



**Archaeological Overview Survey -
Addendum #1 to Technical Report
New Jersey-New York Expansion
Project**
Staten Island, New York

Submitted to:

February 9, 2011
FERC Docket No. CP11-56-000
PAL No. 2367.02

Spectra Energy Transmission, LLC
150 Warren Street
Jersey City, New Jersey 07304

Spectra Energy Corp (Spectra Energy) is proposing to expand its pipeline systems in the New Jersey-New York region to meet the immediate and future demand for natural gas in the largest United States metropolitan area. To accomplish this, Spectra Energy pipeline companies, Texas Eastern Transmission, LP (Texas Eastern) and Algonquin Gas Transmission, LLC (Algonquin) are seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act (NGA) authorizing the construction and operation of the New Jersey-New York Expansion Project (NJ-NY Project) located in New Jersey, New York, and Connecticut. The NJ-NY Project will create a new transportation path for 800,000 decatherms per day (Dth/d) of natural gas from multiple receipt points on the Spectra Energy systems to new delivery points in New Jersey and New York.

Project Changes since the December 2010 Filing

This document represents an addendum to the technical report for the archaeological overview survey completed for the NJ-NY Expansion Project (Elquist et al. 2010). Since filing the formal Certificate application, Texas Eastern has incorporated one route change (**Route Variation 50**) into the current pipeline in the New York portion of the Project area after further consultation with property owners and other stakeholders (Figure 1). The route variation is described below with its corresponding mile post (MP) locations.

MP 4.07R – MP 4.90R - Route Variation 50

This route variation is approximately 0.83 miles in length, deviates from the originally proposed NJ-NY Expansion pipeline right-of-way (ROW) at MP 4.07R, and rejoins the ROW at MP 4.90R. This route variation was incorporated in the preferred pipeline alignment to satisfy concerns expressed by the Port Authority of New York and New Jersey (Port Authority) relating to the potential conflicts with the Goethals Bridge and its planned relocation. Route Variation 50 involves a slight modification to the planned 42-inch Goethals Bridge horizontal directional drill (HDD) location, including the pipeline pullback area, to avoid the proposed bridge footings for the new Goethals Bridge.

The primary advantages of this route variation are that it will continue to accommodate the landowner's request to minimize the establishment of new pipeline ROW on Port Authority property and avoid conflicts with the planned Goethals Bridge relocation. Route Variation 50 also allows Texas Eastern to set up the HDD work area further from its existing facilities at M&R Station 058, providing for a much safer work zone. As a result, the HDD realignment will require a reconfiguration of the proposed facilities at existing M&R Station 058. The HDD exit hole will remain on property owned by Texas Eastern and will be located in an area that is currently undeveloped. Additional tree clearing will be required; however, no additional wetland or water body impacts will occur.

This addendum presents the results of the archaeological overview survey for the above-described Route Variation 50 and makes management recommendations for any necessary additional archaeological investigations. The methodology and sensitivity model utilized for the overview survey of this Project change is the same as outlined in *Archaeological Overview Survey, Texas Eastern Transmission, LP, New Jersey-New York Expansion Project, FERC Docket #CP11-56-000, Staten Island, Manhattan, and Ramapo, New York* (Elquist et al. 2010).

Results of the Archaeological Overview Survey

Elements of Route Variation 50 include an HDD, and a section of pipeline slated for open cut construction (Figures 2 through 5). The HDD extends between an entry point located in a vacant wooded area north of Goethals Road North and an exit point located just south of Lambert Avenue (see Figure 2 thru 4). This same wooded area contains additional temporary workspace adjacent to and east of existing M&R Station 058 (see Figure 4). From south to north, the HDD crosses wetlands and Old Place Creek, continuing north under Western Avenue, the Goethals Bridge roads (I-278 north and southbound), and Goethals Road North (formerly Washington Avenue) into the vacant wooded area east of the existing Texas Eastern M&R Station 058. From here, the open cut portion of the pipeline runs west onto the lot containing the existing M&R Station 058 facilities before turning north and paralleling Western Avenue and entering wetlands associated with Bridge Creek.

In addition to the vacant woods and Bridge Creek wetlands, current conditions along the Project APE consist of tidal marsh at and south of Old Place Creek with raised dirt roads including Lambert Avenue situated at the south end. The area north of Old Place Creek contains paved roadways (Goethals Road North and Western Avenue), and a paved and graded dirt and gravel area associated with M&R 058. The route traverses what was historically tidal marsh south of Old Place Creek before traversing an area of dry raised land north of the creek according to nineteenth century maps (Hassler 1845; USGS 1891). Soils along the Project route at and south of Old Place Creek are mapped as Ipswich-Pawcatuck-Matunuck mucky peats, and those north of the creek are mapped as Pavement and Buildings, wet substratum-Laguardia-Ebbets complex (NRCS 2005). The latter soils consist of a mixture of natural soil materials and construction debris over tidal marsh with up to 80 percent pavement and buildings covering the surface.

Previously Identified Archaeological Sites

There are no known archaeological sites along the portion of the Project route south of Old Place Creek. One recorded pre-contact archaeological site, the Old Place Site (A085-01-0134 and A085-01-2366), is within or adjacent to the pipeline route north of Old Place Creek. Initially reported by

Skinner (1909a), and subsequently investigated by both avocational and professional archaeologists in the 1960s and 1980s (HAA 2002; Payne and Baumgardt 1986; Ritchie and Funk 1971) the Old Place Site has yielded evidence of Archaic, Woodland and Contact period components. Despite impacts by historic development and pot-hunting, a previous cultural resource investigation recommended the site as potentially significant (Payne and Baumgardt 1986:III-3).

Exact boundaries of the Old Place Site are uncertain, but it is reportedly located along a large area on a strip of dry land bounded by marsh in the immediate vicinity of Western Avenue between Old Place Creek to the south and the Staten Island rail line to the north. Available documents suggest that finds definitively from the site to date have all been recovered west of Western Avenue, although a previous archaeological assessment depicts the bounds of the Old Place Site as extending well east of Western Avenue as indicated by a Skinner map (HAA 1995), and Skinner's artifact collection notes variably refer to finds in the area as being from "Old Place," "Old Place Neck," or "Tunissen's Neck" (Skinner 1898–1909), and the "Neck" landform does continue east of Western Avenue.

Post-contact sites recorded along or in the immediate vicinity of the pipeline route include seven house and outbuilding sites on the west side of Western Avenue identified during the 1986 Howland Hook Marine Terminal survey (Payne and Baumgardt 1986). These sites include several loci consisting of domestic and other associated structures ranging in date from the seventeenth through the twentieth centuries (A0815-01-2371, A085-01-2372, A085-01-2373, A085-01-2374, A085-01-2367, A085-01-2368, and A085-01-2369). One site of particular note is Tunissen's 1680 Domestic Structure Site (A085-01-2374) situated along the northwest corner of Western Avenue and what is now Goethals Road North approximately 300 feet west of the Project area according to Payne and Baumgardt's map (1986). This area is documented as being part of a colonial land patent belonging to John Tunissen, a Dutch settler who settled the area ca. 1680 (Skene 1907). The first structure depicted in this vicinity consists of the Tunissen house on maps dating to the Revolutionary War period, after which numerous farmsteads were present along Old Place Road up to the late nineteenth or early twentieth centuries (Beers 1874; Bromley 1917; McMillen 1933 [1776-1783]). Present-day Goethals Bridge Road approximates the route of Old Place Road at this location. The Tunissen house was also used as a meetinghouse during the eighteenth and nineteenth centuries and possibly earlier. All of the residential sites identified during the Howland Hook Marine Terminal survey were recommended as potentially significant archaeological resources (Payne and Baumgardt 1986:III-3), which would make them potentially National Register eligible, although the current status of these sites is not known. Given their location west of Western Avenue, the current Project route is not expected to impact these sites.

In his report on the Old Place Site, Skinner also noted that Euro-American burials had been found near the former residence of the Reverend James Kinney immediately west of Western Avenue (Skinner 1909:9). The Howland Hook Marine Terminal Expansion indicates the former Kinney residence, dating to 1885, was located on the west side of Western Avenue between the Staten Island Rail Road to the north and the Coca-Cola property to the south (Payne and Baumgardt 1986). This would place the location of the residence and nearby reported Euro-American burials (documented as Site A085-01-2375) northwest of the northern most end of Route Variation 50 on the opposite side of Western Avenue (see Figure 5).

The general area of the Kinney house (no longer standing), was also the location of a series of Revolutionary War period skirmishes in 1777 and a British fortification or picket line. The picket

line was located near the “Burnt House” thought to refer to the old John Tunissen House located near the intersection of what is now Western Avenue and Goethals Bridge Road North (Washington Avenue), and earthworks were reportedly constructed on the Kinney property (Payne and Baumgardt 1986:I-35 and III-4). It is believed that the burials on the former Kinney property may represent Hessian casualties from the Revolutionary War skirmish that took place here, though Payne and Baumgardt conclude that Skinner’s report implies that there were “non-white” human remains as well (1986:III-3). However, Skinner (1909:9) does not specifically mention that Native American burials were encountered. Previous test pit excavations undertaken on the former Kinney property revealed fill deposits to 3 ft containing modern refuse and nineteenth- and twentieth-century artifacts possibly associated with occupation of the Kinney House Site (Payne and Baumgardt 1986). No human remains were encountered, but the investigators concluded that human and cultural remains affiliated with the Old Place Site and activity at the Kinney property could be potentially present below the fill deposits (Payne and Baumgardt 1986:II-19). As such, the site was considered potentially significant (Payne and Baumgardt 1986:III-4), which would make it potentially National Register eligible although the current status of the site is not known.

Review of Historic Maps

Like the originally proposed route, a review of historical maps indicate that no pre-twentieth century improvements were present along Route Variation 50 south of Old Place Creek (Beers 1874; Dripps 1872; Hassler 1845; Walling 1860; USGS 1891). Sanborn maps (1937, 1950, 1962, 1977, 1981, 1983, 1986, 1987, 1988, 1989, 1990, 1992, 1993, 1994, and 1995) indicate that the area was owned by Gulf Oil Corporation and had been gridded into “blocks” delineated by roads by 1937. The only twentieth century improvements associated with the Gulf oil refinery complex in proximity to the route were the construction of a cluster of above ground storage tanks (ASTs) located east of the pipeline centerline, the footprint of which are still visible on Project alignment sheets (see Figure 2). These ASTs are present on the 1937 and 1950 Sanborns, but are no longer visible on the successive 1962 Sanborn map.

For the portion of Route Variation 50 north of Old Place Creek, historic maps indicate the presence of nearby structures (Beers 1874; Dripps 1872; Hassler 1845; Walling 1860). The Beers (1874) and Dripps (1872) maps show that the Project route traverses a lot owned by J. Carpenter that includes a residential structure. The structure no longer appears on the 1917 Bromley map, and by this time the land was owned by Thos. E. Greacen. A colonial tidal mill was also reportedly constructed in the Project vicinity along Old Place Creek on the south side of Old Place Road. The later Old Place Mill was constructed in 1803 at the site of the former tidal mill. By 1872 it was being used as a “Flouring Mill” under the operation of J. Carpenter whose residence was on the other side of the road (Beers 1874; Dripps 1872). The Old Place Mill apparently burned down in 1896 (HAA 1995), although other sources indicate that it burned down in 1898 (Morris 1900). It does not appear on the 1917 (Bromley) atlas map. The J. Carpenter house and mill structures appear to be within or in immediate proximity to the current Project route (Figure 6). Other than the construction of the existing natural gas facility (M&R 058) present by 1950, and the elevated Goethal’s Bridge roadways, there are no documented twentieth-century developments in the vicinity of the Project APE north of Old Place Creek (Sanborn 1937, 1950, 1962, 1977, 1981, 1983, 1986, 1987, 1988, 1989, 1990, 1992, 1993, 1994, 1995).

Previous Archaeological Investigations

Previous subsurface archaeological investigations for the Goethals Bridge Replacement Project overlap Route Variation 50 in two places (see Figure 4). A single transect of test pits placed between the elevated Goethals Bridge roadway to the north and Western Avenue to the south (see Figure 4) produced post-contact materials from disturbed contexts, and an argillite biface reduction flake (Berger 2007:55). The isolated argillite flake was recovered from a test pit located approximately 35 to 40 feet east of the pipeline centerline. Isolated deposits of jasper, chert, argillite chipping debris were also recovered some 200 feet east of the southeast corner of the proposed additional temporary workspace along the north side of Goethals Road North, and were considered as likely associated with the Old Place Site (Berger 2007:83). The subsurface testing along the north side of Goethals Road North consisted of a single transect of test pits located parallel to and approximately 50 feet north of Goethals Road North, placing it along the south edge of the newly proposed additional temporary workspace east of existing M&R Station 058 (see Figure 4). This transect also overlaps with the area of the J. Carpenter House depicted on historic maps (Beers 1874; Dripps 1872; see Figure 6). Test pits along this transect in the immediate vicinity of the Project area and J. Carpenter house produced eighteenth through early twentieth century post-contact domestic materials including whiteware, redware, bottle glass, nails and broad/crown glass (Berger 2007:Appendix CC). None of the above described finds were considered significant archaeological resources, though the author's indicate that the finds of pre-contact materials could indicate the presence of more substantial deposits nearby (Berger 2007:83-84).

Disturbance Assessment

Sources of disturbance south of Old Place Creek include likely infilling of the tidal marsh, and artificial channelization in the wetlands along abutting Old Place Creek. Sources of disturbance to the north include the construction of the Goethals Bridge and Western Avenue roadways, and construction and grading associated with the existing Texas Eastern M&R 058 station facilities. In addition an unidentified utility line is present within the Goethal's Road North road bed (see Figure 4).

Although disturbance has occurred and fill has been deposited along the Project pipeline route, previous subsurface investigations north of Old Place Creek demonstrate that intact soils are likely present within the portion of the Project APE that occupies the wooded vacant area. The single transect of test pits from the Goethals Bridge Replacement survey in this area just north of and paralleling Goethals Bridge Road North contained intact, sandy natural soils with little or no evidence of fill or disturbed deposits (Berger 2007:66 and Appendix CB).

Archaeological Sensitivity Assessment

Previous investigations and assessments have characterized the vicinity as having low to high sensitivity for both pre- and post-contact resources (Boesch 1994; HAA 1995; Berger 2007). Based on the current documentary and cartographic review and the presence of the previously recorded Old Place Site, the area is considered to be highly sensitive for pre-contact resources should intact sediments be present within the Project pipeline route. South of present-day Goethals Bridge Road, expected types of resources could range from isolated finds to campsite remains all predating marine transgression of the area. North of this road expected resource types could consist of

components associated with the Old Place Site dating between the Early Archaic and contact periods.

The portion of the pipeline route south of Western Avenue is considered to have low to no sensitivity for post-contact resources in the marshlands, while the portion of the pipeline north of the road is considered moderately sensitive for post-contact resources that could consist of remains associated with Revolutionary War period skirmish and burials and/or the Reverend Kinney property, the former Old Place Mill, and the house site along Old Place Road historically affiliated with J. Carpenter. The nearby Tunissen 1680 Domestic Structure Site (A085-01-2374) may also lie within or adjacent to the Project, but it is expected that this site more likely lies beyond the Project APE some 300 feet to the west.

Recommendations

The majority of the HDD portion of Route Variation 50 will be of sufficient depth (30 to 60 or more ft) that any sediments beneath the fill and marsh deposits that have the potential to contain pre-contact and post-contact period archaeological deposits including recorded sites will not be impacted (see Figure 2). However, the entry and exit points of the HDD may impact archaeologically sensitive artifact bearing sediments at shallower depths. Therefore, additional investigations in the form of soil borings are recommended for the HDD exit point south of Lambert Avenue. Soil borings are also recommended for the open cut portion of the pipeline route outside of the vacant wooded area between STA 252+65.1 and STA 258+47.5 at MP 4.90R. The soil borings will be used to determine the presence and depth of ground disturbance, fill, or marsh deposits, and of any sediments potentially containing pre-contact and post-contact period resources within or below these deposits.

The portion of the Project APE contained within the vacant wooded lot contains the HDD entry point, a section of pipeline route and additional temporary workspace east of existing M&R Station 058. Previous subsurface testing along the south edge of this area (see Figure 4) revealed intact sediments with no overburden of fill or other disturbed sediments, and an isolated find of pre-contact material possibly suggestive of more substantial deposits nearby (Berger 2007). Additionally, the portion of the vacant wooded area to the north of the previously tested area appears to be on a low rise or knoll at a higher elevation. Therefore it is recommended that the vacant wooded portion of the project APE undergo additional investigations in the form of archaeological hand testing.

Route Variation 50 also includes a workspace for pull back south of Lambert Avenue and the HDD exit point (see Figure 3). Only minimal surface impacts to the filled wetland area containing the pull back area are proposed and no further investigations are recommended.

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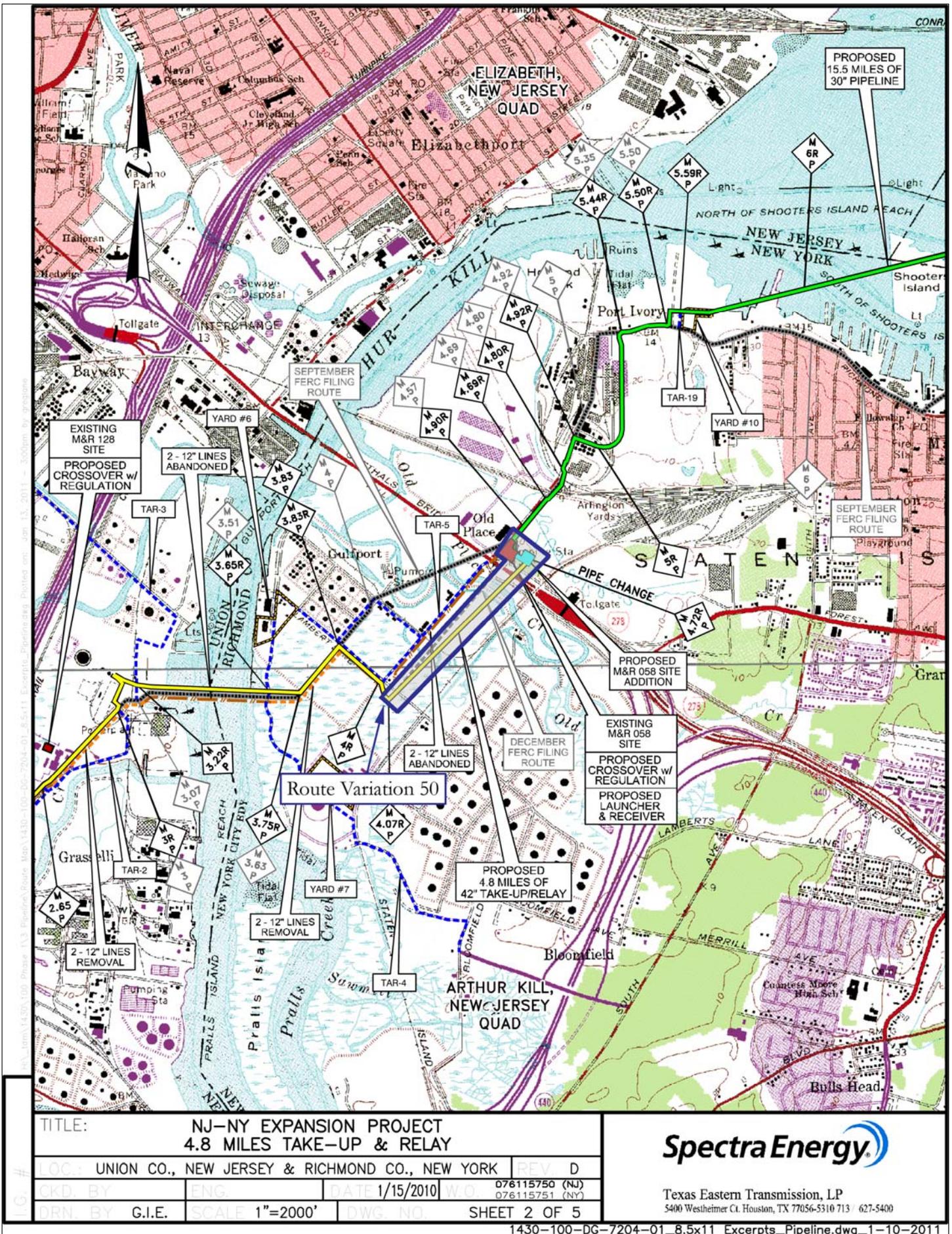
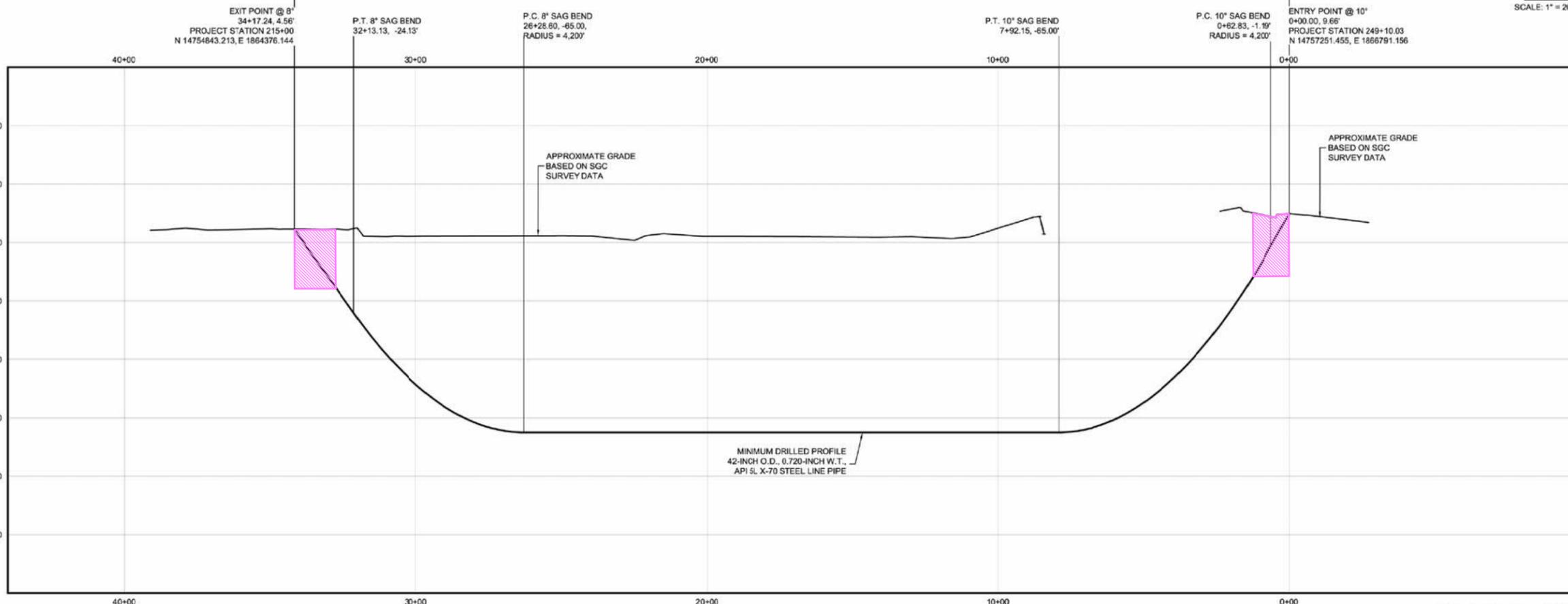


Figure 1. Location of the NJ-NY Project area, showing the location of the Project change on the Elizabeth and Arthur Kill, NJ, USGS topographic quadrangles, 7.5 minute series.



PLAN
SCALE: 1" = 200'



PROFILE
SCALE: 1" = 200' HORIZONTAL
1" = 20' VERTICAL

- GENERAL LEGEND**
- DRILLED PATH ENTRY/EXIT POINT
- SURVEY NOTES**
- ALL TOPOGRAPHIC LAND SURVEY DATA WAS PROVIDED BY SGC ENGINEERING.
 - NORTHINGS AND EASTINGS ARE U.S. SURVEY FEET REFERENCED TO, UTM ZONE 18, NAD83.
- DRILLED PATH NOTES**
- DRILLED PATH STATIONING IS IN FEET BY HORIZONTAL MEASUREMENT AND IS REFERENCED TO CONTROL ESTABLISHED FOR THE DRILLED SEGMENT.
 - DRILLED PATH COORDINATES REFER TO CENTERLINE OF PIPE.

- GEOTECHNICAL NOTES**
- GEOTECHNICAL DATA PROVIDED BY MUESER RUTLEDGE CONSULTING ENGINEERS, NEW YORK CITY, NEW YORK. REFER TO THE PROJECT GEOTECHNICAL REPORT DATED FOR ADDITIONAL INFORMATION.
 - THE LETTER "N" TO THE LEFT OF A SPLIT SPOON SAMPLE INDICATES THAT NO GRAVEL WAS OBSERVED IN THE SAMPLE. THE LETTERS "NT" INDICATE THAT GRAVEL WAS OBSERVED BUT NO GRADATION TESTS WERE PERFORMED.
 - THE GEOTECHNICAL DATA IS ONLY DESCRIPTIVE OF THE LOCATIONS ACTUALLY SAMPLED. EXTENSION OF THIS DATA OUTSIDE OF THE ORIGINAL BORINGS MAY BE DONE TO CHARACTERIZE THE SOIL CONDITIONS, HOWEVER, COMPANY DOES NOT GUARANTEE THESE CHARACTERIZATIONS TO BE ACCURATE. CONTRACTOR MUST USE HIS OWN EXPERIENCE AND JUDGEMENT IN INTERPRETING THIS DATA.

- PILOT HOLE TOLERANCES**
- THE PILOT HOLE SHALL BE DRILLED TO THE TOLERANCES LISTED BELOW. HOWEVER, IN ALL CASES, RIGHT-OF-WAY RESTRICTIONS AND CONCERN FOR ADJACENT UTILITIES SHALL TAKE PRECEDENCE OVER THESE TOLERANCES.
- ELEVATION - PLUS 10 FEET, MINUS 20 FEET.
 - ALIGNMENT - PLUS OR MINUS 10 FEET.
 - ENTRY POINT - AT THE STAKED LOCATION.
 - EXIT POINT - PLUS OR MINUS 5 FEET IN ALIGNMENT, PLUS 25 FEET AND MINUS 0 FEET IN LENGTH.
 - CURVE RADIUS - NO LESS THAN 2,100 FEET.

- PROTECTION OF UNDERGROUND FACILITIES**
- CONTRACTOR SHALL UNDERTAKE THE FOLLOWING STEPS PRIOR TO COMMENCING DRILLING OPERATIONS:
- CONTACT THE UTILITY LOCATION/NOTIFICATION SERVICE FOR THE CONSTRUCTION AREA.
 - POSITIVELY LOCATE AND STAKE ALL EXISTING UNDERGROUND FACILITIES. ANY FACILITIES LOCATED WITHIN 10 FEET OF THE DESIGNED DRILLED PATH SHALL BE EXPOSED.
 - MODIFY DRILLING PRACTICES AND DOWNHOLE ASSEMBLIES AS NECESSARY TO PREVENT DAMAGE TO EXISTING FACILITIES.

Archaeological Sensitivity

- High
- Moderate
- Low

Source/Revision/Issue	Date	Project
		NJ-NY Expansion
PAL modified	02-08-11	Date
Map data received from: Spectra Energy	01-26-11	February 8, 2011
The base information contained in this map was supplied to PAL as a professional courtesy for informational and illustrative purposes only. PAL makes no warranties, either expressed or implied, regarding the fitness or suitability of this map for any other purpose than to depict the location and/or results of cultural resource investigations conducted by PAL.		Figure 2



DWG. NO.		REFERENCE DWG.		REV	DSN	CK	DESCRIPTION		ISSUED FOR STATE APPROVAL (1-17-11) ISSUED FOR FERC APPROVAL (11-22-10)		John Deering Hair Professional Engineer New Jersey Lic # 24020347300 New York Lic # 080859 2424 East 21st Street Suite 510 Tulsa, Oklahoma 74114		ENGINEERING APPROVALS <table border="1"> <thead> <tr> <th></th> <th>PRELIMINARY</th> <th>CONSTRUCTION</th> </tr> </thead> <tbody> <tr> <td>DRAWN BY:</td> <td>JMS 11/10</td> <td></td> </tr> <tr> <td>PROJECT MANAGER</td> <td></td> <td></td> </tr> <tr> <td>DESIGN ENGINEER</td> <td>BKB 11/10</td> <td></td> </tr> <tr> <td>DESIGN CHECKER</td> <td>KMN 11/10</td> <td></td> </tr> <tr> <td>TITLE</td> <td>SIGNATURE</td> <td>DATE</td> <td>SIGNATURE</td> <td>DATE</td> </tr> </tbody> </table>					PRELIMINARY	CONSTRUCTION	DRAWN BY:	JMS 11/10		PROJECT MANAGER			DESIGN ENGINEER	BKB 11/10		DESIGN CHECKER	KMN 11/10		TITLE	SIGNATURE	DATE	SIGNATURE	DATE	PLAN AND PROFILE 42" GOETHALS BRIDGE CROSSING SPECTRA NJ-NY EXPANSION PROJECT				Texas Eastern Transmission, LP 5400 Westheimer Ct. Houston, TX 77056-5310 713 / 637-5400		YEAR: 2010 W.O.	SCALE: 1"=200'	DWG. LD-H-1020	REV. 2
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TITLE	SIGNATURE	DATE	SIGNATURE	DATE																																										

PRIVILEGED INFORMATION - DO NOT RELEASE

Figure 2. Map of the HDD portion of Route Variation 50 showing archaeological sensitivity.

RIGHT-OF-WAY
TRACT NUMBERS
RODDAGE

(CR-22.1)
380 DEVELOPMENT, LLC

(CR-22.1)
380 DEVELOPMENT, LLC

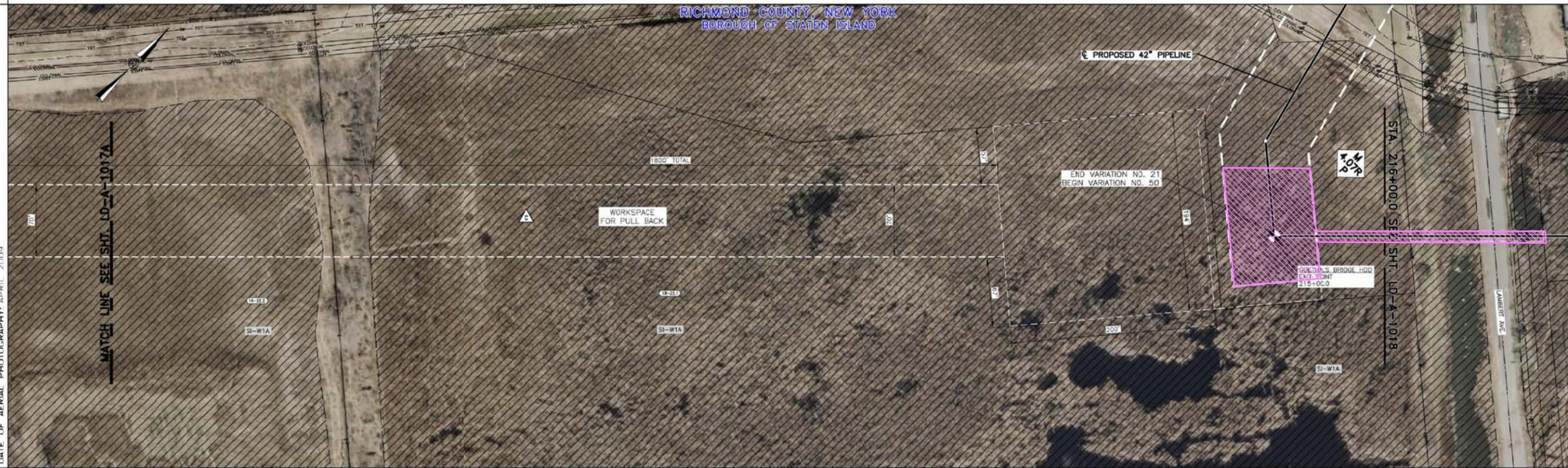
CROSSING
WORKSPACE

SURVEY DATA
SURVEY COMPANY:
FIELD BOOK:
PAGES:

CLASS LOCATION

PIPE MATERIAL

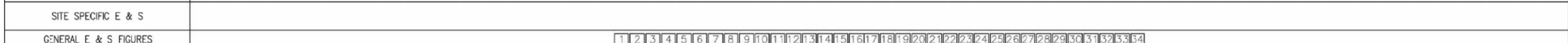
- ALIGNMENT DETAIL
- PROPOSED PIPELINE
 - PRE-FERC (A) ALIGNMENT
 - EXIST. P/L w/ OWNER NAME
 - PIPELINE TO BE REMOVED/ABANDONED
 - TEMP. WORKSPACE
 - PROPOSED PERMANENT EASEMENT
 - EXISTING EASEMENT
 - ADD. TEMP. WORKSPACE
 - YARD LOCATION
 - WATERS OF THE U.S.
 - DELINEATED WATERS OF THE U.S.
 - APPROXIMATE WATERS OF THE U.S. BOUNDARIES
 - EDGE OF PAVEMENT
 - PERMANENT ACCESS ROAD (PAR)
 - TEMPORARY ACCESS ROAD (TAR)
 - CONTOUR MAJOR (EVERY 10')
 - CONTOUR AT +2 ELEV.
 - CONTOUR MINOR (EVERY 2')
 - TREE / BRUSH LINE
 - JERSEY BARRIER
 - PIPELINE MILEPOST
 - PROPERTY LINE
 - VERIFIED STORM DRAIN
 - UNCONFIRMED STORM DRAIN
 - VERIFIED UNDG. ELEC. CABLE
 - UNCONFIRMED UNDG. ELEC. CABLE
 - VERIFIED NAT. GAS LINE
 - UNCONFIRMED NAT. GAS LINE
 - VERIFIED SANITARY SEWER
 - UNCONFIRMED SANITARY SEWER
 - VERIFIED WATER LINE
 - UNCONFIRMED WATER LINE
 - VERIFIED STEAM LINE
 - UNCONFIRMED STEAM LINE
 - VERIFIED TELEPHONE CABLE
 - UNCONFIRMED TELEPHONE CABLE
 - VERIFIED UNDG. COM. CABLE
 - UNCONFIRMED UNDG. COM. CABLE
 - ELEC., WATER, SAN. SEWER, GAS, TELE. & STORM DRAIN MANHOLES
 - LIGHT POLE
 - GAS VALVE
 - FIRE HYDRANT
 - UTILITY POLE
 - WATER VALVE
 - TREE
- DATE OF AERIAL PHOTOGRAPHY: APRIL 2009



ENVIRONMENTAL DATA

SITE SPECIFIC E & S

GENERAL E & S FIGURES



PROFILE

THE LOCATION OF TRENCH PLUGS AND SLOPE BREAKERS ARE INTENDED TO BE USED AS A GUIDELINE ONLY. EXACT LOCATION TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE CHIEF INSPECTOR.

FLUME PIPE AS REQUIRED

SLOPE BREAKERS/ARROW INDICATES DIRECTION

TRENCH P.LUG

SLOPE BREAKER & TRENCH PLUG SPACING

CODE	% SLOPE	SPACING
A	< 5%	NO STRUCTURE
B	5 - 15%	300 FT
C	15 - 30%	200 FT
D	> 30%	100 FT

Source/Revision/Issue	Date	Project
		NJ-NY Expansion
PAL modified	02-08-11	Date
Map data received from: Spectra Energy	01-26-11	February 8, 2011
		Figure 3

The base information contained in this map was supplied to PAL as a professional courtesy for informational and illustrative purposes only. PAL makes no warranties, either expressed or implied, regarding the fitness or suitability of this map for any other purpose than to depict the location and/or results of cultural resource investigations conducted by PAL.

Archaeological Sensitivity

- High (Pink hatched)
- Moderate (Blue hatched)
- Low (Yellow hatched)

Scale: 0 to 200ft / 0 to 60m

FOR 380 GOETHALS BRIDGE HDD DETAIL DESIGN, REFER TO DWG. NO. LD-H-1020

PRIVILEGED INFORMATION - DO NOT RELEASE

DWG. NO.	DESCRIPTION	REV	DRN	DATE	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
LD-A-1017	ALIGNMENT SHEET			8/16/2010	ADDED CONTOURS			
				01/15/2011	REVISED WORKSPACE & ADDED CONTOURS			
				11/01/2010	ADDED VARIATION #21 & CHANGED DWG. NO.			
					DRAWING NUMBER CHANGE 1016B TO 1017B			

ENGINEERING APPROVALS					NJ-NY EXPANSION PROJECT		
DRAWN BY: DLF		CONSTRUCTION		PROPOSED 42" PIPELINE			
DRN. DATE: 06/12/2010				PULL BACK WORKSPACE			
CHECKED BY: JRL				SUPPLEMENTAL ALIGNMENT SHEET			
CHK. DATE: 11/01/2010				LOC. RICHMOND COUNTY, NEW YORK			
TITLE	SIGNATURE	DATE	SIGNATURE	DATE	YEAR: 2010	W.O. 076115750	SCALE:

Spectra Energy
Texas Eastern Transmission, LP
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

DWG. LD-A-1017B REV. A11

Figure 3. Map of Route Variation 50 workspace for pull back area and HDD exit point showing archaeological sensitivity.

RIGHT-OF-WAY TRACT NUMBERS RODDAGE	CROSSING WORKSPACE	(RCH-1) TEXAS EASTERN TRANSMISSION CORP. 18.00 RODS	(RCH-1) TEXAS EASTERN TRANSMISSION CORP. 5.90 RODS	(RCH-1) TEXAS EASTERN TRANSMISSION CORP. 21.70 RODS	(RCH-2) NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION 23.00 RODS	(RCH-2S) BRIDGE CREEK	(RCH-2) NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION 5.47 RODS
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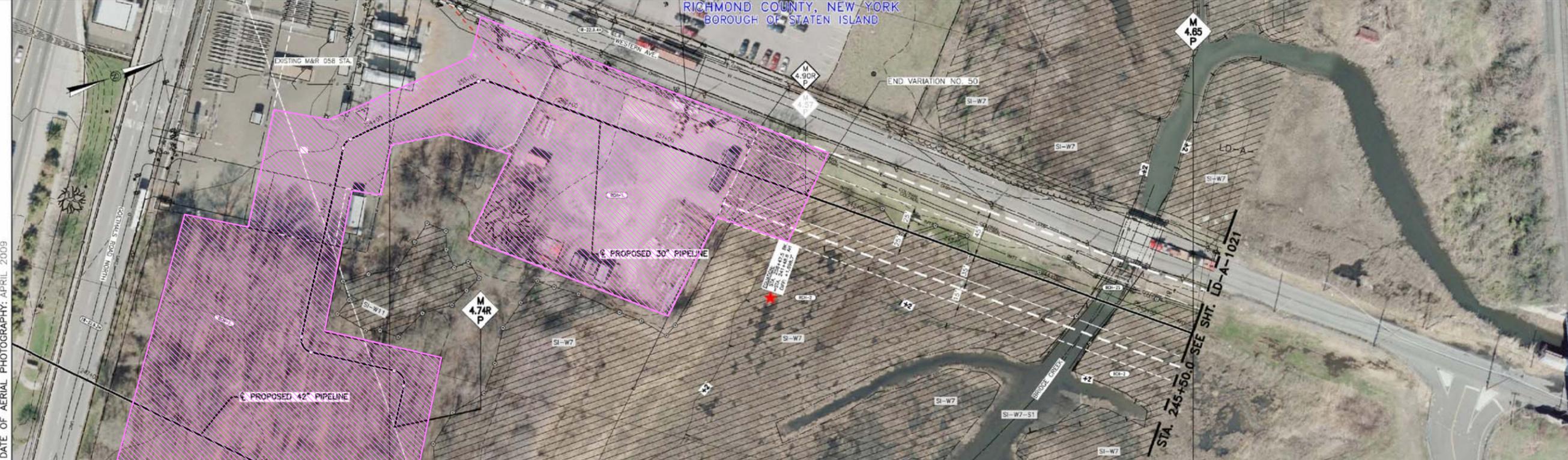
SURVEY DATA
SURVEY COMPANY:
FIELD BOOK:
PAGES:

CLASS LOCATION	PIPE MATERIAL
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ALIGNMENT DETAIL

PROPOSED PIPELINE
PRE-FERC (A7) ALIGNMENT
EXIST. P/L w/ OWNER NAME
PIPELINE TO BE REMOVED/ABANDONED
TEMP. WORKSPACE
PROPOSED PERMANENT EASEMENT
EXISTING EASEMENT
ADD. TEMP. WORKSPACE
YARD LOCATION
WATERS OF THE U.S.
DELINEATED WATERS OF THE U.S.
APPROXIMATE WATERS OF THE U.S. BOUNDARIES
EDGE OF PAVEMENT
PERMANENT ACCESS ROAD (PAR)
TEMPORARY ACCESS ROAD (TAR)
CONTOUR MAJOR (EVERY 10')
CONTOUR AT +2 ELEV.
CONTOUR MINOR (EVERY 2')
TREE / BRUSH LINE
JERSEY BARRIER
PIPELINE MILEPOST
PROPERTY LINE
VERIFIED STORM DRAIN
UNCONFIRMED STORM DRAIN
VERIFIED UNDG. ELEC. CABLE
UNCONFIRMED UNDG. ELEC. CABLE
VERIFIED NAT. GAS LINE
UNCONFIRMED NAT. GAS LINE
VERIFIED SANITARY SEWER
UNCONFIRMED SANITARY SEWER
VERIFIED WATER LINE
UNCONFIRMED WATER LINE
VERIFIED STEAM LINE
UNCONFIRMED STEAM LINE
VERIFIED TELEPHONE CABLE
UNCONFIRMED TELEPHONE CABLE
VERIFIED UNDG. COM. CABLE
UNCONFIRMED UNDG. COM. CABLE
ELEC., WATER, SAN. SEWER, GAS, TELE. & STORM DRAIN MANHOLES
LIGHT POLE
GAS VALVE
FIRE HYDRANT
UTILITY POLE
WATER VALVE
TREE

DATE OF AERIAL PHOTOGRAPHY: APRIL 2009



ENVIRONMENTAL DATA

SI-W7	SI-W7	SI-W7-S1	SI-W7
SI-W7	SI-W7	BRIDGE CREEK	SI-W7
115.1'	185.1'	20.1'	77.6'

SITE SPECIFIC E & S

6	6	6	6
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GENERAL E & S FIGURES

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
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PROFILE

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FLUME PIPE AS REQUIRED

SLOPE BREAKERS/ARROW INDICATES DIRECTION

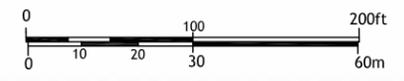
TRENCH PLUG

Source/Revision/Issue	Date	Project
PAL modified	02-08-11	NJ-NY Expansion
Map data received from: Spectra Energy	01-26-11	
February 8, 2011		
Figure 5		



Archaeological Sensitivity

- High
- Moderate
- Low



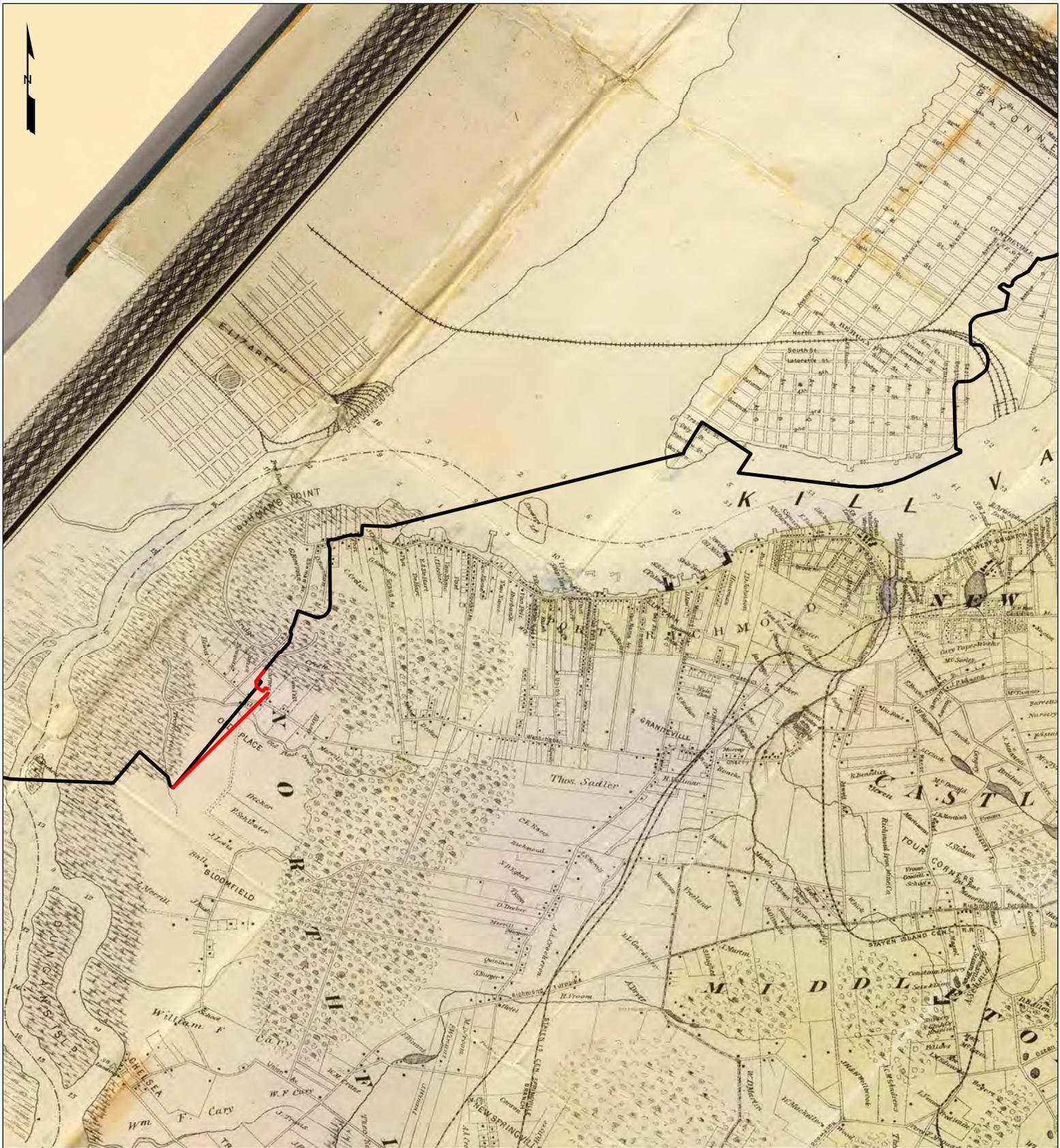
PRIVILEGED INFORMATION - DO NOT RELEASE

DWG. NO.	DESCRIPTION	REV	DRN	DATE	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
				01/14/2011	ADDED VARIATION #50			

ENGINEERING APPROVALS	NJ-NY EXPANSION PROJECT		 Texas Eastern Transmission, LP 5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400
DRAWN BY: DLF	BID	CONSTRUCTION	
DRN. DATE: 06/12/2010			
CHECKED BY: JRL			
CHK. DATE: 10/12/2010			
TITLE	SIGNATURE	DATE	SCALE: 1"=50'

YEAR: 2011	W.O. 076115750	DWG. LD-A-1020.1
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Figure 5. Map of Route Variation 50 pipeline route showing archaeological sensitivity.



Revisions / Modifications / Data Source	
PAL revised: Revised pipeline route (GIE)	1-12-2011
PAL modified: Historic map georeferenced	7-14-2010
Client Data: GIE	7-1-2010
Historic base imagery: Dripps	1872

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PRIVILEGED INFORMATION - DO NOT RELEASE

KEY:

- Route Variation 50
- Project Pipeline Route

0 2,500 5,000 Feet
 0 750 1,500 Meters

Figure 6. 1872 map of Staten Island, with the Project pipeline route in Staten Island.