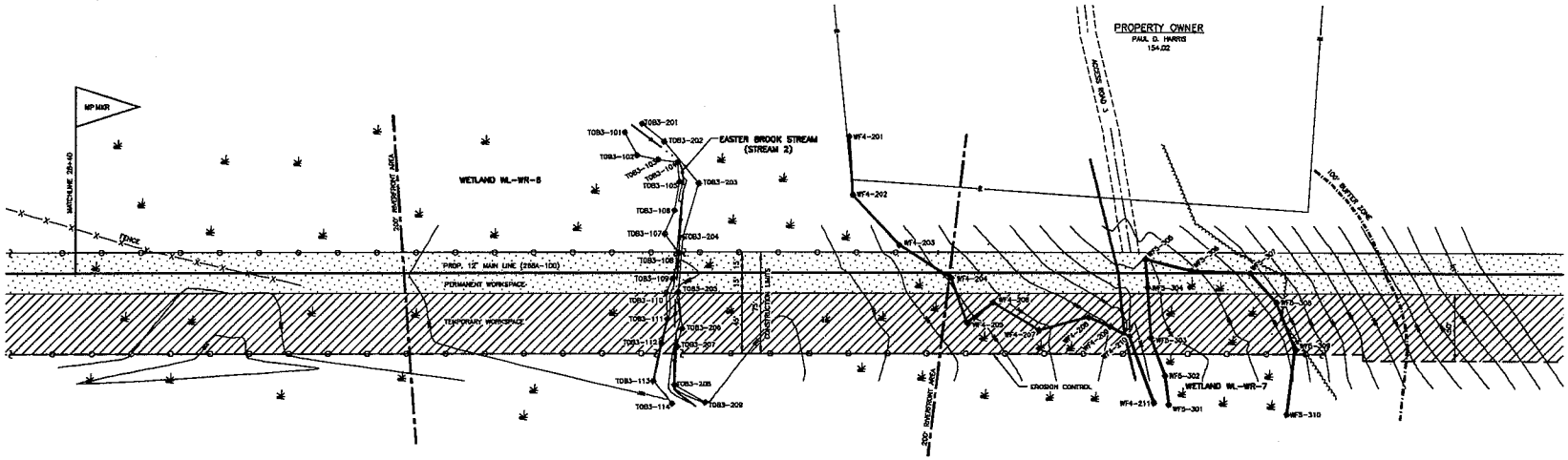
Section:		Township:	Range:
Co./Par.:	WORCESTER	State:	MASSACHUSETTS
Division:	NORTHERN	Op. Area:	HOPKINTON
Drafter:	MTL	Date: 11/07	Project ID: 118063
Chk'd:		Date:	Scale: 1"=40'
Approved:		Date:	Measure: TE-E12-268A-100-21B2

TE-E12-268A-100-21B2 Sheet: 1 of 1 Type: ACAD B

REMARKS		REFERENCE DRAWINGS	
DRAWING NO.	TITLE	DRAWING NO.	TITLE
TE-E12-268A-100-21	ALIGNMENT SHEET		

WEBC_24X36 (Rev. 01/08)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



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8. Back fill the trench as soon as practicable after pipeline installation, through measures that include (but are not limited to) managing the progress of various construction crews so that each phase of construction follows closely to the previous phase (i.e., back filling follows closely to lowering-in, lowering-in follows closely to welding, etc.).

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-6	1.70 AC.	1.03 AC.	3.48 AC.	N/A
WL-WR-7	0.10 AC.	0.03 AC.		N/A
STREAM 2	N/A	N/A	N/A	0.56 AC.

SCALE

40 0 40 80

SCALE IN FEET

DRAWING NO.	TITLE	DRAWING NO.	TITLE
TE-E12-268A-100-21A	ALIGNMENT SHEET		

REMARKS

REFERENCE DRAWINGS

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	06/08	SGH	ISSUED FOR BID	118063	

REVISIONS

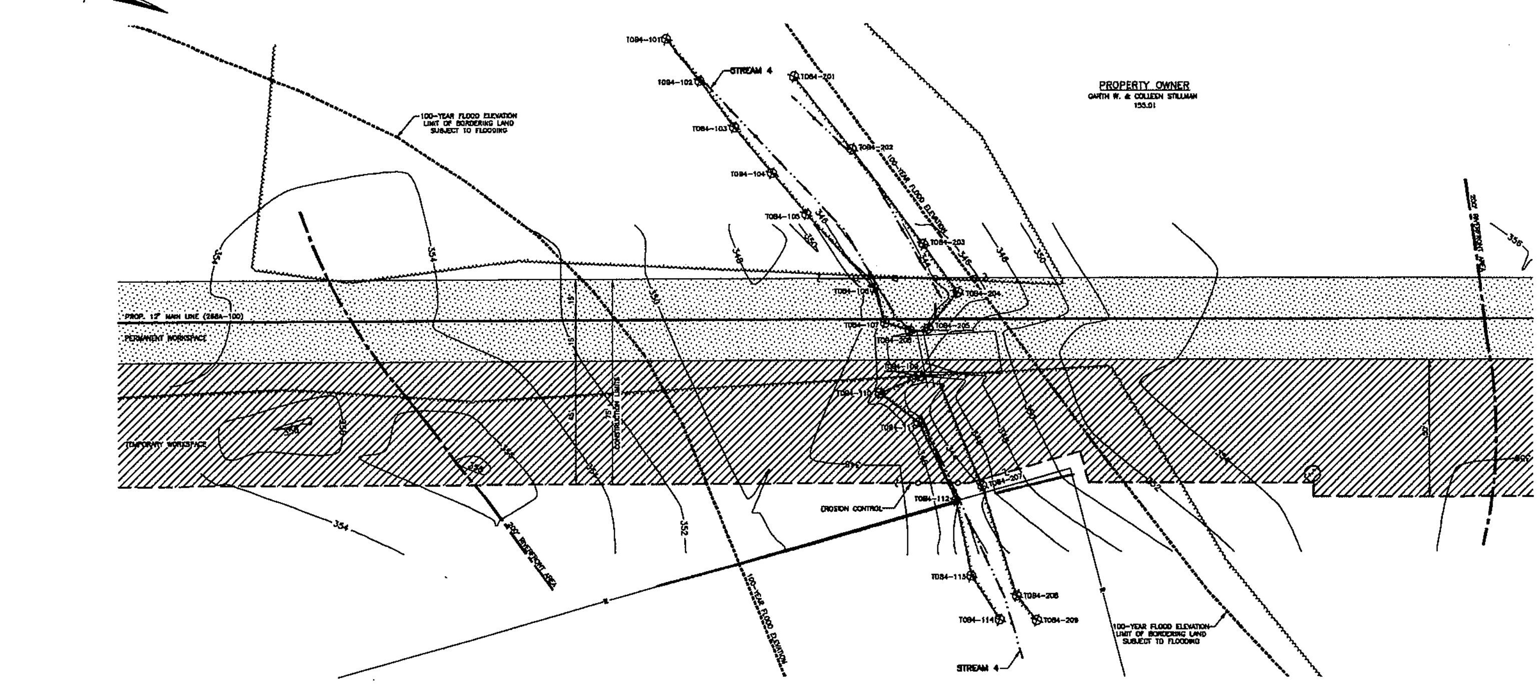
Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-6 & WL-WR-7
STREAM 2
WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Gas. Area: HOPKINTON	
Drafter: MTL	Date: 11/07	Project ID: 118063	
Chk'd:	Date:	Scale: 1" = 40'	
Approved:	Date:	Previous: TE-E12-268A-100-21D	
TE-E12-268A-100-21C		Sheet: 1 of 1	B
		Type: ACAD	

MDPL_2043B (Rev. 01/06)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



LEGEND

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- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
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- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- Water Valve
- Gas Valve
- Electric Junction Box
- Sign Post

GENERAL CONSTRUCTION NOTES:

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2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
STREAM 4	N/A	N/A	N/A	0.71 AC.

SCALE

20 0 20 40

SCALE IN FEET

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
STREAM 4

WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:		Range:	
Co./Par.:	WORCESTER	State:	MASSACHUSETTS		
Division:	NORTHERN	Op. Area:	HOPKINTON		
Drafter: HT	Date: 11/07	Project ID:	118063		
Chk'd:	Date:	Scale:	1" = 20'		
Approved:	Date:	Filename:	TE-E12-268A-100-2281		

TE-E12-268A-100-2281 | Sheet: 1 of 1 | Type: ACAD | B

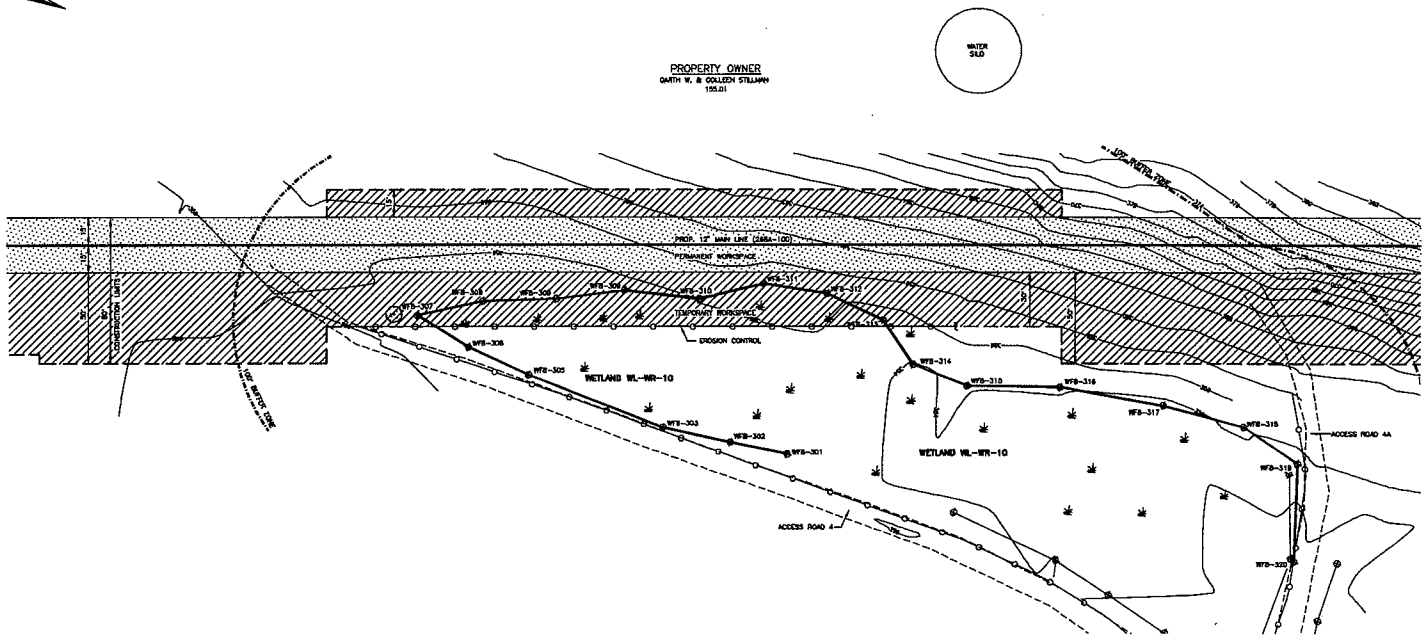
DRAWING NO.	TITLE
TE-E12-268A-100-22	ALIGNMENT SHEET

REMARKS

REFERENCE DRAWINGS

TGP-24X36 (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



GENERAL CONSTRUCTION NOTES:

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2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Contractor's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-10	0.18 AC.	N/A	1.20 AC.	N/A

SCALE

30 0 30 60

SCALE IN FEET

REMARKS	DRAWING NO.	TITLE	DRAWING NO.	TITLE
	TE-E12-268A-100-22	ALIGNMENT SHEET		

REFERENCE DRAWINGS

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- Water Valve
- Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/06	SGH	ISSUED FOR PERMIT	11R063	
B	04/06	SGH	ISSUED FOR BID	11R063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

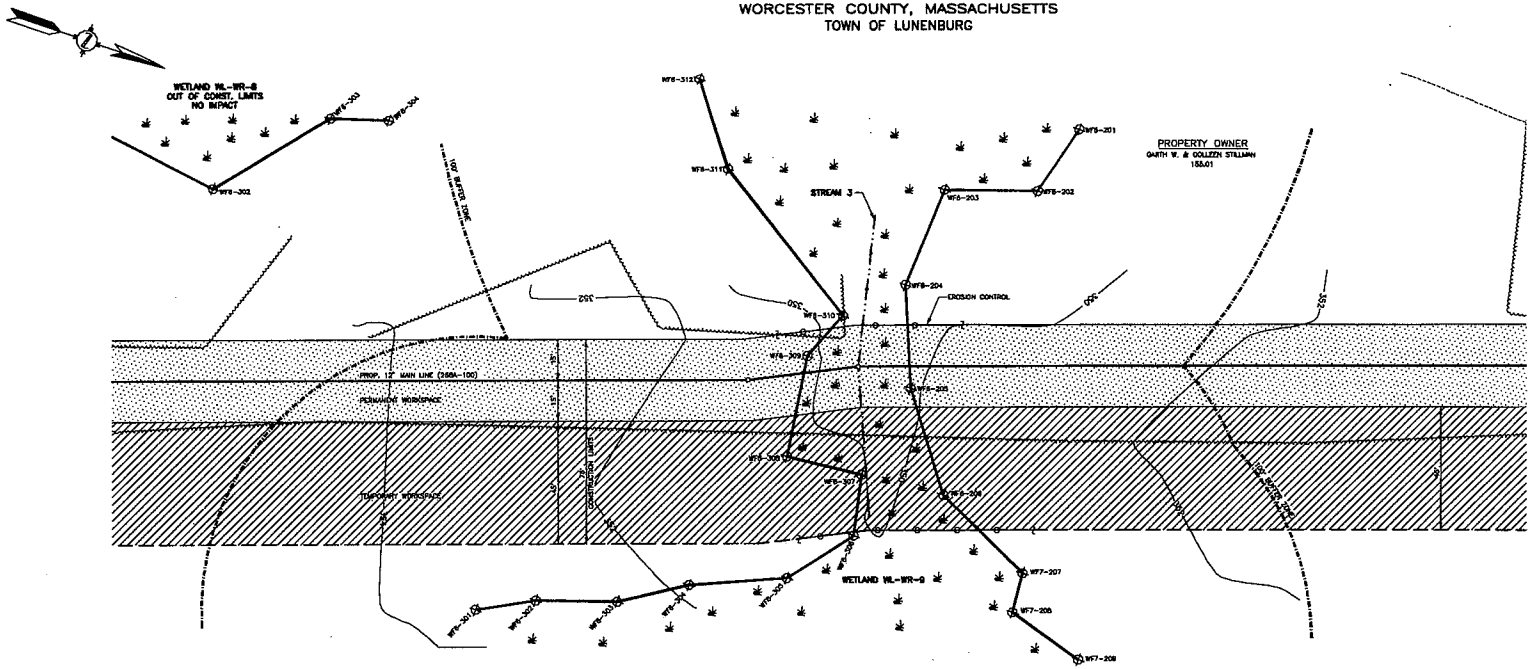
FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-10

WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:	Range:
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: HF	Date: 11/07	Project ID: 11R063	
Chk'd:	Date:	Scale: 1" = 30'	
Approved:	Date:	Filename: TE-E12-268A-100-22B2	
TE-E12-268A-100-22B2		Sheet: 1 of 1 Type: ACAD	B

MOD_268.B (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
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- Fence
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- 200' Riverfront Area
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- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
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- Storm Sewer Manhole
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GENERAL CONSTRUCTION NOTES:

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-9	0.04 AC.	0.03 AC.	0.53 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

DRAWING NO.	TITLE	DRAWING NO.	TITLE
TE-E12-268A-100-22	ALIGNMENT SHEET		

REMARKS

REFERENCE DRAWINGS

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/06	SCH	ISSUED FOR PERMIT	118063	
A	04/06	SCH	ISSUED FOR BID	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-9
STREAM 3
WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:	Range:
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: HT	Date: 11/07	Project ID: 118063	
Chk'd:	Date:	Scale: 1" = 20'	
Approved:	Date:	Filename: TE-E12-268A-100-22B	

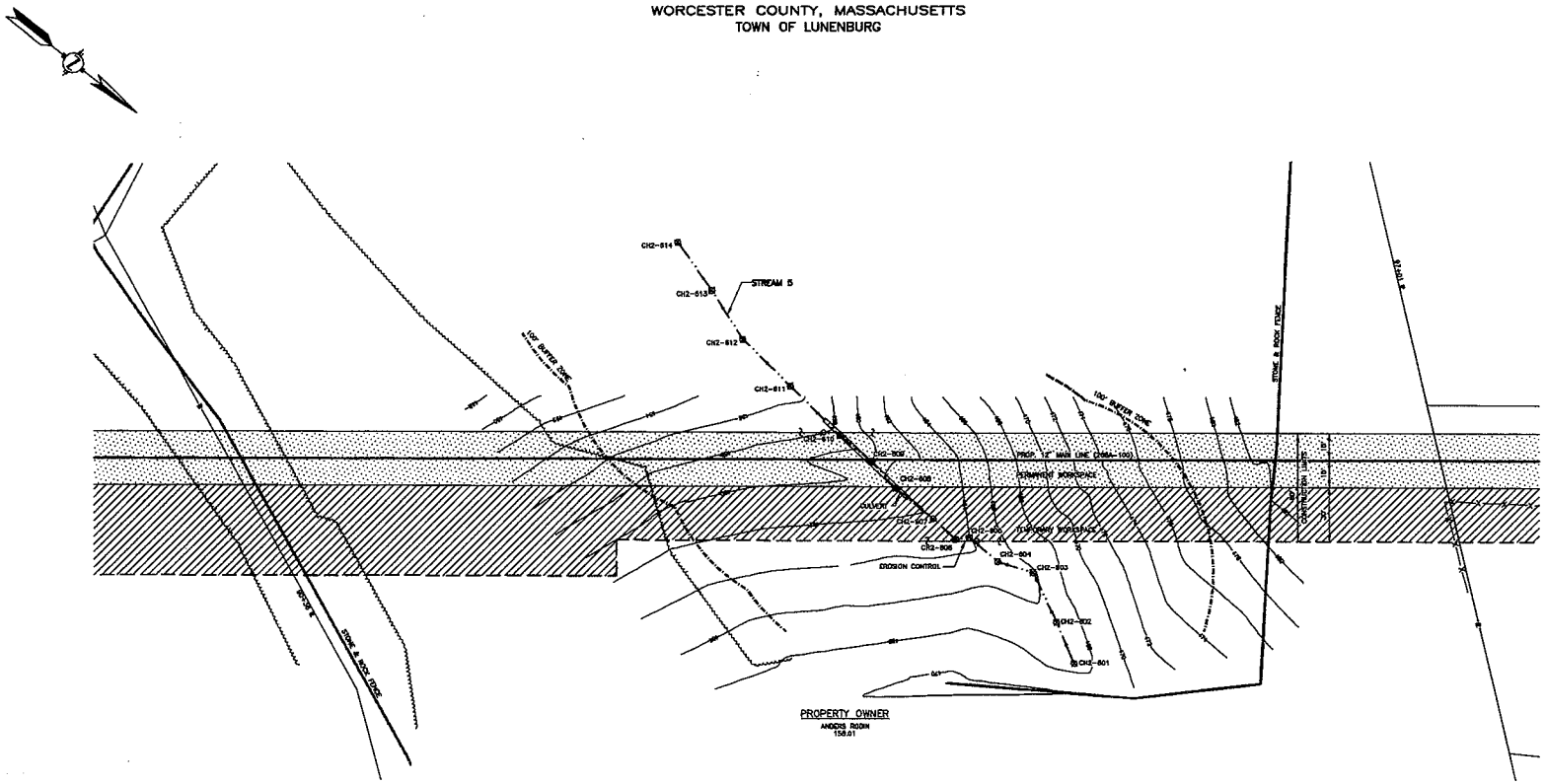
TE-E12-268A-100-22B

Sheet: 1 of 1
Type: ACAD

B

MECH_2403E (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
STREAM 5	N/A	N/A	0.55 AC.	N/A

SCALE

30 0 30 60

SCALE IN FEET

REMARKS	REFERENCE DRAWINGS			
	TE-E12-268A-100-22A	ALIGNMENT SHEET		
	DRAWING NO.	TITLE	DRAWING NO.	TITLE

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
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- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
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- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- Water Valve
- Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SCH	ISSUED FOR PERMIT	118063	
B	04/08	SCH	ISSUED FOR BID	118063	

REVISIONS

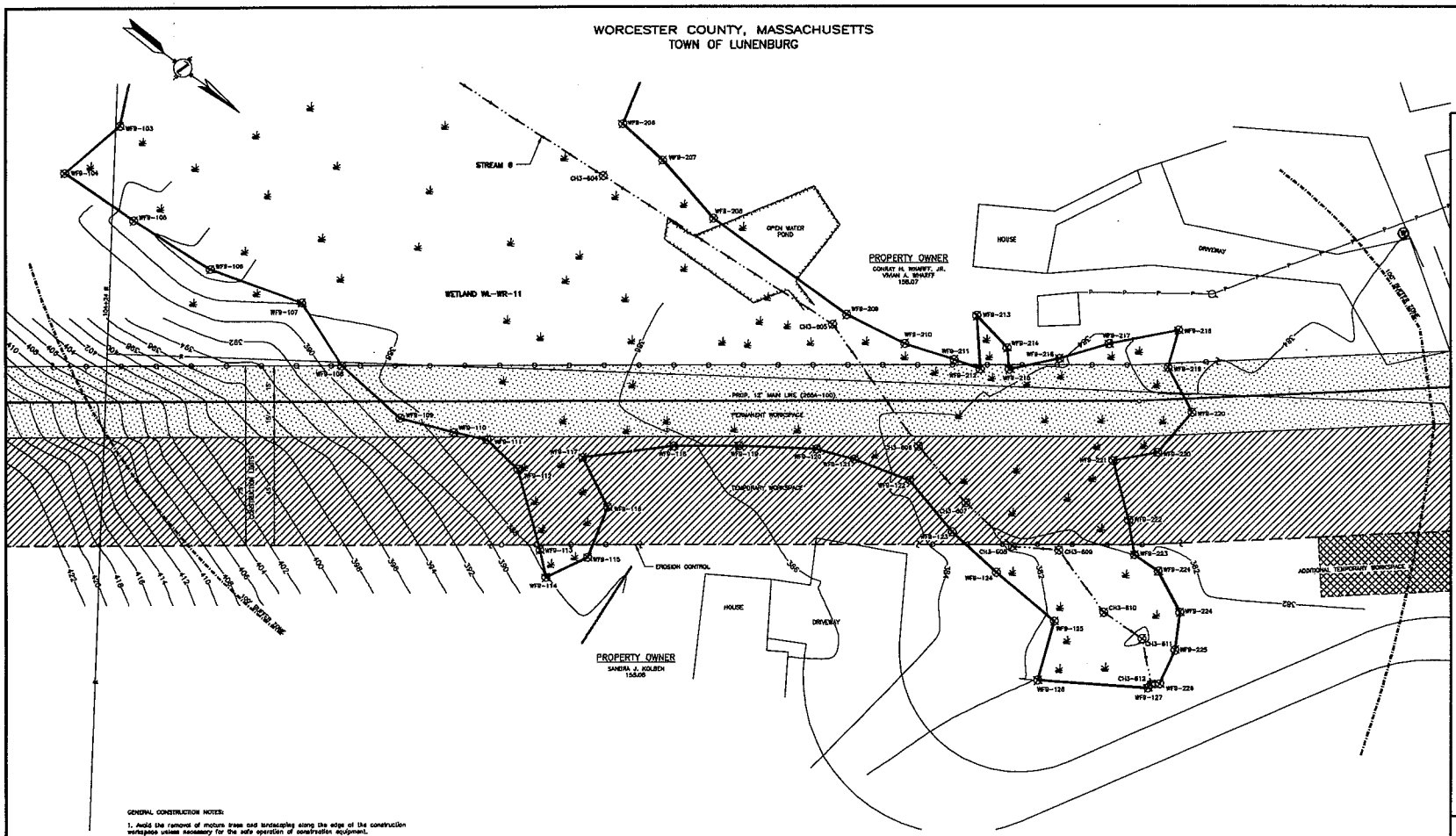
Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
STREAM 5

WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: HT	Date: 11/07	Project ID: 118063	
Chk'd:	Date:	Scale: 1" = 30'	
Approved:	Date:	Filename: TE-E12-268A-100-22C3	
TE-E12-268A-100-22C3		Sheet: 1 of 1	B
		Type: AGRD	

MEDC_24338 (Rev. 01/05)



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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-11	0.14 AC.	0.23 AC.	0.96 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

DRAWING NO.	TITLE	DRAWING NO.	TITLE
TE-E12-268A-100-22A	AUGMENT SHEET		

REMARKS

REFERENCE DRAWINGS

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
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- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

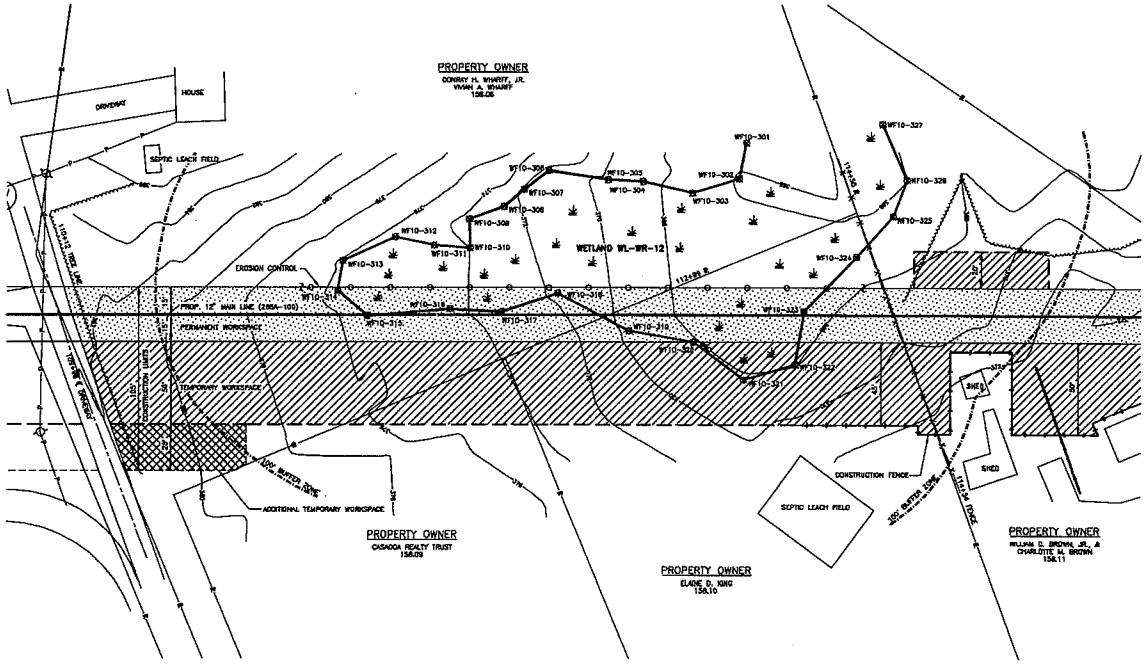
Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-11
STREAM 6
WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Parr.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: HT	Date: 11/07	Project ID: 118063	
Chk'd:	Date:	Scale: 1" = 20'	
Approved:	Date:	Filename: TE-E12-268A-100-22C3	
TE-E12-268A-100-22C5		Sheet: 1 of 1 Type: ACAD	B

MEDC_24X36 (Rev. 01/06)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- NO Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-12	0.02 AC.	0.11 AC.	0.81 AC.	N/A

SCALE

30 0 30 60

SCALE IN FEET

GENERAL CONSTRUCTION NOTES:

1. Avoid the removal of mature trees and landscaping along the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench process of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

6. In the event that excavation or other ground disturbance is required across or on landowner driveways or other private access ways, provide steel plating or other effective means to allow continued access for the landowner.

7. Ensure that construction activities do not unduly obstruct or reduce traffic flow on publicly used roads. For any public or private gravel surfaced roads or paved roads that may be crossed using an open cut trenching technique, expedite construction time frames for crossing by utilizing steel plates over the trench to keep at least one lane open at all times, and/or provide signs and coordination to detour traffic in an organized manner during construction.

8. Back fill the trench as soon as practicable after pipeline installation, through measures that include (but are not limited to) managing the progress of various construction crews so that each phase of construction follows, closely to the previous phase (i.e., back filling follows closely to lowering-in, lowering-in follows closely to welding, etc.).

9. Noise from construction activities and equipment will be minimized by limiting active construction activity in residential areas to daylight hours.

10. Fugitive dust from construction activities will be minimized by watering dry soils or as needed throughout the period of active construction.

11. Landowners will be notified of construction activities through the employment of one or more full-time land agents who will be in contact with landowners before and throughout the construction period to resolve, address, and resolve any complaints that may arise from construction activities. Land agent(s) would serve as a point of contact between the landowner and the construction contractor.

REMARKS	DRAWING NO.	TITLE	DRAWING NO.	TITLE
	TE-E12-268A-100-23	ALIGNMENT SHEET		

REFERENCE DRAWINGS

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SCH	ISSUED FOR PERMIT	118063	
B	04/08	SCH	ISSUED FOR BID	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

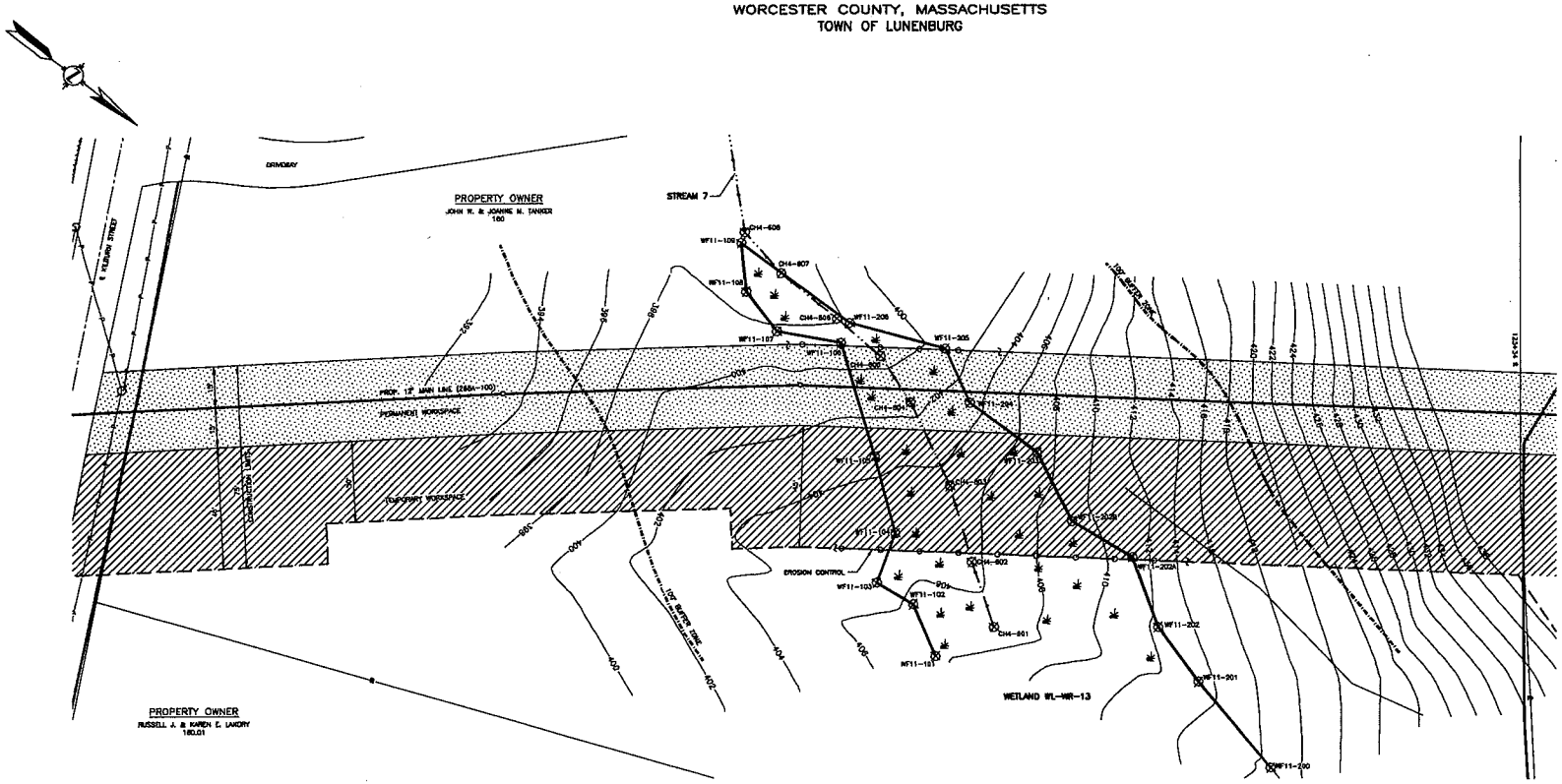
FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-12

WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: HI	Date: 11/07	Project ID: 118063	
Chk'd:	Date:	Scale: 1" = 30'	
Approved:	Date:	Filename: TE-E12-268A-100-23B5	
TE-E12-268A-100-23B5		Sheet: 1 of 1 Type: ACAD	B

UGSL-24038 (Rev. 01/06)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

GENERAL CONSTRUCTION NOTES:

1. Avoid the removal of mature trees and landscaping along the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

6. In the event that excavation or other ground disturbance is required across or on landowner driveways or other private access ways, provide steel plating or other effective means to allow continued access for the landowner.

7. Ensure that construction activities do not unduly obstruct or reduce traffic flow on publicly used roads. For any public or private gravel surfaced roads or paved roads that may be crossed using an open cut trenching technique, expedite construction time frames for crossing by utilizing steel plates over the trench to keep at least one lane open at all times, and/or provide signs and coordination to detour traffic in an organized manner during construction.

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-13	0.07 AC.	0.03 AC.	0.30 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

REMARKS	DRAWING NO.	TITLE	DRAWING NO.	TITLE
	TE-E12-288A-100-23	ALIGNMENT SHEET		

REFERENCE DRAWINGS

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SCH	ISSUED FOR PERMIT	118063	
B	04/08	SCH	ISSUED FOR BID	118063	
C	07/08	DGL	REVISE WORKSPACE, ADD LINE BREAK REMOVAL	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

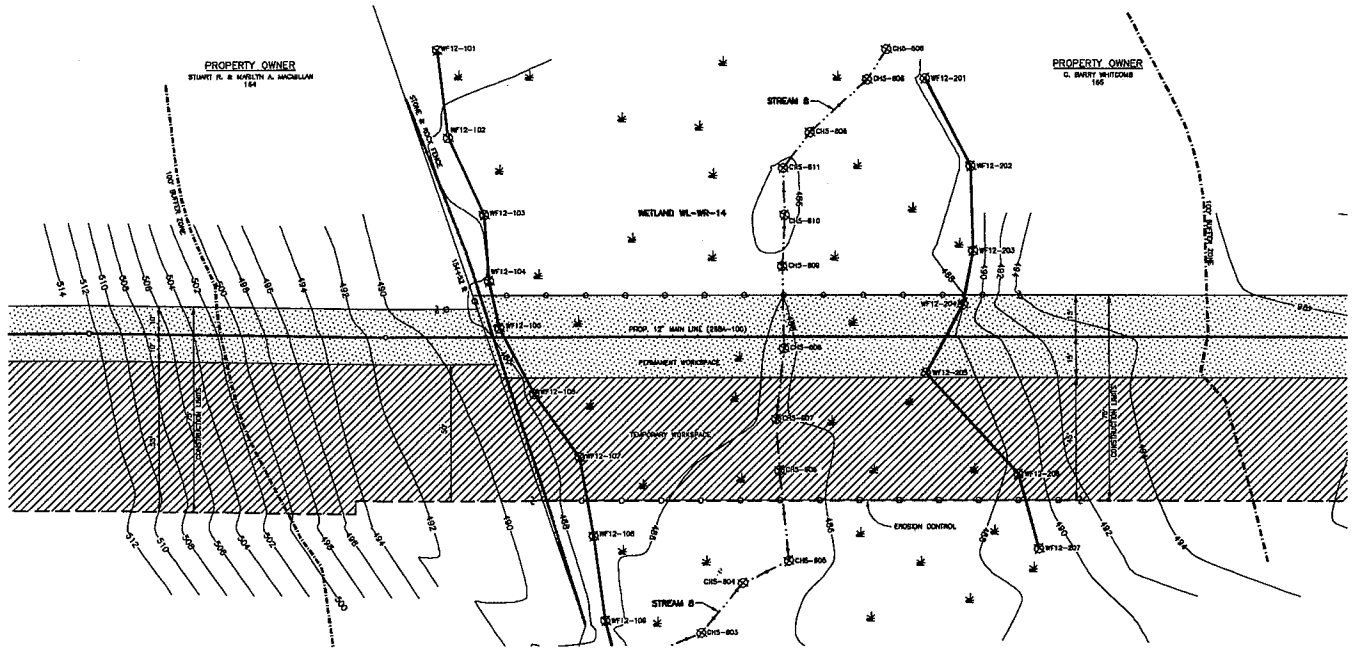
FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-13
STREAM 7
WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: MTL	Date: 11/07	Project ID: 118063	
Chk'd:	Date:	Scale: 1" = 20'	
Approved:	Date:	Filename: TE-E12-288A-100-2389	
TE-E12-288A-100-2389		Sheet 1 of 1 Type: ACAD	C

Rev 05, 2008 - SCHMIE

ED01_24038 (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



GENERAL CONSTRUCTION NOTES:

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4. Maintain safety fencing throughout open trench phases of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-14	0.18 AC.	0.11 AC.	0.81 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

REMARKS	REFERENCE DRAWINGS			
	TE-E12-288A-100-23A	ALIGNMENT SHEET		
	DRAWING NO.	TITLE	DRAWING NO.	TITLE

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Use (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- Water Valve
- Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR REVIEW	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

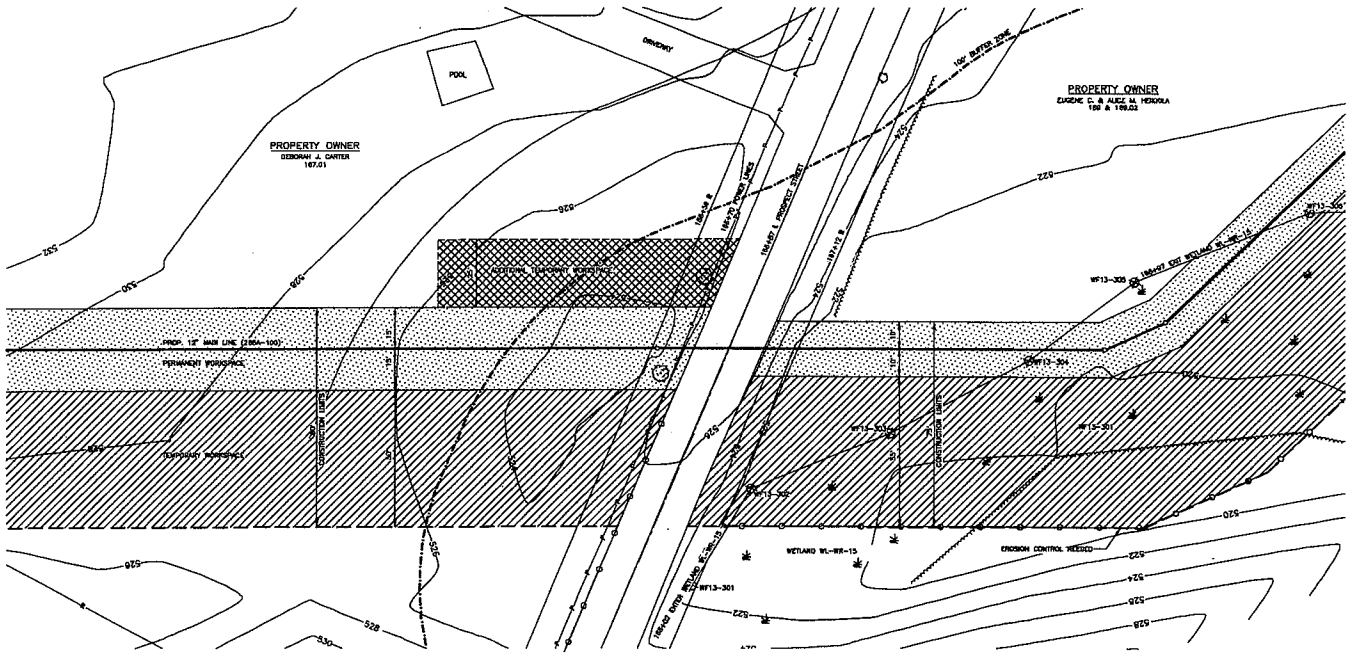
FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-14
STREAM 8
WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:	Range:
Co./Par.:	WORCESTER	State:	MASSACHUSETTS
Division:	NORTHERN	Op. Area:	HOPKINTON
Drafter:	RTM	Date: 11/07	Project ID: 118063
Chk'd:		Date:	Scale: 1" = 30'
Approved:		Date:	Filename: TE-E12-288A-100-23C3

TE-E12-288A-100-23C3 Sheet: 1 of 1 Type: AGRD B

MCGL_24X36 (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



NOTES:

1. Avoid the removal of mature trees and landscaping within the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Downstream's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to such structures for a distance of 103 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

6. In the event that excavation or other ground disturbance is required across or on landowner driveways or other private access ways, provide steel plating or other effective means to allow continued access for the landowner.

7. Ensure that construction activities do not unduly obstruct or reduce traffic flow on publicly used roads. For any public or private gravel surfaced roads or paved roads that may be crossed using an open cut trenching installation, expedite construction time frames for crossing by utilizing steel plates over the trench to keep at least one lane open at all times, and/or provide signs and coordination to detour traffic in an organized manner during construction.

8. Back fill the trench as soon as practicable after pipeline installation, through measures that include (but are not limited to) managing the progress of various construction crews so that each phase of construction follows closely to the previous phase (i.e., back filling follows closely to lowering-in, lowering-in follows closely to welding, etc.).

9. Noise from construction activities and equipment will be minimized by limiting active construction activity in residential areas to daylight hours.

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11. Landowners will be notified of construction activities through the employment of one or more full-time land agents who will be in contact with landowners before and throughout the construction period to resolve, address, and resolve any complaints that may arise from construction activities. Land agent(s) would serve as a point of contact between the landowner and the construction contractor.

REMARKS			REFERENCE DRAWINGS	
	TE-E12-288A-100-24	ALIGNMENT SHEET		
DRAWING NO.	TITLE		DRAWING NO.	TITLE

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Erosion Control Device Location
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/09	SGH	ISSUED FOR PERMIT	118083	
B	04/09	SGH	ISSUED FOR BID	118083	

REVISIONS

Tennessee Gas Pipeline
(an El Paso company)

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
PROSPECT STREET CROSSING

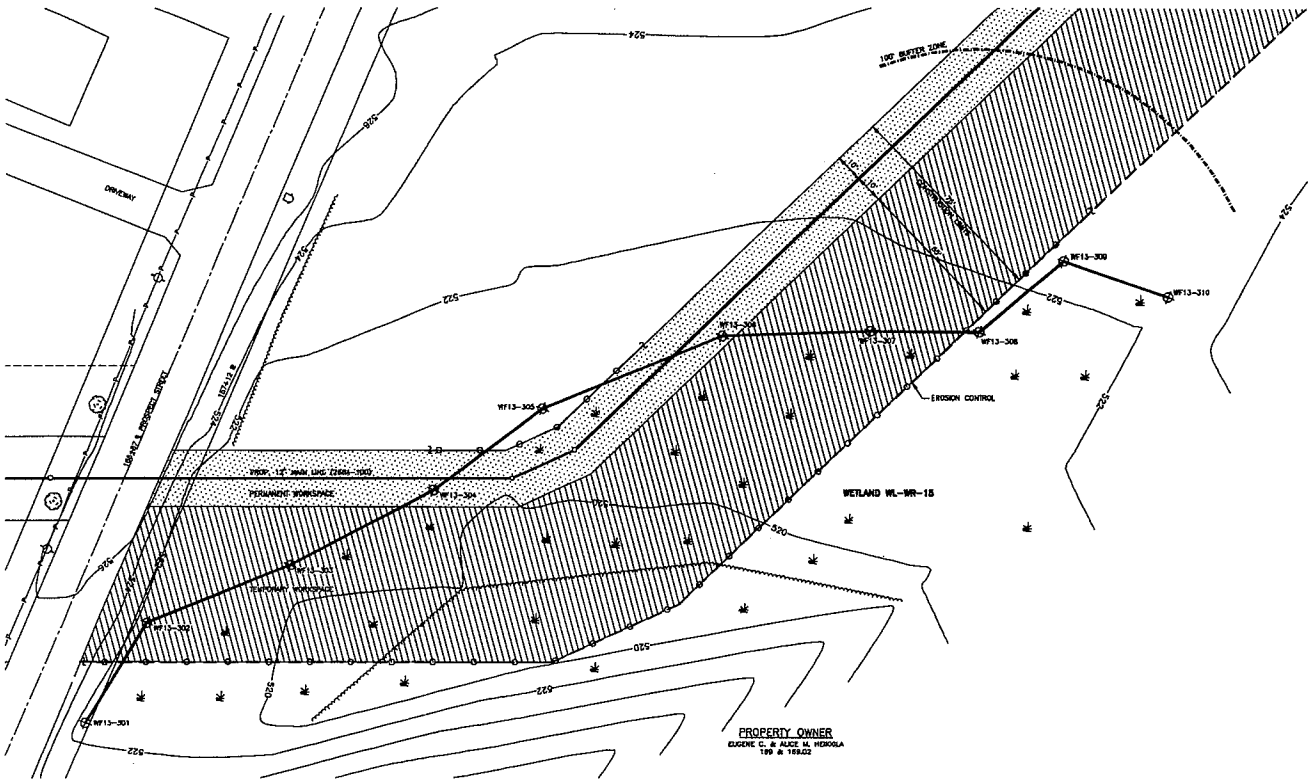
WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:	Range:
Co./Par.:	WORCESTER	State:	MASSACHUSETTS
Division:	NORTHERN	Op. Area:	HOPKINTON
Drafter:	RTM	Date: 11/07	Project ID: 118083
Chk'd:		Date:	Scale: 1" = 30'
Approved:		Date:	Filename: TE-E12-288A-100-24B3

TE-E12-288A-100-24B3 Sheet: 1 of 1 Type: ADID B

REF. 24036 (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

GENERAL CONSTRUCTION NOTES:

1. Avoid the removal of mature trees and landscaping along the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench places of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

6. In the event that excavation or other ground disturbance is required across or on landowner driveways or other private access ways, provide steel plating or other effective means to allow continued access for the landowner.

7. Ensure that construction activities do not unduly obstruct or reduce traffic flow on publicly used roads. For any public or private gravel surfaced roads or paved roads that may be crossed using an open cut trenching technique, expedite construction time frames for crossing by utilizing steel plates over the trench to keep at least one lane open at all times, and/or provide signs and coordination to detour traffic in an organized manner during construction.

8. Back fill the trench as soon as practicable after pipeline installation, through measures that include (but are not limited to) managing the progress of various construction crews so that each phase of construction follows, closely to the previous phase (i.e., back filling follows closely to lowering-in, lowering-in follows closely to welding, etc.).

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-15	0.31 AC.	0.04 AC.	0.09 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

REMARKS	DRAWING NO.	TITLE	DRAWING NO.	TITLE
	TE-E12-268A-100-24	ALIGNMENT SHEET		

REFERENCE DRAWINGS

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	06/08	SGH	ISSUED FOR BID	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

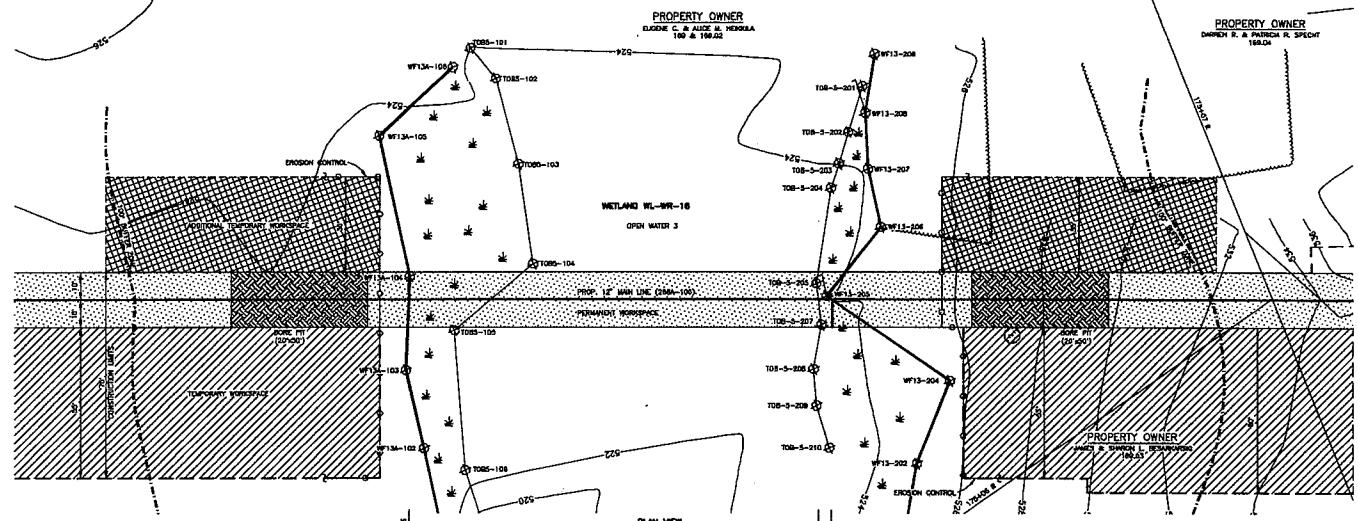
FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-15

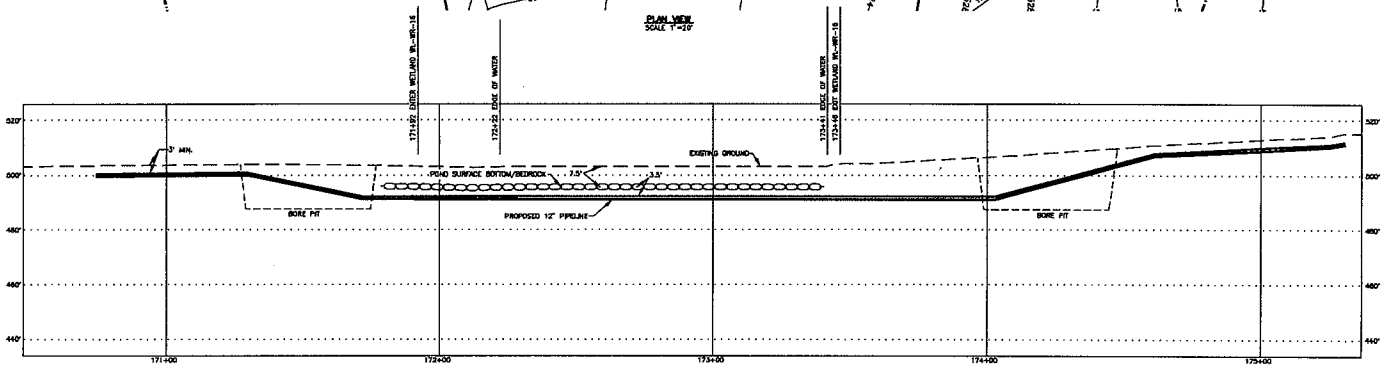
WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: NC	Date: 11/07	Project No. 118063	
CAD/R:	Date:	Scale: 1" = 20'	
Approved:	Date:	Filename: TE-E12-268A-100-24B4	
		Sheet: 1 of 1	
TE-E12-268A-100-24B4		Type: ASBUILT	B

REDC_2K28 (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG





LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
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- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
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MECL_24K36 (Rev. 01/05)

WETLAND/WATERBODY IMPACTS

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-16 (ORIGINAL IMPACT)	0.23 AC.	0.07 AC.	0.28 AC.	N/A
WL-WR-16 (REVISED IMPACT)	0.00 AC.	0.00 AC.	0.47 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

DRAWING NO.	TITLE
TE-E12-268A-100-24	ALIGNMENT SHEET

REMARKS

REFERENCE DRAWINGS

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/06	SGH	ISSUED FOR PERMIT	118063	
B	04/06	SGH	ISSUED FOR BID	118063	
C	07/06	SGH	REVISED FOR HDD CONSTRUCTION METHOD	118063	

REVISIONS

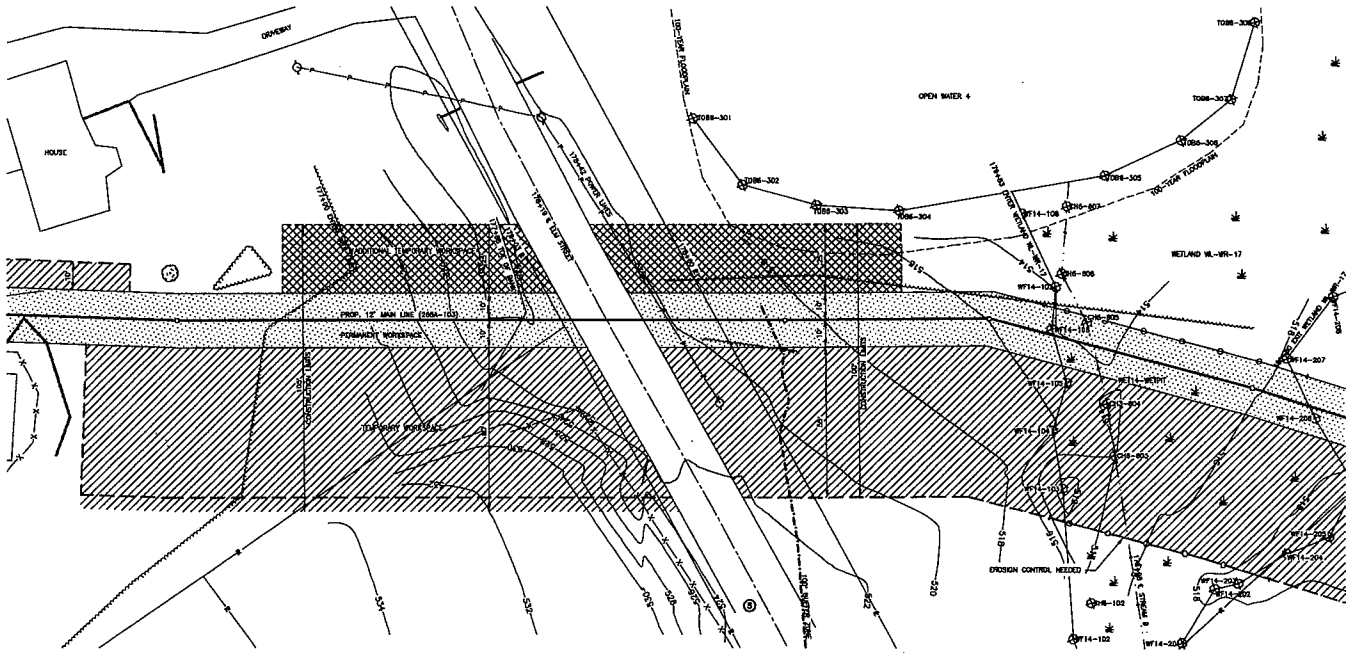
Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-16

WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:	Range:
Co./Par.:	WORCESTER	State:	MASSACHUSETTS
Division:	NORTHERN	Op. Area:	HOPKINTON
Drafter: RTJ	Date: 11/07	Project ID:	118063
Chk'd:	Date:	Scale:	1" = 20'
Approved:	Date:	Filename:	TE-E12-268A-100-24B5
TE-E12-268A-100-24B5		Sheet: 1 of 1 Type: AGRD	C

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



NOTES:

1. Avoid the removal of mature trees and landscaping within the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 103 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

6. In the event that excavation or other ground disturbance is required across or on landowner driveways or other private access ways, provide steel plating or other effective means to allow continued access for the landowner.

7. Ensure that construction activities do not unduly obstruct or reduce traffic flow on publicly used roads. For any public or private gravel surfaced roads or paved roads that may be crossed using an open cut trenching technique, expedite construction time frames for crossing by utilizing steel plates over the trench to keep at least one lane open at all times, and/or provide signs and coordination to deliver traffic in an organized manner during construction.

8. Back fill the trench as soon as practicable after pipeline installation, through measures that include (but are not limited to) managing the progress of various construction crews so that each phase of construction follows, closely to the previous phase (i.e., back filling follows closely to lowering-in, lowering-in follows closely to welding, etc.).

9. Noise from construction activities and equipment will be minimized by limiting active construction activity in residential areas to daylight hours.

10. Fugitive dust from construction activities will be minimized by watering dry soils or as needed throughout the period of active construction.

11. Landowners will be notified of construction activities through the employment of one or more full-time land agents who will be in contact with landowners before and throughout the construction period to resolve, address, and resolve any complaints that may arise from construction activities. Land agent(s) would serve as a point of contact between the landowner and the construction contractor.

REMARKS		REFERENCE DRAWINGS		
	TE-E12-26BA-103-Z6	ALIGNMENT SHEET		
DRAWING NO.	TITLE	DRAWING NO.	TITLE	

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Erosion Control Device Location
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- Water Valve
- Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
ELM STREET CROSSING

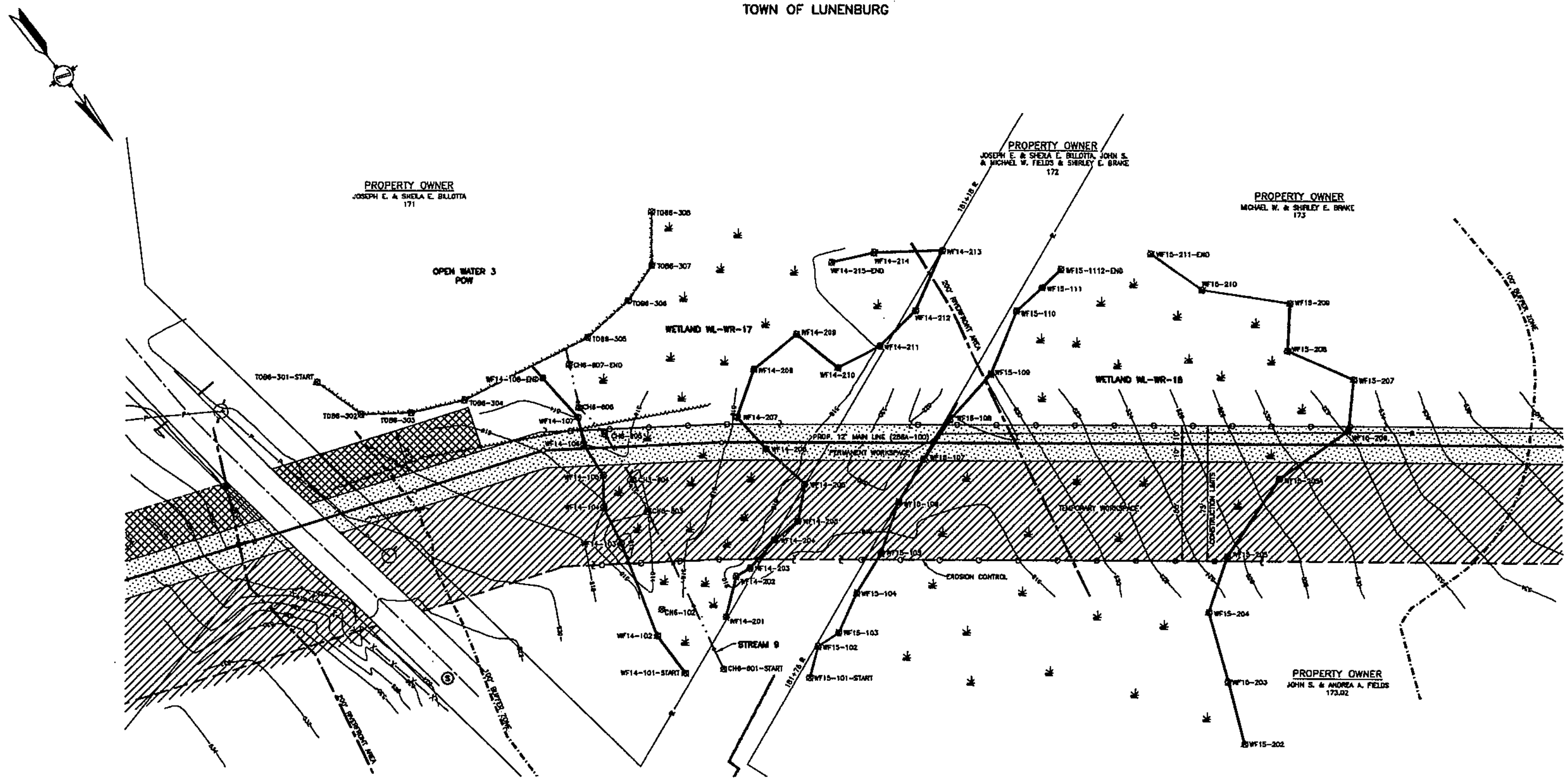
WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:	Range:
Co./Par.:	WORCESTER	State:	MASSACHUSETTS
Division:	NORTHERN	Op. Area:	HOPKINTON
Drafter:	MC	Date: 11/07	Project ID: 118063
Chk'd:		Date:	Scale: 1" = 20'
Approved:		Date:	Remarks: TE-E12-26BA-100-2488

TE-E12-26BA-100-2488 | Sheet: 1 of 1 | Type: ACAD | B

WESC-2403B (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- Water Valve
- Gas Valve
- Electric Junction Box
- Sign Post

GENERAL CONSTRUCTION NOTES:

1. Avoid the removal of mature trees and landscaping along the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

6. In the event that excavation or other ground disturbance is required across or on landowner driveways or other private access ways, provide steel plating or other effective means to allow continued access for the landowner.

7. Ensure that construction activities do not unduly obstruct or reduce traffic flow on publicly used roads. For any public or private gravel surfaced roads or paved roads that may be crossed using an open cut trenching technique, expedite construction time frames for crossing by utilizing steel plates over the trench to keep at least one lane open at all times, and/or provide signs and coordination to detour traffic in an organized manner during construction.

8. Back fill the trench as soon as practicable after pipeline installation, through measures that include (but are not limited to) managing the progress of various construction crews so that each phase of construction follows, closely to the previous phase (i.e., back filling follows closely to lowering-in, lowering-in follows closely to welding, etc.).

9. Noise from construction activities and equipment will be minimized by limiting active construction activity in residential areas to daylight hours.

10. Fugitive dust from construction activities will be minimized by watering dry soils or as needed throughout the period of active construction.

11. Landowners will be notified of construction activities through the employment of one or more full-time land agents who will be in contact with landowners before and throughout the construction period to receive, address, and resolve any complaints that may arise from construction activities. Land agent(s) would serve as a point of contact between the landowner and the construction contractor.

WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-17	0.12 AC.	0.04 AC.	0.68 AC.	N/A
WL-WR-18	0.25 AC.	0.10 AC.	0.68 AC.	N/A
STREAM 9	N/A	N/A	N/A	0.83 AC.

SCALE
50 0 30 60
SCALE IN FEET

DRAWING NO.	TITLE
TE-E12-288A-100-24	ALIGNMENT SHEET

REMARKS

REFERENCE DRAWINGS

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118083	
B	04/08	SGH	ISSUED FOR BID	118083	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

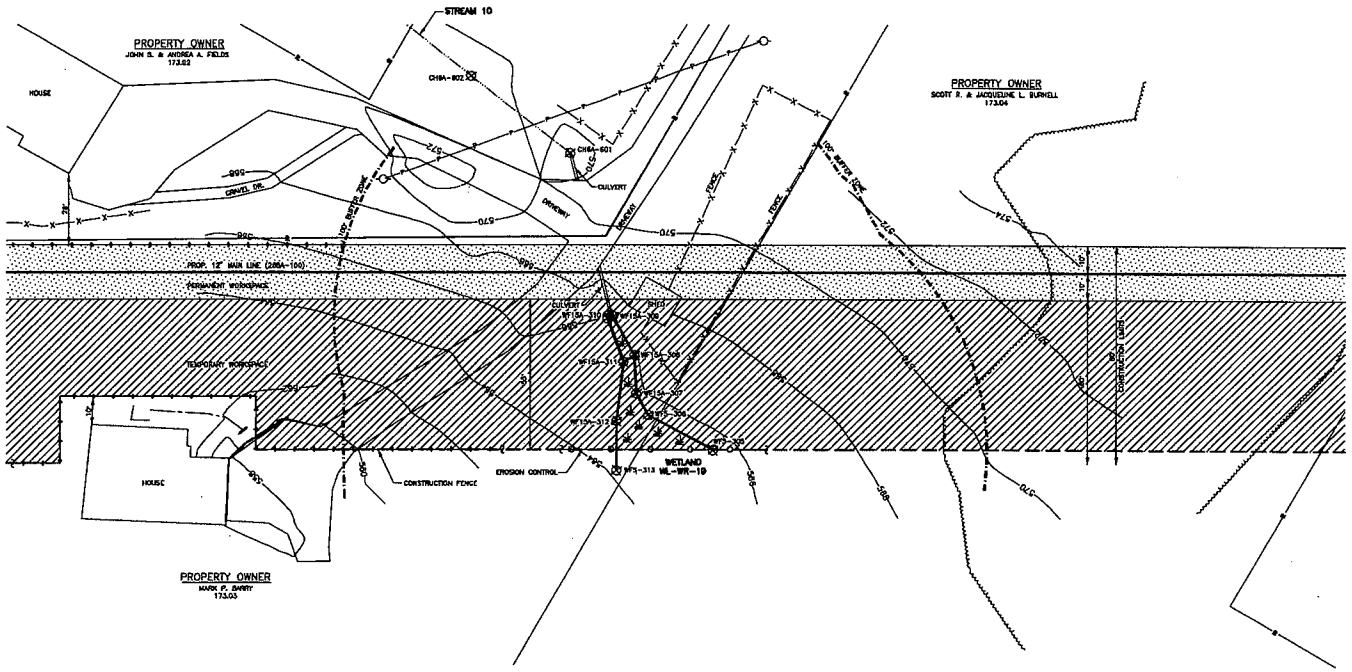
FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-17, WL-WR-18
STREAM 9
WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafted: RTJ	Date: 11/07	Project ID: 118083	
Chk'd:	Date:	Scale: 1" = 30'	
Approved:	Date:	Filename: TE-E12-288A-100-2487	

TE-E12-288A-100-2487 Sheet: 1 of 1 Type: ACAD B

MECH_24X36 (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



GENERAL CONSTRUCTION NOTES:

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2. Immediately restore or lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-19	0.01 AC.	N/A	0.40 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

	TE-E12-268A-100-24A	ALIGNMENT SHEET
REMARKS	DRAWING NO.	TITLE

REFERENCE DRAWINGS

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR PERMIT

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

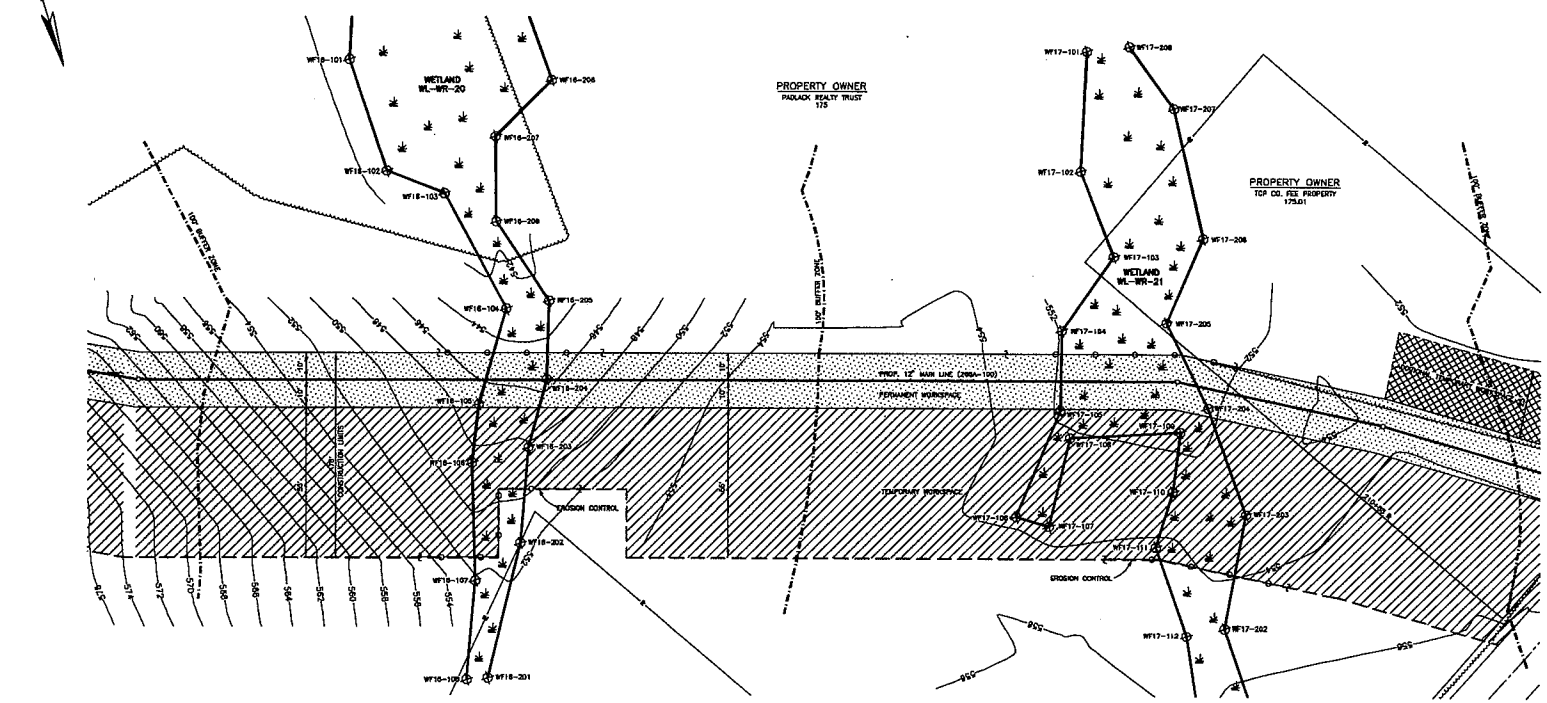
Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-19 &
STREAM 10
WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:	Range:
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: RTJ	Date: 11/07	Project ID: 118063	
Chk'd:	Date:	Scale: 1" = 20'	
Approved:	Date:	Remarks: TE-E12-268A-100-24C3	
TE-E12-268A-100-24C3		Sheet: 1 of 1 Type: ACAD	B

WESC_24C3B (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
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- Toe of Bank
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- Fence
- Edge of Woods
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- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

GENERAL CONSTRUCTION NOTES:

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-20	0.02 AC.	0.01 AC.	0.38 AC.	N/A
WL-WR-21	0.03 AC.	0.02 AC.	0.45 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

REMARKS	DRAWING NO.	TITLE	DRAWING NO.	TITLE
	TE-E12-268A-100-24A	ALIGNMENT SHEET		

REFERENCE DRAWINGS

WCSL-24A36 (Rev. 01/05)

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	07/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	
C	05/08	DDL	REVISED WORKSPACE PER FINAL REQUEST	118063	

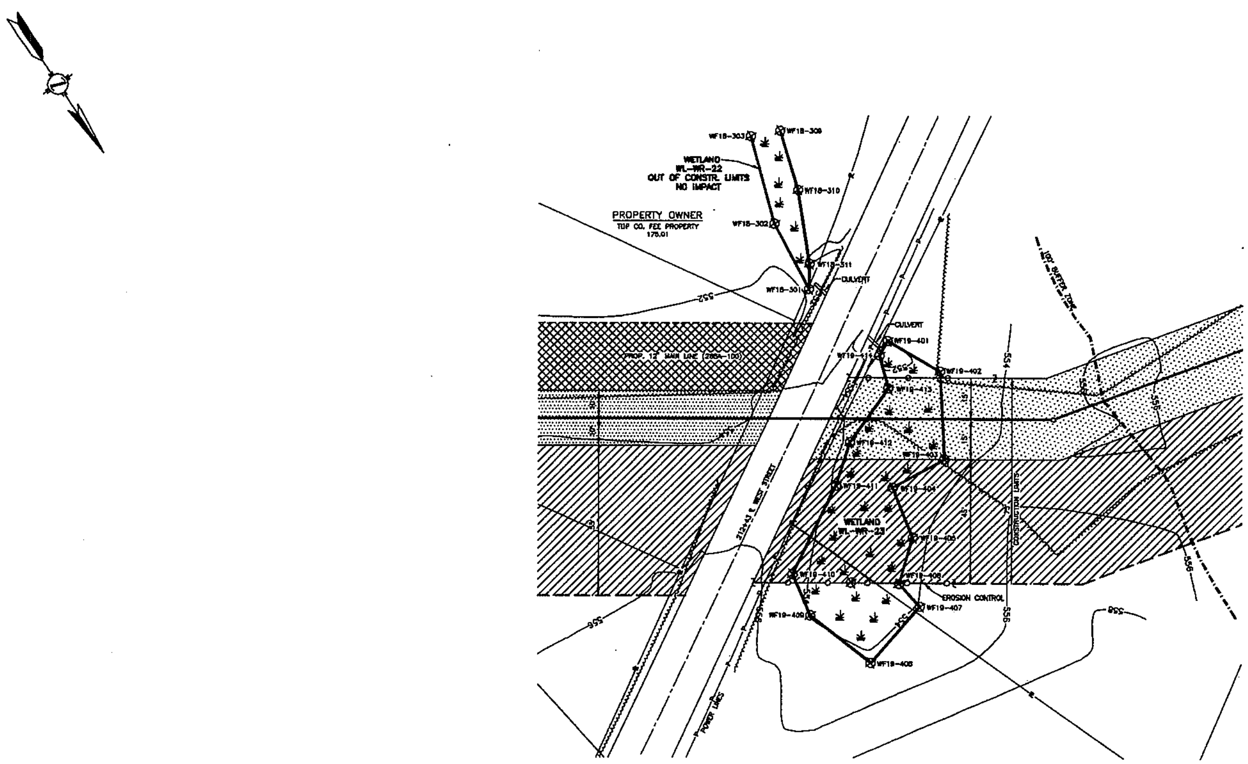
REVISIONS

Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-20
& WETLAND WL-WR-21
WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Par.: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: RTH	Date: 11/07	Project ID: 118063	
Chk'd:	Date:	Scale: 1" = 20'	
Approved:	Date:	Filename: TE-E12-268A-100-24C8	
TE-E12-268A-100-24C8		Sheet: 1 of 1 Type: ACAD	C

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



GENERAL CONSTRUCTION NOTES:

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-23	0.23 AC.	0.02 AC.	0.22 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

LEGEND

Symbol	Description
	Permanent Workspace
	Temporary Workspace
	Additional Temporary Workspace (ATWS)
	℄ Proposed 12" Pipeline
	℄ Existing Pipeline
	No Survey
	℄ Stream
	Top of Bank
	Toe of Bank
	Stone/Rock Fence
	Fence
	Edge of Woods
	Approximate Location of Orange Construction Fence
	Guard Rail
	100' Buffer Zone
	200' Riverfront Area
	Erosion Control Line (To be Maintained During Periods of Active Construction)
	Iron Rod/Pin
	Drill Hole
	Stone/Concrete Monument
	4-Leg Steel Tower
	Single Pole Tower/Power Pole
	H-Frame Tower
	Tree
	Wetland
	Sanitary Sewer Manhole
	Storm Sewer Manhole
	Water Well
	Fire Hydrant
	Foreign Valve Box
	Guy Wire and Anchor
	Curb Inlet
	Catch Basin
	Telephone Hand Hole
	Electric Hand Hole
WV	Water Valve
GV	Gas Valve
	Electric Junction Box
	Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

ep Tennessee Gas Pipeline an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-23

WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:		Range:	
Co./Par.:	WORCESTER			State:	MASSACHUSETTS
Division:	NORTHERN			Op. Area:	HOPKINTON
Drafter:	RTJ	Date:	11/07	Project ID:	118063
Chk'd:		Date:		Scale:	1" = 20'
Approved:		Date:		Filename:	TE-E12-268A-100-2581

TE-E12-268A-100-2581 | Sheet 1 of 1 | Type ACAD | B

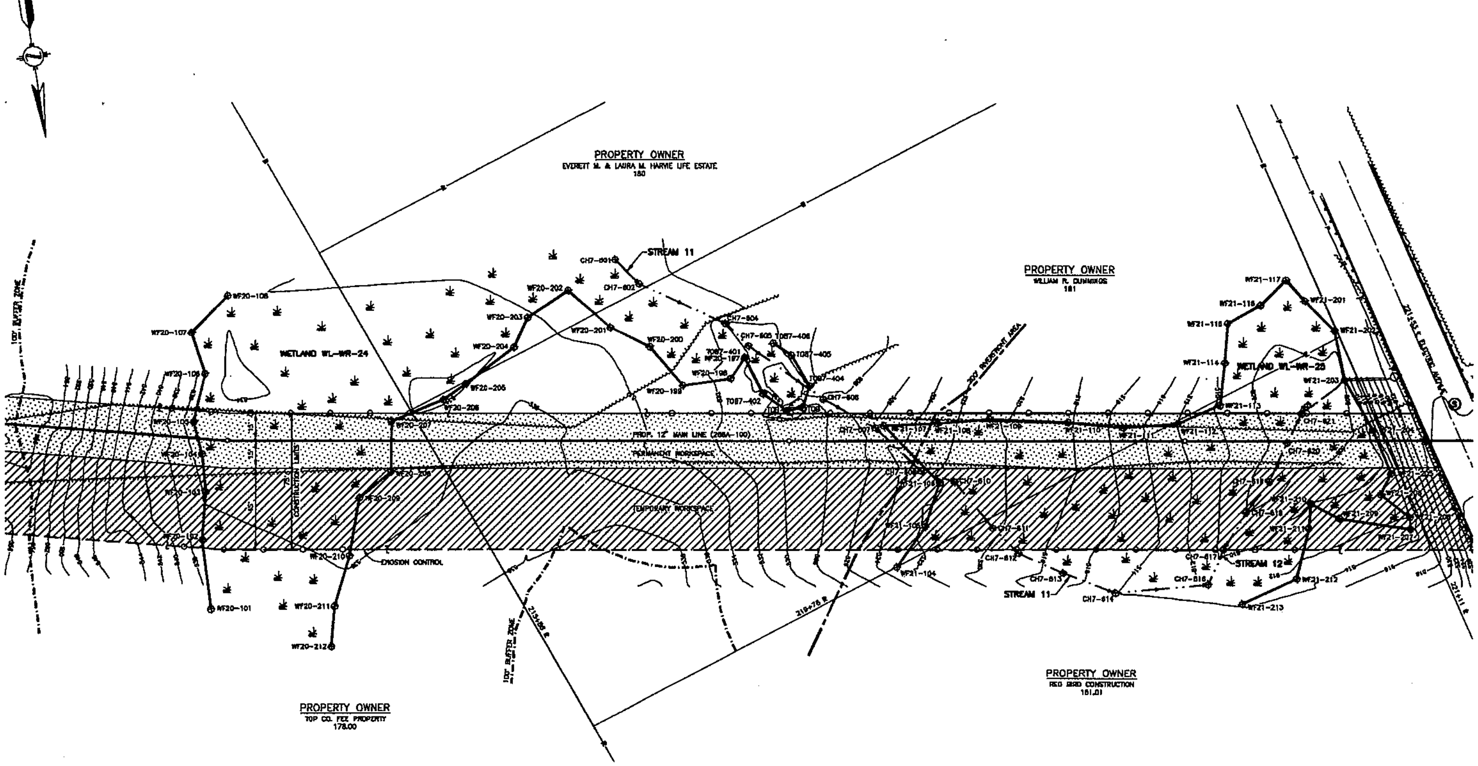
DRAWING NO.	TITLE
TE-E12-268A-100-25	ALIGNMENT SHEET

REMARKS

REFERENCE DRAWINGS

MECH_24X36 (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



GENERAL CONTRUCTION NOTES:

1. Avoid the removal of mature trees and landscaping along the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-24	0.08 AC.	0.07 AC.	1.34 AC.	N/A
WL-WR-23	0.24 AC.	0.18 AC.		N/A
STREAM 12	N/A	N/A	N/A	0.52 AC.

SCALE
30 0 30 60
SCALE IN FEET

TE-E12-268A-100-25	ALIGNMENT SHEET		
DRAWING NO.	TITLE	DRAWING NO.	TITLE

REMARKS

REFERENCE DRAWINGS

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- Water Valve
- Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

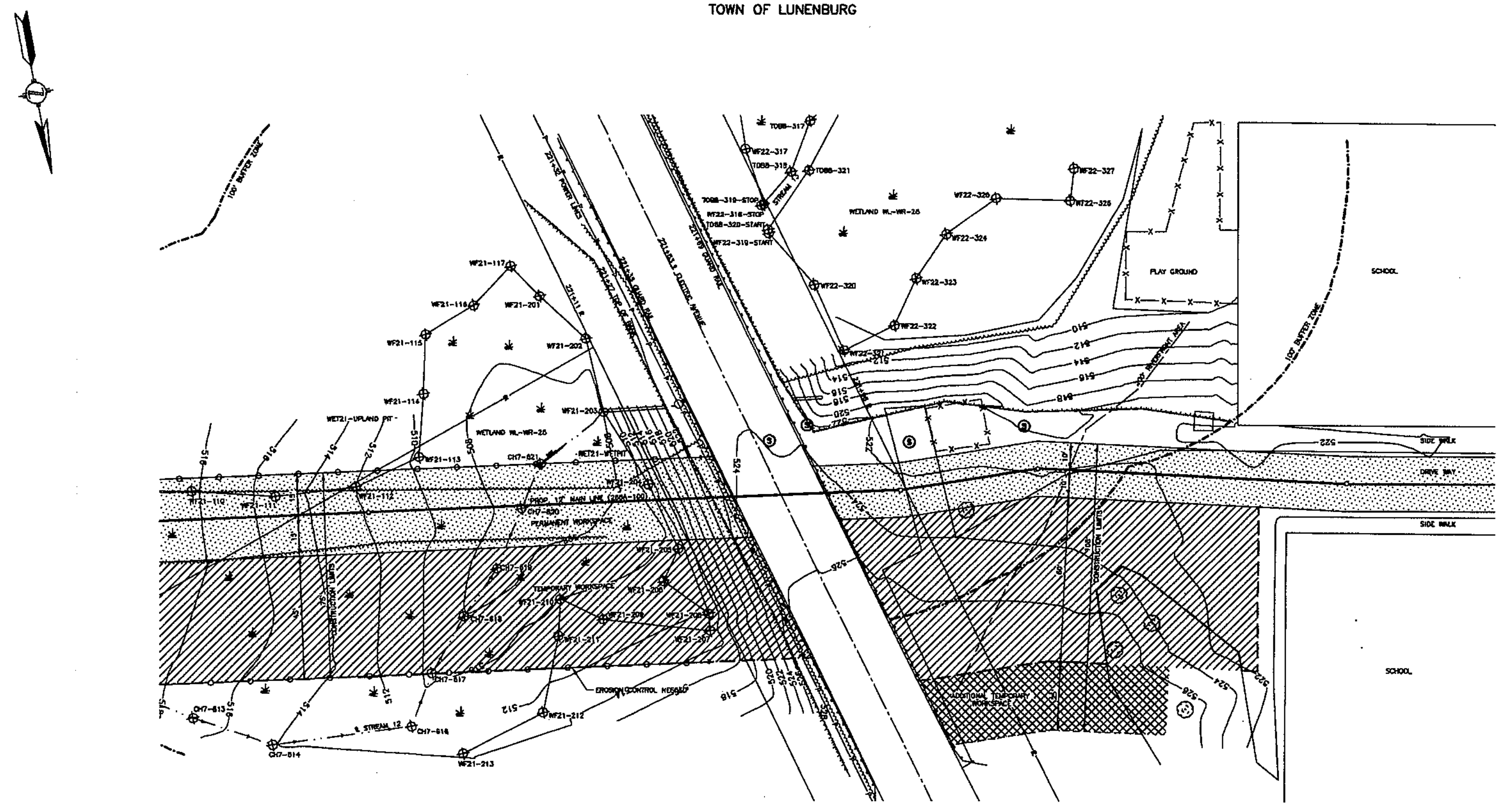
Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-24 & WL-WR-25
STREAMS 11 & 12
WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:		Range:
Co./Par.: WORCESTER		State:	MASSACHUSETTS
Division: NORTHERN		Op. Area:	HOPKINTON
Drafter: NC	Date: 11/07	Project ID:	118063
Chk'd:	Date:	Scale:	1" = 30'
Approved:	Date:	Filename:	TE-E12-268A-100-25B2
TE-E12-268A-100-25B2		Sheet: 1 of 1 Type: ACAD	B

MECH_24X36 (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



NOTES:

1. Avoid the removal of mature trees and landscaping within the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 103 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

6. In the event that excavation or other ground disturbance is required across or on landowner driveways or other private access ways, provide steel plating or other effective means to allow continued access for the landowner.

7. Ensure that construction activities do not unduly obstruct or reduce traffic flow on publicly used roads. For any public or private gravel surfaced roads or paved roads that may be crossed using an open cut trenching technique, expedite construction time frames for crossing by utilizing steel plates over the trench to keep at least one lane open at all times, and/or provide signs and coordination to detour traffic in an organized manner during construction.

8. Back fill the trench as soon as practicable after pipeline installation, through measures that include (but are not limited to) managing the progress of various construction crews so that each phase of construction follows closely to the previous phase (i.e., back filling follows closely to lowering-in, lowering-in follows closely to welding, etc.).

9. Noise from construction activities and equipment will be minimized by limiting active construction activity in residential areas to daylight hours.

10. Fugitive dust from construction activities will be minimized by watering dry soils or as needed throughout the period of active construction.

11. Landowners will be notified of construction activities through the employment of one or more full-time land agents who will be in contact with landowners before and throughout the construction period to receive, address, and resolve any complaints that may arise from construction activities. Land agent(s) would serve as a point of contact between the landowner and the construction contractor.

WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-24	0.18 AC.	0.02 AC.	0.02 AC.	N/A
WL-WR-25	0.40 AC.	0.08 AC.	0.02 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- Water Valve
- Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118083	
B	04/08	SGH	ISSUED FOR BID	118083	

REVISIONS

ep Tennessee Gas Pipeline an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
ELECTRIC AVENUE CROSSING

WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:		Range:	
Co./Par.:	WORCESTER			State:	MASSACHUSETTS
Division:	NORTHERN			Op. Area:	HOPKINTON
Drafter:	MC	Date:	11/07	Project ID:	118083
Chk'd:		Date:		Scale:	1" = 20'
Approved:		Date:		Filename:	TE-E12-268A-100-2583

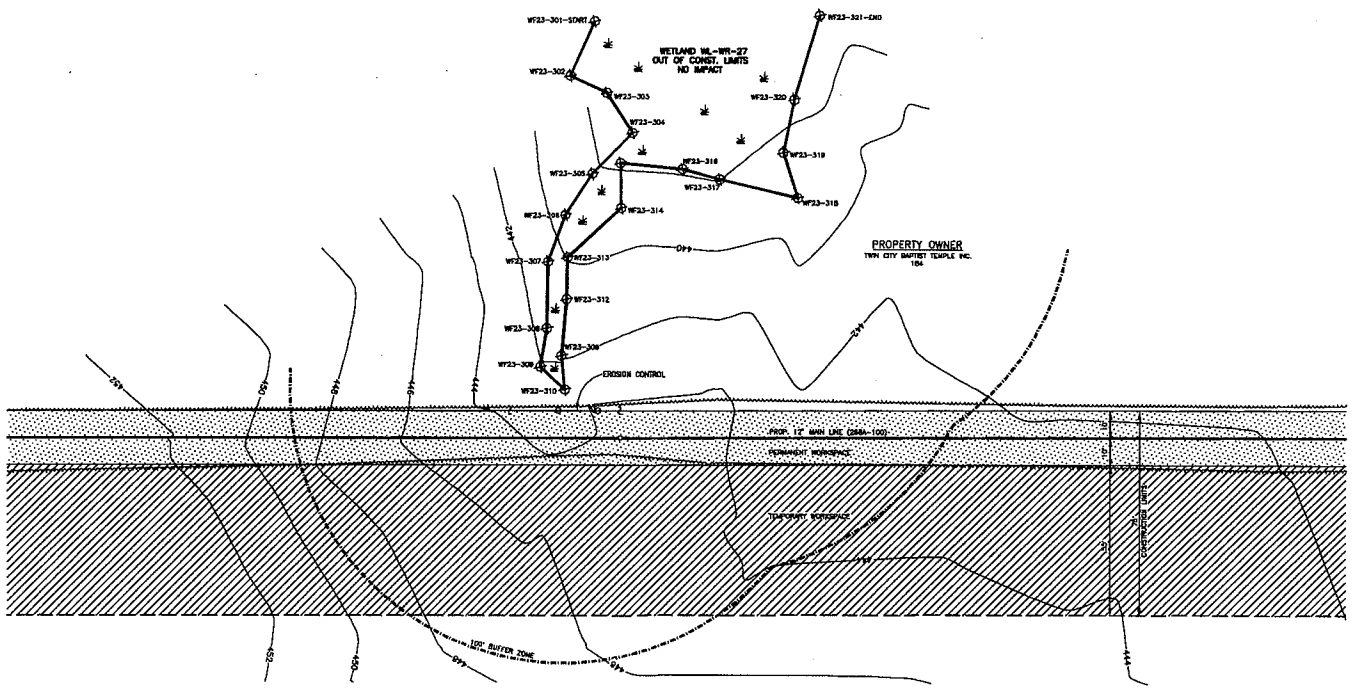
TE-E12-268A-100-2583 | Sheet: 1 of 1 | Type: ACAD | B

REMARKS	DRAWING NO.	TITLE	DRAWING NO.	TITLE
	TE-E12-268A-100-25	ALIGNMENT SHEET		

REFERENCE DRAWINGS

MECH_24X36 (Rev. 01/05)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



GENERAL CONSTRUCTION NOTES:

1. Avoid the removal of mature trees and landscaping along the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

6. In the event that excavation or other ground disturbance is required across or on landowner driveways or other private access ways, provide steel plating or other effective means to allow continued access for the landowner.

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-27	N/A	N/A	0.35 AC.	N/A

SCALE

20 0 20 40

SCALE IN FEET

DRAWING NO.	TITLE
TE-E12-268A-100-22A	ALIGNMENT SHEET

REMARKS

REFERENCE DRAWINGS

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-27

WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:	Range:
Co./Par.:	WORCESTER	State:	MASSACHUSETTS
Division:	NORTHERN	Op. Area:	HOPKINTON
Drafter: KM	Date: 11/07	Project ID:	118063
Chk'd:	Date:	Scale:	1" = 30'
Approved:	Date:	Drawing No.	TE-E12-268A-100-25C

TE-E12-268A-100-25C

Sheet: 1 of 1
Type: ADRD
B

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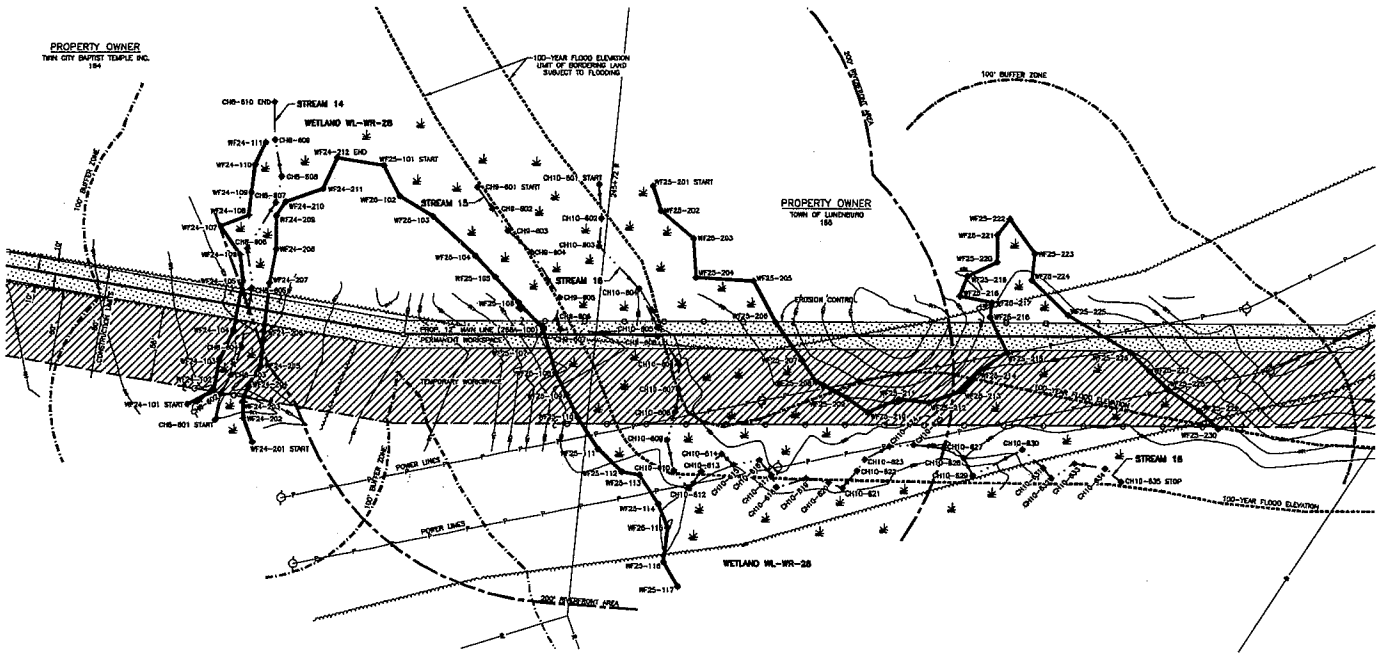
WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



GENERAL CONSTRUCTION NOTES:

1. Avoid the removal of mature trees and landscaping along the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Democratic's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

5. Reduce the construction workspace such that a minimum of 10 feet between each structure and the construction workspace is maintained during construction activities.

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8. Back fill the trench as soon as practicable after pipeline installation, through measures that include (but are not limited to) managing the progress of various construction crews so that each phase of construction follows closely to the previous phase (i.e., back filling follows closely to lowering-in, lowering-in follows closely to welding, etc.).

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10. Fugitive dust from construction activities will be minimized by watering dry soils or as needed throughout the period of active construction.

11. Landowners will be notified of construction activities through the employment of one or more Tub-Gas land agents who will be in contact with landowners before and throughout the construction period to receive, address, and resolve any complaints that may arise from construction activities. Land agent(s) would serve as a point of contact between the landowner and the construction contractor.

WATERBODIES IMPACT

WATERBODY/ WETLAND	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-28	0.48 AC.	0.13 AC.	1.58 AC.	N/A
STREAM 15	N/A	N/A	N/A	0.57 AC.
STREAM 16	N/A	N/A	N/A	

SCALE

40 0 40 80

SCALE IN FEET

REMARKS	REFERENCE DRAWINGS			
	TE-E12-288A-100-25A	ALIGNMENT SHEET		
	DRAWING NO.	TITLE	DRAWING NO.	TITLE

LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118053	
B	04/08	SGH	ISSUED FOR BID	118053	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-28
STREAM 14, 15 & 16
WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:	Range:
Co./Par.:	WORCESTER	State:	MASSACHUSETTS
Division:	NORTHERN	Op. Area:	HOPKINTON
Drafter:	KC	Date: 11/07	Project ID: 118053
Chk'd:		Date:	Scale: 1" = 40'
Approved:		Date:	Filename: TE-E12-288A-100-25C1

TE-E12-288A-100-25C1 | Sheet: 1 of 1 | Type: ACAD | B

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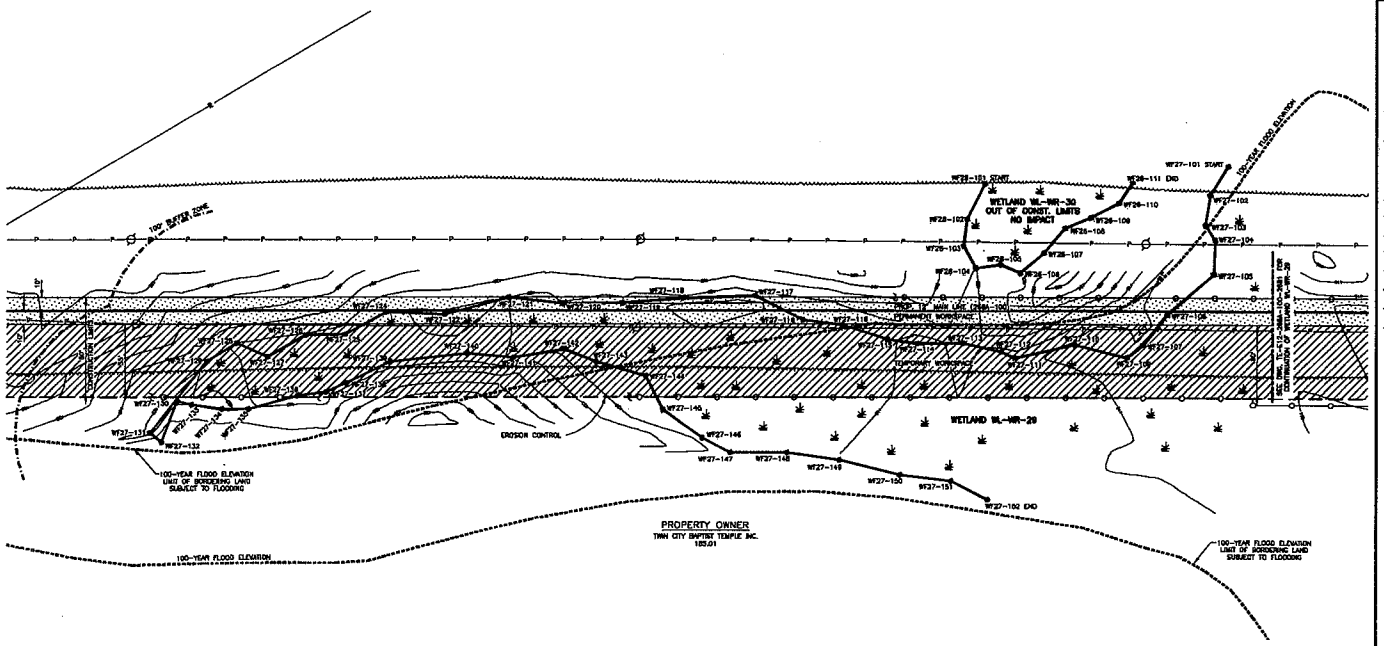
WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
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- Electric Hand Hole
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- GV Gas Valve
- Electric Junction Box
- Sign Post

GENERAL CONSTRUCTION NOTES:

1. Avoid the removal of mature trees and landscaping along the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-29	0.94 AC.	0.31 AC.	2.16 AC.	N/A

SCALE

40 0 40 80

SCALE IN FEET

REMARKS	DRAWING NO.	TITLE	DRAWING NO.	TITLE
	TE-E12-268A-100-25A	ALIGNMENT SHEET		

REFERENCE DRAWINGS

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118053	
B	04/08	SGH	ISSUED FOR BID	118053	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

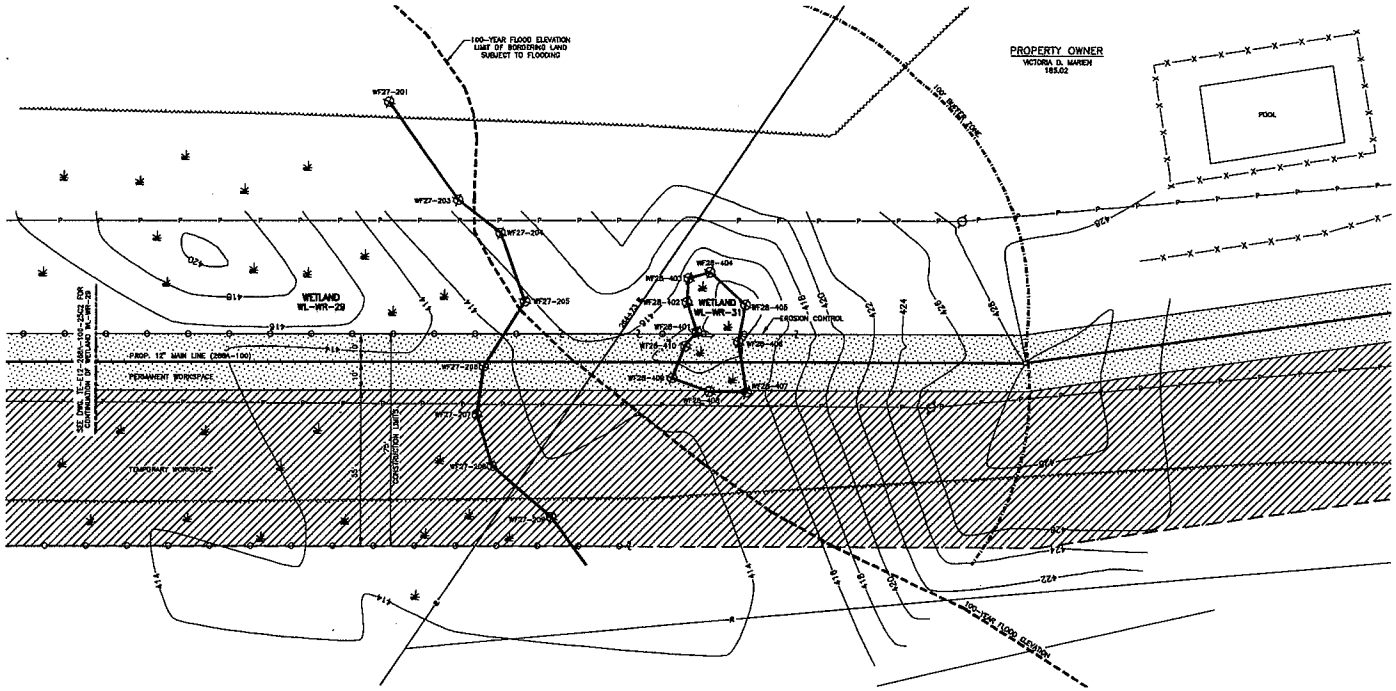
FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-29

WORCESTER COUNTY, MASSACHUSETTS

Section:	Township:	Range:	
Co./Parish: WORCESTER		State: MASSACHUSETTS	
Division: NORTHERN		Op. Area: HOPKINTON	
Drafter: AC	Date: 11/07	Project ID: 118053	
Check:	Date:	Scale: 1" = 40'	
Approved:	Date:	Filename: TE-E12-268A-100-25C2	
TE-E12-268A-100-25C2		Sheet: 1 of 1 Type: ACAD	B

TGP-E12-268A (Rev. 01/06)

WORCESTER COUNTY, MASSACHUSETTS
TOWN OF LUNENBURG



LEGEND

- Permanent Workspace
- Temporary Workspace
- Additional Temporary Workspace (ATWS)
- ℄ Proposed 12" Pipeline
- ℄ Existing Pipeline
- No Survey
- ℄ Stream
- Top of Bank
- Toe of Bank
- Stone/Rock Fence
- Fence
- Edge of Woods
- Approximate Location of Orange Construction Fence
- Guard Rail
- 100' Buffer Zone
- 200' Riverfront Area
- Erosion Control Line (To be Maintained During Periods of Active Construction)
- Iron Rod/Pin
- Drill Hole
- Stone/Concrete Monument
- 4-Leg Steel Tower
- Single Pole Tower/Power Pole
- H-Frame Tower
- Tree
- Wetland
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Water Well
- Fire Hydrant
- Foreign Valve Box
- Guy Wire and Anchor
- Curb Inlet
- Catch Basin
- Telephone Hand Hole
- Electric Hand Hole
- WV Water Valve
- GV Gas Valve
- Electric Junction Box
- Sign Post

GENERAL CONSTRUCTION NOTES:

1. Avoid the removal of mature trees and landscaping along the edge of the construction workspace unless necessary for the safe operation of construction equipment.

2. Immediately restore all lawn areas and landscaping within the construction workspace, consistent with the Commission's Recommended Plan, after back filling the trench.

3. Fence the construction workspace adjacent to each structure for a distance of 100 feet on either side of each structure, to ensure that construction equipment and materials, including the spoil pile, remain within the construction workspace.

4. Maintain safety fencing throughout open trench phases of pipe installation.

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WATERBODIES IMPACT

WATERBODY/ WETLAND #	TEMP. IMPACT	PERM. IMPACT	BUFFER ZONE	RIVERFRONT AREA
WL-WR-29	0.94 AC.	0.21 AC.	2.18 AC.	N/A
WL-WR-31	0.01 AC.	0.0001 AC.		N/A

SCALE
20 0 20 40
SCALE IN FEET

REMARKS	REFERENCE DRAWINGS		
	TE-E12-26BA-100-26 ALIGNMENT SHEET		
	DRAWING NO. / TITLE	DRAWING NO.	TITLE

ISSUED FOR BID

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
A	02/08	SGH	ISSUED FOR PERMIT	118063	
B	04/08	SGH	ISSUED FOR BID	118063	

REVISIONS

Tennessee Gas Pipeline
an El Paso company

FITCHBURG EXPANSION PROJECT
SITE SPECIFIC FOR:
WETLAND WL-WR-29 &
WETLAND WL-WR-31
WORCESTER COUNTY, MASSACHUSETTS

Section:		Township:	Range:
Co./Par.:	WORCESTER	State:	MASSACHUSETTS
Division:	NORTHERN	Op. Area:	HOPKINTON
Drafter:	NG	Date: 11/07	Project ID: 118063
Chk'd:		Date:	Scale: 1" = 20'
Approved:		Date:	Alignment: TE-E12-26BA-100-26A1

TE-E12-26BA-100-26A1 Sheet: 1 of 1 Type: ADAD B

MESC_24KS8 (Rev. 01/06)

7.0 Construction Impacts and Mitigation

Construction and operation of the proposed pipeline replacement will include temporary impacts to wetland resources. The proposed facilities will be designed, constructed, tested, operated, and maintained to conform with or exceed federal, state, and local requirements including 49 CFR Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards", 18 CFR Part 157.206(d), "Guidelines to be Followed by Natural Gas Pipeline Companies in the Planning, Clearing, and Maintenance of Rights-of-Way and the Construction of Aboveground Facilities." Additionally, Tennessee will comply with the Commission's Upland Erosion Control, Revegetation and Maintenance Plan [01-17-03 version] ("Plan") and the Commission's Wetland and Waterbody Construction and Mitigation Procedures [01-17-03 version] ("Procedures") as contained in Appendix A, of Section IV - Appendix D – ER. Tennessee will be requesting a variance from Section VI, B, 1 of the Commission Procedures for ATWS and access roads within 50 feet of wetland boundaries. A Spill Prevention Control and Countermeasure ("SPCC") Plan, an Unanticipated Discovery Plan for cultural resources and a Waste Management Plan comprise the Project's construction BMPs. Copies of these BMPs have been provided in Appendix C of Section IV - Appendix D – ER.

The typical construction ROW width for the Project will be 70 to 80 feet and will generally consist of 20 and 30 feet of permanently maintained ROW and 50 feet of temporary construction workspace. Temporary workspace within wetlands will be limited to 75 feet to minimize adverse impacts, in accordance with Commission guidelines. The 20 and 30-foot permanent ROW will be consistent within wetlands as well, but only a 10-foot wide area centered over the pipeline will be maintained in an herbaceous or scrub-shrub vegetative state.

Construction of the Project will result in approximately 7.78 acres of temporary impacts to wetlands (See Table 5). No long-term impacts to existing PEM and PSS wetlands are expected as a result of the Project, as these wetlands will be allowed to revert to the pre-construction vegetation cover type upon completion of pipeline installation.

Temporary wetland impacts may include soil disturbance, temporary alteration of hydrology and loss of vegetation during construction. Upon completion of construction, topsoil, contour elevations and hydrologic patterns will be restored to pre-construction conditions to promote the reestablishment of hydrophytic vegetation. Woody vegetation will be allowed to regenerate within the ROW except for the area centered over the pipeline that will be maintained in an herbaceous/scrub-shrub state to allow for inspection and maintenance of the pipeline once it is in service. Additionally, trees within 15 feet of the pipeline greater than 15 feet in height will be selectively cut and removed from the permanent ROW.

Tennessee will protect and minimize potential adverse impacts on wetlands using construction procedures specified within the Commission Wetland and Waterbody Construction and Mitigation Procedures and include the following:

- Limiting the amount of equipment and construction activities within wetlands to minimize soil disturbance
- Restoring wetlands to their original configuration and contours;
- Stabilizing upland areas near wetlands with erosion control measures and vegetative cover as soon as possible after backfilling;

- Inspecting the ROW periodically during and after construction and repairing any erosion control or restoration features as needed until permanent revegetation is successful.

Tennessee will utilize one of the following three methods for crossing wetlands during construction:

- Standard Pipeline Construction
- Conventional Wetland Construction
- Push/Pull Wetland Construction

Standard Pipeline Construction

Standard Pipeline Construction will be utilized in wetlands where soils are non-saturated and able to support construction equipment at the time of crossing. This method requires segregation of topsoil from subsoil along the trenchline, trench excavation, pipe laying, backfilling and grade restoration. Erosion control measures including site specific contouring, permanent slope breakers, mulching, and reseeding or sodding with soil-holding vegetation will be implemented. Contouring will be accomplished using acceptable excess soils from construction.

Conventional Wetland Construction

Conventional Wetland Construction will be used for crossing wetlands with saturated soils or soils unable to support construction equipment. Prior to crossing and movement of construction equipment through these wetlands, the ROW will be stabilized using timber mats or corduroy roads to allow for a stable, safe working condition.

Unless soils are saturated, the top 12 inches of wetland soil over the trenchline will be segregated. Trench spoil will be temporarily piled in a ridge along the pipeline trench. Gaps in the spoil pile will be left at appropriate intervals to provide for natural circulation or drainage of water. While the trench is dug, the pipeline will be assembled in a staging area located in an upland area. After the pipeline is lowered into the trench, wide track bulldozers or backhoes supported on swamp mats will be used for backfill, final cleanup, and grading. This method will minimize the amount of equipment and travel in wetland areas. If dry conditions exist within the wetland, the pipe fabrication will occur in the wetland and normal cross-country construction practices will be used.

Push-Pull Technique

Construction in saturated wetland areas may involve the "push-pull technique". Push and pull techniques involve pushing the prefabricated pipe from the edge of the wetland or pulling the pipe with a winch from the opposite bank of the wetland into the trench. The trench will be excavated using a backhoe, dragline, or clamshell dredge. The excavated material will be stored adjacent to the trench. The pipe will be stored and joined at staging areas (push and pull sites) located outside the wetland. Floats may be attached temporarily to give the pipe positive buoyancy. After floating the pipe into place, these floats will be cut and the negatively buoyant pipe will settle to the bottom of the ditch. This operation will be repeated, with pipe sections fabricated, pushed into place, and welded together, until the wetland crossing is complete. The excavated material will then be placed over the pipe to backfill in the trench.

7.1 Minimization of Impacts

To minimize impacts to wetlands, Tennessee will implement the wetland construction procedures described within the Commission Procedures. Tennessee has reduced the typical construction ROW through wetlands, and, during operation of the Project, up to 10 feet of the permanent ROW, centered over the pipeline, will be maintained within wetlands at an early successional stage in accordance with Commission requirements. In forested wetlands, Tennessee will minimize tree clearing to the extent practicable while maintaining safe construction conditions.

Tennessee will protect and minimize potential adverse impacts to wetlands by expediting construction in and around wetlands, restoring wetlands to their original configurations and contours, segregating topsoil during excavation, permanently stabilizing upland areas near wetlands as soon as possible after backfilling, inspecting the ROW periodically during and after construction and repairing any erosion control or restoration features until permanent revegetation is successful. All jurisdictional wetland crossings will require authorization from USACE under Section 404 of the Clean Water Act and MADEP, and Tennessee will comply with applicable permit conditions as issued by these agencies.

7.2 Aboveground Facilities

Construction and operation of the proposed pig launcher and receiver will not impact any wetlands or waterbodies as none of these environmental resource areas are located in the vicinity of the Project location. Tennessee will provide mitigation for any possible land impacts resulting from construction through adherence to the 2003 Commission Plan and Procedures and Tennessee's Construction BMP's.