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June 14, 2012

**RECEIVED**

**JUN 15 2012**

**PUBLIC SERVICE COMMISSION**

Mr. Darrell Nitschke  
Executive Director  
North Dakota Public  
Service Commission  
600 E. Boulevard, Dept. 408  
Bismarck, ND 58505-0480

Dear Mr. Nitschke:

In re: Enbridge Pipelines (North Dakota) LLC  
Berthold Station Expansion Project  
Docket No. PU-11-232  
Our File No. 31-411-005

Enclosed herewith for filing are the original and ten copies of Raptor Survey and Tree and Shrub Inventory Report for the Berthold Station Expansion Project.

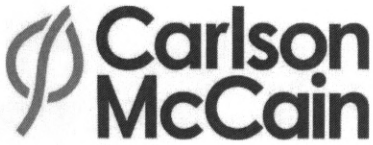
Please feel free to call should you have any questions.

Very truly yours,



BRIAN R. BJELLA

bw  
Enc.



ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

March 27, 2012

Mr. Paul Hartzheim  
Merjent  
615 First Avenue NE  
Minneapolis, MN 55413

Re: **Berthold Station Expansion Project Raptor Survey**

Dear Mr. Hartzheim,

Carlson McCain, Inc. is pleased to submit this letter report which details the finding of a raptor survey that was conducted within and on lands adjacent to the Berthold Station Expansion Project located in Sections 20 and 21, T156N, R86W (**Appendix A, Figure 1**). In addition to the lands located within the Berthold Station Expansion Project a one-half mile area surrounding these lands were surveyed (Analysis Area). The total acreage of the Analysis Area is approximately 2,297 acres.

Suitable habitat was surveyed by ground within the Berthold Station Expansion Project or by long-distance viewing of areas outside the Berthold Station Expansion Project. High-powered binoculars and a spotting scope were used to conduct the long-distance viewing. Chad Tucker, Biologist of Carlson McCain, Inc. conducted the raptor survey on March 23, 2013.

No raptors or raptor nests were observed during the raptor survey.

Please call me at 701-255-1475 if you have any questions or need additional informational.

Sincerely,

A handwritten signature in cursive script that reads 'Greg W. Meyer'.

Greg Meyer, MS  
Ecologist

Attachment - Appendix A, Figure 1

# APPENDIX A

Figure



**Legend**

- Berthold Station Expansion Project
- Raptor Survey Analysis Area



**Figure 1**  
**Raptor Survey Area**  
 Berthold Station Expansion Project  
 Enbridge Pipelines (North Dakota) LLC

1:24,000      1 inch = 2,000 feet

0      1,000      2,000

Feet

Source: NAIP 2009 Orthophoto  
 Ward County, North Dakota

# TREE AND SHRUB INVENTORY REPORT

Berthold Station Expansion Project

*Project #3866*

*Prepared for:*

Merjent  
Mr. Paul Hartzheim  
TractorWorks Building  
800 Washington Avenue N., Suite 315  
Minneapolis, MN 55401

*May 29, 2012*



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- Appendix B Tree and Shrub Inventory Plan
- Appendix C Tree and Shrub Count Forms
- Appendix D Figure

## **1.0 SCOPE OF WORK**

Carlson McCain, Inc. (Carlson McCain) inventoried trees and shrubs within the Berthold Station Expansion Project (Project) for Enbridge Pipelines (North Dakota) LLC (Enbridge). The Project Area is located near Berthold, North Dakota. The Project Area is approximately 445 acres in size and consists of portions of Sections 20 and 21, T156N, R86W, in Ward County, North Dakota.

Trees and shrubs were inventoried in accordance with the North Dakota Public Service Commission (Commission) Tree and Shrub Mitigation Specifications (Specifications) for the Berthold Station Expansion Project. The inventory was conducted within the property boundary of the Project Area. Carlson McCain biologists Miranda Meehan and Chad Tucker conducted the tree and shrub inventory March 23, 2012.

## 2.0 PROCEDURES

Carlson McCain utilized the Commission approved “Tree and Shrub Inventory Plan Enbridge Pipelines (North Dakota) LLC, Berthold Station Expansion Project” (Inventory Plan) while conducting the tree and shrub inventory. Standard data forms were completed for each inventoried tree/shrub site. Each site was assigned a unique identification that consisted of the site’s section, township, range, and identification number e.g. (20156086-01). Data collected at each site included, observer, date, site id, woodland type, tree/shrub species, tally, and total number. An example can be found in the Inventory Plan (Appendix B).

Trees and shrubs located in natural growth areas in the Project were counted by direct stem count. Natural growing trees that were  $\geq 1$  inch diameter breast height (DBH) and all shrubs were inventoried for mitigation replacement.

### 3.0 RESULTS

Natural growth trees and shrubs were inventoried at thirteen individual sites within the Project. Eight tree and shrub species were identified within the Project (Tables 1 and 2). Naturally growing tree and shrub areas were found near wetland areas.

Cottonwood was the primary naturally growing tree species found within the Project Area. Inventoried shrubs within the Project Area included chokecherry, northern hawthorn, and sandbar willow. Invasive species, Siberian elm and Russian olive are present in limited numbers within the Project Area. Tree and Shrub Count Forms are included in Appendix C.

**Table 1. Summary of Tree and Shrub Inventory**

Species	Common Name	Growth Form	Reproduction	Invasive or Nonnative	Natural Growth	Overall Total
					≥1"	
<i>Crateagus rotundifolia</i>	Northern Hawthorn	tree/shrub	suckering	No	5	5
<i>Elaeagnus angustifolia</i>	Russian olive	tree	seed	Yes	1	1
<i>Populus deltoides</i>	Cottonwood	tree	seed/suckering	No	21	21
<i>Populus tremuloides</i>	Aspen	tree	seed/suckering	No	2	2
<i>Prunus virginiana</i>	Chokecherry	shrub	seed/suckering	No	16	16
<i>Salix amygdaloides</i>	Willow (Peachleaf)	tree	rhizomatous, colony forming	No	6	6
<i>Salix exigua</i>	Willow (Sandbar)	shrub	rhizomatous, colony forming	No	36	36
<i>Ulmus pumila</i>	Elm (Siberian)	tree	seed	Yes	1	1

**Table 2. Summary of Tree and Shrub Inventory Sites**

Inventory Site	Species	Common Name	Natural Growth	Overall Total
			≥1"	
20156086-01	<i>Populus tremuloides</i>	Aspen	2	2
20156086-02	<i>Populus deltoides</i>	Cottonwood	1	1
20156086-03	<i>Populus deltoides</i>	Cottonwood	1	1
20156086-04	<i>Populus deltoides</i>	Cottonwood	1	1
20156086-05	<i>Populus deltoides</i>	Cottonwood	13	13
20156086-06	<i>Salix exigua</i>	Willow (Sandbar)	9	9
20156086-07	<i>Prunus virginiana</i>	Chokecherry	10	10

Tree and Shrub Inventory Report / Berthold Station Expansion Project

Inventory Site	Species	Common Name	Natural Growth	Overall Total
			≥1"	
20156086-08	<i>Salix amygdaloides</i>	Willow (Peachleaf)	5	5
	<i>Populus deltoides</i>	Cottonwood	1	1
20156086-09	<i>Salix amygdaloides</i>	Willow (Peachleaf)	1	1
20156086-10	<i>Crateagus rotundifolia</i>	Northern Hawthorn	5	5
21156086-01	<i>Populus deltoides</i>	Cottonwood	3	3
21156086-02	<i>Prunus virginiana</i>	Chokecherry	6	6
	<i>Populus deltoides</i>	Cottonwood	1	1
21156086-03	<i>Salix exigua</i>	Willow (Sandbar)	25	25
	<i>Ulmus pumila</i>	Elm (Siberian)	1	1
	<i>Elaeagnus angustifolia</i>	Russian olive	6	6

#### 4.0 RECOMMENDATIONS

Carlson McCain makes the following recommendations regarding mitigation:

- **Invasive Species.** Invasive species should be replaced with non-invasive native tree/shrub of similar height and canopy suitable for the mitigation area.
- **Colony-forming Species.** Colony-forming and/or suckering species as described in Section 3 should be cut flush with the ground level where necessary to accommodate construction. These areas should then be allowed to regenerate naturally. Where complete removal is necessary, replacement should be made on a 1:4 basis with stem cuttings. A planting ratio of 1:2 is accurate in areas where moisture is not a limiting growth factor.

Enbridge will develop a tree/shrub mitigation plan for Commission's approval.

## 5.0 REFERENCES

Enbridge Pipelines (North Dakota) LLC. Tree and Shrub Inventory Plan. Enbridge Pipelines (North Dakota) LLC, Berthold Station Expansion Project. Case No. PU-11-232. May 2012.

North Dakota Tree Handbook. North Dakota Tree Information Center. North Dakota State University. ND Forest Service. <http://www.ag.ndsu.edu/trees/handbook/ndhand-1.htm>  
Accessed April 2012.

North Dakota Public Service Commission. North Dakota Public Service Commission Certification Relating to Order Provisions Transmission Facility Siting. Case Number PU-11-232 Tree and Shrub Mitigation Specifications. 3p.

# APPENDIX A

## Tree and Shrub Mitigation Specifications

## Case No. PU-11-232

### Tree and Shrub Mitigation Specifications

#### Inventory

1. Trees and shrubs anticipated to be cleared, including those that are considered invasive species or noxious weeds (*e.g.*, *Caragana arborescens*, *Elaeagnus angustifolia*, *Rhamnus cathartica*, *Tamarix chinensis*, *T. parviflora*, *T. ramosissima*, *Ulmus pumila*), shall be inventoried before cutting. The inventory shall record the location, number, and species of trees and shrubs.
2. In windbreaks, shelterbelts and other planted areas, trees or shrubs anticipated to be cleared, regardless of size, shall be inventoried for replacement.
3. In native growth areas, trees anticipated to be cleared that are 1-inch diameter at breast height ("dbh") or greater shall be inventoried for replacement.
4. In native growth areas, shrubs anticipated to be cleared in the permanent right-of-way shall be inventoried for replacement.
5. In native growth areas outside the permanent right-of-way, shrubs shall be cut flush with the surface of the ground, taking care to leave the naturally occurring seed bank and root stock intact. If soil disturbance is necessary, the native topsoil shall be preserved and replaced after construction. Shrubs shall be allowed to regenerate naturally where native topsoil is preserved and replaced. Where native topsoil is not preserved and replaced, shrubs anticipated to be cleared shall be inventoried for replacement.
6. In native growth areas, trees and shrubs may be inventoried by actual count or by sampling method that will properly represent the woody vegetation population. A sampling plan developed by the company, filed with the North Dakota Public Service Commission (Commission) and approved prior to the start of construction shall define the sampling method to be used for trees, for tall shrubs and for low shrubs. The data from the sample plots shall be extrapolated to the total acreage of the wooded area to be cleared to determine the species and quantity of trees and shrubs to be replaced.

### **Clearing for Construction**

7. Trees and shrubs shall be selectively cleared, leaving mature trees and shrubs intact where practical.
8. The width of clear cuts through windbreaks, shelterbelts and all other wooded areas shall be limited to 50 feet or less unless otherwise approved by the NDPSC.
9. If the area of trees or shrubs actually cleared differs from the area inventoried, the difference in number of trees and shrubs to be replaced shall be noted on the inventory.

### **Replacement**

10. Prior to tree/shrub replacement, documentation identifying the number and variety of trees removed as well as the mitigation plan for the proposed number, variety, type, location and date of replacement plantings shall be filed with the NSPSC for approval.
11. Two 2-year-old saplings shall be planted for every one tree removed. Two shrubs (stem cuttings) shall be planted for every one shrub removed.
12. Except in the case of invasive or noxious species, trees and shrubs shall be replaced by the same species or similar species, suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service. Invasive or noxious species shall be replaced by similar non-invasive or non-noxious species suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service.
13. Landowners shall be given the option of having replacement trees/shrubs planted off the right-of-way on the landowner's property or waiving that requirement in writing and allowing those replacement trees/shrubs to be planted at alternative locations.
14. At the conclusion of the project, documentation identifying the actual number, variety, type, location, and date of the replacement plantings shall be filed with the NDPSC.
15. Tree/shrub replacements shall be inspected once a year for three years, on about the anniversary of the plantings, and, on or shortly before October 1 of each year, a report shall be submitted to the NDPSC documenting the condition of replacement planting and any woodlands work completed. If after three years from the anniversary of the plantings the survival rate is less than 75%, the NDPSC may order additional planting(s).

## **APPENDIX B**

### Tree and Shrub Inventory Plan

# Tree and Shrub Inventory Plan

Enbridge Pipelines (North Dakota) LLC  
Berthold Station Expansion Project

Case No. PU-11-232

Prepared for:

Enbridge Pipelines (North Dakota) LLC

May 2012

### **Introduction**

Enbridge Pipelines (North Dakota) LLC proposes to develop the Berthold Station Expansion Project located in portions of Sections 20 and 21, T156N, R86W, in Ward County, North Dakota. The case number for the Berthold Station Expansion Project (Project) is PU-11-232. Enbridge Pipelines (North Dakota) LLC will comply with the tree and shrub mitigation specifications as outlined in the North Dakota Public Service Commission (Commission) Certification Relating to Order Provisions Transmission Facility Siting. Enbridge Pipelines (North Dakota) LLC proposes to contract Carlson McCain, Inc. for the tree and shrub inventory. The tree and shrub mitigation specifications are found in Appendix A of this Tree and Shrub Inventory Plan. Specifically, this Plan outlines the process for completing the tree and shrub inventory.

### **Windbreaks, Shelterbelts, and Other Planted Areas**

In windbreaks, shelterbelts, and other planted areas, trees and shrubs anticipated to be cleared regardless of size will be counted by direct stem count. Trees that are one-inch or greater diameter at breast height (DBH) will be inventoried for replacement.

In windbreaks, shelterbelts, and other planted areas, shrubs that form colonies (such as buffalo currant, chokecherry, dogwood, plum, pussy willow, sandbar willow, western snowberry, and Woods rose) and that are cut flush with the ground surface and not cleared, so as to leave the naturally occurring seed bank and root stock intact will not be direct stem counted. Instead, the area will be delineated on an aerial photo and indicated on construction drawings to not be cleared or have the ground disturbed. If ground disturbance occurs, Enbridge Pipelines (North Dakota) LLC will conduct a direct stem count of the disturbance area or estimate the number of stems cleared using a Commission approved sampling estimate method (see Shrub Sampling Method, Appendix C).

### **Native Growth Areas**

In native growth areas, trees that are one-inch or greater diameter at breast height (DBH) will be inventoried for replacement.

In high-density woodland areas, a Commission approved sampling method may be used in place of individual counting (see Tree Sampling Method, Appendix D).

In native growth areas, shrubs that form colonies (such as buffalo currant, chokecherry, dogwood, plum, pussy willow, sandbar willow, western snowberry, and Woods rose) and that are cut flush with the ground surface and not cleared, so as to leave the naturally occurring seed bank and root stock intact will not be direct stem counted. Instead, the area will be delineated on an aerial photo and indicated on construction drawings to not be cleared or have the ground disturbed. If ground disturbance occurs, Enbridge Pipelines (North Dakota) LLC will conduct a direct stem count of the disturbance area or estimate the number of stems cleared using a Commission approved sampling estimate method (see Shrub Sampling Method, Appendix C).

### **Tree Sampling Method**

Per the Commission's Tree and Shrub Inventory Specifications (Inventory Specification No. 6 in Appendix A), in high-density woodland areas, Enbridge Pipelines (North Dakota) LLC proposes the following sampling method for the tree inventory. The dimensions of the entire woodland stand within the Project will be delineated to determine the area of the woodland. Tree and shrub counts will be made in

representative sample site areas within the woodland. Transects will be developed and the circular sample sites placed along the transect. The number of sample sites within a woodland stand will be dependent on woodland size and uniformity. A smaller, more uniform woodland stand would require fewer sample sites than a larger, less uniform woodland stand.

The sample sites will be 0.10 acre (37.42-foot radius circle). A rope 37.42 feet in length will be attached to a central stake and rotated in a circle (Appendix D). Trees and shrubs within the circle will be counted. Tree and shrub density for the entire woodland area within the Project will be calculated based on the average density from all of the sample locations within the woodland, weighted against the woodland size.

### **Shrub Sampling Method**

Per the Commission's Tree and Shrub Inventory Specifications (Inventory Specification No. 6 in Appendix A), in high-density woodland areas, Enbridge Pipelines (North Dakota) LLC proposes the following sampling method for the shrub inventory. The dimensions of the entire woodland stand within the ROW will be delineated to determine the area of the woodland. Shrub counts will be made in representative sample site areas within the woodland. Transects will be developed and the circular sample sites placed along the transect. The number of sample sites within a woodland stand will be dependent on woodland size and uniformity. A smaller, more uniform woodland stand would require fewer sample sites than a larger, less uniform woodland stand.

The sample sites will be 0.01 acre (3.72-foot radius circle). A rope 3.72 feet in length will be attached to a central stake and rotated in a circle (Appendix C). Shrubs within the circle will be counted. Tree and shrub density for the entire woodland area within the Project will be calculated based on the average density from all of the sample locations within the woodland, weighted against the woodland size.

## Appendix A

### Case No. PU-11-232

#### Tree and Shrub Mitigation Specifications

##### Inventory

1. Trees and shrubs anticipated to be cleared, including those that are considered invasive species or noxious weeds (*e.g.*, *Caragana arborescens*, *Elaeagnus angustifolia*, *Rhamnus cathartica*, *Tamarix chinensis*, *T. parviflora*, *T. ramosissima*, *Ulmus pumila*), shall be inventoried before cutting. The inventory shall record the location, number, and species of trees and shrubs.
2. In windbreaks, shelterbelts and other planted areas, trees or shrubs anticipated to be cleared, regardless of size, shall be inventoried for replacement.
3. In native growth areas, trees anticipated to be cleared that are 1-inch diameter at breast height ("dbh") or greater shall be inventoried for replacement.
4. In native growth areas, shrubs anticipated to be cleared in the permanent right-of-way shall be inventoried for replacement.
5. In native growth areas outside the permanent right-of-way, shrubs shall be cut flush with the surface of the ground, taking care to leave the naturally occurring seed bank and root stock intact. If soil disturbance is necessary, the native topsoil shall be preserved and replaced after construction. Shrubs shall be allowed to regenerate naturally where native topsoil is preserved and replaced. Where native topsoil is not preserved and replaced, shrubs anticipated to be cleared shall be inventoried for replacement.
6. In native growth areas, trees and shrubs may be inventoried by actual count or by sampling method that will properly represent the woody vegetation population. A sampling plan developed by the company, filed with the North Dakota Public Service Commission (Commission) and approved prior to the start of construction shall define the sampling method to be used for trees, for tall shrubs and for low shrubs. The data from the sample plots shall be extrapolated to the total acreage of the wooded area to be cleared to determine the species and quantity of trees and shrubs to be replaced.

### **Clearing for Construction**

7. Trees and shrubs shall be selectively cleared, leaving mature trees and shrubs intact where practical.
8. The width of clear cuts through windbreaks, shelterbelts and all other wooded areas shall be limited to 50 feet or less unless otherwise approved by the NDPSC.
9. If the area of trees or shrubs actually cleared differs from the area inventoried, the difference in number of trees and shrubs to be replaced shall be noted on the inventory.

### **Replacement**

10. Prior to tree/shrub replacement, documentation identifying the number and variety of trees removed as well as the mitigation plan for the proposed number, variety, type, location and date of replacement plantings shall be filed with the NSPSC for approval.
11. Two 2-year-old saplings shall be planted for every one tree removed. Two shrubs (stem cuttings) shall be planted for every one shrub removed.
12. Except in the case of invasive or noxious species, trees and shrubs shall be replaced by the same species or similar species, suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service. Invasive or noxious species shall be replaced by similar non-invasive or non-noxious species suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service.
13. Landowners shall be given the option of having replacement trees/shrubs planted off the right-of-way on the landowner's property or waiving that requirement in writing and allowing those replacement trees/shrubs to be planted at alternative locations.
14. At the conclusion of the project, documentation identifying the actual number, variety, type, location, and date of the replacement plantings shall be filed with the NDPSC.
15. Tree/shrub replacements shall be inspected once a year for three years, on about the anniversary of the plantings, and, on or shortly before October 1 of each year, a report shall be submitted to the NDPSC documenting the condition of replacement planting and any woodlands work completed. If after three years from the anniversary of the plantings the survival rate is less than 75%, the NDPSC may order additional planting(s).

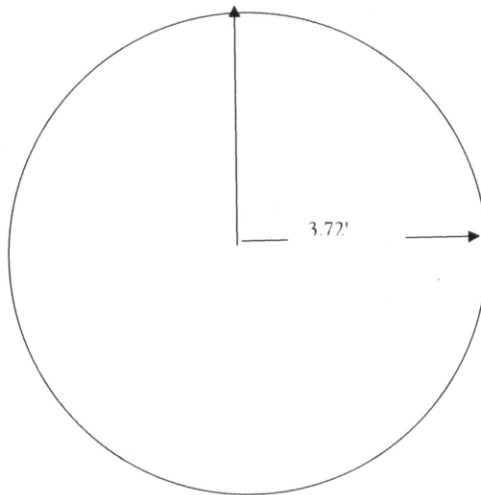


## Appendix C

### Shrub Sampling Method

#### Sample Plot

- Circular sample plots with a radius of 3.72 feet, or area equivalent to 0.01 acres created with a central stake and rope.
- The rope, 3.72 feet in length, anchored to the central stake and rotated in a circle



#### Shrub Counts

- Direct stem counts from each plot
- Talled on work sheet by species

#### Woodland size

- GPS points taken in the field around boundary
- GIS used to calculate acreage

#### Calculations

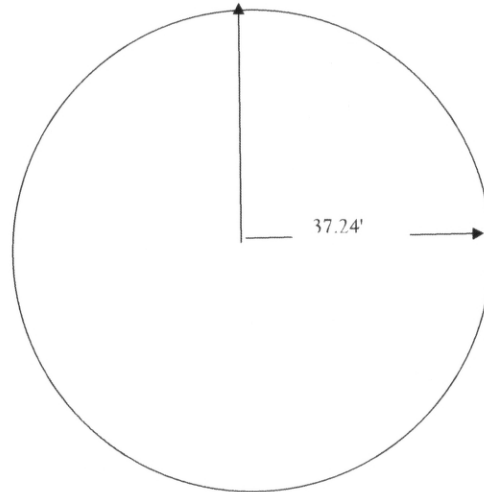
- Average determined from all plots sampled in a woodland area or area is equivalent to stems/0.01 acre
- Converted to a per acre basis (average times 100)
- Total number per woodland determined by multiplying average number per acre with woodland size

## Appendix D

### Tree Sampling Method

#### Sample Plot

- Circular sample plots with a radius of 37.24 feet, or area equivalent to 0.10 acres created with a central stake and rope.
- The rope, 37.24 feet in length, anchored to the central stake and rotated in a circle



#### Tree Counts

- Direct stem counts from each sample site
- Talled on work sheet by species

#### Woodland size

- GPS points taken in the field around boundary
- GIS used to calculate acreage

#### Calculations

- Average determined from all plots sampled in a woodland area or area is equivalent to stems/0.10 acre
- Converted to a per acre basis (average times 10)
- Total number per woodland determined by multiplying average number per acre with woodland size

## APPENDIX C

Tree and Shrub Count Forms

**TREE/SHRUB INVENTORY**

Project Name: Berthold Station Expansion

Sampled by: CT, MM

Date: 3/23/12

Location / Site ID: 20156086

Woodland Type (circle): Native Planted

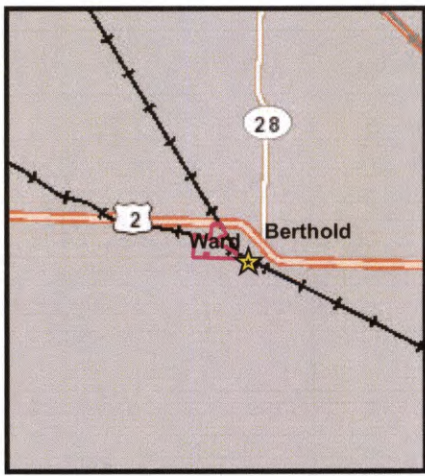
Plot Size (circle): 3.72 ft 37.2 ft

SPECIES	Planted	Native		TOTAL
	All trees shrubs	Trees >1"	All shrubs	
20156086-01 Pop tre		2		2
20156086-02 Pop del		1		1
20156086-03 Pop del		1		1
20156086-04 Pop del		1		1
20156086-05 Pop del		13		13
20156086-06 Sal exi			9	9
20156086-07 Pro vir			10	10
20156086-08 Sal amy		5		5
Pop del		1		1



# APPENDIX D

Figure



**Legend**

- Berthold Station Expansion Area
- Berthold East
- Aspen
- Chokecherry
- Chokecherry - cottonwood
- Cottonwood
- Hawthorn
- Peachleaf willow
- Peachleaf willow - cottonwood
- Sandbar willow
- Sandbar willow - Siberian elm - Russian olive
- Sections

1:12,000  
1 inch = 1,000 feet  
0 250 500 1,000 Feet  
Basemap: NAIP Orthphoto 2010  
Barnes County, North Dakota



  
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 www.carlsonmccain.com

**Figure 1**  
**Tree / Shrub Inventory**  
**Berthold Station Expansion Project**  
**Enbridge Pipelines (North Dakota)**  
**LLC**