

DAVID R. CRAIG  
HARFORD COUNTY EXECUTIVE



C. PETE GUTWALD  
DIRECTOR OF PLANNING AND ZONING

MARY F. CHANCE  
DIRECTOR OF ADMINISTRATION

## HARFORD COUNTY GOVERNMENT

Department of Planning and Zoning

### REVISED FOREST CONSERVATION PLAN APPROVAL

**COLUMBIA GAS TRANSMISSION, LLC**  
**Line MB Extension Project**

FCP No.: FCP13-016	Submitted: 3/21/2013	Revised: 6/26/2013, 8/15/2013
Series: 3		
Tax Map: 38	Parcels:	80, 133, 98, 99, 135, 58, 36, 16, 130, 115, 79, 51, 156, 154, 42, 153
39		329, 232, 32, 135, 28, 135, 28

Ms. Danielle Hall  
CH2M HILL  
1100 Wayne Ave, Suite 670  
Silver Spring, MD 20910

Dear Ms. Hall:

The Department of Planning and Zoning has reviewed this Forest Conservation Plan for its conformance with the Harford County Forest and Tree Conservation Regulations.

This plan is a linear alignment project for Columbia Gas Transmission, LLC. The project involves the extension of an existing natural gas pipeline for approximately 21.1 miles from Owing Mills in Baltimore County to the Rutledge Compressor station in Harford County. A total of 3.4 miles (Mile Post 17.7 through Mile Post 21.1) of the project site is located within Harford County.

The development of this project will require 3.30 acres of forest clearing. The reforestation requirements for this linear project will be met with 4.04 acres of off-site planting on the Pusey property in Aberdeen. The plan indicates that 424 containerized trees will be planted.

The new utility line is proposed on property located within the Harford County Preservation Easement Program. Additionally, the property proposed for the off-site reforestation is also located within the Harford County Preservation Easement. These proposed impacts are subject to the terms and condition of the easement documents.

*Preserving Harford's past; promoting Harford's future*

(410) 638-3103

MY DIRECT PHONE NUMBER IS

Additionally, the new utility line passes through multiple Forest Conservation Areas on Parcel 156 of Tax Map 38, known as MGM Farms. Disturbance to these areas will require revision to the applicable Forest Conservation Plan and the recorded plat.

The areas to be planted shall be recorded on a boundary plat as "Forest Retention Area". The boundary plat shall be submitted with a Declaration of Covenants and Restrictions and must be submitted with the final plat. These areas are non-disturbance areas similar to a Natural Resources District (NRD). Any need to encroach into the forest retention area shall require contact with the Department of Planning and Zoning and possibly a Revised Forest Conservation Plan.

The existing forest edges shall be protected prior to and throughout construction with a combination of sediment controls and high visibility fencing. Encroachment into the retained forest shall constitute a violation of the Harford County Forest Conservation Regulations and the approved Forest Conservation Plan. Therefore, the tree protection devices shall be required as a condition of approval.


An alternate Off-site Reforestation Cost Estimate was forwarded by Ecotone, Inc. totaling \$24,765.00. The Department of Planning and Zoning has reviewed and accepted this cost estimate; therefore, a surety in the amount of \$24,765.00 must be submitted to assure the planting and survival of the required off-site reforestation. The surety in the form of a bond or letter of credit shall be received and approved for the reforestation work prior to the issuance of grading permits.

All reforestation work must be completed within 2-years of the issuance of the first grading permit. Partial release of the surety will occur after the first growing season if the plantings are completed and are demonstrating adequate survival rates. A full release of the surety may occur after the second growing season if the plantings are continuing to survive at an acceptable rate. Please note that the survival for the two growing seasons begins on the date that the Department of Planning and Zoning has been notified, in writing, that all reforestation and/or afforestation is complete.

The Department has found this Forest Conservation Plan accurate and complete. Therefore, the Department of Planning and Zoning hereby grants approval of this Forest Conservation Plan based on all conditions above.

If you have any questions, or would like to discuss this further, please call the Department of Planning and Zoning at 410-638-3103.

Sincerely,

 8/28/13  
Milton D. Davenport, Chief                      Date  
Development Review

MDD: JW/lac

DAVID R. CRAIG  
HARFORD COUNTY EXECUTIVE



C. PETE GUTWALD  
DIRECTOR OF PLANNING AND ZONING

MARY F. CHANCE  
DIRECTOR OF ADMINISTRATION

## HARFORD COUNTY GOVERNMENT

Department of Planning and Zoning

### REVISED FOREST CONSERVATION PLAN APPROVAL

**COLUMBIA GAS TRANSMISSION, LLC**  
**Line MB Extension Project**

FCP No.: FCP13-016

Submitted: 3/21/2013

Revised: 6/26/2013,  
8/15/2013, 3/6/2014

Series: 4

Tax Map: 38

Parcels: 80, 133, 98, 99, 135, 58, 36, 16, 130,  
115, 79, 51, 156, 154, 42, 153

39

329, 232, 32, 135, 28, 135, 28

Ms. Julia Ripley  
CH2M HILL  
1100 Wayne Ave, Suite 670  
Silver Spring, MD 20910

Dear Ms. Ripley:

The Department of Planning and Zoning has reviewed this Forest Conservation Plan for its conformance with the Harford County Forest and Tree Conservation Regulations. A Revised Forest Conservation Plan (FCP13-016-3) was approved for this property in a letter dated 8/28/2013. This plan changes the previous Forest Conservation Plan by revising the limit of disturbance to provide an access road. This change impacts an additional six (6) specimen trees noted to be removed by the project. All conditions of the previous approval letter remain in effect unless specifically altered herein.

This plan is a linear alignment project for Columbia Gas Transmission, LLC. The project involves the extension of an existing natural gas pipeline for approximately 21.1 miles from Owing Mills in Baltimore County to the Rutledge Compressor station in Harford County. A total of 3.4 miles (Mile Post 17.7 through Mile Post 21.1) of the project site is located within Harford County.

*Preserving Harford's past; promoting Harford's future*

(410) 638-3103

MY DIRECT PHONE NUMBER IS

220 SOUTH MAIN STREET BEL AIR, MARYLAND 21014 410.638.3000 • 410.879.2000 • Maryland Relay 711 • [www.harfordcountymd.gov](http://www.harfordcountymd.gov)

THIS DOCUMENT IS AVAILABLE IN ALTERNATIVE FORMAT UPON REQUEST.

The development of this project will require 3.30 acres of forest clearing. The reforestation requirements for this linear project will be met with 4.04 acres of off-site planting on the Pusey property in Aberdeen. The plan indicates that 424 containerized trees will be planted.

A waiver request was submitted and approved for the additional six (6) specimen trees proposed for removal. The specimen trees previously approved for removal under series 3 are grandfathered and a waiver is not required for their removal under this plan.

The new utility line is proposed on property located within the Harford County Preservation Easement Program. Additionally, the property proposed for the off-site reforestation is also located within the Harford County Preservation Easement. These proposed impacts are subject to the terms and condition of the easement documents.

Additionally, the new utility line passes through multiple Forest Conservation Areas on Parcel 156 of Tax Map 38, known as MGM Farms. Disturbance to these areas will require revision to the applicable Forest Conservation Plan and the recorded plat.

The areas to be planted shall be recorded on a boundary plat as "Forest Retention Area". The boundary plat shall be submitted with a Declaration of Covenants and Restrictions and must be submitted with the final plat. These areas are non-disturbance areas similar to a Natural Resources District (NRD). Any need to encroach into the forest retention area shall require contact with the Department of Planning and Zoning and possibly a Revised Forest Conservation Plan.

The existing forest edges shall be protected prior to and throughout construction with a combination of sediment controls and high visibility fencing. Encroachment into the retained forest shall constitute a violation of the Harford County Forest Conservation Regulations and the approved Forest Conservation Plan. Therefore, the tree protection devices shall be required as a condition of approval.

An alternate Off-site Reforestation Cost Estimate was forwarded by Ecotone, Inc. totaling \$24,765.00. The Department of Planning and Zoning has reviewed and accepted this cost estimate; therefore, a surety in the amount of \$24,765.00 must be submitted to assure the planting and survival of the required off-site reforestation. The surety in the form of a bond or letter of credit shall be received and approved for the reforestation work prior to the issuance of grading permits.

All reforestation work must be completed within 2-years of the issuance of the first grading permit. Partial release of the surety will occur after the first growing season if the plantings are completed and are demonstrating adequate survival rates. A full release of the surety may occur after the second growing season if the plantings are continuing to survive at an acceptable rate. Please note that the survival for the two growing seasons begins on the date that the Department of Planning and Zoning has been notified, in writing, that all reforestation and/or afforestation is complete.

The Department has found this Forest Conservation Plan accurate and complete. Therefore, the Department of Planning and Zoning hereby grants approval of this Forest Conservation Plan based on all conditions above.

If you have any questions, or would like to discuss this further, please call the Department of Planning and Zoning at 410-638-3103.

Sincerely,

 4/15/14  
Milton D. Davenport, Chief                      Date  
Development Review

MDD: JW/dm

Cc: Columbia Gas Transmission file

# REVISED FOREST CONSERVATION PLAN ( HARFORD COUNTY ) COLUMBIA GAS TRANSMISSION, LLC LINE MB PIPELINE EXTENSION PROJECT

## REVISION NOTES

1. THE FCP DATED MARCH 2013 (ORIGINAL) WAS APPROVED BY HARFORD COUNTY ON MAY 22, 2013. A REVISED FCP (REVISION 1) WAS SUBMITTED ON JUNE 26, 2013 AND APPROVED ON JULY 29, 2013. A REVISED FCP (REVISION 2) WAS SUBMITTED AUGUST 14, 2013 AND APPROVED ON AUGUST 28, 2013. THIS FCP REVISION (REVISION 3) IS DATED JANUARY 2014 AND REFLECTS THE ADDITION OF AN ACCESS ROAD ON FCP-61 TO ACCOMMODATE THE HORIZONTAL DIRECTIONAL DRILLING EQUIPMENT AT LITTLE GUNPOWDER FALLS. THE FOLLOWING ARE THE CHANGES INCLUDED IN THIS SET:

- T-1
- ADDED REVISION NOTE
  - UPDATED FOREST RESOURCES TABLE
  - UPDATED REVISION NOTE AND FOREST RESOURCES NOTES

- FCP-61
- ADDED REVISION NOTE
  - LOD EXPANDED ALONG ACCESS ROAD
  - ADDED NEW SPECIMEN TREES FROM FIELD INVESTIGATION - SP-1901, SP-1902, SP-1903, SP-1904, SP-1905, SP-1906, SP-1907, SP-1908, SP-1909, SP-1910, SP-1913, AND SP-1914
  - ADDED NEW SPECIMEN TREES FOR REMOVAL - SP-1904, SP-1907, SP-1908, SP-1909, SP-1913, AND SP-1914
  - UPDATED SPECIMEN TREE DETAILS TABLE TO REFLECT NEW TREES AND NEWLY PROPOSED SPECIMEN TREES FOR REMOVAL

## GENERAL NOTES

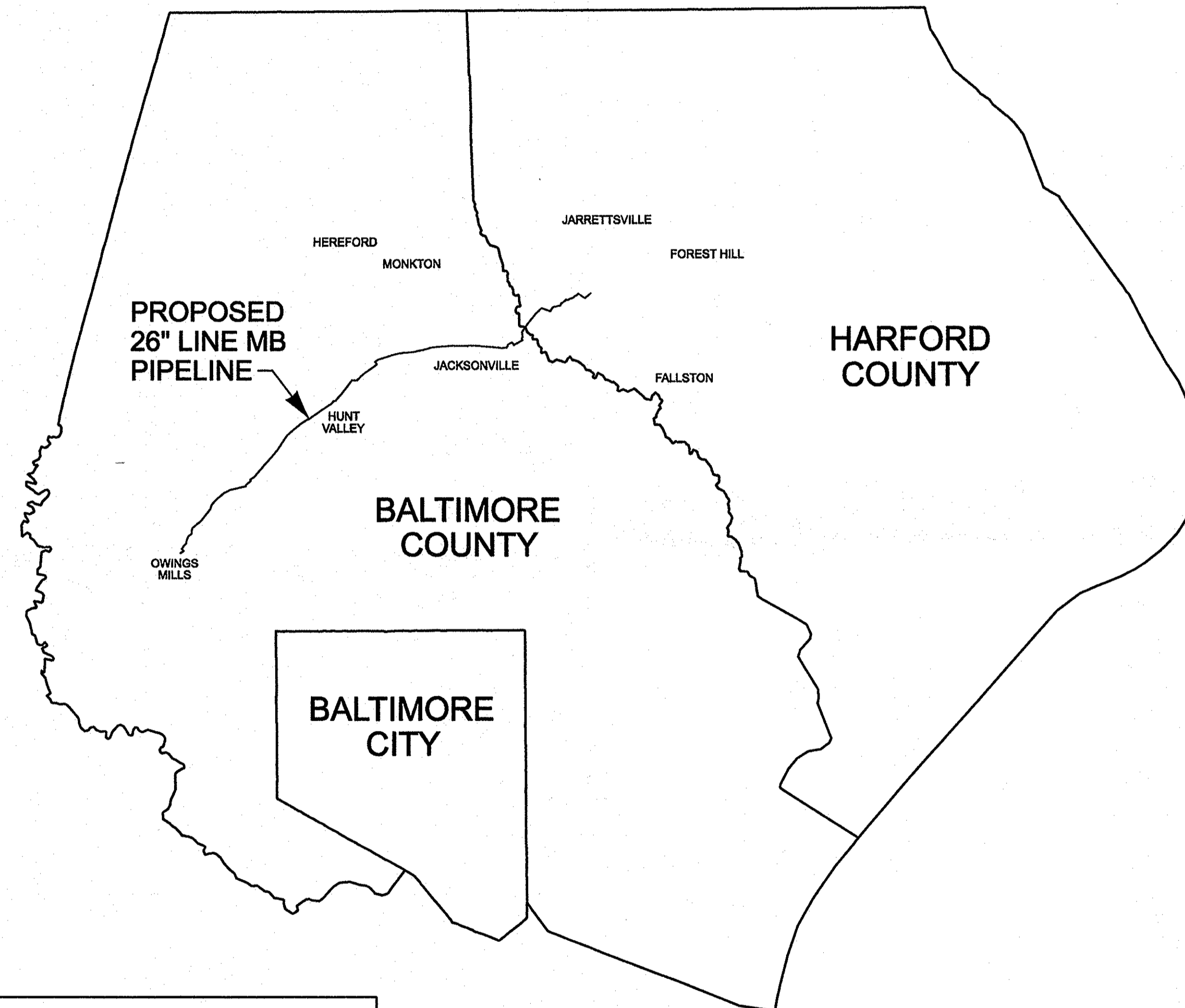
- 2008 TOPOGRAPHICAL SURVEY DATA WAS PROVIDED BY HARFORD COUNTY IN 2012.
- THE HARFORD COUNTY PORTION OF THE PROJECT CORRIDOR CROSSES RESIDENTIAL AND AGRICULTURAL LAND USES.
- CRITICAL HABITATS CONSIST OF NON-TIDAL WETLANDS, THEIR BUFFERS, STEEP SLOPES, AND WATERS OF THE U.S.
- NO RARE, THREATENED, OR ENDANGERED SPECIES WERE ENCOUNTERED DURING THE FIELD INVESTIGATIONS. CORRESPONDENCE WITH MARYLAND DEPARTMENT OF NATURAL RESOURCES INDICATES THAT BOG TURTLE HABITAT EXISTS IN SOME WATERSHEDS CROSSED BY THE PROJECT CORRIDOR. BOG TURTLE SURVEYS ARE COMPLETE AND NO BOG TURTLE POPULATIONS WERE IDENTIFIED IN HARFORD COUNTY.
- INITIAL CORRESPONDENCE WITH MARYLAND HISTORICAL TRUST INDICATED THAT THE HARFORD COUNTY PORTION OF THE PROJECT WILL NOT IMPACT SITES ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER. A SUPPLEMENTAL CULTURAL RESOURCE REPORT FOR ALIGNMENT REVISIONS WAS SUBMITTED TO MARYLAND HISTORICAL TRUST ON JANUARY 15, 2013, AND THE AGENCY PROVIDED FINAL CLEARANCE FOR ALL PROJECT WORKSPACE ON MARCH 7, 2013. COLUMBIA / NISOURCE SUBMITTED A SUPPLEMENTAL CULTURAL RESOURCE REPORT FOR ALIGNMENT REVISIONS ASSOCIATED WITH THE HDD OF LITTLE GUNPOWDER FALLS IN HARFORD COUNTY TO MARYLAND HISTORICAL TRUST ON DECEMBER 27, 2013. A RESPONSE IS CURRENTLY PENDING.

## WATER RESOURCES NOTES

- WATERS OF THE UNITED STATES (WUS) AND WETLANDS WERE DELINEATED BY CH2M HILL FROM DECEMBER 2011 THROUGH FEBRUARY 2014 WITHIN A 200 - 300 FT SURVEY CORRIDOR. THE WETLAND DELINEATION SURVEY CORRIDOR VARIES FROM THE FOREST STAND CORRIDOR IN CERTAIN AREAS. SEE WETLAND AND WATERBODY DELINEATION REPORT SUBMITTED PREVIOUSLY UNDER SEPARATE COVER FOR MORE INFORMATION.
- FOUR NONTIDAL WETLANDS, SEVEN WUS, AND THREE EPHEMERAL CHANNELS WERE LOCATED WITHIN THE CONSTRUCTION WORK AREA ON HARFORD COUNTY LANDS.
- TO RESTABILIZE STREAMBANKS AFTER CONSTRUCTION, COLUMBIA GAS IS PROPOSING LIVE STAKE PLANTING AS ILLUSTRATED ON THESE PLANS.

## FOREST RESOURCES NOTES

- THE STUDY AREA BOUNDARY IS A 250-FOOT TO 300-FOOT WIDE CORRIDOR.
- FOREST STANDS EXTEND BEYOND THE STUDY AREA BOUNDARY.
- THREE (3) FOREST STANDS WERE IDENTIFIED DURING FIELD INVESTIGATIONS IN HARFORD COUNTY.
- SPECIMEN TREES HAVE BEEN MARKED WITH AN "X" FOR REMOVAL WHERE MORE THAN 33% OF THE SPECIMEN TREE'S CRITICAL ROOT ZONE IS IMPACTED.
- FOREST CLEARING AND SPECIMEN TREE REMOVAL WITHIN PUBLIC ROAD RIGHTS-OF-WAY ARE ACCOUNTED FOR IN THE ROADSIDE TREE PERMIT, ISSUED BY MARYLAND DEPARTMENT OF NATURAL RESOURCES ON FEBRUARY 22, 2013, RENEWED ON NOVEMBER 8, 2013, AND ARE NOT INCLUDED IN THIS FOREST CONSERVATION PLAN.
- MITIGATION WILL BE PROVIDED OFF-SITE. THE LINE MB EXTENSION, OFF-SITE REFORESTATION PLANTING PLAN, PREPARED BY ECOTONE, DATED MARCH 2013, ALLOWS FOR 4.04 ACRES OF REFORESTATION. THERE WILL BE NO ON-SITE MITIGATION PLANTINGS.



DESCRIPTION	PREVIOUSLY SUBMITTED IMPACTS (APPROVED AUG. 2013)	NEW PROPOSED IMPACTS (JAN. 2014)
TOTAL PROPOSED FOREST CLEARING REQUIRING MITIGATION	3.30 AC.	3.30 AC.
TOTAL NUMBER OF SPECIMEN TREES IDENTIFIED DURING FIELD INVESTIGATIONS	414	426
TOTAL NUMBER OF PROPOSED SPECIMEN TREES WITHIN FOREST STANDS TO BE REMOVED	89	89
TOTAL NUMBER OF PROPOSED SPECIMEN TREES OUTSIDE FOREST STANDS TO BE REMOVED	17	23

## OWNER

NISOURCE / COLUMBIA GAS TRANSMISSION, LLC  
1700 MacCORKLE AVE, SE  
CHARLESTON, WV 25314  
TELE: (304) 357-2040  
CONTACT: JENNIFER L. FRANCO

## SHEET INDEX

- T-1 TITLE SHEET
- VIC-1 TO VIC-2 VICINITY MAP
- GN-1 FOREST CONSERVATION NOTES AND DETAILS
- FCP-60 TO FCP-72 HARFORD COUNTY FOREST CONSERVATION PLAN
- PO-5 ADJACENT PROPERTY OWNER INFORMATION
- ET-1 EASEMENT INFORMATION

## LEGEND

----- 600 -----	EX. CONTOUR
---SD---SD---	EX. STORM DRAIN
----- W -----	EX. WATER LINE
----- FO -----	EX. FIBER OPTIC LINE
----- // -----	EX. FOREIGN PIPELINE
----- OH -----	EX. OVERHEAD ELECTRIC
----- E -----	EX. UNDERGROUND ELECTRIC
----- T -----	EX. UNDERGROUND TELEPHONE
----- MA -----	EX. LINE MA GAS LINE
----- X ----- X -----	EX. FENCE
-----	EX. STREAM
-----	PUBLIC ROAD RIGHT-OF-WAY
-----	PROPERTY LINE
-----	EX. EASEMENT
----- MB ----- MB -----	PROPOSED LINE MB NATURAL GAS PIPELINE
-----	LINE MB PERMANENT RIGHT-OF-WAY
-----	LINE MB TEMPORARY WORKSPACE
-----	LINE MB ADDITIONAL TEMPORARY WORKSPACE
-----	EXISTING LINE MA RIGHT-OF-WAY
-----	PROPOSED ACCESS ROAD CENTERLINE
----- X ----- X -----	PROPOSED CONTRACTOR STAGING AREA
-----	100 YEAR FLOODPLAIN
----- MaC -----	SOILS DELINEATION
----- GdB -----	
-----	SLOPES 15-25%
-----	SLOPES 25% OR GREATER
----- WUS -----	FIELD DELINEATED WATERS OF THE U.S.
----- NRD -----	NATURAL RESOURCE DISTRICT
-----	NON-TIDAL WETLAND
----- WB -----	25' MDE REGULATED WETLAND BUFFER
-----	FOREST STAND BOUNDARY LINE SURVEYED BY KCI
----- X -----	EX. VEGETATION LINE X
-----	EX. TREE
----- PLOT E-1 -----	FOREST DATA COLLECTION POINT
----- SP-1 -----	SPECIMEN TREE
----- X -----	TREE TO BE REMOVED
-----	FOREST STAND BREAK
-----	STUDY AREA BOUNDARY
----- LOD -----	LIMIT OF DISTURBANCE
----- SF -----	SILT FENCE
----- SSF -----	SUPER SILT FENCE
-----	WOODLAND CLEARING
-----	PROPOSED STREAMBANK PLANTING

\*NOTE: NOT IN A DESIGNATED FOREST STAND

PLAN TYPE FCP  
PLAN NO. 1301  
SERIES NO. 4  
DATE 3-6-14  
D/C/DUE

APPROVED  
4/15/14  
M.D. [Signature]  
Department of Planning & Zoning

THIS PLAN WAS PREPARED BY:  
JENNIFER BIRD  
KCI TECHNOLOGIES  
MDNR QUALIFIED PROFESSIONAL  
STATUS (SEPTEMBER 2011)  
SIGNATURE: [Signature] DATE: 03/2014

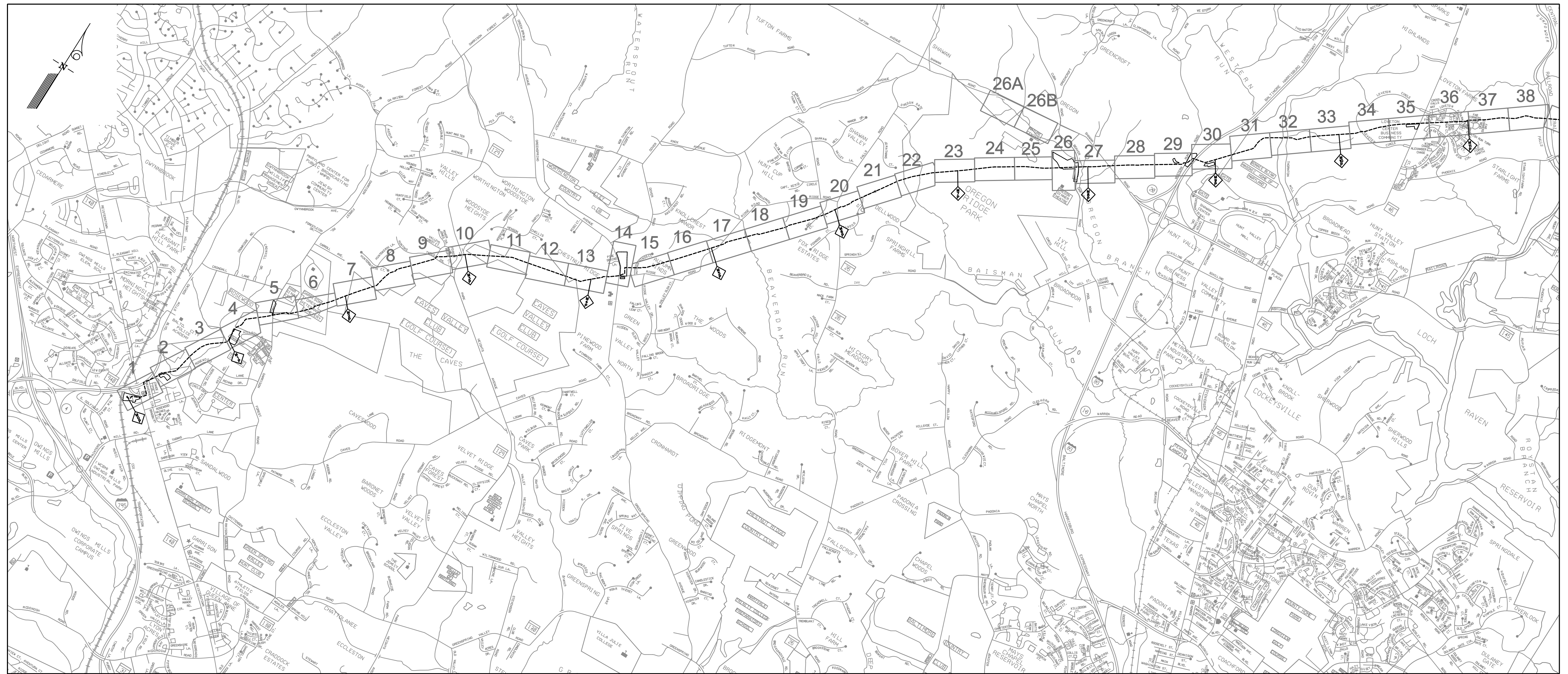
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS  
**KCI**  
TECHNOLOGIES  
936 ROCKBROOK ROAD  
SHARPS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

Columbia Gas  
Transmission  
A NISOURCE Company

NO.	DATE	REVISIONS DESCRIPTION	BY	DATE
1	JUNE 2013	LOD CHANGES & STREAMBANK PLANTING UPDATES	AAW	MARCH 2013
2	AUG. 2013	LOD CHANGES, STREAMBANK PLANTING UPDATES, & SPECIMEN TREE UPDATES	AAW	
3	JAN. 2014	LOD CHANGES, SPECIMEN TREE UPDATES	AAW	

REVISED FOREST CONSERVATION PLAN  
( HARFORD COUNTY )  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB PIPELINE EXTENSION PROJECT  
HARFORD COUNTY, MARYLAND

DRAWING NO.  
**T-1**  
SHEET 1 OF 85  
KCI JOB NUMBER  
16-121849




**NOTE:**

- 1. SHEETS IN BALTIMORE COUNTY (SHOWN IN GRAY) ARE NOT INCLUDED IN THIS PLAN SET.

**VICINITY MAP**

1" = 2000'

PLOTTED: 08:18 AM on Thursday, August 01, 2013  
 FILE: M:\2012\16121849\Drawings\02\_FCP\_HARF\_CO\_LOCATION\_PLAN.dwg

THIS PLAN WAS PREPARED BY:  
 JENNIFER BIRD  
 KCI TECHNOLOGIES  
 MDNR QUALIFIED PROFESSIONAL  
 STATUS (SEPTEMBER 2011)  
  
 SIGNATURE DATE 08/2013

  
**KCI**  
 TECHNOLOGIES  
 ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS  
 936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

  
 Columbia Gas  
 Transmission  
 A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE MARCH 2013  
 SCALE 1" = 2000'  
 DESIGNED BY JIB  
 DRAWN BY CSD

VICINITY MAP  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT - PHASE 2  
 BALTIMORE COUNTY, MARYLAND

DRAWING NO.  
**VIC-1**  
 SHEET 2 OF 85  
 KCI JOB NUMBER  
 16-121849



**VICINITY MAP**

1" = 2000'

- NOTE:**
- PLEASE REFER TO HARFORD COUNTY PLAN SHEETS FCP-60 THROUGH FCP-72 WHEN USING THE SHEET REFERENCE NUMBERS LISTED ABOVE. ADDITIONAL SHEETS ARE IN BALTIMORE COUNTY (SHOWN IN GRAY) AND ARE NOT INCLUDED IN THIS PLAN SET.

PLOTTED: 08:19 AM on Thursday, August 01, 2013  
 FILE: \\MA2012\16121842A\Drawings\03\_FCP\_HARF\_CO\_LOCATION\_PLAN.dgn

THIS PLAN WAS PREPARED BY:  
 JENNIFER BIRD  
 KCI TECHNOLOGIES  
 MDNR QUALIFIED PROFESSIONAL  
 STATUS (SEPTEMBER 2011)

*Jennifer Bird* 08/2013  
 SIGNATURE DATE

**KCI TECHNOLOGIES**  
 ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

**Columbia Gas Transmission**  
 A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE: MARCH 2013  
 SCALE: 1" = 2000'  
 DESIGNED BY: JB  
 DRAWN BY: CSD

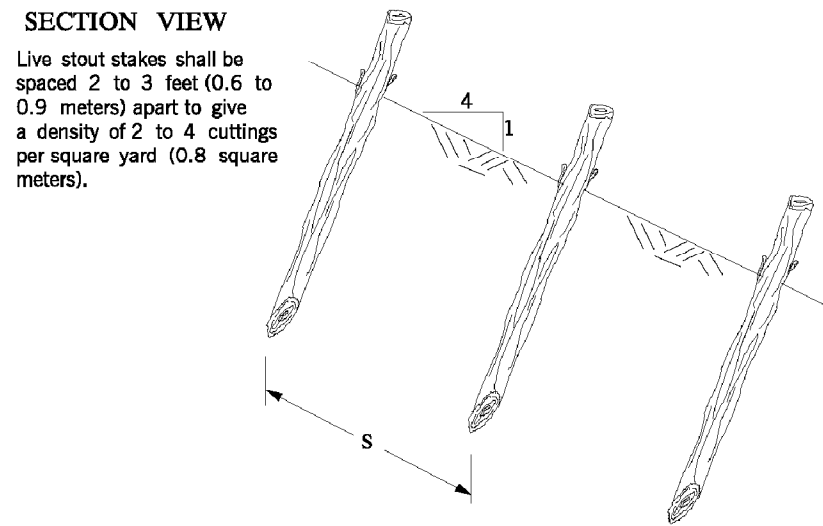
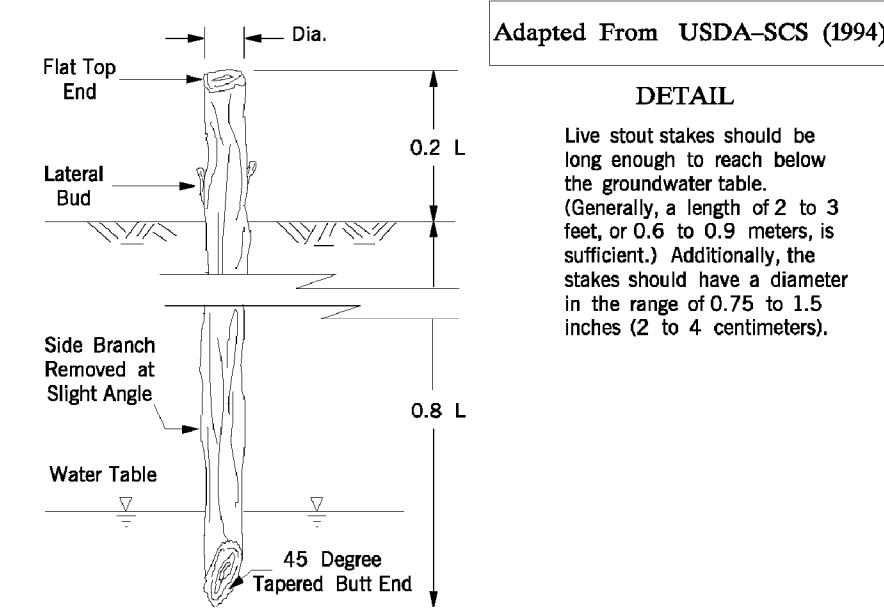
VICINITY MAP  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT - PHASE 2  
 BALTIMORE COUNTY, MARYLAND

DRAWING NO.  
**VIC-2**

SHEET 3 OF 85  
 KCI JOB NUMBER  
 16-121849



Maryland's Guidelines To Waterway Construction  
DETAIL 2.4: LIVE STAKES



SOLOPE PROTECTION AND STABILIZATION TECHNIQUES PAGE 2.4 - 5 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

PROPOSED STREAMBANK PLANTING

MGWC 2.4: LIVE STAKES

Approximate Cost (\$1999)  
\$1 to \$4 per stake

INSTALLATION GUIDELINES

- Live stake installation should proceed as follows (refer to Detail 2.4):
- Live stake rooting areas should be soaked in barrels of water for 24 to 48 hours just prior to installation.
  - While keeping the bark of the live stakes intact, the side branches should be cleanly removed, the basal ends angled for easy insertion, and the tops cut square.
  - The cuttings should be implanted with the angled basal end down and buds oriented up at a minimum angle of 10 degrees to the horizontal so that rooting will not be restricted. All stakes should be positioned above the normal baseflow level. Project planners may need to study an aptly chosen vegetated reference reach for further guidance when installing live stakes.
    - In soft soils, the stakes can be inserted perpendicularly into the slope using a dead blow hammer; in hard soils, however, a steel rod should be employed to create a pilot hole before the stakes are planted.
    - Twenty percent of the live stakes, and a minimum of two lateral buds, should be exposed above the slope so that green, leafy shoots will readily grow.
    - Split or otherwise damaged stakes should be discarded.
  - After the stakes have been inserted into the ground, soil should be tamped firmly around their bases to encourage root growth.
  - Successive stakes should be arranged in a triangular configuration and spaced a distance of 2 to 3 feet (0.6 to 0.9 meters) apart, allowing for a typical density of 2 to 4 cuttings per square yard (0.8 square meters). Willow posts require additional room for growth and propagation and should be planted at 3 to 5-foot (1 to 1.5-meter) intervals. When inserted in arrays, the stakes should be spaced 12 to 18 inches (30 to 46 centimeters) apart to form chevron-like rows that point downstream.
  - Unstable slope toes should be reinforced against scouring and undercutting using live fascines or rock fill to give the live stakes the best opportunity to root and grow.

SOLOPE PROTECTION AND STABILIZATION TECHNIQUES MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000 PAGE 2.4 - 2

LIVE STAKES

Common Name/Scientific Name	Location	Availability	Habitat Value	Size/Form	Root Type	Rooting Ability from Cuttings
Silky dogwood <i>Cornus amomum</i>	N, SE	very common	very good	small shrub	shallow/fibrous	very good
Red osier dogwood <i>Cornus sericea</i> ssp. <i>stolonifera</i>	N, NE, W	very common	very good	med.-small shrub	shallow	very good
Common ninebark <i>Physocarpus opulifolius</i>	NE	common	good	med.-high shrub	shallow/lateral	fair-good
Allegheny blackberry <i>Rubus allegheniensis</i>	NE	very common	very good	small shrub	fibrous	good
Red raspberry <i>Rubus strigosus</i>	N, NE, W	very common	very good	small shrub	fibrous	good
Prairie willow <i>Salix humilis</i>	N, NE	very common	good	medium shrub	fibrous	good
American elderberry <i>Sambucus canadensis</i>	NE, SE	very common	very good	medium shrub	fibrous	good
Meadowsweet spirea <i>Spiraea alba</i>	N, E	common	good	small dense tree	dense/shallow lateral	fair-good
Hardhack spirea <i>Spiraea tomentosa</i>	NE	common	good	small shrub	dense/shallow	fair
Snowberry <i>Symphoricarpos albus</i>	N, NW, E	common	good	small shrub	fibrous	good

SOILS TABLE

Harford County					
Code	Soil Name	Depth (ft)	Clay (%)	Silt (%)	Rooting
CcB2	Chester silt loam	3-8	0.32	N	
Cu	Codorus silt loam	--	0.49	N	
GcB2	Glenelg loam	3-8	0.32	N	
GcC2	Glenelg loam	8-15	0.32	N	
GgB2	Glenelg gravelly loam	3-8	0.32	N	
GnA	Glenville silt loam	0-3	0.32	N	
GnB	Glenville silt loam	3-8	0.32	N	
MbC2	Manor loam	8-15	0.37	N	
MbD2	Manor loam	15-25	0.37	N	
McC2	Manor channery loam	8-15	0.37	N	
McD2	Manor channery loam	15-25	0.37	N	
McD3	Manor channery loam	15-25	0.37	N	

FOREST STAND SUMMARY

Stand	Type	Size (AC)	Priority Retention	Sheet No.
DOD	Northern Red Oak	0.26	High Priority Retention Area	62, 63
CCC	Tulip Poplar - Northern Red Oak	7.37	High Priority Retention Area	65, 66
UU	Tulip Poplar - Black Gum - Red Maple	5.27	High Priority Retention Area	71, 72

PLOTTED: 08:19 AM on Thursday, August 01, 2013  
FILE: M:\2012\16121849\COMINGS\04-FP-NOTES\AND-DETAILS\_HARFORD\_CO.dgn

THIS PLAN WAS PREPARED BY:  
JENNIFER BIRD  
KCI TECHNOLOGIES  
MDNR QUALIFIED PROFESSIONAL  
STATUS (SEPTEMBER 2011)  
*Jennifer Bird*  
SIGNATURE 08/2013  
DATE

ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS  
**KCI**  
TECHNOLOGIES  
936 RIDGEBROOK ROAD  
SPARKS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

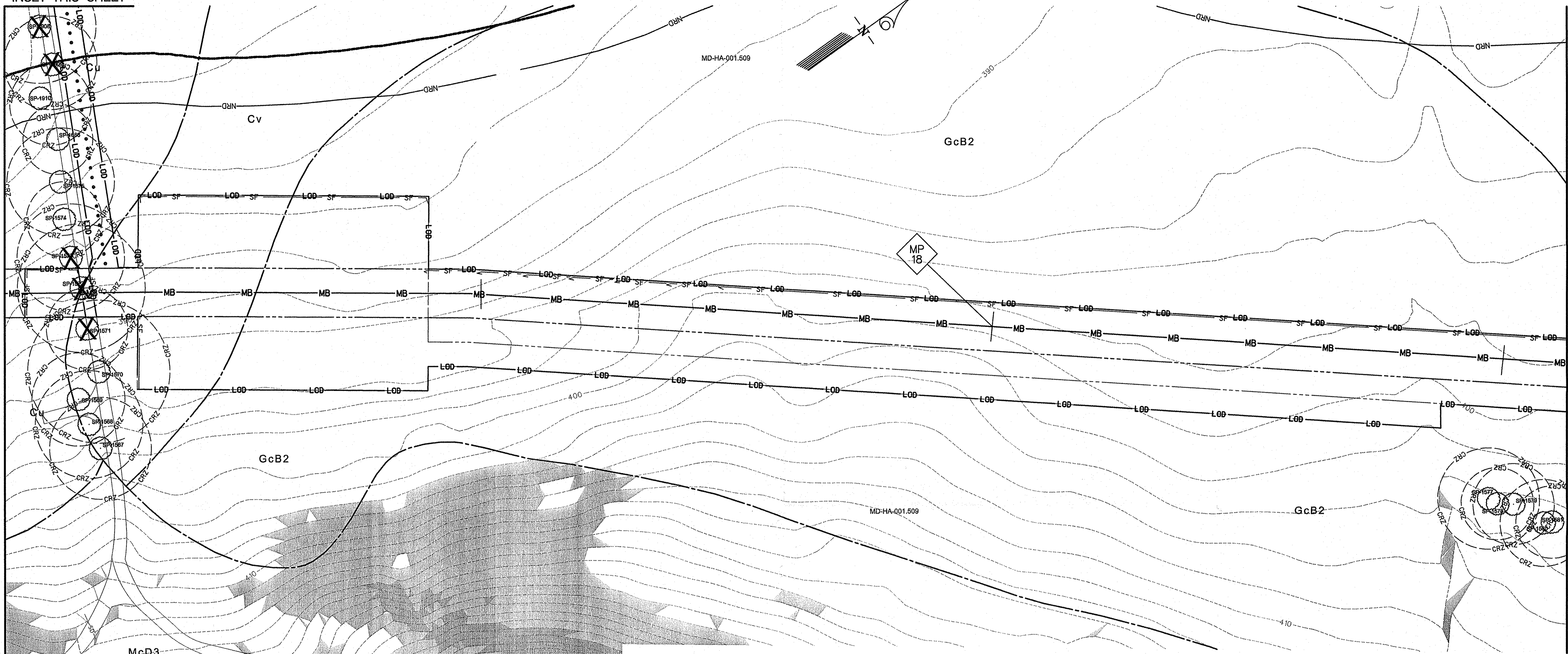
Columbia Gas Transmission  
A NiSource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE
1	JUNE 2013	LIVE STAKE PLANTING UPDATES	AW	MARCH 2013
				SCALE 1" = 50'
				DESIGNED BY JB
				DRAWN BY CSD

REVISED  
FOREST CONSERVATION NOTES AND DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
HARFORD COUNTY, MARYLAND

DRAWING NO.  
**GN-1**  
SHEET 4 OF 85  
KCI JOB NUMBER  
16-121849

MATCH LINE - SEE  
INSET THIS SHEET



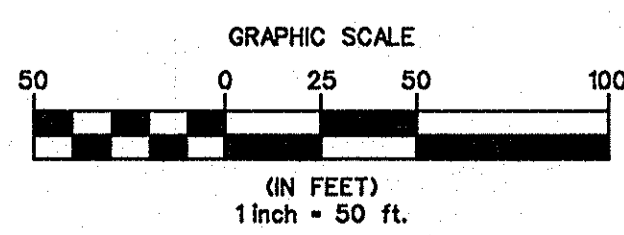
MATCH LINE - SEE SHEET FCP-62

Specimen Tree Details - PREVIOUSLY APPROVED						
Number	Species	Common Name	Size, DBH (in)	Condition	Notes	
SP-1567	Ulmus rubra	Slippery Elm	35.0	Fair	Landscape Tree	
SP-1568	Ulmus rubra	Slippery Elm	37.0	Fair	Landscape Tree	
SP-1569	Ulmus rubra	Slippery Elm	32.0	Good	Landscape Tree	
SP-1570	Ulmus rubra	Slippery Elm	49.0	Good	Landscape Tree	
SP-1571	Ulmus rubra	Slippery Elm	28.0	Good	Landscape Tree, To Be Removed	
SP-1572	Ulmus rubra	Slippery Elm	44.0	Good	Landscape Tree, To Be Removed	
SP-1573	Ulmus rubra	Slippery Elm	37.0	Fair	Landscape Tree, To Be Removed	
SP-1574	Ulmus rubra	Slippery Elm	26.0	Fair	Landscape Tree	
SP-1576	Ulmus rubra	Slippery Elm	37.0	Good	Landscape Tree	
SP-1577	Quercus palustris	Pin Oak	35.0	Good	Hedge-row Tree	
SP-1578	Prunus serotina	Black Cherry	25.0	Good	Hedge-row Tree	
SP-1579	Prunus serotina	Black Cherry	28.0	Fair	Hedge-row Tree	
SP-1580	Fraxinus americana	White Ash	30.0	Good	Hedge-row Tree	
SP-1581	Fraxinus americana	White Ash	25.0	Good	Hedge-row Tree	
SP-1686	Ulmus rubra	Slippery Elm	24.0	Fair	Landscape Tree	

Total Specimen Trees on This Sheet = 15  
Total Specimen Trees Removed on This Sheet = 3

Specimen Tree Details - NEWLY ADDED AND NEWLY PROPOSED FOR REMOVAL						
Number	Species	Common Name	Size, DBH (in)	Condition	Notes	
SP-1901	Ulmus rubra	Slippery Elm	26.0	Fair	Landscape Tree	
SP-1902	Ulmus rubra	Slippery Elm	31.0	Fair	Landscape Tree	
SP-1903	Ulmus rubra	Slippery Elm	24.0	Fair	Landscape Tree	
SP-1904	Ulmus rubra	Slippery Elm	44.0	Fair	Landscape Tree, To Be Removed	
SP-1905	Ulmus rubra	Slippery Elm	30.0	Fair	Landscape Tree	
SP-1906	Ulmus rubra	Slippery Elm	25.0	Fair	Landscape Tree	
SP-1907	Ulmus rubra	Slippery Elm	34.0	Fair	Landscape Tree, To Be Removed	
SP-1908	Ulmus rubra	Slippery Elm	39.0	Good	Landscape Tree	
SP-1909	Ulmus rubra	Slippery Elm	32.0	Fair	Landscape Tree, To Be Removed	
SP-1910	Ulmus rubra	Slippery Elm	29.0	Fair	Landscape Tree	
SP-1913	Ulmus rubra	Slippery Elm	26.0	Fair	Landscape Tree, To Be Removed	
SP-1914	Ulmus rubra	Slippery Elm	24.0	Poor	Landscape Tree, To Be Removed	

Total Specimen Trees on This Sheet = 21  
Total Newly Proposed Specimen Trees Removed on This Sheet = 6



THIS PLAN WAS PREPARED BY:  
JENNIFER BIRD  
KCI TECHNOLOGIES  
MDNR QUALIFIED PROFESSIONAL  
STATUS (SEPTEMBER 2011)

*Jennifer H. Bird*  
SIGNATURE DATE 03/2014

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
SAWES, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

REVISIONS		DATE	
NO.	DATE	DESCRIPTION	BY
2	AUG. 2013	LOD CHANGE - SPECIMEN TREE REMOVAL UPDATE	ANW
3	JAN. 2014	LOD CHANGE - SPECIMEN TREE REMOVAL UPDATE	ANW

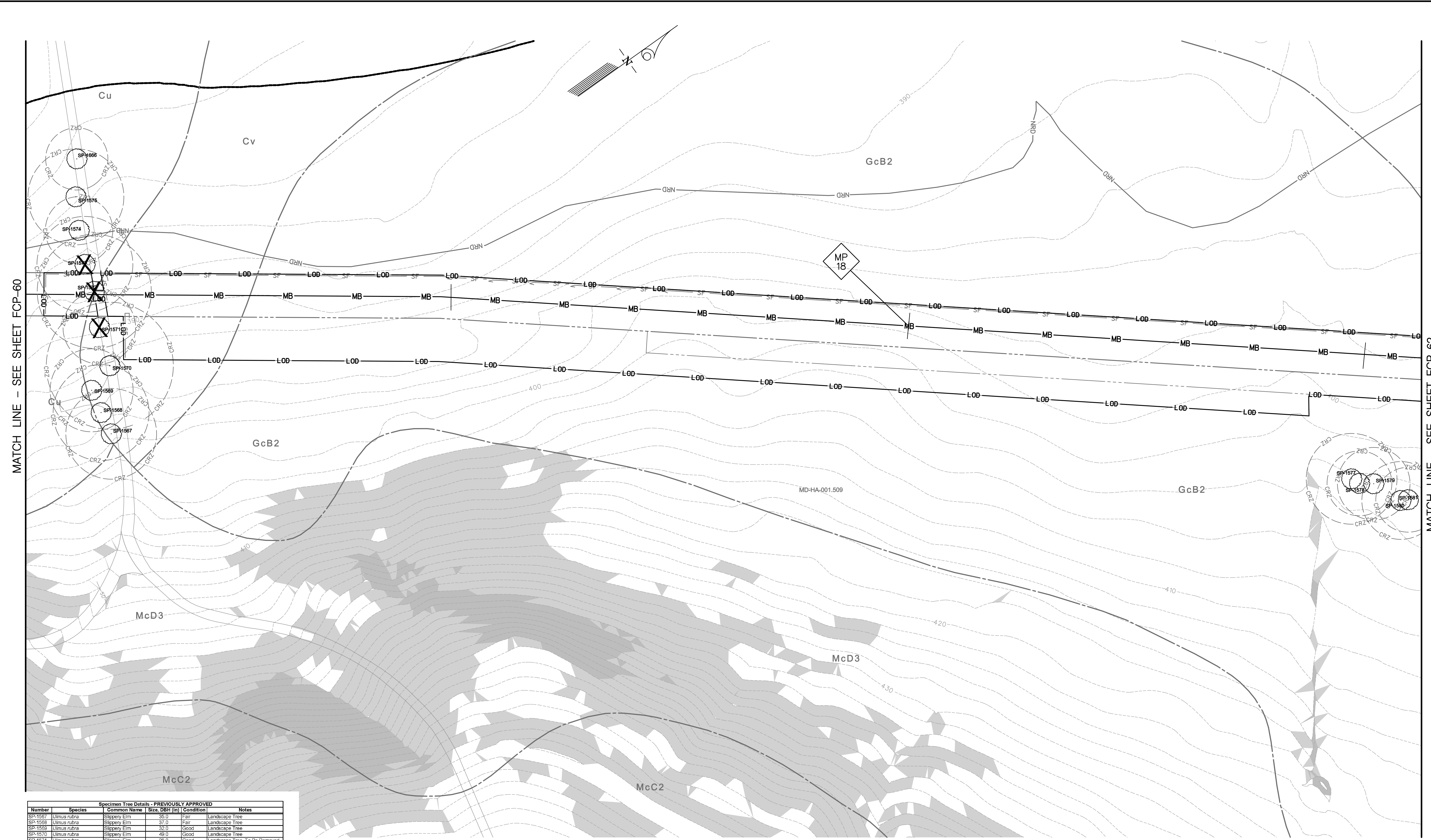
DESIGNED BY: [Blank]  
JOB: [Blank]  
DRAWN BY: CSD

NOTE: NO FOREST STAND IMPACTS ON THIS SHEET

REVISED FOREST CONSERVATION PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
HARFORD COUNTY, MARYLAND

DRAWING NO.  
**FCP-61**  
SHEET 68 OF 85  
KCI JOB NUMBER  
16-121849

PLOTTED: 10:32 AM on Tuesday, March 04, 2014  
BY: Amanda Wagoner Division P050 Natural Res Emp  
FILE: MA-2013-16121849.dwg; Fcp-Pl\_MN\_61.dwg

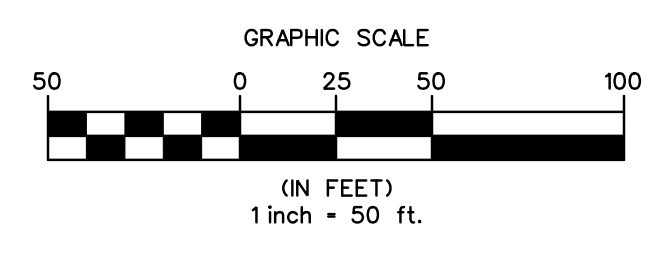



MATCH LINE - SEE SHEET FCP-60

MATCH LINE - SEE SHEET FCP-62

Specimen Tree Details - PREVIOUSLY APPROVED					
Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1567	Ulmus rubra	Slippery Elm	35.0	Fair	Landscape Tree
SP-1568	Ulmus rubra	Slippery Elm	37.0	Fair	Landscape Tree
SP-1569	Ulmus rubra	Slippery Elm	33.0	Good	Landscape Tree
SP-1570	Ulmus rubra	Slippery Elm	49.0	Good	Landscape Tree
SP-1571	Ulmus rubra	Slippery Elm	28.0	Good	Landscape Tree, To Be Removed
SP-1572	Ulmus rubra	Slippery Elm	44.0	Fair	Landscape Tree, To Be Removed
SP-1573	Ulmus rubra	Slippery Elm	37.0	Fair	Landscape Tree
SP-1574	Ulmus rubra	Slippery Elm	26.0	Fair	Landscape Tree
SP-1575	Ulmus rubra	Slippery Elm	37.0	Good	Landscape Tree
SP-1576	Ulmus rubra	Slippery Elm	37.0	Good	Landscape Tree
SP-1577	Quercus pilulifera	Pin Oak	35.0	Good	Hedge-row Tree
SP-1578	Prunus serotina	Black Cherry	28.0	Good	Hedge-row Tree
SP-1579	Prunus serotina	Black Cherry	28.0	Fair	Hedge-row Tree
SP-1580	Fraxinus americana	White Ash	30.0	Good	Hedge-row Tree
SP-1581	Fraxinus americana	White Ash	25.0	Good	Hedge-row Tree
SP-1586	Ulmus rubra	Slippery Elm	24.0	Fair	Landscape Tree
Total Specimen Trees on This Sheet = 15					
Total Specimen Trees Removed on This Sheet = 2					

Specimen Tree Details - NEWLY PROPOSED FOR REMOVAL					
Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1573	Ulmus rubra	Slippery Elm	37.0	Fair	Landscape Tree, To Be Removed
Total Specimen Trees on This Sheet = 15					
Total Newly Proposed Specimen Trees Removed on This Sheet = 1					



THIS PLAN WAS PREPARED BY:  
 JENNIFER BIRD  
 KCI TECHNOLOGIES  
 MDNR QUALIFIED PROFESSIONAL  
 STATUS (SEPTEMBER 2011)  
  
 SIGNATURE DATE 08/2013

**KCI TECHNOLOGIES**  
 ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS  
 936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

**Columbia Gas Transmission**  
 A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY
2	AUG. 2013	LOD CHANGE, SPECIMEN TREE REMOVAL UPDATE	AW

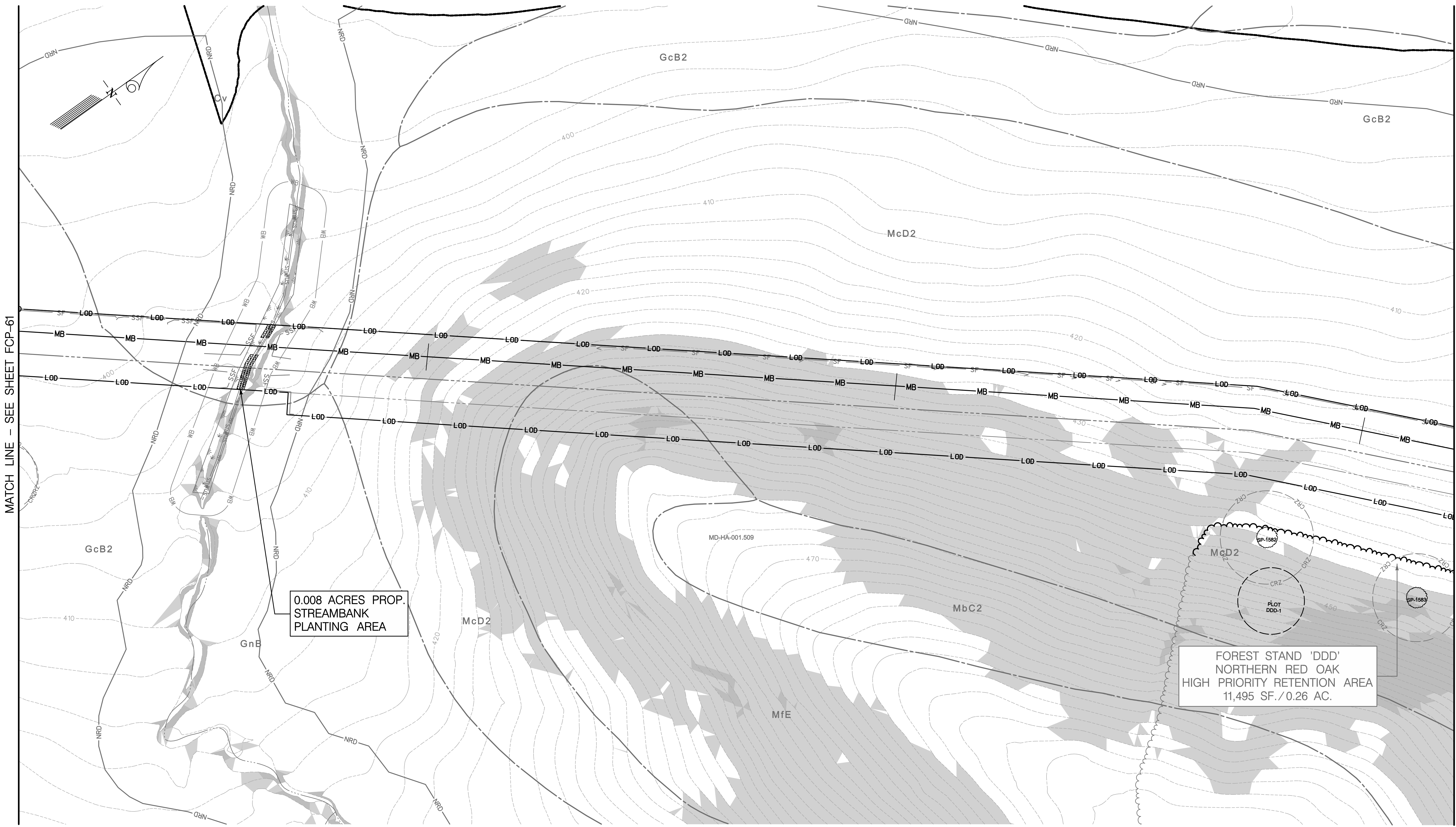
DATE MARCH 2013  
 SCALE 1" = 50'  
 DESIGNED BY JB  
 DRAWN BY CSD

**REVISED FOREST CONSERVATION PLAN**  
 FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
**LINE MB EXTENSION PROJECT**  
 HARFORD COUNTY, MARYLAND

DRAWING NO.  
**FCP-61**  
 SHEET 68 OF 85  
 KCI JOB NUMBER 16-121849

NOTE: NO FOREST STAND IMPACTS ON THIS SHEET

PLOTTED: 08:21 AM on Thursday, August 01, 2013  
 FILE: M:\2012\16121849\Drawings\FCP-61.dwg



MATCH LINE - SEE SHEET FCP-61

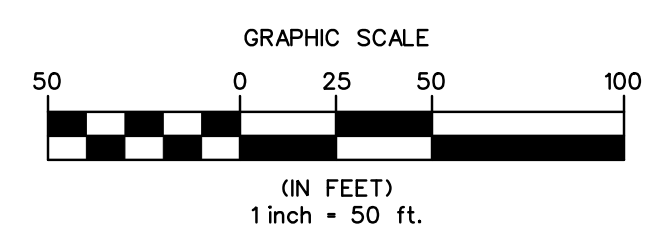
MATCH LINE - SEE SHEET FCP-63

0.008 ACRES PROP.  
STREAMBANK  
PLANTING AREA

FOREST STAND 'DDD'  
NORTHERN RED OAK  
HIGH PRIORITY RETENTION AREA  
11,495 SF./0.26 AC.

NOTE: NO FOREST STAND IMPACTS ON THIS SHEET  
NOTE: STREAMBANK PLANTING AREA INCREASED  
FROM 0.004 AC TO 0.008 AC.

Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1582	Quercus rubra	Northern Red Oak	35.0	Good	Forest Tree
SP-1583	Quercus rubra	Northern Red Oak	33.0	Poor	Forest Tree



THIS PLAN WAS PREPARED BY:  
JENNIFER BIRD  
KCI TECHNOLOGIES  
MDNR QUALIFIED PROFESSIONAL  
STATUS (SEPTEMBER 2011)

*Jennifer Bird* 08/2013  
SIGNATURE DATE

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
SEABOARD, MARYLAND 21152  
TELEPHONE: (410) 315-7800  
FAX: (410) 315-7818

**Columbia Gas Transmission**  
A NiSource Company

NO.	DATE	REVISIONS	DESCRIPTION	BY	DATE
1	JUNE 2013	STREAMBANK PLANTING UPDATES		AWW	MARCH 2013
2	AUG. 2013	LOD CHANGES		AWW	

SCALE 1" = 50'  
DESIGNED BY JB  
DRAWN BY CSD

REVISED FOREST CONSERVATION PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
HARFORD COUNTY, MARYLAND

DRAWING NO. **FCP-62**  
SHEET 69 OF 85  
KCI JOB NUMBER 16-121849

PLOTTED: 11:54 AM on Monday, August 05, 2013  
FILE: \\A:\2012\16121849\Drawings\Fcp\PLAN\_62.dwg

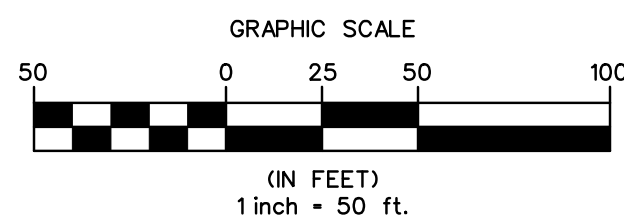
MATCH LINE - SEE SHEET FCP-62

MATCH LINE - SEE SHEET FCP-64

FOREST STAND 'DDD'  
NORTHERN RED OAK  
HIGH PRIORITY RETENTION AREA  
11,495 SF./0.26 AC.

0.008 ACRES PROP.  
STREAMBANK  
PLANTING AREA

Specimen Tree Details						
Number	Species	Common Name	Size DBH (in)	Condition	Notes	
SP-1584	Quercus rubra	Northern Red Oak	34.0	Good	Forest Tree	
SP-1585	Quercus rubra	Northern Red Oak	28.0	Poor	Forest Tree	
SP-1586	Quercus rubra	Northern Red Oak	26.0	Good	Forest Tree	
SP-1587	Quercus rubra	Northern Red Oak	36.0	Good	Forest Tree	



THIS PLAN WAS PREPARED BY:  
JENNIFER BIRD  
KCI TECHNOLOGIES  
MDNR QUALIFIED PROFESSIONAL  
STATUS (SEPTEMBER 2011)  
*Jennifer Bird* 08/2013  
SIGNATURE DATE

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS  
936 RIDGEBROOK ROAD  
SEABOARD, MARYLAND 21152  
TELEPHONE: (410) 315-7800  
FAX: (410) 315-7818

**Columbia Gas Transmission**  
A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	JUNE 2013	STREAMBANK PLANTING UPDATES	AW

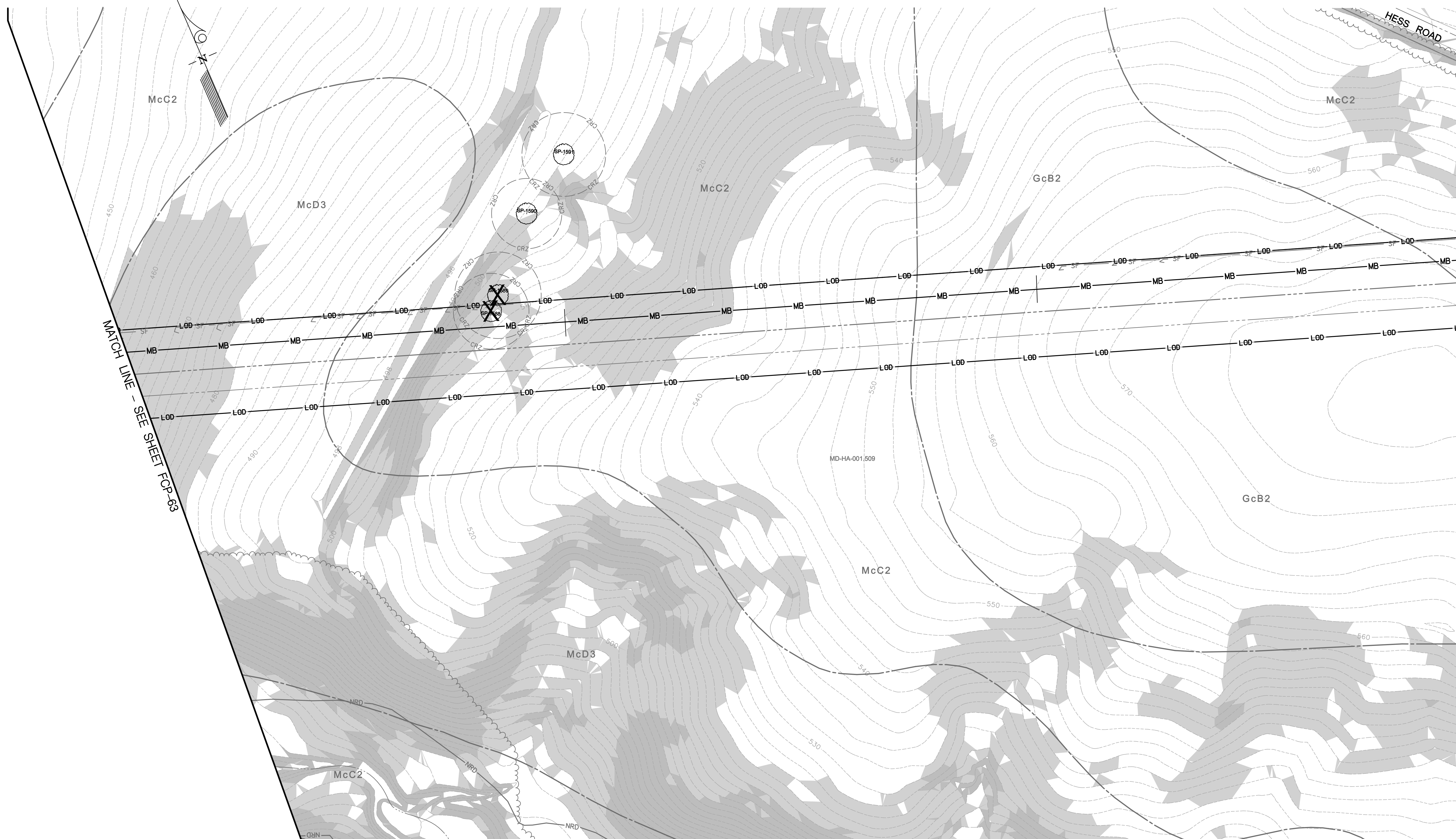
DATE	BY
MARCH 2013	AW
DESIGNED BY	JB
DRAWN BY	CSD

NOTE: NO FOREST STAND IMPACTS ON THIS SHEET  
NOTE: STREAMBANK PLANTING AREA INCREASED  
FROM 0.004 AC TO 0.008 AC.

REVISED FOREST CONSERVATION PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
HARFORD COUNTY, MARYLAND

DRAWING NO.  
**FCP-63**  
SHEET 70 OF 85  
KCI JOB NUMBER  
16-121849

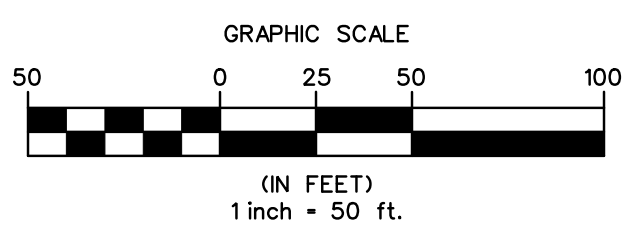
PLOTTED: 08:22 AM on Thursday, August 01, 2013  
FILE: \\A:\2012\16121849\Drawings\Fcp-PLAN\_63.dwg




PLOTTED: 08:22 AM on Thursday, August 01, 2013  
 FILE: M:\2012\161218429\Drawings\Fcp-PLAN\_64.dwg

Specimen Tree Details - PREVIOUSLY APPROVED					
Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1588	Prunus serotina	Black Cherry	28.0	Fair	Hedge-row Tree, To Be Removed
SP-1589	Prunus serotina	Black Cherry	32.0	Fair	Hedge-row Tree
SP-1590	Morus alba	White Mulberry	26.0	Good	Hedge-row Tree
SP-1591	Linderothia tulipifera	Tulip Poplar	31.0	Good	Hedge-row Tree
Total Specimen Trees on This Sheet = 4					
Total Specimen Trees Removed on This Sheet = 1					

Specimen Tree Details - NEWLY PROPOSED FOR REMOVAL					
Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1592	Prunus serotina	Black Cherry	32.0	Fair	Hedge-row Tree, To Be Removed
Total Specimen Trees on This Sheet = 4					
Total Newly Proposed Specimen Trees Removed on This Sheet = 1					



THIS PLAN WAS PREPARED BY:  
 JENNIFER BIRD  
 KCI TECHNOLOGIES  
 MDNR QUALIFIED PROFESSIONAL  
 STATUS (SEPTEMBER 2011)  
  
 SIGNATURE DATE 08/2013

  
**KCI**  
 TECHNOLOGIES  
 ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS  
 936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

  
 Columbia Gas  
 Transmission  
 A NiSource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	SCALE
2	AUG. 2013	LOD CHANGE, SPECIMEN TREE REMOVAL UPDATE	AW	MARCH 2013
				1" = 50'
				DESIGNED BY
				JB
				DRAWN BY
				CSD

NOTE: NO FOREST STAND IMPACTS ON THIS SHEET

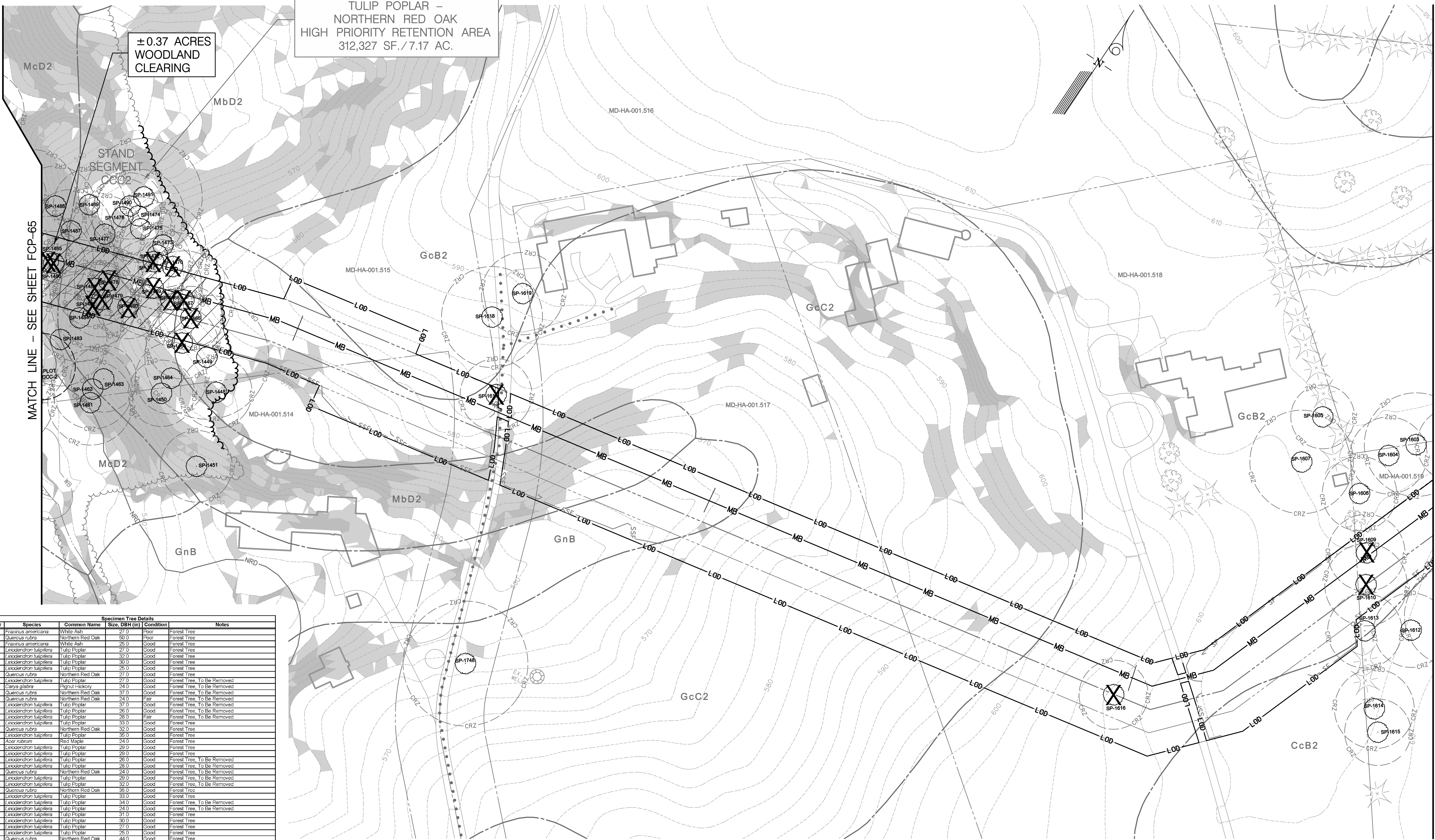
REVISED FOREST CONSERVATION PLAN  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 HARFORD COUNTY, MARYLAND

DRAWING NO.  
**FCP-64**  
 SHEET 71 OF 85  
 KCI JOB NUMBER  
 16-121849



FOREST STAND 'CCC'  
TULIP POPLAR -  
NORTHERN RED OAK  
HIGH PRIORITY RETENTION AREA  
312,327 SF./7.17 AC.

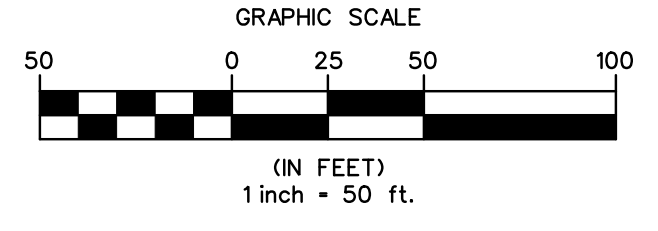
±0.37 ACRES  
WOODLAND  
CLEARING



MATCH LINE - SEE SHEET FCP-65

MATCH LINE - SEE SHEET FCP-67

Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1448	Fraxinus americana	White Ash	27.0	Poor	Forest Tree
SP-1449	Quercus rubra	Northern Red Oak	50.0	Poor	Forest Tree
SP-1450	Fraxinus americana	White Ash	25.0	Good	Forest Tree
SP-1451	Liriodendron tulipifera	Tulip Poplar	27.0	Good	Forest Tree
SP-1452	Liriodendron tulipifera	Tulip Poplar	32.0	Good	Forest Tree
SP-1453	Liriodendron tulipifera	Tulip Poplar	26.0	Good	Forest Tree
SP-1454	Quercus rubra	Northern Red Oak	27.0	Good	Forest Tree
SP-1455	Liriodendron tulipifera	Tulip Poplar	27.0	Good	Forest Tree, To Be Removed
SP-1456	Carinus glabra	Pignut Hickory	24.0	Good	Forest Tree, To Be Removed
SP-1457	Quercus rubra	Northern Red Oak	37.0	Good	Forest Tree, To Be Removed
SP-1458	Quercus rubra	Northern Red Oak	24.0	Fair	Forest Tree, To Be Removed
SP-1459	Liriodendron tulipifera	Tulip Poplar	37.0	Good	Forest Tree, To Be Removed
SP-1460	Liriodendron tulipifera	Tulip Poplar	28.0	Good	Forest Tree, To Be Removed
SP-1471	Liriodendron tulipifera	Tulip Poplar	28.0	Fair	Forest Tree, To Be Removed
SP-1472	Liriodendron tulipifera	Tulip Poplar	33.0	Good	Forest Tree
SP-1473	Quercus rubra	Northern Red Oak	33.0	Good	Forest Tree
SP-1474	Liriodendron tulipifera	Tulip Poplar	35.0	Good	Forest Tree
SP-1475	Acer rubrum	Red Maple	24.0	Good	Forest Tree
SP-1476	Liriodendron tulipifera	Tulip Poplar	29.0	Good	Forest Tree
SP-1477	Liriodendron tulipifera	Tulip Poplar	29.0	Good	Forest Tree
SP-1478	Liriodendron tulipifera	Tulip Poplar	26.0	Good	Forest Tree, To Be Removed
SP-1479	Liriodendron tulipifera	Tulip Poplar	28.0	Good	Forest Tree, To Be Removed
SP-1480	Quercus rubra	Northern Red Oak	24.0	Good	Forest Tree, To Be Removed
SP-1481	Liriodendron tulipifera	Tulip Poplar	29.0	Good	Forest Tree, To Be Removed
SP-1482	Liriodendron tulipifera	Tulip Poplar	32.0	Good	Forest Tree, To Be Removed
SP-1483	Quercus rubra	Northern Red Oak	36.0	Good	Forest Tree
SP-1484	Liriodendron tulipifera	Tulip Poplar	33.0	Good	Forest Tree
SP-1485	Liriodendron tulipifera	Tulip Poplar	34.0	Good	Forest Tree, To Be Removed
SP-1486	Liriodendron tulipifera	Tulip Poplar	24.0	Good	Forest Tree, To Be Removed
SP-1487	Liriodendron tulipifera	Tulip Poplar	31.0	Good	Forest Tree
SP-1488	Liriodendron tulipifera	Tulip Poplar	30.0	Good	Forest Tree
SP-1489	Liriodendron tulipifera	Tulip Poplar	27.0	Good	Forest Tree
SP-1490	Liriodendron tulipifera	Tulip Poplar	26.0	Good	Forest Tree
SP-1491	Quercus rubra	Northern Red Oak	44.0	Good	Forest Tree
SP-1503	Pinus strobus	Black Cherry	39.0	Good	Hedge-row / Landscape Tree
SP-1504	Acer platanoides	Norway Maple	29.0	Good	Hedge-row / Landscape Tree
SP-1505	Pinus strobus	White Pine	24.0	Good	Hedge-row / Landscape Tree
SP-1507	Acer saccharinum	Silver Maple	38.0	Good	Landscape Tree
SP-1508	Pinus strobus	White Pine	23.0	Fair	Hedge-row / Landscape Tree
SP-1509	Acer platanoides	Norway Maple	29.0	Fair	Hedge-row / Landscape Tree, To Be Removed
SP-1510	Acer platanoides	Norway Maple	31.0	Good	Hedge-row / Landscape Tree, To Be Removed
SP-1512	Malus sp	Crabapple Species	26.0	Good	Landscape Tree
SP-1513	Acer platanoides	Norway Maple	29.0	Good	Hedge-row / Landscape Tree
SP-1514	Acer platanoides	Norway Maple	30.0	Good	Hedge-row / Landscape Tree
SP-1515	Acer platanoides	Norway Maple	25.0	Good	Hedge-row / Landscape Tree
SP-1516	Platanus occidentalis	Sycamore	29.0	Good	Landscape Tree, To Be Removed
SP-1517	Acer platanoides	Norway Maple	27.0	Good	Hedge-row / Landscape Tree, To Be Removed
SP-1518	Acer platanoides	Norway Maple	38.0	Good	Hedge-row / Landscape Tree
SP-1519	Castanea dentata	American Chestnut	31.0	Good	Hedge-row / Landscape Tree
SP-1748	Acer platanoides	Norway Maple	47.0	Good	Landscape Tree
Total Specimen Trees on This Sheet = 51					
Total Specimen Trees Removed on This Sheet = 18					



THIS PLAN WAS PREPARED BY:  
JENNIFER BIRD  
KCI TECHNOLOGIES  
MDNR QUALIFIED PROFESSIONAL  
STATUS (SEPTEMBER 2011)

*Jennifer Bird* 08/2013  
SIGNATURE DATE

ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
SEABOARD, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

A NiSource Company

NO.	DATE	DESCRIPTION	BY

DATE  
MARCH 2013

SCALE  
1" = 50'

DESIGNED BY  
JB

DRAWN BY  
CSD

TOTAL FOREST CLEARING: 0.37 AC.  
TOTAL AREA REPLANTED ON-SITE: 0.00 AC.  
TOTAL AREA REQUIRING OFF-SITE MITIGATION: 0.37 AC.

FOREST CONSERVATION PLAN

FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT - PHASE 2  
BALTIMORE COUNTY, MARYLAND

DRAWING NO.  
FCP-66

SHEET 73 OF 85  
KCI JOB NUMBER  
16-121849

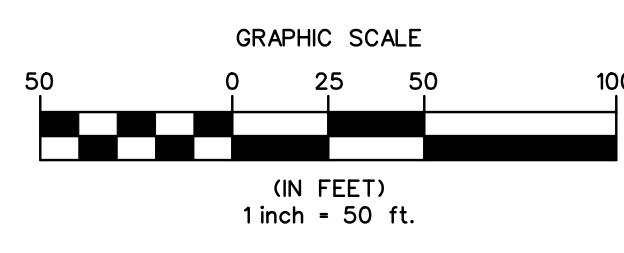


MATCH LINE - SEE SHEET FCP-66

MATCH LINE - SEE SHEET FCP-68

Specimen Tree Details - PREVIOUSLY APPROVED					
Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1592	Pinus strobus	White Pine	25.0	Good	Hedge/row / Landscape Tree
SP-1593	Pinus strobus	White Pine	25.0	Fair	Hedge/row / Landscape Tree To Be Removed
SP-1594	Acer saccharum	Silver Maple	26.0	Good	Hedge/row / Landscape Tree
SP-1595	Acer saccharum	Silver Maple	39.0	Good	Hedge/row / Landscape Tree
SP-1596	Acer platanoides	Norway Maple	26.0	Good	Hedge/row / Landscape Tree
SP-1597	Acer saccharum	Silver Maple	25.0	Good	Hedge/row / Landscape Tree
SP-1598	Acer platanoides	Norway Maple	24.0	Good	Hedge/row / Landscape Tree
SP-1599	Acer platanoides	Norway Maple	24.0	Good	Landscape Tree
SP-1600	Acer platanoides	Norway Maple	32.0	Good	Hedge/row / Landscape Tree
SP-1601	Acer platanoides	Norway Maple	26.0	Good	Hedge/row / Landscape Tree
SP-1602	Acer platanoides	Norway Maple	28.0	Good	Hedge/row / Landscape Tree
SP-1611	Morus alba	White Mulberry	38.0	Fair	Landscape Tree
SP-1622	Pinus strobus	White Pine	32.0	Good	Landscape Tree
SP-1623	Acer saccharum	Silver Maple	34.0	Good	Landscape Tree
SP-1624	Acer saccharum	Silver Maple	37.0	Good	Landscape Tree
SP-1625	Acer saccharum	Silver Maple	33.0	Good	Landscape Tree
SP-1626	Prunus serotina	Black Cherry	32.0	Good	Landscape Tree
SP-1627	Acer negundo	Box Elder	25.0	Poor	Landscape Tree
SP-1628	Morus alba	White Mulberry	24.0	Good	Landscape Tree
SP-1629	Morus alba	White Mulberry	26.0	Good	Landscape Tree
SP-1630	Acer saccharum	Silver Maple	28.0	Good	Landscape Tree
SP-1631	Acer saccharum	Silver Maple	30.0	Good	Landscape Tree
SP-1632	Acer negundo	Box Elder	24.0	Fair	Landscape Tree
SP-1633	Acer saccharum	Silver Maple	24.0	Good	Landscape Tree
SP-1634	Gymnocladus dioica	Kentucky Coffee Tree	34.0	Good	Hedge/row / Landscape Tree
SP-1635	Pinus strobus	White Pine	32.0	Good	Hedge/row / Landscape Tree
SP-1636	Pinus strobus	White Pine	28.0	Good	Hedge/row / Landscape Tree
SP-1637	Acer saccharum	Silver Maple	25.0	Good	Landscape Tree
SP-1638	Acer saccharum	Silver Maple	45.0	Fair	Landscape Tree
SP-1639	Acer saccharum	Silver Maple	26.0	Fair	Landscape Tree
SP-1640	Prunus serotina	Black Cherry	32.0	Good	Landscape Tree
SP-1641	Prunus serotina	Black Cherry	25.0	Good	Landscape Tree
SP-1642	Acer rubrum	Red Maple	33.0	Good	Landscape Tree
SP-1643	Prunus serotina	Black Cherry	38.0	Good	Landscape Tree
SP-1644	Morus alba	White Mulberry	32.0	Good	Landscape Tree
SP-1749	Robinia pseudoacacia	Black Locust	38.0	Poor	Forest Tree REMOVAL OF TREES
SP-1750	Acer rubrum	Red Maple	40.0	Good	Forest Tree SP-1749, 1750, 1751 & 1752
SP-1751	Acer platanoides	Norway Maple	29.0	Good	Forest Tree IS ADDRESSED IN THE
SP-1752	Morus alba	White Mulberry	28.0	Poor	Forest Tree ROADSIDE TREE PERMIT
Total Specimen Trees on This Sheet = 39					
Total Newly Proposed Specimen Trees Removed on This Sheet = 1					

Specimen Tree Details - NEWLY PROPOSED FOR REMOVAL					
Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1622	Pinus strobus	White Pine	32.0	Good	Landscape Tree, To Be Removed
SP-1644	Morus alba	White Mulberry	32.0	Good	Landscape Tree, To Be Removed
Total Specimen Trees on This Sheet = 39					
Total Newly Proposed Specimen Trees Removed on This Sheet = 2					



THIS PLAN WAS PREPARED BY:  
 JENNIFER BIRD  
 KCI TECHNOLOGIES  
 MDRN QUALIFIED PROFESSIONAL  
 STATUS (SEPTEMBER 2011)

*Jennifer Bird* 08/2013  
 SIGNATURE DATE

**KCI TECHNOLOGIES**  
 ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

**Columbia Gas Transmission**  
 A NiSource Company

NO.		DATE		REVISIONS		DATE	
1		JUNE 2013		DESCRIPTION		BY	
				LOD CHANGES		AW	
						CSD	

REVISOR: MARCH 2013  
 SCALE: 1" = 50'  
 DESIGNED BY: JB  
 DRAWN BY: CSD

REVISED FOREST CONSERVATION PLAN  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 HARFORD COUNTY, MARYLAND

DRAWING NO.  
**FCP-67**

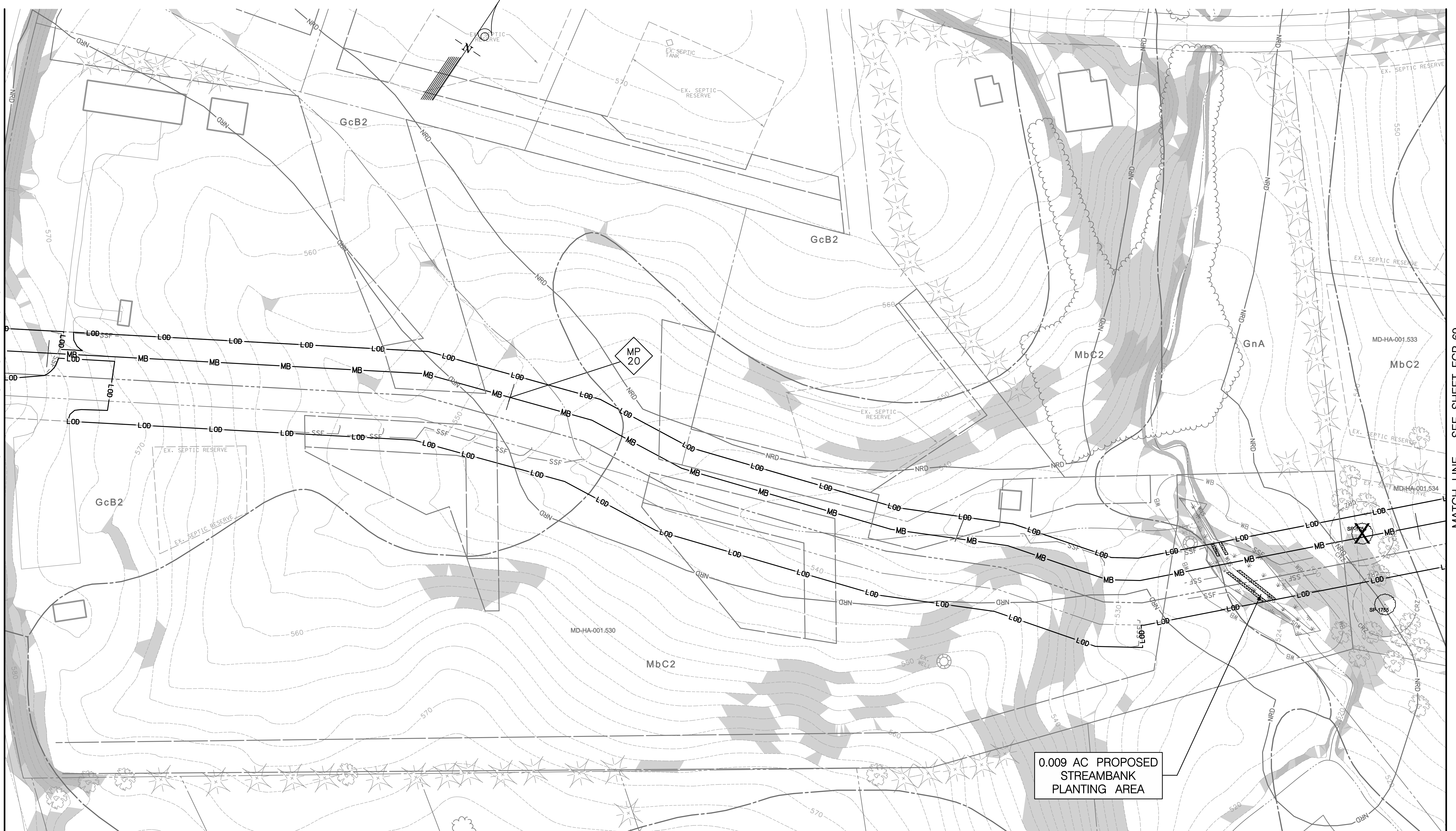
SHEET 74 OF 85  
 KCI JOB NUMBER  
 16-121849

NOTE: NO FOREST STAND IMPACTS ON THIS SHEET

PLOTTED: 08:25 AM on Thursday, August 01, 2013  
 FILE: M:\2012\16121849\Drawings\Fcp\PLAN\_67.dwg

MATCH LINE - SEE SHEET FCP-67

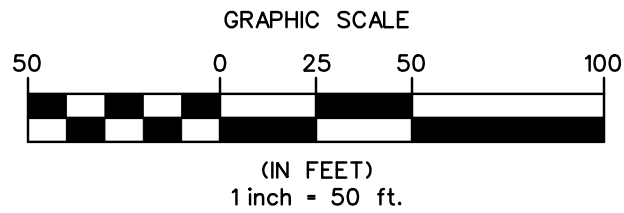
MATCH LINE - SEE SHEET FCP-69



0.009 AC PROPOSED  
STREAMBANK  
PLANTING AREA

NOTE: NO FOREST STAND IMPACTS ON THIS SHEET  
NOTE: STREAMBANK PLANTING AREA INCREASED  
FROM 0.004 AC TO 0.009 AC.

Specimen Tree Details					
Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1754	<i>Robinia pseudoacacia</i>	Black Locust	24.0	Fair	Hedgerow Tree, To Be Removed
SP-1755	<i>Robinia pseudoacacia</i>	Black Locust	24.0	Fair	Hedgerow Tree
Total Specimen Trees on This Sheet = 2					
Total Specimen Trees Removed on This Sheet = 1					



THIS PLAN WAS PREPARED BY:  
JENNIFER BIRD  
KCI TECHNOLOGIES  
MDNR QUALIFIED PROFESSIONAL  
STATUS (SEPTEMBER 2011)  
*Jennifer Bird*  
SIGNATURE DATE 08/2013

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS  
936 RIDGEBROOK ROAD  
SPARKS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

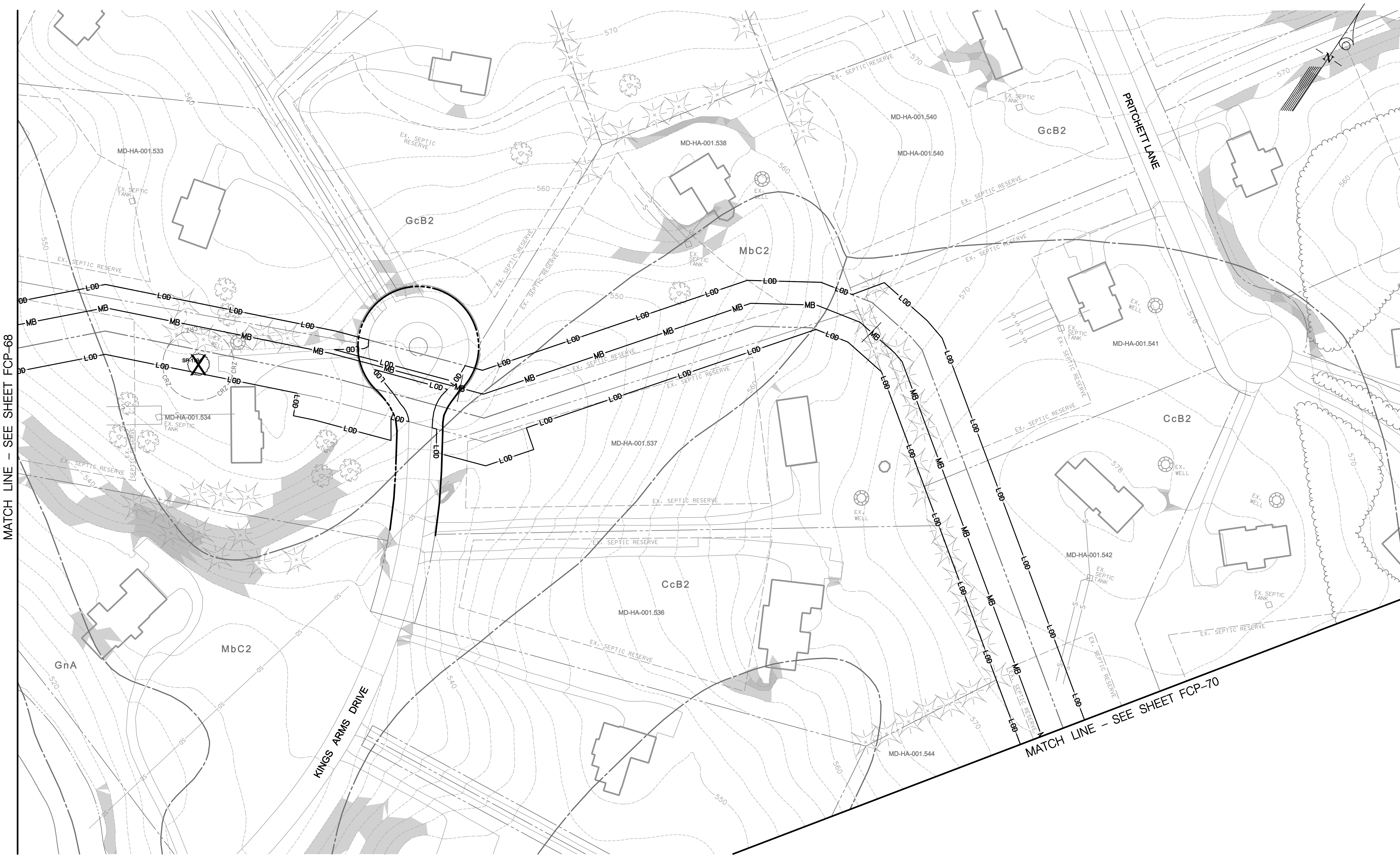
**Columbia Gas Transmission**  
A NiSource Company

REVISIONS		DATE	
NO.	DATE	DESCRIPTION	BY
1	JUNE 2013	STREAMBANK PLANTING UPDATES	AAW
2	AUG. 2013	LOD CHANGES	AAW
		DESIGNED BY	
		JB	
		DRAWN BY	
		CSD	

REVISED FOREST CONSERVATION PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
HARFORD COUNTY, MARYLAND

DRAWING NO.  
**FCP-68**  
SHEET 75 OF 85  
KCI JOB NUMBER  
16-121849

PLOTTED: 11:58 AM on Monday, August 05, 2013  
FILE: \\A2012\16121849\Drawings\Fcp\PLAN\_68.dwg

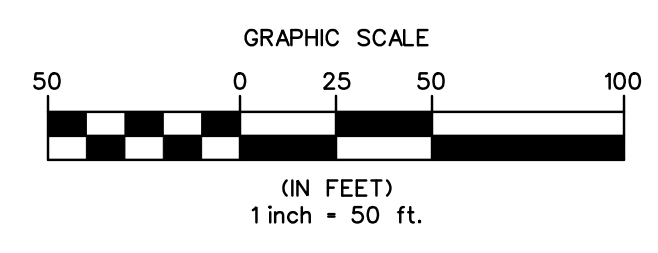


MATCH LINE - SEE SHEET FCP-68

MATCH LINE - SEE SHEET FCP-70

NOTE: NO FOREST STAND IMPACTS ON THIS SHEET

Specimen Tree Details					
Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1794	<i>Ulmus parvifolia</i>	Chinese Elm	26.0	Poor	Landscape Tree, To be Removed
Total Specimen Trees on This Sheet = 1					
Total Specimen Trees Removed on This Sheet = 1					



THIS PLAN WAS PREPARED BY:  
 JENNIFER BIRO  
 KCI TECHNOLOGIES  
 MDNR QUALIFIED PROFESSIONAL  
 STATUS (SEPTEMBER 2011)  
*Jennifer Biro*  
 SIGNATURE DATE 08/2013

**KCI TECHNOLOGIES**  
 ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS  
 936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

**Columbia Gas Transmission**  
 A NiSource Company

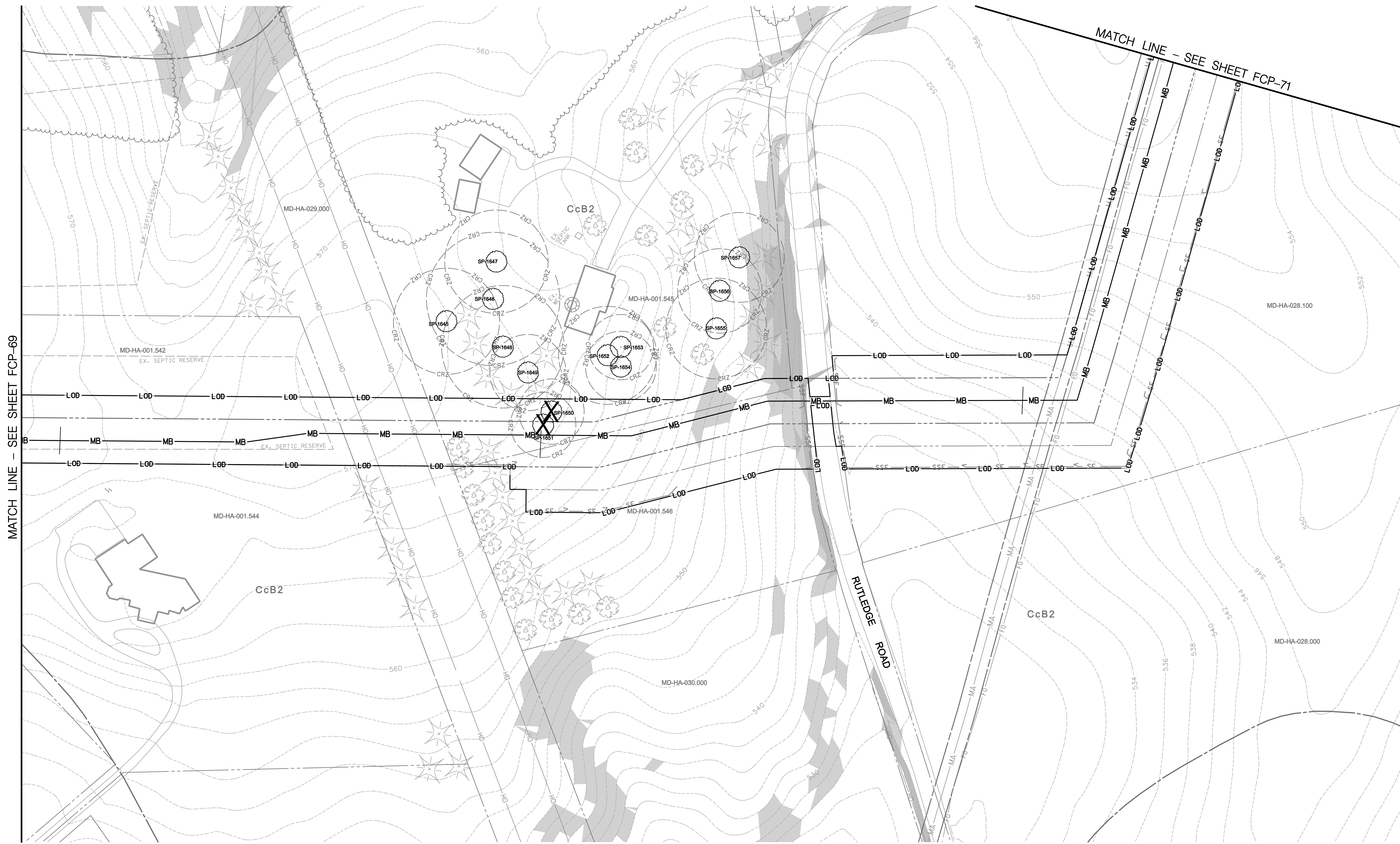
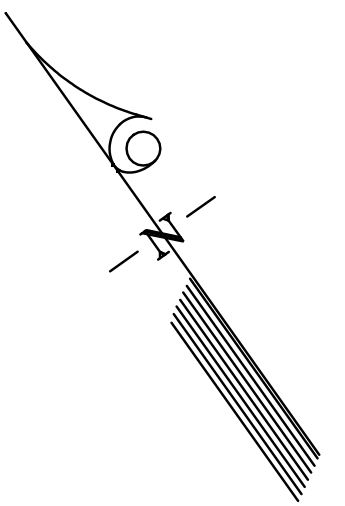
REVISIONS			
NO.	DATE	DESCRIPTION	BY
2	AUG. 2013	LOD CHANGES	AW

DATE	BY
MARCH 2013	AW
DESIGNED BY	JB
DRAWN BY	CSD

REVISED FOREST CONSERVATION PLAN  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 HARFORD COUNTY, MARYLAND

DRAWING NO.  
**FCP-69**  
 SHEET 76 OF 85  
 KCI JOB NUMBER  
 16-121849

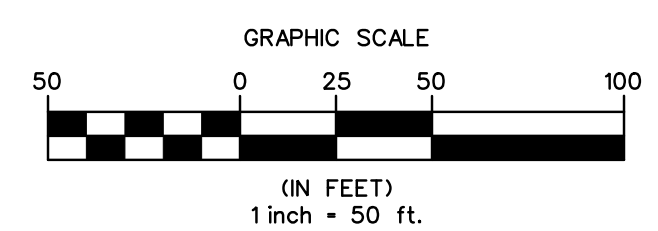
PLOTTED: 08:26 AM on Thursday, August 01, 2013  
 FILE: \\A:\2012\16121849\Drawings\FCP-PLAN\_69.dwg



MATCH LINE - SEE SHEET FCP-69

MATCH LINE - SEE SHEET FCP-71

Specimen Tree Details					
Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1647	Liriodendron tulipifera	Tulip Poplar	38.0	Good	Landscape Tree
SP-1648	Quercus rubra	Northern Red Oak	48.0	Good	Landscape Tree
SP-1649	Acer saccharum	Silver Maple	45.0	Fair	Landscape Tree
SP-1650	Pinus strobus	White Pine	28.0	Fair	Landscape Tree
SP-1651	Robinia pseudoacacia	Black Locust	24.0	Poor	Landscape Tree, To Be Removed
SP-1652	Liriodendron tulipifera	Tulip Poplar	36.0	Good	Landscape Tree
SP-1653	Acer rubrum	Red Maple	24.0	Good	Landscape Tree
SP-1654	Acer rubrum	Red Maple	26.0	Good	Landscape Tree
SP-1655	Liriodendron tulipifera	Tulip Poplar	37.0	Good	Landscape Tree
SP-1656	Liriodendron tulipifera	Tulip Poplar	31.0	Good	Landscape Tree
SP-1657	Liriodendron tulipifera	Tulip Poplar	33.0	Good	Landscape Tree
Total Specimen Trees on This Sheet = 13					
Total Specimen Trees Removed on This Sheet = 2					



THIS PLAN WAS PREPARED BY:  
 JENNIFER BIRD  
 KCI TECHNOLOGIES  
 MDNR QUALIFIED PROFESSIONAL  
 STATUS (SEPTEMBER 2011)  
 Signature: Jennifer Bird  
 DATE: 08/2013

**KCI TECHNOLOGIES**  
 ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS  
 936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

**Columbia Gas Transmission**  
 A NiSource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	
2	AUG. 2013	LOD CHANGES	AW	MARCH 2013
				SCALE
				1" = 50'
				DESIGNED BY
				JB
				DRAWN BY
				CSD

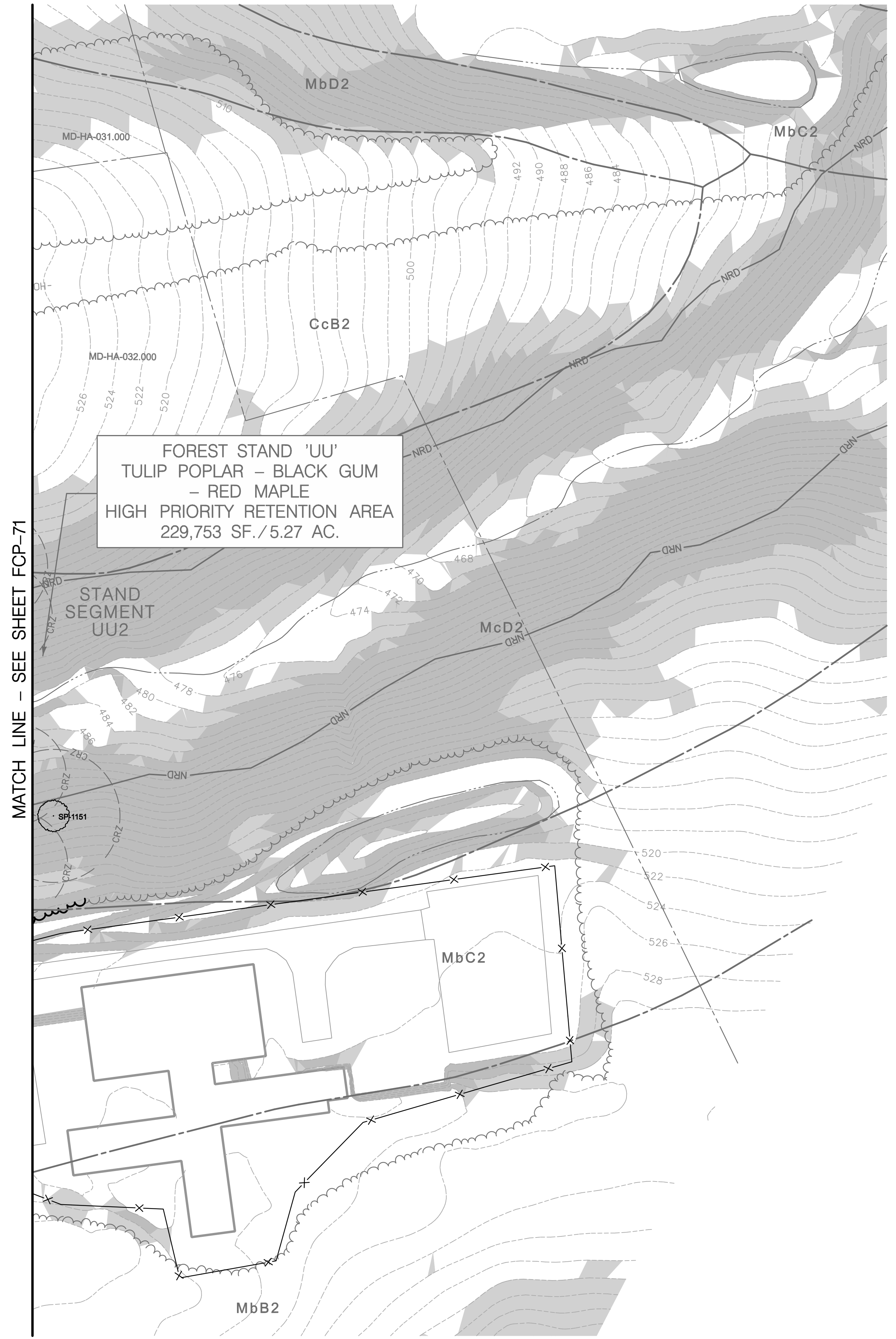
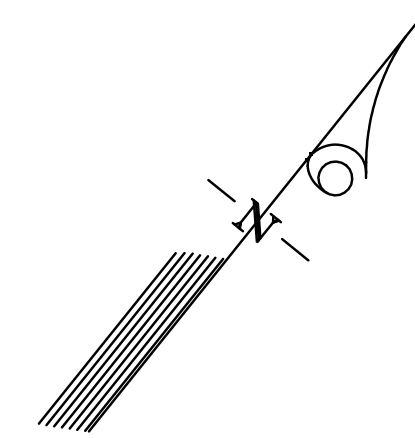
NOTE: NO FOREST STAND IMPACTS ON THIS SHEET

REVISED FOREST CONSERVATION PLAN  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 HARFORD COUNTY, MARYLAND

DRAWING NO.  
**FCP-70**  
 SHEET 77 OF 85  
 KCI JOB NUMBER  
 16-121849

PLOT: 08/26 AM on Thursday, August 01, 2013  
 FILE: M:\2012\16121849\Drawings\FCP-PLAN\_70.dwg





MATCH LINE - SEE SHEET FCP-71

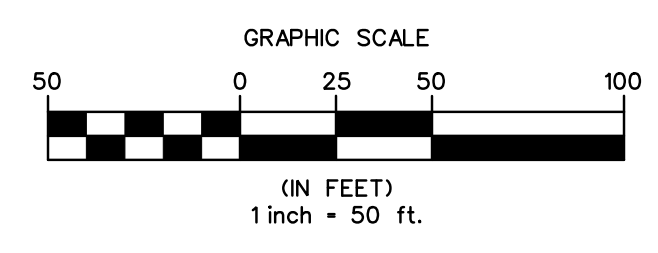
FOREST STAND 'UU'  
TULIP POPLAR - BLACK GUM  
- RED MAPLE  
HIGH PRIORITY RETENTION AREA  
229,753 SF./5.27 AC.

STAND SEGMENT  
UU2

NOTE: NO FOREST STAND IMPACTS ON THIS SHEET

PLOTTED: 08:27 AM on Thursday, August 01, 2013  
FILE: M:\2012\16121849\Drawings\Fcp\_Plan\_72.dwg

Specimen Tree Details					
Number	Species	Common Name	Size, DBH (in)	Condition	Notes
SP-1151	Quercus rubra	Northern Red Oak	33.0	Good	Forest Tree



THIS PLAN WAS PREPARED BY:  
JENNIFER BIRD  
KCI TECHNOLOGIES  
MDNR QUALIFIED PROFESSIONAL  
STATUS (SEPTEMBER 2011)

*Jennifer H. Bird* 08/2013  
SIGNATURE DATE

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
SPARKS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE  
MARCH 2013  
SCALE  
1" = 50'  
DESIGNED BY  
JB  
DRAWN BY  
CSD

FOREST CONSERVATION PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT - PHASE 2  
BALTIMORE COUNTY, MARYLAND

DRAWING NO.  
**FCP-72**  
SHEET 79 OF 85  
KCI JOB NUMBER  
16-121849



Tract ID	Milepost	Easement Type	Crossing Distance (feet unless otherwise noted)
MD-HA-001.509	17.7 - 19.1	Harford County Agricultural Land Preservation	7,188
MD-HA-001.530	19.9 - 20.2	Harford County Natural Conservation	260
MD-HA-001.530	19.9 - 20.2	Harford County Forest Retention	753

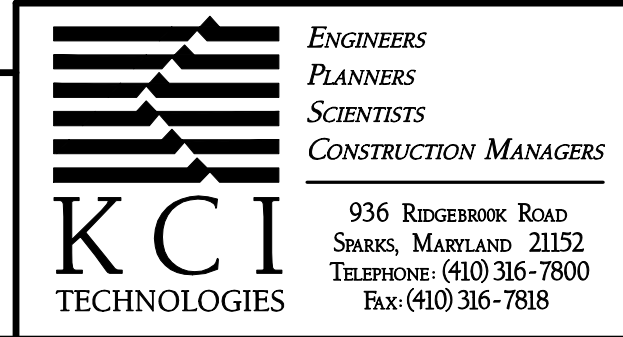
NOTE: EASEMENTS CROSSED BY CONSTRUCTION WORK AREA

PLOTTED: 09:09 AM on Thursday, August 01, 2013  
 FILE: \\16121849\csm\16121849\16121849\CP-PROPEASEMENT-TABLE-HARFORD\_CO.dgn

THIS PLAN WAS PREPARED BY:  
 JENNIFER BIRD  
 KCI TECHNOLOGIES  
 MDNR QUALIFIED PROFESSIONAL  
 STATUS (SEPTEMBER 2011)

08/2013  
 DATE

SIGNATURE



REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	MARCH 2013

SCALE  
 1" = 50'

DESIGNED BY  
 JB

DRAWN BY  
 CSD

EASEMENT INFORMATION

FOR

**COLUMBIA GAS TRANSMISSION, LLC**  
**LINE MB EXTENSION PROJECT**

HARFORD COUNTY, MARYLAND

DRAWING NO.  
**ET-1**

SHEET 85 OF 85  
 KCI JOB NUMBER  
 16-121849