Attachment B

Revised Figures and Tables for Remedial Investigation Report for Reach 3

Enbridge Energy, Limited Partnership
333 South Kalamazoo Avenue
Marshall, Michigan 49068
P. 269-781-1500
F. 269-789-9135

June 19, 2015

Ms. Michelle DeLong, Project Coordinator
and Enbridge Response Unit Chief
Water Resources Division
13444 Preston Drive
Marshall, MI 49068

Mr. Mark DuCharme, Project Coordinator
MDEQ Remediation Division
Kalamazoo District Office
7953 Adobe Road
Kalamazoo, MI 49009

RE: Enbridge Energy, Limited Partnership Line 6B: Kalamazoo River Response Actions – Revised Figures and Tables for Remedial Investigation Report for Reach 3, Enbridge Line 6B MP 608, Marshall, MI Pipeline Release, Enbridge Energy, Limited Partnership.
Court Case No.: 15-1411-CE.

Dear Ms. DeLong and Mr. DuCharme:

Enclosed, please find a complete set of revised figures and tables for the *Remedial Investigation Report for Reach 3*, submitted to the Michigan Department of Environmental Quality (MDEQ) on October 30, 2014. Several figures and tables (denoted as "REVISED" to designate which figures and tables have been changed) were modified to address comments provided by the MDEQ on February 10, 2015. Revisions were completed so that these figures and tables fully support the results and conclusions of the Reach 3 RI Report.

Should you have any questions or require additional information, please contact me at the email referenced below or my direct line at (269) 781-1942.

Sincerely,

David Bareham
Manager Environment
david.bareham@enbridge.com

Enclosures:

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Figure 3 Reach 3 Potable Well Locations
Figure 4 Reach 3 All Sampling Locations (REVISED)
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Document ID 5059

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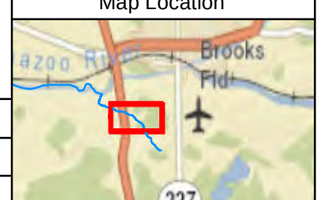
cc: AECOM

ENBRIDGE

Drawn:	NS	6/2/2015
Approved:	HF	6/2/2015
Project #:	60339671	

Map Location



Legend

- Zoned Agricultural
- Decommissioning Activities
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 175 350 700

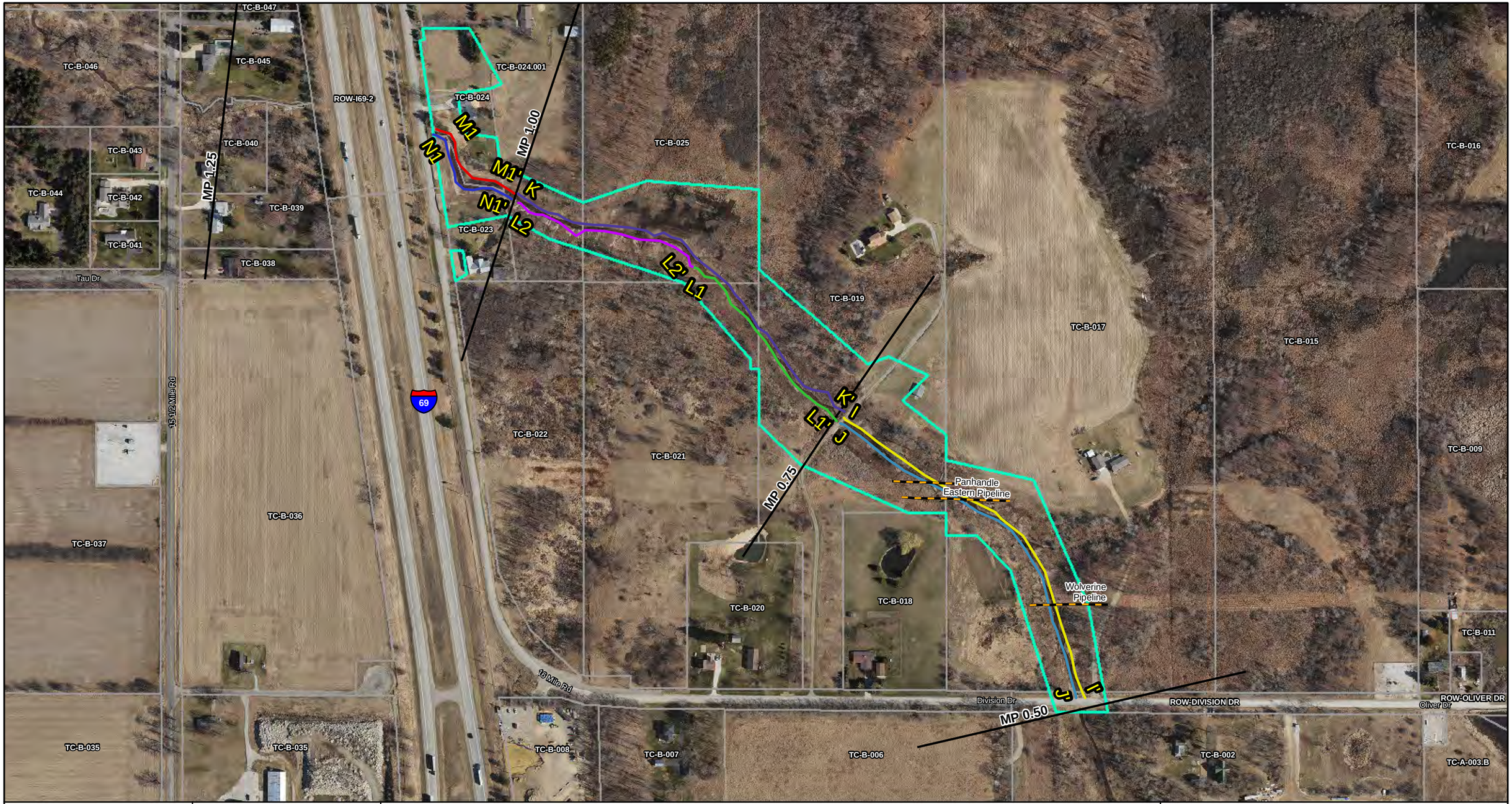
Scale in Feet

FIGURE 1
REACH 3
SITE LOCATION (REVISED)

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Kalamazoo_River_RI\MXDs\Parcel_Primers\REACH3\Report\Figure_01_Reach_3_Site_Location.mxd

Aerial Photography Date: April 2011



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Approved:	JB	6/2/2015
Project #:	60339671	

Map Location

Legend

- Cross Section I-I'
- Cross Section J-J'
- Cross Section K-K'
- Cross Section L1-L1'
- Cross Section L2-L2'
- Cross Section M1-M1'
- Cross Section N1-N1'
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 150 300 600

Scale in Feet

FIGURE 2
REACH 3
GEOLOGIC CROSS SECTION (REVISED)
OVERVIEW
SHEET 1 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Kalamazoo_River_RI\MXDs\Parcel_Primers\REACH3\Report\Figure_02_Reach_3_Geology_XS_Overview_Sheet_1.mxd

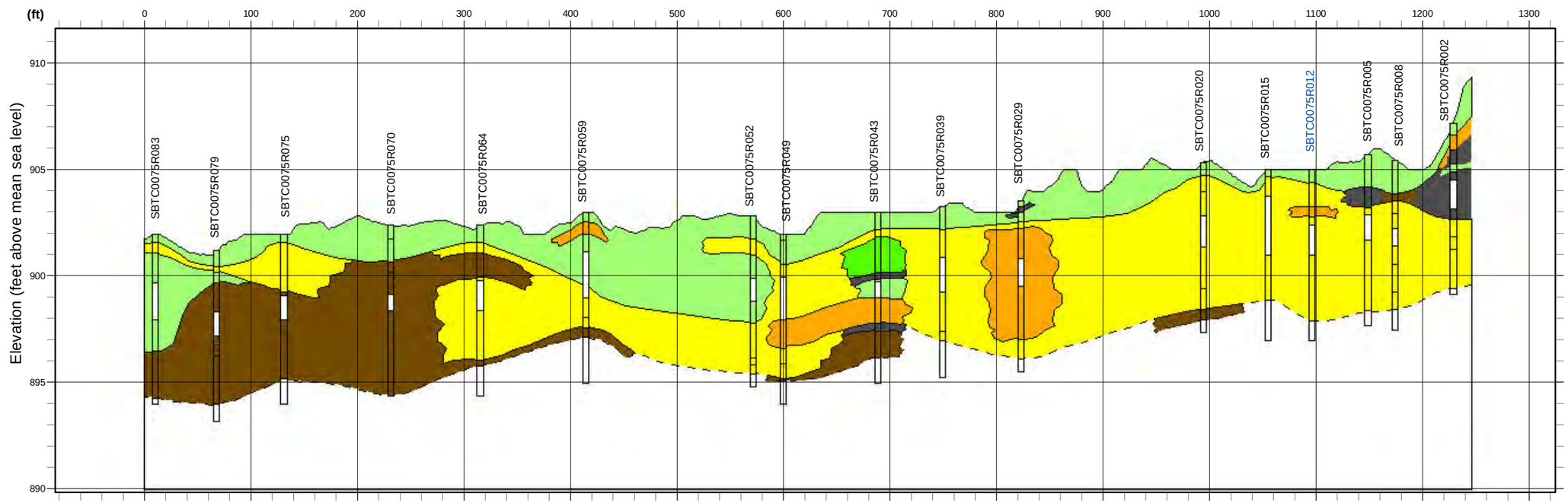
Aerial Photography Date: April 2011

Cross Section I-I'

Vertical Exaggeration: 20x

North MP 0.75
I

South MP 0.50
I'



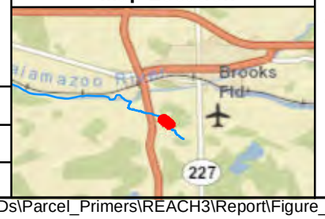
USCS

- No Recovery
- Peat
- Organic Soils
- Clay Soils
- Silt Soils
- Sand Soils
- Gravel Soils
- Bedrock

ENBRIDGE

Drawn:	DH	6/2/2015
Approved:	JB	6/2/2015
Project #:	60339671	

Map Location



Overview Legend

- Cross Section I-I'
- Cores
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments

Cross Section Legend

- Sample Interval
- Water Level

Note: Soil borings with no water levels shown are due to no water present in bore hole.

SBTC0000R000 **Temporary Well Location**

0 40 80 160
Scale in Feet

FIGURE 2
REACH 3
GEOLOGIC CROSS SECTION (REVISED)
I-I'
SHEET 2 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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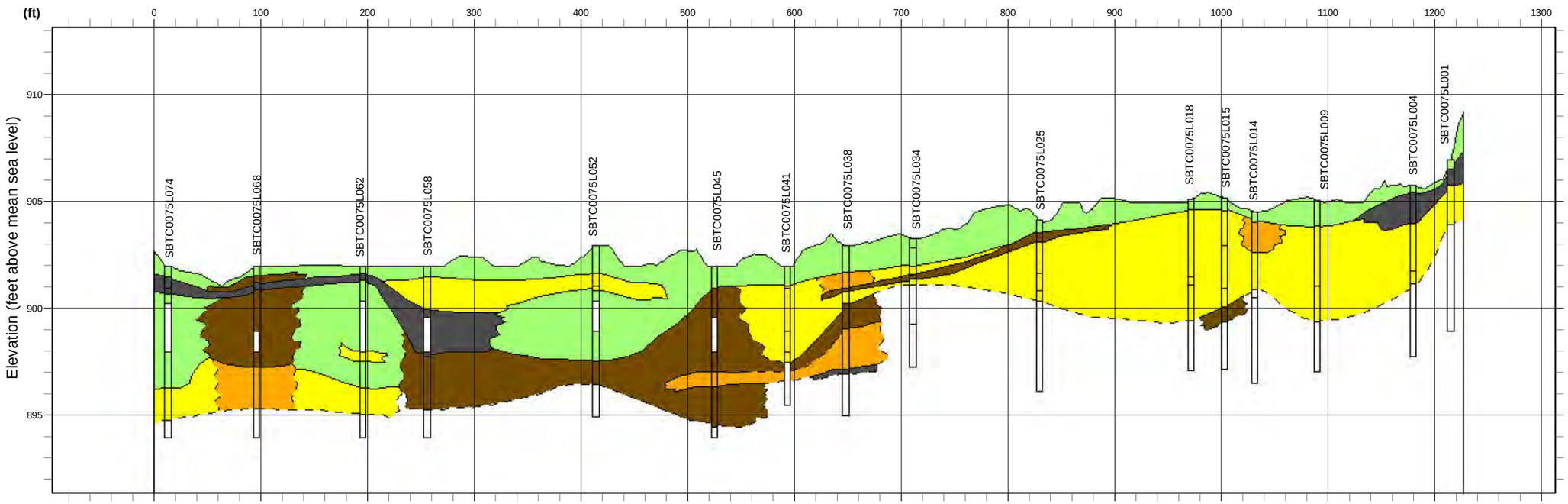
Aerial Photography Date: April 2011

Cross Section J-J'

Vertical Exaggeration: 20x

North MP 0.75
J

South MP 0.50
J'



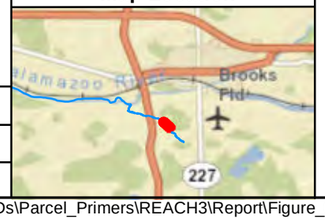
USCS

- No Recovery
- Peat
- Organic Soils
- Clay Soils
- Silt Soils
- Sand Soils
- Gravel Soils
- Bedrock

ENBRIDGE

Drawn:	DH	6/2/2015
Approved:	JB	6/2/2015
Project #:	60339671	

Map Location



Overview Legend

- Cross Section J-J'
- Cores
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments

Cross Section Legend

- Sample Interval
- Water Level

Note: Soil borings with no water levels shown are due to no water present in bore hole.

SBTC0000R000 **Temporary Well Location**

0 40 80 160
Scale in Feet

FIGURE 2
REACH 3
GEOLOGIC CROSS SECTION (REVISED)
J-J'
SHEET 3 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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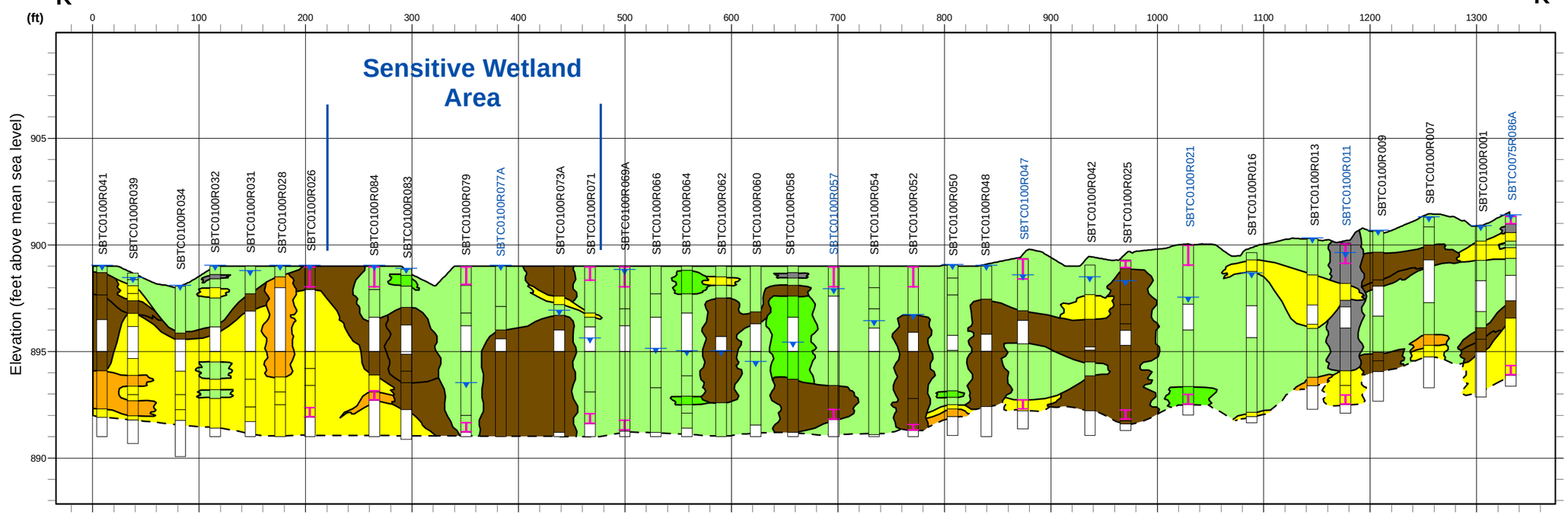
Aerial Photography Date: April 2011

Cross Section K-K'

Vertical Exaggeration: 20x

North MP 1.00
K

South MP 0.75
K'



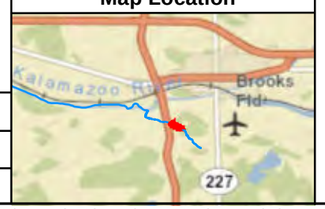
Soil Type

- No Recovery
- Peat
- Organic Soils
- Clay Soils
- Silt Soils
- Sand Soils
- Gravel Soils

ENBRIDGE

Drawn:	DH	6/2/2015
Approved:	JB	6/2/2015
Project #:	60339671	

Map Location



Overview Legend

- Cross Section K-K'
- Cores
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments

Cross Section Legend

- Sample Interval
- Water Level

Note: Soil borings with no water levels shown are due to no water present in bore hole.

SBTC0000R000 **Temporary Well Location**

0 45 90 180
Scale in Feet

FIGURE 2
REACH 3
GEOLOGIC CROSS SECTION (REVISED)
K-K'
SHEET 4 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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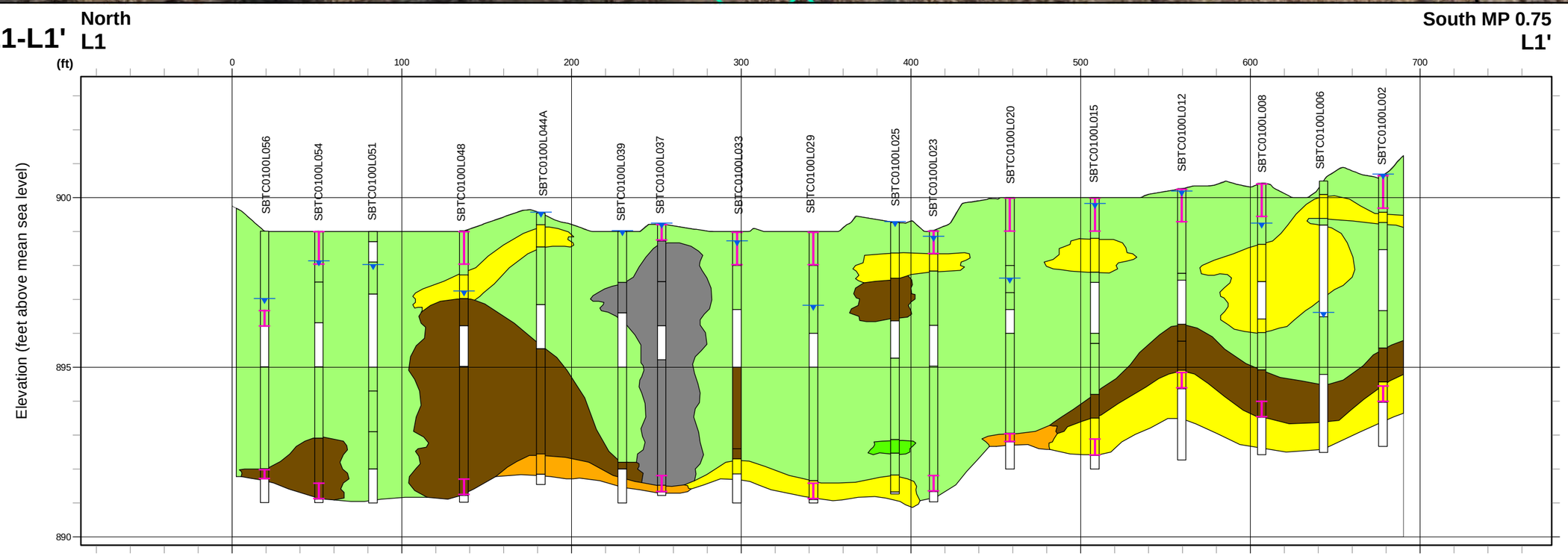
Aerial Photography Date: April 2011

Cross Section L1-L1'

Vertical Exaggeration: 20x



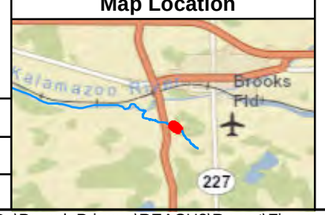
USCS

- No Recovery
- Peat
- Organic Soils
- Clay Soils
- Silt Soils
- Sand Soils
- Gravel Soils

ENBRIDGE

Drawn:	DH	6/2/2015
Approved:	JB	6/2/2015
Project #:	60339671	

Map Location



Overview Legend

- Cross Section L1-L1'
- Cores
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments

Cross Section Legend

- Sample Interval
- Water Level

Note: Soil borings with no water levels shown are due to no water present in bore hole.

SBTC0000R000 **Temporary Well Location**

0 25 50 100
Scale in Feet

FIGURE 2
REACH 3
GEOLOGIC CROSS SECTION (REVISED)
L1-L1'
SHEET 5 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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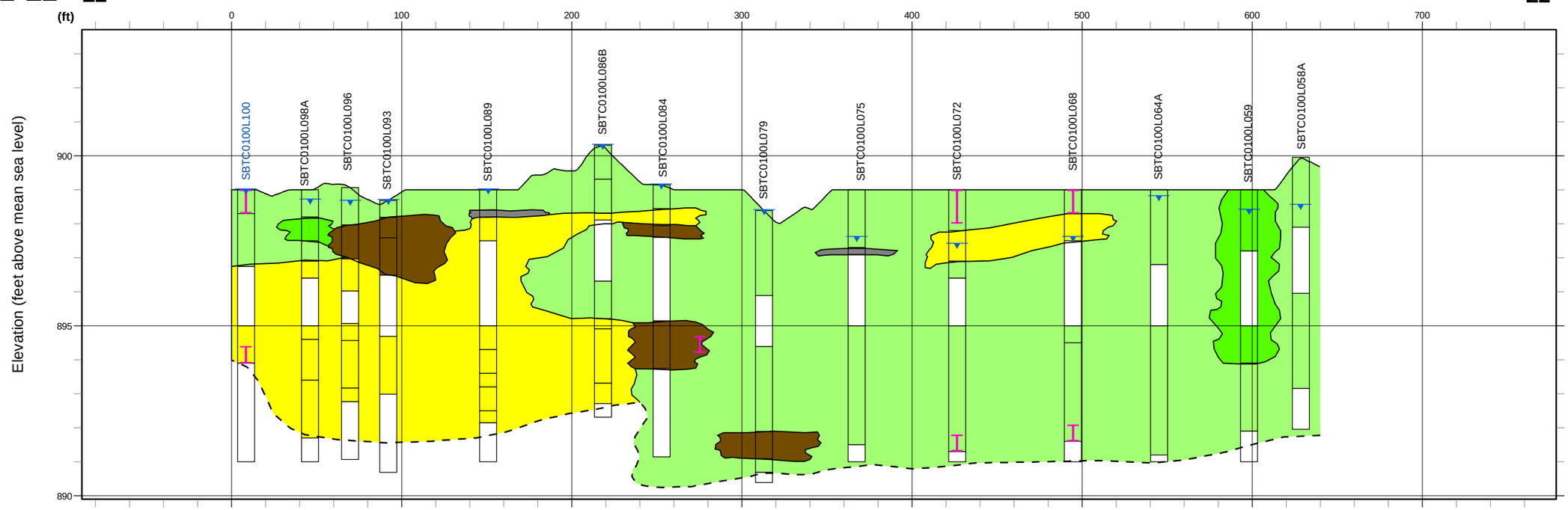
Aerial Photography Date: April 2011

Cross Section L2-L2'

Vertical Exaggeration: 20x

North
L2

South MP 0.75
L2'



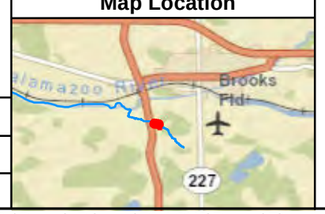
USCS

- No Recovery
- Peat
- Organic Soils
- Clay Soils
- Silt Soils
- Sand Soils
- Gravel Soils

ENBRIDGE

Drawn:	DH	6/2/2015
Approved:	JB	6/2/2015
Project #:	60339671	

Map Location



Overview Legend

- Cross Section L2-L2'
- Cores
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments

Cross Section Legend

- Sample Interval
- Water Level

Note: Soil borings with no water levels shown are due to no water present in bore hole.

SBTC0000R000 **Temporary Well Location**

N

0 20 40 80
Scale in Feet

FIGURE 2
REACH 3
GEOLOGIC CROSS SECTION (REVISED)
L2-L2'
SHEET 6 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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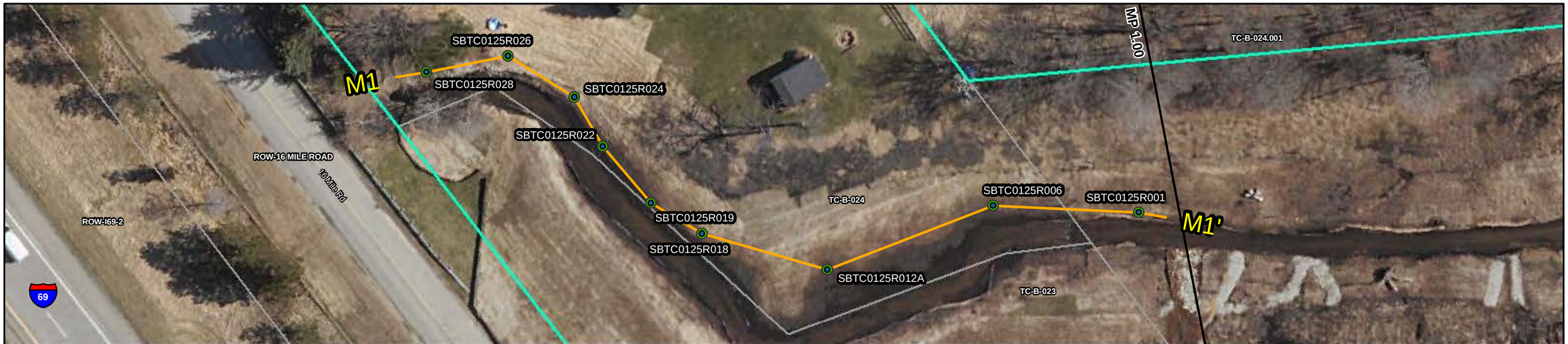
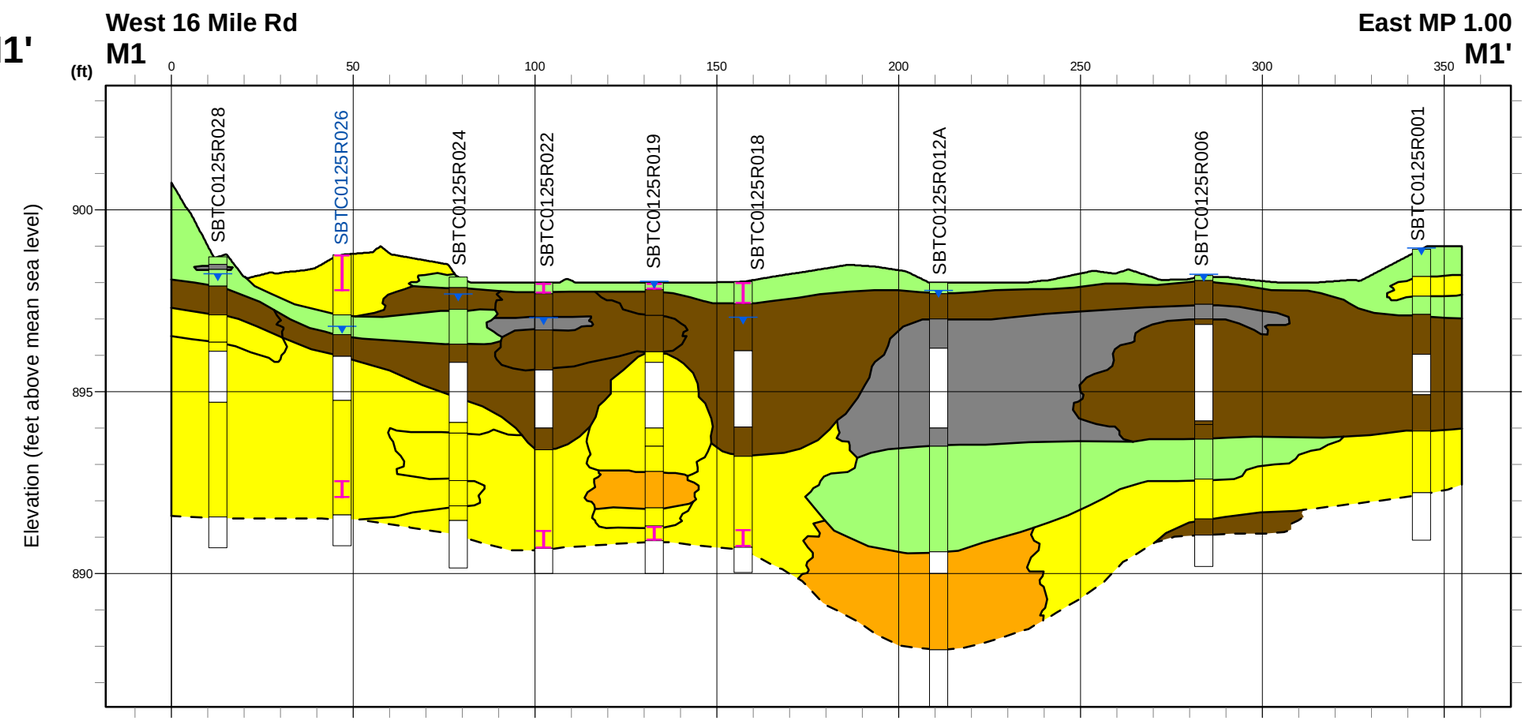
Aerial Photography Date: April 2011



Cross Section M1-M1'

Vertical Exaggeration: 10x



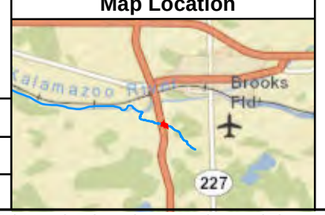
USCS

- No Recovery
- Peat
- Organic Soils
- Clay Soils
- Silt Soils
- Sand Soils
- Gravel Soils

ENBRIDGE

Drawn:	DH	6/2/2015
Approved:	JB	6/2/2015
Project #:	60339671	

Map Location



Overview Legend

- Cross Section M1-M1'
- Cores
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments

Cross Section Legend

- Sample Interval
- Water Level

Note: Soil borings with no water levels shown are due to no water present in bore hole.

SBTC0000R000 **Temporary Well Location**

N

0 20 40 80

Scale in Feet

FIGURE 2
REACH 3
GEOLOGIC CROSS SECTION (REVISED)
M1-M1'
SHEET 7 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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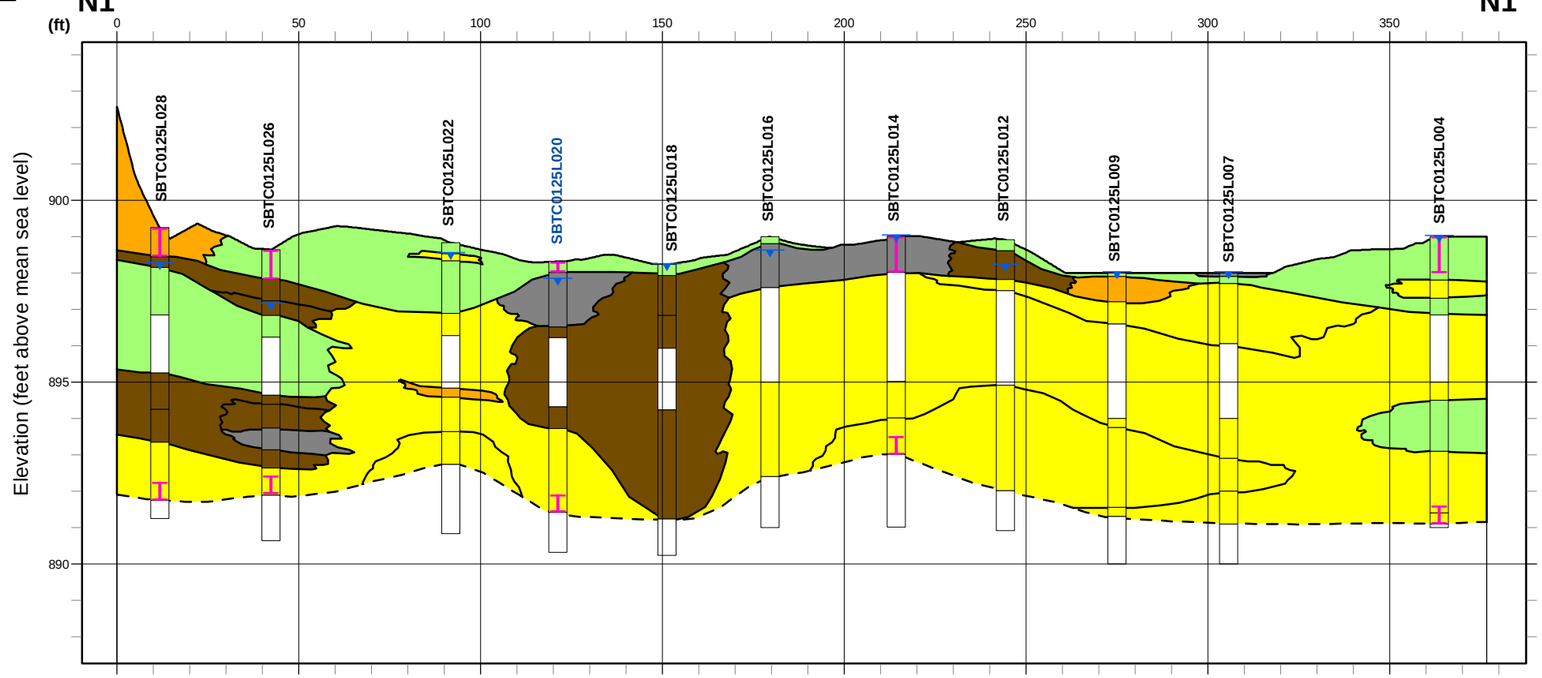
Aerial Photography Date: April 2011

Cross Section N1-N1'

Vertical Exaggeration: 10x

West 16 Mile Rd
N1

East MP 1.00
N1'

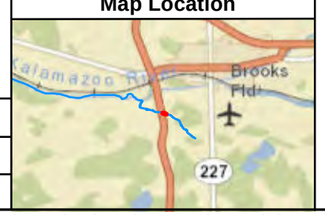


USCS
- No Recovery
- Peat
- Organic Soils
- Clay Soils
- Silt Soils
- Sand Soils
- Gravel Soils

ENBRIDGE

Drawn:	DH	6/2/2015
Approved:	JB	6/2/2015
Project #:	60339671	

Map Location



Overview Legend
- Cross Section N1-N1'
- Cores
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments

Cross Section Legend
- Sample Interval
- Water Level

Note: Soil borings with no water levels shown are due to no water present in bore hole.

SBTC0000R000 **Temporary Well Location**

N

0 20 40 80
Scale in Feet

FIGURE 2
REACH 3
GEOLOGIC CROSS SECTION (REVISED)
N1-N1'
SHEET 8 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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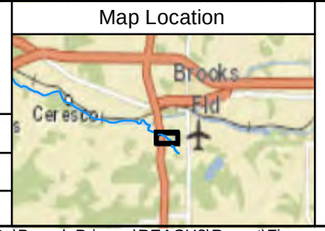
Aerial Photography Date: April 2011

ENBRIDGE

Drawn:	NS	5/22/2015
Approved:	JB	5/22/2015
Project #:	60339671	

Map Location



Legend

- Potable Well
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 150 300 600

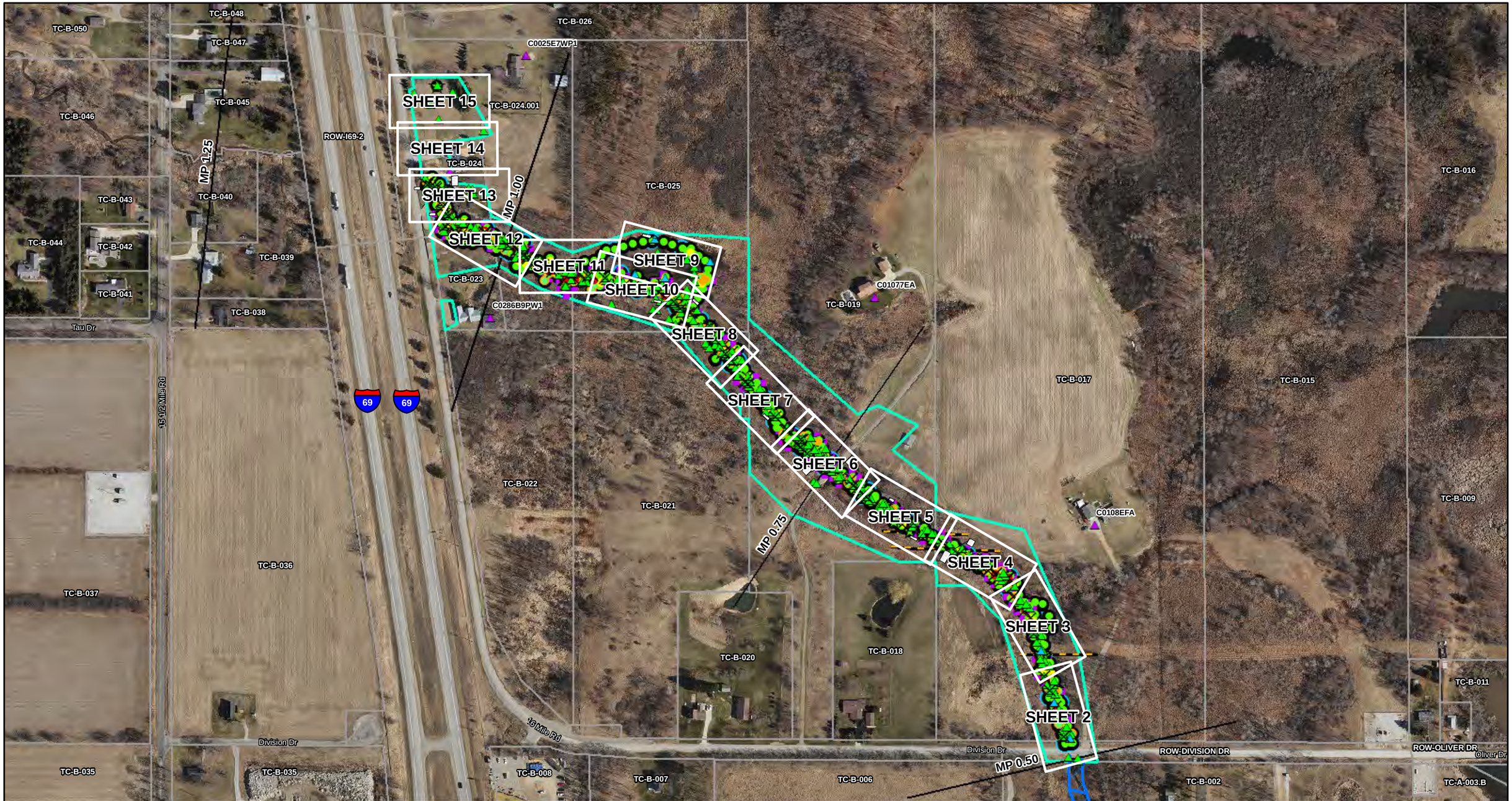
Scale in Feet

FIGURE 3
REACH 3
POTABLE WELL LOCATIONS

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Kalamazoo_River_RI\MXDs\Parcel_Primers\REACH3\Report\Figure_03_Reach_3_Potable_Wells.mxd

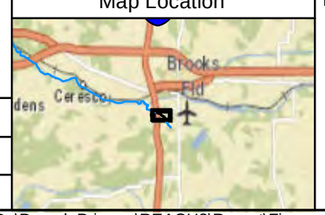
Aerial Photography Date: April 2011



ENBRIDGE

Drawn:	NS	6/2/2015
Approved:	HF	6/2/2015
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 150 300 600
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 1 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

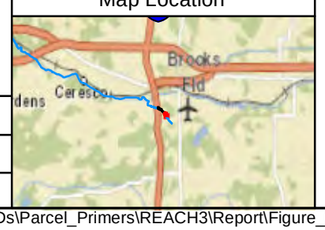
Z:\Work\GIS\Kalamazoo_River_RI\MXDs\Parcel_Primers\REACH3\Report\Figure_04_Reach_3_All_Sampling_Locations_Sheet1.mxd

Aerial Photography Date: April 2011

ENBRIDGE

Drawn:	NS	6/2/2015
Approved:	HF	6/2/2015
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 2 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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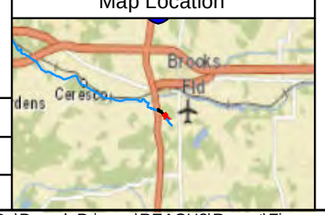
Aerial Photography Date: April 2011

ENBRIDGE

Drawn:	NS	6/2/2015
Approved:	HF	6/2/2015
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 3 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011

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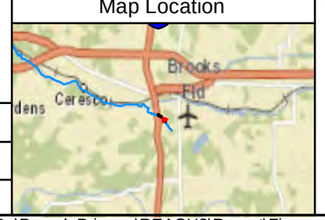
Approved:	HF	6/2/2015
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 4 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011

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Project #:	60339671	

Map Location

TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 5 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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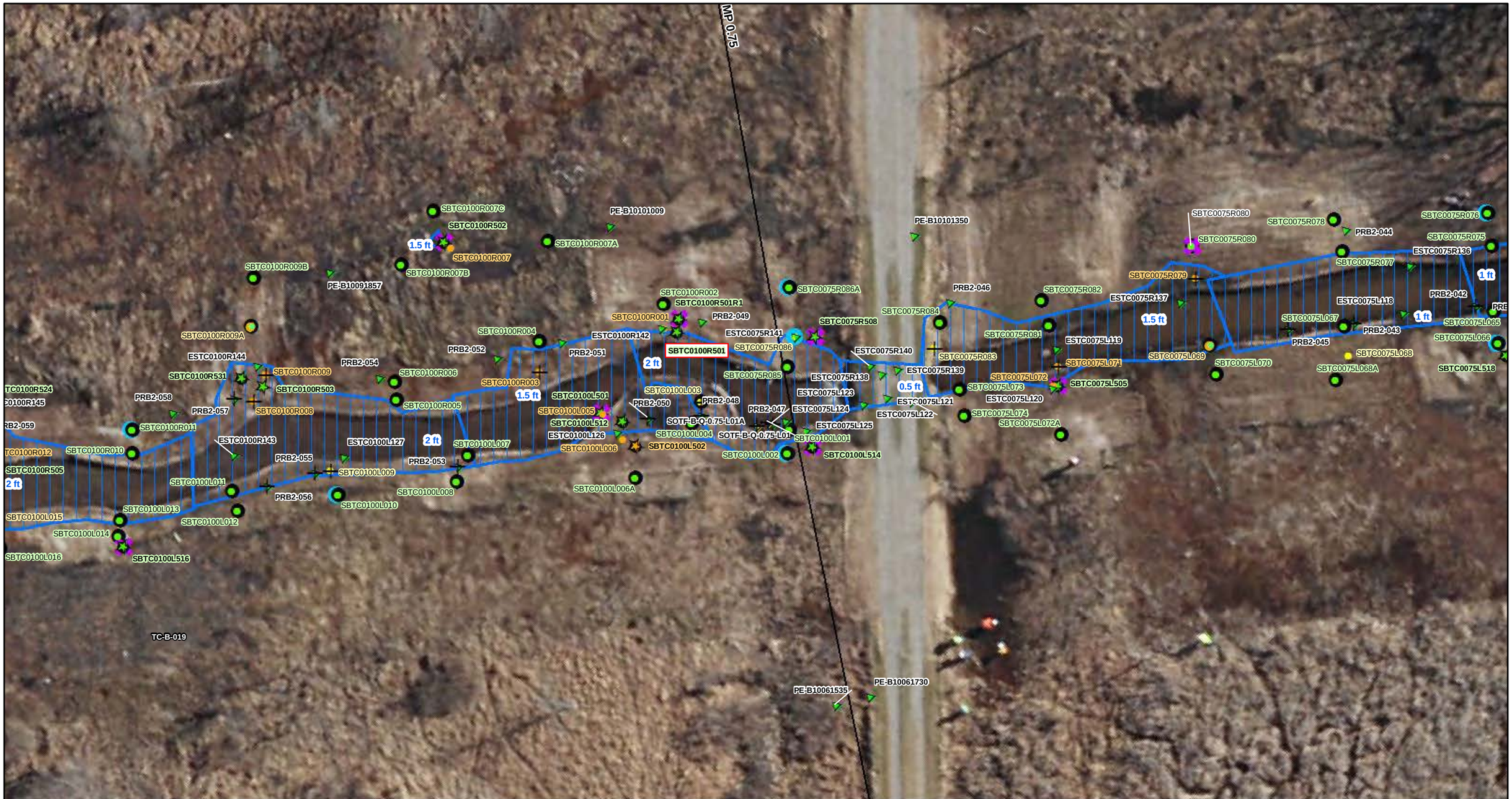
Aerial Photography Date: April 2011



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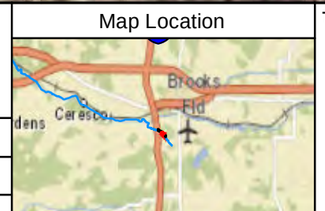
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 6 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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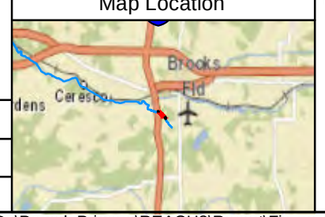
Aerial Photography Date: April 2011

ENBRIDGE

Drawn:	NS	6/2/2015
Approved:	HF	6/2/2015
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 7 OF 15

ENBRIDGE LINE 6B MP 608
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ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011

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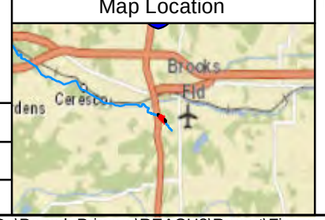
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 8 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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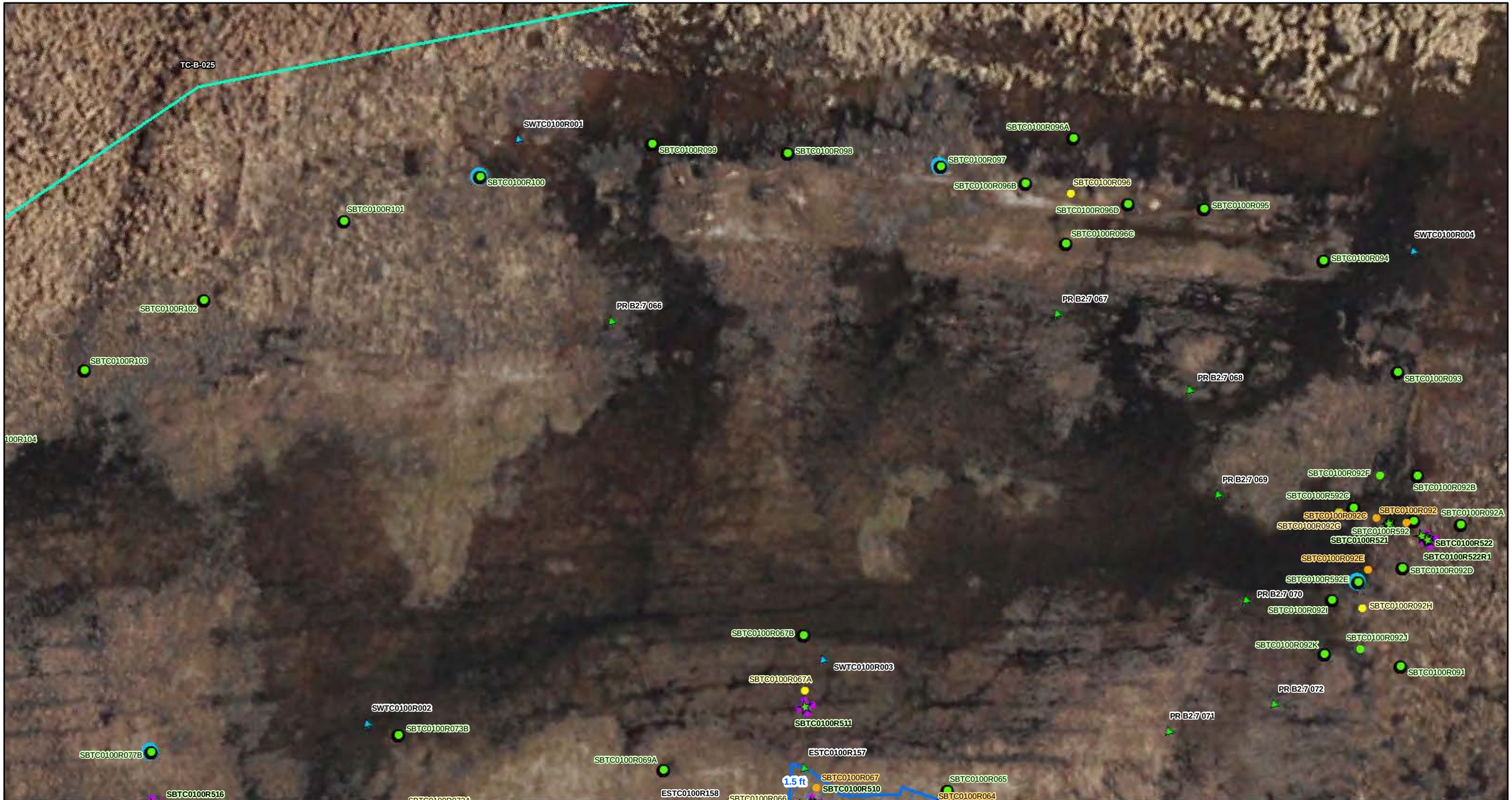

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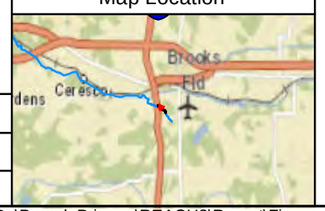
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well
- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 9 OF 15

ENBRIDGE LINE 6B MP 608
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ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011

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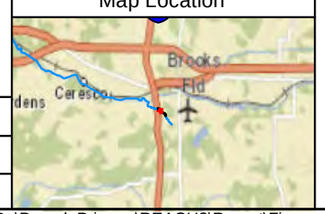
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 10 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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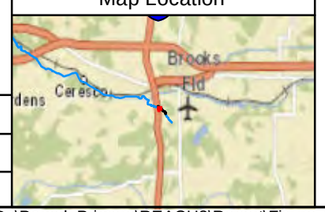
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 11 OF 15

ENBRIDGE LINE 6B MP 608
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ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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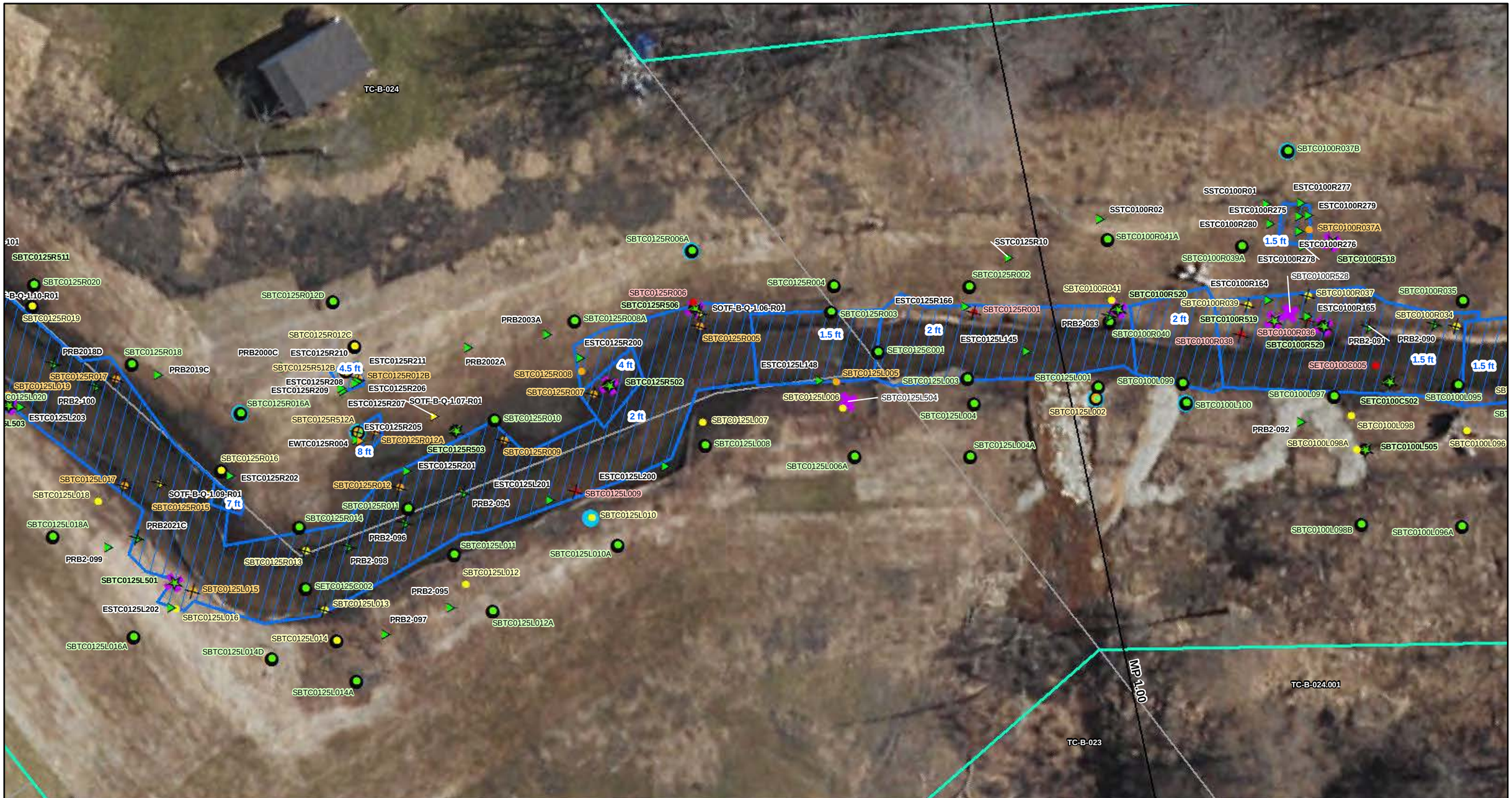
Aerial Photography Date: April 2011



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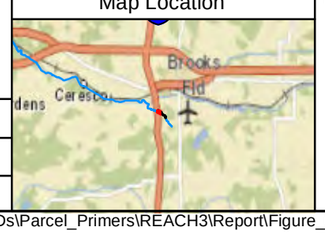
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 12 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011

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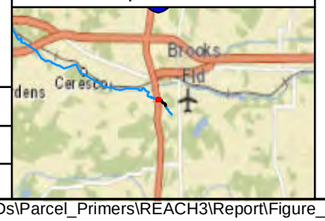
Approved:	HF	6/2/2015
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well
- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 13 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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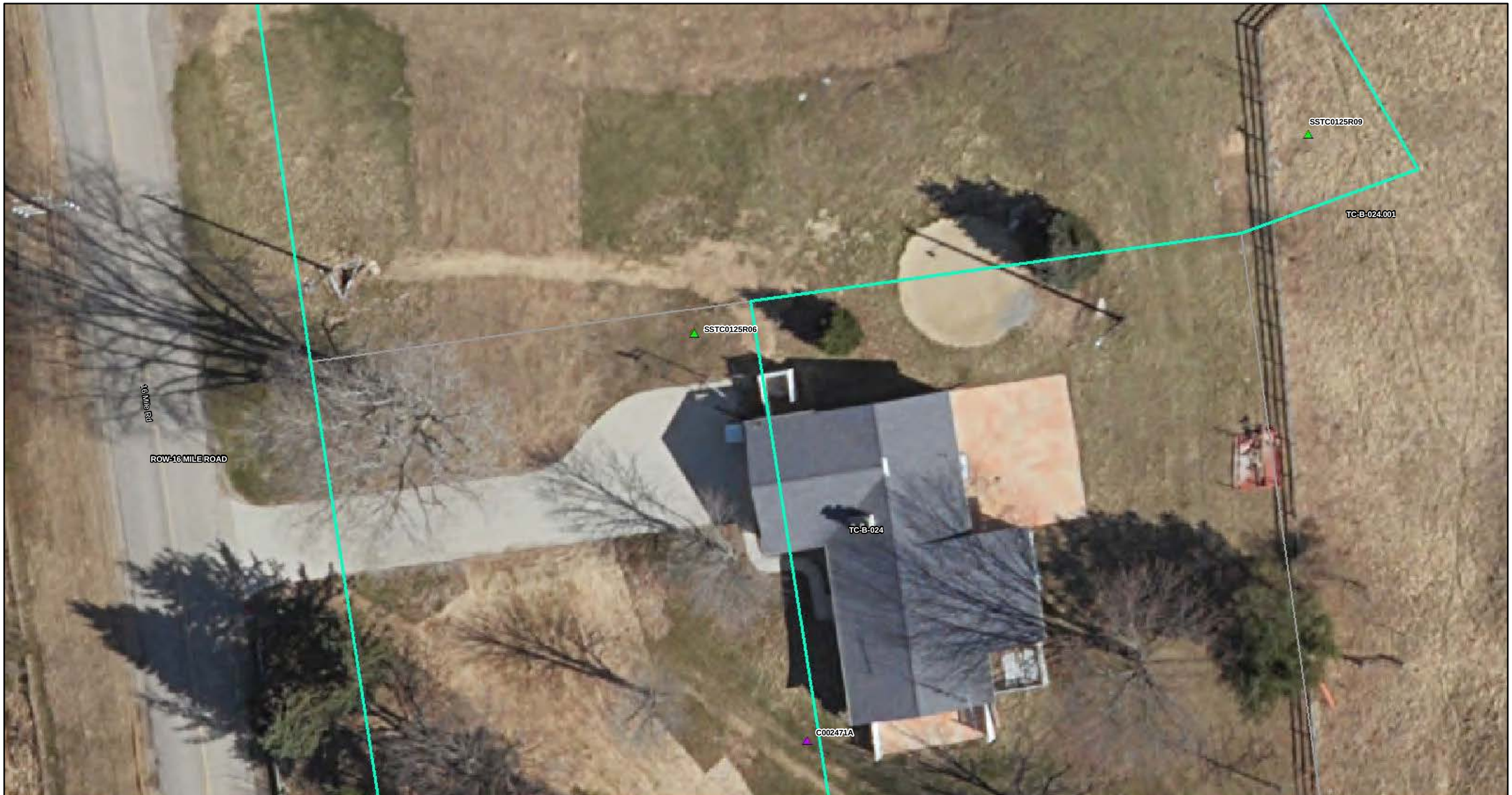
Aerial Photography Date: April 2011



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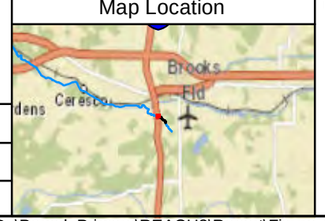
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well
- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 14 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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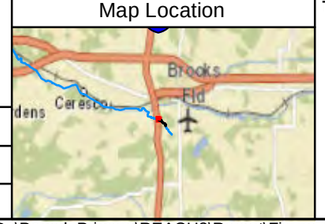
Aerial Photography Date: April 2011

ENBRIDGE

Drawn:	NS	6/2/2015
Approved:	HF	6/2/2015
Project #:	60339671	

Map Location



TCRI Cores
- Impact Under Visible Light
- Fluoresence Observed Under UV Light
- Trace Fluoresence Under UV Light
- Surficial Impact Observed in Field
- No Impacts Observed
- TCRI GW Sample
- TCRI/Data Gap Sampled Core

Data Gap Cores
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Data Gap Temp Well
- Sediment Sample
- Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Other Sample
- Potable Well

- 2011 Talmadge Excavation Area
- Excavated Sample and/or Aesthetic Observation
- Reach 3 Spill Area
- Quarter Mile Grid Segments
- Pipeline
- Parcel
- 2 ft Excavation Depth

ESTC0100L138 Sample Location With Analytical Exceedance

ug/kg - Microgram Per Kilogram
UV - Ultraviolet

N

0 10 20 40
Scale in Feet

FIGURE 4
REACH 3
ALL SAMPLING LOCATIONS (REVISED)
SHEET 15 OF 15

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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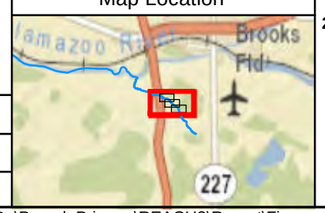
Aerial Photography Date: April 2011

ENBRIDGE

Drawn:	NS	5/26/2015
Approved:	JB	5/26/2015
Project #:	60339671	

Map Location



Legend

2011 SORT Reassessment

- No Oil
- Pooled Oil
- Film (Sheen) Observations
- Remaining Observations
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 150 300 600

Scale in Feet

FIGURE 5
REACH 3
SPRING 2011 SORT REASSESSMENT
SHEET 1 OF 4

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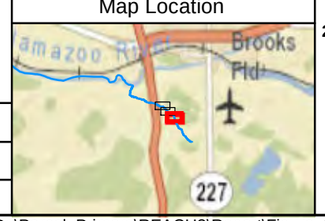
Project #:	60339671	

Map Location



Legend

2011 SORT Reassessment

- No Oil
- Pooled Oil
- Film (Sheen) Observations
- Remaining Observations
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 50 100 200

Scale in Feet

FIGURE 5
REACH 3
SPRING 2011 SORT REASSESSMENT
SHEET 2 OF 4

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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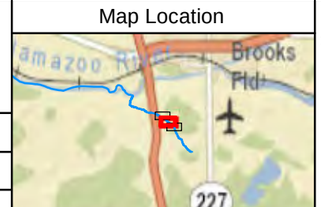
Aerial Photography Date: April 2011

ENBRIDGE

Drawn:	NS	5/26/2015
Approved:	JB	5/26/2015
Project #:	60339671	

Map Location



Legend

2011 SORT Reassessment

- No Oil
- Pooled Oil
- Film (Sheen) Observations
- Remaining Observations
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 50 100 200

Scale in Feet

FIGURE 5
REACH 3
SPRING 2011 SORT REASSESSMENT
SHEET 3 OF 4

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011

ENBRIDGE

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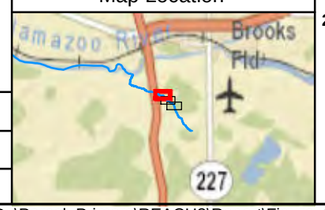
Project #:	60339671	

Map Location



Legend

2011 SORT Reassessment

- No Oil
- Pooled Oil
- Film (Sheen) Observations
- Remaining Observations
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 50 100 200

Scale in Feet

FIGURE 5
REACH 3
SPRING 2011 SORT REASSESSMENT
SHEET 4 OF 4

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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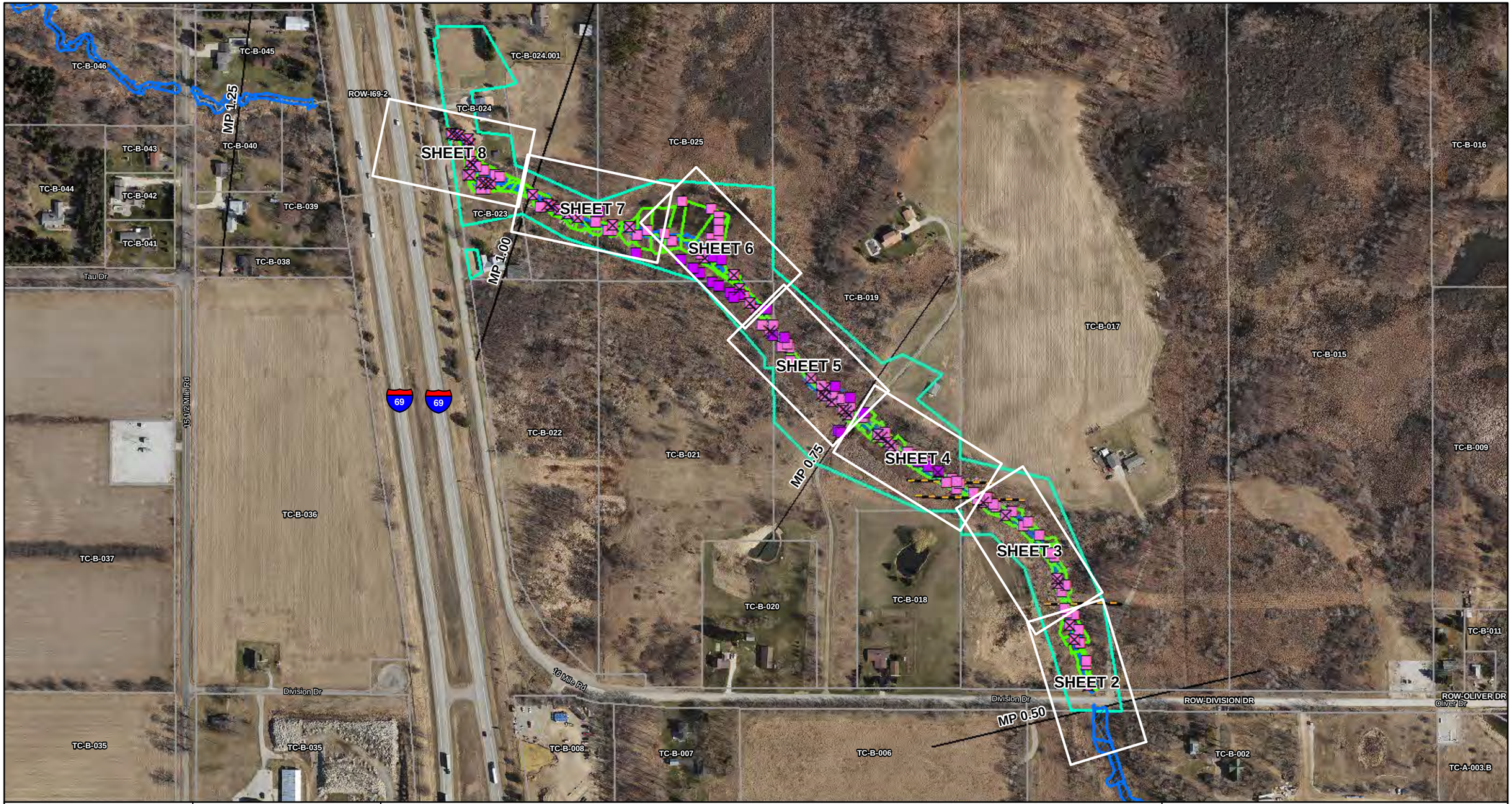
Aerial Photography Date: April 2011



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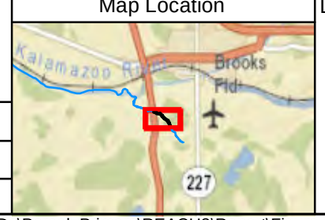
Drawn:	NS	6/2/2015
Approved:	JB	6/2/2015
Project #:	60339671	

Map Location



Legend

- 2010 U.S. EPA Clearance Areas
  - *A - Excavated to Visual Extent*
  - *B - Excavated to Water*
  - *C - Excavated to Confining Layer*
  - *Special - Does not Meet A, B, or C Criteria*
- 2010 Post-Excavation Assessment Soil Sample
- 2010 Mat Road Decommissioning Soil Sample
- Excavated Sample and/or Aesthetic Observation
- 2011-2012 Excavation
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 150 300 600

Scale in Feet

FIGURE 6
REACH 3
2010 U.S. EPA CLEARANCE AREAS AND 2010 POST-EXCAVATION ASSESSMENT SOIL SAMPLES (REVISED)
SHEET 1 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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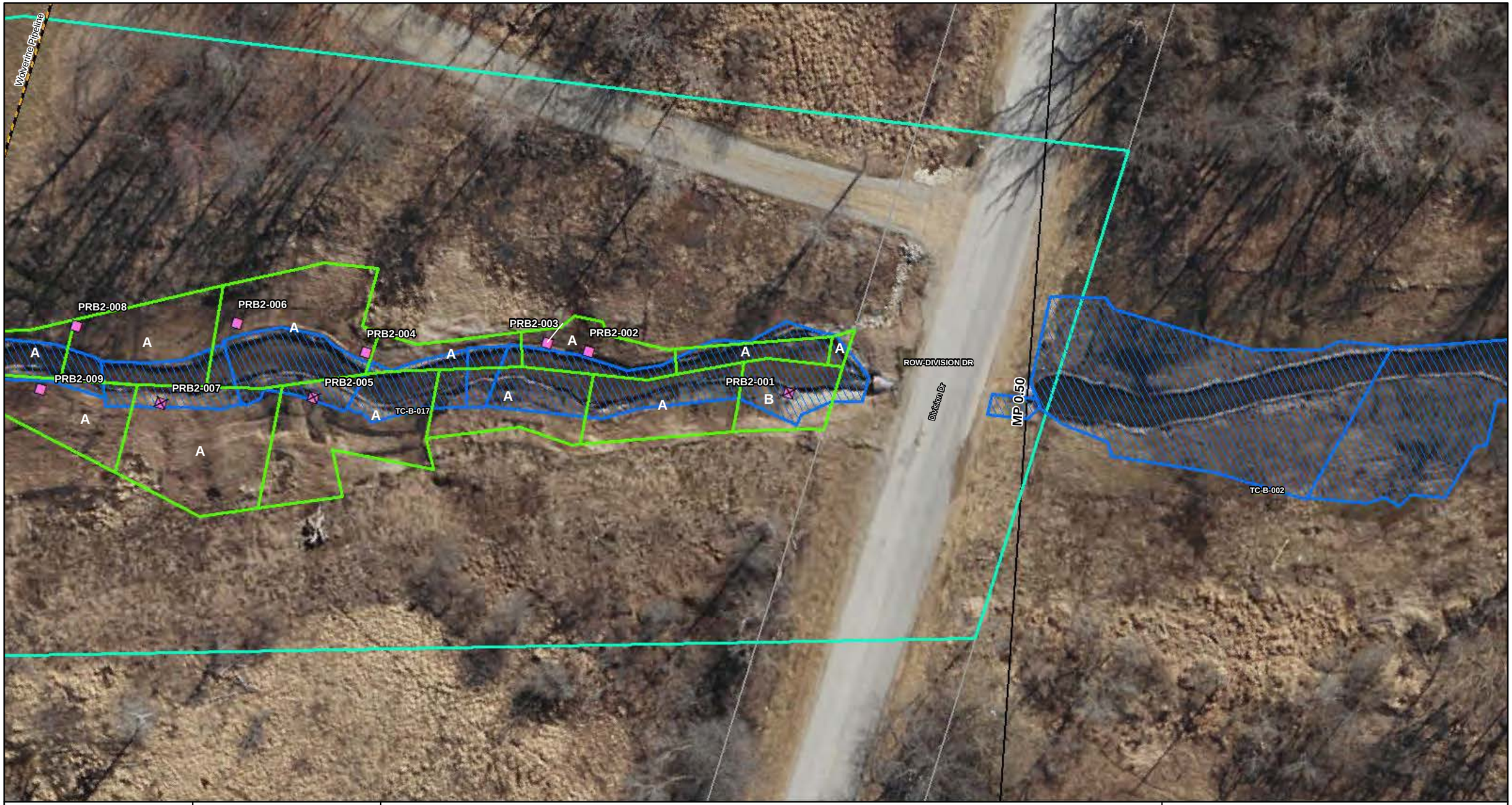
Aerial Photography Date: April 2011



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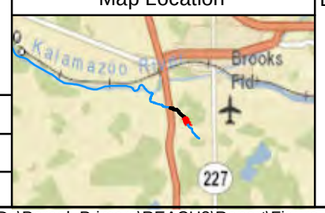
Map Location



Legend

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- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 15 30 60
Scale in Feet

FIGURE 6
REACH 3
2010 U.S. EPA CLEARANCE AREAS AND 2010 POST-EXCAVATION ASSESSMENT SOIL SAMPLES (REVISED)
SHEET 2 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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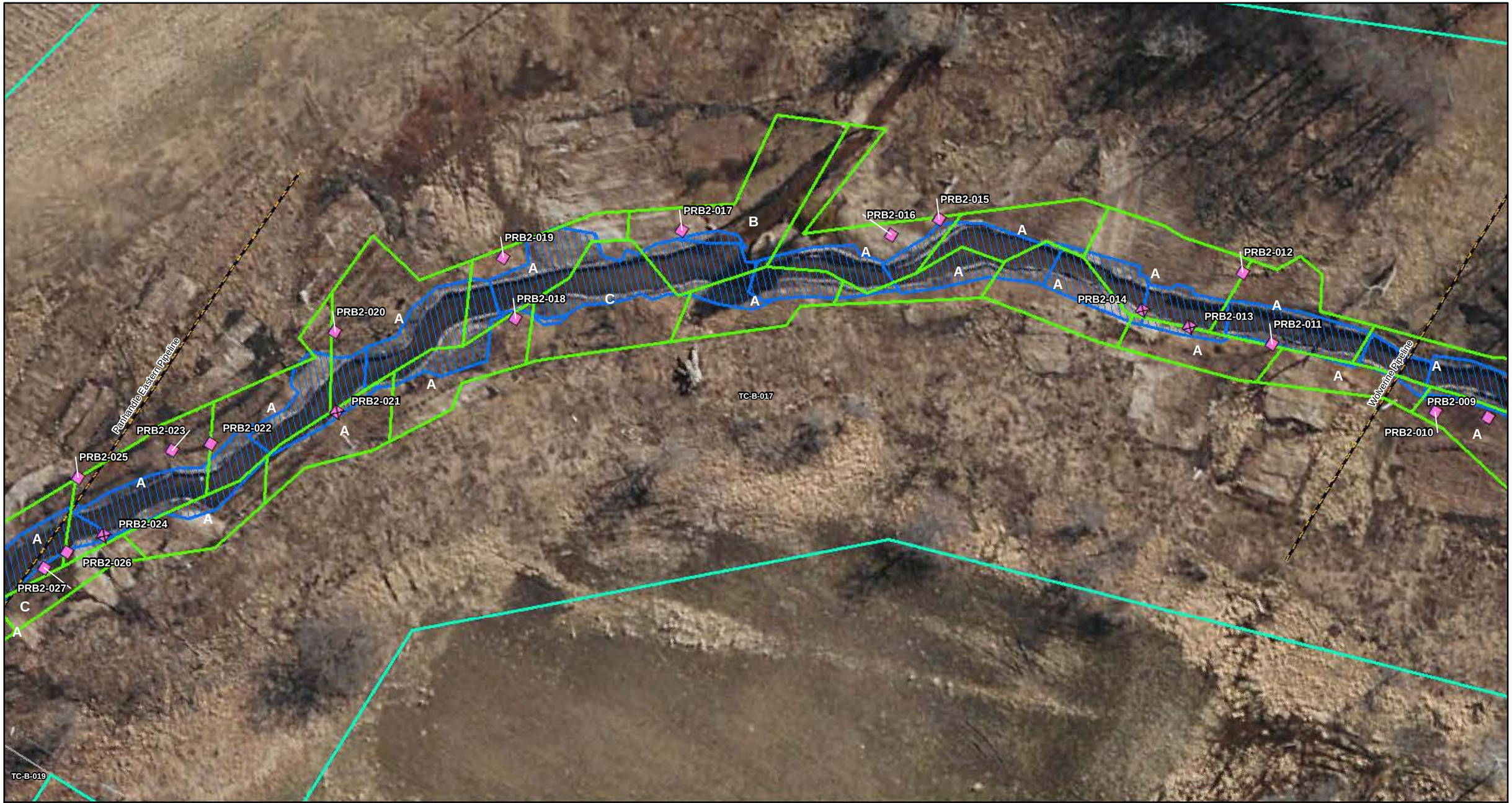
Aerial Photography Date: April 2011



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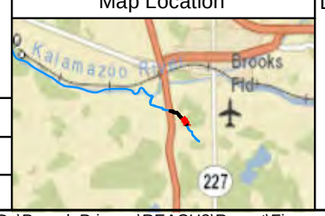
Map Location



Legend

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N

0 15 30 60

Scale in Feet

FIGURE 6
REACH 3
2010 U.S. EPA CLEARANCE AREAS AND 2010 POST-EXCAVATION ASSESSMENT SOIL SAMPLES (REVISED)
SHEET 3 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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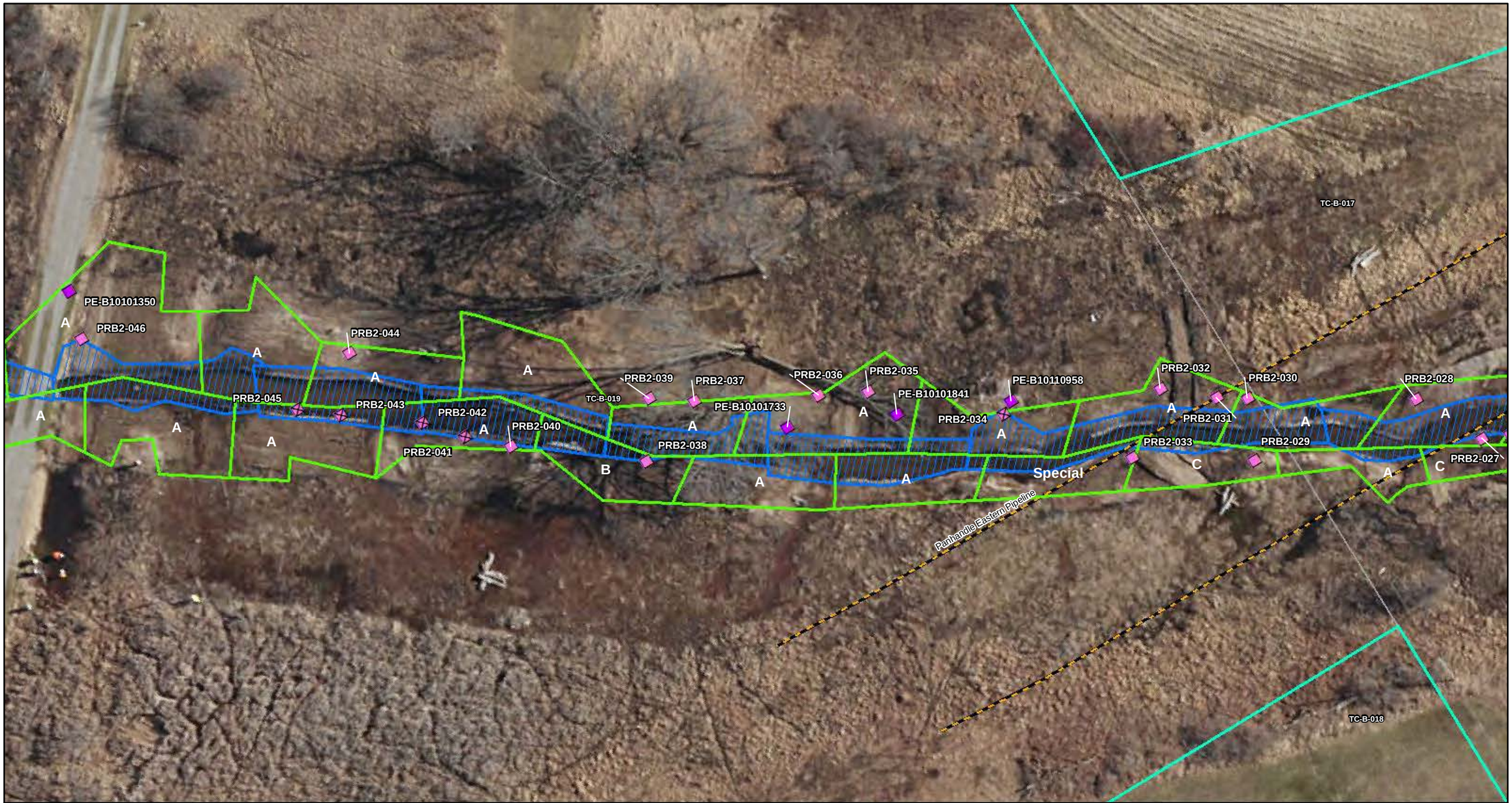

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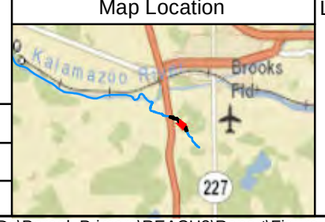

Legend

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- Pipeline

N

0 15 30 60
Scale in Feet

FIGURE 6
REACH 3
2010 U.S. EPA CLEARANCE AREAS AND 2010 POST-EXCAVATION ASSESSMENT SOIL SAMPLES (REVISED)
SHEET 4 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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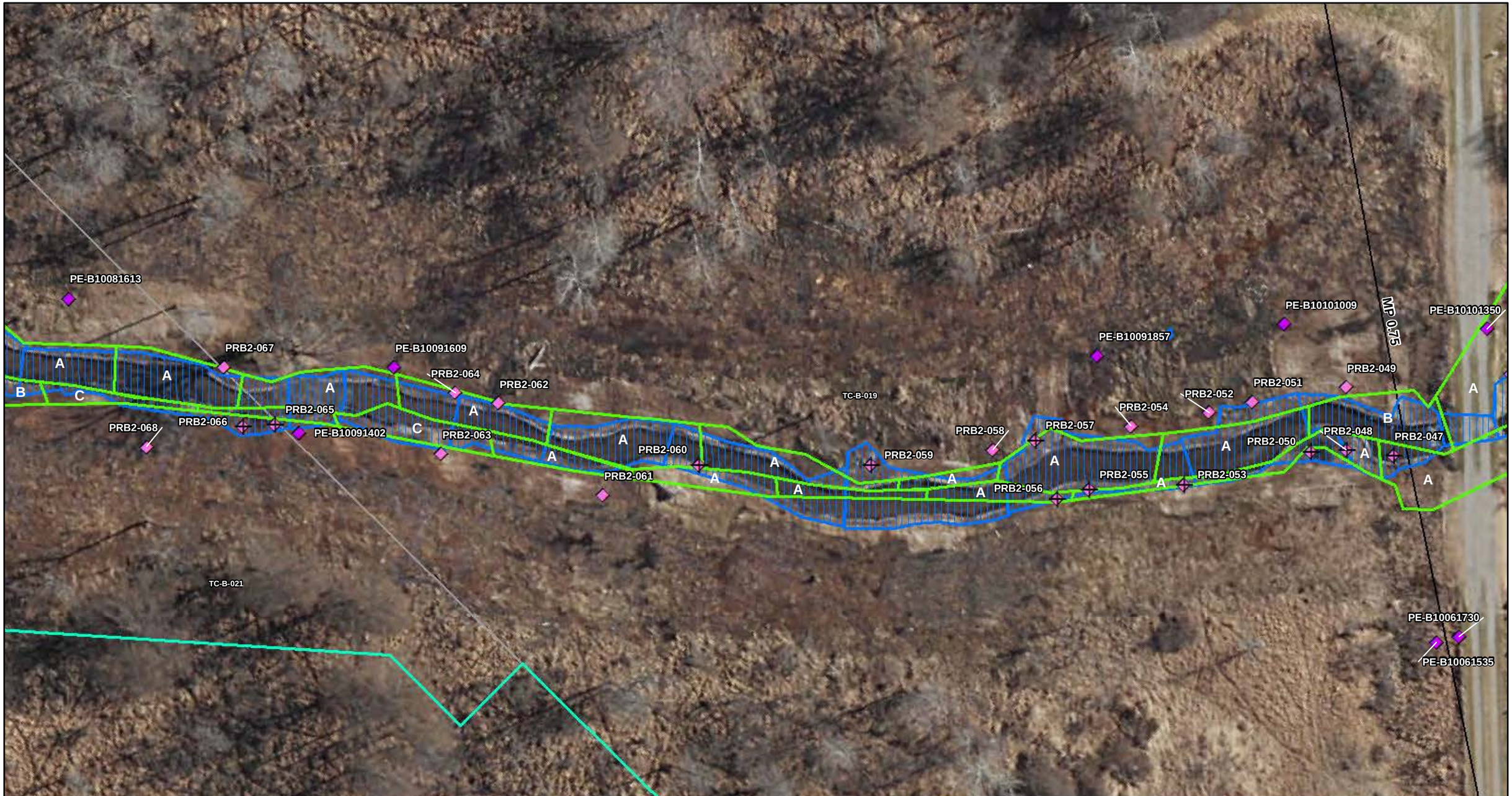

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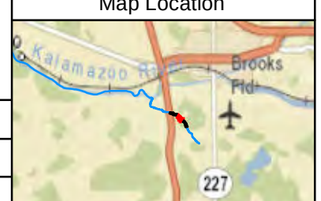

Legend

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- Quarter Mile Grid Segments
- Pipeline

N

0 15 30 60

Scale in Feet

FIGURE 6
REACH 3
2010 U.S. EPA CLEARANCE AREAS AND 2010 POST-EXCAVATION ASSESSMENT SOIL SAMPLES (REVISED)
SHEET 5 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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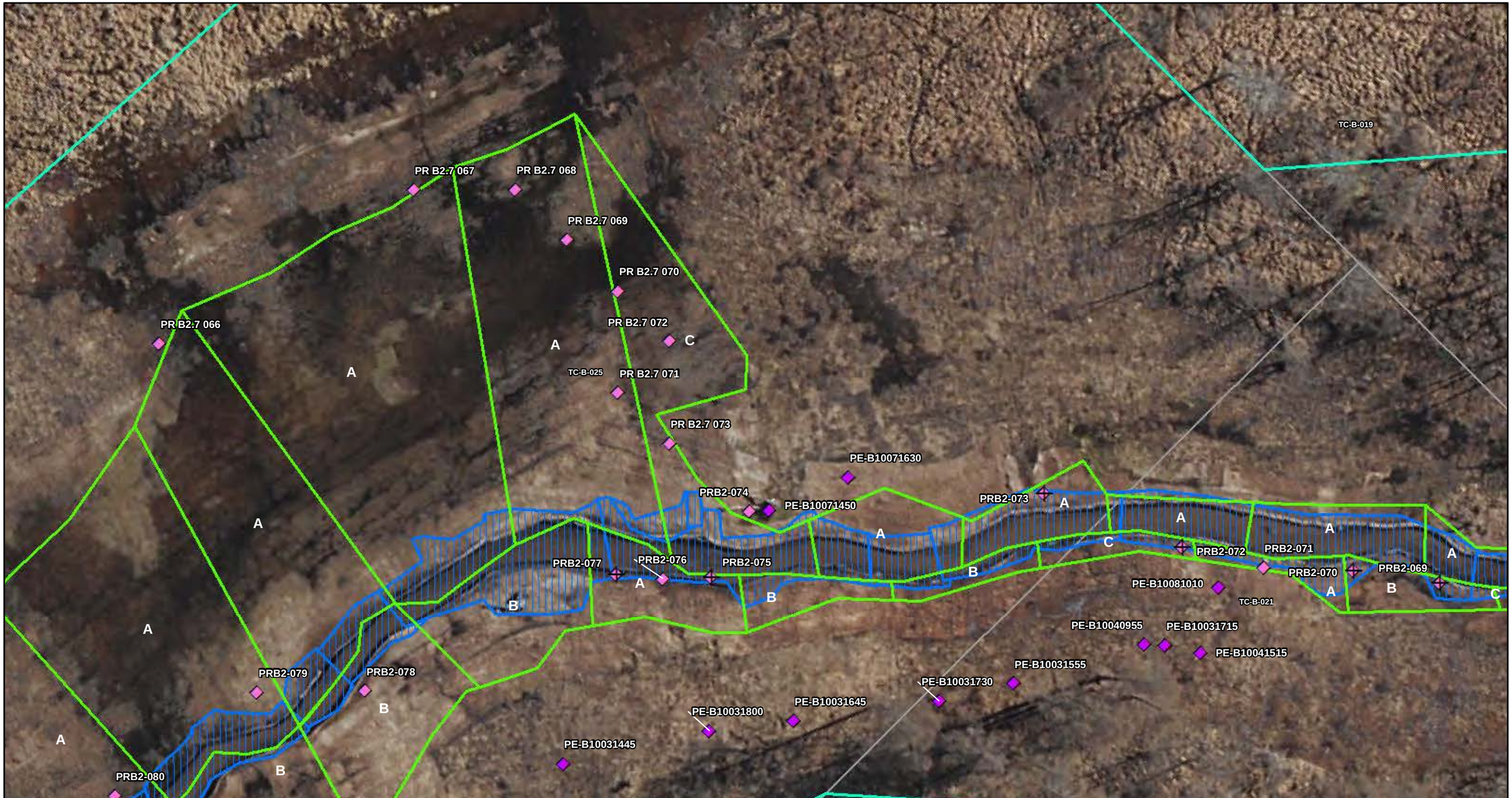

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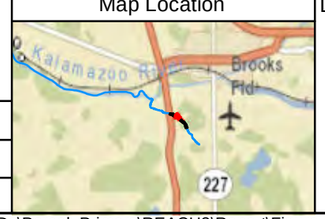

Legend

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- Pipeline

N

0 15 30 60

Scale in Feet

FIGURE 6
REACH 3
2010 U.S. EPA CLEARANCE AREAS AND 2010 POST-EXCAVATION ASSESSMENT SOIL SAMPLES (REVISED)
SHEET 6 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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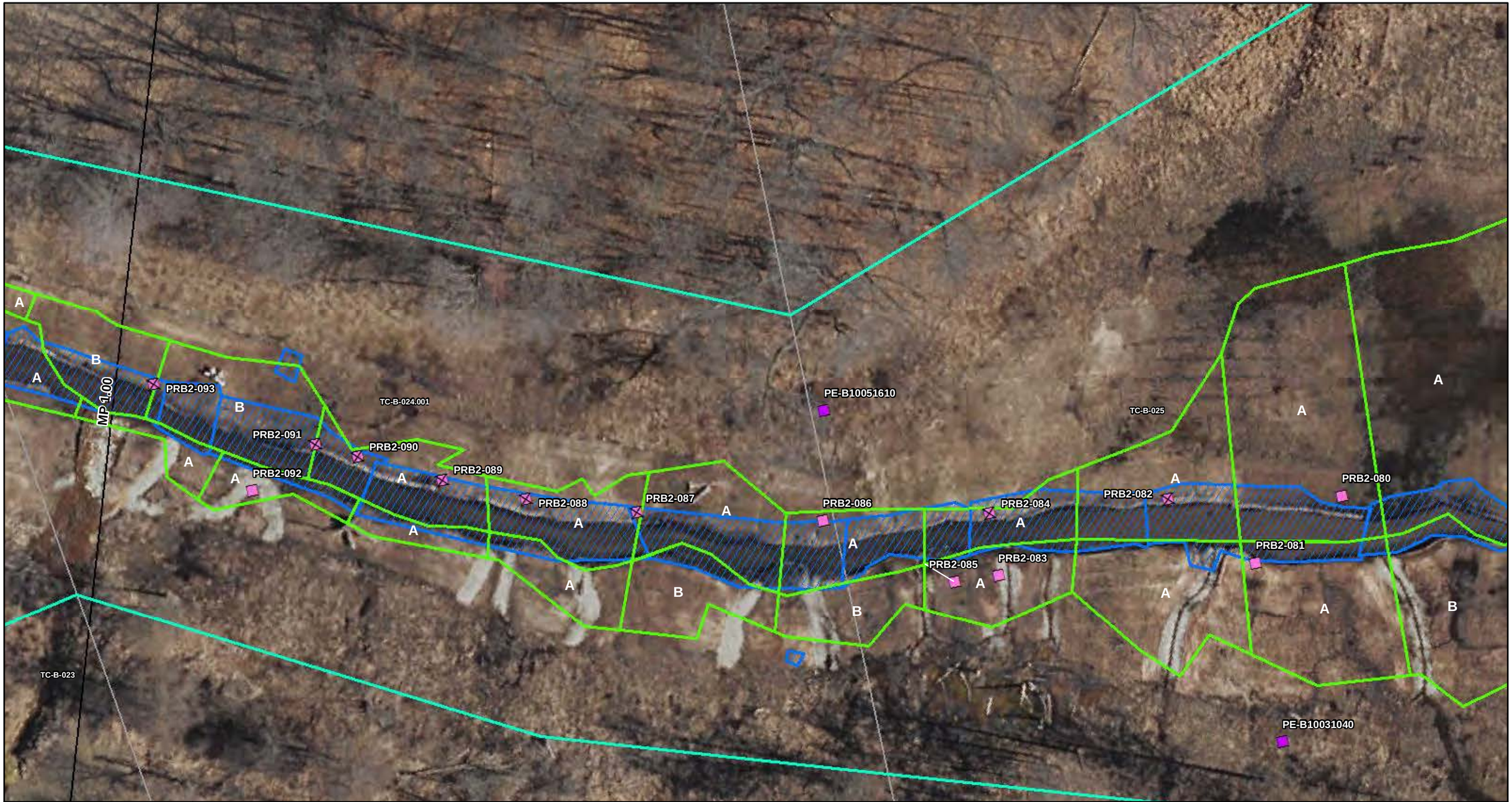

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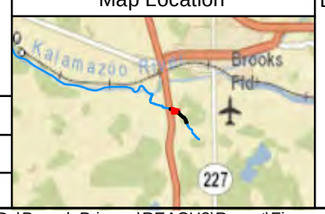

Legend

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- 2011-2012 Excavation
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 15 30 60

Scale in Feet

FIGURE 6
REACH 3
2010 U.S. EPA CLEARANCE AREAS AND 2010 POST-EXCAVATION ASSESSMENT SOIL SAMPLES (REVISED)
SHEET 7 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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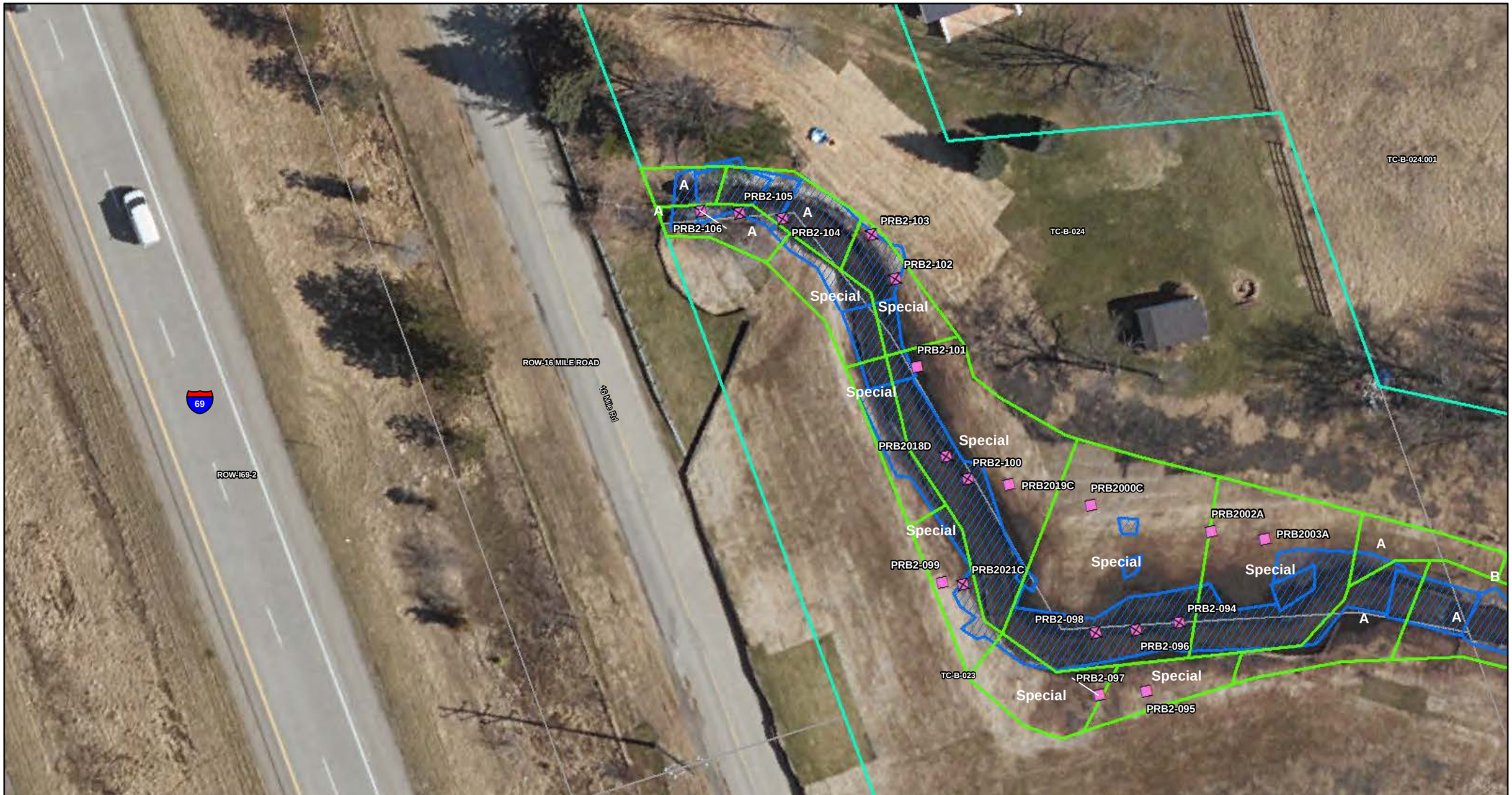

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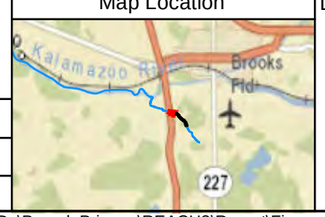

Legend

- 2010 U.S. EPA Clearance Areas
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- 2011-2012 Excavation
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 15 30 60

Scale in Feet

FIGURE 6
REACH 3
2010 U.S. EPA CLEARANCE AREAS AND 2010 POST-EXCAVATION ASSESSMENT SOIL SAMPLES (REVISED)
SHEET 8 OF 8

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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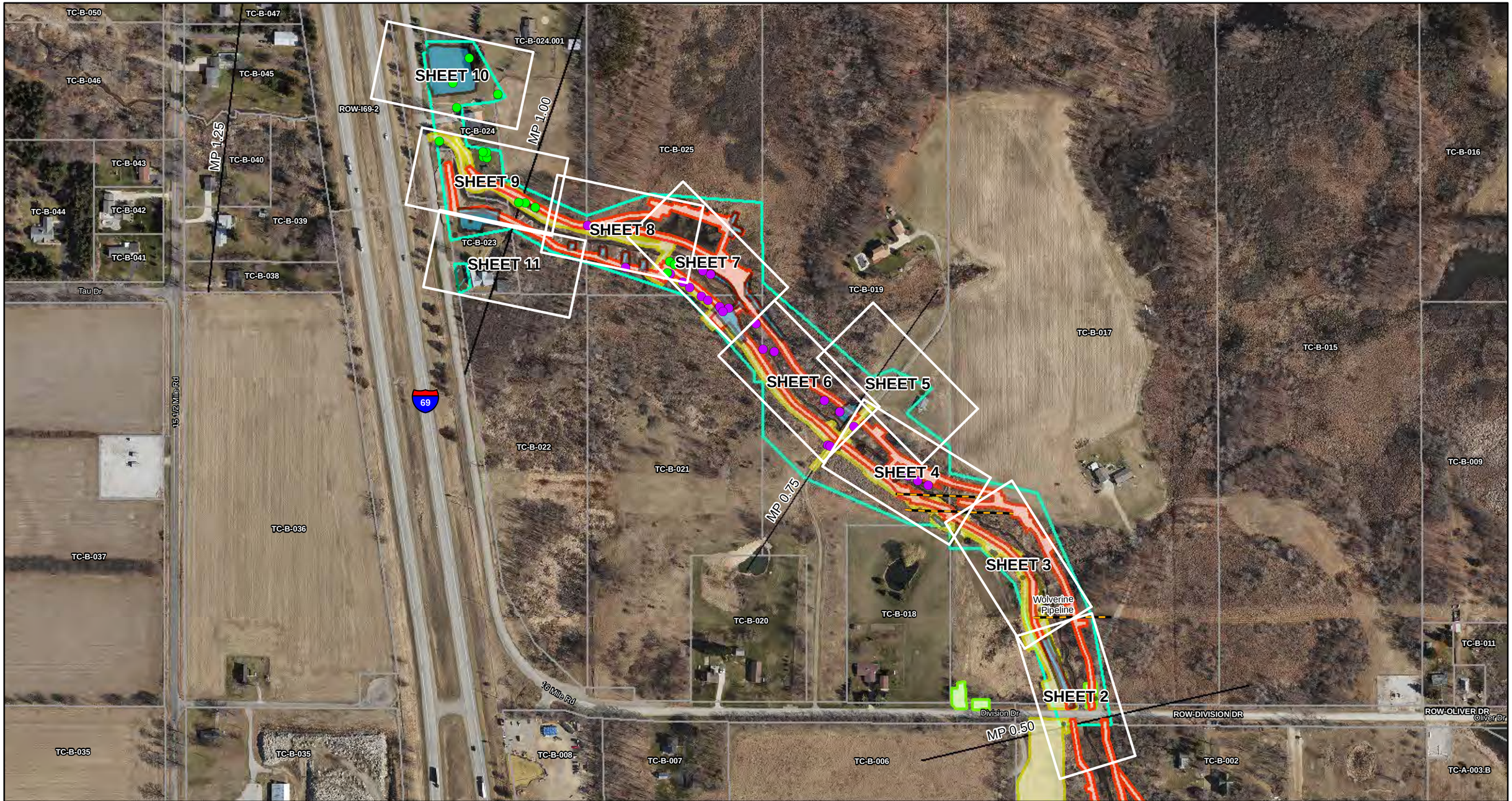

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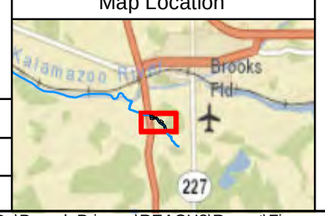

Legend

- Mat Road (2010)
- Parking Area
- Mat Road (2011-2012)
- Decommisioning Activities
- 2010 Mat Road Decommissioning Soil Sample
- 2013 Auxiliary Location Decommissioning Soil Sample
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 150 300 600

Scale in Feet

FIGURE 7
REACH 3
DECOMMISSIONING/AUXILIARY
LOCATIONS (REVISED)
SHEET 1 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011

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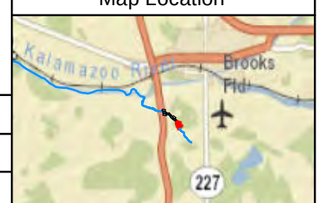
Project #:	60339671	

Map Location



Legend

- Mat Road (2010)
- Parking Area
- Mat Road (2011-2012)
- Decommisioning Activities
- 2010 Mat Road Decommissioning Soil Sample
- 2013 Auxiliary Location Decommissioning Soil Sample
- Reach 3 Spill Area
- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 15 30 60

Scale in Feet

FIGURE 7
REACH 3
DECOMMISSIONING/AUXILIARY
LOCATIONS (REVISED)
SHEET 2 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011

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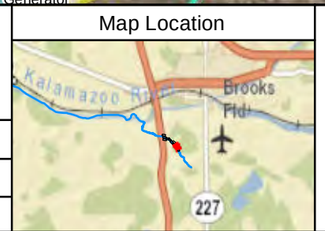
Map Location



Legend

- Mat Road (2010)
- Parking Area
- Mat Road (2011-2012)
- Decommisioning Activities
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- Parcel
- Quarter Mile Grid Segments
- Pipeline

N

0 15 30 60

Scale in Feet

FIGURE 7
REACH 3
DECOMMISSIONING/AUXILIARY
LOCATIONS (REVISED)
SHEET 3 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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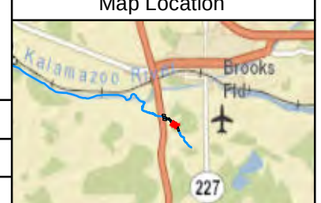

Legend

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- Pipeline

N

0 15 30 60

Scale in Feet

FIGURE 7
REACH 3
DECOMMISSIONING/AUXILIARY
LOCATIONS (REVISED)
SHEET 4 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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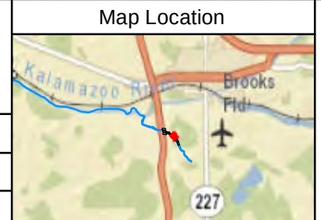

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N

0 15 30 60
Scale in Feet

FIGURE 7
REACH 3
DECOMMISSIONING/AUXILIARY
LOCATIONS (REVISED)
SHEET 5 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011