Spire STL Pipeline Project

Resource Report 8
Land Use, Recreation and Aesthetics

FERC Docket No. CP17-40-_ _ _

Amendment to FERC Application
April 2017

Public

RESOURCE REPORT 8 - LAND USE, RECREATION AND AESTHETICS	
SUMMARY OF FILING INFORMATION	
Information	**Found in**
1. Classify and quantify land use affected by: Title 18 Code of Federal Regulations (CFR) section (§) 380.12(j)(1) a. Pipeline construction and permanent rights-of-way; b. Extra work/staging areas; c. Access roads; d. Pipe and contractor yards; and e. aboveground facilities.	Sections 8.1 and 8.1.2; Tables 8.1-1, 8.1-2, 8.1-4, and 8.1-5.
2. Identify by milepost all locations where the pipeline right-of-way would at least partially coincide with existing rights-of-way, where it would be adjacent to existing rights-of-way, and where it would be outside of existing rights-of-way - 18 CFR § 380.12(j)(1).	Section 8.1.1.2 and Table 8.1-3.
3. Provide detailed typical construction right-of-way cross section diagrams showing information such as widths and relative locations of existing rights-of-way, new permanent right-of-way and temporary construction right-of-way - 18 CFR - § 380.12(j)(1).	Appendix 8-A.
4. Summarize the total acreage of land affected by construction and operation of the project - 18 CFR § 380.12(j)(1).	Section 8.1 and Tables 8.1-1 and 8.1-2.
5. Identify by milepost all planned residential or commercial/business development and the timeframe for construction - 18 CFR § 380.12(j)(4).	Section 8.2.1.
6. Identify by milepost special land uses (e.g., maple sugar stands, specialty crops, natural areas, national and state forests, conservation land, etc.) - 18 CFR § 380.12(j)(4).	Section 8.3.
7. Identify by beginning milepost and length of crossing all land administered by federal, state, or local agencies, or private conservation organizations - 18 CFR § 380.12(j)(4).	Table 8.3-2.
8. Identify by milepost all natural, recreational, or scenic areas, and all registered natural landmarks crossed by the project - 18 CFR § 380.12(j)(4 & 6).	Table 8.3.2.

RESOURCE REPORT 8 - LAND USE, RECREATION AND AESTHETICS	
SUMMARY OF FILING INFORMATION	
Information	**Found in**
9. Identify all facilities that would be within designated coastal zone management areas - 18 CFR § 380.12(j)(4).	Section 8.5.
10. Identify by milepost all residences that would be within 50 feet of the construction right-of-way or extra work area - 18 CFR § 380.12(j)(5).	Table 8.2-1.
11. Identify all designated or proposed candidate National or State Wild and Scenic Rivers crossed by the project - 18 CFR - § 380.12(j)(6).	Section 8.3.1.
12. Describe any measures to visually screen aboveground facilities, such as compressor stations - 18 CFR § 380.12(j)(11).	Section 8.6.
13. Demonstrate that applications for rights-of-way or other proposed land use have been or soon will be filed with federal land-managing agencies with jurisdiction over land that would be affected by the project - 18 CFR § 380.12(j)(12).	Section 8.7.
INFORMATION RECOMMENDED OR OFTEN MISSING	
1. Identify all buildings within 50 feet of the construction right-of-way or extra work areas.	Table 8.2-1.
2. Describe the management and use of all public lands that would be crossed.	Section 8.3.
3 Provide a list of landowners by milepost or tract number that corresponds to information on alignment sheets.	Resource Report 1, Appendix 1-G.
4. Provide a site-specific construction plan for residences within 25 feet of construction or as requested by Federal Energy Regulatory Commission staff.	Appendix 8-C.

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Tables

Appendices

Acronyms and Abbreviations

AIMA	Agricultural Impact Mitigation Agreement
ATWS	additional temporary workspace
CFR	Code of Federal Regulations
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
E&SCP	Erosion and Sediment Control Plan
Enable MRT	Enable Mississippi River Transmission LLC
FERC	Federal Energy Regulatory Commission
FSA	Farm Service Agency
FUSRAP	Formerly Utilized Sites Remedial Action Program
HDD	horizontal directional drill
IDNR	Illinois Department of Natural Resources
IHPA	Illinois Historic Preservation Agency
M&R	metering and regulating
MDOC	Missouri Department of Conservation
MLV	mainline valve
MP	milepost
NRCS	Natural Resources Conservation Service
PAR	permanent access road
PEM	Palustrine Emergent
PFO	Palustrine Forested
Plan	FERC's Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	FERC's Wetland and Waterbody Construction and Mitigation Procedures
Project	Spire STL Pipeline Project
PSS	Palustrine Scrub Shrub
REX	Rockies Express Pipeline LLC
Spire	Spire STL Pipeline LLC
TAR	temporary access road

TWS	temporary workspace
USEPA	United States Environmental Protection Agency
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

Land Use, Recreation, and Aesthetics

This resource report addresses the land that will be affected by the construction and operation of the Spire STL Pipeline LLC ("Spire") Spire STL Pipeline Project ("Project"), including temporary construction right-of-way, permanent easement, additional temporary workspace ("ATWS"), temporary and permanent access roads, staging areas, and aboveground facilities. In addition to quantifying and summarizing affected land, this report identifies public lands and designated recreation or other special use areas affected by the Project. It also provides summaries of consultations with federal and state agencies regarding land uses and discusses specialized construction techniques and mitigation that will be utilized to minimize impacts during construction and operation.

8.1 Land Use

Land use within the Project area was based on interpretation of recently flown aerial photography in 2016 and supplemented with field reconnaissance during the environmental resources investigations which were initiated in September 2016 within areas of accessible properties. Resource Report 3, Section 3.3 Vegetation provides detailed descriptions of the vegetation cover types crossed by the Project.

The Project will cross land use categories including agricultural lands, forest, open land, developed, and open water. Descriptions of each type of land use category traversed by the Project are provided below. Waterbodies less than 10 feet wide were classified within the land use categories which surrounded them (agriculture and open land). Linear mileage and percentage of cover type crossed per each identified land use type is summarized in Table 8.1-1.

Land use types are characterized as:

- Agricultural Land - Cultivated or rotated cropland or hay fields and pastureland;
- Open Land - Non-forested lands used for open space;
- Forest/Woodland - Tracts of upland forest or woodland that would be removed for the construction right-of-way or ATWS;
- Developed Land/Industrial areas - include paved or named roads, railroads, and associated easements, transportation rights-of-way, commercial areas, residential yards, and residential subdivisions. Unpaved roads were classified under their surrounding land use category;
- Wetland - wetlands classified as emergent, forested, and/or scrub shrub; and
- Open Water - Water crossings greater than 10 feet.

Table 8.1-1. Land Crossed by the Pipelines

County, State	Agriculture		Open Land		Forest		Developed[1]		Wetland		Open Water		Total	
	Miles	Percent	Miles	Percent	Miles	Percent	Miles	Percent	Miles	Percent	Miles	Percent	Miles	Percent
24-Inch Pipeline														
Scott County, Illinois	2.89	76.30	0.31	8.28	0.51	13.39	0.05	1.22	0.02	0.62	0.01	0.20	3.78	100
Greene County, Illinois	23.62	91.53	1.12	4.35	0.62	2.39	0.15	0.59	0.24	0.92	0.06	0.23	25.81	100
Jersey County, Illinois	13.30	82.65	0.84	5.21	1.53	9.49	0.09	0.53	0.05	0.32	0.29	1.79	16.09	100
St. Charles County, Missouri	10.82	84.81	0.05	0.39	0.19	1.49	0.16	1.24	0.81	6.34	0.73	5.73	12.76	100
St. Louis County, Missouri	<0.01	0.61	0.05	7.41	0.12	16.98	0.38	52.56	0.01	1.58	0.15	20.86	0.72	100
Subtotals[2]	50.63	85.58	2.38	4.02	2.96	5.01	0.82	1.39	1.13	1.92	1.24	2.09	59.16	100
North County Extension														
St. Louis County, Missouri	2.43	40.32	0.79	13.08	2.02	33.53	0.47	7.72	0.27	4.52	0.05	0.83	6.03	100
Totals[2]	**53.06**	**81.39**	**3.17**	**4.86**	**4.98**	**7.65**	**1.29**	**1.98**	**1.41**	**2.16**	**1.29**	**1.97**	**65.19**	**100**

Notes:

[1] Developed land is characterized as existing rights-of-way, commercial/industrial and residential land.

[2] May not equal the sum of the column due to rounding.

Agricultural Land

The majority of the Project route traverses agricultural land, including areas that are regularly cultivated and used to grow row crops. The primary crops observed during field reconnaissance in the environmental survey area were corn (*Zea mays*) and soybeans (*Glycine max*). Table 8.1-1 summarizes the total acreage of agricultural land anticipated to be impacted during construction and operation of the Project. With the exception of areas where permanent aboveground facilities will be constructed, agricultural land affected by the Project will be restored to its original use, including the permanent pipeline easement. Spire proposes five feet of cover in agricultural lands.

Spire will minimize adverse impacts on agricultural land by completing work in accordance with FERC's Upland Erosion Control, Revegetation and Maintenance Plan ("Plan") and the Agricultural Impact Mitigation Agreement ("AIMA") which was developed in coordination with the Illinois Department of Agriculture for the portion of the Project in Illinois. Spire has provided an executed AIMA in Resource Report 7, Appendix 7-C Agricultural Impact Mitigation Agreement.

In order to avoid and minimize affects to topsoil, Spire proposes to perform topsoil segregation in active croplands across the entire length of the construction right-of-way. Spire has included 25 feet of ATWS in agricultural lands in order to complete topsoil segregation activities. A minimum of 12 inches of topsoil will be segregated in deep soils, and the entire topsoil layer, where possible, will be segregated in soils with less than 12 inches of topsoil. It is anticipated that Spire will encounter greater than 12 inches of topsoil in Illinois, which will be determined during construction by a qualified soil scientist per the AIMA. The topsoil and subsoil will be temporarily stockpiled in separate windrows on the construction right-of-way.

During the course of easement negotiations, Spire will work with landowners to locate areas known to have existing drain tiles or irrigation systems. If drain tiles or irrigation systems are damaged by construction of the pipeline, Spire will work with the landowner to repair or replace those damaged sections in accordance with the FERC Plan for the entire Project and the Plan and AIMA for Illinois portions of the Project. Agricultural land will be returned to its original contour to maintain pre-construction hydrology. Should construction result in any new draining or ponding issues, Spire will work directly with the landowners to address the issues.

Within agricultural lands crossed by the Project, Spire will negotiate with and reimburse landowners for damages or loss to their productivity as a result of the construction of the proposed Project. The reimbursement to these landowners will be based on the market prices for the specific crops at the time of easement negotiations with each affected landowner. Additionally, Spire will coordinate with landowners to accommodate farm access during construction of the Project.

Spire has coordinated with landowners who will be directly affected by Project construction. Landowners who have made specific construction requests such as relocation of animals or contractor access into the properties are being tracked by Spire and will be accommodated by Spire and its contractors during construction. Spire will continue working with landowners throughout the easement negotiation process to ensure landowner request have been discussed and implemented.

Forest/Woodland

Table 8.1-1 summarizes the total acreage of forest/woodland anticipated to be impacted during construction and operation of the Project. The forested habitat observed during field reconnaissance included bottomland forest (riparian forested areas bordering waterbodies). The largest span of forested tracts along the north and south sides of the Mississippi River will be colocated with an existing pipeline corridor therefore minimizing impacts to forest land. Temporary workspace ("TWS") will be cleared in the locations of the horizontal directional drill ("HDD") entry/exit locations; however, no clearing will occur between the entry and exit points of crossing.

Temporary areas that are cleared for construction within the workspace boundaries will be restored and allowed to revert back to forest after construction is complete. Uplands within the permanent easement that are currently forested will be maintained in an herbaceous state without trees to facilitate the operation of the Project facilities.

Open Land

Open land is defined as non-forested lands used for open space. During field reconnaissance of the Project, this was observed to be mostly grassy, mowed, and maintained areas and spaces between agricultural fields and roads or areas actively maintained in scrub-shrub herbaceous vegetation. Table 8.1-1 summarizes the total acreage of open land anticipated to be impacted during construction and operation of the Project. Open land affected by the Project will be returned to its original use upon completion of the Project.

Developed Land

Developed land includes industrial/commercial lands, roadways and associated easements, transportation rights-of-way, railroads, and residential lands and subdivisions. Disturbed areas such as these are typically devoid of undisturbed vegetation or consist of impervious surfaces.

Impact minimization measures used in commercial/industrial areas will include timing of construction to avoid peak use periods, maintaining access to businesses at all times, and expediting construction through these areas. Spire will coordinate directly with affected commercial/industrial landowners on an individual basis to further reduce potential adverse impacts.

A list of roads and railroads crossed by the Project is provided in Table 1.3-2 in Resource Report 1, General Project Description. Roads crossed by the Project range from maintained gravel municipal roads to state highways. Potential temporary impacts associated with roadway crossings include disruption of traffic flows, disturbance of existing underground utilities, and hindrance of emergency vehicle access. The majority of the roads are public and will be crossed via conventional bore; smaller private roads will be crossed by open cut methodologies. Spire will ensure that construction activities will not pose a traffic concern and will create temporary travel lanes during construction.

The proposed 24-inch pipeline crosses the Kansas City Southern Railway and the Burlington Northern & Santa Fe Railroad. The North County Extension crosses the Burlington Northern & Santa Fe Railroad. Each railroad along the 24-inch pipeline route will be crossed via conventional bore. The North County Extension's crossing of the Burlington Northern & Santa Fe Railroad will be crossed via HDD as part of the Coldwater Creek crossing. The use of conventional bore and HDD will avoid impacts on the normal operation of the active railroads during

construction and operation of the proposed Project. For safety purposes, Spire will consider the specific requirements of each railroad company when designing and constructing each railroad crossing.

Residential land is developed land that includes both single and multiple family dwellings, and may contain developed subdivisions. Vegetation cover in residential lands generally consists of mowed lawns and landscaped areas. Impacts on residential areas and a discussion of the mitigation measures that will be implemented during construction to minimize these impacts is discussed in Section 8.2, Residential Areas.

Wetland

Wetland includes wetlands classified as palustrine forested ("PFO"), palustrine scrub-shrub ("PSS") and palustrine emergent ("PEM"). Wetland acreages were based on data collected during the stream and wetland identification surveys initiated in September 2016 where landowner permissions had been granted. Table 8.1-1 summarizes the total acreage of wetland anticipated to be impacted during construction and operation of the Project. Direct impacts to some wetlands will be avoided by the trenchless crossings of the Mississippi and Missouri Rivers, as specified in Table 2.3-1 of Resource Report 2, Water Use and Quality.

In locations of wetlands outside of cultivated lands, Spire will reduce its construction right-of-way width to 75 feet, where possible, in order to minimize the acreage of clearing that will be required for the Project. Exceptions have been requested in Appendix 1-D of Resource Report 1, General Project Description. Operational impacts reported in Table 8.1-2 reflect the acreage of wetland within the permanent easement for the Project. PEM wetlands are not anticipated to be permanently impacted by Project activities as these wetlands will revert back to the same type following construction. In accordance with the FERC's Wetland and Waterbody Construction and Mitigation Procedures ("Procedures"), Spire will maintain a ten-foot wide corridor through wetlands which will permanently convert PSS and PFO wetlands to an emergent state. Spire will also selectively remove trees within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating.

Open Water

Open water includes lakes, ponds, and waterbodies greater than 10 feet wide. Table 8.1-1 summarizes the total acreage of open water anticipated to be impacted during construction and operation of the Project.

Spire intends to implement the FERC's Procedures as a minimum standard for crossing and restoring waterbodies affected by the Project. Spire proposes to limit waterbody impacts by reducing the crossing width to 75 feet in these areas. The Mississippi and Missouri Rivers, Coldwater Creek, Spanish Lake Park and associated waters/wetlands will be crossed via HDD and will not result in direct impacts on these waterbodies and wetlands. Open water impacted during operation will not result in a change of land use designation.

During construction, Spire will implement best management practices and adhere to the FERC Procedures to minimize impacts on open water resources and minimize erosion and sediment run off. Following the completion of construction activities, open water areas will be restored to pre-construction conditions. Additional information regarding waterbody crossing methods and impacts is provided in Section 2.2 of Resource Report 2, Water Use and Quality.

Four perennial streams/rivers, two lakes, and one pond crossed by the Project were identified as 100 feet wide or greater and will be crossed by the HDD method, including: the Mississippi River, Luesse Lake, Missouri River, an oxbow of the Missouri River, Coldwater Creek, Sunfish Lake at Spanish Lake Park, and an unnamed pond at Spanish Lake Park. These HDDs will allow for trenchless construction across the waterbodies and will eliminate planned impacts from construction activities within the waterbodies. Macoupin Creek is the only waterbody feature at or greater than 100 feet wide proposed as an open cut crossing; the crossing is discussed further in Resource Report 2, Section 2.2 Surface Water Resources.

The acreages of land affected by construction and operation of the Project workspaces by land use category is provided in Table 8.1-2. Construction impacts include all areas of disturbance, including TWS, permanent easement, ATWS, access roads, and staging areas. Typical construction right-of-way cross-section diagrams are provided in Appendix 8-A.

8.1.1 Pipeline Facilities

8.1.1.1 Construction and Permanent Rights-of-Way

Construction of the Project will require the acquisition of new permanent easements necessary for operation of the pipeline, as well as the TWS and ATWS necessary for construction of the pipeline. Land uses were tabulated for the Project's pipeline facilities by calculating each land use category crossed by the 24-inch pipeline and the North County Extension workspaces. A summary table showing the mileages by land use category is provided in Table 8.1-1.

The typical construction right-of-way width for the 24-inch pipeline and the North County Extension in non-agricultural upland areas will be 90 feet and will consist of 50 feet of permanent easement and 40 feet of TWS. Spire proposes to increase its typical construction workspace configuration by 25 feet to a total of 115 feet in agricultural areas to allow for full right-of-way topsoil segregation. Workspace in waterbodies and wetlands will be generally reduced to 75 feet to minimize impacts.

Table 8.1-2. Acreage Affected by Construction and Operation of the Project

Facility ID (County, State)[1]	Agriculture		Open Land		Forest		Developed		Wetland		Open Water		Total	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.[2]	Oper.[3]
24-Inch Pipeline														
Pipeline														
Scott County, Illinois	31.34	17.4	3.4	1.88	5.52	3.17	0.58	0.28	0.21	0.14	0.08	0.05	41.13	22.92
Greene County, Illinois	257	143.13	12.29	6.8	6.85	3.7	1.73	0.98	2.45	1.45	0.55	0.36	280.87	156.42
Jersey County, Illinois	144.41	80.23	9.12	5.57	17.06	9.12	0.87	0.52	0.57	0.33	1.8	1.74	173.82	97.53
St. Charles County, Missouri	118.62	65.51	0.86	0.65	1.28	1.16	1.75	0.99	6.47	4.59	4.5	4.44	133.49	77.34
St. Louis County, Missouri	0.05	0.05	0.58	0.33	1.43	0.83	3.64	2.31	0.06	0.04	0.91	0.91	6.67	4.47
Subtotals[4]	**551.42**	**306.32**	**26.25**	**15.23**	**32.13**	**17.98**	**8.57**	**5.09**	**9.76**	**6.55**	**7.84**	**7.51**	**635.97**	**358.67**
ATWS														
Scott County, Illinois	10.56	0.00	1.11	0.00	0.74	0.00	0.08	0.00	0.00	0.00	0.00	0.00	12.48	0.00
Greene County, Illinois	82.88	0.00	3.66	0.00	0.59	0.00	0.33	0.00	0.00	0.00	0.00	0.00	87.46	0.00
Jersey County, Illinois	44.33	0.00	2.33	0.00	2.46	0.00	0.13	0.00	0.00	0.00	0.03	0.00	49.28	0.00
St. Charles County, Missouri	54.54	0.00	0.22	0.00	0.05	0.00	0.50	0.00	1.04	0.00	0.00	0.00	56.35	0.00
St. Louis County, Missouri	2.06	0.00	0.24	0.00	0.23	0.00	1.37	0.00	0.01	0.00	0.00	0.00	3.92	0.00
Subtotals[4]	**194.36**	**0.00**	**7.57**	**0.00**	**4.07**	**0.00**	**2.40**	**0.00**	**1.05**	**0.00**	**0.03**	**0.00**	**209.49**	**0.00**
Cathodic Protection														
Greene County, Illinois	0.68	0.44	0.39	0.26	0.00	0.00	0.06	0.06	0.00	0.00	0.00	0.00	1.12	0.76
Jersey County, Illinois	0.41	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.27
St. Charles County, Missouri	0.41	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.28
Subtotals[4]	**1.50**	**1.00**	**0.39**	**0.26**	**0.00**	**0.00**	**0.06**	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**1.95**	**1.31**

Table 8.1-2. Acreage Affected by Construction and Operation of the Project (Continued)

Facility ID (County, State)[1]	Agriculture		Open Land		Forest		Developed		Wetland		Open Water		Total	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.[2]	Oper.[3]
Access Roads														
Scott County, Illinois	0.08	0.00	0.49	0.09	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.73	0.10
Greene County, Illinois	1.34	0.00	2.65	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16	0.00
Jersey County, Illinois	1.04	0.00	2.91	0.03	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.53	0.03
St. Charles County, Missouri	0.89	0.48	1.23	0.91	0.12	0.12	0.82	0.78	0.00	0.00	0.00	0.00	3.06	2.29
St. Louis County, Missouri	0.00	0.00	0.00	0.00	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	2.13	0.00
Subtotals[4]	**3.35**	**0.48**	**7.28**	**1.03**	**0.86**	**0.12**	**3.12**	**0.78**	**0.00**	**0.00**	**0.00**	**0.00**	**14.61**	**2.42**
Subtotals for 24-Inch Pipeline[4]	**750.64**	**307.80**	**41.48**	**16.52**	**37.07**	**18.10**	**14.14**	**5.92**	**10.81**	**6.55**	**7.87**	**7.51**	**862.01**	**362.40**
North County Extension														
Pipeline														
St. Louis County, Missouri	25.63	13.90	7.34	4.72	19.90	13.15	4.33	2.85	1.83	1.58	0.37	0.34	59.41	36.54
ATWS														
St. Louis County, Missouri	24.72	0.00	1.31	0.00	3.43	0.00	0.79	0.00	0.01	0.00	0.00	0.00	30.25	0.00
Cathodic Protection														
St. Louis County, Missouri	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.30	0.00	0.00	0.00	0.00	0.45	0.30
Access Roads														
St. Louis County, Missouri	0.00	0.00	0.02	0.00	0.09	0.00	2.24	0.00	0.00	0.00	0.00	0.00	2.35	0.00
Subtotals for North County Extension[4]	**50.35**	**13.90**	**8.67**	**4.72**	**23.43**	**13.15**	**7.80**	**3.14**	**1.85**	**1.58**	**0.37**	**0.34**	**92.47**	**36.83**
Aboveground Facilities														
Rex Receipt Station														
Scott County, Illinois	5.00	5.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.02	5.02

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Table 8.1-2. Acreage Affected by Construction and Operation of the Project (Continued)

Facility ID (County, State)[1]	Agriculture		Open Land		Forest		Developed		Wetland		Open Water		Total	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.[2]	Oper.[3]
Laclede/Lange Delivery Station														
St. Louis County, Missouri	3.61	3.61	0.00	0.00	0.34	0.34	0.03	0.03	0.00	0.00	0.00	0.00	3.99	3.99
Chain of Rocks Station														
St. Louis County, Missouri	0.00	0.00	1.94	1.93	3.78	3.29	1.79	1.74	0.00	0.00	0.00	0.00	7.51	6.97
Subtotals for Aboveground Facilities[4]	**8.62**	**8.62**	**1.96**	**1.95**	**4.13**	**3.64**	**1.82**	**1.78**	**0.00**	**0.00**	**0.00**	**0.00**	**16.52**	**15.98**
Staging Areas														
Scott County, Illinois	27.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.82	0.00
Jersey County, Illinois	0.00	0.00	2.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.83	0.00
St. Charles County, Missouri	2.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.87	0.00
Subtotals for Staging Areas[4]	**30.70**	**0.00**	**2.83**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**33.53**	**0.00**
Totals[4,5]	**840.30**	**330.31**	**54.94**	**23.19**	**64.63**	**34.89**	**23.77**	**10.85**	**12.65**	**8.13**	**8.24**	**7.85**	**1,004.53**	**415.22**
Acreage Affected in Illinois	606.89	246.48	41.19	14.66	33.96	15.99	3.94	1.84	3.23	1.93	2.45	2.16	691.66	283.04
Acreage Affected in Missouri	233.41	83.83	13.74	8.54	30.67	18.90	19.84	9.01	9.43	6.20	5.79	5.69	312.87	132.17

Notes:

1 Impacts associated with MLVs are included in the pipeline impacts. Impacts associated with the pig launcher and pig receiver are included in the aboveground facility impacts.

2 Land affected during construction for the pipeline facilities is comprised of the 50-foot permanent easement and 40 feet of TWS and ATWS where applicable.

3 Land affected during operation of the pipeline includes only the 50-foot permanent easement.

4 May not equal the sum of the column due to rounding.

5 Acreages associated with the area between the HDD sites include the 50-foot permanent easement only. This area is included for both construction and operation, however, no clearing is proposed.

Vegetation within the entire width of the permanent easement will be maintained in a herbaceous state, except in wetlands and adjacent perennial waterbodies, where maintenance clearing of woody vegetation will be limited to a 10-foot-wide strip centered directly over the pipeline (with selective removal of trees within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating). Tree clearing and vegetation maintenance within the permanent easement will result in the conversion of forested upland to open land within forested upland portions of the permanent easement, and the permanent conversion of forested wetlands to emergent/scrub-shrub wetland within the vegetation maintenance corridor. With the exception of those agricultural lands at the locations of the proposed aboveground facilities, agricultural areas and the growing of crops will be allowed to continue in agricultural areas.

Typical right-of-way workspace configurations and dimensions are shown in Appendix 8-A.

8.1.1.2 Existing Right-of-Way

The Project was routed to utilize existing utility and road rights-of-way to the maximum extent practicable. Existing rights-of-way paralleled by the Project is provided in Table 8.1-3. For the purposes of this discussion, colocation includes areas where the Project's construction right-of-way is located immediately abutting existing rights-of-way.

8.1.1.3 Additional Temporary Workspace

ATWS will be generally located at specialized pipeline construction areas (e.g., agricultural, road, waterbody, wetland, railroad crossings, etc.). These work areas vary in size depending on the space needs and the geographic conditions at that specific location. The acreage and associated land use affected by ATWS that occur outside of the typical construction right-of-way is summarized in Appendix 8-F. ATWS is shown on the Construction Alignment Sheets provided in Resource Report 1, Appendix 1-B.

Except as otherwise requested due to site-specific constraints, ATWS will be set back at least 50 feet from the edges of waterbodies and wetlands. A list of these exceptions is provided in Resource Report 1, Appendix 1-D. ATWS are temporary in nature and will not be utilized during Project operation. Areas utilized as ATWS will be allowed to revert back to pre-construction conditions following construction.

8.1.1.4 Access Roads

Spire proposes to use and/or modify existing access roads as well as develop new access roads to access the Project during construction and operation. Public roads will be used to access the right-of-way wherever possible. Access roads proposed to be utilized for the Project as well as the widths and lengths, proposed modifications and improvements, and acreage requirements are provided in Table 8.1-4. Several of the existing roads will require modifications and improvements to allow for the safe passage of construction equipment and vehicles. New access roads may require temporary modification of existing land use associated with the access roads during construction and operation.

Table 8.1-3. Existing Rights-of-Way Adjacent to the Pipelines

MP Begin	MP End	County, State	Type of Right-of-Way[1]	Operator/Name of Existing Infrastructure	Position Related to Proposed Pipeline	Width of Existing Right-of-Way (feet)	Width Used for Construction Right-of-Way (feet)	Width Used for Permanent Right-of-Way (feet)
24-Inch Pipeline								
5.0	5.7	Greene, Illinois	Powerline (12 kV)/Road	Illinois Elec. Co-Op Powerline 1000E, Roodhouse Township	East	TBD[2] 40	0	0
5.7	5.8	Greene, Illinois	Road	1000E, Roodhouse Township	West	40	0	0
5.8	6.5	Greene, Illinois	Powerline (12 kV)/Road	Illinois Elec. Co-Op Powerline 1000E, Roodhouse Township	West	blanket (40) 40	0	0
6.5	6.7	Greene, Illinois	Road	1000E, Roodhouse Township	West	40	0	0
6.7	7.8	Greene, Illinois	Powerline (12 kV)/Road	Illinois Elec. Co-Op Powerline 1000E, Roodhouse/While Hall Townships	East	TBD 40	0	0
7.8	8.6	Greene, Illinois	Road	1000E, While Hall Township	East	40	0	0
10.3	11.3	Greene, Illinois	Powerline (138 kV)	Ameren Powerline	West	80	0	0
11.3	12.0	Greene, Illinois	Road	1050E, White Hall Township	West	40	0	0
15.6	15.7	Greene, Illinois	Road	1100E, Carrollton Township	West	40	0	0
16.8	16.9	Greene, Illinois	Powerline (138 kV)	Ameren Powerline	West	80	0	0
16.9	17.1	Greene, Illinois	Powerline (138 kV)/Road	Ameren Powerline 1025E, Carrollton Township	West	80 40	0	0
17.1	17.9	Greene, Illinois	Powerline (138 kV)	Ameren Powerline	West	80	0	0
22.7	22.8	Greene, Illinois	Powerline (7 kV)	Illinois Elec. Co-Op Powerline	South	TBD	0	0
27.1	27.3	Greene, Illinois	Road	1175E, Kane Township & County Hwy 17, Greene County	East	40	0	0
28.4	29.4	Greene, Illinois	Powerline (138 kV)/Road	Ameren Powerline 1200E, Kane Township	West	TBD 40	0	0
31.2	31.9	Jersey, Illinois	Road	Grafton Ln, English Township	West	40	0	0
32.4	32.9	Jersey, Illinois	Road	Grafton Ln, English Township	West	40	0	0
32.9	33.4	Jersey, Illinois	Powerline (12 kV)/Road	Ameren Powerline Grafton Ln, English Township	West	TBD 40	0	0

Table 8.1-3. Existing Rights-of-Way Adjacent to the Pipelines (Continued)

MP Begin	MP End	County, State	Type of Right-of-Way[1]	Operator/Name of Existing Infrastructure	Position Related to Proposed Pipeline	Width of Existing Right-of-Way (feet)	Width Used for Construction Right-of-Way (feet)	Width Used for Permanent Right-of-Way (feet)
24-Inch Pipeline (continued)								
33.4	34.9	Jersey, Illinois	Road	County Hwy 9, Jersey County	West	66	0	0
38.1	39.1	Jersey, Illinois	Road	Godar Ln, Otter Creek Township	West	40	0	0
42.3	42.6	Jersey, Illinois	Road	Croxford Rd, Elsah Township	East	40	0	0
43.4	43.9	Jersey, Illinois	Road	County Hwy 23, Jersey County	East	60	0	0
43.9	45.4	Jersey, Illinois	Pipeline	Nustar	West	30	0	0
45.4	46.2	St. Charles, Missouri	Pipeline	Nustar	West	30	0	0
52.5	54.5	St. Charles, Missouri	Railroad	Burlington Northern & Santa Fe RR	North	90	0	0
54.8	56.4	St. Charles, Missouri	Railroad	Burlington Northern & Santa Fe RR	North	100 - 140	0	0
58.5	58.6	St Louis, Missouri	Powerline (12 kV)	Ameren Powerline	East	10 - 20	0	0
58.6	58.8	St Louis, Missouri	Road	Fort Bellefontaine Rd, St. Louis County	North	65	0	0
North County Extension								
0.0	0.2	St. Louis, Missouri	Propane Line	Laclede Pipeline Company	East	10	0	0
0.8	1.1	St. Louis, Missouri	Powerline (7 kV/12 kV)	Ameren Powerline	West/South	TBD	0	0
2.2	3.2	St. Louis, Missouri	Powerline (12 kV) Railroad	Ameren Powerline BNSF	South	TBD 100	0	0

Notes:

[1] Powerline/Road indicates that both features run parallel to the pipeline, along the same side of the road.

[2] TBD-To Be Determined. Right-of-way information is currently being gathered.

Table 8.1-4. Access Roads Required for the Project

Facility/County, State/MP[1,2]	Access Road ID	County	Type (Existing /New)	Surface Material of AR	Dimensions (feet)		Proposed Improvements	Temporary Acreage Requirements (acres)	Permanent Acreage Requirements (acres)	Existing Land Use[3]
					Length	Width				
24-Inch Pipeline										
Illinois										
1.0	TAR-003	Scott	Existing	Dirt	1,103	25	Gravel as needed and remove	0.08	0.00	Agriculture
								0.39	0.00	Open Land
								0.16	0.00	Developed
8.6	TAR-008	Greene	Existing	Dirt	75	25	Gravel if needed and remove	0.01	0.00	Agriculture
								0.04	0.00	Open Land
								<0.01	0.00	Forest
								<0.01	0.00	Developed
14.4	TAR-009	Greene	Existing	Dirt	1,015	25	Gravel if needed and remove	0.58	0.00	Agriculture
15.1	TAR-010	Greene	Existing	Gravel	496	25	Gravel as needed	0.11	0.00	Agriculture
								0.17	0.00	Open Land
24.9R	TAR-012	Greene	Existing	Gravel/Dirt	2,717	25	Gravel as needed	0.47	0.00	Agriculture
								1.08	0.00	Open Land
								0.01	0.00	Developed
25.8R	TAR-013	Greene	Existing	Gravel/Dirt	1,615	25	Gravel as needed	0.01	0.00	Agriculture
								0.92	0.00	Open Land
26.1	TAR-014	Greene	Existing	Gravel/Dirt	1,353	25	Gravel as needed	0.16	0.00	Agriculture
								0.44	0.00	Open Land
								0.15	0.00	Forest
34.7	PAR-024	Jersey	New	Dirt to MLV 2	78	25	Grade and gravel	0.01	0.01	Agriculture
								0.03	0.03	Open Land
36.6R	TAR-015	Jersey	Existing	Dirt	697	25	Gravel if needed and remove	0.31	0.00	Agriculture
								0.09	0.00	Forest

Table 8.1-4. Access Roads Required for the Project (Continued)

Facility/County, State/MP[1,2]	Access Road ID	County	Type (Existing /New)	Surface Material of AR	Dimensions (feet)		Proposed Improvements	Temporary Acreage Requirements (acres)	Permanent Acreage Requirements (acres)	Existing Land Use[3]
					Length	Width				
24-Inch Pipeline (continued)										
Illinois (continued)										
40.8	TAR-016	Jersey	Existing	Dirt	2,090	25	Gravel if needed and remove	0.32	0.00	Agriculture
								0.88	0.00	Open Land
44.7	TAR-017	Jersey	Existing	Gravel/Dirt	5,035	25	Gravel as needed	0.39	0.00	Agriculture
								2.00	0.00	Open Land
								0.50	0.00	Forest
Missouri										
46.1	PAR-018[4]	St. Charles	New/Existing	Gravel to MLV 3	4,117	25	Gravel as needed	0.48	0.48	Agriculture
								0.91	0.91	Open Land
								0.12	0.12	Forest
								0.78	0.78	Developed
51.1	TAR-022	St. Charles	New	Dirt	728	25	Gravel if needed and remove	0.42	0.00	Agriculture
								0.01	0.00	Open Land
52.3	TAR-019	St. Charles	Existing	Gravel	618	25	Gravel as needed	0.32	0.00	Open Land
								0.04	0.00	Developed
58.5	TAR-021	St. Louis	Existing	Gravel	3,720	25	Gravel as needed	2.13	0.00	Developed
							24-Inch Pipeline Subtotal[3]	14.54	2.33	-
Rex Receipt Station										
Illinois										
0.0R	PAR-001	Scott	Existing	Gravel	182	25	Gravel as needed	0.01	0.01	Agriculture
								0.09	0.09	Open Land
North County Extension										
Missouri										
1.6	TAR-023	St. Louis	New	Dirt, Trees	39	25	Cut Trees, Grade, Gravel	0.02	0.00	Forest

Table 8.1-4. Access Roads Required for the Project (Continued)

Facility/County, State/MP[1,2]	Access Road ID	County	Type (Existing /New)	Surface Material of AR	Dimensions (feet)		Proposed Improvements	Temporary Acreage Requirements (acres)	Permanent Acreage Requirements (acres)	Existing Land Use[3]
					Length	Width				
2.3	TAR-025	St. Louis	Existing	Dirt/Gravel	733	25	Gravel As Needed	0.07	0.00	Forest
								0.35	0.00	Developed
4.5	TAR-026	St. Louis	Existing	Paved	3,266	25	N/A[5]	0.02	0.00	Open Land
								1.86	0.00	Developed
4.8	TAR-027	St. Louis	Existing	Paved	79	25	N/A[5]	0.03	0.00	Developed
				Project Totals[6]	**29,756**	**-**	**-**	**16.99**	**2.43**	-

Notes:

1 MP is based on where the TAR or PAR enters into the nominal corridor.

2 Permanent access roads for MLV 1 will be located within the permanent easement and are not included in the totals above. The road will be permanently graveled and result in the conversion of existing land use to developed land for a total of approximately 0.02 acres. This road are shown on the Typical Facility Plot Plans provided in Resource Report 1, Appendix 1-F.

3 Land use within the Project area was based on interpretation of recently flown aerial photography in 2016 and supplemented with field reconnaissance during the environmental resources investigations which were initiated in September 2016 within areas of accessible properties. Paved or named roads were classified under the "Developed" land use category. Unpaved roads were classified under their surrounding land use category.

4 Spire plans to relocate the western portion of PAR-018 to an existing roadway, in coordination with the landowner. This change is not reflected on the Construction Alignment Sheets.

5 This road is an existing, blacktop road with minimal improvements proposed.

6 May not equal the sum of the column due to rounding.

Following construction, temporary access roads ("TARs") will be restored to their preconstruction condition or allowed to remain in place in accordance with individual landowner agreements. Three permanent access roads ("PARs") are associated with the Project. PAR-001 is an existing gravel road, and therefore, no impacts to the existing land use associated with this road is anticipated as a result of the Project. PAR-018 is a partially existing, gravel road. The portion of this road that is proposed to be new is located within an agricultural field and therefore, will result in permanent land use conversion from agricultural land to developed land. PAR-024 will be a partially new access road, though impacts are nominal at less than one tenth of an acre. Along the North County Extension, the three proposed access roads are all existing dirt, gravel, or paved roads. Temporary and permanent acreages associated with access roads utilized for the Project are provided in Table 8.1-4. Access roads are shown on the Construction Alignment Sheets provided in Resource Report 1, Appendix 1-B.

8.1.1.5 Staging Areas

Land use crossed by the staging areas associated with the Project are shown in the Table in 8.1-5. Spire will utilize temporary staging areas in the vicinity of the Project for equipment and material storage, and contractor vehicle parking. These areas are shown on the construction alignment sheets in Resource Report 1, Appendix 1-B. Spire anticipates grading and addition of gravel at the existing land at each of the staging areas temporarily during construction. Upon completion of the Project, these areas will be restored and allowed to revert to prior uses.

Table 8.1-5. Staging Areas

Facility ID	County, State	Nearest MP	Total Land Affected During Construction (acres)	Existing Land Use
SA-001	Scott County, Illinois	0.0	27.82	Agriculture
SA-002	Jersey County, Illinois	43.9	2.48	Open Land
SA-003	Jersey County, Illinois	43.9	0.35	Open Land
SA-004	St. Charles County, Missouri	46.6	1.44	Agriculture
SA-005	St. Charles County, Missouri	57.3	1.43	Agriculture
		Total	**33.52**	-

8.1.2 Aboveground Facilities

Minor ancillary aboveground facilities to be included as part of the Project include the Rockies Express Pipeline LLC ("REX") Receipt Station and Laclede/Lange Delivery Station along the 24-inch pipeline and the new station to be constructed at the interconnect with Enable Mississippi River Transmission, LLC ("Enable MRT") and Laclede Gas Company (the Chain of Rocks Station) along the North County Extension. Additionally, three MLVs will be installed on the proposed 24-inch pipeline. Additional information about these facilities can be found in Resource Report 1, Section 1.1.2.2 Aboveground Facilities.

Table 8.1-2 provides the estimated acreage affected by aboveground facilities broken down by land use type. Current land use at these stations includes agricultural, open land, forest, and developed. The current land use within the operational footprint of the new M&R stations will be permanently converted to developed use following construction. The Mississippi and Missouri Rivers, Coldwater Creek, Spanish Lake Park, and associated wetlands will be crossed via HDD and will not result in adverse impacts on these waterbodies and wetlands.

The MLVs will be constructed within the new permanent easement. Temporary construction workspace associated with the installation of the MLVs is captured within the pipeline construction right-of-way calculations. Land uses associated with the MLVs include agricultural land or developed land. The acreages associated with each MLV site will be permanently converted from their existing land use to "developed" during operation of the pipeline.

Facility Plot Plans are provided for aboveground facilities in Resource Report 1, Appendix 1-F.

8.1.3 Facility Abandonment/Replacement

At present, Spire has no firm or immediate plans to expand upon the current Project.

8.2 Residential Areas

The proposed Project crosses through existing residential areas, as further described below.

8.2.1 Planned Residential and Commercial Areas

Information on in-progress or planned residential or commercial/business developments and subdivisions within a one-mile buffer of the 24-inch pipeline and the North County Extension was requested from the counties crossed by the Project.

To date, Spire has not been advised of planned residential or commercial development within one mile of the Project. Correspondence from the Scott County Assessor's Office and Jersey County Planning and Zoning department indicated that no residential or commercial developments are planned within one mile of the Project areas (Koch 2016 and McGraw 2016). Consultation with the Greene County Clerk indicated that there is no planning or zoning department for Greene County (Banghart 2016), therefore, Spire contacted the political townships crossed by the Project. Roodhouse, Carrollton, and White Hall townships indicated that no residential or commercial developments are planned within one mile of the Project areas (Plahn 2016; Snyder 2016; and McMillan 2016). Spire could not locate a contact for Kane Township.

Correspondence from St. Louis County, Missouri Department of Planning and St. Charles County, Missouri Planning and Zoning Division has been received stating that they are not aware of any planned commercial, residential, or other development within the Project vicinity (Choate 2016 and Myers 2016). The City of West Alton Planning and Zoning Commission was contacted and indicated that no residential or commercial developments are planned within one mile of the Project area (Farley 2016). Copies of current correspondence received are included in Resource Report 1, Appendix 1-C Agency Correspondence.

8.2.2 Existing Residences and Buildings

Table 8.2-1 provides a list of residences and/or structures within approximately 50 feet of the edge of the construction work area (i.e., construction right-of-way, ATWS, access road). The distance in feet between the residence and the construction work area, as well as the distance between the residence and the pipeline centerline is also provided in Table 8.2-1. This information is currently based on aerial imagery interpretation from aerial flights conducted in 2016.

Construction along the 24-inch pipeline is primarily located in agricultural areas, however portions along the line would affect residences temporarily during construction activities. Construction along the North County Extension would result in short-term impacts on the adjacent residential areas during construction activities. Additionally, the residences along the North County Extension may experience construction related traffic on local roads, as well as dust and noise generated during construction. Spire will minimize these impacts through implementation of the following mitigation measures:

- construction activities will generally occur during daytime hours wherever feasible;
- construction activities along the 24-inch pipeline and North County Extension near residences would occur over an approximately four-week-long period per location;
- landowners would be notified of construction activities by Spire and would be given a general timeframe when work would begin and be completed;
- access and traffic flow maintenance during construction activities would be site-specific and would conform to local needs and/or agency specific roadway permits;
- the hazard of open trenches would be minimized in residential areas when construction activities are not in progress by erecting safety fence around the open ditch;
- topsoil will be segregated where appropriate or at the request of the landowner;
- final grading, topsoil replacement, and installation of permanent erosion control structures will be completed within 10 days after backfilling the trench; and
- fugitive dust would be controlled to the extent possible by applying water if sustained visible dust plumes occur. Additional information regarding fugitive dust measures is discussed within the Fugitive Dust Control Plan provided in Appendix 9-C of Resource Report 9, Air and Noise Quality.

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Table 8.2-1. Residences and Structures Within 50 Feet of Construction Work Area and Proposed Mitigation

Milepost	County, State	Building Type	Distance from Work Area (feet)[1]	Distance from Pipeline Centerline (feet)[1]	Proposed Mitigation
24-Inch Pipeline					
Illinois					
5.6	Greene, Illinois	Structure	0	0	See Section 8.2.2
6.2	Greene, Illinois	Residence	50	81	See Section 8.2.2 and Appendix 8-C
14.9	Greene, Illinois	Structure	28	63	See Section 8.2.2
14.9	Greene, Illinois	Structure	33	68	See Section 8.2.2
24.4	Greene, Illinois	Structure	21	1,722	See Section 8.2.2
24.4	Greene, Illinois	Barn	25	1,761	See Section 8.2.2
24.6R	Greene, Illinois	Barn	6	1,358	See Section 8.2.2
24.7R	Greene, Illinois	Barn	4	1,272	See Section 8.2.2
24.7R	Greene, Illinois	Barn	33	1,143	See Section 8.2.2
24.7R	Greene, Illinois	Barn	37	1,199	See Section 8.2.2
29.7	Jersey, Illinois	Barn	50	147	See Section 8.2.2
29.7	Jersey, Illinois	Barn	43	98	See Section 8.2.2
30.9	Jersey, Illinois	Barn	38	117	See Section 8.2.2
36.4R	Jersey, Illinois	Structure	46	81	See Section 8.2.2
37.9	Jersey, Illinois	Structure	19	99	See Section 8.2.2
37.9	Jersey, Illinois	Structure	15	95	See Section 8.2.2
37.9	Jersey, Illinois	Structure	15	95	See Section 8.2.2
37.9	Jersey, Illinois	Structure	15	95	See Section 8.2.2
38.6	Jersey, Illinois	Residence*	N/A	N/A	N/A; *demolished per most recent aerial imagery
Missouri					
46.4	St. Charles, Missouri	Residence	42	1,392	See Section 8.2.2 and Appendix 8-C
46.4	St. Charles, Missouri	Barn	5	1,271	See Section 8.2.2
46.6	St. Charles, Missouri	Residence	49	710	See Section 8.2.2 and Appendix 8-C
58.2	St. Louis, Missouri	Structure	31	375	See Section 8.2.2
58.2	St. Louis, Missouri	Structure	29	508	See Section 8.2.2
58.2	St. Louis, Missouri	Structure	7	566	See Section 8.2.2
58.2	St. Louis, Missouri	Structure	14	590	See Section 8.2.2
58.3	St. Louis, Missouri	Structure	28	591	See Section 8.2.2
58.3	St. Louis, Missouri	Commercial	41	762	See Section 8.2.2
58.4	St. Louis, Missouri	Garage	4	147	See Section 8.2.2
58.7	St. Louis, Missouri	Residence	5	46	See Section 8.2.2 and Appendix 8-C
58.8	St. Louis, Missouri	Residence	50	100	See Section 8.2.2 and Appendix 8-C
58.8	St. Louis, Missouri	Garage	12	43	See Section 8.2.2 and Appendix 8-C
North County Extension					
Missouri					
0	St. Louis, Missouri	Residence	15	52	See Section 8.2.2 and Appendix 8-C
0	St. Louis, Missouri	Shed	7	42	See Section 8.2.2
0.3	St. Louis, Missouri	Barn	0	0	See Section 8.2.2

Table 8.2-1. Residences and Structures Within 50 Feet of Construction Work Area and Proposed Mitigation (Continued)

Milepost	County, State	Building Type	Distance from Work Area (feet)[1]	Distance from Pipeline Centerline (feet)[1]	Proposed Mitigation
North County Extension (Continued)					
Missouri (Continued)					
1.1	St. Louis, Missouri	Shed	38	93	See Section 8.2.2
1.1	St. Louis, Missouri	Barn	20	75	See Section 8.2.2
1.3	St. Louis, Missouri	Garage	26	81	See Section 8.2.2
2.4	St. Louis, Missouri	Residence	48	195	See Section 8.2.2 and Appendix 8-C
2.6	St. Louis, Missouri	Shed	3	58	See Section 8.2.2
2.6	St. Louis, Missouri	Pool	0	9	See Section 8.2.2
2.6	St. Louis, Missouri	Residence	14	69	See Section 8.2.2 and Appendix 8-C
2.6	St. Louis, Missouri	Shed	25	65	See Section 8.2.2
3.0	St. Louis, Missouri	Structure	16	51	See Section 8.2.2
3.3	St. Louis, Missouri	Barn	26	61	See Section 8.2.2
5.0	St. Louis, Missouri	Shed	8	63	See Section 8.2.2
5.8	St. Louis, Missouri	Pool	50	105	See Section 8.2.2
5.8	St. Louis, Missouri	Residence	46	101	See Section 8.2.2 and Appendix 8-C
5.8	St. Louis, Missouri	Residence	45	100	See Section 8.2.2 and Appendix 8-C
6.0	St. Louis, Missouri	Residence	5	48	See Section 8.2.2 and Appendix 8-C
Chain of Rocks Station					
6.0	St. Louis, Missouri	Commercial	38	79	See Section 8.2.2
6.0	St. Louis, Missouri	Commercial	41	93	See Section 8.2.2

Notes:

Source: Aerial imagery interpretation based on the Aerial Survey conducted on August & September of 2016 and January 2017.

[1] Distances are approximate and derived from aerial photography.

Additionally, for residences within 50 feet of the construction work area, the following mitigation measures would be adopted:

- mature trees and landscaping would not be removed from within the edge of the construction work area unless necessary for safe operation of the construction equipment or as specified in landowner agreements;
- lawn areas and landscaping would be restored in a sequential manner in accordance with FERC's Plan and specific landowner agreements;
- areas of permanent easement will be permanently maintained per USDOT PHMSA requirements, and temporary workspaces would be allowed to revert to pre-existing uses;
- existing fences would be repaired/replaced;

- the edge of the construction work area adjacent to the residence will have safety fence installed for a distance of at least 100 feet on either side of the residence to ensure that construction equipment and materials, including the spoil pile, remain within the construction work area;
- driveways may be left intact until the construction tie-in crew comes through to cut and install the pipe (in one day or less), and alternatively, the contractor may install a steel plate to serve as a temporary bridge until the pipe is lowered in and backfilled;
- at the end of each workday, end caps will be placed on the open sections of pipeline; and
- fencing should be maintained, at minimum, throughout the active construction phases; and where feasible, a minimum of 25 feet will be maintained between the construction work area for a distance of at least 100 feet on either side of the residence.

In cultivated areas as well as land with livestock, after digging the ditch, a crossing will be made available to allow for cattle and/or equipment to cross. These crossings would be installed per landowner request.

Site-specific plans for residences that are within 50 feet of the construction work area are included in Appendix 8-C.

8.3 Public Land, Recreation, and Other Designated Areas

8.3.1 Public or Conservation Land

Public land, recreation, and other designated areas throughout the Project area were evaluated by utilizing publicly available information, consultations with federal, state, and local agencies and landowners, and field reconnaissance surveys. Based on a review of these data sets, no National Parks, National Monuments, National Wild and Scenic Rivers, or National Wildlife Refuges are crossed by the Project [U.S. Department of the Interior – National Park Service ("USDOI/NPS") 2014a and 2014b; U.S. Department of Agriculture ("USDA") undated, USFWS 2014 and 2016]. Additionally, the Project does not cross and is not located within 0.25-mile of Indian reservations, National Wilderness Areas, state parks, or registered landmarks (USDOI/NPS 2014a, 2014b, and undated; USDA undated; Illinois Department of Natural Resources 2016; Missouri Department of Natural Resources undated; Wilderness 2017).

The Project crosses one community farm further discussed below in Section 8.3.1.1. Spire has reviewed available resources and no other community farms or specialty crops such as orchards or silviculture were found to be present within the Project area (Orange Pippin 2015; Pick Your Own 2016; and University of Illinois Extension 2016). Additionally, no specialty crop areas were observed during the environmental surveys in areas where landowner permissions had been granted.

The 24-inch pipeline and the North County Extension are located within 0.25-mile of public land, recreational areas, and scenic areas. These areas are provided in Table 8.3-2.

Those areas that are directly affected by the pipelines are discussed in detail below. At a minimum, Spire will implement FERC's Plan and Procedures to minimize and mitigate impacts to these special use areas.

Areas that are not crossed by the Project but are located within 0.25-mile Project are not likely to be adversely affected from construction or operation of the Project. Furthermore, Spire will implement measures in accordance with FERC's Plan and Procedures and the Project's Erosion and Sediment Control Plan ("E&SCP") to prevent disturbance to off-site areas.

8.3.1.1 24-Inch Pipeline

Effects of construction on lands crossed by the 24-inch pipeline are anticipated to be minor and short term. Spire intends to reduce the construction and operational impacts on these lands to the extent feasible by utilizing only the space necessary to safely construct the facilities and by continuing communications with the officials and regulatory agencies as appropriate. Following construction, all impacted areas categorized as special land uses, recreational areas, and other designated areas will be restored to their current conditions to the extent possible in accordance with FERC's Plan and Procedures and the Project's E&SCP.

Principia College

Land owned by The Principia is crossed by the 24-inch pipeline at MP 44. Table 8.3-2 summarizes the acres anticipated to be impacted during construction and operation of the Project.

The Project crosses the portion of The Principia known as the Principia College West Farm. This is an approximately 650 acre area utilized by the Principia College for research, forest management practices, and other class work. The Principia College campus is located approximately one mile from the Project corridor. The proposed Project is located approximately 0.9-mile from the Principia College Historic District, and therefore is not expected to impact this resource. The general land use through this area is contiguous forest cover.

This portion of the Principia College West Farm is bisected by the presence of an approximate 30-foot existing pipeline right-of-way owned and operated by NuStar. The property is fragmented by the presence of existing roadways. In order to minimize impacts to this area, Spire has routed its pipeline adjacent to this existing pipeline corridor. Spire proposes an approximately 90 foot construction right-of-way through this area (which includes the proposed 50 foot permanent easement). As part of the Project's HDD of the Mississippi River, which is located to the south of The Principia property, Spire has sited its proposed HDD entry site on southernmost portion of The Principia property. An expanded area of ATWS will be necessary at this location and will be cleared temporarily during construction activities. Spire has sited this workspace adjacent to the existing pipeline right-of-way, a minor existing aboveground facility, and the existing road right-of-way (State Route 100). Upon the completion of construction, these areas of ATWS, and any temporary areas utilized during construction, will be allowed to revert to pre-existing uses. No aboveground facilities (e.g. M&R facilities, MLVs) are proposed to be located on The Principia property and Spire proposes to utilize one existing road in this area in order to access the Project corridor during construction.

Scoping comments received from the faculty at the Principia College indicate that future subdivision development may occur in a portion of the Principia College West Farm which would overlap with the existing pipeline corridor and Spire's proposed right-of-way (Jersey County 2016). Future development of a subdivision is typically not

hindered by the presence of existing infrastructure. Spire will continue to coordinate with The Principia to limit the Project's potential effects on future developments in this area.

The 24-inch pipeline at The Principia property also traverses the Principia Hill Prairies West Illinois Natural Area Inventory Site and Natural Heritage Landmark, and is also within 0.25-mile of a high-quality Loess Hill Prairie Natural Community (IDNR 2013). As discussed with IDNR during the Project introduction meeting on June 21, 2016, the Principia Hills Prairies West Illinois Natural Area Inventory Site has no regulatory implications under Illinois law. Spire has located its proposed 24-inch pipeline route adjacent to an existing pipeline right-of-way through this area. Further discussion is provided in Resource Report 3.

Spire does not anticipate that construction of the Project will permanently affect the ongoing activities that The Principia conducts on its Principia College West Farm. The College's activities in the area of Spire's 90-foot construction right-of-way may be temporarily disrupted during construction activities, however, the remaining area of the Principia College West Farm will be not be disturbed. Construction of the pipeline and the installation of the HDD across the Mississippi River will be temporary in nature. It is not anticipated that the construction of the Project will further fragment the forest in this location as the area is already traversed by existing roads, and an existing pipeline-right-of way. Upon completion of construction, the construction right-of-way will be restored in accordance with FERC's Plan and Procedures, and temporary workspaces will be allowed to revert to pre-construction conditions. These temporary workspaces will not be maintained and will revert to forest habitat over time. Permanent loss of trees will occur with the permanent easement as this area will be periodically maintained by mowing or tree removal. Spire would welcome an opportunity to collaborate with The Principia on construction measures that could be employed across the property to minimize impacts to The Principia's forest management projects or research efforts. Spire will continue to reach out to The Principia to address their concerns.

The proposed 24-inch pipeline route traverses the shortest constructible route between the source gas and the Laclede/Lange Delivery Station. In determining constructability of any north to south route, the crossing location of the Mississippi River was the foremost consideration. The north bank of the Mississippi River consists of high bluffs which result in large elevation differences, and isolated pockets of concentrated development. Several populated towns are located on the north bank of the Mississippi River in Jersey County, including Grafton, Chautauqua, Elsah, Lockhaven, Melville, and Alton, Illinois. The Raging Rivers Water Park is located between Grafton and Chautauqua, and Pere Marquette State Park and the Two Rivers National Wildlife Refuge are located west of Grafton. The south bank consists of multiple conservation easements and environmentally sensitive areas, including a floodplain with protected islands and flooded sloughs. As a result, there are limited opportunities for constructible pipeline crossings. The proposed crossing is located in one of the few undeveloped low relief areas of the bluffs on the north bank and minimizes overall drill length, while still allowing Spire to cross federal-owned lands on the south bank via a trenchless method. The proposed crossing location also provides the opportunity to minimize the elevation differences between the entrance and exit locations of the proposed HDD.

A detailed analysis of the technical constructability limitations, the proposed route and alternatives considered is provided as part of Resource Report 10, Alternatives.

The portion of the Project that traverses The Principia property West Farm also crosses the Three Rivers

Community Farm, located at approximate MP 44.0. The acreage associated with this farm is included in Table 8.3-2 with the land reported for The Principia. According to the Three Rivers Community Farm website, the farm is a 12-acre chemical-free vegetable farm located on land leased by Principia (Three Rivers Community Farm 2016). The Three Rivers Community Farm does not have organic certification from the USDA, but incorporates organic and sustainable farming practices into their farming techniques (USDA 2015). The Principia College utilizes this community sponsored farm for educational activities for their students.

The property has two main structures (one residence and a barn), both of which are greater than 50 feet from Spire's proposed 24-inch pipeline construction work area and no active farming is crossed. Additionally, Spire has routed its pipeline through this area adjacent with an existing pipeline right-of-way. Construction activities may temporarily inhibit the activities at this site while construction is occurring, however, upon the completion of construction, as with other agricultural land areas along the Project, this area will be allowed to revert to pre-existing land uses. The pipeline will be buried in agricultural areas with a minimum depth of 5-feet of cover and will allow agricultural activities to continue after the pipeline has been installed. Spire does not anticipate the Project will permanently affect the activities of the Three Rivers Community Farm. As with other agricultural land areas that the Project crosses, Spire will implement the same mitigation and minimization techniques as discussed in Section 8.1, Land Use.

HDD Evaluation

Spire evaluated the feasibility of conducting an HDD of the tracts to the north of the Mississippi River in order to minimize impacts to forested land.

Spire evaluated locating an HDD exit location on agricultural land at approximately MP 43.9 and locating the HDD entry location at MP 45.1 (Spire's current HDD entry location for the Mississippi River HDD). Based solely on bore geometry, an HDD alignment would be possible but could encounter serious risks discussed below. The total length of this HDD installation would be approximately 6,250 feet. Design preparation for the HDD would require approximately six to eight geotechnical boreholes (spaced equally along the alignment) to be drilled to depths below the proposed HDD installation to characterized the ground materials and determine the associated risk. Risks of this HDD are described as follows:

- There is a significant elevation change of approximately 220 feet between the evaluated HDD entry and exit locations. This elevation change would result in approximately 950 feet of the HDD alignment lacking any supportive drilling fluid pressure to help support and stabilize the geotechnical materials. The lack of fluid increases bore instability/collapse risks, stuck pipe conditions during installation, and/or potential damage to the product pipe as the pipe is pulled through the long section of dry bore. Conversely, in order to ensure enough drilling fluid is present in the drill, an increase of pressure of the drilling fluid would be required which would significantly increase the risk of potential inadvertent release of drilling fluid onto the surface. This would result in additional forested clearing in the HDD alignment.
- The completion of this HDD could require a drill and intersect method which requires drill rigs to be staged on each end of the installation, drilling towards each other to meet at the midpoint of the HDD. The elevation difference of 220 feet between the entry and exit locations would result in significant drilling fluid pressures

at the lower elevation at the instant when the two drills intersect, which would result in drilling fluid draining towards the lower elevation. This would cause an increased risk of over flow of drilling fluid containment at the lower drill site as pumps moving the fluids to storage tanks may not be sufficient to accommodate the increased volume and velocity. Due to the increased volume of fluid, significantly more staging area would be required at the lower elevation HDD drill pad to store fluids in tanks. These tanks could require up to 50 percent more additional cleared temporary work areas in the forested areas near the Mississippi River.

- Product pipe installation requires minimization of the number of pull strings and associated intermediate welds to minimize delays and associated risks of a stuck pipe condition. The lowest risk alternative would require staging of the entire 6,250-foot-long pipe string in a single string following a straight alignment behind the HDD exit location on the north end of the requested alignment. This would require an equal length of workspace for HDD pullback behind the exit location. Based on publically available aerial imagery, such a length is not possible without clearing additional forested areas north of the HDD exit location. The length of open space currently available without clearing trees is approximately 1,000 to 1,100 feet. The higher risk alternative would use this open area, which would result in approximately eight to 10 pipe strings and up to nine intermediate welds during pullback operations, significantly increasing the risk to this installation. This number of pullback strings and intermediate welds has not been attempted within the HDD industry.

Sam Vadalabene Great River Road Bike Trail

The Project crosses the Sam Vadalabene Great River Road Bike Trail following Great River Road along the north side of the Mississippi River. The crossing of the bike trail and Great River Road will be encompassed into Spire's HDD of the Mississippi River, therefore, no earth disturbance or adverse impacts to this trail are anticipated. The trail will be allowed to remain open during construction activities provided that activities pose no safety risk to bike riders.

Spire anticipates that indirect impacts will occur as the Project's HDD workspace is within the viewshed of the bike riders on the trail. However, impacts will be primarily temporary as the proposed route is adjacent to an existing right-of-way and the HDD workspace on the north side of Great River Road is adjacent to a small existing aboveground valve site. Temporary workspace required for the HDD will be cleared and graded; however this area will be returned to pre-existing contours and allowed to revert following the completion of construction.

Upper Mississippi Conservation Area

The south side of the Mississippi River at the Project's crossing location is designated by the MDOC as the Upper Mississippi Conservation Area and is crossed by the 24-inch pipeline at MP 45.6. This conservation area contains wildlife and habitat diversity and stretches from the Melvin Price Lock and Dam at Alton, Illinois to LaGrange, Missouri. It is composed of 87 tracts of federal lands totaling over 11,000 acres and is managed under a cooperative agreement between the United States Fish and Wildlife ("USFWS") and the United States Army Corps of Engineers ("USACE").

The Upper Mississippi Conservation area will be crossed as part of Spire's HDD of the Mississippi River. Spire has colocated its route adjacent to an existing pipeline right-of-way in this area. HDD entry/exit locations have been located outside the boundaries of this property (based on tax map parcel data obtained December 2016). No

aboveground facilities will be located on the property and Spire has also sited its proposed permanent access road in this location outside the boundaries of the conservation area. As the pipeline will be installed via HDD, there will be no earth disturbance this conservation area. Furthermore, no clearing of vegetation will occur between the HDD entry and exit locations as Spire intends to utilize a gyroscopic guidance system that does not require the installation of a tracer wire along the HDD alignment on the ground surface. No ground disturbance is proposed for utilizing this guidance system. Spire's HDD contractor and inspectors will complete regular inadvertent return walks throughout the duration of the drill which would require minimal foot traffic along the HDD alignment.

This property is held in USACE fee title by the USACE St. Louis District. Crossing of this property will require right-of-way easement (Standard Form 299-Transportation and Utility Systems and Facilities on Federal Lands) with the USACE. Additionally, other permits including a Section 408 permit from the USACE will also be required for the crossing of the Mississippi River and this associated federal property. A list of all permits required for the Project is provided in Table 1.6-1 of Resource Report 1, General Project Description. Spire submitted its easement application and Section 408 permit in January 2017 concurrently with its FERC application. Spire initiated consultation with the USACE and MDOC regarding this crossing in June 2016. Draft design drawings and construction information for this crossing was provided to the USACE and MDOC in November 2016. Coordination with the USACE and the MDOC regarding this crossing will continue throughout the permitting and easement process.

Consolidated North Levee

The Project is proposed to cross the Consolidated North County Levee District levee on the north side of the Missouri River. A Section 408 permit will be needed from the USACE which will involve the USACE reviewing and approving the proposed HDD design on this levee. In addition, coordination with the Consolidated North County Levee Board will be required as part of the Section 408 permit package. Spire initiated consultation with the USACE and Consolidated North County Levee Board in June 2016. Spire has continued to consult with the USACE and MDOC throughout the FERC pre-filing process. Draft design drawings and construction information for this crossing was provided to the USACE in November 2016. Spire has submitted its easement application and Section 408 permit in January 2017 concurrently with its FERC application.

8.3.1.2 North County Extension

Effects of construction on lands crossed by the North County Extension are anticipated to be minor and short term. Spire intends to reduce the construction and operational impacts on these lands to the extent feasible by utilizing only the space necessary to safely construct the facilities and by continuing communications with the officials and regulatory agencies as appropriate. Following construction, all impacted areas categorized as special land uses, recreational areas, and other designated areas will be restored to their current conditions to the extent possible in accordance with FERC's Plan and Procedures and the Project's E&SCP.

Fort Belle Fontaine County Park

The Park comprises 305.6 acres on the Missouri River in north St. Louis County and contains four main areas: the Missouri River; Belle Fontaine Spring; Coldwater Creek; and a 50-acre upland prairie and wetlands (St. Louis County 2017). The North County Extension crosses the Coldwater Creek area of the park; the property is crossed

entirely by HDD. The nearest recreational use is a trail 0.37-mile north of the pipeline. Recreational uses of the park will not be interrupted, and no park resources or land uses will change due to construction or operation of the Project. Table 8.3-2 summarizes the crossing length, however, no impacts are expected during construction and operation of the Project with the HDD crossing.

Spanish Lake Park

The North County Extension is located along Spanish Lake Park, which is owned and maintained by the St. Louis County Department of Parks and Recreation. This area contains both Spanish Lake (34 acres) and Sunfish Lake (31 acres). The area contains boat ramps, boat docks, picnic areas, pavilions, and fishing docks, and the lake maintains populations of bass, catfish, crappie, and sunfish (MDOC 2016).

Spire has proposed to cross the park entirely with the HDD crossing method. Recreational uses of the park will not be interrupted, and no park resources or land uses will change as a result of construction or operation of the Project. However, there will be a temporary increase in the amount of vehicles utilizing the existing public road that leads to the park during construction of the Project. Additionally, this may cause short-term visual impacts from the park during construction activities. Table 8.3-2 summarizes the crossing length, however, no impacts are expected to the park property during construction and operation of the Project with the HDD crossing.

Applied Scholastics International

The North County Extension crosses a portion (0.22 mile) of an approximately 27-acre educational training facility's property, Applied Scholastics International. Spire obtained survey permission from the institution in February 2017 and will continue to communicate with Applied Scholastics as the Project progresses to easement discussions.

8.3.1.3 Conservation Land

Illinois and Missouri have several conservation programs that may exist when crossing agricultural property including the Conservation Reserve Program ("CRP") with the United States Department of Agriculture ("USDA") Farm Service Agency ("FSA"), Environmental Quality Incentive Program or Conservation Stewardship Program contract with the USDA Natural Resources Conservation Service ("NRCS"), or Wetland Reserve Program Easement/Wetland Reserve Easement with the Natural Resources Conservation Service. Additionally, IDNR manages the Conservation Reserve Enhancement Program ("CREP") lands. These programs and easements may have specific vegetation requirements that the landowner has agreed to implement and maintain.

Spire has consulted with USDA Farm Service Agency FSA in Illinois and confirmed that the 24-inch pipeline will cross lands enrolled in the CRP (Diebal 2016a, 2016b, and 2017). Information regarding the specific tracts of CRP lands crossed by the Project is not able to be provided directly to Spire by the FSA; therefore, letters were sent by the Illinois FSA to each of the owners of the CRP lands crossed by the Project. Landowners then coordinated with Spire to indicate which tracts or portions of tracts enrolled in CRP lands would be temporarily affected by the Project. Spire communicated with the landowners of known CRP lands regarding particular seeding plans for these areas. Seed mix information for these lands is provided in Table 7.4-1 of Resource Report 7, Soils.

Spire has consulted with USDA FSA in Missouri and confirmed that there are no CRP lands crossed by the Project in Missouri (Gibson 2016 and Niemeyer 2017).

Spire consulted with the IDNR in September and December 2016 regarding the potential for the Project to cross any CREP lands. The IDNR determined that no CREP lands will be crossed by the Project (Garver 2016, Bedient 2016 and 2017). Consultations for CREP lands is provided in Resource Report 1, Appendix 1-C Agency Correspondence.

Table 8.3-1 includes conservation program lands crossed by the Project.

Table 8.3-1. Potential Lands Enrolled in Conservation Programs

Approximate MP	CRP Contract #	County, State	Type of Conservation Program
24-Inch Pipeline			
3.1	-	Scott, Illinois	CRP
10.4	11192	Greene, Illinois	CRP
22.6	HEL TRACT # 1715	Greene, Illinois	Highly Erodible Soils
27.3	796	Greene, Illinois	CRP
42.4	11109	Jersey, Illinois	CRP
43.5	-	Jersey, Illinois	Highly Erodible Soils

Note: Boundaries of the CRP tracts will be determined during easement negotiations and therefore, proposed impacts are not provided. No CRP lands were located in Missouri on the 24-inch pipeline or North County Extension routes.

8.3.2 Natural, Recreational, or Scenic Areas

Table 8.3-2 lists public land and designated recreation areas, scenic areas, or other special use areas that are either located within 0.25-mile of the Project and/or are crossed by the construction right-of-way.

The Project does not cross any national forests, national parks, or national monuments (USDA 2016, and USDOI/NPS 2014a and 2014b). The Project does not cross Wild or Scenic Rivers or federally designated wilderness areas (USFWS 2014, USDA undated, Wilderness 2017). Refer to Section 8.3.1, Public or Conservation Land, above for a discussion on trails in the vicinity of the Project area. The Project crosses one scenic byway and one national historic trail, discussed below.

Meeting of the Great Rivers Scenic Byway

The Project crosses the Meeting of the Great Rivers Scenic Byway, located adjacent to the Mississippi River in Jersey County, Illinois. This route is a National Scenic Byway which follows the Mississippi River and allows travelers to view 18th century river towns, islands, points, and bends covered by forests extending over 20,000 acres (USDOT 2016).

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Table 8.3-2 Public Land and Designated Recreation Areas, Scenic Areas, or Other Public Special Use Areas within 0.25-mile of the Project

Approximate Milepost/ County, State	Name	Crossing Length (Feet)	Area Affected by Construction (acres)[1]	Area Affected by Operation (acres)[2]	Approximate Distance from Pipeline (Feet)	Planned Crossing Method
24-Inch Pipeline						
Scott County, Illinois						
2.2	Pleasant Hill Church	0	0	0	619	N/A
Jersey County, Illinois						
44	Principia College West Farm Property	5,609	13.92	6.45	0	Pipeline
44.6	Elsah Historic District	0	0	0	935	N/A
45.1	Meeting of the Great Rivers Scenic Byway	69	0	0.08	0	Pipeline (HDD)
45.1	Sam Vadalabene Great River Road Bike Trail	10	0	0.01	0	Pipeline (HDD)
St. Charles County, Missouri						
45.6	Upper Mississippi Conservation Area	1,737	0	2.00	0	Pipeline (HDD)
49.0	Portage Des Sioux Baseball Field	0	0	0	695	N/A
57.8	Consolidated North Levee	79	0	0.09	0	Pipeline (HDD)
58.3	Lewis and Clark National Historic Trail / Missouri River Water Trail	517	0	0.59	0	Pipeline (HDD)
St. Louis County, Missouri						
58.3	Lewis and Clark National Historic Trail / Missouri River Water Trail	750	0	0.86	0	Pipeline (HDD)
North County Extension						
St. Louis County, Missouri						
1.0	Jamestown Mall (closed down)	0	0	0	462	N/A
1.4	The Valley (Senior Community)	0	0	0	464	N/A
2.0	Fort Belle Fontaine County Park (St. Louis County property)	448	0	0.54	0	Pipeline (HDD)
2.2	Arrowpoint Elementary School (Hazelwood School District)	0	0	0	826[3]	N/A
4.0	Spanish Lake Park	1,479	0	1.7	0	Pipeline (HDD)
4.2	Emerald Greens Golf Course	3,068	6.20	3.83	0	Pipeline (Partial HDD)
5.3	Mount Moriah Church of Christ	0	0	0	630	N/A
6.0	Applied Scholastics International	1,044	3.02	2.15	0, 72[4]	Pipeline
6.0	Grace Baptist Church	0	0	0	392	N/A

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Table 8.3-2 Public Land and Designated Recreation Areas, Scenic Areas, or Other Public Special Use Areas within 0.25-mile of the Project (Continued)

Approximate Milepost/ County, State	Name	Crossing Length (Feet)	Area Affected by Construction (acres)[1]	Area Affected by Operation (acres)[2]	Approximate Distance from Pipeline (Feet)	Planned Crossing Method
Chain of Rocks Station						
St. Louis County, Missouri						
N/A	Green Valley Nursing and Rehab	0	0	0	260	N/A
Access Roads						
Jersey County, Illinois						
44.7	Principia College West Farm Property	4,835	2.89	0	0	TAR-017
St. Louis County, Missouri						
4.5	Emerald Greens Golf Course	3,327	1.9	0	0	TAR-026

Notes:

Project facilities not listed in this table were not located within 0.25-mile of any public land or designated natural area. The 0.25-mile buffer was based on the Project limit of disturbance and the centerline (including workspaces); approximate distance was reported based on the distance of the resource (in feet) to the pipeline centerline.

[1] Land affected during construction is inclusive of operational impacts (permanent).

[2] Impacts were calculated along the 50-foot wide permanent easement only.

[3] Distance measured from the nearest workspace (HDD site) to schoolyard; also buffered by railroad right-of-way and forest between the site and the school.

[4] Distance of "0" accounts for the pipeline crossing the property. Distance of "72" is measured from training facility to Chain of Rocks construction workspace.

The crossing of this byway will be encompassed into Spire's HDD of the Mississippi River, therefore, no earth disturbance or adverse impacts to this byway are anticipated. The byway will remain open during construction activities. Spire anticipates that indirect impacts will occur as the Project's HDD workspace is within the viewshed of those passengers utilizing the byway. However, impacts will be primarily temporary. Temporary workspace required for the HDD will be cleared and graded; however this area will be returned to pre-existing contours and allowed to revert following the completion of construction.

Lewis and Clark National Historic Trail

The Project is proposed to cross a segment of the Lewis and Clark National Historic Trail known as the Corps of Discovery Expedition, Camp Wood to Grand River, or the Missouri River Water Trail at the Missouri River (USDOI/NPS 2017a and 2017b). Spire's proposed HDD crossing of the Missouri River avoids disturbance to this historic water trail, therefore, adverse impacts to the river or the water trail are not anticipated. The river will remain navigable during construction activities. However, Spire anticipates that minor indirect impacts will occur as a portion of the Project's HDD workspace may be within the viewshed of those traveling on the river as discussed in Section 8.6.1. In March 2017, Spire provided the NPS a review of Project construction and facilities in the vicinity of the historic trail, and in response, the agency had no further comments at that time. Related correspondence with the NPS (Wiley 2017 and Weekley 2017) is provided in Resource Report 1, Appendix 1-C Agency Correspondence.

Emerald Greens Golf Course

The project crosses the Emerald Green Golf Course along the North County Extension, a portion of which is crossed by HDD (about 0.3 mile) and a portion crossed by conventional pipeline construction (about 0.3 mile). Construction of the North County Extension pipeline may temporarily affect recreational use at the golf course, however, this area will be returned to existing contours and revegetated following completion of the Project. Peak season for golfing at Emerald Greens is March through October (Emerald Greens 2017). Spire is attempting to coordinate with the Emerald Green Golf Course regarding the pipeline routing and will continue coordination through construction and restoration.

Hunting Seasons

No public hunting areas are located at Project areas in Illinois (IDNR 2017a). In Illinois, state hunting season for turkey is generally late March to early May, deer season is typically early October to mid-January, and waterfowl season (central zone) is late October to January (IDNR 2017b, 2017c).

In Missouri, the Upper Mississippi Conservation Area is public land that offers hunting opportunities through the MDOC, including waterfowl, deer, and turkey hunting (Calvert, 2017). No other public hunting areas are located at Project areas in Missouri (MDOC 2017a). In Missouri, state hunting season for turkey is generally early April to early May and mid-September to mid-January and deer season is typically mid-November to mid-January; waterfowl season is generally October to early February, with also a two week September teal season and a light goose season through April (MDOC 2017b).

The Upper Mississippi Conservation Area, introduced in Section 8.3.1, provides waterfowl hunting for leased blind sites and allocates relinquished blind sites through a lottery system (MDOC 2017c). Land tracts associated with the Upper Mississippi Conservation Area are located along the 24-inch pipeline in St. Charles County, Missouri, from approximately MP 45.6 to 46.1. This area is proposed to be crossed with the HDD method. While no impacts are anticipated to the conservation area, an adjacent area at MP 46.2 is proposed as a HDD workspace and mainline valve site. Spire colocated workspaces to an existing pipeline's crossing and existing valve site in this area to reduce impacts in the vicinity of the conservation area. Additionally, the proposed construction schedule for the Mississippi River HDD crossing is scheduled, as practicably possible, outside of major Missouri hunting seasons. However, preparation work at the HDD workspace adjacent to the conservation area may overlap with turkey season.

Hunting season dates vary from year to year in Illinois and Missouri, although they tend to generally open and close around the same times of the year. Hunting dates are published annually on the IDNR and MDOC websites, and Spire will verify these seasonal dates as the 2017/2018 hunting regulations become available. Spire has and will continue working with landowners to identify land parcels with private hunting leases. As of March 2017, five private property owners have indicated deer hunting occurs at their parcels, all of which are along the northern half of the 24-inch pipeline route. As currently scheduled, Project construction is not expected to conflict with deer hunting season in those areas.

In the event hunting seasons cannot be avoided during Project construction, Spire will work with private landowners and leaseholders during easement negotiations to determine potential hunting restrictions on all directly affected parcels. Spire will accommodate landowner requests regarding hunting or negotiate compensation for interruptions to private hunting as a result of the construction of the Project. Spire would reiterate personnel safety and visibility to its contractors during hunting seasons and/or at parcels identified with hunting. Spire will also continue to work with the MDOC regarding construction schedule and timing for the work in the vicinity of the Upper Mississippi Conservation Area.

8.3.3 Agency and Landowner Consultation

Spire has initiated consultation with a variety of federal and state agencies to identify potential constraints in the Project area. Agency consultation was initiated in June 2016. Spire has also conducted various meetings with agencies with permitting authority on the Project, and other agencies with interest in the Project area. A record of these consultations is provided in Resource Report 1, Appendix 1-C Agency Correspondence. Further details on agency consultation are provided in Resource Report 1, Section 1.7.3 Agency Outreach. A Project-specific list of permits/consults and their status, including agency and landowner contacts can be found in Resource Report 1, Table 1.6-1.

Spire initiated landowner contact in July 2016; landowners at the North County Extension were contacted in early 2017. Landowners were informed about the Project and a request for survey permission on each landowner's property within 300 feet of the 24-inch pipeline and generally within 200 to 300 feet of the North County Extension was requested. Environmental field surveys on the Project were initiated in September 2016 and are ongoing as landowner permissions are obtained. Additionally, open houses for the Project were held in August 2016 in all five

counties crossed by the Project. Further details on landowner notification are provided in Resource Report 1, Section 1.7 Affected Landowners/Stakeholders.

8.3.4 Impact and Mitigation

The Project crosses both public and privately owned lands. Within special use areas, construction activities may temporarily disrupt recreational access and use of these areas primarily as a result of construction-related traffic. Construction will also generate dust and noise that may be a nuisance to recreational users; noise and air impacts and mitigation are discussed in greater detail in Resource Report 9.

At a minimum, Spire will implement FERC's Plan and Procedures to minimize and mitigate impacts to special use areas. Spire will implement the following safety measures to minimize adverse impacts to the recreational and/or public areas: install safety fence, cover open excavations at the end of the workday, and initiate restoration as soon as feasible following construction. These areas will be restored back to pre-existing conditions to the extent practicable.

Except for select aboveground facilities associated with the Project, such as valve sites, the proposed 24-inch pipeline and the North County Extension will be located entirely underground and thus will generally not affect the use of the surface of the land that the Project crosses after construction is completed. Effects of construction on lands crossed by the 24-inch pipeline and the North County Extension are anticipated to be minor and short term. Spire intends to reduce the construction and operational impacts on these lands to the extent feasible by utilizing only the space necessary to safely construct the facilities and by continuing communications with the officials and regulatory agencies as appropriate. Following construction, all impacted areas categorized as special land uses, recreational areas, and other designated areas will be restored to their current conditions to the extent possible in accordance with FERC's Plan and Procedures and the Project's E&SCP.

The pipe will be buried in croplands with a minimum depth of 5 feet of cover and will allow agricultural activities to continue after the pipe has been installed.

Spire anticipates that the pipeline contractor will be able to lay and backfill approximately 750 linear feet of pipeline per day in sensitive areas such as a school. Final restoration and cleanup is not included in this estimate. Durations will vary based upon the size and areas along school properties which are impacted by the Project.

In HDD areas, no clearing of vegetation will occur between the HDD entry and exit locations as Spire intends to utilize a gyroscopic guidance system that does not require the installation of a tracer wire along the HDD alignment on the ground surface. No ground disturbance is anticipated for utilizing this guidance system. Spire's HDD contractor and inspectors will complete regular inadvertent return walks throughout the duration of the drill which would require minimal foot traffic along the HDD alignment.

Temporary workspaces utilized for the Project will only be used during construction and will not be permanently maintained. Once construction is complete, these areas will be restored in accordance with FERC's Plan and Procedures and the Project E&SCP. Additionally, tree stumps and rootstock will be left in place within temporary workspaces wherever possible to facilitate natural revegetation.

Impacts and mitigation measures for special use areas are discussed in detail in Sections 8.3.1 and 8.3.2.

8.4 Contaminated or Hazardous Waste Sites

The Project is located in a designated metropolitan no-discharge stream, as found in 10CSR 20-7.031, Table F (MDNR 2014). The Project crosses Coldwater Creek within the metropolitan no-discharge stream reach. Spire has coordinated with the USACE Formerly Utilized Sites Remedial Action Program ("FUSRAP") about crossing Coldwater Creek with open cut and trenchless techniques. The USACE FUSRAP indicated that their current sampling efforts are revealing the sources of contaminants have been removed upstream and there is an unlikely possibility for contaminants to migrate. The USACE FUSRAP reviewed Spire's current crossing plan and proposed soil disturbance areas and determined that there is no contamination or a pathway for future contamination at the crossing location (USACE 2016a, 2016b, 2016c, and 2017).

The United States Environmental Protection Agency ("USEPA") National Priority List Superfund Sites list was searched for sites near the Project area (USEPA 2016). The closest site is located approximately 4.8 miles away from the Project. The Chemetco Superfund Site, located in Hartford, Illinois, is a 41-acre site where site cleanup is ongoing. Contaminants of concern include elevated levels of cadmium, copper, lead, and zinc oxide (USEPA 2017b). The site is currently fenced and access is restricted. The Project is located approximately 4.8 miles to the west of this site, therefore no issues of contamination are expected during construction.

The West Lake Landfill Superfund Site is an USEPA Superfund Site located in Bridgeton, Missouri, consisting of several inactive landfills, including the West Lake Landfill and Bridgeton Landfill (USEPA 2017a). The Project is located approximately 11.4 miles northeast of these landfills and therefore no issues of contamination are expected during construction.

8.5 Coastal Zone Management Areas

The Project is not located within a designated coastal zone management area, therefore, this section is not applicable (NOAA 2012).

8.6 Visual Resources

8.6.1 Pipelines

Visual impacts associated with construction activities may result from the removal of vegetation, particularly in forested areas, exposure of bare soils during construction, and the presence of construction equipment during usage and storage. These impacts may be most observable where the pipeline parallels or crosses roads and where vegetation is removed between the construction right-of-way and residences.

Temporary workspaces will be utilized for the duration of construction and will not be permanently maintained. Temporary workspaces located in predominately agricultural areas will revert back to pre-existing land uses with little to no visual impact. TWS in forested areas will also be allowed to revert to pre-existing conditions, however, long term visual impacts are anticipated as forest habitat would likely take several years to establish. Visual

impacts also can occur where vegetation removal occurs in public recreational areas, valued for their scenic qualities. Recreational areas valued for scenic qualities located in the vicinity of the proposed Project are described in the Sections below.

Principia College

The portion of Principia College crossed by the proposed Project includes areas of upland forest. Spire is attempting to coordinate with Principia regarding the pipeline routing and will continue coordination through construction and restoration. The portion of the proposed route through the College's West Farm is adjacent to an existing pipeline right-of-way which reduces bisection of undisturbed portions of this property and visual impacts.

Spire does not anticipate that construction of the Project will permanently affect visual resources at the Three Rivers Community Farm. Visual impacts to this area will primarily occur during construction and consist of vegetative and soil disturbance. Visual impacts will be short term and temporary in nature. The land is predominately agricultural and will be allowed to revert to preconstruction conditions upon completion of construction.

Sam Vadalabene Great River Road Bike Trail

The Project crosses the Sam Vadalabene Great River Road Bike Trail via HDD. Spire expects that indirect visual impacts will occur as the Project's HDD workspace is within the viewshed. ATWS required for the HDD will be cleared and graded; however this area will be returned to existing contours and allowed to revegetate following completion of the Project. The visual impact associated with the proposed permanent easement and TWS would not be inconsistent with currently developed areas along the bike trail.

Meeting of the Great Rivers Scenic Byway

The Project crosses the Meeting of the Great Rivers Scenic Byway (Highway 100) via HDD. Spire expects that indirect impacts will occur as the Project's HDD workspace is within the viewshed however, impacts will be minimized and primarily temporary as the proposed route parallels an existing right-of-way and the HDD workspace is adjacent to a small existing aboveground valve site. Temporary workspace required for the HDD will be cleared and graded; however, this area will be returned to existing contours and allowed to revegetate following completion of the Project.

As part of Spire's discussions with the Illinois Department of Transportation for road crossing permits, state jurisdiction of the scenic byway does not extend beyond the existing road right-of-way. Construction activities within the existing road right-of-way may not disturb the view of the highway; therefore, within the existing right-of-way, no signage or aboveground appurtenances are allowed. The Project is not placing any permanent facilities within this existing road right-of-way. The visual impact associated with the proposed permanent easement and TWS would not be inconsistent with the existing right-of-way and developed areas along the scenic byway north towards Grafton and Chautauqua, Illinois, or south towards Elsah, Illinois.

Upper Mississippi Conservation Area

The Upper Mississippi Conservation Area is crossed by the Project via HDD. HDD entry/exit locations will be outside the boundaries of this property. No aboveground disturbance is planned between the HDD entry and exit locations during construction. No trees will be removed. Therefore, significant visual impacts to this resource are not anticipated.

Lewis and Clark National Historic Trail

In response to a request by the NPS, Spire reviewed the Lewis and Clark National Historic Trail and associated "Auto Tour" sites for the potential of visual resource impacts. The Lewis and Clark National Historic Trail

HDD entry and exit sites are located on the north and south side of the Lewis and Clark National Historic Trail (the Missouri River); each HDD site is two acres in size and typically have drill rigs, support vehicles, and pipe fabricators onsite during construction. The tallest piece of construction equipment is anticipated to be approximately 14 feet tall. After the construction is complete, the temporary workspace areas will be restored to pre-existing conditions to the extent practicable. The view of the HDD site on the north side of the river is obstructed by a treeline and levee. The HDD site south of the river is visible from the river; however, it is within an active quarry site with frequent dump truck access for aggregate materials loading and unloading.

In addition to the river crossing, "Auto Tour" historic site destinations located along the Lewis and Clark National Historic Trail route were also reviewed for potential viewshed impacts.

The Lewis and Clark Historic Site, Lewis and Clark State Memorial Park, and Confluence Tower are located eight to nine miles east of the Project, on the east side of the Missouri River. View of the Project from these sites are not only located at ample distances across the river, but also obscured by large forests and treelines lining both sides of the river. Visual impacts are not anticipated during construction or operation of the Project.

The Jefferson National Expansion Memorial in St. Louis, Missouri, and the Cahokia Courthouse State Historic Site in Cahokia, Illinois, are over 10 miles south of the Project. The Charbonier Bluff in western St. Louis County is over seven miles south and west of the Project, and the St. Charles Historic District is St. Charles County is over 13 miles southwest of the Project. No visual impacts would occur during construction or operation of the Project.

As discussed in Section 8.3.2, Spire provided the NPS a review of Project construction and facilities in the vicinity of the historic trail, and in response, the agency had no further comments at that time. Related correspondence with the NPS (Wiley 2017 and Weekley 2017) is provided in Resource Report 1, Appendix 1-C Agency Correspondence.

Fort Belle Fontaine County Park

Fort Belle Fontaine County Park is crossed by HDD. While no impacts are proposed to the county property, recreational users may be able to see the HDD workspace on an adjacent property. Thus, construction of the Project may temporarily affect visual resources to park users of the nearest trail, 0.37-mile to the north of the construction right-of-way. Construction at the HDD workspace is planned for approximately four months.

Spanish Lake Park

An existing road to be utilized for access to the Project is located on the perimeter of the park. Spire anticipates a temporary increase in the amount of vehicles utilizing the existing road during construction of the Project, which may cause short-term visual impacts during construction activities. Visual impacts to this area are not anticipated to be permanent as the area will be restored back to pre-existing conditions to the extent practicable upon construction completion.

Emeralds Green Golf Course

The portion of the Emeralds Green Golf Course crossed by HDD (about 0.3 mile) avoids impact to aesthetic resources of course such as ponds, shrubs, and trees. Portions of the golf course crossed by conventional construction methods (about 0.3 mile) include primarily areas of open land but also shrubs and trees according to aerial imagery. Spire would clear the area of trees and shrubs around MP 4.75 for construction of the North County Extension which may temporarily affect visual resources to golf course users, however, this area will be returned to existing contours and revegetated following completion of the Project. Spire is coordinating with the Emeralds Green Golf Course regarding the pipeline routing and will continue coordination through construction and restoration.

Applied Scholastics International

The portion of Applied Scholastics International crossed by the proposed Project includes areas of open land. Spire is attempting to coordinate with Applied Scholastics International regarding the pipeline routing and will continue coordination through construction and restoration. Construction of the North County Extension pipeline may temporarily affect visual resources at this training facility, however, this area will be returned to existing contours and revegetated following completion of the Project. The facility will also have new visual resource impacts to the south with the Chain of Rocks facility across the street (Prigge Road). As discussed in Resource Report 1, Section 1.1.2.2 Aboveground Facilities, the Chain of Rocks Station will include a tie-in to Enable MRT, a section of 24-inch-diameter pipeline between the western and eastern portions of the facility, a bi-directional 24-inch pig launcher/receiver assembly, a filter/separator, over pressure protection skid, meter skid, control valve skid, liquids storage tank and truck loading box, gas chromatograph, remote telemetry unit, and monitoring instruments.

8.6.2 Aboveground Facilities

Long-term visible facilities will include the M&R aboveground facilities - the REX Receipt Station and Laclede/Lange Delivery Station along the 24-inch pipeline and construction of the new Chain of Rocks Station along the North County Extension, as well as the MLVs along the 24-inch pipeline. The facilities will be consistent with the current visual landscape in terms of color and scale such that no significant visual changes to the current landscape are anticipated.

The proposed REX Receipt Station will be located within land classified as agricultural and open land (rural) and will have permanent impacts to the visual resources in this area as the land use will be converted to developed. The proposed Laclede/Lange Delivery Station will be located within land classified as agricultural, forest, and developed and will have permanent impacts to the visual resources in this area as the land use will be converted

to developed. The proposed Chain of Rocks Station will be located within land classified as forest and open land and will have permanent impacts to the visual resources in the area as the land use will be converted to developed. However, a portion of the proposed Chain of Rocks Station will be left as undisturbed, in which case some trees on the property would remain in place. New buildings and aboveground piping installed within proposed facilities will be colored consistent with the surrounding environment.

Aboveground facilities will be permanent and remain in operation throughout the life of the pipelines.

8.7 Applications for Rights-of-Way and Other Land Use

Applications for the easement across the federal property, which is owned in fee title by the USACE, was filed with the USACE in January 2017, concurrently with Spire's FERC application.

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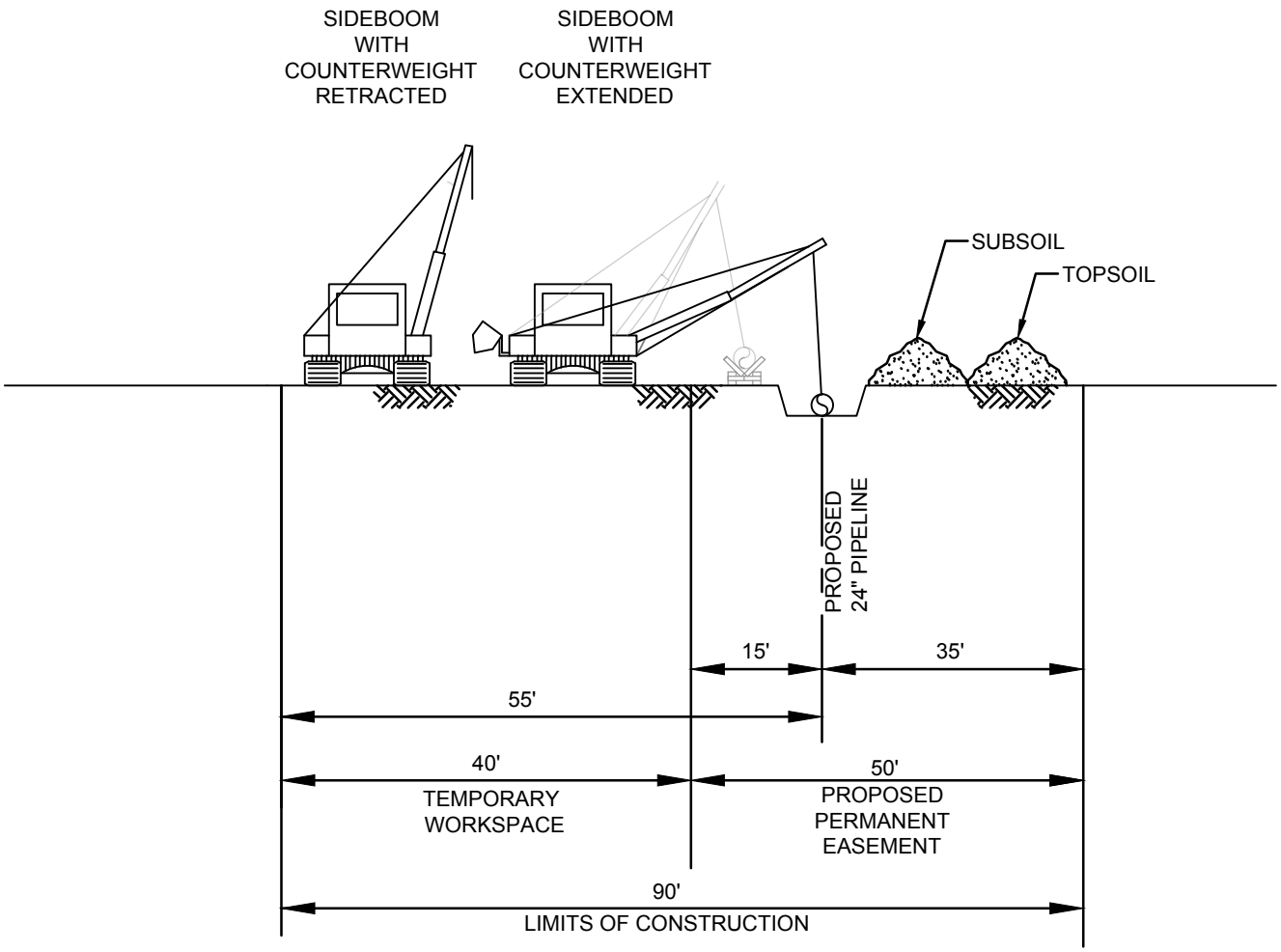
APPENDIX 8-A

Typical Right-of-Way Cross-Section Drawings



PROFILE
(NOT TO SCALE)

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 90 FEET WIDE CONSISTING OF 50 FEET OF PROPOSED PERMANENT EASEMENT AND 40 FEET OF TEMPORARY WORKSPACE. ADDITIONAL TEMPORARY WORKSPACE (ATWS) WILL BE NECESSARY AT MAJOR ROADS, RAILROADS, RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
2. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO STREAMS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING TOPSOIL AND SPOIL PILES.
3. MINIMUM DEPTH OF COVER FOR PIPE IS 5 FEET.

NO	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
2	04/2017	RJR	AMENDMENT TO FERC		

REVISIONS

ENG. RECORD		DATE
DRAWN BY:	MM	09/2016
DRAWING APPROVAL	DGG	09/2016
PROJECT APPROVAL	JEW	09/2016
SURVEY DATE:		
SCALE: N.T.S.		
PROJECT ID:		
FILE NAME:		

TYPICAL 90' CONSTRUCTION RIGHT-OF-WAY (UPLAND) FOR PROPOSED 24-INCH DIAMETER PIPELINE

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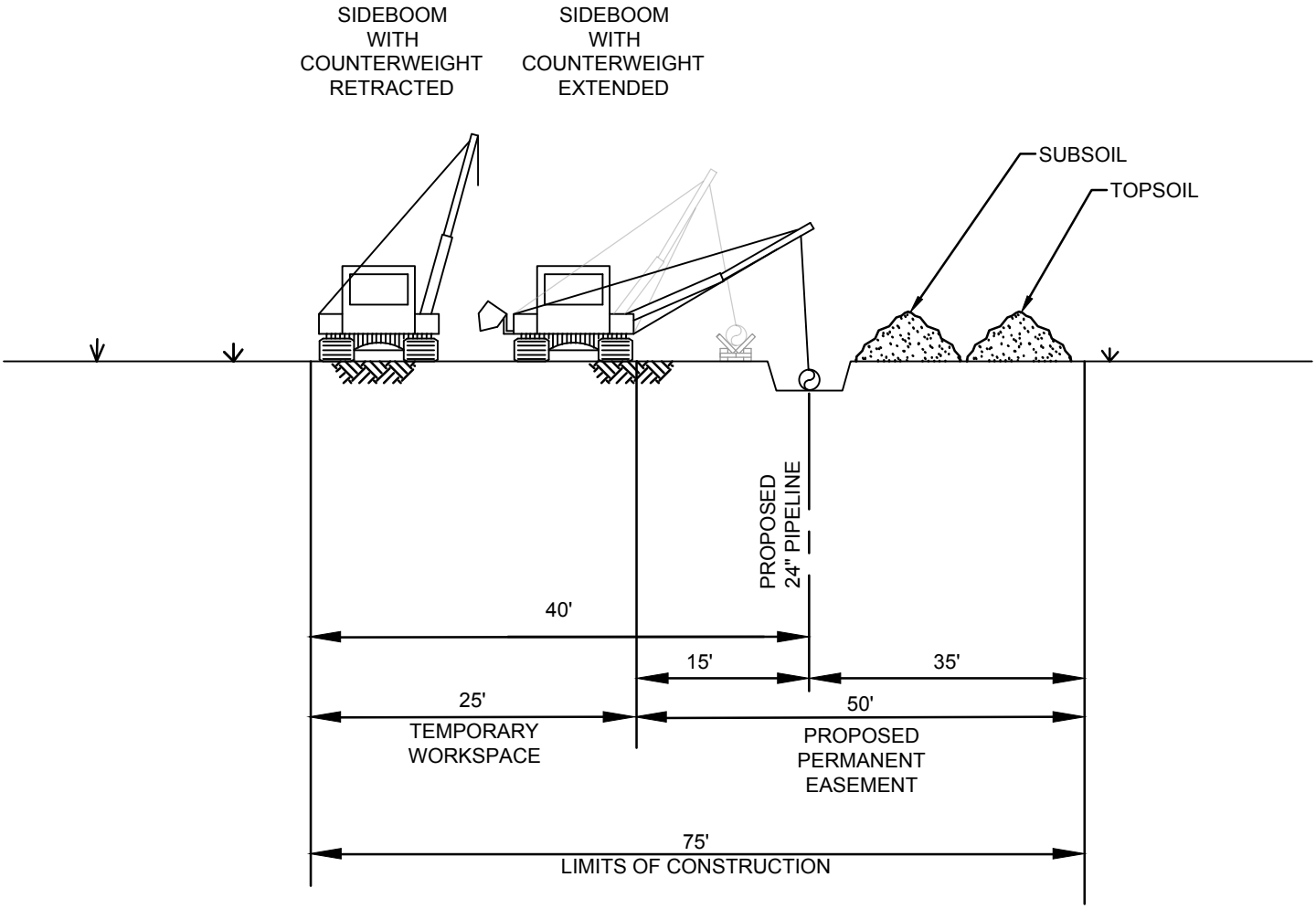

PROFILE
(NOT TO SCALE)

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY THROUGH STREAMS AND WETLANDS WILL TYPICALLY BE REDUCED TO 75 FEET WIDE CONSISTING OF 50 FEET OF PROPOSED PERMANENT EASEMENT AND 25 FEET OF TEMPORARY WORKSPACE.
2. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO STREAMS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING TOPSOIL AND SPOIL PILES.
3. MINIMUM DEPTH OF COVER IN AGRICULTURAL FIELD IS 5 FEET.
4. MINIMUM DEPTH OF COVER AT STREAM CROSSINGS IS 5 FEET, EXCEPT IN CONSOLIDATED ROCK, WHERE THE DEPTH OF COVER WILL BE 5 FEET MINIMUM.
5. TOPSOIL STORAGE WILL NOT TAKE PLACE IN THE WETLAND.

NO	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
2	04/2017	RJR	AMENDMENT TO FERC		

REVISIONS

ENG. RECORD		DATE
DRAWN BY:	MM	09/2016
DRAWING APPROVAL	DGG	09/2016
PROJECT APPROVAL	JEW	09/2016
SURVEY DATE:		
SCALE: N.T.S.		
PROJECT ID:		
FILE NAME:		

TYPICAL 75' CONSTRUCTION RIGHT-OF-WAY (STREAMS AND WETLANDS) FOR PROPOSED 24-INCH DIAMETER PIPELINE

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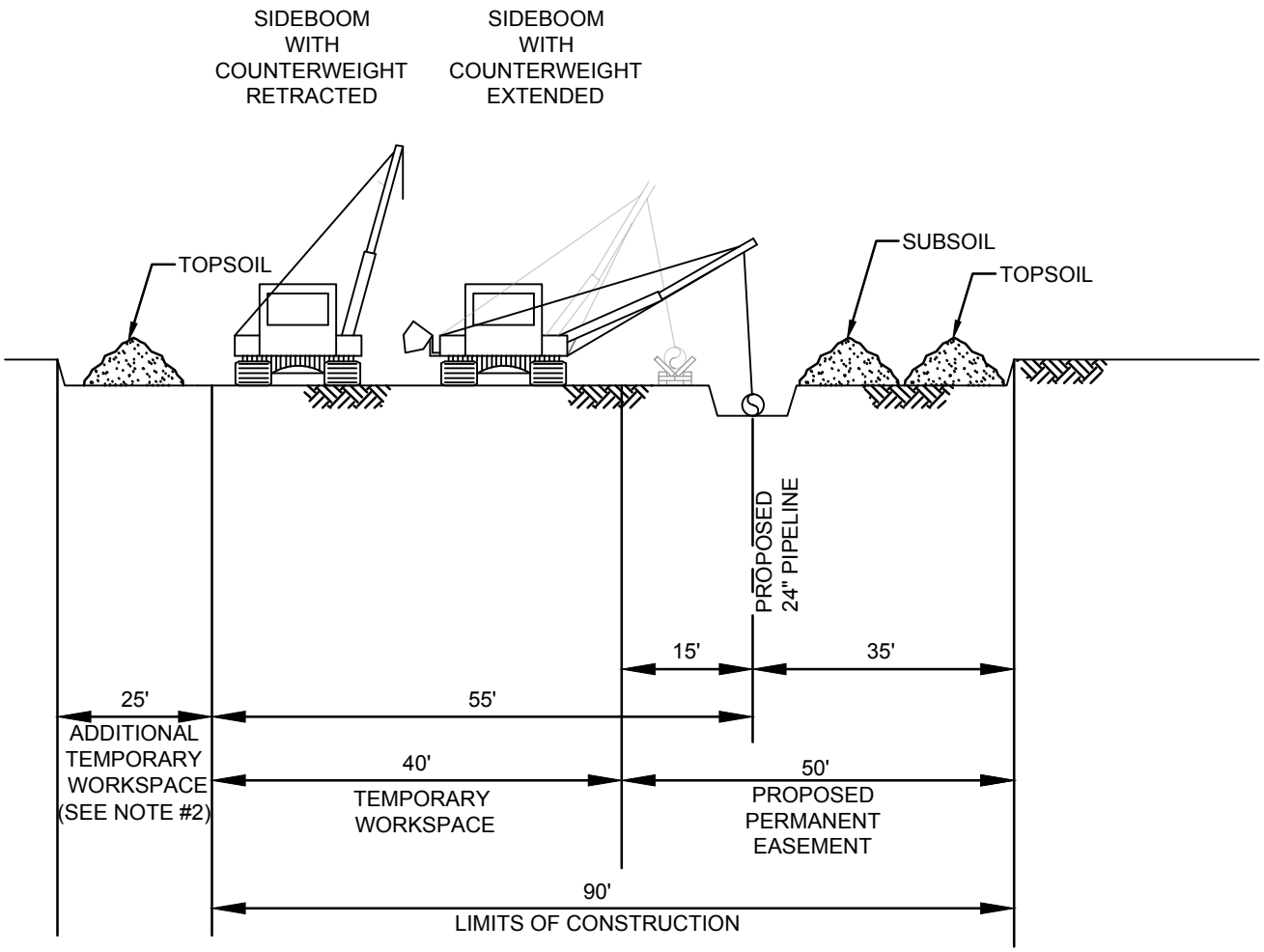


PROFILE
(NOT TO SCALE)

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 90 FEET WIDE CONSISTING OF 50 FEET OF PROPOSED PERMANENT EASEMENT AND 40 FEET OF TEMPORARY WORKSPACE. ADDITIONAL TEMPORARY WORKSPACE (ATWS) WILL BE NECESSARY AT MAJOR ROADS, RAILROADS, RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
2. ADD 25 FEET OF ATWS ON WORKING SIDE (TYPICALLY) FOR TOPSOIL STORAGE IN AGRICULTURAL FIELDS, RESIDENTIAL YARDS, AND AS PER LANDOWNER AGREEMENTS.
3. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH AGRICULTURAL SOILS INTO STREAMS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING TOPSOIL AND SPOIL PILES.
4. MINIMUM DEPTH OF COVER IN AGRICULTURAL FIELD IS 5 FEET.

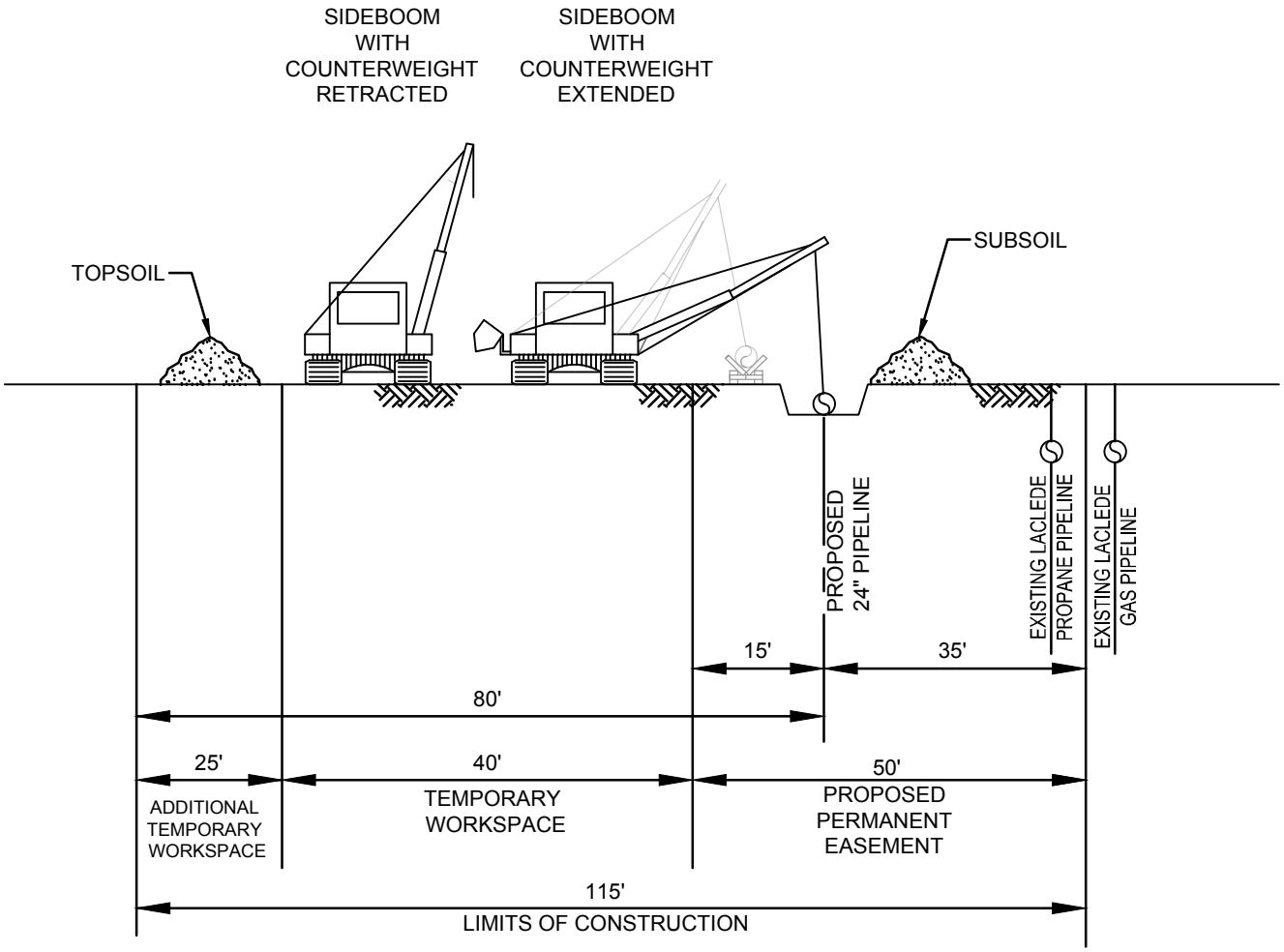
NO	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
2	04/2017	RJR	AMENDMENT TO FERC		

REVISIONS

ENG. RECORD		DATE
DRAWN BY:	MM	09/2016
DRAWING APPROVAL	DGG	09/2016
PROJECT APPROVAL	JEW	09/2016
SURVEY DATE:		
SCALE: N.T.S.		
PROJECT ID:		
FILE NAME:		

TYPICAL 90' CONSTRUCTION RIGHT-OF-WAY (AGRICULTURE FIELD) FOR PROPOSED 24-INCH DIAMETER PIPELINE

DWG. NO. ROW-CONFIG_03



PROFILE
(NOT TO SCALE)

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 90 FEET WIDE CONSISTING OF 50 FEET OF PROPOSED PERMANENT EASEMENT AND 40 FEET OF TEMPORARY WORKSPACE. ADDITIONAL TEMPORARY WORKSPACE (ATWS) WILL BE NECESSARY AT MAJOR ROADS, RAILROADS, RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
2. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO STREAMS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING TOPSOIL AND SPOIL PILES.
3. MINIMUM DEPTH OF COVER FOR PIPE IS 5 FEET.

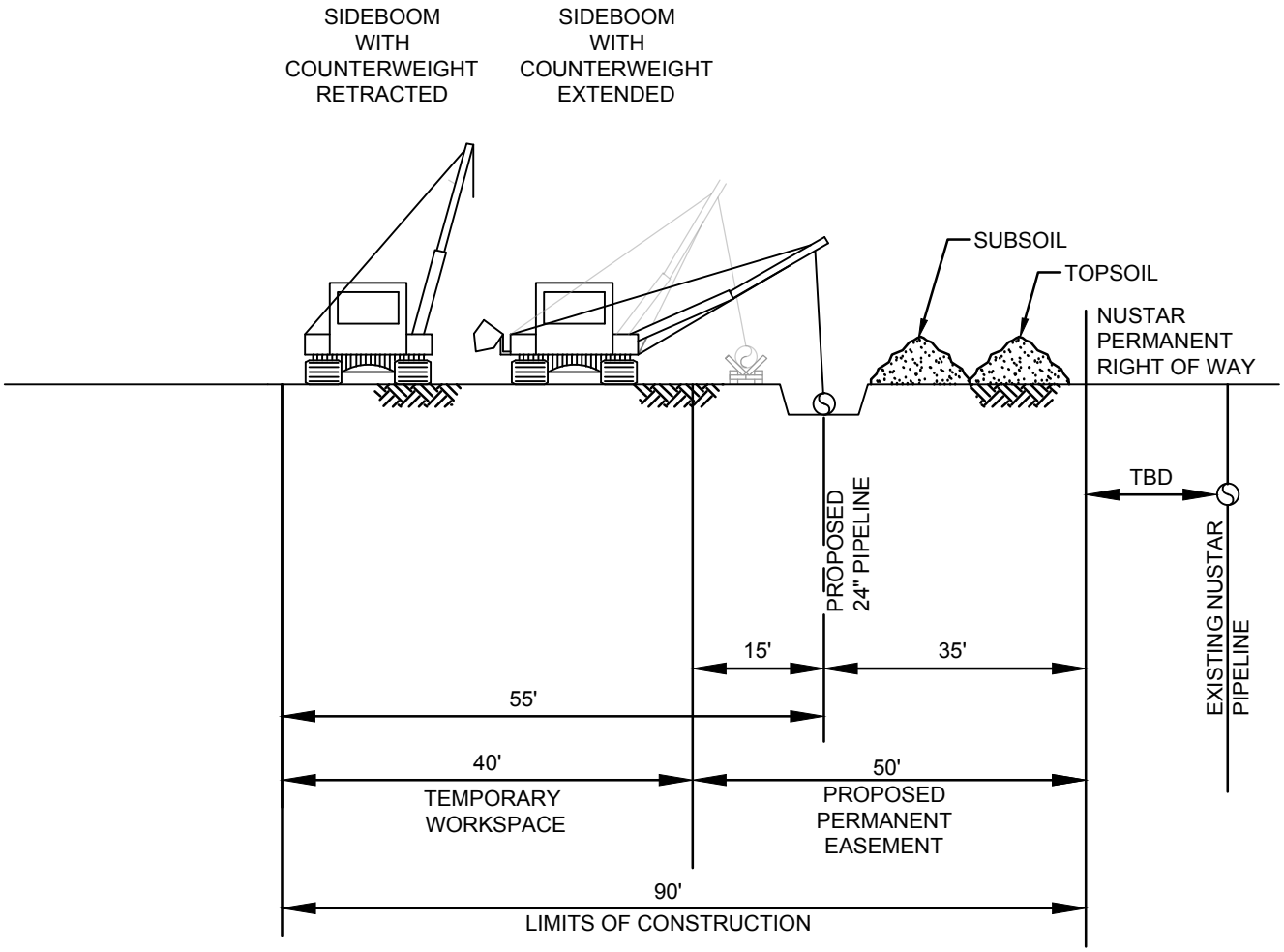
NO	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
2	04/2017	RJR	AMENDMENT TO FERC		

REVISIONS

ENG. RECORD		DATE
DRAWN BY:	MM	04/2017
DRAWING APPROVAL	DGG	04/2017
PROJECT APPROVAL	JEW	04/2017
SURVEY DATE:		
SCALE: N.T.S.		
PROJECT ID:		
FILE NAME:		

TYPICAL CONSTRUCTION WHILE COLOCATING WITH LACLEDE PIPELINES FOR PROPOSED 24-INCH DIAMETER PIPELINE

DWG. NO. ROW-CONFIG_04



PROFILE
(NOT TO SCALE)

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 90 FEET WIDE CONSISTING OF 50 FEET OF PROPOSED PERMANENT EASEMENT AND 40 FEET OF TEMPORARY WORKSPACE. ADDITIONAL TEMPORARY WORKSPACE (ATWS) WILL BE NECESSARY AT MAJOR ROADS, RAILROADS, RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
2. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO STREAMS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING TOPSOIL AND SPOIL PILES.
3. MINIMUM DEPTH OF COVER FOR PIPE IS 5 FEET.

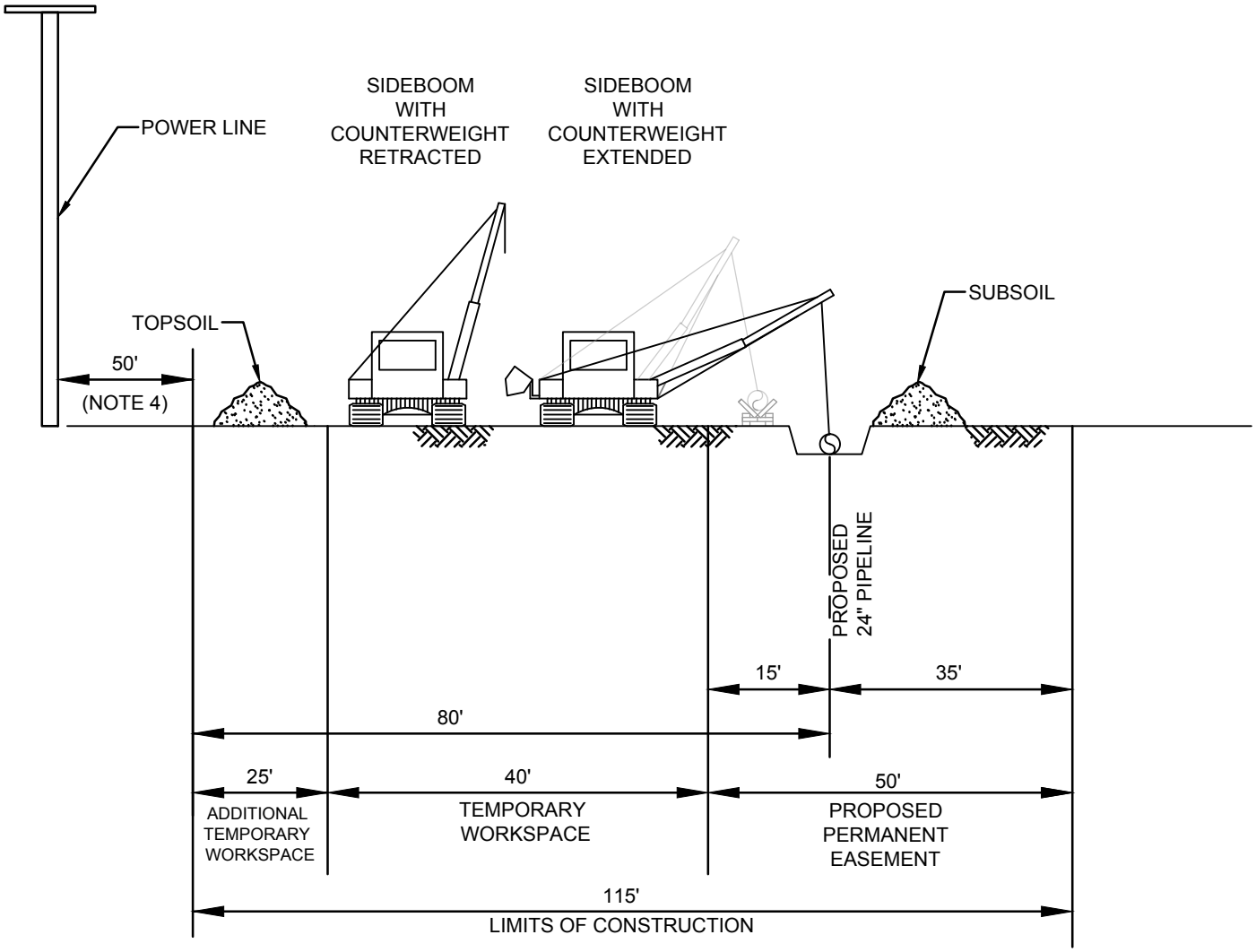
NO	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
2	04/2017	RJR	AMENDMENT TO FERC		

REVISIONS

ENG. RECORD		DATE
DRAWN BY:	MM	04/2017
DRAWING APPROVAL	DGG	04/2017
PROJECT APPROVAL	JEW	04/2017
SURVEY DATE:		
SCALE: N.T.S.		
PROJECT ID:		
FILE NAME:		

TYPICAL CONSTRUCTION WHILE COLOCATING WITH NUSTAR PIPELINE FOR PROPOSED 24-INCH DIAMETER PIPELINE

DWG. NO. ROW-CONFIG_05



PROFILE
(NOT TO SCALE)

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 90 FEET WIDE CONSISTING OF 50 FEET OF PROPOSED PERMANENT EASEMENT AND 40 FEET OF TEMPORARY WORKSPACE. ADDITIONAL TEMPORARY WORKSPACE (ATWS) WILL BE NECESSARY AT MAJOR ROADS, RAILROADS, RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
2. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO STREAMS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING TOPSOIL AND SPOIL PILES.
3. MINIMUM DEPTH OF COVER FOR PIPE IS 5 FEET.
4. ATWS IN AGRICULTURAL FIELDS. ACTUAL DISTANCE MAY VARY BASED ON LINE VOLTAGE SO A SAFE WORKING DISTANCE MAY BE MAINTAINED.

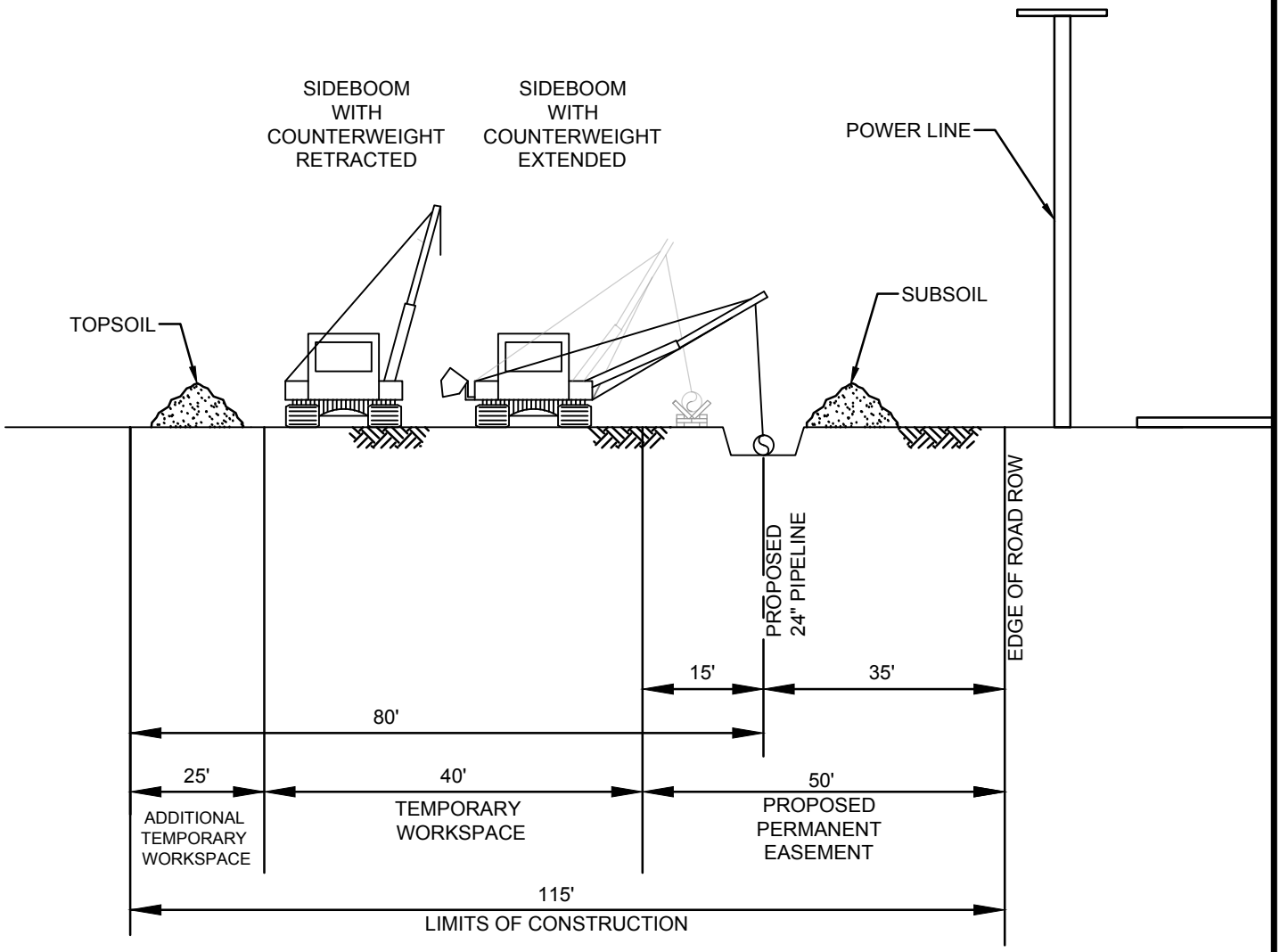
NO	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
2	04/2017	RJR	AMENDMENT TO FERC		

REVISIONS

ENG. RECORD		DATE
DRAWN BY:	MM	04/2017
DRAWING APPROVAL	DGG	04/2017
PROJECT APPROVAL	JEW	04/2017
SURVEY DATE:		
SCALE: N.T.S.		
PROJECT ID:		
FILE NAME:		

TYPICAL CONSTRUCTION WHILE COLOCATING WITH POWER LINE FOR PROPOSED 24-INCH DIAMETER PIPELINE

DWG. NO. ROW-CONFIG_06



PROFILE
(NOT TO SCALE)

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 90 FEET WIDE CONSISTING OF 50 FEET OF PROPOSED PERMANENT EASEMENT AND 40 FEET OF TEMPORARY WORKSPACE. ADDITIONAL TEMPORARY WORKSPACE (ATWS) WILL BE NECESSARY AT MAJOR ROADS, RAILROADS, RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
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3. MINIMUM DEPTH OF COVER FOR PIPE IS 5 FEET.

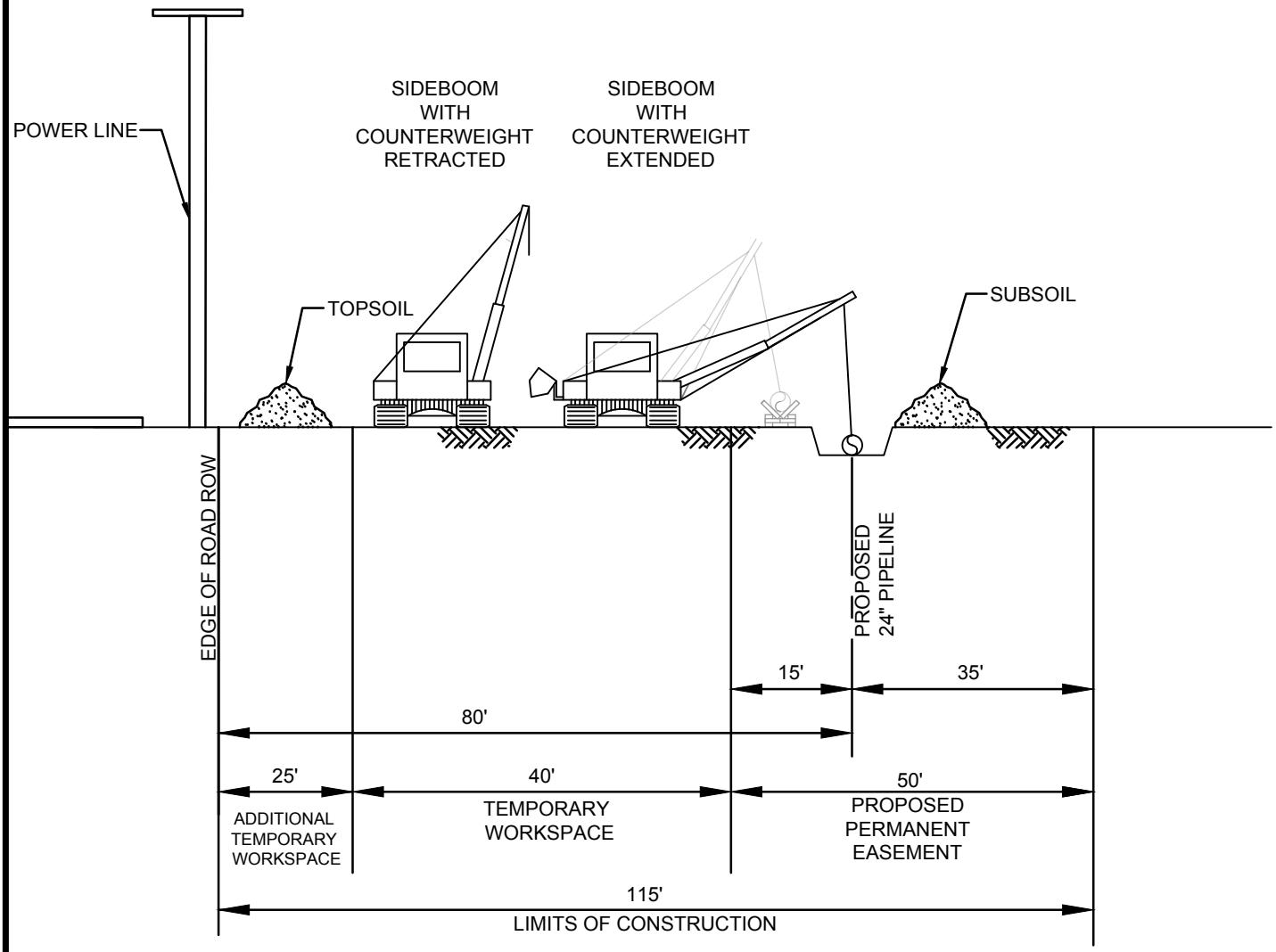
NO	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
2	04/2017	RJR	AMENDMENT TO FERC		

REVISIONS

ENG. RECORD		DATE
DRAWN BY:	MM	04/2017
DRAWING APPROVAL	DGG	04/2017
PROJECT APPROVAL	JEW	04/2017
SURVEY DATE:		
SCALE: N.T.S.		
PROJECT ID:		
FILE NAME:		

TYPICAL CONSTRUCTION WHILE COLOCATING WITH ROAD (WORKING SIDE AWAY FROM ROAD) FOR PROPOSED 24-INCH DIAMETER PIPELINE

DWG. NO. ROW-CONFIG_07



PROFILE
(NOT TO SCALE)

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 90 FEET WIDE CONSISTING OF 50 FEET OF PROPOSED PERMANENT EASEMENT AND 40 FEET OF TEMPORARY WORKSPACE. ADDITIONAL TEMPORARY WORKSPACE (ATWS) WILL BE NECESSARY AT MAJOR ROADS, RAILROADS, RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
2. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO STREAMS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING TOPSOIL AND SPOIL PILES.
3. MINIMUM DEPTH OF COVER FOR PIPE IS 5 FEET.

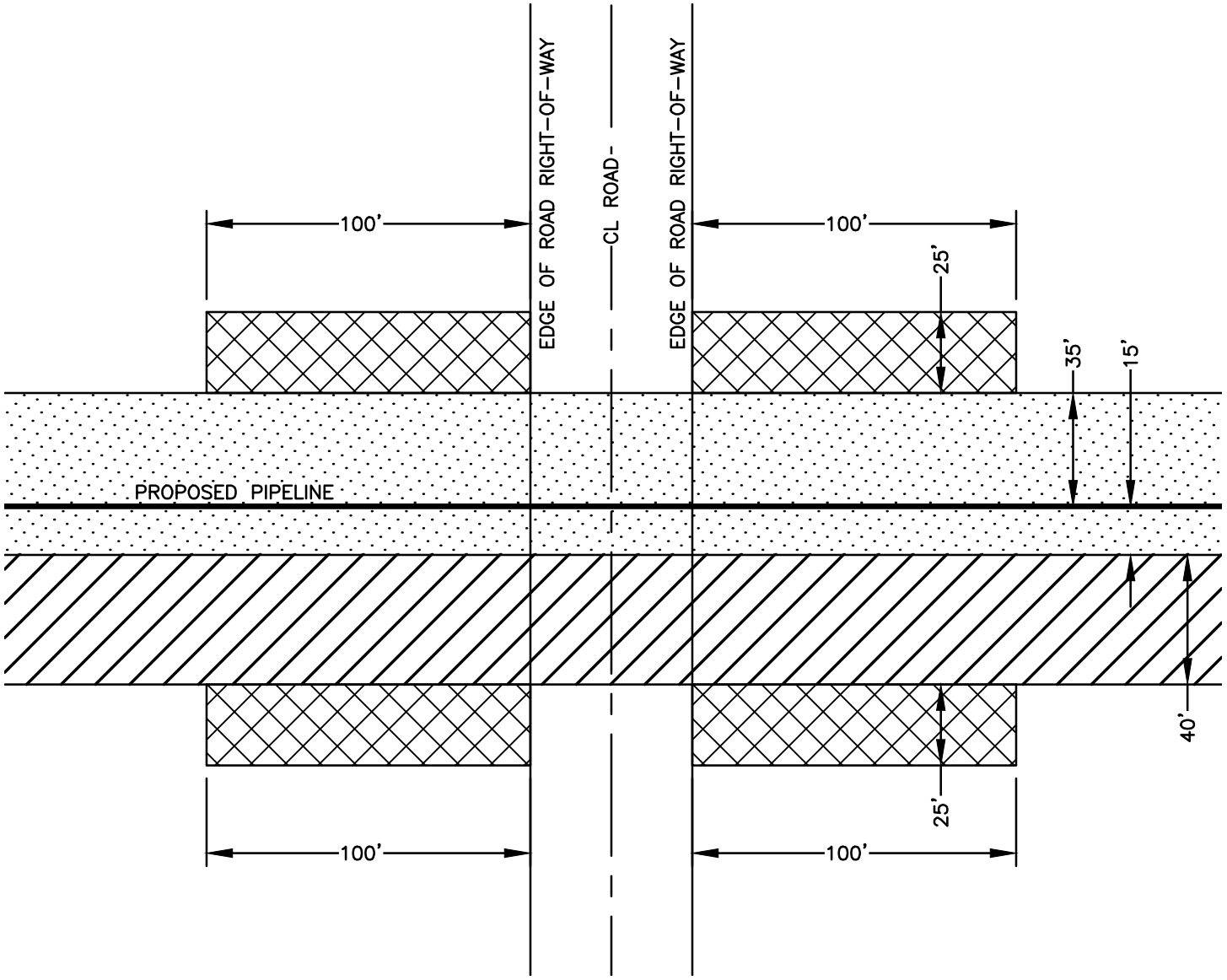
NO	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
2	04/2017	RJR	AMENDMENT TO FERC		

REVISIONS

ENG. RECORD		DATE
DRAWN BY:	MM	04/2017
DRAWING APPROVAL	DGG	04/2017
PROJECT APPROVAL	JEW	04/2017
SURVEY DATE:		
SCALE: N.T.S.		
PROJECT ID:		
FILE NAME:		

TYPICAL CONSTRUCTION WHILE COLOCATING WITH ROAD (WORKING SIDE ADJACENT WITH ROAD) FOR PROPOSED 24-INCH DIAMETER PIPELINE

DWG. NO. ROW-CONFIG_08



EXISTING PERMANENT EASEMENT

PROPOSED PERMANENT EASEMENT

TEMPORARY WORKSPACE

ADDITIONAL TEMPORARY WORKSPACE

NOTES:

1. TEMPORARY WORKSPACES NEED TO BE REDUCED IN ORDER FOR THE CROSSING WIDTH TO BE 75' STARTING 50' FROM THE EDGE OF WETLANDS OR TOP OF BANKS.
2. ADDITIONAL TEMPORARY WORKSPACES CAN'T BE PLACED WITHIN 50' OF WETLAND EDGES OR TOP OF BANKS.
3. ATWS DIMENSIONS MAY VARY DUE TO SITE SPECIFIC CONDITIONS.
4. WORKSPACE IMPACTS SHOWN ARE APPLICABLE TO BOTH OPEN CUT AND BORED CROSSING CONSTRUCTION METHODS.

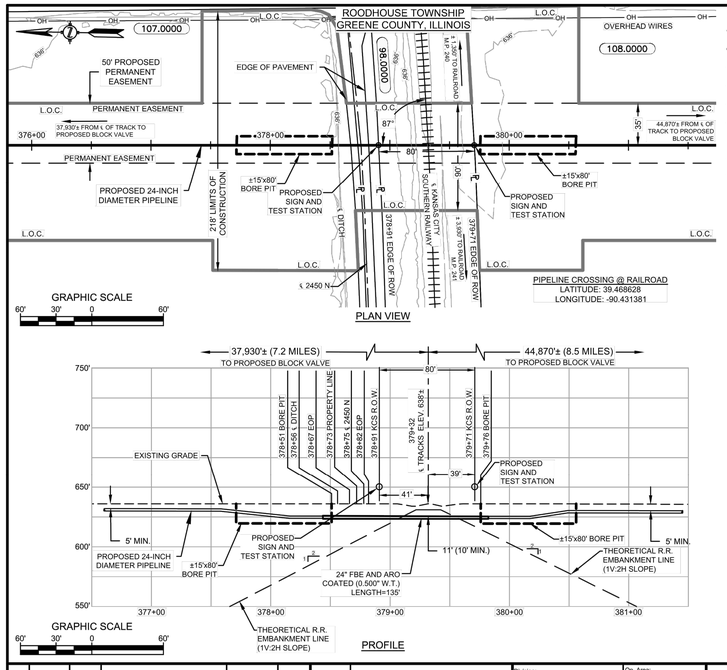
NO	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
2	04/2017	MM	AMENDMENT TO FERC		

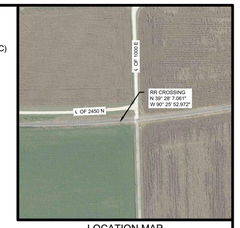
REVISIONS

ENG. RECORD		DATE
DRAWN BY:	MM	03/2017
DRAWING APPROVAL	DGG	04/2017
PROJECT APPROVAL	JEW	04/2017
SURVEY DATE:		
SCALE: N.T.S.		
PROJECT ID:		
FILE NAME:		

SPIRE STLP PIPELINE
TYPICAL ROAD CROSSING
PROPOSED 24-INCH DIAMETER PIPELINE & NORTH COUNTY EXTENSION

DWG. NO. STLP-RD-T001





LOCATION MAP

LEGEND

- PROPOSED PIPELINE
- LIMITS OF CONSTRUCTION (L.O.C)
- PERMANENT EASEMENT
- ℄ OF ROAD
- EXISTING FOREIGN PIPELINE
- EXISTING PROPERTY LINE
- (1306.0000) MMID
- ℄ OF STREAM (DESKTOP)
- ℄ OF STREAM (DELINEATED)
- WETLAND (DESKTOP)
- WETLAND (DELINEATED)
- POND (DELINEATED)

GENERAL NOTES:

1. THIS DRAWING IS FOR PERMITTING PURPOSES.
2. TEST STATIONS SHALL BE LOCATED ON BOTH SIDES OF THE RAILWAY, OVER THE CENTERLINE OF THE PIPE AND IN LINE WITH THE RAILWAY RIGHT-OF-WAY BOUNDARIES. EACH TEST STATION SHALL BEAR A SIGN DISPLAYING THE NAME AND ADDRESS OF PIPELINE OWNER, THE CONTENTS OF THE PIPE, THE PRESSURE IN THE PIPE, THE DEPTH OF COVER AT THE TEST STATION AND AN EMERGENCY TELEPHONE NUMBER IN THE EVENT OF PIPE RUPTURE.
3. ALL PIPELINE INSTALLATION AND MAINTENANCE WORK WITHIN THE LIMITS OF THE RAILROAD RIGHT-OF-WAY SHALL CONFORM TO THE MOST CURRENT EDITION OF SPECIFICATIONS FOR PIPELINE OCCUPANCY OF KANSAS CITY SOUTHERN RAILWAY AND AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION (AREMA) PART 5, WORK AND MATERIALS WITHIN THE RAILROAD RIGHT-OF-WAY MUST ALSO CONFORM TO ALL PUBLIC LAWS OF THE STATE OF ILLINOIS, LOCAL LAWS, ORDINATES AND ORDERS OF THE PUBLIC UTILITIES COMMISSION.
4. ALL WORK MUST CONFORM WITH USDOT PIPELINE SAFETY REGULATIONS PARTS 190-199 AND APPLICABLE INDUSTRY CODES.
5. NO BLASTING PERMITTED.
6. HORIZONTAL AND VERTICAL DATUM BASED ON NAD83 UTM15F.
7. PROPERTY LINES SHOWN ON THESE PLANS ARE APPROXIMATE AND NOT BASED ON A BOUNDARY SURVEY.
8. SURVEY CONDUCTED BY MOTT MACDONALD.

UTILITY NOTES:

1. THE UNDERGROUND UTILITIES SHOWN HEREON WERE COMPILED FROM INFORMATION OBTAINED FROM EXISTING PLANS, SURFACE FACILITIES, AND FIELD WORK. UTILITIES ARE SHOWN AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. NO GUARANTEE OF ACTUAL LOCATION IS GIVEN UNTIL SAID UTILITIES ARE UNCOVERED IN FIELD FOR VERIFICATION.
2. PIPELINE SHALL BE REGISTERED WITH ILLINOIS ONE CALL SYSTEM: 1-800-892-0123.

PIPE DATA	
CONTENTS TO BE HANDLED	NATURAL GAS
NORMAL OPERATING PRESSURE	1,440 PSIG
NORMAL SIZE OF PIPE	24"
OUTSIDE DIAMETER	24.000"
INSIDE DIAMETER	23.000"
WALL THICKNESS	0.500"
WEIGHT PER FOOT (LB/FT)	125.61
MATERIAL	STEEL
STEEL PIPE MINIMUM YIELD STRENGTH (SMYS)	70,000 PSI
PROCESS OF MANUFACTURE	DSAW
SPECIFICATION	API 5L
TEST PRESSURE	1800 PSIG
TYPE OF JOINT	WELD
TYPE OF COATING	FBE & ARO
DETAILS OF CATHODIC PROTECTION	IMPRESSED CURRENT
METHODS OF INSTALLATION	BORE & JACK

2	04/2017	DGG	AMENDMENT TO FERC				
NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.		
REVISIONS							

STLP-A-008	ALIGNMENT SHEET		
DWG NO.	DESCRIPTION		
REFERENCES			

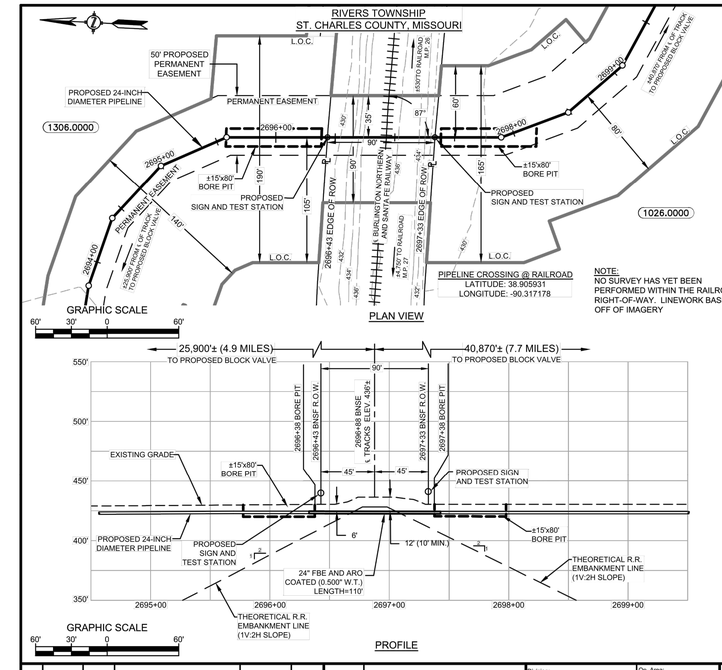
Division:		Op. Area:
State:	ILLINOIS	Co./Par.: GREENE
Section: 21	Township: ROODHOUSE	Range: 12W
Drft: DRG	Date: 04/2017	Scale Plan: 1"=60'
Chk: MAP	Date: 04/2017	Scale Profile: 1"=60'
Appr: DGG	Date: 04/2017	Filename: STLP-RR-001

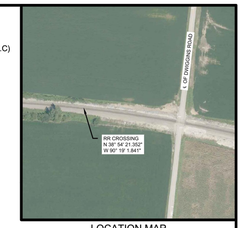
SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH DIAMETER PIPELINE
SITE-SPECIFIC RAIL ROAD CROSSING DETAIL
KANSAS CITY SOUTHERN RAILWAY

PREPARED FOR: Spire STL Pipeline

PREPARED BY: MOTT MACDONALD

Drawing Number:	Sheet: 1 of 1	Rev
STLP-RR-001	Type: ACAD	2





LOCATION MAP

LEGEND

- PROPOSED PIPELINE
- LIMITS OF CONSTRUCTION (L.O.C)
- PERMANENT EASEMENT
- ℄ OF ROAD
- EXISTING FOREIGN PIPELINE
- EXISTING PROPERTY LINE
- (1306.0000) MMID
- ℄ OF STREAM (DESKTOP)
- ℄ OF STREAM (DELINEATED)
- WETLAND (DESKTOP)
- WETLAND (DELINEATED)
- POND (DELINEATED)

GENERAL NOTES:

1. THIS DRAWING IS FOR PERMITTING PURPOSES.
2. TEST STATIONS SHALL BE LOCATED ON BOTH SIDES OF THE RAILWAY, OVER THE CENTERLINE OF THE PIPE AND IN LINE WITH THE RAILWAY RIGHT-OF-WAY BOUNDARIES. EACH TEST STATION SHALL BEAR A SIGN DISPLAYING THE NAME AND ADDRESS OF PIPELINE OWNER, THE CONTENTS OF THE PIPE, THE PRESSURE IN THE PIPE, THE DEPTH OF COVER AT THE TEST STATION AND AN EMERGENCY TELEPHONE NUMBER IN THE EVENT OF PIPE RUPTURE.
3. ALL PIPELINE INSTALLATION AND MAINTENANCE WORK WITHIN THE LIMITS OF THE RAILROAD RIGHT-OF-WAY SHALL CONFORM TO THE MOST CURRENT EDITION OF SPECIFICATIONS FOR PIPELINE OCCUPANCY OF BURLINGTON NORTHERN & SANTA FE RAILWAY AND AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION (AREMA) PART 5, WORK AND MATERIALS WITHIN THE RAILROAD RIGHT-OF-WAY MUST ALSO CONFORM TO ALL PUBLIC LAWS OF THE STATE OF MISSOURI, LOCAL LAWS, ORDINATES AND ORDERS OF THE PUBLIC UTILITIES COMMISSION.
4. ALL WORK MUST CONFORM WITH USDOT PIPELINE SAFETY REGULATIONS PARTS 190-199 AND APPLICABLE INDUSTRY CODES.
5. NO BLASTING PERMITTED.
6. HORIZONTAL AND VERTICAL DATUM BASED ON NAD83 UTM15F.
7. PROPERTY LINES SHOWN ON THESE PLANS ARE APPROXIMATE AND NOT BASED ON A BOUNDARY SURVEY.
8. SURVEY CONDUCTED BY MOTT MACDONALD.

UTILITY NOTES:

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2. PIPELINE SHALL BE REGISTERED WITH MISSOURI ONE CALL SYSTEM: 1-800-344-7483.

PIPE DATA	
CONTENTS TO BE HANDLED	NATURAL GAS
NORMAL OPERATING PRESSURE	1,440 PSIG
NORMAL SIZE OF PIPE	24"
OUTSIDE DIAMETER	24.000"
INSIDE DIAMETER	23.000"
WALL THICKNESS	0.500"
WEIGHT PER FOOT (LB/FT)	125.61
MATERIAL	STEEL
STEEL PIPE MINIMUM YIELD STRENGTH (SMYS)	70,000 PSI
PROCESS OF MANUFACTURE	DSAW
SPECIFICATION	API 5L
TEST PRESSURE	1800 PSIG
TYPE OF JOINT	WELD
TYPE OF COATING	FBE & ARO
DETAILS OF CATHODIC PROTECTION	IMPRESSED CURRENT
METHODS OF INSTALLATION	BORE & JACK

						STLP-A-059	ALIGNMENT SHEET
						STLP-A-060	ALIGNMENT SHEET
2	04/2017	DGG	AMENDMENT TO FERC			DWG NO.	DESCRIPTION
NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.	REFERENCES	
REVISIONS							

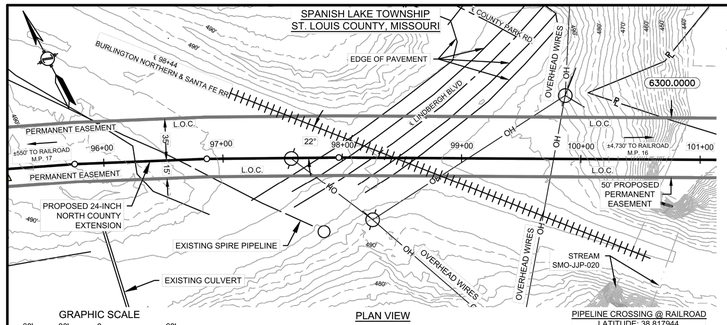
Division:		Op. Area:
State: MISSOURI		Co./Par.: ST. CHARLES
Section:	Township: RIVERS	Range:
Drft: DRG	Date: 04/2017	Scale Plan: 1"=60'
Chk: MAP	Date: 04/2017	Scale Profile: 1"=60'
Appr: DGG	Date: 04/2017	Filename: STLP-RR-002

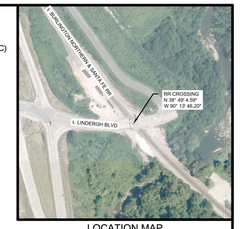
SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH DIAMETER PIPELINE
SITE-SPECIFIC RAIL ROAD CROSSING DETAIL
BURLINGTON NORTHERN & SANTA FE RAILWAY

PREPARED FOR: Spire STL Pipeline

PREPARED BY: MOTT MACDONALD

Drawing Number:	Sheet: 1 of 1	Rev
STLP-RR-002	Type: ACAD	2





LOCATION MAP

LEGEND

- PROPOSED PIPELINE
- LIMITS OF CONSTRUCTION (L.O.C)
- PERMANENT EASEMENT
- ℄ OF ROAD
- EXISTING FOREIGN PIPELINE
- EXISTING PROPERTY LINE
- (1306.0000) MMID
- ℄ OF STREAM (DESKTOP)
- ℄ OF STREAM (DELINEATED)
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4. ALL WORK MUST CONFORM WITH USDOT PIPELINE SAFETY REGULATIONS PARTS 190-199 AND APPLICABLE INDUSTRY CODES.
5. NO BLASTING PERMITTED.
6. HORIZONTAL AND VERTICAL DATUM BASED ON NAD83 UTM15F.
7. PROPERTY LINES SHOWN ON THESE PLANS ARE APPROXIMATE AND NOT BASED ON A BOUNDARY SURVEY.
8. SURVEY CONDUCTED BY MOTT MACDONALD.

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PIPE DATA	
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NORMAL OPERATING PRESSURE	1,440 PSIG
NORMAL SIZE OF PIPE	24"
OUTSIDE DIAMETER	24.000"
INSIDE DIAMETER	23.000"
WALL THICKNESS	0.500"
WEIGHT PER FOOT (LB/FT)	125.61
MATERIAL	STEEL
STEEL PIPE MINIMUM YIELD STRENGTH (SMYS)	70,000 PSI
PROCESS OF MANUFACTURE	DSAW
SPECIFICATION	API 5L
TEST PRESSURE	2160 PSIG
TYPE OF JOINT	WELD
TYPE OF COATING	FBE & ARO
DETAILS OF CATHODIC PROTECTION	IMPRESSED CURRENT
METHODS OF INSTALLATION	HDD

						STLP-HDD-1002	HDD PROFILE OVERVIEW
						STLP-HDD-1001	HDD PROFILE OVERVIEW
2	04/2017	DGG	AMENDMENT TO FERC			STLP-A-1002	ALIGNMENT SHEET
NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.	DWG NO.	DESCRIPTION
REVISIONS						REFERENCES	

Division:		Op. Area:
State: MISSOURI		Co./Par.: ST. LOUIS
Section:	Township: SPANISH LAKE	Range:
Drft: WAH	Date: 04/2017	Scale Plan: 1"=60'
Chk: MAP	Date: 04/2017	Scale Profile: 1"=60'
Appr: DGG	Date: 04/2017	Filename: STLP-RR-1001

SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH NORTH COUNTY EXTENSION
SITE-SPECIFIC RAIL ROAD CROSSING DETAIL
BURLINGTON NORTHERN & SANTA FE RR

PREPARED FOR: Spire STL Pipeline

PREPARED BY: MOTT MACDONALD

Drawing Number:	Sheet: 1 of 1	Rev
STLP-RR-1001	Type: ACAD	2

REFERENCE DRAWINGS		REFERENCE DRAWINGS	
DWG. NO.	TITLE	DWG. NO.	TITLE
STLP-A-008	ALIGNMENT SHEET	STLP-A-1002	ALIGNMENT SHEET
STLP-A-059	ALIGNMENT SHEET	STLP-HDD-1001	HDD PROFILE OVERVIEW
STLP-A-060	ALIGNMENT SHEET	STLP-HDD-1002	HDD PROFILE OVERVIEW

REVISIONS					
NO.	DESCRIPTIONS	DATE	DRAWN	CK	APPR
2	AMENDMENT TO FERC	04/2017	WH	MAP	DGG

REVISIONS					
NO.	DESCRIPTIONS	DATE	DRAWN	CK	APPR

APPROVALS					
DRAWN BY	DATE	ENG. APPROVAL	DATE	CLIENT APPROVAL	DATE
ACS	04/2017	MAP	04/2017		
CHECKED BY	DATE	P.M. APPROVAL	DATE	SCALE:	
RJP	04/2017	JEW	04/2017		

PREPARED FOR: Spire STL Pipeline

PREPARED BY: MOTT MACDONALD

SPIRE STL PIPELINE PROJECT

SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH DIAMETER PIPELINE
AND NORTH COUNTY EXTENSION
SITE SPECIFIC RAILROAD CROSSING DETAILS

APPENDIX 8-B

Federal Property Crossing Plan

Spire STL Pipeline Project

Federal Property Crossing Plan

FERC Docket No. CP17-40-_ _ _

April 2017

Public

Table of Contents

Acronyms and Abbreviations

ATWS	Additional Temporary Workspace
Enable MRT	Enable Mississippi River Transmission, LLC
HDD	horizontal directional drill
LGC	Laclede Gas Company
MP	milepost
NEPA	National Environmental Policy Act
NWI	National Wetlands Inventory
Project	Spire STL Pipeline Project
REX	Rockies Express Pipeline LLC
Spire	Spire STL Pipeline LLC
USACE	United States Army Corps of Engineers

Federal Property Crossing Plan

1.1 Introduction

Spire STL Pipeline LLC ("Spire"), a wholly owned subsidiary of Spire Inc., is proposing to construct and operate the Spire STL Pipeline Project ("Project") located in Scott, Greene, and Jersey Counties, Illinois; and St. Charles and St. Louis Counties, Missouri. The proposed Project would cross land in St. Charles County, Missouri that is owned in fee by the United States Army Corps of Engineers ("USACE") St. Louis District (Upper Mississippi River Conservation Area). This Federal Crossing Plan discusses the crossing of this property and the avoidance and minimization measures that will be implemented during construction at this property. Spire continues to coordinate with the USACE and will revise this Plan as necessary throughout the Project's planning process.

1.1.1 Project Location

The proposed Project will consist of approximately 65 miles of new, greenfield, 24-inch-diameter steel pipeline in two segments. The first segment (referred to as the "24-inch pipeline" portion of the Project) will originate at a new interconnect with the Rockies Express Pipeline LLC ("REX") pipeline in Scott County, Illinois and extend approximately 59 miles through Greene and Jersey Counties in Illinois before crossing the Mississippi River and extending east through St. Charles County, Missouri. The 24-inch pipeline then crosses the Missouri River into St. Louis County, Missouri, and terminates at a new interconnect with Laclede Gas Company ("LGC"). The second segment of new, greenfield pipeline (referred to as the "North County Extension"), will consist of a 24-inch-diameter steel pipeline, which will extend approximately six miles from the LGC interconnect through the northern portion of St. Louis County and terminate at a new interconnect with Enable Mississippi River Transmission, LLC ("Enable MRT") and LGC. The total length of the Project pipeline will be approximately 65 miles.

The crossing of the property owned by the USACE is located adjacent to the Mississippi River in St. Charles County, Missouri, and is described in greater detail below.

1.1.2 Federal Lands Crossing

Federal lands are proposed to be crossed by the 24-inch pipeline at the western bank of the Mississippi River at approximate Milepost ("MP") 45.6. Spire's proposed route is collocated with an existing pipeline through this location. As currently proposed, the USACE property (near Mississippi River mile marker 215) would be crossed by the Project via horizontal directional drill ("HDD") as part of the 24-inch pipeline's crossing of the Mississippi River. Spire initiated its geotechnical assessment of this river crossing in October, 2016, to determine the final placement of the pipeline and associated HDD entry/exits locations; these are shown on the Project mapping. No tree clearing or earth disturbance will occur on the USACE federal land as described in Sections 1.2 through 1.4. Workspace required for the crossing will be located outside of the USACE property boundary.

1.2 Construction Methods and Impacts

Spire will cross the Mississippi River, including the USACE federal land, using HDD techniques. This trenchless method avoids land surface and water disturbances, including those to wetlands, waterbodies, vegetation, or any special land uses. Section 1.2.1 describes the crossing method, and Sections 1.2.2 through 1.2.4 discuss the land requirements for a permanent pipeline right-of-way easement on the USACE property and the resources avoided by use of the trenchless crossing of the property.

1.2.1 Crossing Method

HDD is an advanced, controllable trenchless boring method of installing underground pipes along a predetermined bore path. This method allows for trenchless construction across an area by pre-drilling a hole well below the depth of a conventional pipeline lay and then pulling the pipeline through the pre-drilled borehole. The process consists of drilling a pilot hole with a cutting head along the predetermined path and then enlarging the pilot hole with a larger cutting tool (back reamer) to the diameter required to install the casing, pipe, or conduit. The process is done with viscous fluid (e.g., drilling fluid). The fluid generally consists of a mixture of water and usually bentonite or polymer. The fluid is pumped through holes in the cutting heads to facilitate the removal of cuttings, stabilize the bore hole and cool the cutting heads, and lubricate the passage of the pipe. The fluid is recycled throughout the drilling process. This method of installation will require additional temporary workspace ("ATWS"). The amount of ATWS is directly related to the required drilling fluid pits and the pipe stringing corridor (pull-back). The pipe stringing corridor is required to pre-connect the pipe so that it can be pulled through the bore hole in one piece.

Construction workspaces required to conduct the trenchless crossing include the following:

- the HDD entry/exit location at approximate MP 45 at the north side of the Mississippi River (270 feet north of the river);
- the HDD entry/exit location at approximate MP 46.1 at the south side of the Mississippi River and south of the USACE property (2,622 feet south of the river); and
- the HDD pull-back (typically the length of the drill for stringing pipe) located south of the USACE property.

These construction workspaces will be located outside of the USACE property boundary. Only subsurface drilling will occur across the property, avoiding impacts to the Mississippi River and the associated federal land.

As discussed in Resource Report 2, the trenchless crossing will extend to a minimum depth of 25 feet below the river bed. No aboveground disturbance is planned between the HDD entry and exit locations during construction. No trees will be removed. No clearing of vegetation will occur between the HDD entry and exit locations as Spire intends to utilize a gyroscopic guidance system that does not require the installation of a tracer wire along the HDD alignment on the ground surface. No ground disturbance is anticipated for utilizing this guidance system. Spire's HDD contractor and inspectors will complete regular inadvertent return walks throughout the duration of the drill which would require minimal foot traffic along the HDD alignment. The proposed Site-Specific crossing drawings of the Mississippi River and associated federal property are provided in Resource Report 2.

1.2.2 Land Requirements

A 50-foot-wide permanent easement is proposed by Spire for the entirety of the proposed 24-inch pipeline. The permanent easement allows access to Spire personnel for any future operational needs. Table 1.2-1 displays the acreage of this easement across the USACE property. As stated above, Spire does not propose to maintain the portion of its permanent easement across the USACE land.

Table 1.2-1. Land Requirements on Federal Land

Facility	Construction Footprint (acres)[1]	Operational Easement (acres) [1]
24-Inch Pipeline	2.00	2.00

Notes:

[1] 50-foot-wide permanent easement only. No earth disturbance or clearing will occur.

1.2.3 Resources Crossed

The USACE property contains sensitive resources including wetlands and waterbodies. As previously mentioned, disturbances to these resources will be avoided by implementing the HDD crossing method. The United States Fish and Wildlife Service's National Wetlands Inventory ("NWI") identifies wetlands and waterbodies at the USACE property, as described below in Table 1.2-2. Spire initiated environmental surveys in September 2016.

Table 1.2-2. Resources on Federal Land

Resource and ID	Type	Source [2]	Operational Easement (acres) [3]
Wetlands			
NWI-105[1]	PFO1Ah	NWI	0[4]
WMO-WJW-001	PFO	FD	0[4]
		Subtotal	**0**
Waterbodies			
NWI-505[1]	L1UBHh (Luesse Lake)	NWI	0[5]
		Subtotal	**0**
		Total	**0**

Table 1.2-2. Resources on Federal Land (Continued)

Notes:

[1] These features are based on publically available NWI data. These features are located within areas of open water and cannot be accessed or field delineated on foot.

[2] NWI – National Wetland Inventory. FD – Field Delineation.

[3] Acreages are calculated based on the 50-foot-wide permanent easement only.

[4] Wetland is crossed by the HDD. No vegetation clearing is proposed within the permanent right-of-way above the HDD path; therefore impacts to this wetland are not anticipated.

[5] Waterbody is crossed by the HDD; therefore impacts are not anticipated.

Spire will not clear land between the HDD entry and exit locations for the proposed crossing of the Mississippi River and USACE property, and no impacts to wetlands or waterbodies are anticipated.

1.2.4 Land Use Crossed

Land use within the Project area was determined based on field reconnaissance during environmental resources investigations, as well as review of existing aerial mapping. Land use classifications were reviewed for the USACE property; those results are displayed in Table 1.2-3. As previously mentioned, impacts will be avoided by implementing a trenchless crossing method, therefore, permanent conversions of land use are not anticipated.

Table 1.2-3. Land Use at Crossing of Federal Land

Land Use Type	Construction Footprint (acres)[1]	Operational Easement (acres)[1]
Forest	0.71	0.71
Agricultural	0.00	0.00
Open Water	0.54	0.54
Open Land	0.00	0.00
Wetland	0.74	0.74
Totals	**2.00**	**2.00**

Notes:

[1] 50-foot-wide permanent easement only. No proposed tree clearing or earth disturbance.

1.3 Permitting and Mitigation

1.3.1 Permitting

As part of the easement agreement with the USACE, Spire intends to submit Standard Form 299, Application for Transportation and Utility Systems and Facilities on Federal Lands. Additionally, the USACE requires that projects that propose to make alternations to, or to temporarily or permanently occupy or use any USACE federally authorized civil works project, apply for a Section 408 permit. Spire submitted a permit for a Section 408 in January 2017. Both the USACE easement and Section 408 request are federal actions, and therefore subject to the National Environmental Policy Act ("NEPA"). The Federal Energy Regulatory Commission will act as the lead federal agency under NEPA for the environmental review and the development of the environmental document for the Project.

1.3.2 Easement

Spire requests a 50-foot-wide permanent right-of-way easement. No direct impacts are anticipated during or after construction within the operational easement.

1.3.3 Mitigation

Spire does not propose mitigation for this property at this time.

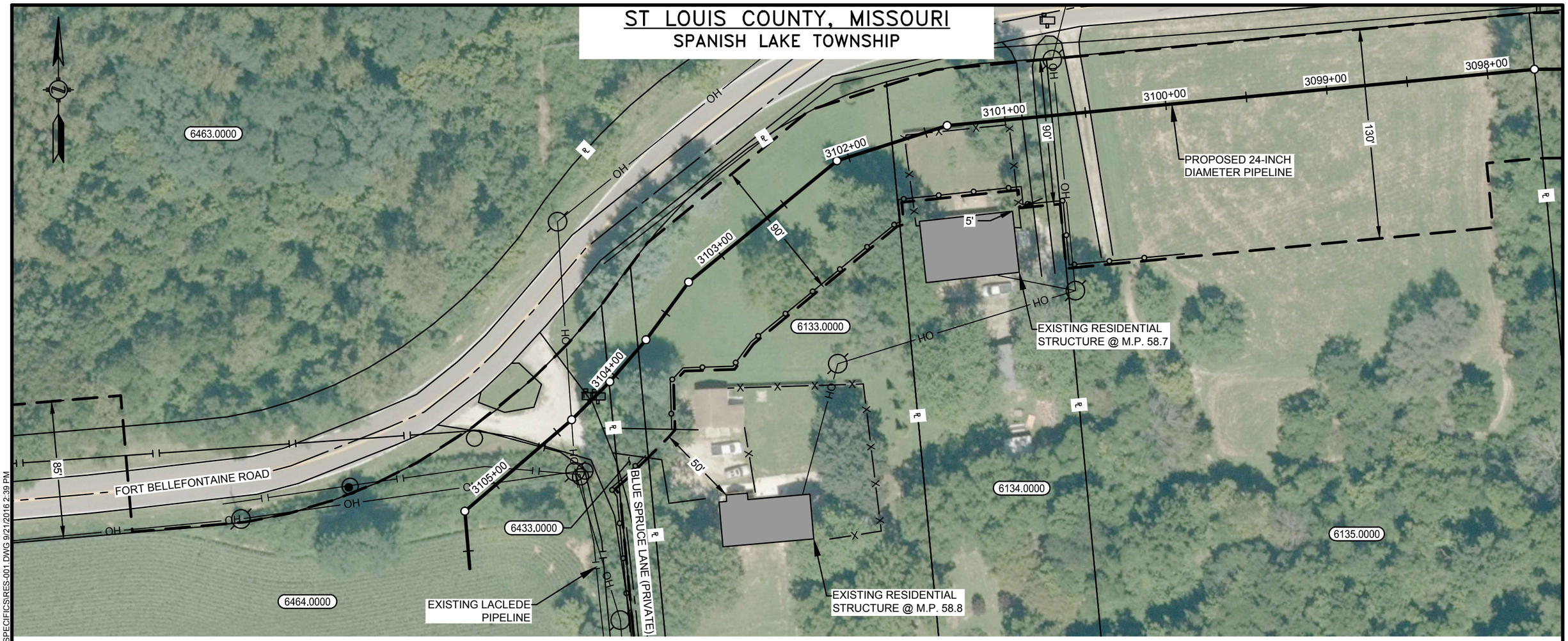
1.4 Reference

United States Fish and Wildlife Service. 2015. *National Wetlands Inventory*.

APPENDIX 8-C

Site-Specific Residential Construction Details

ST LOUIS COUNTY, MISSOURI
SPANISH LAKE TOWNSHIP



LEGEND

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PLAN VIEW
1" = 60'

GRAPHIC SCALE
60' 30' 0 60'

CONSTRUCTION TECHNIQUES

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1	01/2017	DRG	ISSUE FOR FERC		

REVISIONS

Division:		Op. Area:
State: MISSOURI		Co./Par.: ST LOUIS
Section:	Township:	Range:
Dft: DRG	Date: 10/11/16	Scale: 1" = 60'
Chk: EB	Date: 10/11/16	
Appr:	Date:	Filename: RES-001.DWG

SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH DIAMETER PIPELINE
RESIDENTIAL SITE SPECIFIC
ST LOUIS COUNTY, MISSOURI

PREPARED FOR
Spire
STL Pipeline

PREPARED BY
MOTT MACDONALD

RES-001

Sheet: 1 of 1
Type: ACAD

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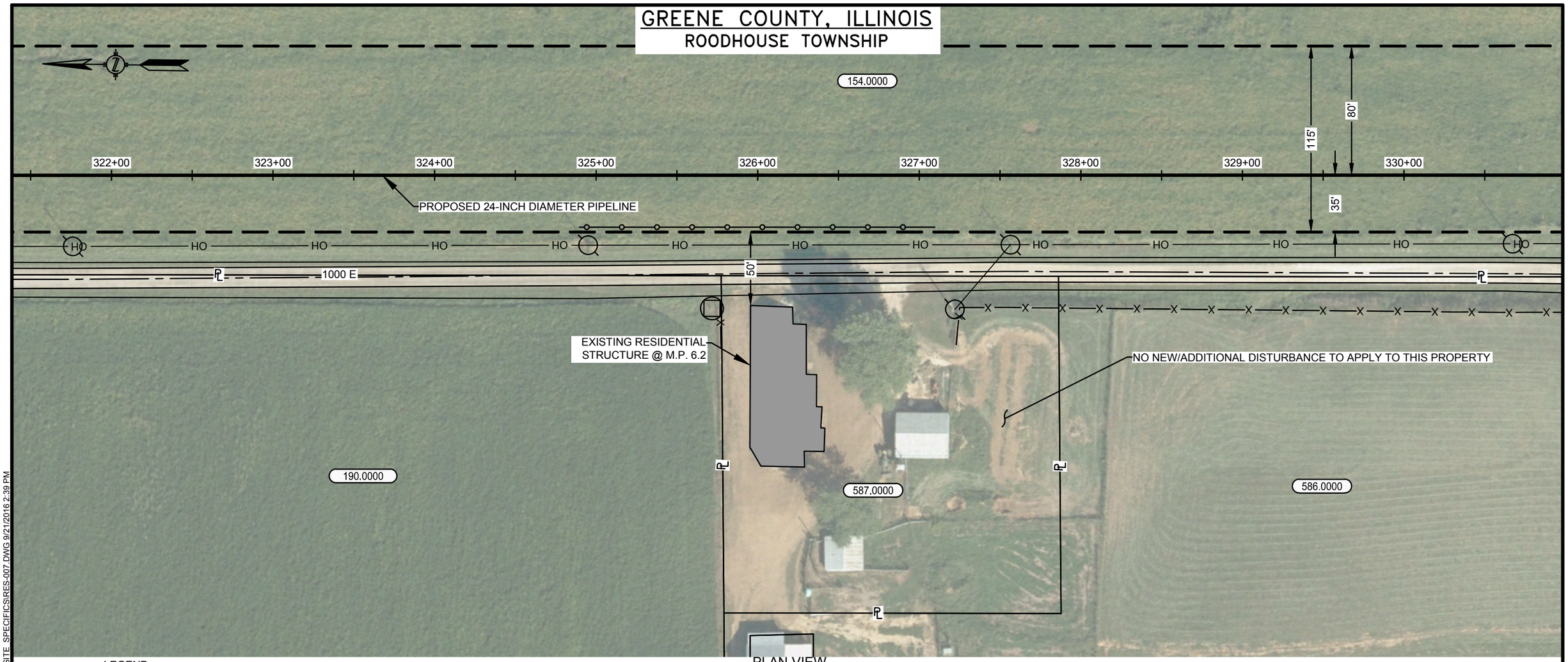
GREENE COUNTY, ILLINOIS
ROODHOUSE TOWNSHIP



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Division: | Op. Area:
State: ILLINOIS | Co./Par.: GREENE COUNTY
Section: | Township: ROODHOUSE | Range:
Dft: SG | Date: 03/2017 | Scale: 1" = 60'
Chk: WAH | Date: 03/2017
Appr: | Date: | Filename: RES-007.DWG

SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH DIAMETER PIPELINE
RESIDENTIAL SITE SPECIFIC
GREENE COUNTY, ILLINOIS

PREPARED FOR
Spire STL Pipeline

PREPARED BY
MOTT MACDONALD

RES-007 | Sheet: 1 of 1 | Type: ACAD | 2

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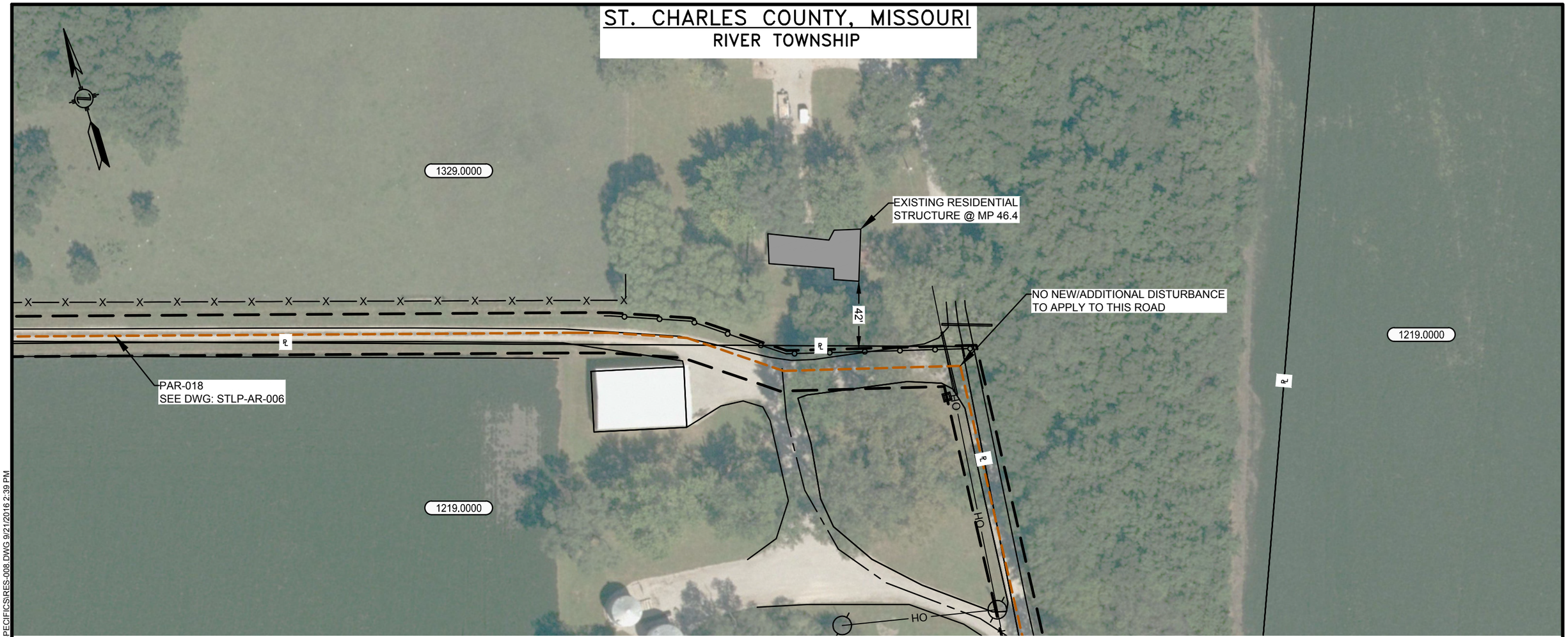
ST. CHARLES COUNTY, MISSOURI
RIVER TOWNSHIP



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GRAPHIC SCALE
60' 30' 0 60'

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Section:	Township: RIVER	Range:	
Dft: AYK	Date: 03/2017	Scale: 1" = 60'	
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ST. CHARLES COUNTY, MISSOURI

PREPARED FOR
Spire STL Pipeline

PREPARED BY
MOTT MACDONALD

RES-008

Sheet: 1 of 1
Type: ACAD

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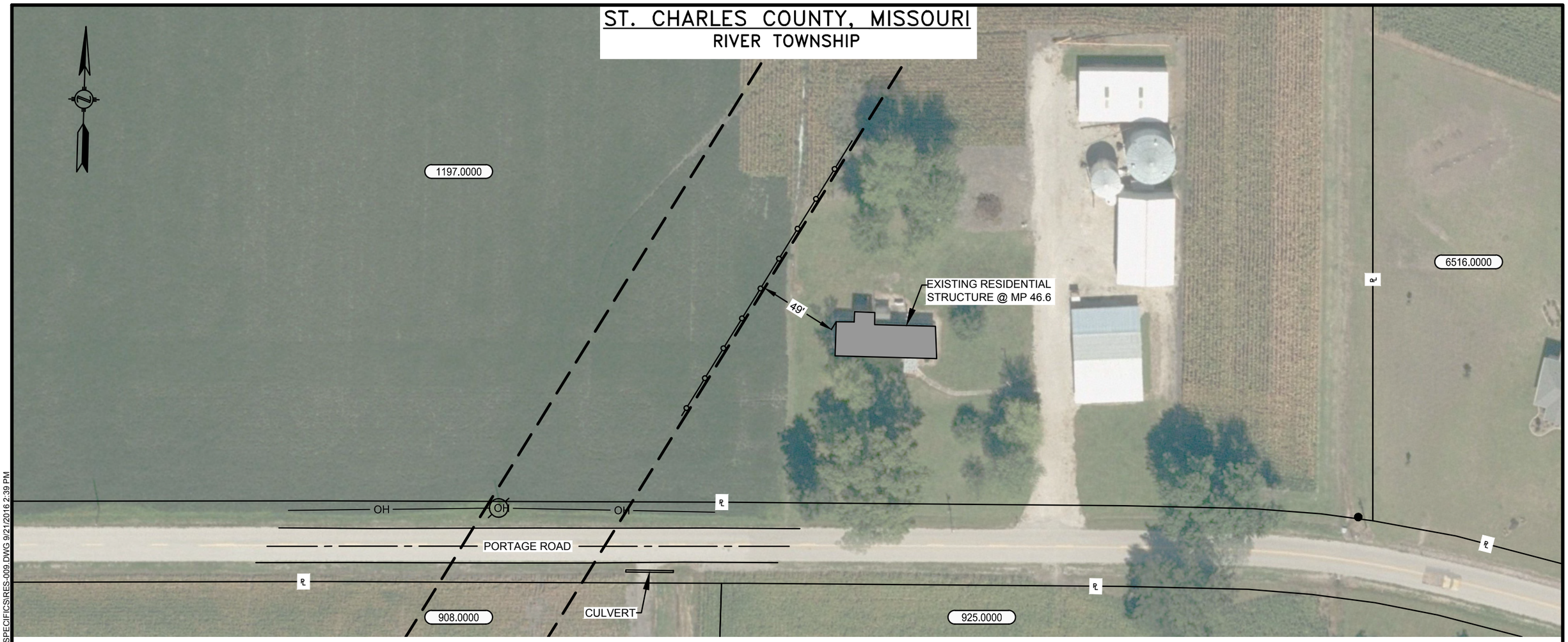
ST. CHARLES COUNTY, MISSOURI
RIVER TOWNSHIP



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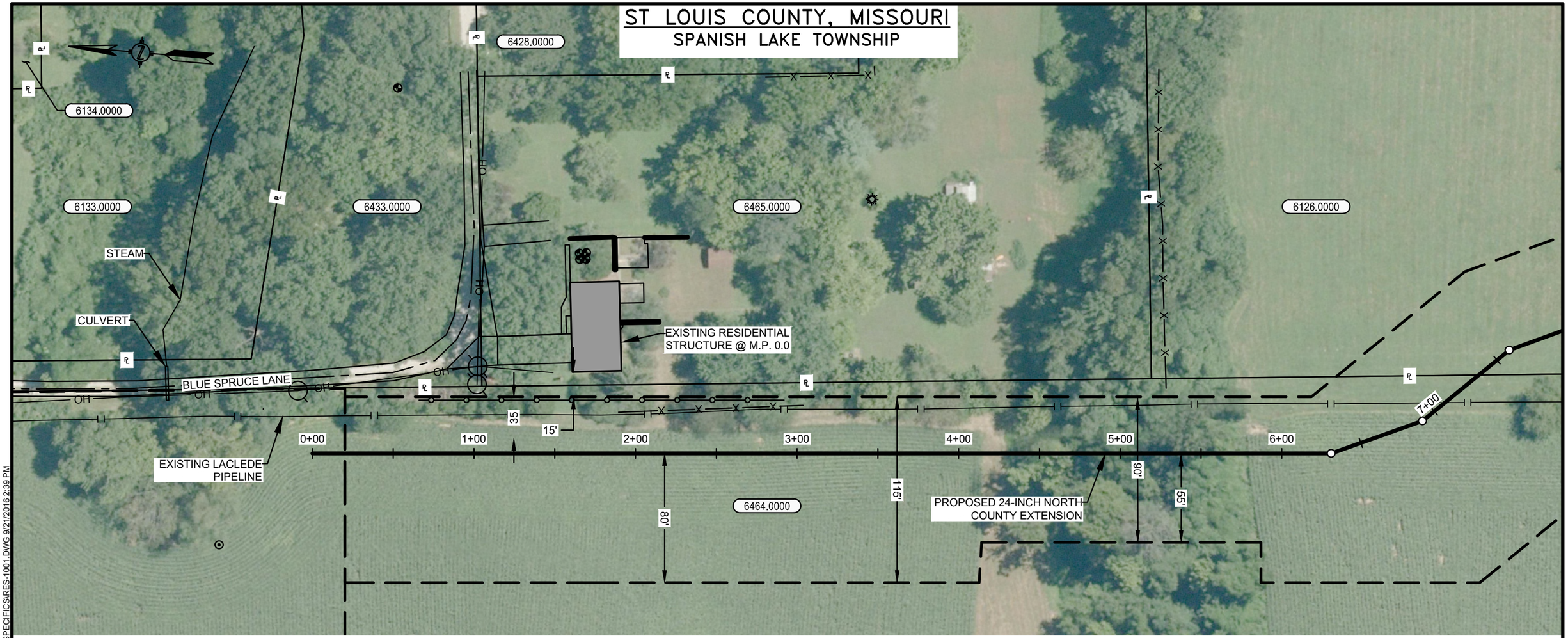
ST LOUIS COUNTY, MISSOURI
SPANISH LAKE TOWNSHIP



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- UTILITY POLE

NOTES:

1. SAFETY FENCE WILL BE INSTALLED AT THE EDGE OF THE LIMIT OF DISTURBANCE (L.O.D.) FOR A DISTANCE OF 100 FEET ON EITHER SIDE OF THE RESIDENCE OR COMMERCIAL ESTABLISHMENT. AT MINIMUM, FENCING WILL BE MAINTAINED THROUGHOUT ACTIVE CONSTRUCTION IN THE AREA.
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3. PROPERTY LINES DEPICTED ON THIS PLAN ARE BASED ON GIS TAX MAP DATA AND/OR FIELD LOCATED PROPERTY EVIDENCE. THEY SHOULD NOT BE RELIED ON AS AN ACCURATE DEPICTION OF THE ACTUAL PROPERTY LINE LOCATIONS. THEY DO NOT REPRESENT THE RESULTS OF A BOUNDARY SURVEY.
4. AREAS OF PERMANENT EASEMENT WILL BE PERMANENTLY MAINTAINED PER USDOT PHMSA REQUIREMENTS. TEMPORARY WORKSPACES WOULD BE ALLOWED TO REVERT TO PRE-EXISTING USES. FENCES WOULD BE REPAIRED OR REPLACED.
5. SPIRE, DURING LANDOWNER NEGOTIATIONS, IS SEEKING FEEDBACK FROM LANDOWNERS ON THE PROPOSED PIPELINE AND IT'S IMPACTS ON THEIR PROPERTY. IF A LANDOWNER PROVIDES FEEDBACK ABOUT A PARTICULAR FEATURE ON THEIR PROPERTY FOR AVOIDANCE, SPIRE WILL MAKE REASONABLE ACCOMMODATIONS TO TRY TO AVOID THE IMPACT OR PROVIDE THE LANDOWNER COMPENSATION.

PLAN VIEW
1" = 60'

GRAPHIC SCALE
60' 30' 0 60'

CONSTRUCTION TECHNIQUES

1. THE STOVE PIPE TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRUCTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A COMMERCIAL/RESIDENTIAL ESTABLISHMENT. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
2. THE DRAG SECTION CONSTRUCTION TECHNIQUE, WHILE LESS EFFICIENT THAN MAINLINE METHODS, IS NORMALLY PREFERRED OVER THE STOVE PIPE ALTERNATIVE. THIS TECHNIQUE INVOLVES THE TRENCHING, INSTALLATION AND BACKFILL OF A PREFABRICATED LENGTH OF PIPE CONTAINING SEVERAL SEGMENTS ALL IN ONE DAY. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED AND/OR COVERED WITH STEEL PLATES OR TIMBER MATS.

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
2	04/2017	AKY	AMENDMENT TO FERC		
1	01/2017	AKY	ISSUED FOR FERC		

REVISIONS

Division:
State: MISSOURI
Op. Area:
Co./Par.: ST LOUIS COUNTY
Section:
Township: SPANISH LAKE
Range:
Dft: AKY Date: 03/2017
Chk: WAH Date: 03/2017
Appr: Date:
Scale: 1" = 60'
Filename: RES-1001.DWG

SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH NORTH COUNTY EXTENSION
RESIDENTIAL SITE SPECIFIC
ST LOUIS COUNTY, MISSOURI

PREPARED FOR
Spire STL Pipeline

PREPARED BY
MOTT MACDONALD

RES-1001

Sheet: 1 of 1
Type: ACAD

2

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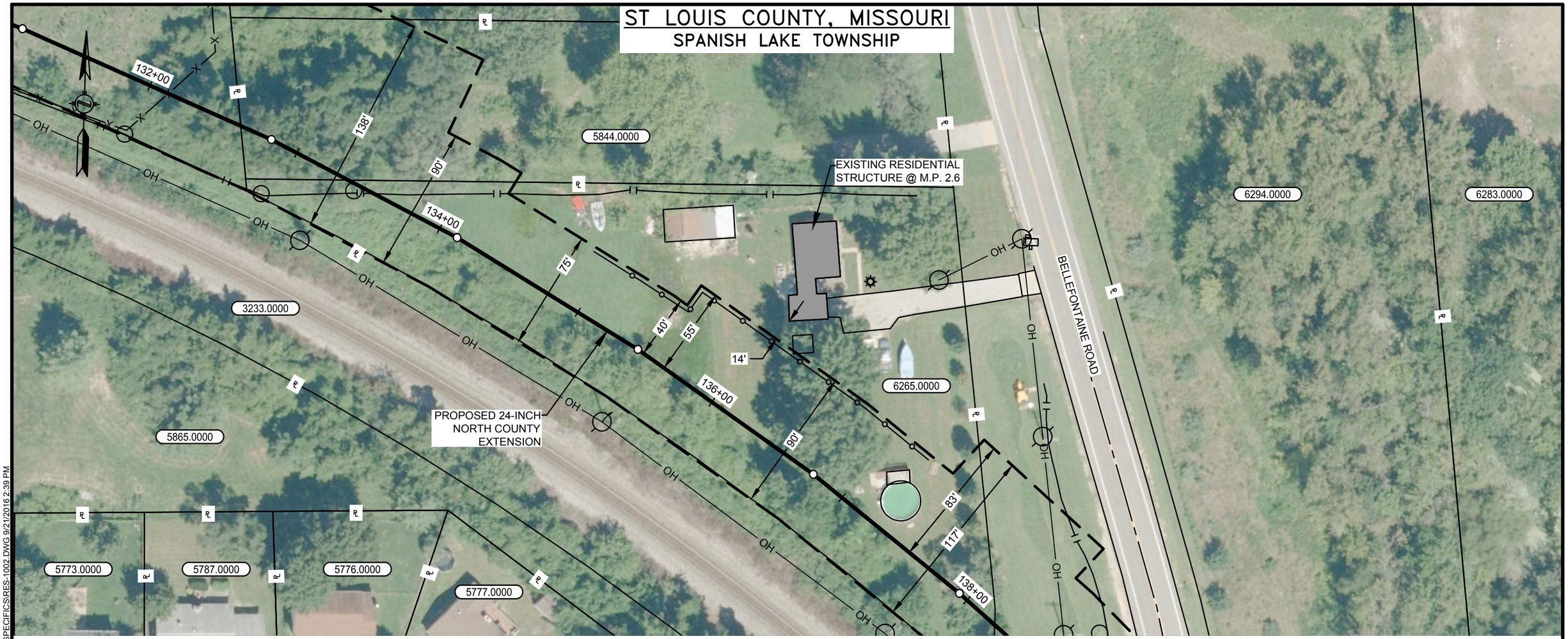

LEGEND

- SAFETY FENCE
- PROPOSED PIPELINE
- OH — OVERHEAD UTILITY LINES
- EXISTING FOREIGN PIPELINE
- CONSTRUCTION LIMITS
- ℄ — PROPERTY LINE
- PROPOSED ACCESS ROAD
- ####.0000 — MMID
- RESIDENTIAL OR COMMERCIAL ESTABLISHMENT
- UTILITY POLE

NOTES:

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PLAN VIEW
1" = 60'

GRAPHIC SCALE
60' 30' 0 60'

CONSTRUCTION TECHNIQUES

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1	01/2017	SG	ISSUE FOR FERC		

REVISIONS

Division: | Op. Area:
State: MISSOURI | Co./Par.: ST LOUIS COUNTY
Section: | Township: SPANISH LAKE | Range:
Dft: SG | Date: 03/2017
Chk: WAH | Date: 03/2017
Appr: | Date:
Scale: 1" = 60'
Filename: RES-1002.DWG

SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH NORTH COUNTY EXTENSION
RESIDENTIAL SITE SPECIFIC
ST LOUIS COUNTY, MISSOURI

PREPARED FOR
Spire STL Pipeline

PREPARED BY
MOTT MACDONALD

RES-1002

Sheet: 1 of 1
Type: ACAD

2

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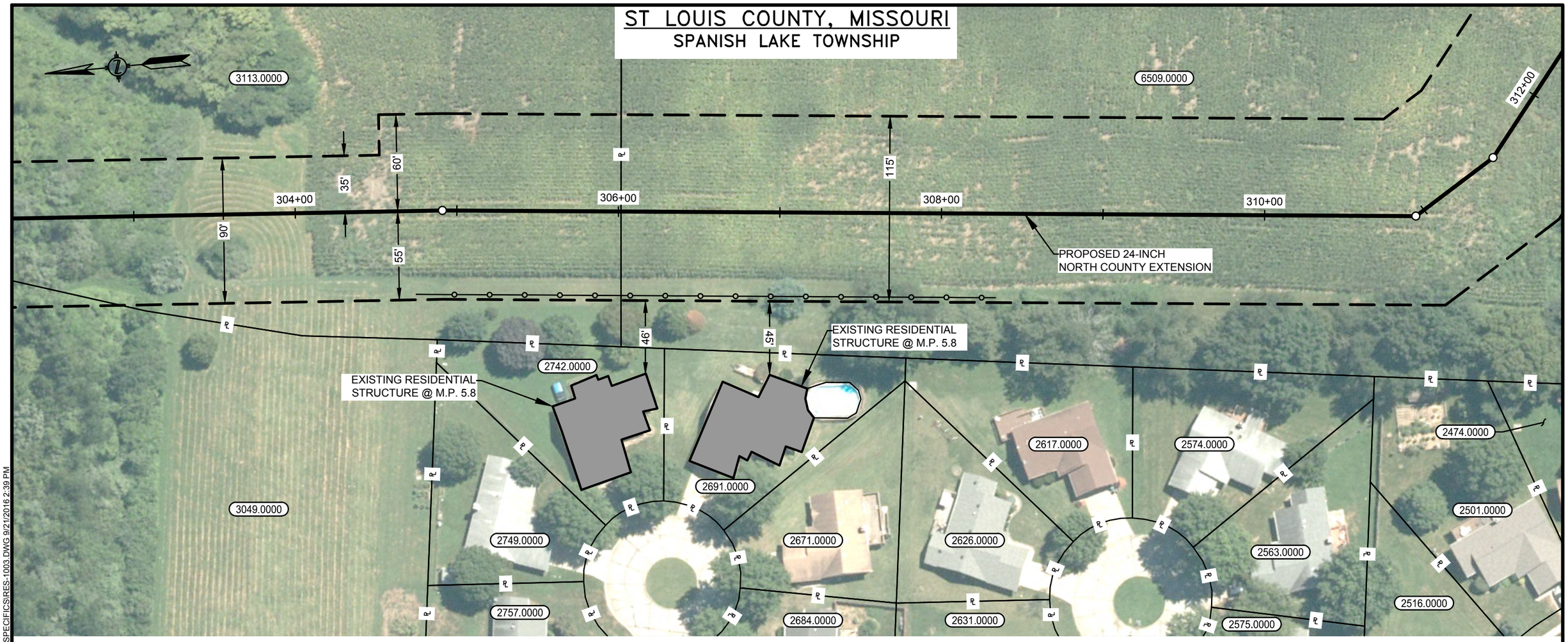
ST LOUIS COUNTY, MISSOURI
SPANISH LAKE TOWNSHIP



LEGEND

- SAFETY FENCE
- PROPOSED PIPELINE
- OH — OVERHEAD UTILITY LINES
- EXISTING FOREIGN PIPELINE
- CONSTRUCTION LIMITS
- ℄ — PROPERTY LINE
- PROPOSED ACCESS ROAD
- ####.0000 — MMID
- RESIDENTIAL OR COMMERCIAL ESTABLISHMENT
- UTILITY POLE

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PLAN VIEW
1" = 60'

GRAPHIC SCALE
60' 30' 0 60'

CONSTRUCTION TECHNIQUES

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1	01/2017	AKY	ISSUE FOR FERC		

REVISIONS

Division:		Op. Area:	
State: MISSOURI		Co./Par.: ST LOUIS	
Section:	Township: SPANISH LAKE	Range:	
Drft: AKY	Date: 03/2017	Scale: 1" = 60'	
Chk: WAH	Date: 03/2017	Filename: RES-1003.DWG	
Appr:	Date:		

SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH NORTH COUNTY EXTENSION
RESIDENTIAL SITE SPECIFIC
ST LOUIS COUNTY, MISSOURI

PREPARED FOR
Spire STL Pipeline

PREPARED BY
MOTT MACDONALD

RES-1003

Sheet: 1 of 1
Type: ACAD

2

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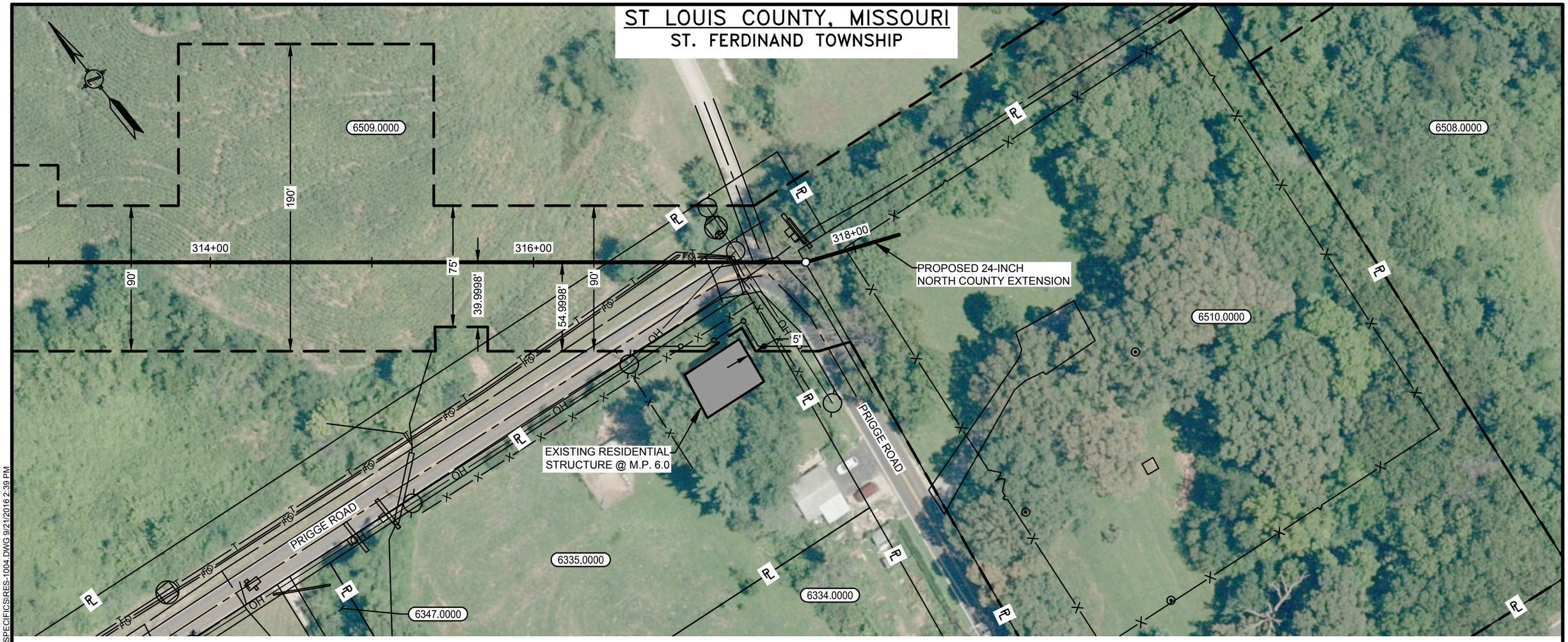
ST LOUIS COUNTY, MISSOURI
ST. FERDINAND TOWNSHIP



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LEGEND

- SAFETY FENCE
- PROPOSED PIPELINE
- OH — OVERHEAD UTILITY LINES
- EXISTING FOREIGN PIPELINE
- CONSTRUCTION LIMITS
- PROPERTY LINE
- PROPOSED ACCESS ROAD
- ####.0000 — MMID
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PLAN VIEW
1" = 60'

GRAPHIC SCALE
60' 30' 0 60'

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2	04/2017	SG	AMENDMENT TO FERC		
1	01/2017	SG	ISSUE FOR FERC		

REVISIONS

Division:		Op. Area:	
State: MISSOURI		Co./Par.: ST LOUIS COUNTY	
Section:	Township: ST. FERDINAND	Range:	
Dft: SG	Date: 03/2017	Scale: 1" = 60'	
Chk: WAH	Date: 03/2017		
Appr:	Date:	Filename: RES-1004.DWG	

SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH NORTH COUNTY EXTENSION
RESIDENTIAL SITE SPECIFIC
ST LOUIS COUNTY, MISSOURI

PREPARED FOR
Spire
STL Pipeline

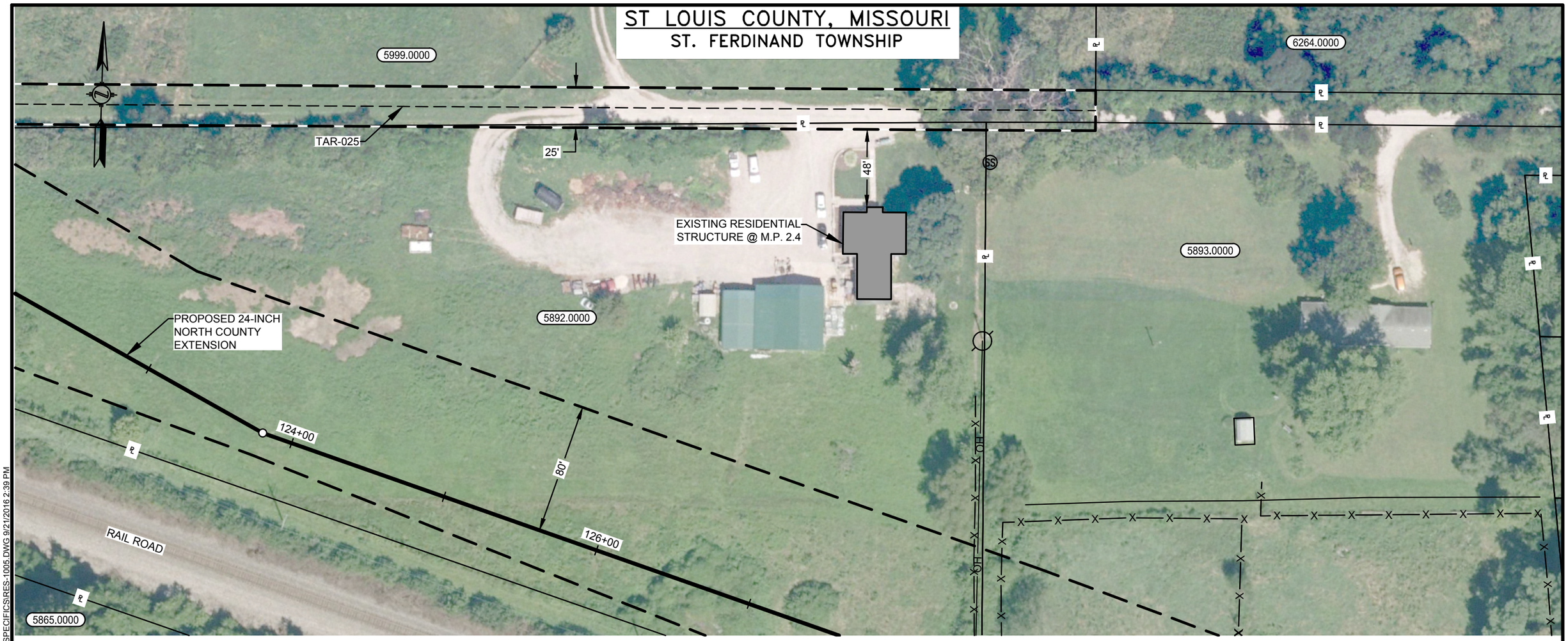
PREPARED BY
MOTT MACDONALD

RES-1004

Sheet: 1 of 1
Type: ACAD

2

ST LOUIS COUNTY, MISSOURI
ST. FERDINAND TOWNSHIP



LEGEND

- SAFETY FENCE
- PROPOSED PIPELINE
- OH — OVERHEAD UTILITY LINES
- EXISTING FOREIGN PIPELINE
- CONSTRUCTION LIMITS
- ℄ — PROPERTY LINE
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- ####.0000 — MMID
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GRAPHIC SCALE
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1	01/2017	AKY	ISSUE FOR FERC		

REVISIONS

Division: | Op. Area:
State: MISSOURI | Co./Par.: ST LOUIS COUNTY
Section: | Township: ST. FERDINAND | Range:
Dft: AKY | Date: 03/2017 | Scale: 1" = 60'
Chk: RJP | Date: 04/2017 | Filename: RES-1005.DWG
Appr: | Date:

SPIRE STL PIPELINE PROJECT
PROPOSED 24-INCH NORTH COUNTY EXTENSION
RESIDENTIAL SITE SPECIFIC
ST LOUIS COUNTY, MISSOURI

PREPARED FOR: Spire STL Pipeline
PREPARED BY: MOTT MACDONALD

RES-1005 | Sheet: 1 of 1 | Type: ACAD | 2

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APPENDIX 8-D

Land Use Mapping

1 MILE POST
PROPOSED M&R SITE
PROPOSED MAINLINE VALVE SITE
PROPOSED 24-INCH DIAMETER PIPELINE

AGRICULTURAL
DEVELOPED
FOREST
OPEN LAND
OPEN WATER
WETLAND
COUNTY BOUNDARY
STATE BOUNDARY

Landuse data digitized using publicly available imagery and field data where field surveys have been completed.
Mapbook imagery sourced from NAIP 2015 USDA FAS.

SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH DIAMETER PIPELINE

SCOTT COUNTY
ILLINOIS

600 300 0 600 1,200 FEET

ABSOLUTE SCALE: 1:7,200

REFERENCE SCALE: 1 IN = 600 FEET

PREPARED FOR Spire STL Pipeline

PREPARED BY MOTT MACDONALD

DRAWN BY:	NDK 12/15/2016
CHECKED BY:	EAP 12/16/2016
APPROVED BY:	JW 12/19/2016
REV. DATE:	04/2017
REVISION:	2
DESC:	AMENDMENT TO FERC
PAGE:	1 OF 34

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1 MILE POST
PROPOSED M&R SITE
PROPOSED MAINLINE VALVE SITE
PROPOSED 24-INCH DIAMETER PIPELINE

AGRICULTURAL
DEVELOPED
FOREST
OPEN LAND
OPEN WATER
WETLAND
COUNTY BOUNDARY
STATE BOUNDARY

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Mapbook imagery sourced from NAIP 2015 USDA FAS.

SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH DIAMETER PIPELINE

SCOTT COUNTY
ILLINOIS

600 300 0 600 1,200 FEET

ABSOLUTE SCALE: 1:7,200

REFERENCE SCALE: 1 IN = 600 FEET

PREPARED FOR Spire STL Pipeline

PREPARED BY MOTT MACDONALD

DRAWN BY:	NDK 12/15/2016
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APPROVED BY:	JW 12/19/2016
REV. DATE:	04/2017
REVISION:	2
DESC:	AMENDMENT TO FERC
PAGE:	2 OF 34

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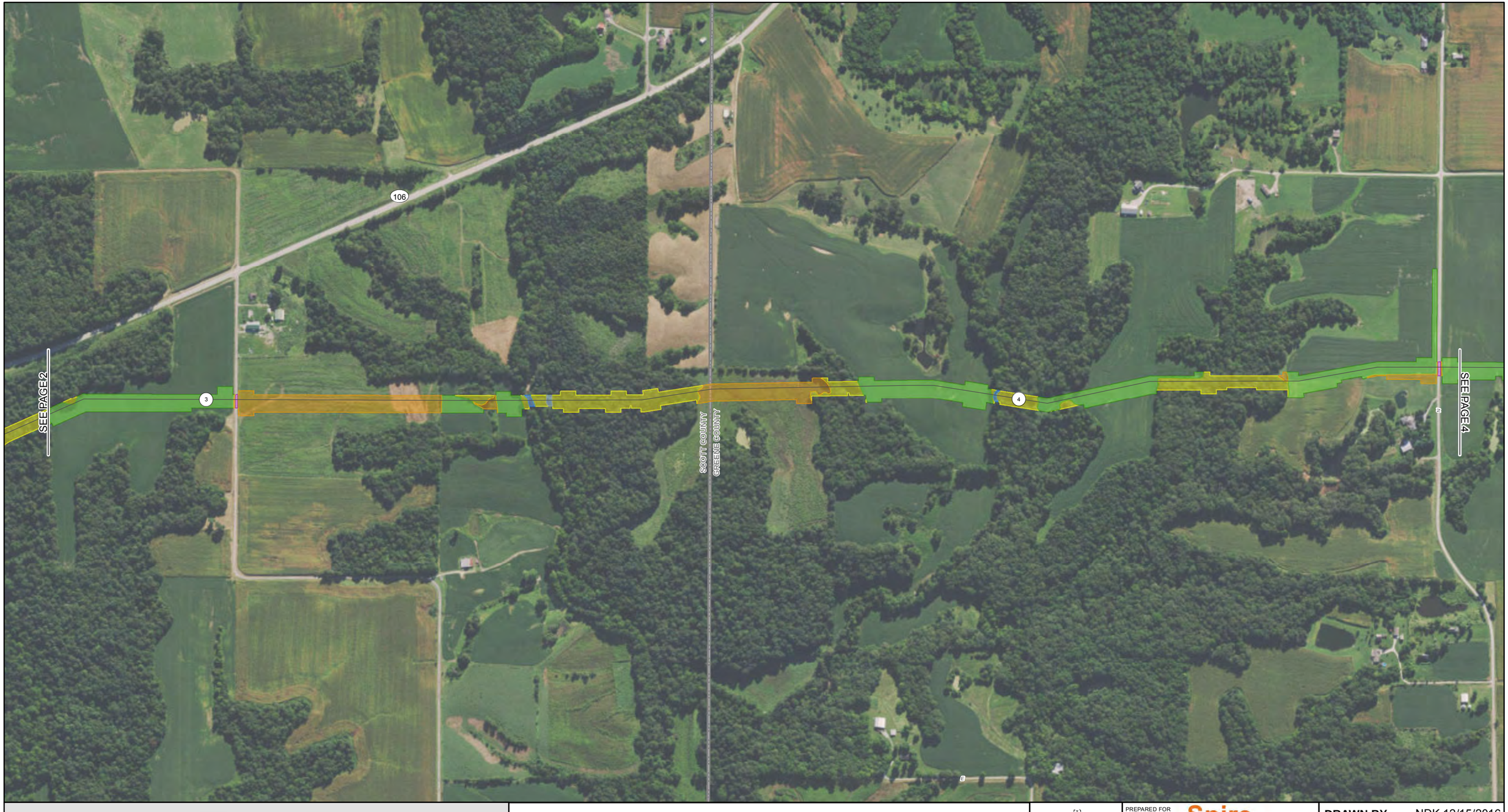

1 MILE POST
PROPOSED M&R SITE
PROPOSED MAINLINE VALVE SITE
PROPOSED 24-INCH DIAMETER PIPELINE

AGRICULTURAL
DEVELOPED
FOREST
OPEN LAND
OPEN WATER
WETLAND
COUNTY BOUNDARY
STATE BOUNDARY

Landuse data digitized using publicly available imagery and field data where field surveys have been completed.
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SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH DIAMETER PIPELINE

SCOTT & GREENE COUNTIES
ILLINOIS

600 300 0 600 1,200 FEET

N W E S

ABSOLUTE SCALE: 1:7,200

REFERENCE SCALE: 1 IN = 600 FEET

PREPARED FOR Spire STL Pipeline

PREPARED BY MOTT MACDONALD

DRAWN BY:	NDK 12/15/2016
CHECKED BY:	EAP 12/16/2016
APPROVED BY:	JW 12/19/2016
REV. DATE:	04/2017
REVISION:	2
DESC:	AMENDMENT TO FERC
PAGE:	3 OF 34

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1 MILE POST
PROPOSED M&R SITE
PROPOSED MAINLINE VALVE SITE
PROPOSED 24-INCH DIAMETER PIPELINE

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DEVELOPED
FOREST
OPEN LAND
OPEN WATER
WETLAND
COUNTY BOUNDARY
STATE BOUNDARY

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SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH DIAMETER PIPELINE

GREENE COUNTY
ILLINOIS

600 300 0 600 1,200 FEET

N E S W

ABSOLUTE SCALE: 1:7,200

REFERENCE SCALE: 1 IN = 600 FEET

PREPARED FOR Spire STL Pipeline

PREPARED BY MOTT MACDONALD

DRAWN BY:	NDK 12/15/2016
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APPROVED BY:	JW 12/19/2016
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1 MILE POST
PROPOSED M&R SITE
PROPOSED MAINLINE VALVE SITE
PROPOSED 24-INCH DIAMETER PIPELINE

AGRICULTURAL
DEVELOPED
FOREST
OPEN LAND
OPEN WATER
WETLAND
COUNTY BOUNDARY
STATE BOUNDARY

Landuse data digitized using publicly available imagery and field data where field surveys have been completed.
Mapbook imagery sourced from NAIP 2015 USDA FAS.

SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH DIAMETER PIPELINE

GREENE COUNTY
ILLINOIS

600 300 0 600 1,200 FEET

N E S W

ABSOLUTE SCALE: 1:7,200

REFERENCE SCALE: 1 IN = 600 FEET

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GREENE COUNTY
ILLINOIS

600 300 0 600 1,200 FEET

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- AGRICULTURAL
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GREENE COUNTY
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CR 25

1 MILE POST

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PROPOSED 24-INCH DIAMETER PIPELINE

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GREENE COUNTY
ILLINOIS

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SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH DIAMETER PIPELINE

GREENE & JERSEY COUNTIES
ILLINOIS

600 300 0 600 1,200 FEET

N E S W

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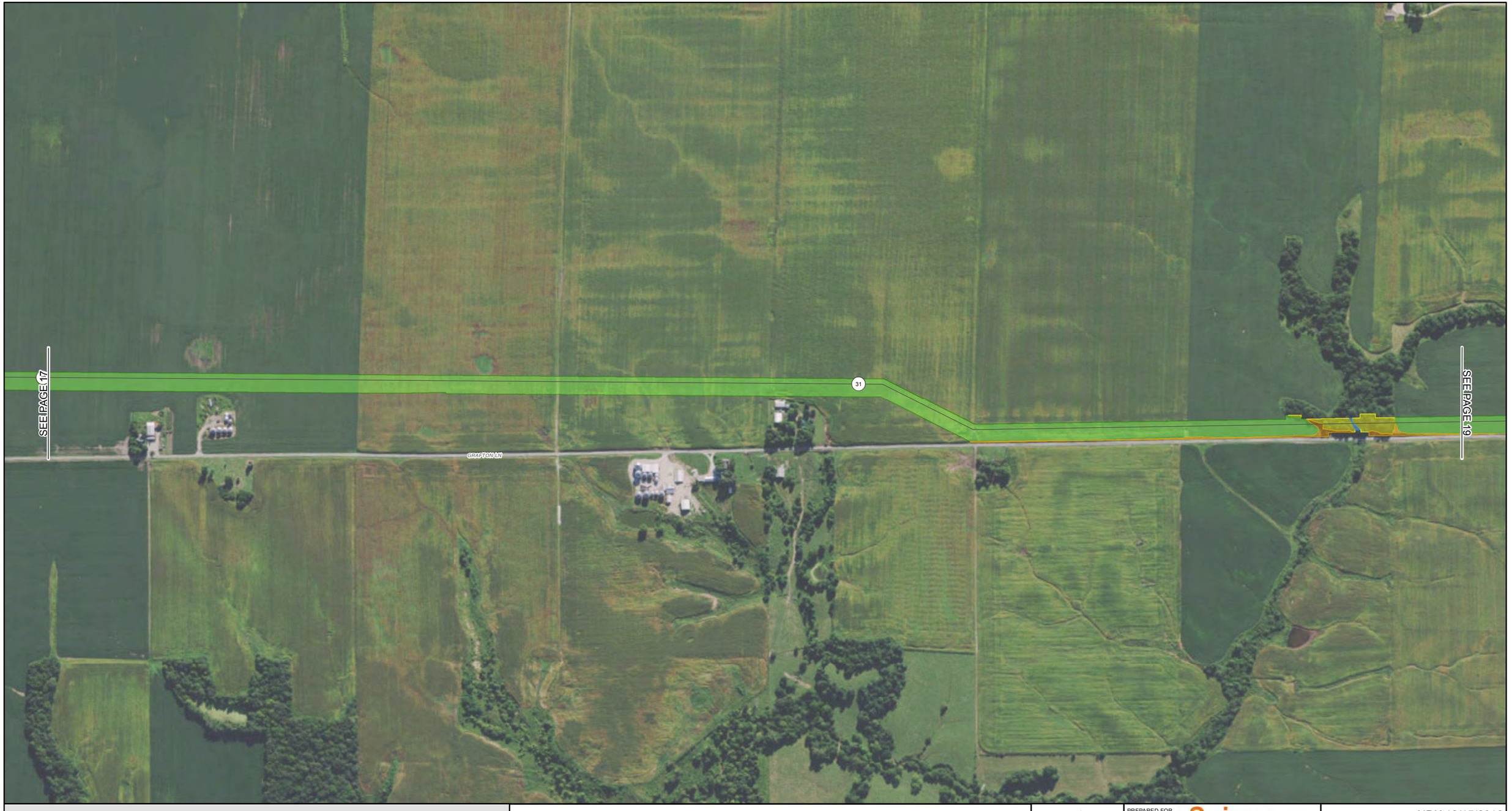

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JERSEY COUNTY
ILLINOIS

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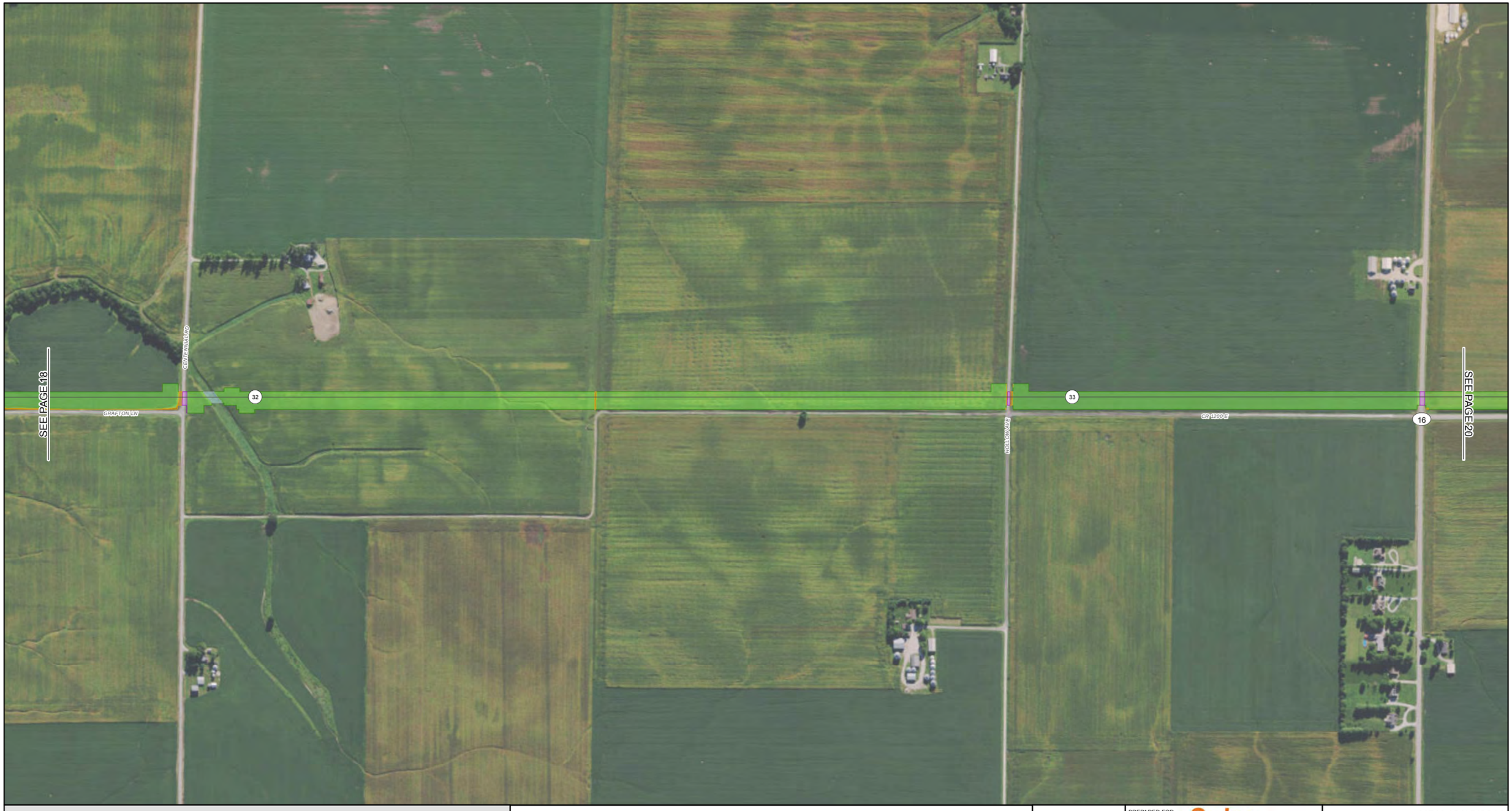

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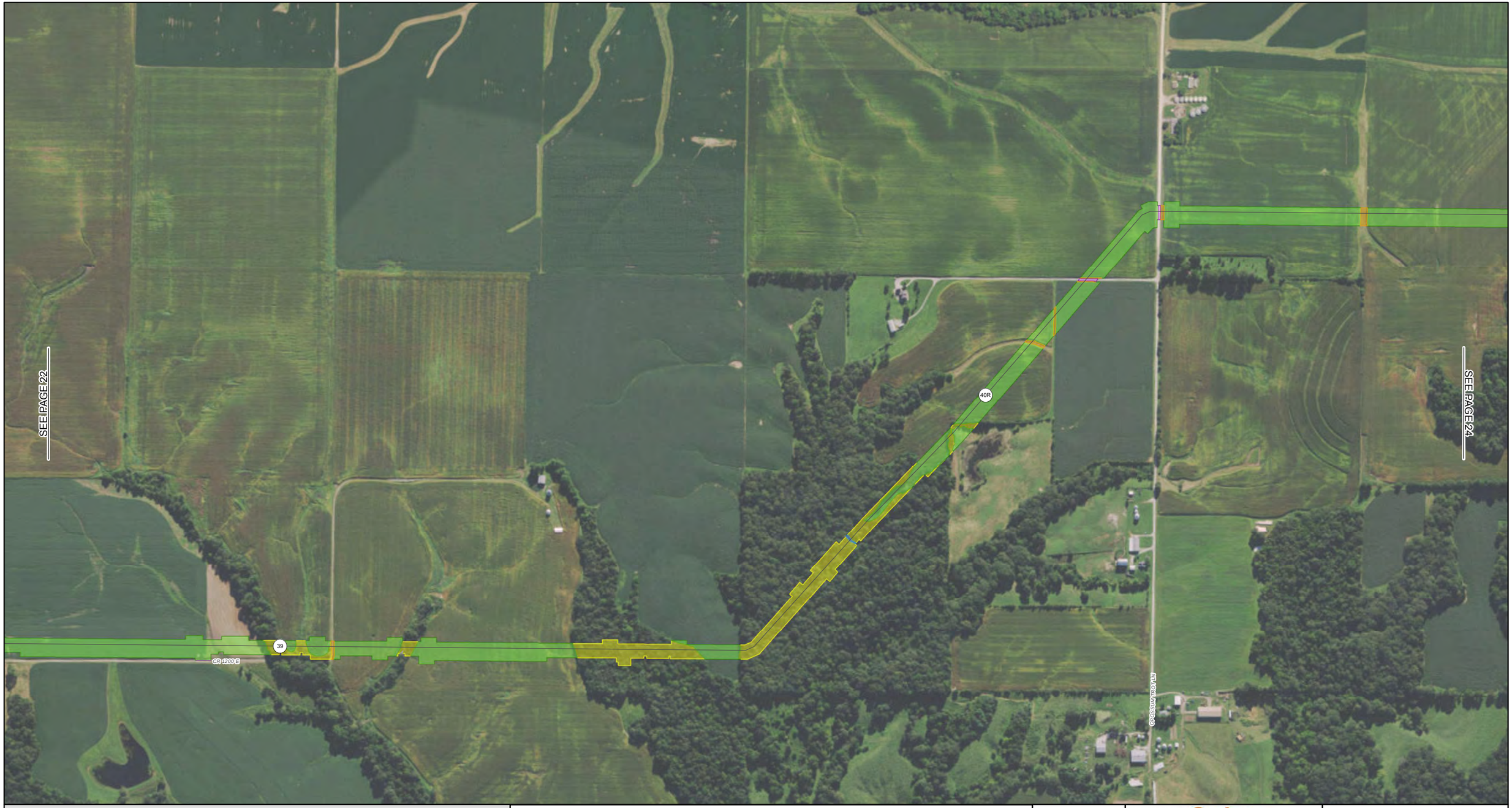

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REFERENCE SCALE: 1 IN = 600 FEET

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PREPARED BY MOTT MACDONALD

DRAWN BY:	NDK 12/15/2016
CHECKED BY:	EAP 12/16/2016
APPROVED BY:	JW 12/19/2016
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1 MILE POST
PROPOSED M&R SITE
PROPOSED MAINLINE VALVE SITE
PROPOSED 24-INCH DIAMETER PIPELINE

AGRICULTURAL
DEVELOPED
FOREST
OPEN LAND
OPEN WATER
WETLAND
COUNTY BOUNDARY
STATE BOUNDARY

Landuse data digitized using publicly available imagery and field data where field surveys have been completed.
Mapbook imagery sourced from NAIP 2015 USDA FAS.

SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH DIAMETER PIPELINE

JERSEY COUNTY
ILLINOIS

600 300 0 600 1,200 FEET

ABSOLUTE SCALE: 1:7,200

REFERENCE SCALE: 1 IN = 600 FEET

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AGRICULTURAL
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SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH DIAMETER PIPELINE

JERSEY COUNY, ILLINOIS AND ST. CHARLES COUNTY
MISSOURI

600 300 0 600 1,200 FEET

ABSOLUTE SCALE: 1:7,200

REFERENCE SCALE: 1 IN = 600 FEET

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SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH DIAMETER PIPELINE

ST. CHARLES COUNTY
MISSOURI

600 300 0 600 1,200 FEET

N E S W

ABSOLUTE SCALE: 1:7,200

REFERENCE SCALE: 1 IN = 600 FEET

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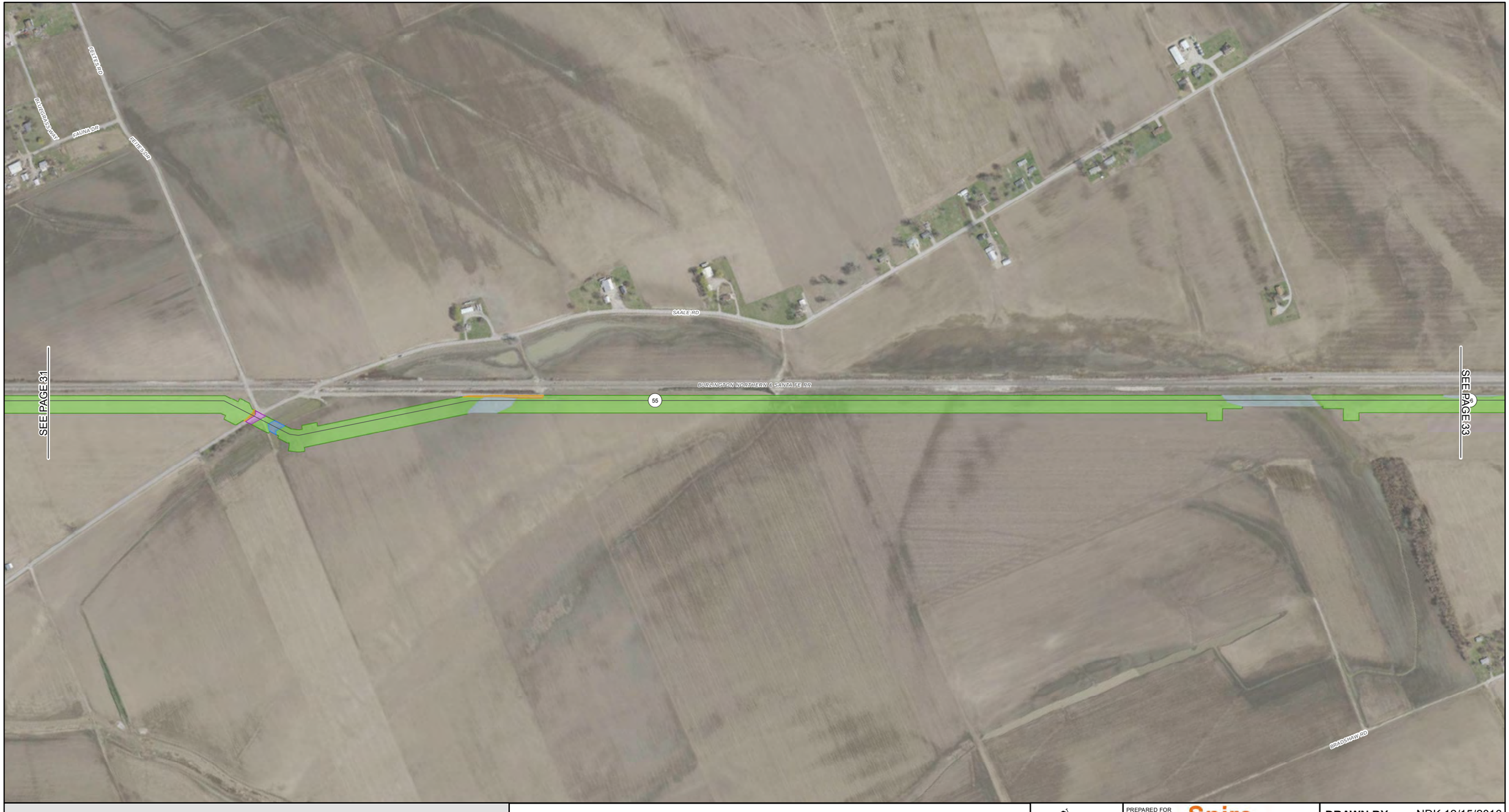

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PROPOSED MAINLINE VALVE SITE
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ST. CHARLES COUNTY
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SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH DIAMETER PIPELINE

ST. CHARLES & ST. LOUIS COUNTIES
MISSOURI

600 300 0 600 1,200 FEET

N E S W

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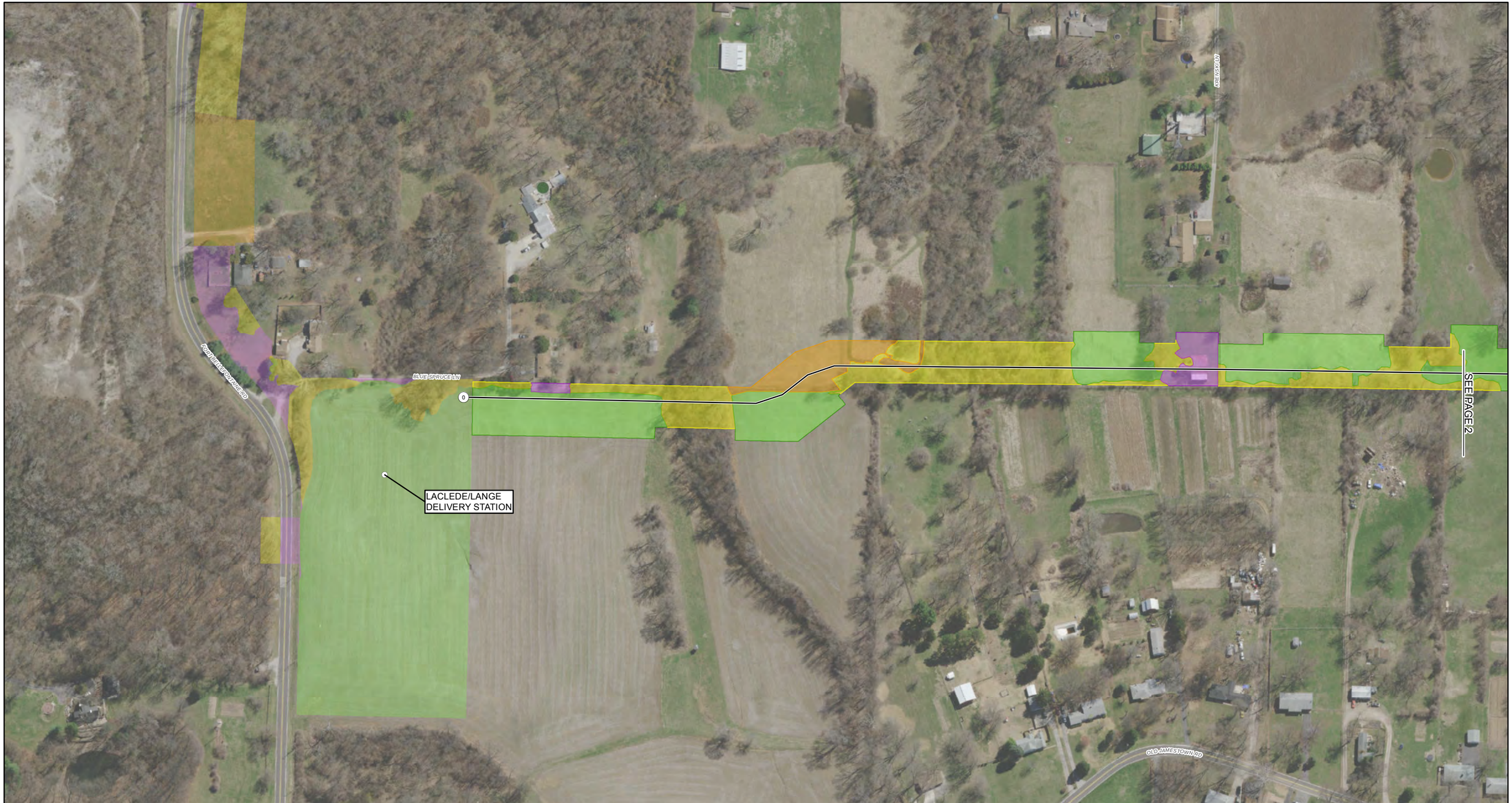

- (1) MILE POST
- PROPOSED M&R SITE
- PROPOSED MAINLINE VALVE SITE
- PROPOSED 24-INCH NORTH COUNTY EXTENSION

- AGRICULTURAL
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SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH NORTH COUNTY EXTENSION

ST. LOUIS COUNTY
MISSOURI

200 100 0 200 400 FEET

N E S W

ABSOLUTE SCALE: 1:2,400

REFERENCE SCALE: 1 IN = 200 FEET

PREPARED FOR Spire STL Pipeline

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SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH NORTH COUNTY EXTENSION

ST. LOUIS COUNTY
MISSOURI

200 100 0 200 400 FEET

N E S W

ABSOLUTE SCALE: 1:2,400

REFERENCE SCALE: 1 IN = 200 FEET

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PROPOSED 24-INCH NORTH COUNTY EXTENSION

ST. LOUIS COUNTY
MISSOURI

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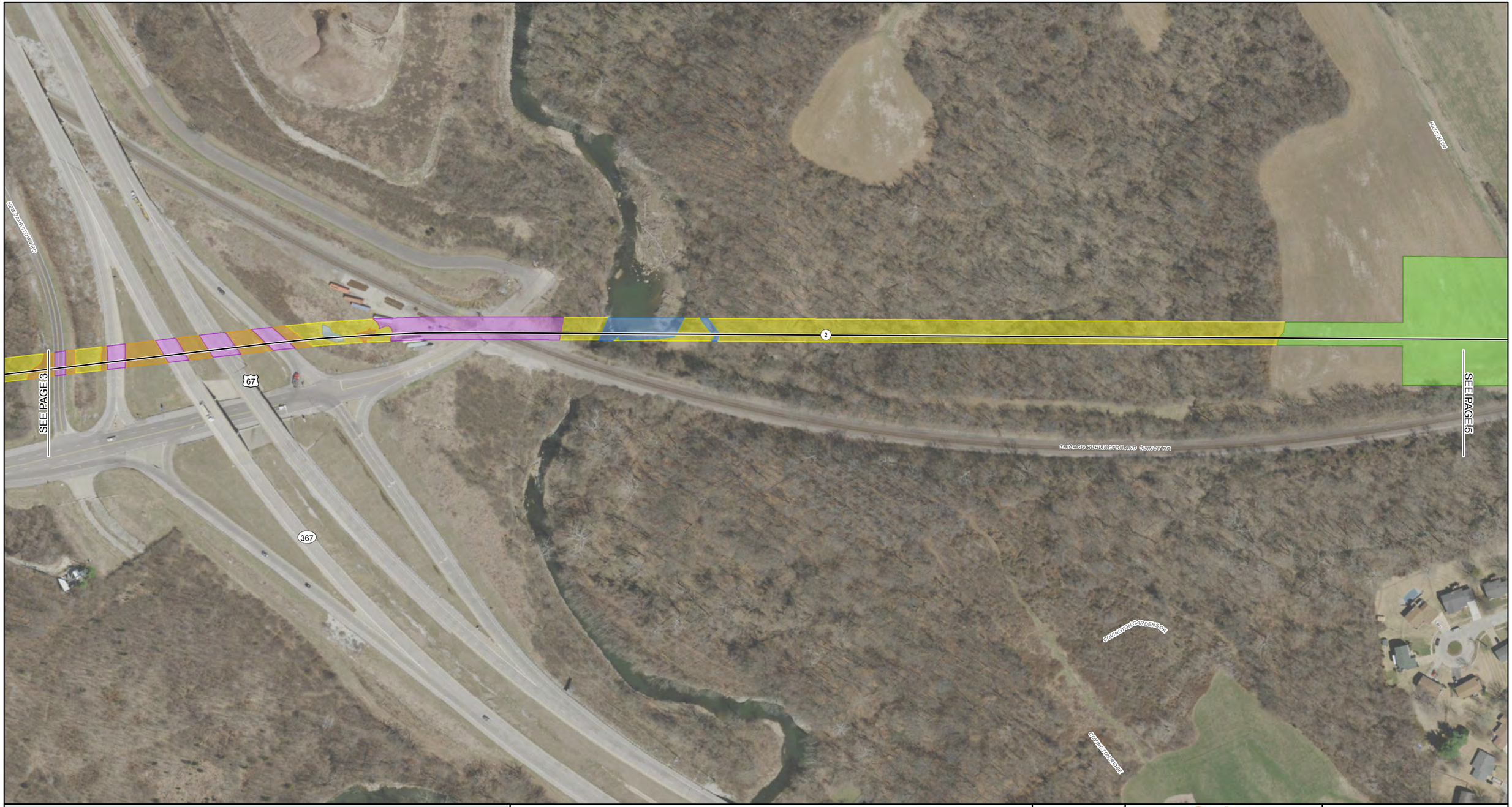

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SPIRE STL PIPELINE PROJECT

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ST. LOUIS COUNTY
MISSOURI

200 100 0 200 400 FEET

N E S W

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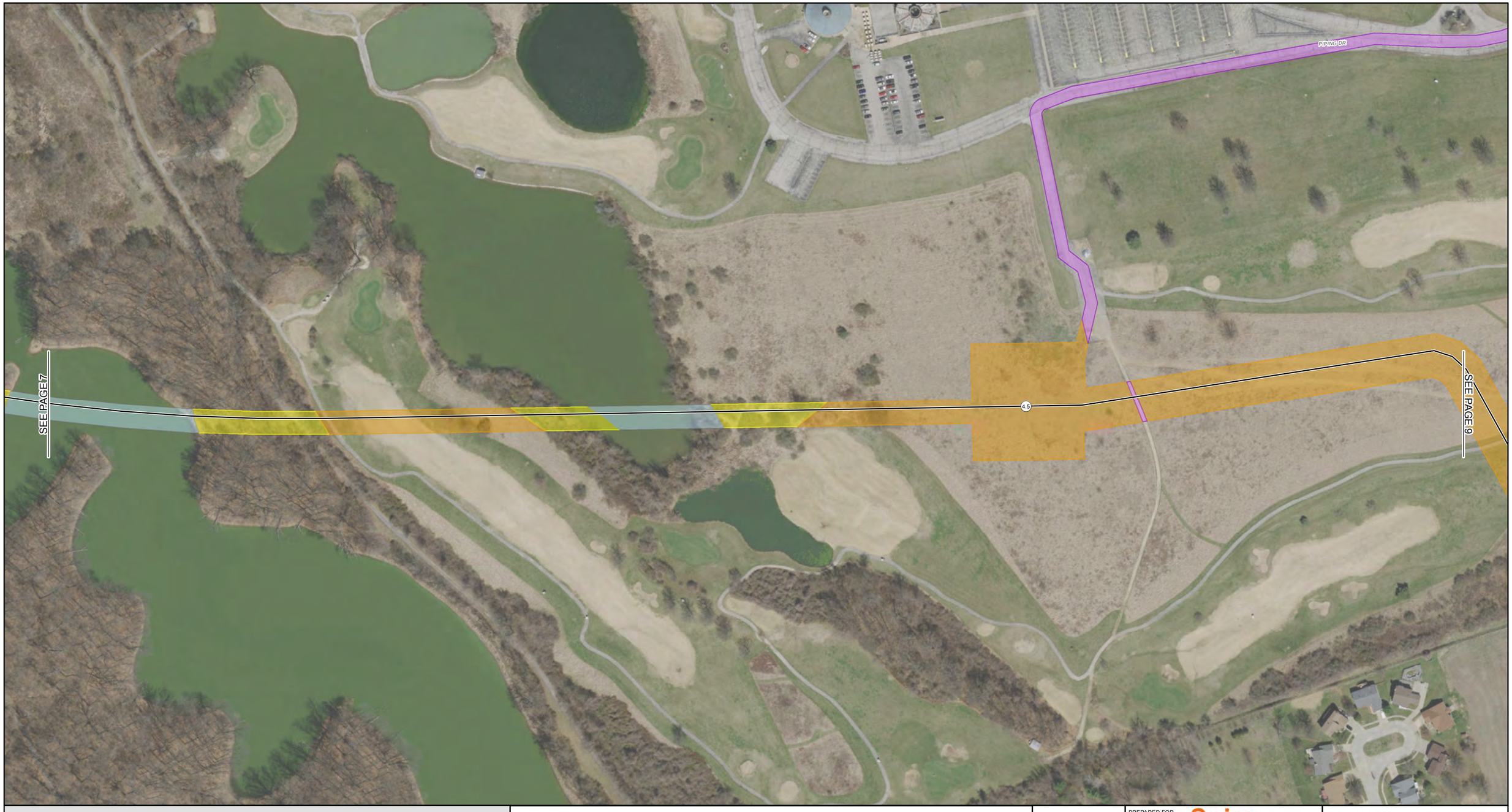

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N E S W

ABSOLUTE SCALE: 1:2,400

REFERENCE SCALE: 1 IN = 200 FEET

PREPARED FOR Spire STL Pipeline

PREPARED BY MOTT MACDONALD

DRAWN BY:	NDK 12/15/2016
CHECKED BY:	EAP 12/16/2016
APPROVED BY:	JW 12/19/2016
REV. DATE:	04/2017
REVISION:	2
DESC:	AMENDMENT TO FERC
PAGE:	10 OF 11

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SEE PAGE 10

CHAIN OF ROCKS STATION

PRIGGE MEADOWS DR

PRIGGE RD

HOBATH DR

RIVERVIEW DR

6

8.02

- (1) MILE POST
- PROPOSED M&R SITE
- PROPOSED MAINLINE VALVE SITE
- PROPOSED 24-INCH NORTH COUNTY EXTENSION

- AGRICULTURAL
- DEVELOPED
- FOREST
- OPEN LAND
- OPEN WATER
- WETLAND

Landuse data digitized using publicly available imagery and field data where field surveys have been completed.
Mapbook imagery sourced from NAIP 2015 USDA FAS.

SPIRE STL PIPELINE PROJECT

LANDUSE AERIAL MAPBOOK
PROPOSED 24-INCH NORTH COUNTY EXTENSION

ST. LOUIS COUNTY
MISSOURI

200 100 0 200 400 FEET

N E S W

ABSOLUTE SCALE: 1:2,400

REFERENCE SCALE: 1 IN = 200 FEET

PREPARED FOR Spire STL Pipeline

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APPENDIX 8-E

Unanticipated Discovery of Contaminants Plan

Spire STL Pipeline Project

Unanticipated Discovery of Contaminants Plan

FERC Docket No. CP17-40-_ _ _

April 2017

Public

Table of Contents

Acronyms and Abbreviations

Project	Spire STL Pipeline Project
Spire	Spire STL Pipeline LLC
FUSRAP	Formerly Utilized Sites Remedial Action Program
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency

Unanticipated Discovery of Contaminants Plan

1.1 Introduction

This Unanticipated Discovery of Contaminants Plan addresses the measures that Spire STL Pipeline LLC ("Spire") will implement to handle and dispose of contaminated soil, groundwater, or sediments in the event any is exposed during the construction of the Spire STL Pipeline Project ("Project").

1.2 Planning, Review, and Assessment

Spire conducted desktop analysis and research to determine if any known or potential contaminated and/or hazardous sites occur at Project areas. The Project is located in a designated metropolitan no-discharge stream, as found in 10CSR 20-7.031, Table F (Missouri Department of Natural Resources 2014). The Project crosses Coldwater Creek within the metropolitan no-discharge stream reach. Spire has coordinated with the United States Army Corps of Engineers ("USACE") Formerly Utilized Sites Remedial Action Program ("FUSRAP") about crossing Coldwater Creek with open cut techniques. The USACE FUSRAP indicated that their current sampling efforts are revealing the sources of contaminants have been removed upstream and the possibility for contaminants to migrate is unlikely. The USACE FUSRAP reviewed Spire's current crossing plan and proposed soil disturbance areas and determined that there is no contamination or a pathway for future contamination at the crossing location (USACE 2016a, 2016b, 2016c, and 2017).

The United States Environmental Protection Agency ("USEPA") National Priority List Superfund Sites list was reviewed for sites near the Project area (USEPA 2016c). The closest site is located approximately 4.8 miles away from the Project (USEPA 2016b). The Chemetco Superfund Site, located in Hartford, Illinois, is a 41-acre site where site cleanup is ongoing. Contaminants of concern include elevated levels of cadmium, copper, lead, and zinc oxide. The site is currently fenced and access is restricted. The Project is located approximately 4.8 miles to the west of this site, therefore no issues of contamination are expected during construction (USEPA 2016b).

The West Lake Landfill Superfund Site is a USEPA Superfund Site located in Bridgeton, Missouri, consisting of several inactive landfills, including the West Lake Landfill and Bridgeton Landfill (USEPA 2016a). The Project is located approximately 11.4 miles northeast of these landfills and therefore no issues of contamination are expected during construction (USEPA 2016a).

Spire's Construction Manager, Field Construction Manager, Environmental Manager, and Lead Environmental Inspector shall review these findings of known or potential contaminated or hazardous waste sites prior to commencement of construction. If potential sites are within or close proximity to Project areas, Spire personnel will follow up with site reconnaissance and information from local sources/landowners and other public sources. Further investigation may be required; however, Spire does not anticipate contamination at Project areas.

Should the potential for contaminated sites be at or in close proximity to Project areas, the Lead Environmental Investigator and Environmental Manager shall determine the potential for impacts. If impacts to a contaminated site are planned by construction or operation of the Project, Spire will consult with the appropriate agency, landowner, and party responsible for a suitable course of action. If feasible, Spire may locate a reroute to avoid the site.

1.3 Unanticipated Discovery Response

In the event unanticipated contaminated soil, groundwater, or other potential environmental contamination (e.g., odor, staining, etc.) is encountered during Project construction, operation, or maintenance activities, the following procedures will be implemented:

- halt construction where contamination or hazardous waste is suspected;
- evacuate personnel, if necessary, to an upwind location or road;
- notify Spire's Construction Manager, Field Construction Manager, Environmental Manager, and Lead Environmental Inspector to manage the situation and facilitate follow-up actions;
- verify the type/level of contamination by a qualified health and safety professional (field observation, field screening, air sampling, laboratory analysis, or other methods may be required);
- consult with appropriate local, state, and/or the USEPA as necessary;
- contact local emergency services if immediate or imminent threats to human health or the environment exist (see Spire's Emergency Response Plan and Spire's Spill Prevention, Containment, and Countermeasure Plan);
- if remediation of the site is necessary, ensure a qualified remediation contractor is selected and aware of the limits of disturbance with Spire's authorized workspaces;
- remedial actions may involve:
  - sampling and laboratory analysis for waste classification for follow up requirements;
  - coordinating with Spire on sampling methods and sampling frequencies;
  - placement of suspect excavated soils/waste on plastic sheeting and covered at the end of each day or placement in approved containers/locations clearly labelled as "hazardous waste" with the contents (if known) and date placed in the container;
  - minimizing impacts by limiting or diverting clean surface water away from the affected area;
  - potential contaminated water or wastewater is not to be discharged to grade without appropriate state or federal approval; and
  - potential contaminated water or wastewater may require on-site storage tanks or discharge to public water treatment facilities.

- if disposal of contaminated materials is necessary, Spire and the Contractor will arrange for agency-approved transport and disposal facility;
- all disposal documentation will be obtained by Spire or the Contractor and maintained on file by Spire; and
- if USEPA-regulated hazardous wastes, Toxic Substance Control Act wastes, or state hazardous wastes are generated, a USEPA generator identification number will need to be obtained by Spire.

1.4 References

Missouri Department of Natural Resources. 2014. *Water Quality*. Accessed September 2016 from https://dnr.mo.gov/env/wpp/wqstandards/index.html.

United States Army Corps of Engineers. 2016a. Emails from Jacob Prebianca, Formerly Utilized Sites Remedial Action Program to Jayme Fuller, GAI on September 28, 2016.

United States Army Corps of Engineers. 2016b. Email from Jonathan Rankins, Radiation Safety Officer to Lori Ferry, GAI on October 12, 2016.

United States Army Corps of Engineers. 2016c. Emails from Jacob Prebianca, Formerly Utilized Sites Remedial Action Program to Jayme Fuller, GAI on October 12, 2016.

United States Army Corps of Engineers. 2017. Emails from Jonathan Rankins, Formerly Utilized Sites Remedial Action Program to Ali Trunzo, GAI on March 29, 2017.

United States Environmental Protection Agency. 2016a. *EPA in Missouri – West Lake Landfill.* Accessed October 2016 from https://www.epa.gov/mo/west-lake-landfill.

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United States Environmental Protection Agency. 2016c. *Envirofacts EPA Regional KML Download*. Accessed October 2016 from https://www.epa.gov/enviro/epa-regional-kml-download.

APPENDIX 8-F

Additional Temporary Workspace

spire

Appendix 8-F. Additional Temporary Workspace

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
24-Inch Pipeline								
Illinois								
Scott	ATWS-001	0.0R	ATWS is required for access road entrance / equipment	50	40	581	0.01	Agricultural
Scott	ATWS-001	0.0R	ATWS is required for access road entrance / equipment	50	40	1,309	0.03	Open Land
Scott	ATWS-814	0.0R	ATWS is required for construction of REX Receipt Station / installation of tap to REX line	130	335	43,635	1.00	Agricultural
Scott	ATWS-819	0.2R	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Scott	ATWS-820	0.2R	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Scott	ATWS-003	0.2R	ATWS is required for topsoil segregation	3,430	25	239	0.01	Developed
Scott	ATWS-003	0.2R	ATWS is required for topsoil segregation	3,430	25	756	0.02	Open Land
Scott	ATWS-003	0.5R	ATWS is required for topsoil segregation	3,430	25	84,435	1.94	Agricultural
Scott	ATWS-005	0.7R	ATWS is required for road crossing	100	25	2,491	0.06	Agricultural
Scott	ATWS-007	0.7R	ATWS is required for road crossing	100	25	2,488	0.06	Agricultural
Scott	ATWS-009	0.7R	ATWS is required for road crossing	125	25	3,223	0.07	Agricultural
Scott	ATWS-010	0.8	ATWS is required for access road entrance/equipment	100	50	356	0.01	Agricultural
Scott	ATWS-010	0.8	ATWS is required for access road entrance/equipment	100	50	4,644	0.11	Open Land
Scott	ATWS-008	1.0	ATWS is required for topsoil segregation	3,410	25	559	0.01	Developed
Scott	ATWS-008	1.0	ATWS is required for topsoil segregation	3,410	25	2,579	0.06	Open Land
Scott	ATWS-008	1.2	ATWS is required for topsoil segregation	3,410	25	79,573	1.83	Agricultural
Scott	ATWS-008	1.2	ATWS is required for topsoil segregation	3,410	25	2,586	0.06	Forest
Scott	ATWS-468	1.2	ATWS is required for waterbody crossing	115	25	2,667	0.06	Agricultural
Scott	ATWS-012	1.3	ATWS is required for waterbody crossing	100	25	1,704	0.04	Agricultural
Scott	ATWS-012	1.3	ATWS is required for waterbody crossing	100	25	706	0.02	Open Land

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Scott	ATWS-012	1.3	ATWS is required for waterbody crossing	100	25	90	0.00	Forest
Scott	ATWS-013	1.3	ATWS is required for topsoil segregation	1,450	25	36,297	0.83	Agricultural
Scott	ATWS-014	1.3	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Scott	ATWS-815	1.8R	ATWS is required for topsoil segregation	1,230	25	30,978	0.71	Agricultural
Scott	ATWS-816	1.8R	ATWS is required for road crossing	100	25	2,521	0.06	Agricultural
Scott	ATWS-817	1.8R	ATWS is required for road crossing	100	25	2,421	0.06	Agricultural
Scott	ATWS-818	1.8R	ATWS is required for road crossing	100	50	5,000	0.11	Agricultural
Scott	ATWS-821	2.0R	ATWS is required for waterbody crossing	100	25	641	0.01	Developed
Scott	ATWS-821	2.0R	ATWS is required for waterbody crossing	100	25	1,859	0.04	Forest
Scott	ATWS-822	2.0R	ATWS is required for waterbody crossing	100	25	2,033	0.05	Developed
Scott	ATWS-822	2.0R	ATWS is required for waterbody crossing	100	25	467	0.01	Forest
Scott	ATWS-479	2.1R	ATWS is required for topsoil segregation	840	25	21,095	0.48	Agricultural
Scott	ATWS-480	2.1R	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Scott	ATWS-481	2.1R	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Scott	ATWS-484	2.1	ATWS is required for topsoil segregation	755	25	18,835	0.43	Agricultural
Scott	ATWS-485	2.1	ATWS is required for wetland crossing	100	25	2,450	0.06	Agricultural
Scott	ATWS-486	2.1	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Scott	ATWS-482	02.2R	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Scott	ATWS-487	2.2	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Scott	ATWS-488	2.2	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Scott	ATWS-483	02.2R	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Scott	ATWS-489	2.3	ATWS is required for topsoil segregation	685	25	17,095	0.39	Agricultural
Scott	ATWS-490	2.4	ATWS is required for topsoil segregation	890	25	22,317	0.51	Agricultural
Scott	ATWS-491	2.5	ATWS is required for road crossing	105	25	2,551	0.06	Agricultural
Scott	ATWS-492	2.5	ATWS is required for road crossing	100	25	2,551	0.06	Agricultural

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Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Scott	ATWS-493	2.5	ATWS is required for road crossing	100	25	2,007	0.05	Agricultural
Scott	ATWS-493	2.5	ATWS is required for road crossing	100	25	493	0.01	Forest
Scott	ATWS-494	2.5	ATWS is required for road crossing	120	25	2,613	0.06	Agricultural
Scott	ATWS-494	2.5	ATWS is required for road crossing	120	25	361	0.01	Open Land
Scott	ATWS-494	2.5	ATWS is required for road crossing	120	25	60	0.00	Forest
Scott	ATWS-495	2.5	ATWS is required for topsoil segregation	261	25	6,251	0.14	Agricultural
Scott	ATWS-495	2.5	ATWS is required for topsoil segregation	261	25	283	0.01	Forest
Scott	ATWS-496	2.6	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Scott	ATWS-497	2.6	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Scott	ATWS-498	2.7	ATWS is required for waterbody crossing	100	25	2,429	0.06	Forest
Scott	ATWS-499	2.7	ATWS is required for waterbody crossing	100	25	2,571	0.06	Forest
Scott	ATWS-047	2.9	ATWS is required for topsoil segregation	925	25	23,037	0.53	Agricultural
Scott	ATWS-048	3.0	ATWS is required for road crossing/topsoil segregation	100	50	5,000	0.11	Agricultural
Scott	ATWS-049	3.0	ATWS is required for road crossing	100	25	2,500	0.06	Open Land
Scott	ATWS-500	3.0	ATWS is required for road crossing	100	25	2,500	0.06	Open Land
Scott	ATWS-050	3.1	ATWS is required for topsoil segregation	1,589	25	32,892	0.76	Open Land
Scott	ATWS-050	3.3	ATWS is required for topsoil segregation	1,589	25	6,824	0.16	Agricultural
Scott	ATWS-051	3.4	ATWS is required for waterbody and wetland crossing	95	25	2,383	0.05	Agricultural
Scott	ATWS-052	3.4	ATWS is required for topsoil segregation	159	25	3,917	0.09	Agricultural
Scott	ATWS-052	3.4	ATWS is required for topsoil segregation	159	25	50	0.00	Open Land
Scott	ATWS-053	3.4	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Scott	ATWS-501	3.4	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Forest
Scott	ATWS-502	3.4	ATWS is required for waterbody and wetland crossing	100	25	2,493	0.06	Forest
Scott	ATWS-503	3.5	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Scott	ATWS-504	3.5	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest

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Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Scott	ATWS-505	3.5	ATWS is required for waterbody crossing	125	25	744	0.02	Forest
Scott	ATWS-506	3.5	ATWS is required for waterbody crossing	100	25	485	0.01	Forest
Greene	ATWS-505	3.5	ATWS is required for waterbody crossing	125	25	2,478	0.06	Forest
Greene	ATWS-506	3.5	ATWS is required for waterbody crossing	100	25	2,015	0.05	Forest
Greene	ATWS-507	3.6	ATWS is required for topsoil segregation	750	25	462	0.01	Forest
Greene	ATWS-507	3.7	ATWS is required for topsoil segregation	750	25	18,217	0.42	Open Land
Greene	ATWS-508	3.7	ATWS is required for waterbody crossing	100	25	2,435	0.06	Open Land
Greene	ATWS-508	3.7	ATWS is required for waterbody crossing	100	25	47	0.00	Forest
Greene	ATWS-509	3.8	ATWS is required for waterbody crossing	100	25	1,804	0.04	Open Land
Greene	ATWS-509	3.8	ATWS is required for waterbody crossing	100	25	696	0.02	Forest
Greene	ATWS-510	3.8	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-511	3.8	ATWS is required for waterbody crossing	100	25	2,419	0.06	Agricultural
Greene	ATWS-511	3.8	ATWS is required for waterbody crossing	100	25	81	0.00	Forest
Greene	ATWS-060	3.9	ATWS is required for topsoil segregation	785	25	19,597	0.45	Agricultural
Greene	ATWS-512	3.9	ATWS is required for waterbody crossing	150	25	3,750	0.09	Agricultural
Greene	ATWS-513	3.9	ATWS is required for waterbody crossing	150	25	3,750	0.09	Agricultural
Greene	ATWS-514	4.1	ATWS is required for topsoil segregation	478	25	11,963	0.27	Agricultural
Greene	ATWS-514	4.2	ATWS is required for topsoil segregation	478	25	2	0.00	Forest
Greene	ATWS-515	4.2	ATWS is required for waterbody crossing	100	25	1,456	0.03	Agricultural
Greene	ATWS-515	4.2	ATWS is required for waterbody crossing	100	25	1,044	0.02	Forest
Greene	ATWS-516	4.2	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Greene	ATWS-517	4.3	ATWS is required for waterbody crossing	100	25	1,850	0.04	Agricultural
Greene	ATWS-517	4.3	ATWS is required for waterbody crossing	100	25	650	0.01	Open Land
Greene	ATWS-518	4.3	ATWS is required for waterbody crossing	100	25	2,509	0.06	Agricultural
Greene	ATWS-518	4.3	ATWS is required for waterbody crossing	100	25	46	0.00	Forest

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Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-519	4.3	ATWS is required for topsoil segregation	322	25	128	0.00	Forest
Greene	ATWS-519	4.4	ATWS is required for topsoil segregation	322	25	7,924	0.18	Agricultural
Greene	ATWS-070	4.5	ATWS is required for road crossing	100	25	2,503	0.06	Agricultural
Greene	ATWS-071	4.5	ATWS is required for road crossing	100	25	2,504	0.06	Open Land
Greene	ATWS-072	4.5	ATWS is required for road crossing	100	25	2,501	0.06	Agricultural
Greene	ATWS-074	4.5	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-520	4.5	ATWS is required for topsoil segregation	325	25	8,063	0.19	Open Land
Greene	ATWS-521	4.6	ATWS is required for topsoil segregation	345	25	8,662	0.20	Agricultural
Greene	ATWS-522	5.0	ATWS is required for topsoil segregation	2,645	25	64,288	1.48	Agricultural
Greene	ATWS-522	5.0	ATWS is required for topsoil segregation	2,645	25	1,838	0.04	Open Land
Greene	ATWS-523	5.2	ATWS is required for access road entrance/equipment	25	20	506	0.01	Agricultural
Greene	ATWS-524	5.4	ATWS is required for topsoil segregation	2,500	25	62,520	1.44	Agricultural
Greene	ATWS-084	5.7	ATWS is required for topsoil segregation	170	25	4,242	0.10	Agricultural
Greene	ATWS-085	5.7	ATWS is required for waterbody and wetland crossing	112	25	2,791	0.06	Agricultural
Greene	ATWS-525	5.7	ATWS is required for waterbody and wetland crossing/road crossing	289	25	7,222	0.17	Agricultural
Greene	ATWS-526	5.7	ATWS is required for waterbody and wetland crossing/road crossing	243	25	6,079	0.14	Agricultural
Greene	ATWS-527	5.7	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-528	5.8	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-529	5.8	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-530	5.8	ATWS is required for topsoil segregation	3,520	25	1,322	0.03	Developed
Greene	ATWS-530	6.4	ATWS is required for topsoil segregation	3,520	25	86,723	1.99	Agricultural
Greene	ATWS-531	6.4	ATWS is required for waterbody crossing	100	25	2,518	0.06	Agricultural
Greene	ATWS-532	6.5	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-533	6.5	ATWS is required for topsoil segregation	1,665	25	41,764	0.96	Agricultural

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-534	6.8	ATWS is required for road crossing	110	25	2,759	0.06	Agricultural
Greene	ATWS-535	6.8	ATWS is required for road crossing	129	25	3,232	0.07	Agricultural
Greene	ATWS-097	7.0	ATWS is required for topsoil segregation	2,209	25	54,688	1.26	Agricultural
Greene	ATWS-097	7.2	ATWS is required for topsoil segregation	2,209	25	10	0.00	Developed
Greene	ATWS-097	7.2	ATWS is required for topsoil segregation	2,209	25	513	0.01	Open Land
Greene	ATWS-099	7.2	ATWS is required for road and railroad bored crossing	119	75	1,087	0.02	Developed
Greene	ATWS-099	7.2	ATWS is required for road and railroad bored crossing	119	75	7,127	0.16	Agricultural
Greene	ATWS-099	7.2	ATWS is required for road and railroad bored crossing	119	75	745	0.02	Open Land
Greene	ATWS-100	7.2	ATWS is required for road and railroad bored crossing	122	25	8	0.00	Developed
Greene	ATWS-100	7.2	ATWS is required for road and railroad bored crossing	122	25	2,515	0.06	Agricultural
Greene	ATWS-100	7.2	ATWS is required for road and railroad bored crossing	122	25	537	0.01	Open Land
Greene	ATWS-101	7.2	ATWS is required for road and railroad bored crossing	93	80	1,051	0.02	Developed
Greene	ATWS-101	7.2	ATWS is required for road and railroad bored crossing	93	80	6,413	0.15	Agricultural
Greene	ATWS-102	7.2	ATWS is required for road and railroad bored crossing	90	25	2,176	0.05	Agricultural
Greene	ATWS-103	7.3	ATWS is required for topsoil segregation	705	25	17,575	0.40	Agricultural
Greene	ATWS-104	7.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-105	7.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-106	7.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-107	7.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-108	7.7	ATWS is required for topsoil segregation	2,400	25	60,052	1.38	Agricultural
Greene	ATWS-109	7.8	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-110	7.8	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-112	7.8	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-113	7.8	ATWS is required for road crossing	100	25	14	0.00	Developed
Greene	ATWS-113	7.8	ATWS is required for road crossing	100	25	2,486	0.06	Agricultural

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-111	8.6	ATWS is required for topsoil segregation	5,402	25	985	0.02	Forest
Greene	ATWS-114	8.6	ATWS is required for access road transition to workspace	100	50	3,919	0.09	Agricultural
Greene	ATWS-114	8.6	ATWS is required for access road transition to workspace	100	50	341	0.01	Open Land
Greene	ATWS-114	8.6	ATWS is required for access road transition to workspace	100	50	740	0.02	Forest
Greene	ATWS-111	8.8	ATWS is required for topsoil segregation	5,402	25	134,067	3.08	Agricultural
Greene	ATWS-115	8.8	ATWS is required for waterbody crossing	100	25	2,495	0.06	Agricultural
Greene	ATWS-115	8.8	ATWS is required for waterbody crossing	100	25	5	0.00	Forest
Greene	ATWS-116	8.8	ATWS is required for waterbody crossing	100	25	2,498	0.06	Agricultural
Greene	ATWS-116	8.8	ATWS is required for waterbody crossing	100	25	2	0.00	Forest
Greene	ATWS-117	8.9	ATWS is required for waterbody crossing	100	25	2,477	0.06	Agricultural
Greene	ATWS-117	8.9	ATWS is required for waterbody crossing	100	25	23	0.00	Forest
Greene	ATWS-118	8.9	ATWS is required for waterbody crossing	100	25	2,210	0.05	Agricultural
Greene	ATWS-118	8.9	ATWS is required for waterbody crossing	100	25	290	0.01	Forest
Greene	ATWS-119	8.9	ATWS is required for topsoil segregation	1,162	25	28,966	0.66	Agricultural
Greene	ATWS-119	8.9	ATWS is required for topsoil segregation	1,162	25	84	0.00	Forest
Greene	ATWS-120	9.1	ATWS is required for road crossing	100	50	5,252	0.12	Agricultural
Greene	ATWS-121	9.1	ATWS is required for road crossing/hydrostatic testing	600	200	119,687	2.75	Agricultural
Greene	ATWS-122	9.1	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-123	9.7	ATWS is required for topsoil segregation	6,285	25	156,400	3.59	Agricultural
Greene	ATWS-123	10.1	ATWS is required for topsoil segregation	6,285	25	733	0.02	Developed
Greene	ATWS-125	10.3	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-127	10.3	ATWS is required for waterbody crossing	110	25	2,618	0.06	Agricultural
Greene	ATWS-536	10.3	ATWS is required for road crossing	100	50	5,000	0.11	Agricultural
Greene	ATWS-537	10.3	ATWS is required for road crossing	100	25	2,618	0.06	Agricultural
Greene	ATWS-538	10.3	ATWS is required for topsoil segregation	140	25	3,511	0.08	Agricultural

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-539	10.4	ATWS is required for waterbody crossing	100	25	2,131	0.05	Agricultural
Greene	ATWS-539	10.4	ATWS is required for waterbody crossing	100	25	369	0.01	Forest
Greene	ATWS-126	10.6	ATWS is required for topsoil segregation	2,367	25	793	0.02	Forest
Greene	ATWS-126	10.7	ATWS is required for topsoil segregation	2,367	25	58,371	1.34	Agricultural
Greene	ATWS-128	10.7	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-129	10.8	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-130	10.8	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-132	10.8	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-131	10.9	ATWS is required for topsoil segregation	2,460	25	61,477	1.41	Agricultural
Greene	ATWS-133	11.3	ATWS is required for waterbody/road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-134	11.3	ATWS is required for waterbody/road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-136	11.3	ATWS is required for waterbody/road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-137	11.3	ATWS is required for waterbody/road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-135	11.4	ATWS is required for topsoil segregation	9,139	25	228,404	5.24	Agricultural
Greene	ATWS-135	12.0	ATWS is required for topsoil segregation	9,139	25	66	0.00	Forest
Greene	ATWS-139	13.0	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-140	13.0	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-141	13.1	ATWS is required for topsoil segregation	236	25	5,896	0.14	Agricultural
Greene	ATWS-141	13.1	ATWS is required for topsoil segregation	236	25	4	0.00	Open Land
Greene	ATWS-142	13.1	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-143	13.1	ATWS is required for waterbody crossing/road crossing/topsoil segregation	799	25	19,873	0.46	Agricultural
Greene	ATWS-143	13.1	ATWS is required for waterbody crossing/road crossing/topsoil segregation	799	25	100	0.00	Open Land
Greene	ATWS-145	13.2	ATWS is required for waterbody crossing	100	25	1,191	0.03	Agricultural
Greene	ATWS-145	13.2	ATWS is required for waterbody crossing	100	25	1,309	0.03	Forest

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-540	13.2	ATWS is required for waterbody crossing	50	25	1,250	0.03	Agricultural
Greene	ATWS-146	13.3	ATWS is required for topsoil segregation	265	25	6,591	0.15	Agricultural
Greene	ATWS-541	13.3	ATWS is required for waterbody crossing	70	25	1,750	0.04	Forest
Greene	ATWS-147	13.4	ATWS is required for topsoil segregation	929	25	23,219	0.53	Agricultural
Greene	ATWS-148	13.5	ATWS is required for road crossing	105	25	2,571	0.06	Agricultural
Greene	ATWS-149	13.5	ATWS is required for road crossing	100	25	2,528	0.06	Agricultural
Greene	ATWS-150	13.6	ATWS is required for road crossing	100	25	2,547	0.06	Agricultural
Greene	ATWS-151	13.6	ATWS is required for topsoil segregation	537	25	12,457	0.29	Agricultural
Greene	ATWS-151	13.6	ATWS is required for topsoil segregation	537	25	964	0.02	Open Land
Greene	ATWS-152	13.6	ATWS is required for road crossing	102	25	2,505	0.06	Agricultural
Greene	ATWS-152	13.6	ATWS is required for road crossing	102	25	42	0.00	Open Land
Greene	ATWS-542	13.7	ATWS is required for topsoil segregation	570	25	13,772	0.32	Open Land
Greene	ATWS-542	13.8	ATWS is required for topsoil segregation	570	25	464	0.01	Forest
Greene	ATWS-543	13.9	ATWS is required for waterbody and wetland crossing	100	50	5,000	0.11	Agricultural
Greene	ATWS-154	14.0	ATWS is required for topsoil segregation	335	25	8,250	0.19	Open Land
Greene	ATWS-155	14.0	ATWS is required for waterbody and wetland crossing	100	25	2,483	0.06	Open Land
Greene	ATWS-156	14.0	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Open Land
Greene	ATWS-544	14.1	ATWS is required for wetland crossing	100	25	2,500	0.06	Open Land
Greene	ATWS-157	14.2	ATWS is required for wetland crossing/topsoil segregation	690	25	17,371	0.40	Open Land
Greene	ATWS-545	14.2	ATWS is required for wetland crossing	100	25	2,500	0.06	Open Land
Greene	ATWS-546	14.2	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Open Land
Greene	ATWS-158	14.3	ATWS is required for wetland crossing	90	25	2,218	0.05	Open Land
Greene	ATWS-159	14.4	ATWS is required for access road entrance/equipment	100	50	5,000	0.11	Developed
Greene	ATWS-547	14.4	ATWS is required for access road transition to workspace	172	35	6,025	0.14	Agricultural
Greene	ATWS-162	15.1	ATWS is required for access road transition to workspace	100	50	3,702	0.08	Agricultural

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-162	15.1	ATWS is required for access road transition to workspace	100	50	1,284	0.03	Open Land
Greene	ATWS-163	15.1	ATWS is required for access road entrance/equipment	100	50	2,656	0.06	Agricultural
Greene	ATWS-163	15.1	ATWS is required for access road entrance/equipment	100	50	2,344	0.05	Open Land
Greene	ATWS-548	15.1	ATWS is required for topsoil segregation	5,981	25	10,060	0.23	Open Land
Greene	ATWS-548	15.3	ATWS is required for topsoil segregation	5,981	25	1,201	0.03	Forest
Greene	ATWS-548	15.5	ATWS is required for topsoil segregation	5,981	25	138,274	3.17	Agricultural
Greene	ATWS-549	15.6	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-164	15.7	ATWS is required for topsoil segregation	7,397	25	11	0.00	Open Land
Greene	ATWS-550	15.7	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-164	17.0	ATWS is required for topsoil segregation	7,397	25	184,908	4.24	Agricultural
Greene	ATWS-165	17.1	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-166	17.1	ATWS is required for road crossing/wetland crossing	55	25	1,316	0.03	Agricultural
Greene	ATWS-167	17.1	ATWS is required for road crossing/wetland crossing	85	25	2,125	0.05	Agricultural
Greene	ATWS-168	17.1	ATWS is required for wetland crossing	95	25	2,378	0.05	Agricultural
Greene	ATWS-169	17.1	ATWS is required for wetland crossing	100	25	178	0.00	Developed
Greene	ATWS-169	17.1	ATWS is required for wetland crossing	100	25	2,332	0.05	Agricultural
Greene	ATWS-170	17.2	ATWS is required for topsoil segregation	2,480	25	62,018	1.42	Agricultural
Greene	ATWS-171	17.6	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-172	17.6	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-173	17.6	ATWS is required for waterbody crossing	100	25	407	0.01	Developed
Greene	ATWS-173	17.6	ATWS is required for waterbody crossing	100	25	2,093	0.05	Agricultural
Greene	ATWS-551	17.6	ATWS is required for waterbody crossing	100	25	394	0.01	Developed
Greene	ATWS-551	17.6	ATWS is required for waterbody crossing	100	25	2,106	0.05	Agricultural
Greene	ATWS-176	17.7	ATWS is required for topsoil segregation	440	25	10,992	0.25	Agricultural
Greene	ATWS-175	17.8	ATWS is required for topsoil segregation	1,955	25	783	0.02	Developed

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-175	18.0	ATWS is required for topsoil segregation	1,955	25	48,112	1.10	Agricultural
Greene	ATWS-177	18.1	ATWS is required for road crossing	100	25	2,519	0.06	Agricultural
Greene	ATWS-178	18.1	ATWS is required for road crossing	100	25	2,518	0.06	Agricultural
Greene	ATWS-179	18.1	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-181	18.1	ATWS is required for road crossing	100	25	2,526	0.06	Agricultural
Greene	ATWS-182	18.7R	ATWS is required for waterbody crossing	100	50	5,000	0.11	Agricultural
Greene	ATWS-183	18.7R	ATWS is required for waterbody crossing	95	25	2,352	0.05	Agricultural
Greene	ATWS-552	18.7R	ATWS is required for topsoil segregation	3,180	25	79,505	1.83	Agricultural
Greene	ATWS-184	18.8R	ATWS is required for waterbody crossing	100	25	2,414	0.06	Agricultural
Greene	ATWS-553	18.9	ATWS is required for topsoil segregation	1,685	25	42,077	0.97	Agricultural
Greene	ATWS-187	19.1	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-188	19.1	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-554	19.1	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-555	19.1	ATWS is required for topsoil segregation	2,202	25	690	0.02	Forest
Greene	ATWS-555	19.2	ATWS is required for topsoil segregation	2202	25	54,350	1.25	Agricultural
Greene	ATWS-191	19.5	ATWS is required for road crossing	100	25	13	0.00	Developed
Greene	ATWS-191	19.5	ATWS is required for road crossing	100	25	2,487	0.06	Agricultural
Greene	ATWS-192	19.5	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-194	19.6	ATWS is required for road crossing/hydrostatic testing	600	200	120,000	2.75	Agricultural
Greene	ATWS-195	20.3	ATWS is required for road crossing	105	25	2,534	0.06	Agricultural
Greene	ATWS-196	20.3	ATWS is required for road crossing	100	25	2,540	0.06	Agricultural
Greene	ATWS-556	20.3	ATWS is required for topsoil segregation	4,330	25	108,251	2.49	Agricultural
Greene	ATWS-196	20.4	ATWS is required for road crossing	100	25	22	0.00	Developed
Greene	ATWS-197	20.4	ATWS is required for road crossing	100	25	2,542	0.06	Agricultural
Greene	ATWS-199	20.4	ATWS is required for road crossing	105	25	2,535	0.06	Agricultural

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-557	20.7	ATWS is required for topsoil segregation	2395	25	54,961	1.26	Agricultural
Greene	ATWS-200	20.8	ATWS is required for waterbody crossing	100	25	2,500	0.06	Open Land
Greene	ATWS-557	20.8	ATWS is required for topsoil segregation	2,395	25	4,803	0.11	Open Land
Greene	ATWS-557	20.8	ATWS is required for topsoil segregation	2,395	25	127	0.00	Forest
Greene	ATWS-558	20.8	ATWS is required for waterbody crossing	100	25	2,500	0.06	Open Land
Greene	ATWS-559	20.9	ATWS is required for topsoil segregation	150	25	3,794	0.09	Open Land
Greene	ATWS-560	20.9	ATWS is required for waterbody crossing	100	25	2,500	0.06	Open Land
Greene	ATWS-561	20.9	ATWS is required for waterbody crossing	100	25	2,500	0.06	Open Land
Greene	ATWS-562	20.9	ATWS is required for topsoil segregation	1,902	25	4,172	0.10	Open Land
Greene	ATWS-562	21.0	ATWS is required for topsoil segregation	1,902	25	43,397	1.00	Agricultural
Greene	ATWS-203	21.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-203	21.3	ATWS is required for road crossing	100	25	17	0.00	Open Land
Greene	ATWS-204	21.3	ATWS is required for road crossing	100	25	2,508	0.06	Agricultural
Greene	ATWS-204	21.3	ATWS is required for road crossing	100	25	10	0.00	Open Land
Greene	ATWS-205	21.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-207	21.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-563	21.6	ATWS is required for topsoil segregation	5,705	25	142,643	3.27	Agricultural
Greene	ATWS-564	22.3	ATWS is required for waterbody crossing	114	25	2,859	0.07	Agricultural
Greene	ATWS-565	22.4	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-566	22.6	ATWS is required for topsoil segregation	1,475	27	36,817	0.85	Agricultural
Greene	ATWS-566	22.6	ATWS is required for topsoil segregation	1,475	27	2,837	0.07	Open Land
Greene	ATWS-567	22.8	ATWS is required for topsoil segregation	1,033	25	25,827	0.59	Agricultural
Greene	ATWS-568	22.8	ATWS is required for road crossing	100	30	2,812	0.06	Agricultural
Greene	ATWS-569	22.8	ATWS is required for road crossing	100	30	2,778	0.06	Agricultural
Greene	ATWS-569	22.8	ATWS is required for road crossing	100	30	38	0.00	Open Land

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-570	22.8	ATWS is required for road crossing	88	25	2,204	0.05	Agricultural
Greene	ATWS-571	22.8	ATWS is required for topsoil segregation	3,295	25	52	0.00	Open Land
Greene	ATWS-571	23.3	ATWS is required for topsoil segregation	3,295	25	82,323	1.89	Agricultural
Greene	ATWS-571	23.4	ATWS is required for topsoil segregation	3,295	25	9	0.00	Forest
Greene	ATWS-572	23.5	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Greene	ATWS-573	23.5	ATWS is required for waterbody crossing	100	25	753	0.02	Agricultural
Greene	ATWS-573	23.5	ATWS is required for waterbody crossing	100	25	1,747	0.04	Forest
Greene	ATWS-574	23.5	ATWS is required for topsoil segregation	1,520	25	1,276	0.03	Forest
Greene	ATWS-574	23.7	ATWS is required for topsoil segregation	1,520	25	36,783	0.84	Agricultural
Greene	ATWS-575	23.8	ATWS is required for topsoil segregation	185	25	4,578	0.11	Agricultural
Greene	ATWS-576	23.8	ATWS is required for topsoil segregation	115	25	2,983	0.07	Agricultural
Greene	ATWS-577	23.9	ATWS is required for topsoil segregation	610	25	15,311	0.35	Agricultural
Greene	ATWS-216	24.0	ATWS is required for topsoil segregation	441	25	397	0.01	Open Land
Greene	ATWS-216	24.0	ATWS is required for topsoil segregation	441	25	129	0.00	Forest
Greene	ATWS-216	24.1	ATWS is required for topsoil segregation	441	25	10,499	0.24	Agricultural
Greene	ATWS-578	24.2	ATWS is required for topsoil segregation	890	25	21,926	0.50	Agricultural
Greene	ATWS-578	24.2	ATWS is required for topsoil segregation	890	25	318	0.01	Forest
Greene	ATWS-217	24.3	ATWS is required for topsoil segregation	290	25	7,210	0.17	Agricultural
Greene	ATWS-218	24.4	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-219	24.4	ATWS is required for road crossing	95	25	2,380	0.05	Agricultural
Greene	ATWS-220	24.4	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-221	24.4	ATWS is required for road crossing	90	25	2,240	0.05	Agricultural
Greene	ATWS-222	24.4	ATWS is required for access road entrance / equipment	100	25	714	0.02	Developed
Greene	ATWS-222	24.4	ATWS is required for access road entrance / equipment	100	25	839	0.02	Agricultural
Greene	ATWS-222	24.4	ATWS is required for access road entrance / equipment	100	25	947	0.02	Open Land

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-579	24.5R	ATWS is required for topsoil segregation	1,015	25	25,472	0.58	Agricultural
Greene	ATWS-824	24.5R	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-825	24.6R	ATWS is required for wetland crossing	100	25	2,530	0.06	Agricultural
Greene	ATWS-826	24.6R	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-827	24.6R	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-828	24.9R	ATWS is required for topsoil segregation	1,640	25	40,351	0.93	Agricultural
Greene	ATWS-828	24.9R	ATWS is required for topsoil segregation	1,640	25	629	0.01	Open Land
Greene	ATWS-829	24.9R	ATWS is required for access road entrance / equipment	55	50	2,639	0.06	Agricultural
Greene	ATWS-830	24.9R	ATWS is required for access road entrance / equipment	50	50	1,634	0.04	Agricultural
Greene	ATWS-830	24.9R	ATWS is required for access road entrance / equipment	50	50	727	0.02	Open Land
Greene	ATWS-831	24.9R	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-832	24.9R	ATWS is required for wetland crossing	150	25	3,706	0.09	Agricultural
Greene	ATWS-833	25.0R	ATWS is required for wetland crossing	200	25	5,000	0.11	Agricultural
Greene	ATWS-835	25.1R	ATWS is required for wetland crossing	200	25	5,000	0.11	Agricultural
Greene	ATWS-834	25.2R	ATWS is required for topsoil segregation	1,220	25	29,691	0.68	Agricultural
Greene	ATWS-836	25.2R	ATWS is required for waterbody crossing	100	25	1,812	0.04	Agricultural
Greene	ATWS-837	25.2R	ATWS is required for waterbody crossing	100	25	965	0.02	Developed
Greene	ATWS-837	25.2R	ATWS is required for waterbody crossing	100	25	1,535	0.04	Agricultural
Greene	ATWS-834	25.3R	ATWS is required for topsoil segregation	1,220	25	787	0.02	Developed
Greene	ATWS-836	25.3R	ATWS is required for waterbody crossing	100	25	688	0.02	Developed
Greene	ATWS-838	25.4R	ATWS is required for waterbody crossing	200	25	5,027	0.12	Agricultural
Greene	ATWS-839	25.4R	ATWS is required for waterbody crossing	200	25	5,044	0.12	Agricultural
Greene	ATWS-840	25.6R	ATWS is required for topsoil segregation	2,025	25	50,649	1.16	Agricultural
Greene	ATWS-841	25.7R	ATWS is required for waterbody and wetland crossing	110	25	2,770	0.06	Agricultural
Greene	ATWS-842	25.7R	ATWS is required for waterbody and wetland crossing	80	25	2,009	0.05	Agricultural

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-234	25.8R	ATWS is required for waterbody and wetland crossing	135	25	3,299	0.08	Agricultural
Greene	ATWS-236	25.8R	ATWS is required for waterbody and wetland crossing	180	25	4,397	0.10	Agricultural
Greene	ATWS-600	25.8R	ATWS is required for topsoil segregation	210	25	5,123	0.12	Agricultural
Greene	ATWS-237	26.0	ATWS is required for access road entrance / equipment	100	50	184	0.00	Agricultural
Greene	ATWS-237	26.0	ATWS is required for access road entrance / equipment	100	50	4,816	0.11	Open Land
Greene	ATWS-601	26.0	ATWS is required for topsoil segregation	950	25	23,800	0.55	Agricultural
Greene	ATWS-243	26.1	ATWS is required for access road entrance/equipment	55	50	2,421	0.06	Open Land
Greene	ATWS-243	26.1	ATWS is required for access road entrance/equipment	55	50	359	0.01	Forest
Greene	ATWS-602	26.1	ATWS is required for road crossing	100	25	2,495	0.06	Agricultural
Greene	ATWS-603	26.1	ATWS is required for road crossing	100	25	2,499	0.06	Agricultural
Greene	ATWS-604	26.2	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-605	26.4	ATWS is required for topsoil segregation	2,890	25	1,058	0.02	Forest
Greene	ATWS-605	26.6	ATWS is required for topsoil segregation	2,890	25	71,321	1.64	Agricultural
Greene	ATWS-606	26.7	ATWS is required for waterbody and wetland crossing	90	25	2,345	0.05	Agricultural
Greene	ATWS-607	26.7	ATWS is required for waterbody and wetland crossing	105	30	2,967	0.07	Agricultural
Greene	ATWS-608	26.7	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Greene	ATWS-609	26.8	ATWS is required for waterbody crossing	100	25	2,362	0.05	Agricultural
Greene	ATWS-610	27.2	ATWS is required for topsoil segregation	2,800	25	70,215	1.61	Agricultural
Greene	ATWS-610	27.3	ATWS is required for topsoil segregation	2,800	25	8	0.00	Open Land
Greene	ATWS-611	27.3	ATWS is required for road crossing	71	25	1,772	0.04	Agricultural
Greene	ATWS-611	27.3	ATWS is required for road crossing	71	25	11	0.00	Open Land
Greene	ATWS-612	27.3	ATWS is required for road crossing	100	25	2,487	0.06	Agricultural
Greene	ATWS-612	27.3	ATWS is required for road crossing	100	25	4	0.00	Open Land
Greene	ATWS-613	27.3	ATWS is required for road crossing	85	25	1,984	0.05	Open Land
Greene	ATWS-614	27.3	ATWS is required for road crossing	100	25	2,500	0.06	Open Land

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Greene	ATWS-615	27.3	ATWS is required for topsoil segregation	430	25	10,757	0.25	Open Land
Greene	ATWS-616	27.3	ATWS is required for road crossing	69	25	1,730	0.04	Open Land
Greene	ATWS-617	27.4	ATWS is required for road crossing	94	25	2	0.00	Developed
Greene	ATWS-617	27.4	ATWS is required for road crossing	94	25	2,353	0.05	Agricultural
Greene	ATWS-618	27.4	ATWS is required for road crossing	100	25	2,696	0.06	Agricultural
Greene	ATWS-619	27.9	ATWS is required for topsoil segregation	5,250	25	131,096	3.01	Agricultural
Greene	ATWS-256	28.4	ATWS is required for road crossing	100	20	1,957	0.04	Agricultural
Greene	ATWS-257	28.4	ATWS is required for road crossing	100	25	2,524	0.06	Agricultural
Greene	ATWS-259	28.4	ATWS is required for road crossing	100	50	5,000	0.11	Agricultural
Greene	ATWS-620	28.4	ATWS is required for topsoil segregation	2,605	25	216	0.00	Open Land
Greene	ATWS-620	28.7	ATWS is required for topsoil segregation	2,605	25	64,957	1.49	Agricultural
Greene	ATWS-621	28.9	ATWS is required for road crossing	100	50	5,000	0.11	Agricultural
Greene	ATWS-622	28.9	ATWS is required for road crossing	100	50	5,000	0.11	Agricultural
Greene	ATWS-623	28.9	ATWS is required for topsoil segregation	3,920	25	63	0.00	Open Land
Greene	ATWS-623	29.0	ATWS is required for topsoil segregation	3,920	25	67,556	1.55	Agricultural
Jersey	ATWS-623	29.5	ATWS is required for topsoil segregation	3,920	25	30,364	0.70	Agricultural
Jersey	ATWS-264	29.6	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-265	29.6	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-266	29.7	ATWS is required for road crossing	100	25	2,499	0.06	Agricultural
Jersey	ATWS-266	29.7	ATWS is required for road crossing	100	25	1	0.00	Open Land
Jersey	ATWS-267	29.7	ATWS is required for topsoil segregation	100	25	2,488	0.06	Agricultural
Jersey	ATWS-267	29.7	ATWS is required for topsoil segregation	100	25	12	0.00	Open Land
Jersey	ATWS-624	29.7	ATWS is required for road crossing	100	25	1,924	0.04	Developed
Jersey	ATWS-624	29.7	ATWS is required for road crossing	100	25	573	0.01	Agricultural
Jersey	ATWS-624	29.7	ATWS is required for road crossing	100	25	4	0.00	Open Land

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Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Jersey	ATWS-268	29.8	ATWS is required for topsoil segregation	9,800	25	230,998	5.30	Agricultural
Jersey	ATWS-268	31.4	ATWS is required for topsoil segregation	9,800	25	13,242	0.30	Open Land
Jersey	ATWS-625	31.5	ATWS is required for waterbody crossing	100	25	1,570	0.04	Agricultural
Jersey	ATWS-625	31.5	ATWS is required for waterbody crossing	100	25	930	0.02	Forest
Jersey	ATWS-626	31.6	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Jersey	ATWS-627	31.7	ATWS is required for topsoil segregation	1,406	25	25,270	0.58	Agricultural
Jersey	ATWS-627	31.7	ATWS is required for topsoil segregation	1,406	25	1,219	0.03	Forest
Jersey	ATWS-271	31.9	ATWS is required for road crossing	100	50	5,000	0.11	Agricultural
Jersey	ATWS-272	31.9	ATWS is required for road crossing/wetland crossing	110	50	83	0.00	Developed
Jersey	ATWS-272	31.9	ATWS is required for road crossing/wetland crossing	110	50	5,407	0.12	Agricultural
Jersey	ATWS-627	31.9	ATWS is required for topsoil segregation	1,406	25	8,661	0.20	Open Land
Jersey	ATWS-275	32.0	ATWS is required for wetland crossing	100	25	2,502	0.06	Agricultural
Jersey	ATWS-276	32.0	ATWS is required for wetland crossing	100	25	2,499	0.06	Agricultural
Jersey	ATWS-628	32.4	ATWS is required for topsoil segregation	4,973	25	221	0.01	Open Land
Jersey	ATWS-628	32.8	ATWS is required for topsoil segregation	4,973	25	124,103	2.85	Agricultural
Jersey	ATWS-277	32.9	ATWS is required for road crossing	100	50	4,961	0.11	Agricultural
Jersey	ATWS-277	32.9	ATWS is required for road crossing	100	50	39	0.00	Open Land
Jersey	ATWS-278	32.9	ATWS is required for road crossing	100	50	4,992	0.11	Agricultural
Jersey	ATWS-278	32.9	ATWS is required for road crossing	100	50	8	0.00	Open Land
Jersey	ATWS-629	33.3	ATWS is required for topsoil segregation	2,610	25	65,268	1.50	Agricultural
Jersey	ATWS-283	33.7	ATWS is required for waterbody crossing	100	50	5,000	0.11	Agricultural
Jersey	ATWS-630	33.7	ATWS is required for topsoil segregation	1,445	25	35,941	0.83	Agricultural
Jersey	ATWS-630	33.7	ATWS is required for topsoil segregation	1,445	25	195	0.00	Open Land
Jersey	ATWS-631	33.8	ATWS is required for topsoil segregation	535	25	13,314	0.31	Agricultural
Jersey	ATWS-284	33.9	ATWS is required for road crossing	200	25	5,000	0.11	Agricultural

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Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Jersey	ATWS-632	34.2	ATWS is required for hydrostatic testing	602	200	120,382	2.76	Agricultural
Jersey	ATWS-633	34.2	ATWS is required for hydrostatic testing	50	50	464	0.01	Developed
Jersey	ATWS-633	34.2	ATWS is required for hydrostatic testing	50	50	2,036	0.05	Agricultural
Jersey	ATWS-634	34.7	ATWS is required for topsoil segregation	7,150	25	161,072	3.70	Agricultural
Jersey	ATWS-634	34.7	ATWS is required for topsoil segregation	7,150	25	17,374	0.40	Open Land
Jersey	ATWS-846	35.1R	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-288	35.2R	ATWS is required for waterbody and wetland crossing	100	25	2,458	0.06	Agricultural
Jersey	ATWS-636	35.3R	ATWS is required for waterbody and wetland crossing	100	25	2,672	0.06	Forest
Jersey	ATWS-848	35.3R	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Forest
Jersey	ATWS-849	35.4R	ATWS is required for topsoil segregation	835	25	20,860	0.48	Agricultural
Jersey	ATWS-850	35.4R	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-851	35.5R	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-852	35.5R	ATWS is required for road and waterbody crossing	100	25	2,478	0.06	Agricultural
Jersey	ATWS-852	35.5R	ATWS is required for road and waterbody crossing	100	25	22	0.00	Forest
Jersey	ATWS-853	35.5R	ATWS is required for topsoil segregation	1,175	0	29,384	0.67	Agricultural
Jersey	ATWS-853	35.5R	ATWS is required for topsoil segregation	1,175	0	64	0.00	Forest
Jersey	ATWS-854	35.5R	ATWS is required for road and waterbody crossing	100	25	1,448	0.03	Agricultural
Jersey	ATWS-854	35.5R	ATWS is required for road and waterbody crossing	100	25	1,052	0.02	Forest
Jersey	ATWS-855	36.3R	ATWS is required for topsoil segregation	3,095	25	77,429	1.78	Agricultural
Jersey	ATWS-856	36.4R	ATWS is required for topsoil segregation	1,280	25	32,003	0.73	Agricultural
Jersey	ATWS-857	36.6R	ATWS is required for access road entrance / equipment	100	50	5,000	0.11	Agricultural
Jersey	ATWS-858	36.6R	ATWS is required for topsoil segregation	225	25	549	0.01	Forest
Jersey	ATWS-869	36.6R	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-870	36.6R	ATWS is required for waterbody crossing	100	25	2,085	0.05	Agricultural
Jersey	ATWS-870	36.6R	ATWS is required for waterbody crossing	100	25	415	0.01	Forest

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Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Jersey	ATWS-871	36.6R	ATWS is required for waterbody crossing	100	25	1,206	0.03	Forest
Jersey	ATWS-858	36.7R	ATWS is required for topsoil segregation	225	25	4,980	0.11	Agricultural
Jersey	ATWS-858	36.7R	ATWS is required for topsoil segregation	225	25	186	0.00	Open Land
Jersey	ATWS-871	36.7R	ATWS is required for waterbody crossing	100	25	1,256	0.03	Agricultural
Jersey	ATWS-671	37.0R	ATWS is required for topsoil segregation	2,090	25	49,922	1.15	Agricultural
Jersey	ATWS-672	37.1	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-671	37.1R	ATWS is required for topsoil segregation	2,090	25	2,506	0.06	Open Land
Jersey	ATWS-673	37.2	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-674	37.2	ATWS is required for topsoil segregation	240	25	5,938	0.14	Agricultural
Jersey	ATWS-675	37.3	ATWS is required for road crossing	100	25	2,498	0.06	Agricultural
Jersey	ATWS-676	37.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-677	37.3	ATWS is required for topsoil segregation	1,583	25	38,750	0.89	Agricultural
Jersey	ATWS-677	37.3	ATWS is required for topsoil segregation	1,583	25	850	0.02	Open Land
Jersey	ATWS-678	37.6	ATWS is required for topsoil segregation	165	25	4,177	0.10	Agricultural
Jersey	ATWS-679	37.7	ATWS is required for topsoil segregation	165	25	4,167	0.10	Agricultural
Jersey	ATWS-680	37.9	ATWS is required for topsoil segregation	1,705	25	42,595	0.98	Agricultural
Jersey	ATWS-681	38.0	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-682	38.0	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-683	38.0	ATWS is required for road crossing	100	25	2,594	0.06	Agricultural
Jersey	ATWS-684	38.1	ATWS is required for road crossing	100	25	2,312	0.05	Agricultural
Jersey	ATWS-685	38.5	ATWS is required for topsoil segregation	2,685	25	67,129	1.54	Agricultural
Jersey	ATWS-686	38.5	ATWS is required for road crossing	100	25	2,364	0.05	Agricultural
Jersey	ATWS-687	38.5	ATWS is required for road crossing	100	25	2,583	0.06	Agricultural
Jersey	ATWS-688	38.6	ATWS is required for road crossing	100	25	2,500	0.06	Open Land
Jersey	ATWS-689	38.6	ATWS is required for road crossing	100	25	2,133	0.05	Agricultural

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Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Jersey	ATWS-689	38.6	ATWS is required for road crossing	100	25	367	0.01	Open Land
Jersey	ATWS-690	38.6	ATWS is required for topsoil segregation	564	25	8,462	0.19	Agricultural
Jersey	ATWS-690	38.6	ATWS is required for topsoil segregation	564	25	5,630	0.13	Open Land
Jersey	ATWS-691	38.7	ATWS is required for topsoil segregation	1,230	25	30,779	0.71	Agricultural
Jersey	ATWS-692	38.9	ATWS is required for waterbody crossing	110	25	2,757	0.06	Agricultural
Jersey	ATWS-693	38.9	ATWS is required for waterbody crossing	100	15	17	0.00	Developed
Jersey	ATWS-693	38.9	ATWS is required for waterbody crossing	100	15	1,596	0.04	Agricultural
Jersey	ATWS-694	38.9	ATWS is required for waterbody crossing	175	25	4,376	0.10	Agricultural
Jersey	ATWS-695	39.0	ATWS is required for waterbody crossing	100	25	2,492	0.06	Agricultural
Jersey	ATWS-696	39.1	ATWS is required for waterbody crossing	195	25	1,313	0.03	Agricultural
Jersey	ATWS-696	39.1	ATWS is required for waterbody crossing	195	25	335	0.01	Open Land
Jersey	ATWS-696	39.1	ATWS is required for waterbody crossing	195	25	3,219	0.07	Forest
Jersey	ATWS-697	39.1	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-698	39.1	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-699	39.2	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-700	39.2	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-701	39.2	ATWS is required for topsoil segregation	825	25	20,673	0.47	Agricultural
Jersey	ATWS-702	39.4	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Jersey	ATWS-703	39.4	ATWS is required for topsoil segregation	95	25	2,385	0.05	Forest
Jersey	ATWS-704	39.4	ATWS is required for waterbody crossing	85	25	2,065	0.05	Forest
Jersey	ATWS-705	39.5	ATWS is required for waterbody crossing	100	25	1,631	0.04	Agricultural
Jersey	ATWS-705	39.5	ATWS is required for waterbody crossing	100	25	869	0.02	Forest
Jersey	ATWS-706	39.7	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Jersey	ATWS-707	39.7	ATWS is required for waterbody crossing	80	25	2,000	0.05	Forest
Jersey	ATWS-708	39.7	ATWS is required for waterbody crossing	250	25	6,224	0.14	Forest

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Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Jersey	ATWS-710	39.9R	ATWS is required for topsoil segregation	1,670	25	2,642	0.06	Forest
Jersey	ATWS-710	40.1R	ATWS is required for topsoil segregation	1,670	25	38,047	0.87	Agricultural
Jersey	ATWS-710	40.1R	ATWS is required for topsoil segregation	1,670	25	1,040	0.02	Open Land
Jersey	ATWS-711	40.2R	ATWS is required for topsoil segregation	525	25	13,120	0.30	Agricultural
Jersey	ATWS-711	40.2R	ATWS is required for topsoil segregation	525	25	22	0.00	Open Land
Jersey	ATWS-322	40.3	ATWS is required for road crossing	100	25	2,660	0.06	Agricultural
Jersey	ATWS-712	40.3	ATWS is required for road crossing	95	25	2,225	0.05	Agricultural
Jersey	ATWS-713	40.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-714	40.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-715	40.6	ATWS is required for topsoil segregation	3,105	25	1,132	0.03	Open Land
Jersey	ATWS-327	40.8	ATWS is required for access road entrance/equipment	100	50	1,385	0.03	Agricultural
Jersey	ATWS-327	40.8	ATWS is required for access road entrance/equipment	100	50	3,615	0.08	Open Land
Jersey	ATWS-715	40.8	ATWS is required for topsoil segregation	3,105	25	700	0.02	Forest
Jersey	ATWS-716	40.8	ATWS is required for access road transition to workspace	130	50	6,497	0.15	Agricultural
Jersey	ATWS-715	40.9	ATWS is required for topsoil segregation	3,105	25	75,831	1.74	Agricultural
Jersey	ATWS-717	40.9	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-718	40.9	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-719	40.9	ATWS is required for waterbody crossing	100	25	2,332	0.05	Agricultural
Jersey	ATWS-719	40.9	ATWS is required for waterbody crossing	100	25	168	0.00	Open Land
Jersey	ATWS-720	40.9	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-721	41.0	ATWS is required for topsoil segregation	515	25	12,855	0.30	Agricultural
Jersey	ATWS-722	41.0	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-723	41.0	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-724	41.1	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Jersey	ATWS-725	41.1	ATWS is required for waterbody crossing	100	25	2,357	0.05	Agricultural

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Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Jersey	ATWS-725	41.1	ATWS is required for waterbody crossing	100	25	143	0.00	Forest
Jersey	ATWS-726	41.1	ATWS is required for topsoil segregation	285	25	7,140	0.16	Agricultural
Jersey	ATWS-727	41.2	ATWS is required for topsoil segregation	85	25	2,160	0.05	Agricultural
Jersey	ATWS-728	41.2	ATWS is required for wetland crossing	75	25	1,877	0.04	Agricultural
Jersey	ATWS-729	41.2	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-730	41.2	ATWS is required for wetland crossing	100	25	2,382	0.05	Agricultural
Jersey	ATWS-730	41.2	ATWS is required for wetland crossing	100	25	118	0.00	Open Land
Jersey	ATWS-731	41.2	ATWS is required for wetland crossing	100	25	2,350	0.05	Agricultural
Jersey	ATWS-731	41.2	ATWS is required for wetland crossing	100	25	150	0.00	Open Land
Jersey	ATWS-732	41.2	ATWS is required for topsoil segregation	550	25	124	0.00	Open Land
Jersey	ATWS-732	41.3	ATWS is required for topsoil segregation	550	25	13,692	0.31	Agricultural
Jersey	ATWS-733	41.3	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-734	41.3	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-735	41.3	ATWS is required for waterbody and wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-736	41.3	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-737	41.4	ATWS is required for topsoil segregation	585	25	14,586	0.33	Agricultural
Jersey	ATWS-329	41.5	ATWS is required for waterbody crossing	106	25	2,642	0.06	Agricultural
Jersey	ATWS-330	41.6	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-331	41.6	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-332	41.6	ATWS is required for topsoil segregation	214	25	5,353	0.12	Agricultural
Jersey	ATWS-738	41.6	ATWS is required for waterbody crossing	100	25	2,502	0.06	Agricultural
Jersey	ATWS-739	41.6	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-740	41.6	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-333	41.7	ATWS is required for topsoil segregation	925	25	23,154	0.53	Agricultural
Jersey	ATWS-741	41.7	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Jersey	ATWS-334	41.8	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-335	41.8	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-336	41.8	ATWS is required for road crossing	100	25	420	0.01	Developed
Jersey	ATWS-336	41.8	ATWS is required for road crossing	100	25	1,487	0.03	Agricultural
Jersey	ATWS-336	41.8	ATWS is required for road crossing	100	25	594	0.01	Open Land
Jersey	ATWS-337	41.8	ATWS is required for topsoil segregation	630	25	427	0.01	Developed
Jersey	ATWS-337	41.8	ATWS is required for topsoil segregation	630	25	592	0.01	Open Land
Jersey	ATWS-338	41.8	ATWS is required for road crossing	100	25	458	0.01	Developed
Jersey	ATWS-338	41.8	ATWS is required for road crossing	100	25	1,461	0.03	Agricultural
Jersey	ATWS-338	41.8	ATWS is required for road crossing	100	25	582	0.01	Open Land
Jersey	ATWS-337	41.9	ATWS is required for topsoil segregation	630	25	14,752	0.34	Agricultural
Jersey	ATWS-339	41.9	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-340	41.9	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-341	42.0	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-342	42.0	ATWS is required for topsoil segregation	1,935	25	48,374	1.11	Agricultural
Jersey	ATWS-343	42.0	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-344	42.3	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-345	42.3	ATWS is required for road crossing	100	25	2,002	0.05	Agricultural
Jersey	ATWS-345	42.3	ATWS is required for road crossing	100	25	497	0.01	Open Land
Jersey	ATWS-346	42.4	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-347	42.4	ATWS is required for topsoil segregation	700	25	16,610	0.38	Agricultural
Jersey	ATWS-347	42.4	ATWS is required for topsoil segregation	700	25	828	0.02	Open Land
Jersey	ATWS-742	42.5	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-743	42.5	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
Jersey	ATWS-348	42.6	ATWS is required for topsoil segregation	5,193	25	440	0.01	Open Land

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Jersey	ATWS-348	42.7	ATWS is required for topsoil segregation	5,193	25	129,374	2.97	Agricultural
Jersey	ATWS-350	43.6R	ATWS is required for topsoil segregation	615	25	15,414	0.35	Agricultural
Jersey	ATWS-351	43.7R	ATWS is required for topsoil segregation	660	25	16,487	0.38	Agricultural
Jersey	ATWS-355	43.9	ATWS is required for road crossing	160	25	153	0.00	Forest
Jersey	ATWS-744	43.9	ATWS is required for road crossing	135	25	2,035	0.05	Forest
Jersey	ATWS-355	44.0	ATWS is required for road crossing	160	25	3,826	0.09	Agricultural
Jersey	ATWS-357	44.0	ATWS is required for topsoil segregation	105	25	2,548	0.06	Agricultural
Jersey	ATWS-358	44.0	ATWS is required for access road entrance/equipment	100	50	5,000	0.11	Forest
Jersey	ATWS-744	44.0	ATWS is required for road crossing	135	25	1,333	0.03	Agricultural
Jersey	ATWS-361	44.1	ATWS is required for waterbody crossing	100	25	2,525	0.06	Open Land
Jersey	ATWS-745	44.1	ATWS is required for topsoil segregation	367	25	5,499	0.13	Agricultural
Jersey	ATWS-745	44.1	ATWS is required for topsoil segregation	367	25	3,673	0.08	Forest
Jersey	ATWS-362	44.2	ATWS is required for waterbody crossing	100	25	453	0.01	Open Land
Jersey	ATWS-362	44.2	ATWS is required for waterbody crossing	100	25	2,047	0.05	Forest
Jersey	ATWS-746	44.2	ATWS is required for topsoil segregation	475	25	11,786	0.27	Open Land
Jersey	ATWS-364	44.5	ATWS is required for waterbody crossing	100	25	2,500	0.06	Open Land
Jersey	ATWS-365	44.5	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
Jersey	ATWS-366	44.5	ATWS is required for waterbody crossing	100	25	2,469	0.06	Open Land
Jersey	ATWS-747	44.7	ATWS is required for access road transition to workspace	105	50	3,779	0.09	Open Land
Jersey	ATWS-747	44.7	ATWS is required for access road transition to workspace	105	50	1,635	0.04	Forest
Jersey	ATWS-368	45.0	ATWS is required for HDD	300	75	22,500	0.52	Forest
Jersey	ATWS-369	45.0	ATWS is required for HDD	300	135	15,155	0.35	Open Land
Jersey	ATWS-369	45.0	ATWS is required for HDD	300	135	25,345	0.58	Forest
Jersey	ATWS-920	45.1	ATWS is required for HDD	215	25	1,768	0.04	Developed
Jersey	ATWS-920	45.1	ATWS is required for HDD	215	25	1,336	0.03	Water

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
Jersey	ATWS-920	45.1	ATWS is required for HDD	215	25	974	0.02	Open Land
Jersey	ATWS-920	45.1	ATWS is required for HDD	215	25	1,318	0.03	Forest
Missouri								
St. Charles	ATWS-371	46.1	ATWS is required for HDD	301	134	17	0.00	Open Land
St. Charles	ATWS-371	46.1	ATWS is required for HDD	301	134	387	0.01	Forest
St. Charles	ATWS-370	46.2	ATWS is required for HDD	210	90	18,628	0.43	Agricultural
St. Charles	ATWS-371	46.2	ATWS is required for HDD	301	134	39,972	0.92	Agricultural
St. Charles	ATWS-372	46.2	ATWS is required for HDD	5,909	75	438,920	10.08	Agricultural
St. Charles	ATWS-373	46.3	ATWS is required for topsoil segregation	545	25	12,610	0.29	Agricultural
St. Charles	ATWS-374	46.6	ATWS is required for road crossing	105	25	2,552	0.06	Agricultural
St. Charles	ATWS-748	46.6	ATWS is required for topsoil segregation	1,680	25	42,010	0.96	Agricultural
St. Charles	ATWS-372	46.7	ATWS is required for HDD	5,909	75	2,333	0.05	Developed
St. Charles	ATWS-376	46.7	ATWS is required for road crossing	100	25	2,543	0.06	Agricultural
St. Charles	ATWS-379	46.8	ATWS is required for HDD	150	150	22,500	0.52	Agricultural
St. Charles	ATWS-378	46.9R	ATWS is required for access road entrance / equipment	50	40	1,093	0.03	Agricultural
St. Charles	ATWS-378	46.9R	ATWS is required for access road entrance / equipment	50	40	857	0.02	Open Land
St. Charles	ATWS-749	46.9R	ATWS is required for topsoil segregation	1,470	25	36,739	0.84	Agricultural
St. Charles	ATWS-919	46.9R	ATWS is required for access road entrance / equipment	50	40	1,562	0.04	Agricultural
St. Charles	ATWS-919	46.9R	ATWS is required for access road entrance / equipment	50	40	235	0.01	Open Land
St. Charles	ATWS-860	47.6R	ATWS is required for topsoil segregation	3,405	25	85,184	1.96	Agricultural
St. Charles	ATWS-861	47.6R	ATWS is required for road crossing	550	25	13,729	0.32	Agricultural
St. Charles	ATWS-862	47.6R	ATWS is required for road crossing	555	25	13,831	0.32	Agricultural
St. Charles	ATWS-863	47.6R	ATWS is required for road crossing	100	25	2,505	0.06	Agricultural
St. Charles	ATWS-865	47.6R	ATWS is required for road crossing	100	25	2,499	0.06	Agricultural
St. Charles	ATWS-864	47.7R	ATWS is required for topsoil segregation	190	25	4,776	0.11	Agricultural

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
St. Charles	ATWS-866	47.8R	ATWS is required for waterbody crossing	380	25	9,452	0.22	Agricultural
St. Charles	ATWS-868	47.8R	ATWS is required for waterbody crossing	380	25	9,177	0.21	Agricultural
St. Charles	ATWS-761	48R	ATWS is required for topsoil segregation	4,030	25	100,091	2.30	Agricultural
St. Charles	ATWS-761	48.1R	ATWS is required for topsoil segregation	4,030	25	693	0.02	Open Land
St. Charles	ATWS-762	48.9	ATWS is required for topsoil segregation	2,230	25	55,704	1.28	Agricultural
St. Charles	ATWS-762	49.0	ATWS is required for topsoil segregation	2,230	25	17	0.00	Open Land
St. Charles	ATWS-763	49.0	ATWS is required for road crossing	100	25	2,486	0.06	Agricultural
St. Charles	ATWS-763	49.0	ATWS is required for road crossing	100	25	14	0.00	Open Land
St. Charles	ATWS-764	49.0	ATWS is required for road crossing	100	25	2,472	0.06	Agricultural
St. Charles	ATWS-764	49.0	ATWS is required for road crossing	100	25	28	0.00	Open Land
St. Charles	ATWS-765	49.0	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-766	49.0	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-767	49.1	ATWS is required for topsoil segregation	1,990	25	49,710	1.14	Agricultural
St. Charles	ATWS-768	49.4	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-769	49.4	ATWS is required for road crossing	100	25	2,497	0.06	Agricultural
St. Charles	ATWS-770	49.4	ATWS is required for road crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-771	49.5	ATWS is required for topsoil segregation	970	25	24,274	0.56	Agricultural
St. Charles	ATWS-772	49.5	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-773	49.5	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-774	49.7	ATWS is required for topsoil segregation	2,940	25	23,641	0.54	Wetland
St. Charles	ATWS-774	49.9	ATWS is required for topsoil segregation	2,940	25	405	0.01	Open Land
St. Charles	ATWS-774	50.0	ATWS is required for topsoil segregation	2,940	25	5,200	0.12	Developed
St. Charles	ATWS-774	50.1	ATWS is required for topsoil segregation	2,940	25	44,274	1.02	Agricultural
St. Charles	ATWS-775	50.4	ATWS is required for topsoil segregation	1,382	25	34,551	0.79	Agricultural
St. Charles	ATWS-402	50.5	ATWS is required for road crossing	100	25	2,501	0.06	Agricultural

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
St. Charles	ATWS-405	50.5	ATWS is required for road crossing	129	25	3,217	0.07	Agricultural
St. Charles	ATWS-776	50.5	ATWS is required for road crossing	4,030	25	100,091	0.06	Agricultural
St. Charles	ATWS-777	50.5	ATWS is required for road crossing	100	25	2,498	0.06	Agricultural
St. Charles	ATWS-403	50.8	ATWS is required for topsoil segregation	3,135	25	78,354	1.80	Agricultural
St. Charles	ATWS-778	51.0	ATWS is required for railroad bored crossing	131	25	3,274	0.08	Agricultural
St. Charles	ATWS-408	51.1	ATWS is required for railroad bored crossing	108	25	2,004	0.05	Agricultural
St. Charles	ATWS-408	51.1	ATWS is required for railroad bored crossing	108	25	700	0.02	Forest
St. Charles	ATWS-409	51.1	ATWS is required for topsoil segregation	1,105	25	659	0.02	Forest
St. Charles	ATWS-410	51.1	ATWS is required for railroad bored crossing	126	25	2,522	0.06	Agricultural
St. Charles	ATWS-410	51.1	ATWS is required for railroad bored crossing	126	25	633	0.01	Forest
St. Charles	ATWS-779	51.1	ATWS is required for railroad bored crossing	100	50	5,026	0.12	Agricultural
St. Charles	ATWS-409	51.2	ATWS is required for topsoil segregation	1,105	25	24,649	0.57	Agricultural
St. Charles	ATWS-780	51.2	ATWS is required for access road entrance/equipment	100	50	3,927	0.09	Agricultural
St. Charles	ATWS-780	51.2	ATWS is required for access road entrance/equipment	100	50	1,084	0.02	Open Land
St. Charles	ATWS-409	51.3	ATWS is required for topsoil segregation	1,105	25	2,340	0.05	Developed
St. Charles	ATWS-411	51.3	ATWS is required for road crossing	110	25	2,639	0.06	Agricultural
St. Charles	ATWS-412	51.3	ATWS is required for road crossing	100	25	2,639	0.06	Developed
St. Charles	ATWS-413	51.3	ATWS is required for road crossing	100	25	2,253	0.05	Developed
St. Charles	ATWS-413	51.3	ATWS is required for road crossing	100	25	386	0.01	Agricultural
St. Charles	ATWS-414	51.3	ATWS is required for topsoil segregation	2,268	25	2,869	0.07	Developed
St. Charles	ATWS-415	51.3	ATWS is required for road crossing	110	25	1,910	0.04	Developed
St. Charles	ATWS-415	51.3	ATWS is required for road crossing	110	25	730	0.02	Agricultural
St. Charles	ATWS-414	51.4	ATWS is required for topsoil segregation	2,268	25	53,823	1.24	Agricultural
St. Charles	ATWS-416	51.7	ATWS is required for road crossing	155	25	3,198	0.07	Agricultural
St. Charles	ATWS-417	51.7	ATWS is required for road crossing	100	25	3,184	0.07	Agricultural

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
St. Charles	ATWS-419	51.8	ATWS is required for road crossing	100	25	3,183	0.07	Agricultural
St. Charles	ATWS-420	51.8	ATWS is required for road crossing	155	25	3,183	0.07	Agricultural
St. Charles	ATWS-418	51.9	ATWS is required for topsoil segregation	1,268	25	31,690	0.73	Agricultural
St. Charles	ATWS-781	52.0	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-782	52.0	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-783	52.0	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-784	52.0	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-785	52.1	ATWS is required for topsoil segregation	720	25	17,996	0.41	Agricultural
St. Charles	ATWS-786	52.1	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-787	52.1	ATWS is required for road and waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-788	52.2	ATWS is required for road and waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-789	52.2	ATWS is required for road and waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-790	52.2	ATWS is required for topsoil segregation	410	25	10,354	0.24	Agricultural
St. Charles	ATWS-791	52.2	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-792	52.2	ATWS is required for waterbody crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-421	52.3	ATWS is required for access road entrance/equipment	100	50	1,369	0.03	Agricultural
St. Charles	ATWS-421	52.3	ATWS is required for access road entrance/equipment	100	50	3,624	0.08	Open Land
St. Charles	ATWS-422	52.3	ATWS is required for access road transition to workspace	100	50	3,751	0.09	Agricultural
St. Charles	ATWS-422	52.3	ATWS is required for access road transition to workspace	100	50	1,249	0.03	Open Land
St. Charles	ATWS-793	52.3	ATWS is required for waterbody crossing	100	25	1,880	0.04	Agricultural
St. Charles	ATWS-793	52.3	ATWS is required for waterbody crossing	100	25	620	0.01	Open Land
St. Charles	ATWS-794	52.3	ATWS is required for topsoil segregation	4,092	25	634	0.01	Open Land
St. Charles	ATWS-424	53.0	ATWS is required for road crossing	100	50	5,421	0.12	Agricultural
St. Charles	ATWS-794	53.0	ATWS is required for topsoil segregation	4,092	25	101,655	2.33	Agricultural
St. Charles	ATWS-425	53.1	ATWS is required for road crossing	120	50	5,421	0.12	Agricultural

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
St. Charles	ATWS-795	53.1	ATWS is required for topsoil segregation	7,543	25	23	0.00	Open Land
St. Charles	ATWS-795	53.6	ATWS is required for topsoil segregation	7,543	25	188,411	4.33	Agricultural
St. Charles	ATWS-795	53.9	ATWS is required for topsoil segregation	7,543	25	140	0.00	Wetland
St. Charles	ATWS-796	54.5	ATWS is required for waterbody crossing/road crossing	100	25	2,306	0.05	Agricultural
St. Charles	ATWS-797	54.5	ATWS is required for waterbody crossing/road crossing	85	25	2,121	0.05	Agricultural
St. Charles	ATWS-798	54.6	ATWS is required for waterbody crossing/road crossing	100	25	2,596	0.06	Agricultural
St. Charles	ATWS-799	54.6	ATWS is required for waterbody crossing/road crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-800	54.6	ATWS is required for topsoil segregation	6,065	25	146,411	3.36	Agricultural
St. Charles	ATWS-800	54.8	ATWS is required for topsoil segregation	6,065	25	5,250	0.12	Wetland
St. Charles	ATWS-801	55.7	ATWS is required for wetland crossing	100	50	4,999	0.11	Agricultural
St. Charles	ATWS-802	55.9	ATWS is required for wetland crossing	100	50	5,000	0.11	Agricultural
St. Charles	ATWS-437	56.5	ATWS is required for topsoil segregation	3,714	25	92,945	2.13	Agricultural
St. Charles	ATWS-438	56.6	ATWS is required for road crossing	100	25	2,505	0.06	Agricultural
St. Charles	ATWS-439	56.6	ATWS is required for road crossing	100	25	2,504	0.06	Agricultural
St. Charles	ATWS-440	56.6	ATWS is required for road crossing	100	25	2,505	0.06	Agricultural
St. Charles	ATWS-441	56.6	ATWS is required for topsoil segregation	875	25	21,929	0.50	Agricultural
St. Charles	ATWS-442	56.6	ATWS is required for road crossing	100	25	2,505	0.06	Agricultural
St. Charles	ATWS-443	56.7	ATWS is required for wetland crossing	100	25	2,461	0.06	Agricultural
St. Charles	ATWS-444	56.7	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-445	56.8	ATWS is required for topsoil segregation	1,200	25	29,951	0.69	Agricultural
St. Charles	ATWS-446	56.8	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-447	56.8	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-448	57.1	ATWS is required for HDD	150	150	22,500	0.52	Agricultural
St. Charles	ATWS-803	57.1	ATWS is required for topsoil segregation	920	25	23,032	0.53	Agricultural
St. Charles	ATWS-450	57.2	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural

spire

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
St. Charles	ATWS-451	57.2	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-452	57.2	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-449	57.3	ATWS is required for HDD	2,584	75	2,168	0.05	Developed
St. Charles	ATWS-453	57.3	ATWS is required for topsoil segregation	410	25	10,259	0.24	Agricultural
St. Charles	ATWS-454	57.3	ATWS is required for wetland crossing	100	25	2,500	0.06	Agricultural
St. Charles	ATWS-455	57.3	ATWS is required for road crossing	100	25	2,503	0.06	Agricultural
St. Charles	ATWS-457	57.3	ATWS is required for road crossing	100	25	2,503	0.06	Agricultural
St. Charles	ATWS-458	57.3	ATWS is required for topsoil segregation	175	25	4,414	0.10	Agricultural
St. Charles	ATWS-804	57.3	ATWS is required for road crossing	100	25	2,504	0.06	Agricultural
St. Charles	ATWS-449	57.4	ATWS is required for HDD	2,584	75	16,232	0.37	Wetland
St. Charles	ATWS-460	57.4	ATWS is required for topsoil segregation	1,750	25	43,661	1.00	Agricultural
St. Charles	ATWS-449	57.5	ATWS is required for HDD	2,584	75	175,389	4.03	Agricultural
St. Charles	ATWS-461	57.7	ATWS is required for HDD	300	95	28,497	0.65	Agricultural
St. Charles	ATWS-462	57.7	ATWS is required for HDD	300	115	34,500	0.79	Agricultural
St. Louis	ATWS-463	58.3	ATWS is required for HDD	290	95	2,058	0.05	Forest
St. Louis	ATWS-464	58.3	ATWS is required for HDD	300	91	591	0.01	Wetland
St. Louis	ATWS-463	58.4	ATWS is required for HDD	290	95	25,492	0.59	Developed
St. Louis	ATWS-464	58.4	ATWS is required for HDD	300	91	26,808	0.62	Developed
St. Louis	ATWS-805	58.6	ATWS is required for road crossing	115	35	3,084	0.07	Developed
St. Louis	ATWS-805	58.6	ATWS is required for road crossing	115	35	956	0.02	Forest
St. Louis	ATWS-806	58.6	ATWS is required for road crossing	117	25	2,923	0.07	Forest
St. Louis	ATWS-807	58.7	ATWS is required for topsoil segregation	265	40	10,609	0.24	Open Land
St. Louis	ATWS-808	58.8	Construction of Laclede/Lange Delivery Station/hydrostatic testing	100	85	4,211	0.10	Developed
St. Louis	ATWS-808	58.8	Construction of Laclede/Lange Delivery Station/hydrostatic testing	100	85	31	0.00	Agricultural

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Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
St. Louis	ATWS-808	58.8	Construction of Laclede/Lange Delivery Station/hydrostatic testing	100	85	4,243	0.10	Forest
St. Louis	ATWS-809	58.8	Construction of Laclede/Lange Delivery Station/hydrostatic testing	365	245	83	0.00	Developed
St. Louis	ATWS-809	58.8	Construction of Laclede/Lange Delivery Station/hydrostatic testing	365	245	89,491	2.05	Agricultural
North County Extension								
Missouri								
St. Louis	ATWS-873	0.0	ATWS is required for topsoil segregation	395	25	9,834	0.23	Agricultural
St. Louis	ATWS-874	0.1	ATWS is required for topsoil segregation	255	25	6,394	0.15	Agricultural
St. Louis	ATWS-875	0.3	ATWS is required for topsoil segregation	140	25	3,530	0.08	Agricultural
St. Louis	ATWS-875	0.3	ATWS is required for topsoil segregation	140	25	1	0.00	Forest
St. Louis	ATWS-876	0.3	ATWS is required for topsoil segregation	90	25	2,251	0.05	Developed
St. Louis	ATWS-876	0.3	ATWS is required for topsoil segregation	90	25	18	0.00	Forest
St. Louis	ATWS-877	0.4	ATWS is required for topsoil segregation	260	25	6,488	0.15	Agricultural
St. Louis	ATWS-878	0.4	ATWS is required for wetland crossing	100	50	4,584	0.11	Agricultural
St. Louis	ATWS-878	0.4	ATWS is required for wetland crossing	100	50	416	0.01	Forest
St. Louis	ATWS-879	0.5	ATWS is required for wetland crossing	100	50	5,000	0.11	Agricultural
St. Louis	ATWS-880	0.5	ATWS is required for topsoil segregation	1,775	25	44,398	1.02	Agricultural
St. Louis	ATWS-881	0.9	ATWS is required for topsoil segregation and waterbody crossing	160	50	5,503	0.13	Agricultural
St. Louis	ATWS-881	0.9	ATWS is required for topsoil segregation and waterbody crossing	160	50	2,439	0.06	Forest
St. Louis	ATWS-882	0.9	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
St. Louis	ATWS-883	1.0	ATWS is required for road crossing	150	60	8,954	0.21	Open Land
St. Louis	ATWS-884	1.1	ATWS is required for waterbody crossing	95	25	2,366	0.05	Forest
St. Louis	ATWS-885	1.2	ATWS is required for waterbody crossing	400	25	10,000	0.23	Forest
St. Louis	ATWS-886	1.6	ATWS is required for HDD	245	65	15,766	0.36	Forest
St. Louis	ATWS-887	1.6	ATWS is required for HDD	245	90	22,024	0.51	Forest

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
St. Louis	ATWS-888	1.6	ATWS is required for access road entrance / equipment	100	50	3,311	0.08	Open Land
St. Louis	ATWS-888	1.6	ATWS is required for access road entrance / equipment	100	50	1,689	0.04	Forest
St. Louis	ATWS-889	2.3	ATWS is required for HDD	275	45	12,277	0.28	Agricultural
St. Louis	ATWS-890	2.3	ATWS is required for HDD	350	140	9,445	0.22	Developed
St. Louis	ATWS-890	2.3	ATWS is required for HDD	350	140	38,301	0.88	Agricultural
St. Louis	ATWS-890	2.3	ATWS is required for HDD	350	140	1,036	0.02	Forest
St. Louis	ATWS-891	2.4	ATWS is required for topsoil segregation	750	25	18,356	0.42	Developed
St. Louis	ATWS-891	2.5	ATWS is required for topsoil segregation	750	25	387	0.01	Forest
St. Louis	ATWS-892	2.5	ATWS is required for wetland crossing	190	50	9,500	0.22	Forest
St. Louis	ATWS-893	2.6	ATWS is required for road crossing	105	25	2,617	0.06	Developed
St. Louis	ATWS-894	2.7	ATWS is required for topsoil segregation	1,450	25	3,077	0.07	Open Land
St. Louis	ATWS-895	2.7	ATWS is required for road crossing	95	25	2,392	0.05	Open Land
St. Louis	ATWS-894	2.8	ATWS is required for topsoil segregation	1,450	25	33,163	0.76	Agricultural
St. Louis	ATWS-896	2.9	ATWS is required for waterbody and wetland crossing	100	50	5,000	0.11	Agricultural
St. Louis	ATWS-897	3.0	ATWS is required for waterbody and wetland crossing	100	50	5,000	0.11	Agricultural
St. Louis	ATWS-898	3.0	ATWS is required for topsoil segregation	2,175	25	1,633	0.04	Developed
St. Louis	ATWS-898	3.2	ATWS is required for topsoil segregation	2,175	25	52,680	1.21	Agricultural
St. Louis	ATWS-899	3.7	ATWS is required for HDD	3,410	215	725,887	16.66	Agricultural
St. Louis	ATWS-899	3.8	ATWS is required for HDD	3,410	215	492	0.01	Wetland
St. Louis	ATWS-899	3.8	ATWS is required for HDD	3,410	215	6,355	0.15	Forest
St. Louis	ATWS-900	3.8	ATWS is required for HDD	215	85	11,442	0.26	Agricultural
St. Louis	ATWS-900	3.8	ATWS is required for HDD	215	85	7,031	0.16	Forest
St. Louis	ATWS-901	3.8	ATWS is required for HDD	220	80	17,219	0.40	Agricultural
St. Louis	ATWS-901	3.8	ATWS is required for HDD	220	80	460	0.01	Forest
St. Louis	ATWS-902	4.5	ATWS is required for HDD	240	115	27,505	0.63	Open Land

Appendix 8-F. Additional Temporary Workspace (Continued)

County	Workspace ID	Nearest Milepost	Justification	Dimensions[2]		Area (square feet)	Area (acres)	Existing Land Use
				Length	Width			
St. Louis	ATWS-903	4.5	ATWS is required for HDD	245	45	11,036	0.25	Open Land
St. Louis	ATWS-904	4.8	ATWS is required for topsoil segregation	810	25	20,233	0.46	Agricultural
St. Louis	ATWS-905	4.9	ATWS is required for road crossing	125	50	6,256	0.14	Agricultural
St. Louis	ATWS-906	5.0	ATWS is required for topsoil segregation	415	25	10,436	0.24	Agricultural
St. Louis	ATWS-907	5.0	ATWS is required for road crossing	125	50	6,256	0.14	Agricultural
St. Louis	ATWS-908	5.1	ATWS is required for topsoil segregation	325	25	8,185	0.19	Agricultural
St. Louis	ATWS-909	5.2	ATWS is required for topsoil segregation	105	25	2,594	0.06	Agricultural
St. Louis	ATWS-910	5.3	ATWS is required for waterbody crossing	100	50	5,000	0.11	Forest
St. Louis	ATWS-911	5.3	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
St. Louis	ATWS-912	5.3	ATWS is required for waterbody crossing	100	25	2,500	0.06	Forest
St. Louis	ATWS-913	5.4	ATWS is required for waterbody crossing and steep slope	335	25	8,424	0.19	Forest
St. Louis	ATWS-914	5.4	ATWS is required for waterbody crossing and steep slope	545	25	13,589	0.31	Forest
St. Louis	ATWS-915	5.6	ATWS is required for waterbody crossing and steep slope	655	25	16,370	0.38	Forest
St. Louis	ATWS-916	5.6	ATWS is required for waterbody crossing and steep slope	550	25	13,794	0.32	Forest
St. Louis	ATWS-917	5.8	ATWS is required for topsoil segregation	805	25	20,139	0.46	Agricultural
St. Louis	ATWS-918	6.0	ATWS is required for wetland crossing	160	100	15,800	0.36	Agricultural
St. Louis	ATWS-922	6.0	Construction of Chain of Rocks Station	200	30	651	0.01	Open Land
St. Louis	ATWS-922	6.0	Construction of Chain of Rocks Station	200	30	5,307	0.12	Forest
					Project Totals[1]	**10,443,112**	**239.74**	-

Notes:

[1] Totals may not equal the sum of the columns due to rounding.

[2] The dimensions shown are approximate and may not equal the total area of impact for irregular ATWS.