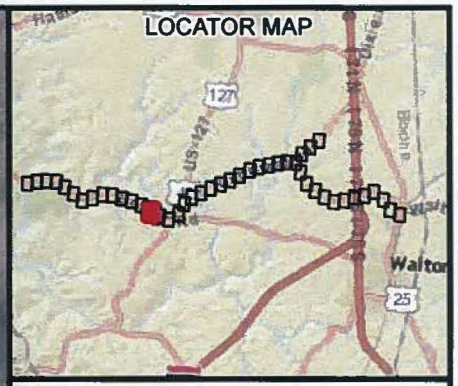

N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale In Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4N
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m.

CREATED BY:

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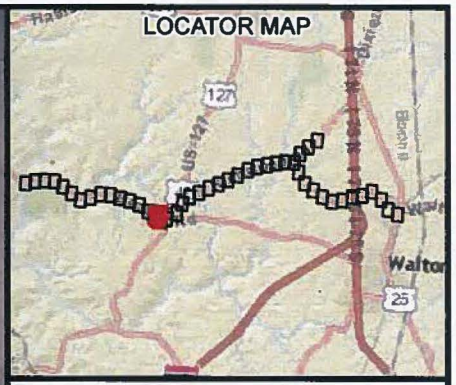
CONFIDENTIAL PROPRIETARY TRADE SECRET



N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale In Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4O
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m:

CREATED BY

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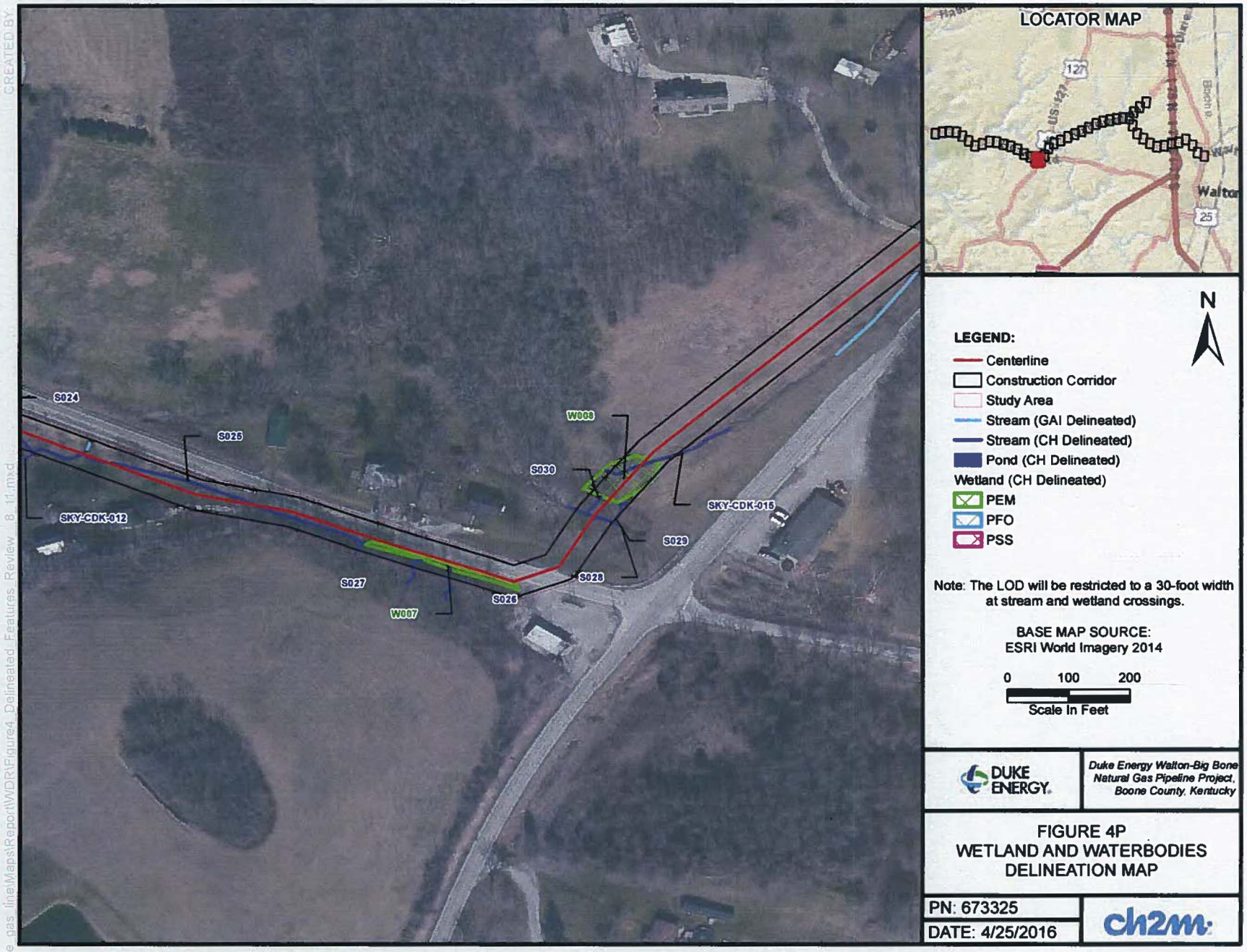

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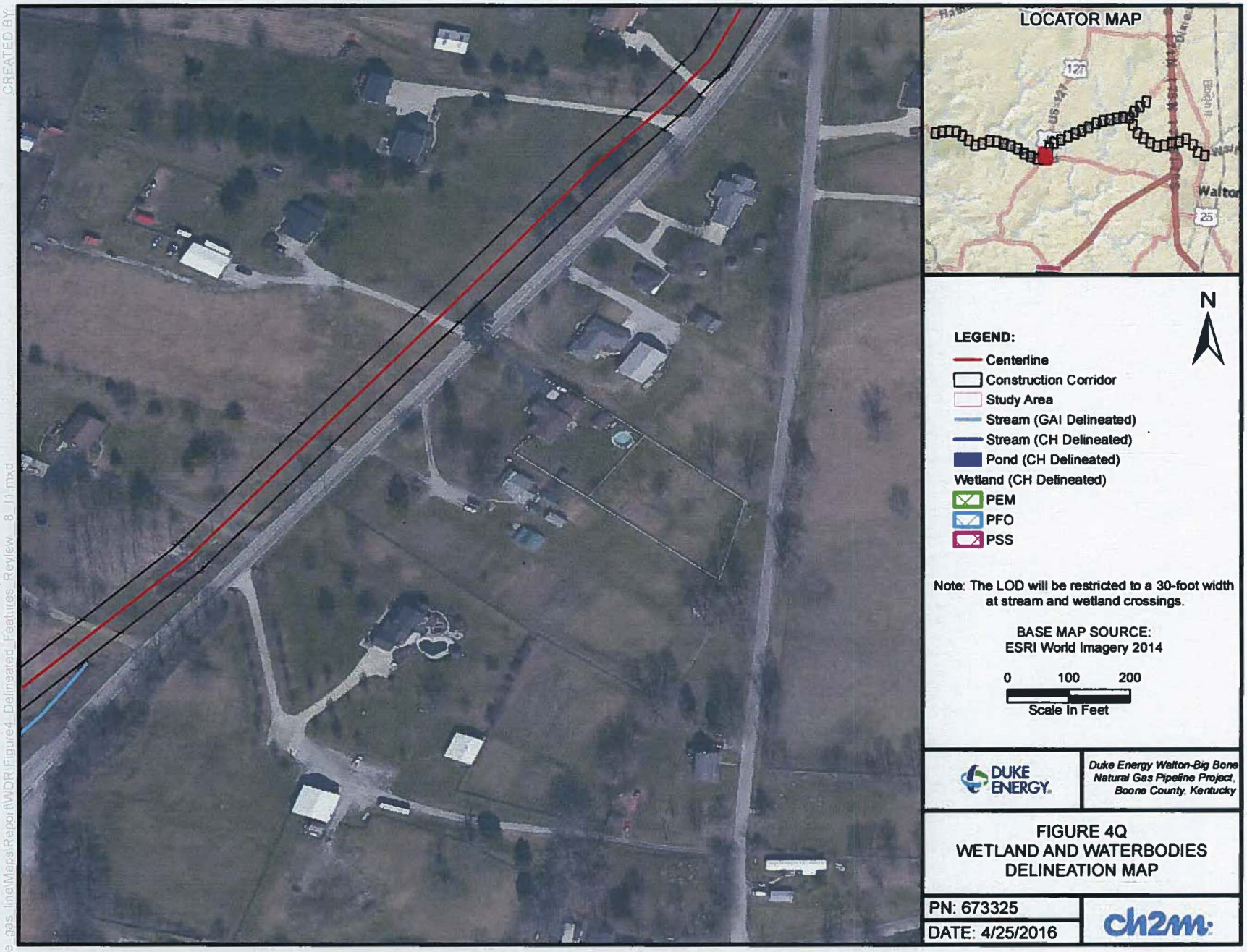
LOCATOR MAP
127
US-127
Walton
25
N
LEGEND:
Centerline
Construction Corridor
Study Area
Stream (GAI Delineated)
Stream (CH Delineated)
Pond (CH Delineated)
Wetland (CH Delineated)
PEM
PFO
PSS
Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.
BASE MAP SOURCE:
ESRI World Imagery 2014
0
100
200
Scale in Feet
DUKE ENERGY.
Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky
FIGURE 4Q
WETLAND AND WATERBODIES DELINEATION MAP
PN: 673325
DATE: 4/25/2016
ch2m
CREATED BY:
3igBone_gas_lineMapsReportWDR Figure4_Delineated_Features_Review_8_11.mxd

CONFIDENTIAL PROPRIETARY TRADE SECRET

N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale in Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4R
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m

CREATED BY:
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CONFIDENTIAL PROPRIETARY TRADE SECRET

N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale in Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4S
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m

CREATED BY:

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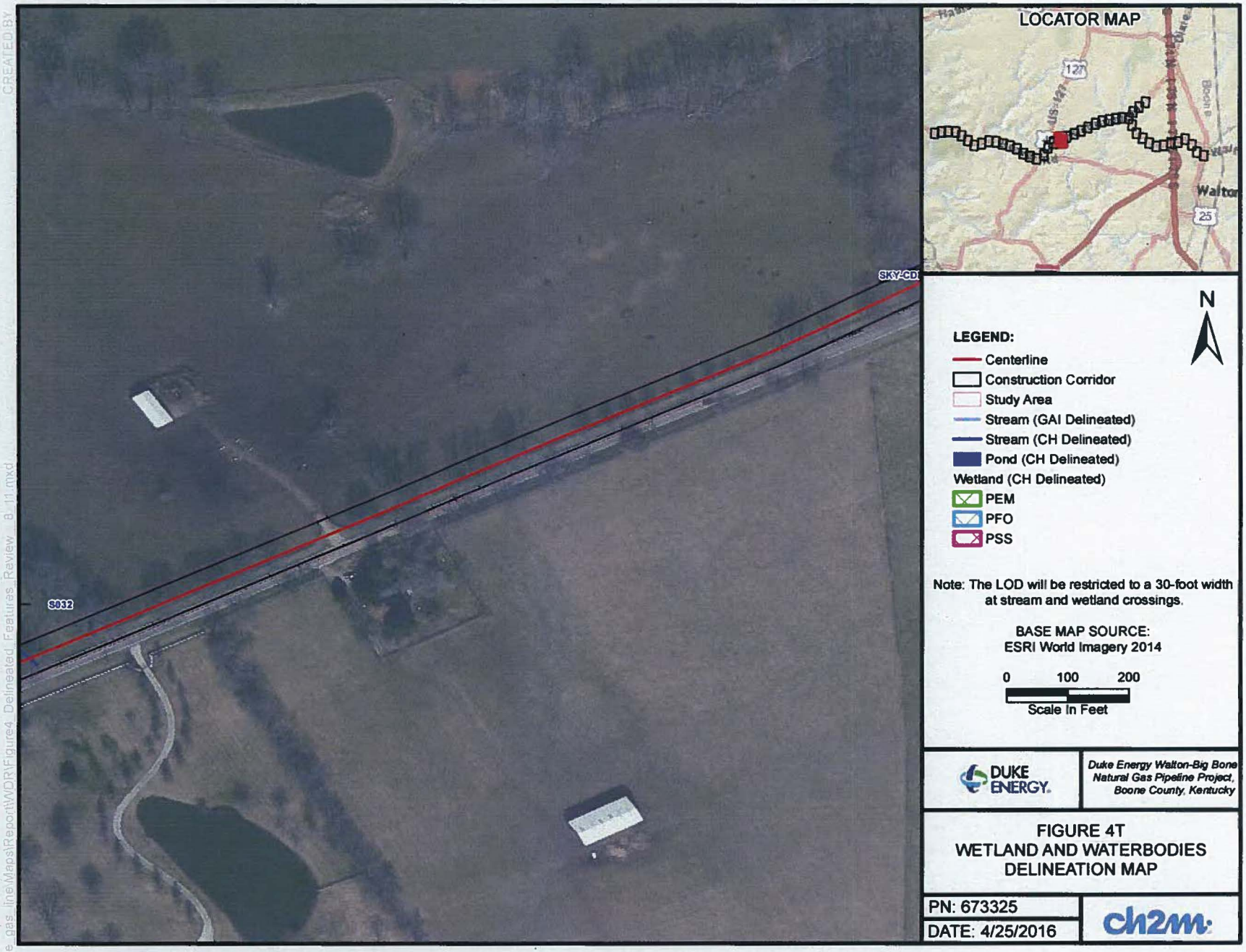
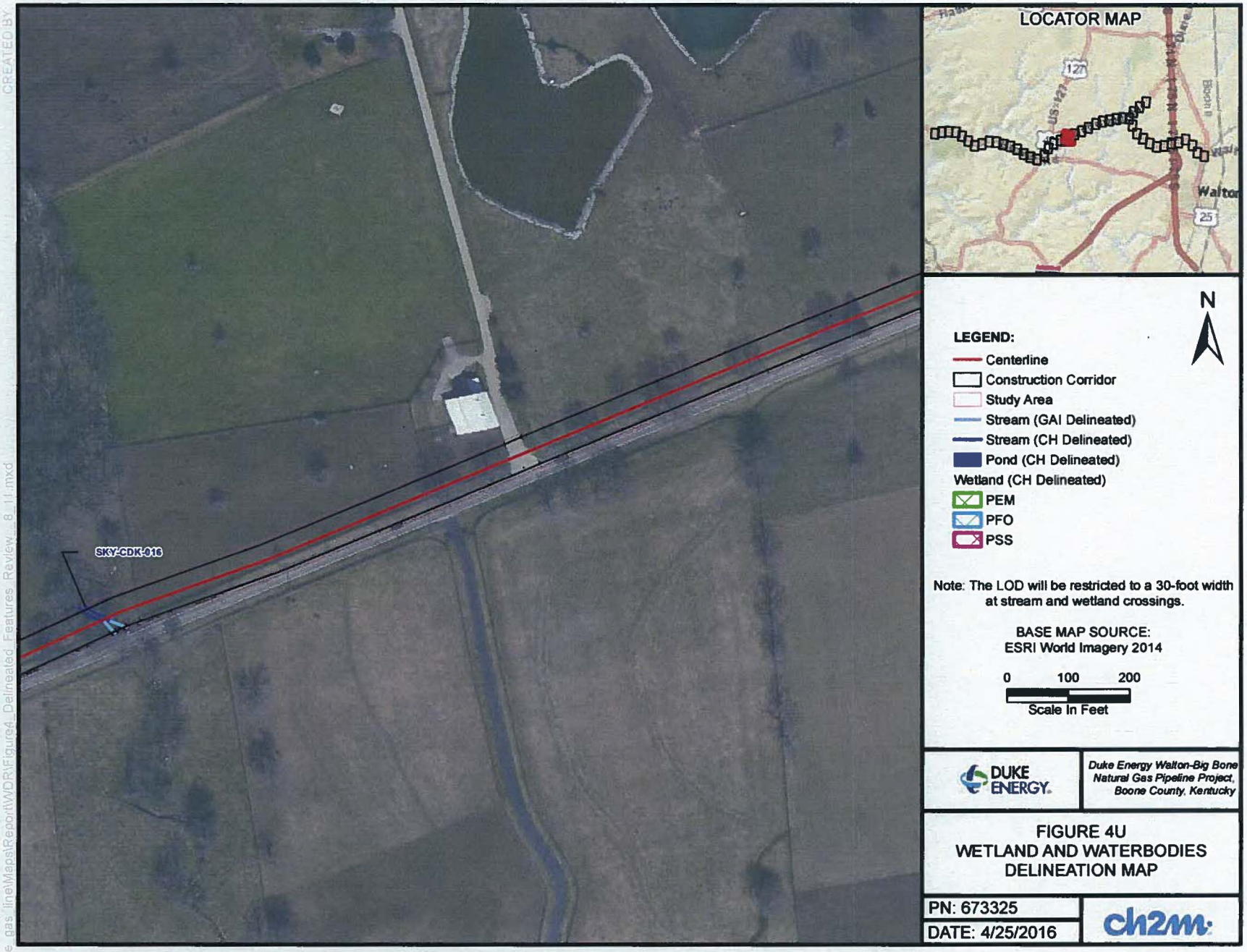
CONFIDENTIAL PROPRIETARY TRADE SECRET




SKY-CDK-016
LOCATOR MAP
127
US-127
Big Bone
Walton
25
N
LEGEND:
Centerline
Construction Corridor
Study Area
Stream (GAI Delineated)
Stream (CH Delineated)
Pond (CH Delineated)
Wetland (CH Delineated)
PEM
PFO
PSS
Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.
BASE MAP SOURCE:
ESRI World Imagery 2014
0
100
200
Scale In Feet
DUKE ENERGY.
Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky
FIGURE 4U
WETLAND AND WATERBODIES DELINEATION MAP
PN: 673325
DATE: 4/25/2016
ch2m
CREATED BY:
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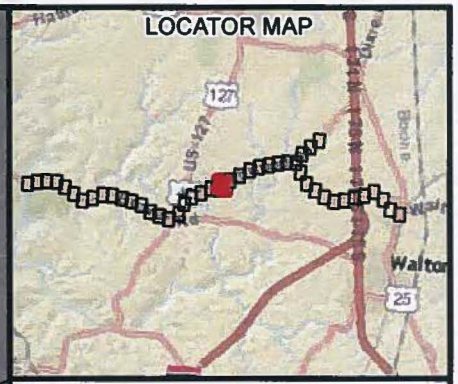


N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale in Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4V
WETLAND AND WATERBODIES DELINEATION MAP

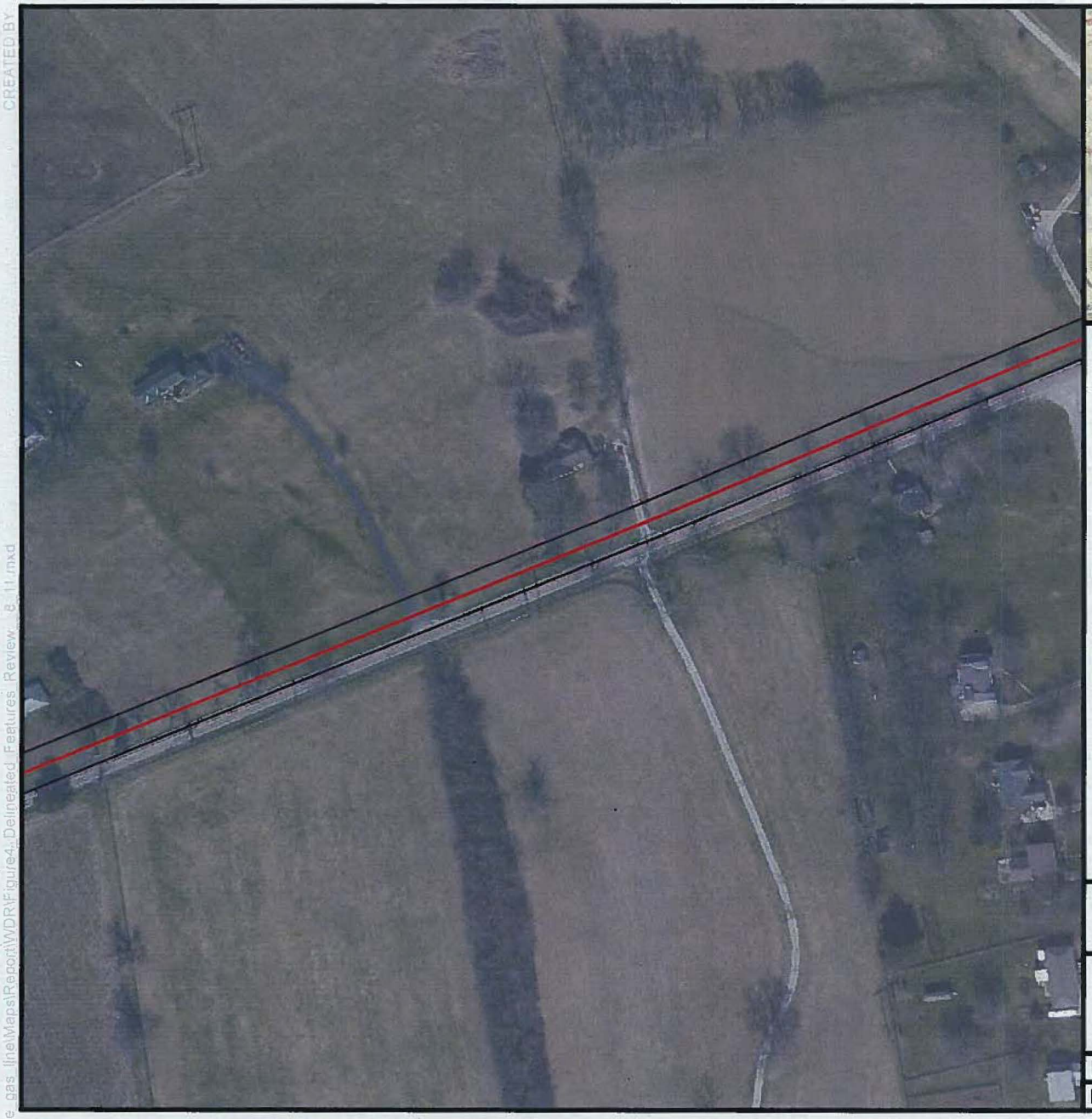
PN: 673325
DATE: 4/25/2016

ch2m

CREATED BY:

3\gBone_gas_line\Maps\Report\WDR\Figure4_Delineated_Features_Review_8_11.mxd

CONFIDENTIAL PROPRIETARY TRADE SECRET



N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale In Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4W
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m

CREATED BY:

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CONFIDENTIAL PROPRIETARY TRADE SECRET

N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale in Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4X
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

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CREATED BY:
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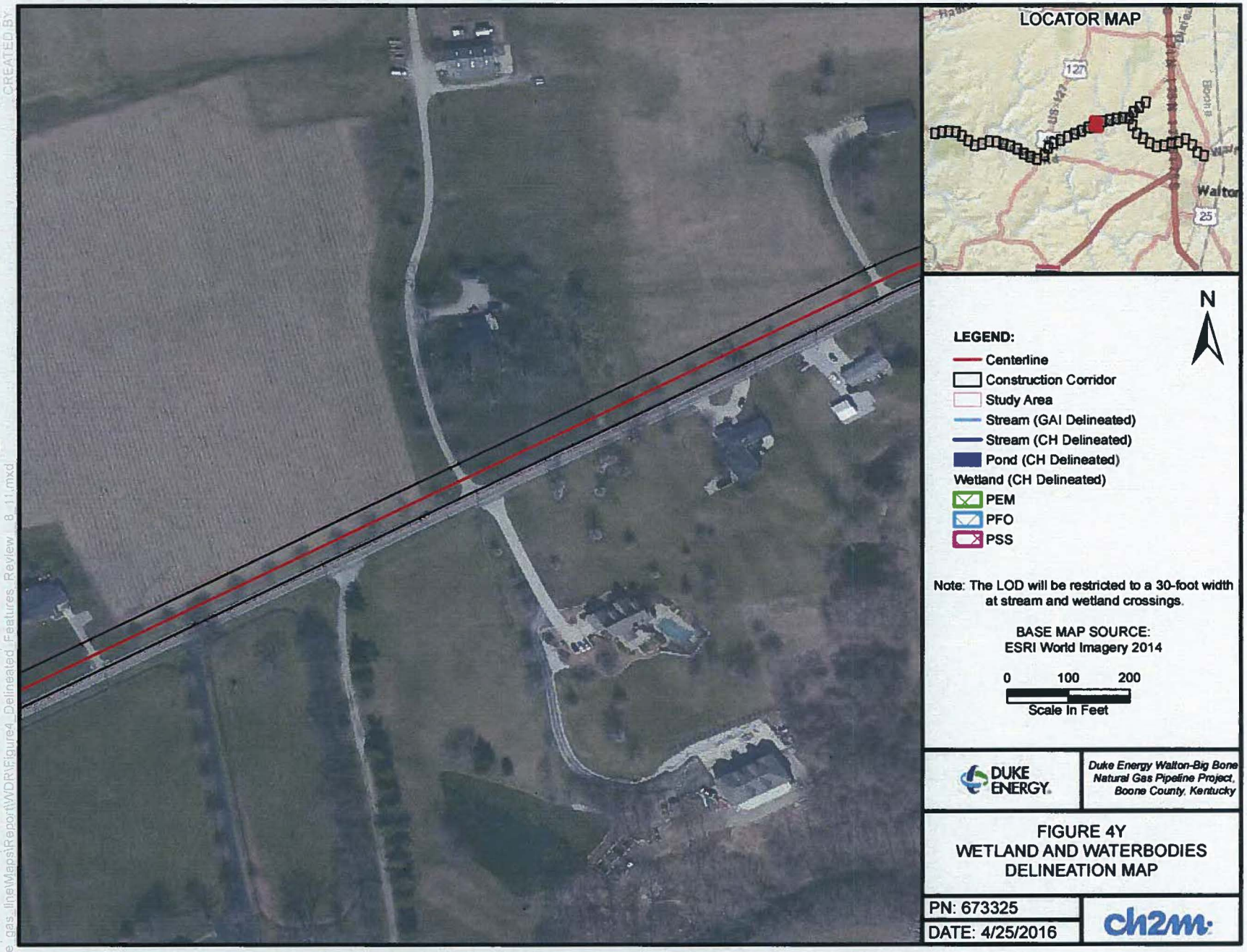

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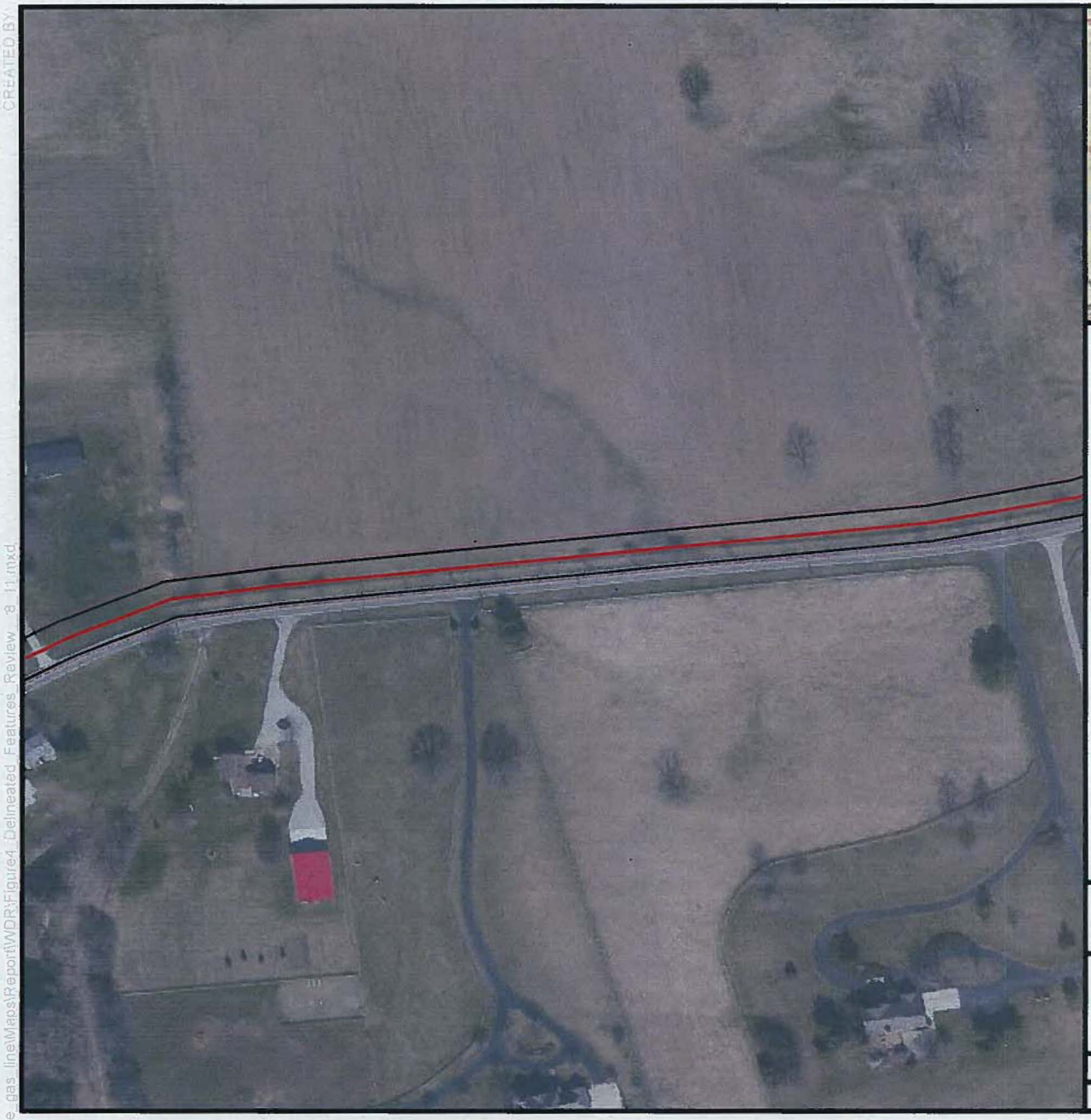

N

LEGEND:
- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)
- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale In Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4Z
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m

CREATED BY:
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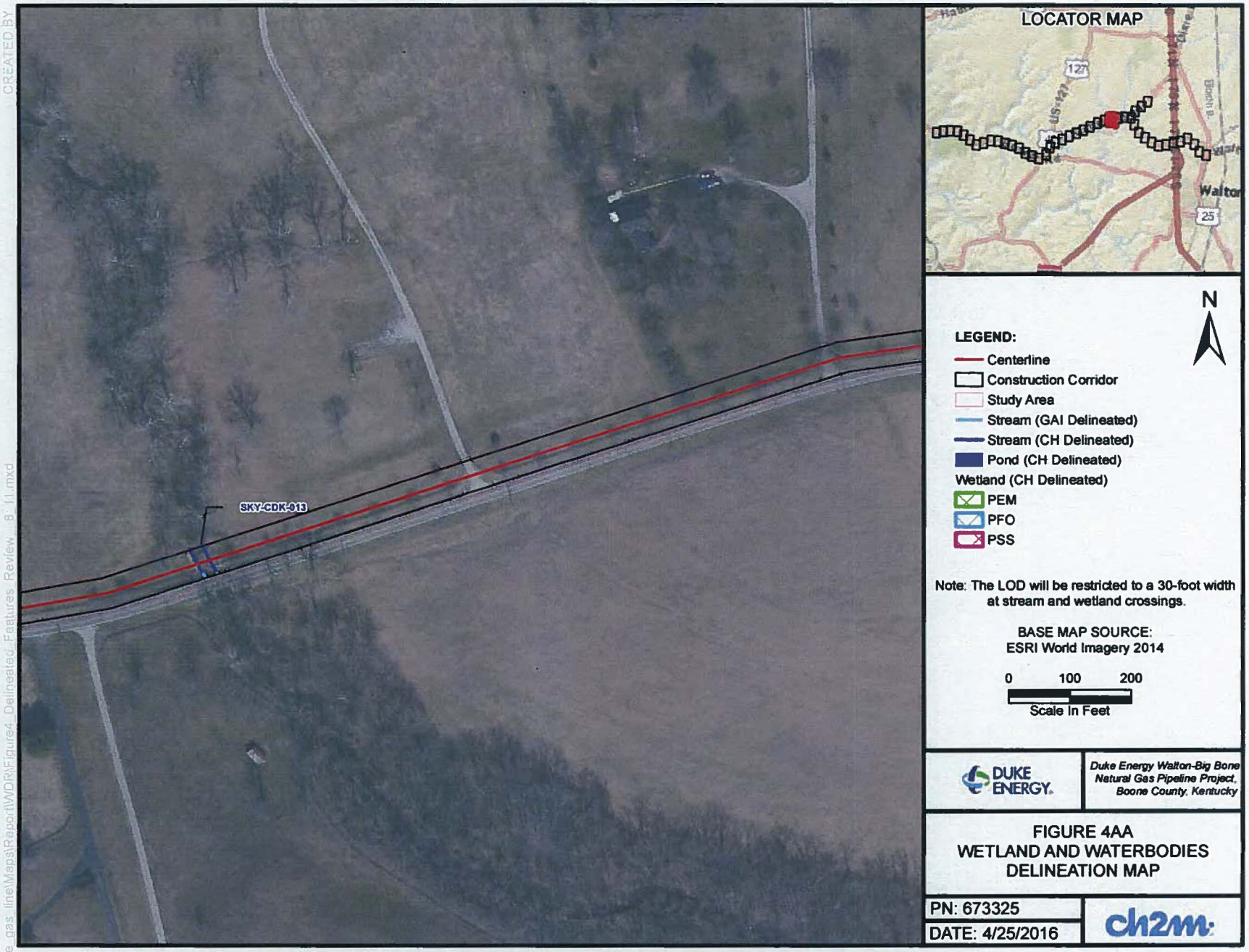

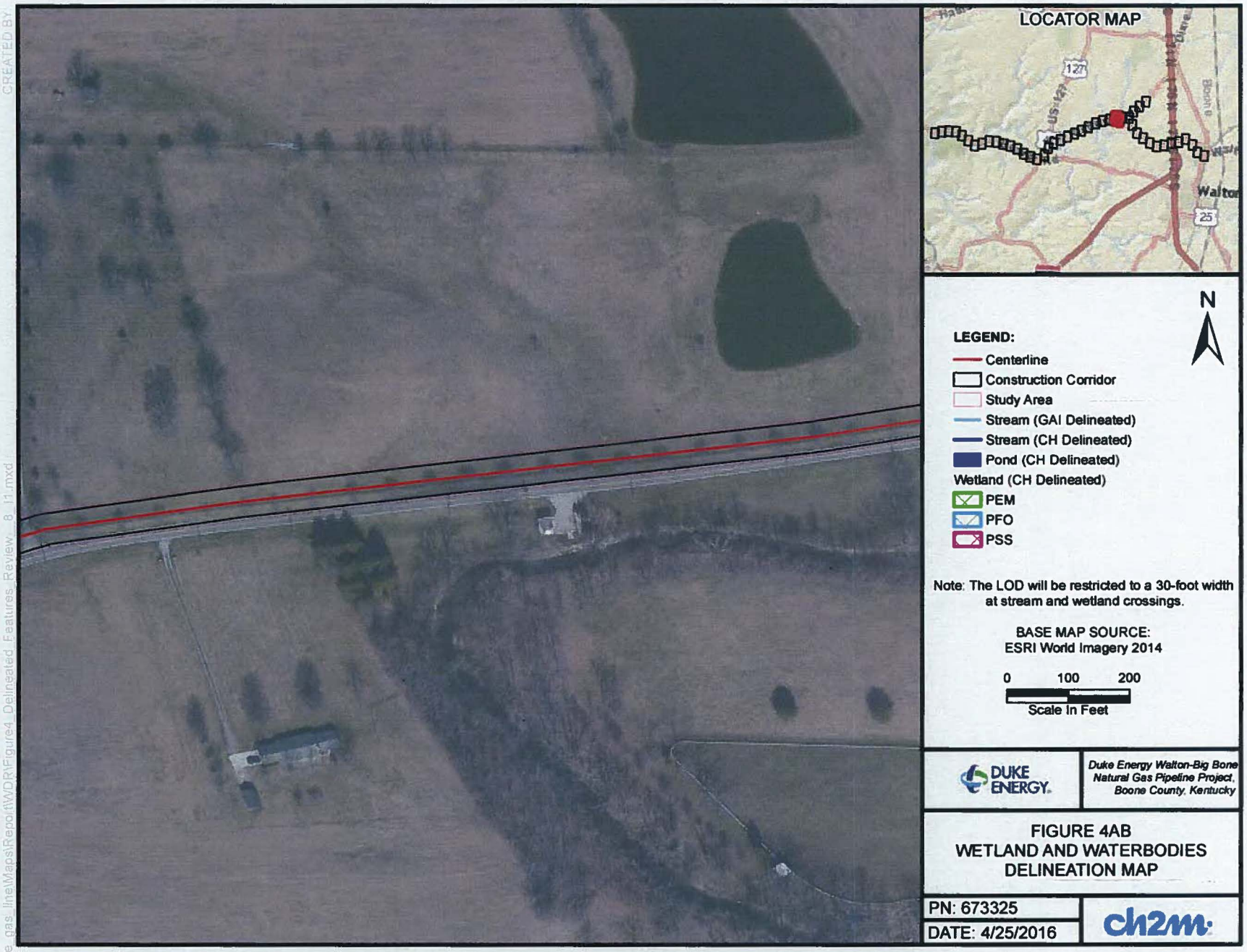
LOCATOR MAP
127
25
Walton
N
LEGEND:
Centerline
Construction Corridor
Study Area
Stream (GAI Delineated)
Stream (CH Delineated)
Pond (CH Delineated)
Wetland (CH Delineated)
PEM
PFO
PSS
Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.
BASE MAP SOURCE:
ESRI World Imagery 2014
0
100
200
Scale in Feet
DUKE ENERGY.
Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky
FIGURE 4AB
WETLAND AND WATERBODIES DELINEATION MAP
PN: 673325
DATE: 4/25/2016
ch2m
CREATED BY:
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CONFIDENTIAL PROPRIETARY TRADE SECRET

N

LEGEND:
- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)
- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale In Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4AC
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

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CREATED By:
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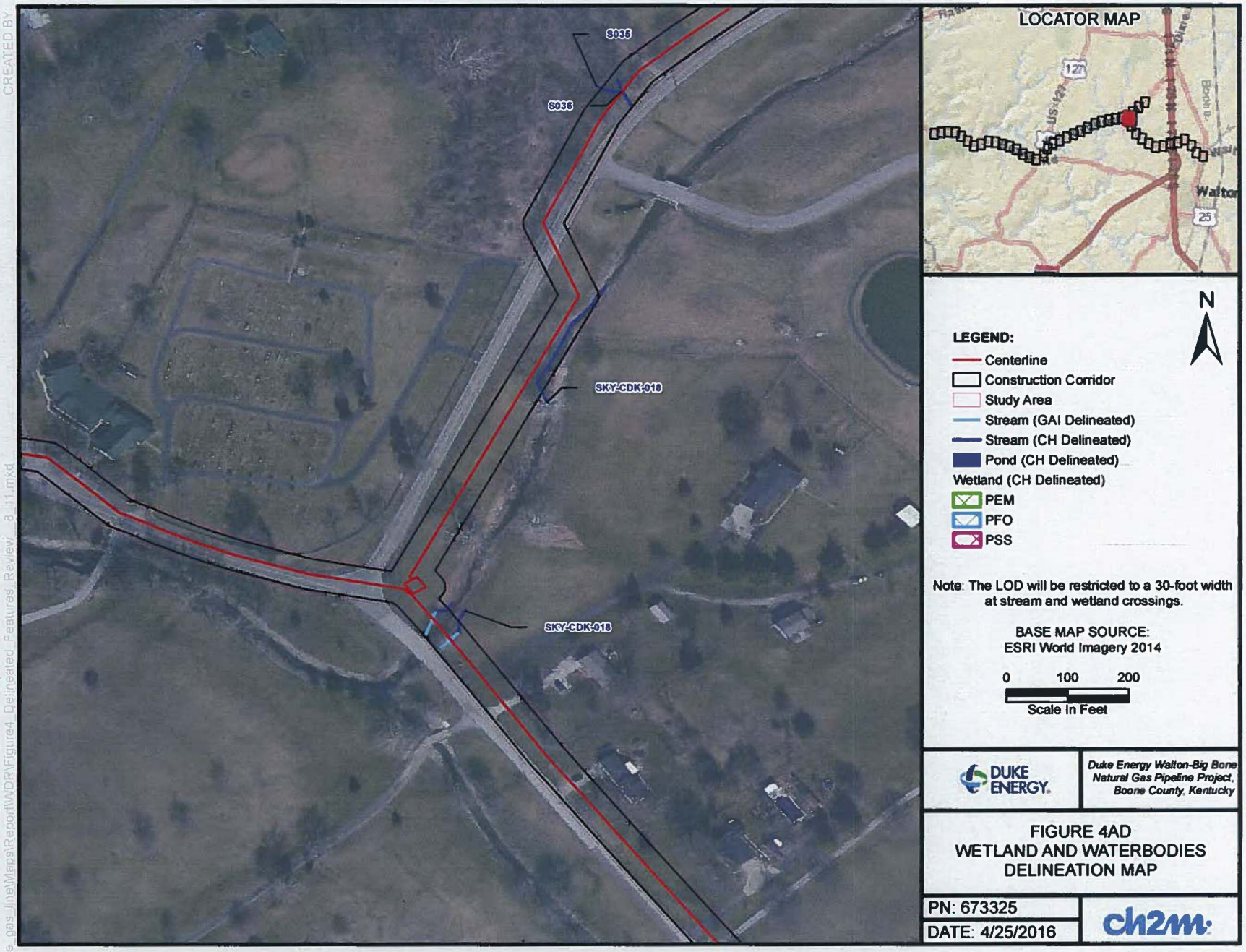

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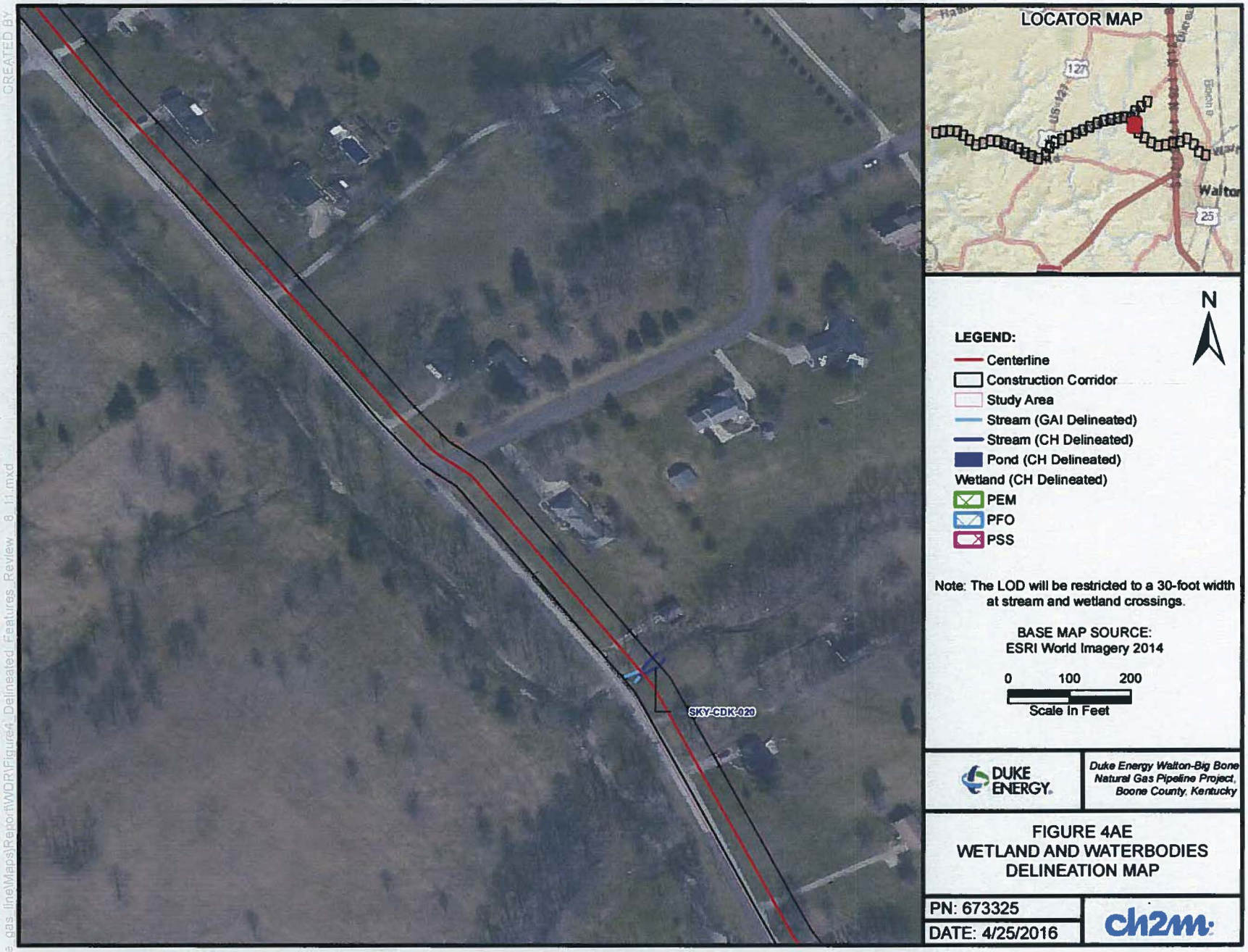

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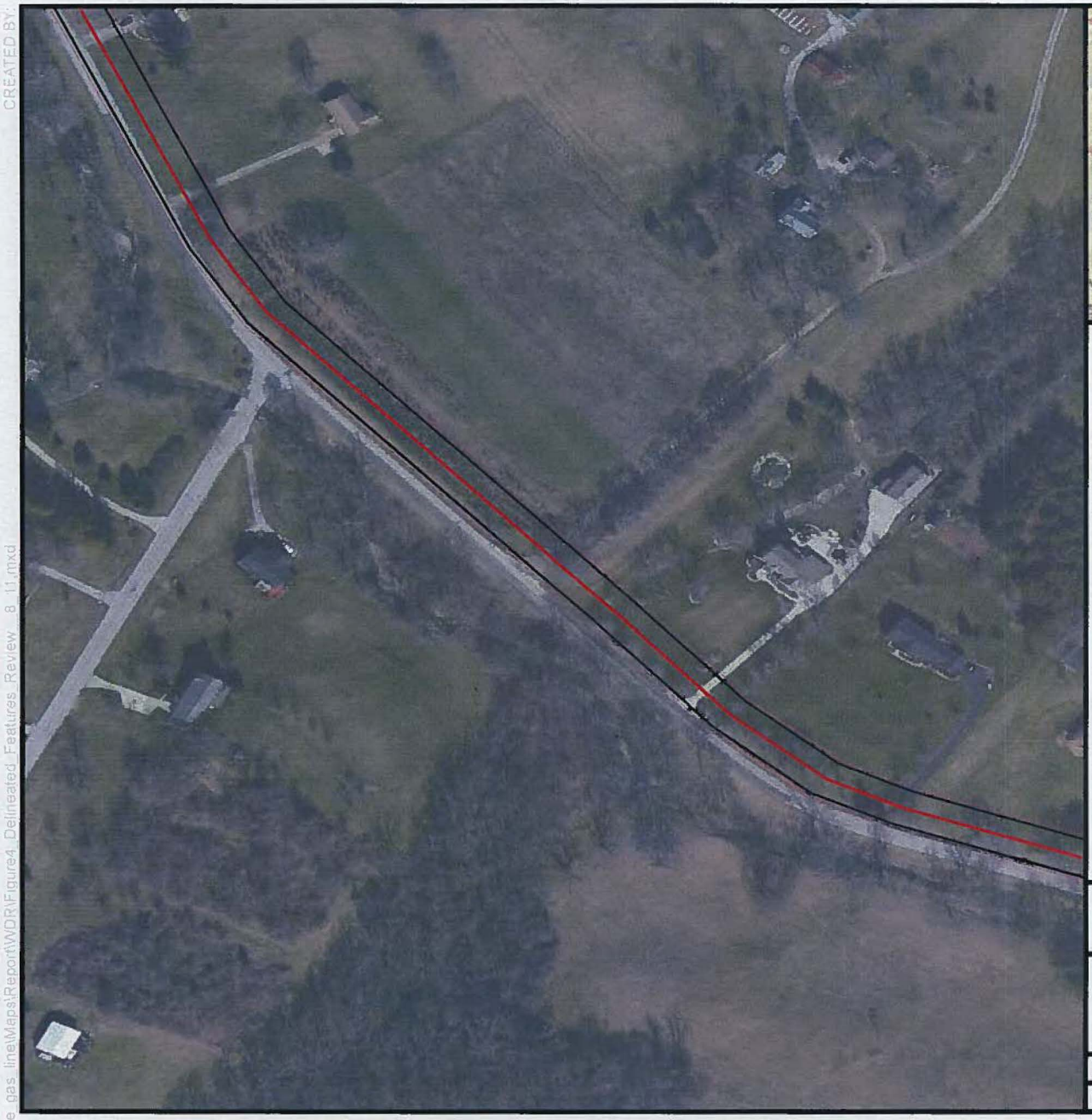

N

LEGEND:
- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)
- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale in Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4AF
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m

CREATED BY:
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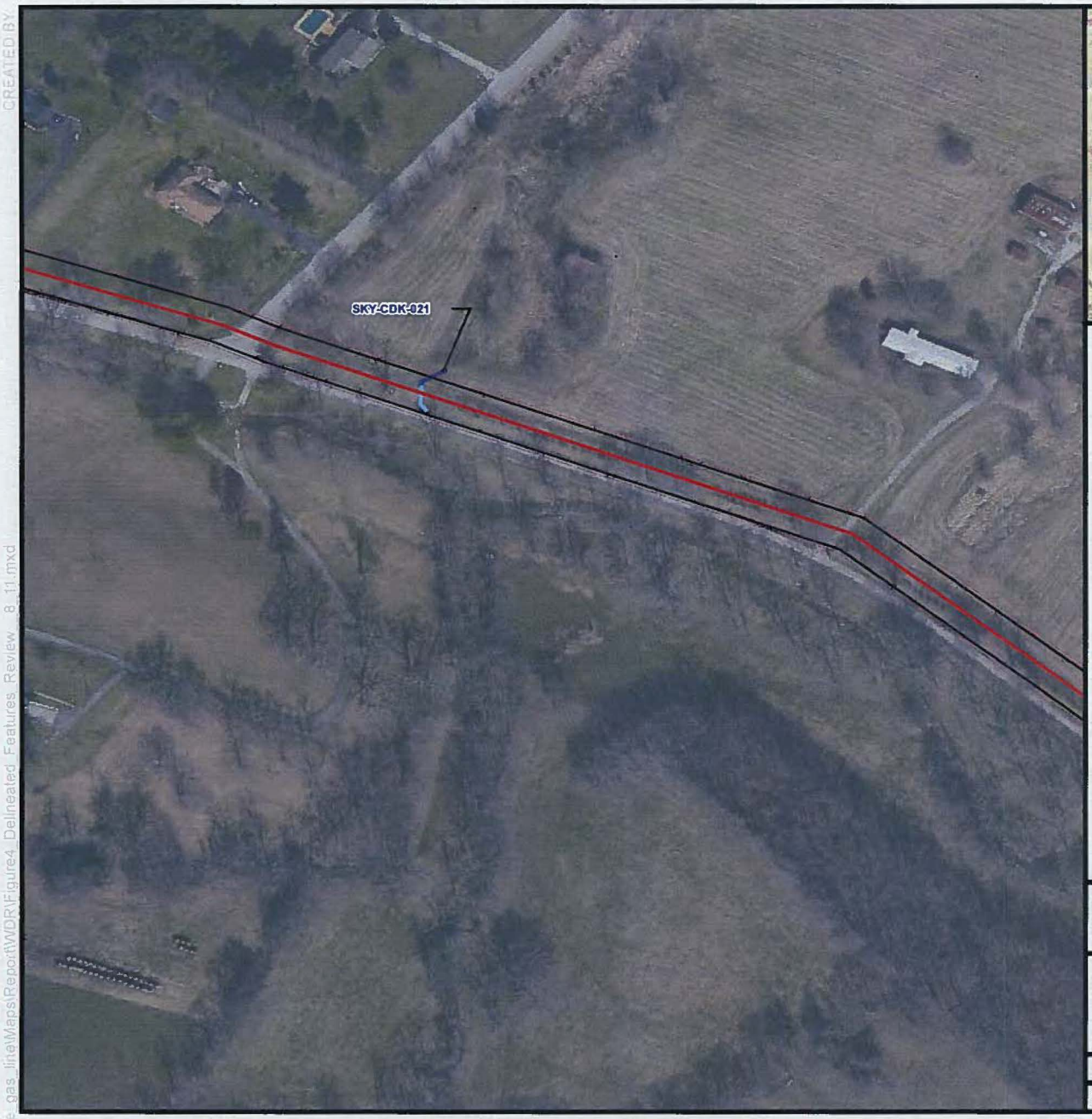
CONFIDENTIAL PROPRIETARY TRADE SECRET



N

LEGEND:
- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)
- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale in Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

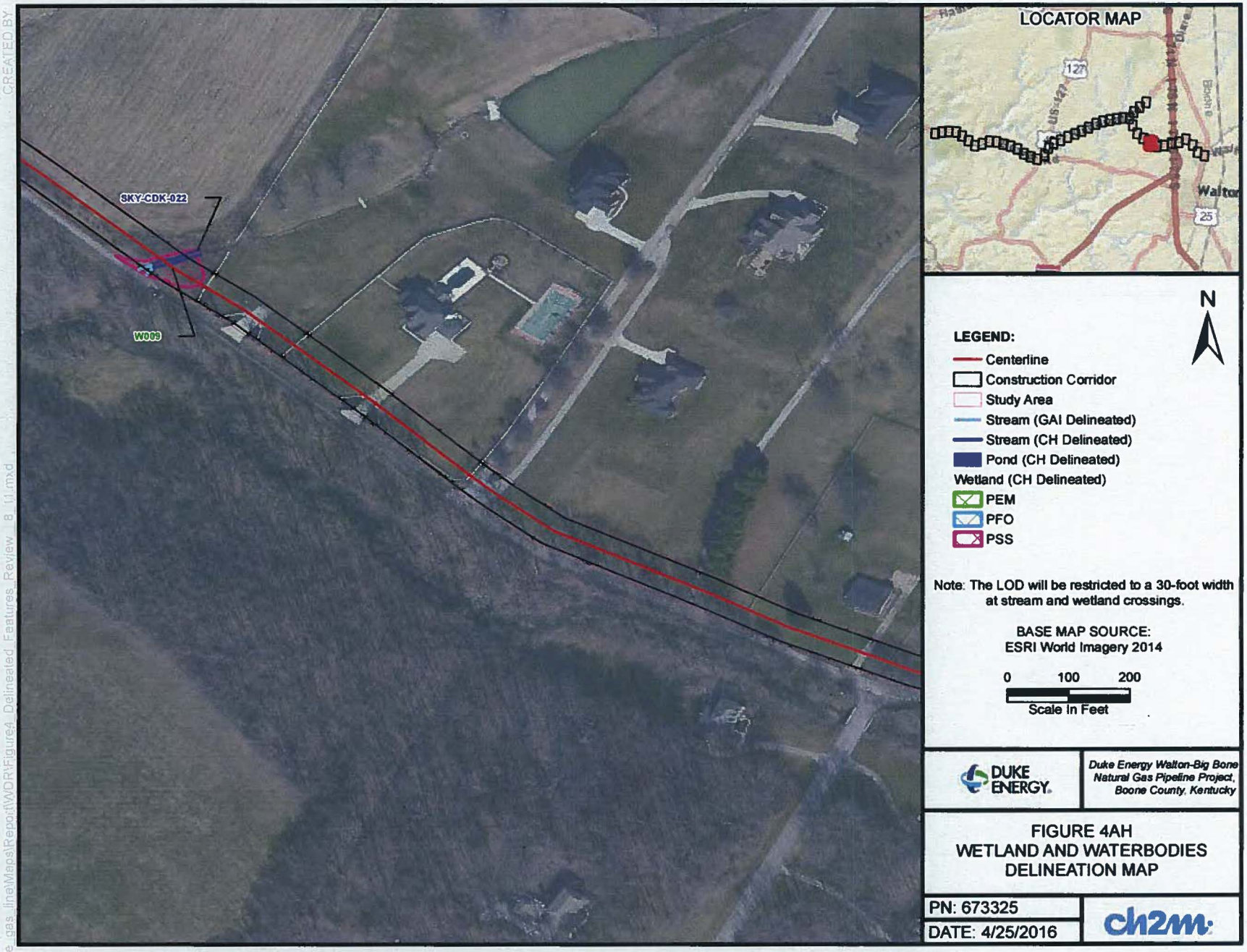
FIGURE 4AG
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m

CREATED BY:

3igBone_gas_lineMaps\Report\WDR\Figure4_Delineated_Features_Review_8_11.mxd


SKY-CDK-022
W009
LOCATOR MAP
127
US-127
Walton
25
N
LEGEND:
Centerline
Construction Corridor
Study Area
Stream (GAI Delineated)
Stream (CH Delineated)
Pond (CH Delineated)
Wetland (CH Delineated)
PEM
PFO
PSS
Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.
BASE MAP SOURCE:
ESRI World Imagery 2014
0
100
200
Scale in Feet
DUKE ENERGY.
Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky
FIGURE 4AH
WETLAND AND WATERBODIES DELINEATION MAP
PN: 673325
DATE: 4/25/2016
ch2m
CREATED BY:
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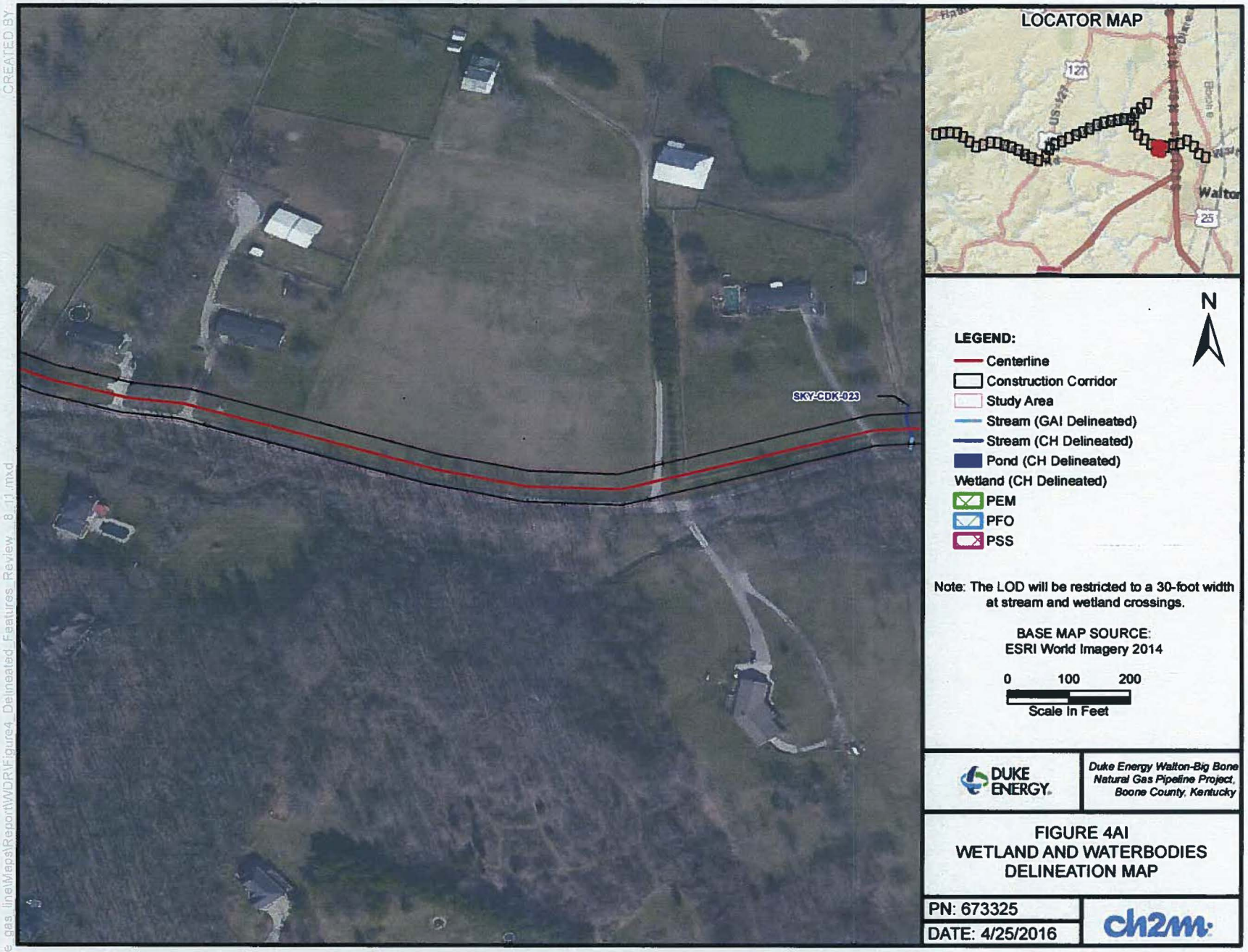
SKY-CDK-023
LOCATOR MAP
127
25
Walton
N
LEGEND:
Centerline
Construction Corridor
Study Area
Stream (GAI Delineated)
Stream (CH Delineated)
Pond (CH Delineated)
Wetland (CH Delineated)
PEM
PFO
PSS
Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.
BASE MAP SOURCE:
ESRI World Imagery 2014
0
100
200
Scale in Feet
DUKE ENERGY.
Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky
FIGURE 4AI
WETLAND AND WATERBODIES DELINEATION MAP
PN: 673325
DATE: 4/25/2016
ch2m
CREATED BY:
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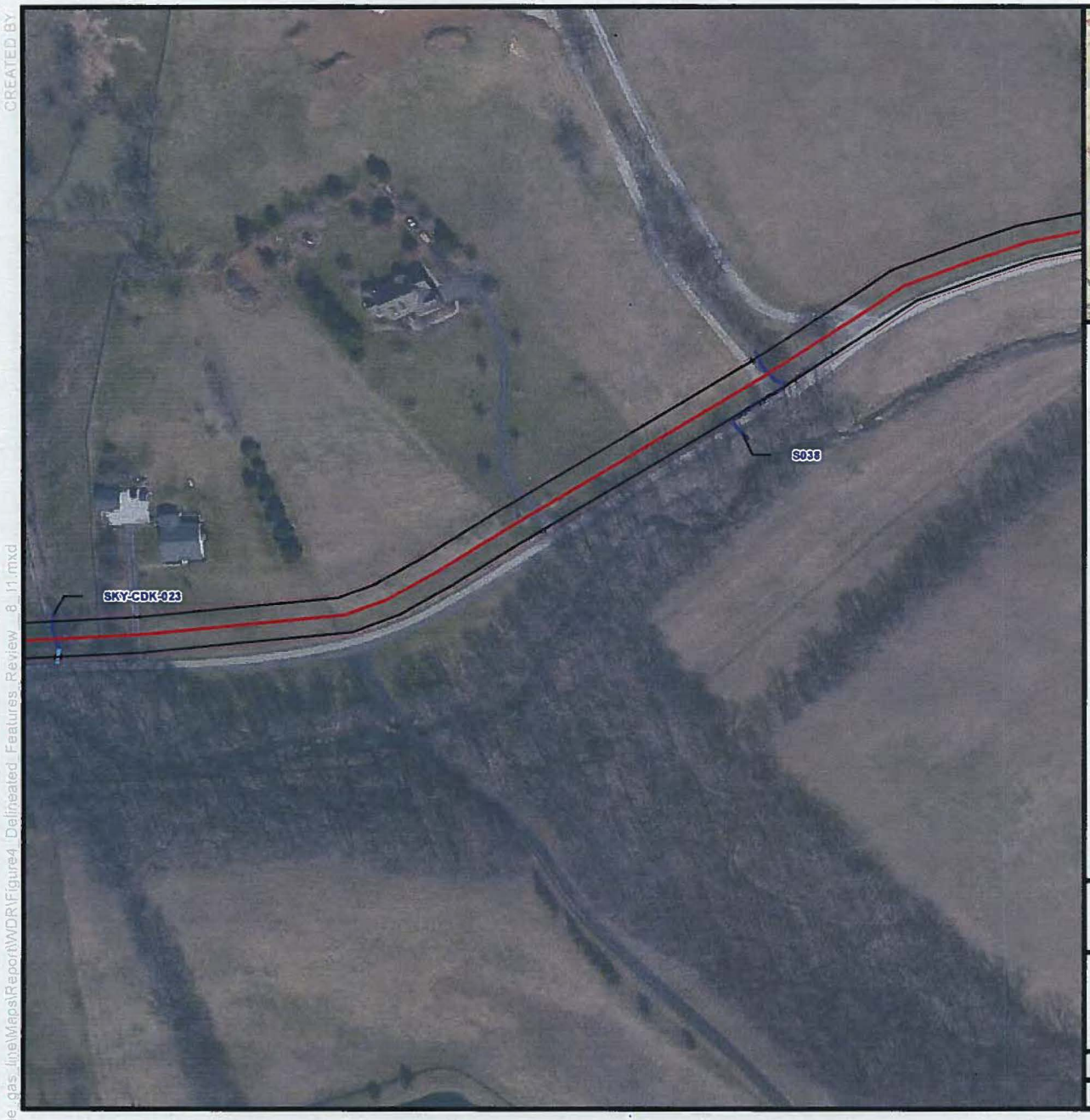

LOCATOR MAP

N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale in Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4AJ
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m

CREATED BY:

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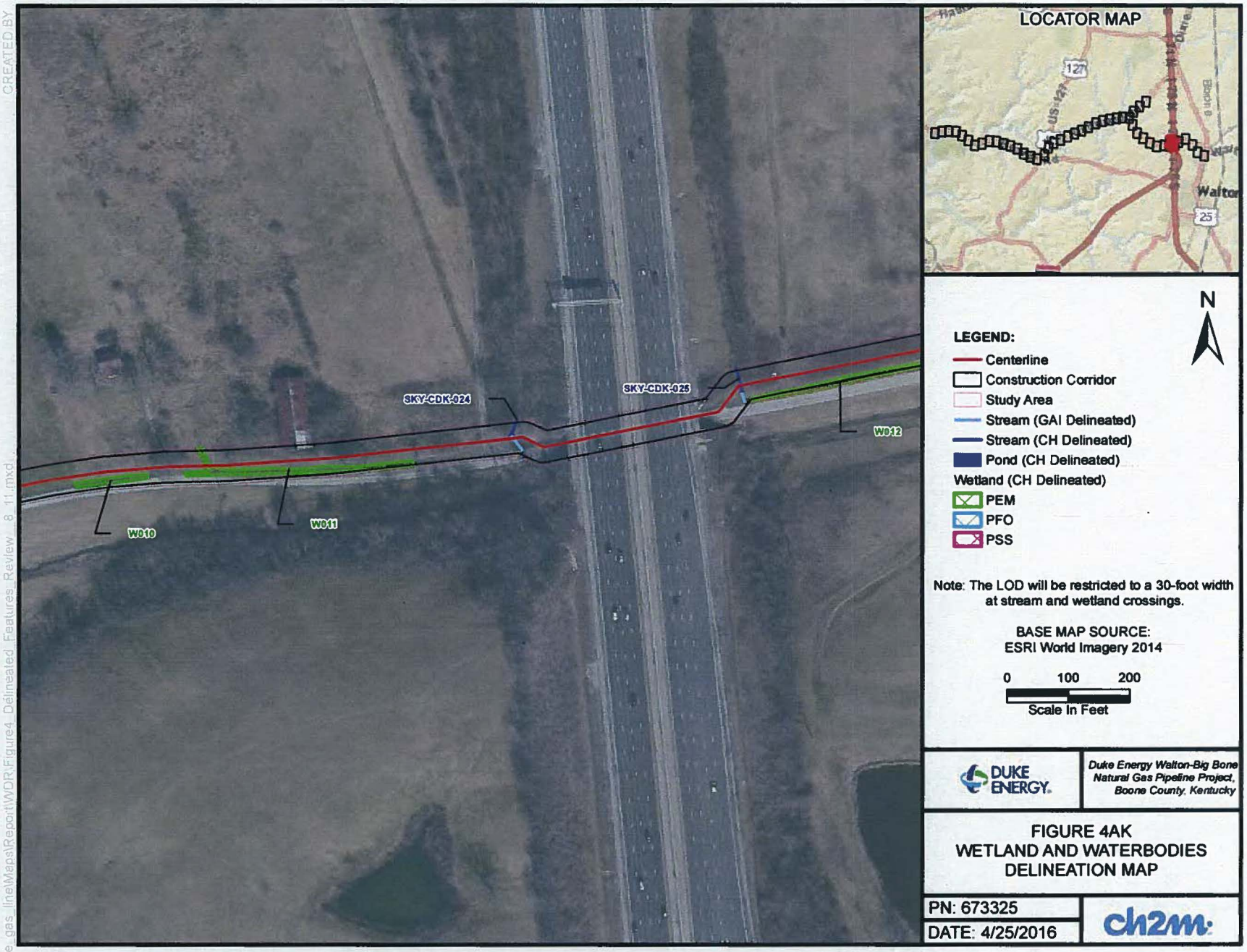

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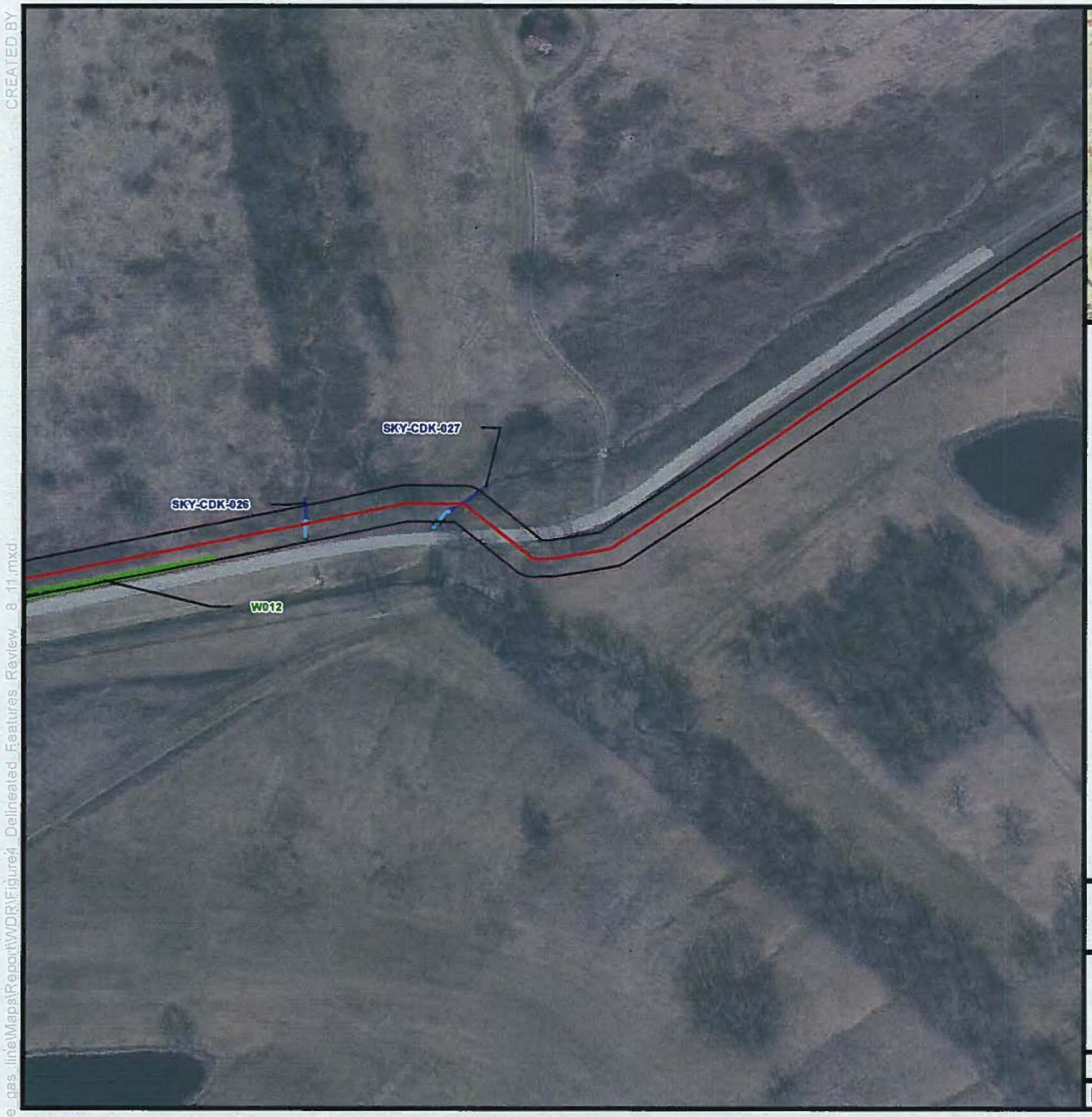
CONFIDENTIAL PROPRIETARY TRADE SECRET



N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale In Feet

DUKE ENERGY

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4AL
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m

CREATED BY
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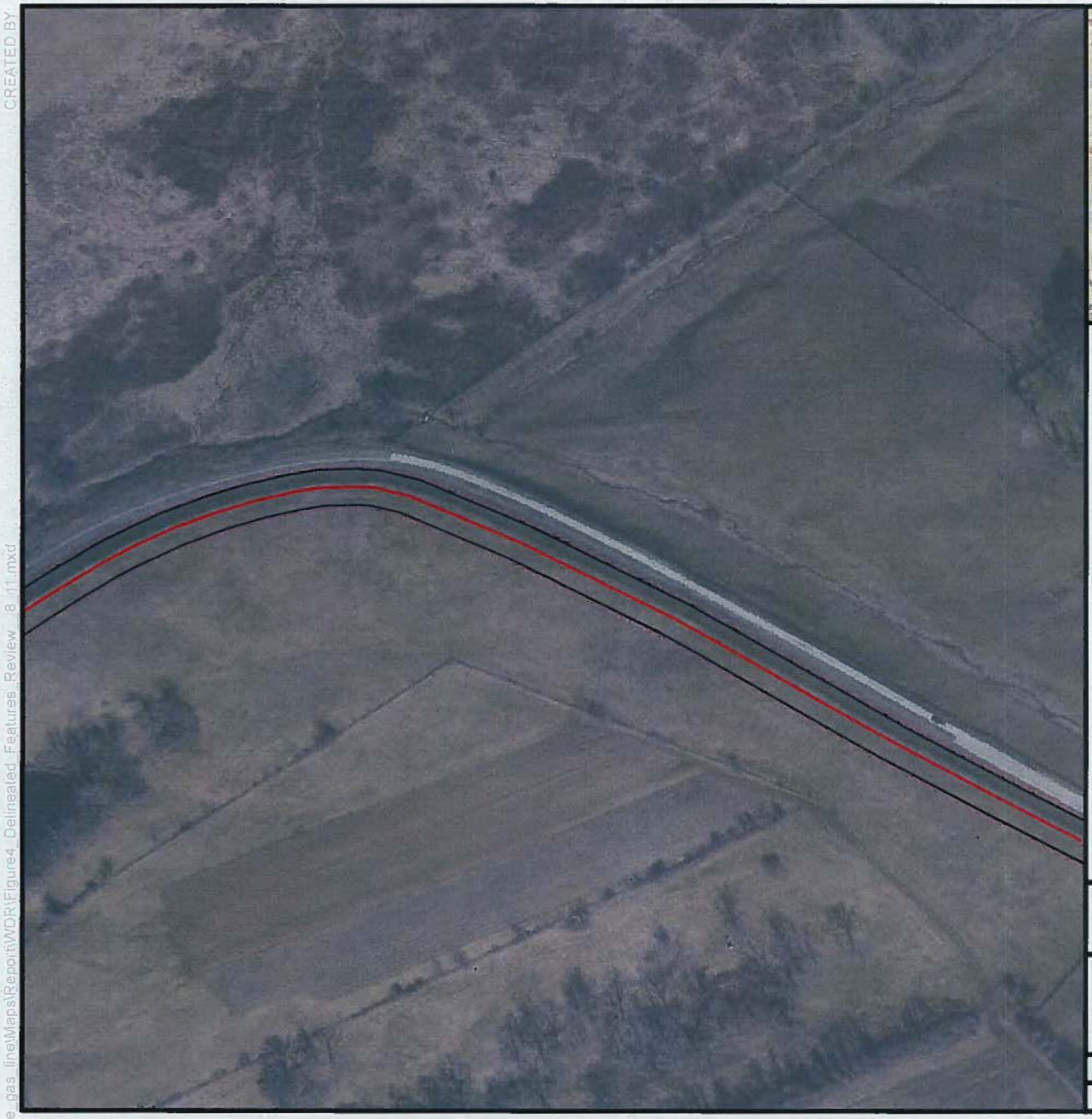


N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale in Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

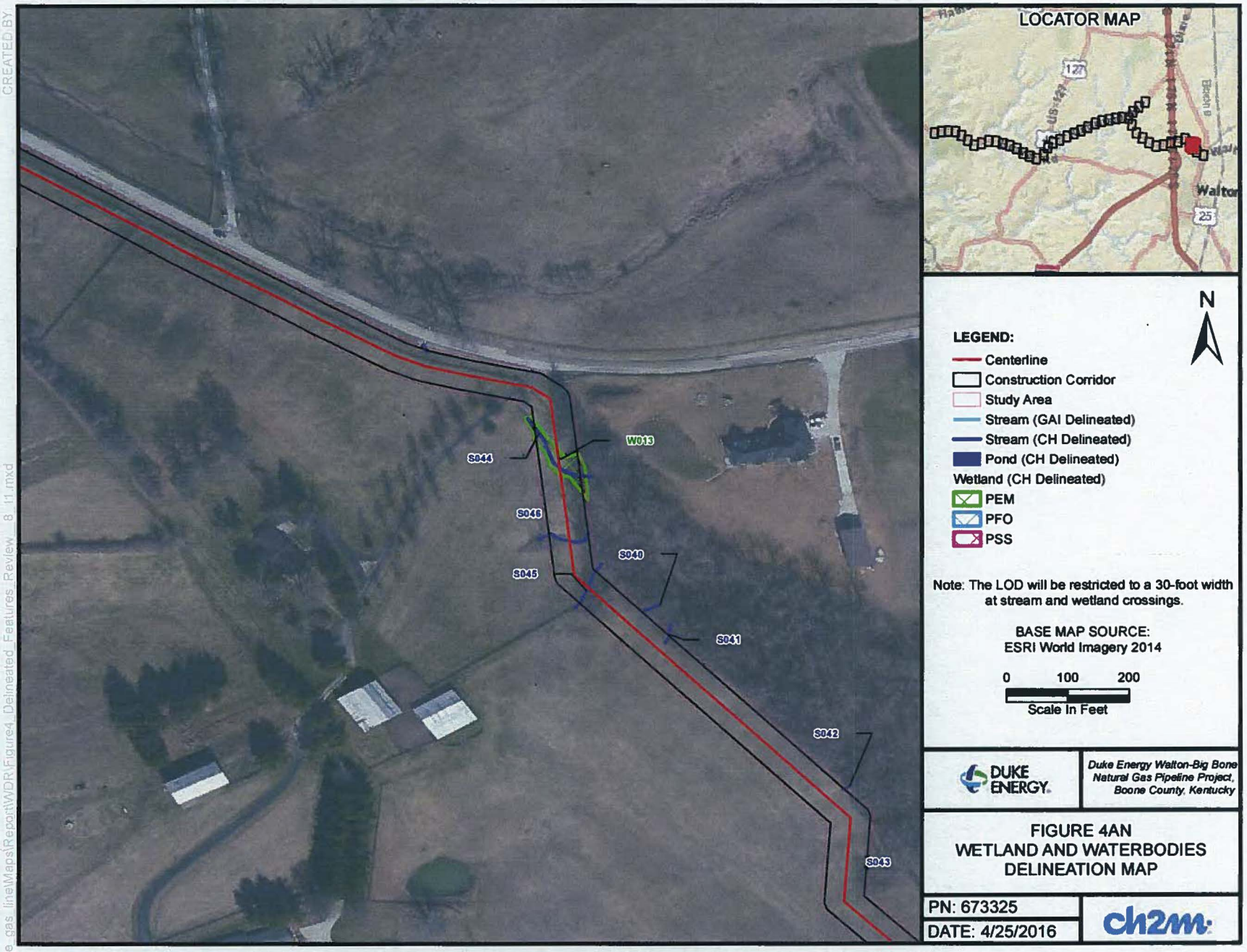
FIGURE 4AM
WETLAND AND WATERBODIES DELINEATION MAP

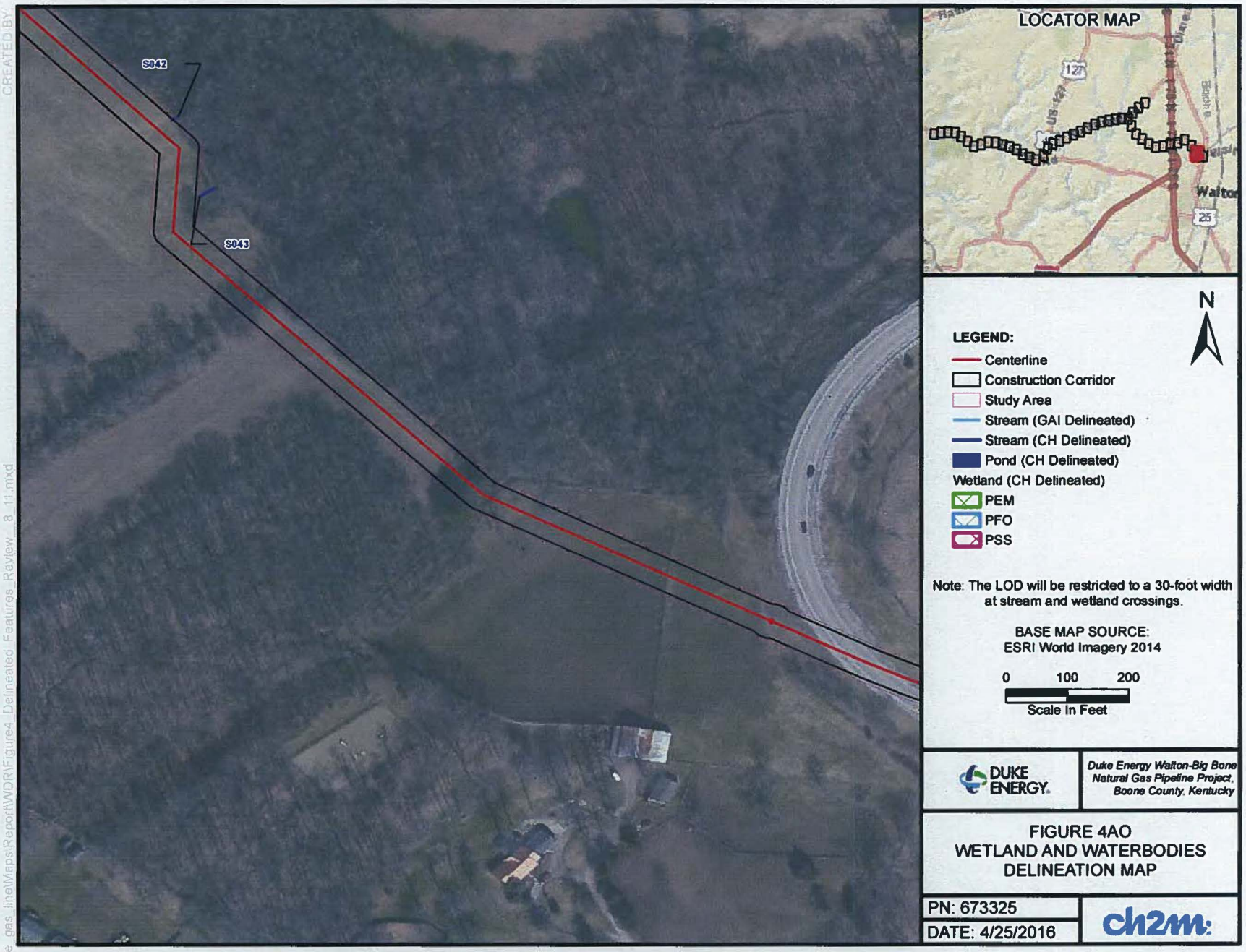
PN: 673325
DATE: 4/25/2016

ch2m.

CREATED BY:

3IgBone_gas_lineMapsReportWDR\Figure4_Delineated_Features_Review_8_11.mxd





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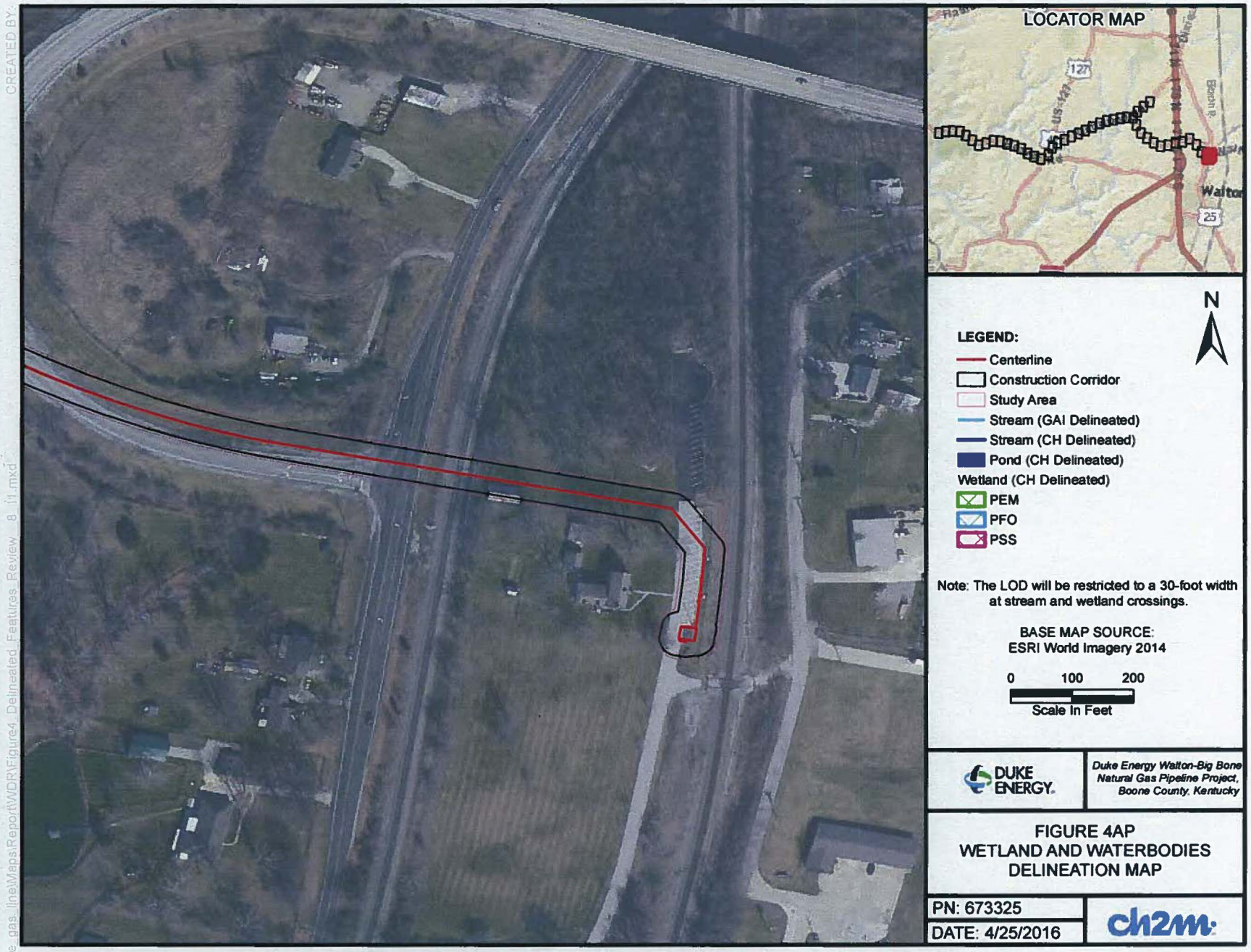

LOCATOR MAP
127
US-127
Walton
25
N
LEGEND:
Centerline
Construction Corridor
Study Area
Stream (GAI Delineated)
Stream (CH Delineated)
Pond (CH Delineated)
Wetland (CH Delineated)
PEM
PFO
PSS
Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.
BASE MAP SOURCE:
ESRI World Imagery 2014
0
100
200
Scale In Feet
DUKE ENERGY
Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky
FIGURE 4AP
WETLAND AND WATERBODIES DELINEATION MAP
PN: 673325
DATE: 4/25/2016
ch2m
CREATED BY:
3igBone_gas_lineMapsReportWDR\Figure4_Delineated_Features_Review_8_11.mxd

N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale in Feet

DUKE ENERGY.

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4AQ
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m.

CREATED BY:

3igBone_gas_lineMaps\Report\WDR\Figure4_Delineated_Features_Review_8_11.mxd

CONFIDENTIAL PROPRIETARY TRADE SECRET

N

LEGEND:

- Centerline
- Construction Corridor
- Study Area
- Stream (GAI Delineated)
- Stream (CH Delineated)
- Pond (CH Delineated)

Wetland (CH Delineated)

- PEM
- PFO
- PSS

Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.

BASE MAP SOURCE:
ESRI World Imagery 2014

0 100 200
Scale In Feet

DUKE ENERGY.

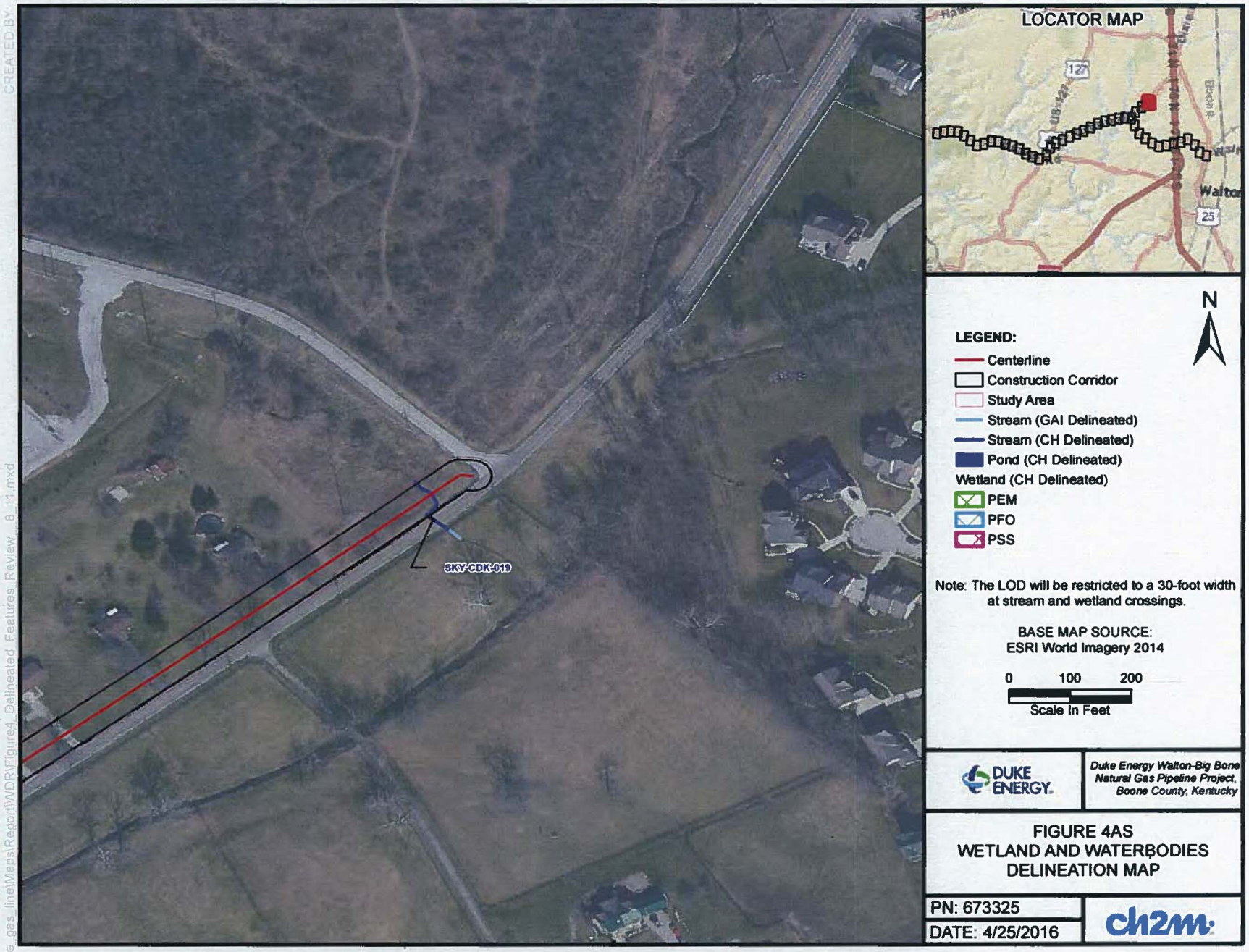
Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 4AR
WETLAND AND WATERBODIES DELINEATION MAP

PN: 673325
DATE: 4/25/2016

ch2m.

CREATED BY:
3igBone_gas_lineMaps\Report\WDR\Figure4_Delineated_Features_Review_8_11.mxd


LOCATOR MAP
127
US-127
Walton
25
SKY-CDK-019
N
LEGEND:
Centerline
Construction Corridor
Study Area
Stream (GAI Delineated)
Stream (CH Delineated)
Pond (CH Delineated)
Wetland (CH Delineated)
PEM
PFO
PSS
Note: The LOD will be restricted to a 30-foot width at stream and wetland crossings.
BASE MAP SOURCE:
ESRI World Imagery 2014
0
100
200
Scale in Feet
DUKE ENERGY.
Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky
FIGURE 4AS
WETLAND AND WATERBODIES DELINEATION MAP
PN: 673325
DATE: 4/25/2016
ch2m
CREATED BY:
3:\gBone_gas_lineMaps\Report\WDR\Figure4_Delineated_Features_Review_8_11.mxd

Appendix A
USACE Wetland Determination Field Datasheets

CONFIDENTIAL PROPRIETARY TRADE SECRET
DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton- Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/29/16
Applicant/Owner: Duke Energy State: Kentucky Sampling Point: W003-PEM
Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
Landform (hillslope, terrace, etc.): bottom land Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR or MLRA): LRR N Lat.: 38.88759 Long.: -84.742106 Datum: WGS 84
Soil Map Unit Name No-Nolin silt loam, 0 to 2 percent slopes, occasionally flooded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ____ (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Yes	**Is the sampled area within a wetland?** Yes
Hydric soil present?	Yes	W003-PEM
Wetland hydrology present?	Yes	

Remarks:

PEM / PSS/ PFO wetland located in Big Bone Lick State Park. Pit dug in PEM portion

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No	____	Depth (inches):	1
Water table present?	Yes	X	No	____	Depth (inches):	2
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET

VEGETATION - Use scientific names of plants

Sampling Point: W003-PEM

Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1	*Cyperus esculentus*	25	Y	FACW
2	*Lysimachia nummularia*	25	Y	FACW
3	*Epilobium coloratum*	20	Y	FACW
4	*Persicaria sagittata*	20	Y	OBL
5	*Rumex crispus*	5	N	FAC
6	*Solidago sp.*	5	N	
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100	= Total Cover	

Woody Vine Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	20	x 1 =	20
FACW species	70	x 2 =	140
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	95 (A)		175 (B)

Prevalence Index = B/A = 1.84

Hydrophytic Vegetation Indicators:

X Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

CONFIDENTIAL PROPRIETARY TRADE SECRET

SOIL **Sampling Point:** W003-PEM

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-18	10YR 4/2	80	10YR 5/6	20	C	PL/M	silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? ___Y___

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET

DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton- Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/29/16
Applicant/Owner: Duke Energy State: Kentucky Sampling Point: W003-PSS
Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
Landform (hillslope, terrace, etc.): bottom land Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR or MLRA): LRR N Lat.: 38.887415 Long.: -84.741682 Datum: WGS 84
Soil Map Unit Name LkB-Licking silt loam, 2 to 6 percent slopes NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No _____ (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation _____, soil _____, or hydrology _____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Yes	**Is the sampled area within a wetland?** Yes
Hydric soil present?	Yes	W003-PSS
Wetland hydrology present?	Yes	

Remarks:

PEM / PSS/ PFO wetland located in Big Bone Lick State Park. Pit dug in PSS portion

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No	___	Depth (inches):	1
Water table present?	Yes	X	No	___	Depth (inches):	2
Saturation present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET

VEGETATION - Use scientific names of plants

Sampling Point: W003-PSS

Tree Stratum (Plot Size (30 ft.))	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot Size (15 ft.))	Absolute % Cover	Dominant Species	Indicator Status
1 *Acer negundo*	85	Y	FAC
2 *Populus deltoides*	15	Y	FAC
3			
4			
5			
6			
7			
8			
9			
10			
	100 = Total Cover		

Herb Stratum (Plot Size (5 ft.))	Absolute % Cover	Dominant Species	Indicator Status
1 *Lysimachia nummularia*	20	Y	FACW
2 *Alliaria petiolata*	10	Y	FACU
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
	30 = Total Cover		

Woody Vine Stratum (Plot Size (30 ft.))	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0 = Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	20	50
Herb Stratum	6	15
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	100	x 3 =	300
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column totals	130 (A)		380 (B)

Prevalence Index = B/A = 2.92

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** W003-PSS

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-18	10YR 5/2	90	10YR 5/4	10	C	PL/M	silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET

DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/29/16
Applicant/Owner: Duke Energy State: Kentucky Sampling Point: W003-PFO
Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
Landform (hillslope, terrace, etc.): bottom land Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR or MLRA): LRR N Lat.: 38.886972 Long.: -84.740982 Datum: WGS 84
Soil Map Unit Name: No- Nolin silt loam, 0 to 2 percent slopes, occasionally flooded NWI Classification: PFO1A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No _____ (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation _____, soil _____, or hydrology _____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Yes	**Is the sampled area within a wetland?** Yes
Hydric soil present?	Yes	W003-PFO
Wetland hydrology present?	Yes	

Remarks:

PEM / PSS/ PFO wetland located in Big Bone Lick State Park. Pit dug in PFO portion

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No	___	Depth (inches):	1
Water table present?	Yes	X	No	___	Depth (inches):	2
Saturation present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: